Bharath
INSTITUTE OF HIGHER EDUCATION AND RESEARCH
(Declared as Deemed - to - be - University under section 3 of UGC Act 1956)

SCHOOL OF AGRICULTURAL SCIENCES

Academic Regulations and Syllabus

BACHELOR OF SCIENCE (HONOURS) IN AGRICULTURE

Under Choice based credit system (CBCS) with Outcome based Education

R 2018

SCHOOL OF AGRICULTURAL SCIENCES

CURRICULUM & SYLLABUS: Regulation 2018 of ICAR

VISION

1. To search new area of knowledge and transform Agricultural education as a tool for making Agriculture a suitable industry for the benefit of the farmers and the country as a whole.
2. To be the leading centre to provide students – responsive education, farmers centered training and services to develop Agriculture as an industry.
3. To provide leading education with knowledge and life enhancing programme and produce graduates to serve the State and nation, sharing and applying knowledge acquired by them.

MISSION

1. To impart a technical education in Agriculture & related areas. The faculty will create integrate and share the knowledge to meet the objectives.
2. To develop well qualified human resources in Agriculture and Allied activities.
3. To generate new technologies to provide food and nutritional security by using crop improvement and Genetic Engineering Techniques in Agricultural research.
4. To transfer technology to farmers and farming community and other stake holders through well-defined extension education and programme especially for the marginal farmers and rural people.

BHARATH INSTITUTE OF HIGHER EDUCATION AND RESEARCH

SCHOOL OF AGRICULTURAL SCIENCES

Academic Regulations and Syllabus of B.Sc. (Hons.) Agriculture

(Applicable to the students admitted from July 2018)

1. TITLE

1.1. These academic Regulations shall be called **"Bharath Institute of Higher Education and Research, School of Agricultural Sciences, B.Sc. (Hons.) AgricultureAcademic Regulations 2018"** for obtaining Bachelor Degree in the School of Agricultural Sciences.

1.2. The regulations provided herein shall apply to the students admitted from the academic year 2018-19 onwards.

2. DEFINITIONS

2.1. **Academic Year** means a period consisting of two consecutive semesters including the inter-semester break as announced by the University/ Deans of respective colleges. The first year of study shall be the first and second semesters following a student's admission. The second year of study shall be the third and fourth semesters; the third year, the fifth and sixth semesters and the fourth year, the seventh and eighth semesters.

2.2. **Coordinator** means a teacher of the faculty who has been nominated by the Dean concerned to look after academic matters of a particular year of the degree programme. He/she will attend to registration, preparation of time tables, and distribution of courses, regulation of credit load and maintenance of individual student's records of the concerned batch

2.3. **Academic counselor**means a teacher of the faculty who has been nominated by the Dean for counseling a group of students in academic matters.

2.4. **Curriculum** is a group of courses and other specified requirements for the fulfillment of the degree programme.

2.5. **Curricula and Syllabi** are a list of approved courses for Degree Programme.Wherein each course is identified with a three-letter code, a course number, outline of syllabus and credit assigned.

2.6. **Course** is a teaching unit of a discipline to be covered within a semester as detailed in the Curricula and Syllabi issued by the BIHER.

2.7. **Credit Load** of a student during a semester is the total number of credits of all the courses a student registers during that particular semester.

2.8. **A credit** in theory means one hour of class room lecture and a credit in practical means two and a half hours of laboratory or workshop or field work per week. For example, a 1+1 course (2 credits) means 1 hour theory and 2½ hours practical per week.

2.9. **Grade Point**means the total marks in percentage obtained in a course divided by 10 and rounded to two decimal places.

2.10. **Credit Point** means the grade point multiplied by the credit load of the course

2.11. **Overall Grade Point Average** (OGPA) means the total credit points of the courses completed by the student divided by total credits of the courses. The OGPA is to be worked out and then rounded to two decimals.

2.12. **Duration of Semester** means the duration of each semester of 105 working days inclusive of the mid-semester and practical examinations but excluding the study holidays and final theory

examinations.

2.13. **Transcript Card** is the consolidated report of academic performance of a student issued by the Bharath Institute of Higher Education and Research (BIHER) on completion of the curriculum.

2.14. **Class Grade Chart** means a grade chart prepared by the Controller of Examinations indicating marks obtained by the students belonging to a particular class for each course.

2.15. **Statement of Marks** means a report of grades, credit point and OGPA obtained by a student in a particular semester.

2.16. **Re-examination/Reappearance**is an examination written for the failed courses by a student without undergoing regular class/course.

3. ADMISSION

3.1. Admission of the student to B.Sc. (Hons.)Agriculture programme in the School of Agricultural Sciences shall be on the basis of merit and in accordance with the policy and guidelines of ICAR and Bharath Institute of Higher Education and Research. The minimum admission requirement shall be decided by the BIHER and issued from time to time. Decision of the BIHER is final in deciding procedure of admission and finalization of number of seats. Reservation rules shall be made applicable as per norms of the state government.

3.2. **Tuition fees and scholarships:** The various fees payable by the students will be decided by the IHER from time to time.

a) In case of new admission, the fees for the semester are payable in advance failing which they will not be admitted.

b) In other cases, the fees are payable within seven working days from the commencement of the semester.

c) In the case of default, a fine as per the BIHER rules will be collected.

d) The students who fail to pay the tuition fees within a month of commencement of the semester will not be allowed to attend the classes and their names will be struck off from the rolls. However, if the defaulting students pay the fees along with the fines in addition to a prescribed readmission fee, they will be permitted to attend the classes. The period for which his/her name is removed from the rolls will be treated as absence for the purpose of calculating the minimum attendance requirements.

e) Students who are away on study tour, camp activities or other extracurricular activities organized by the Institute or the Faculty at the commencement of the semester may, however, pay their semester tuition fees and other fees within the third working day after they return from such programmes, without fine.

f) A student who has been granted scholarships by the Welfare Departments or by the Government of India or by the State Government will, however, be exempted from the levy of fines, provided the fees are paid on the next day after the scholarship amount is actually disbursed to him/her. The concession referred above will apply to those who have actually been granted scholarships and not to those who have only applied and are expecting sanction.

g) The candidate should obtain a Hall Ticket from the Controller of Examinations through the Dean after clearing all arrears including the hostel dues before the commencement of each semester final examination.

4. SYSTEM OF EDUCATION

4.1. Maximum Duration Permissible: The system of education followed for all the undergraduate programmes is Semester System with duration of four academic years (8 Semesters). The maximum duration permissible for a student shall be `n' plus four academic years (16 semesters), where 'n' denotes the normal duration of the degree programme (8 semesters). The hostel facilities will be provided only for the actual duration of academic programme.

4.2. Credit Requirements: The minimum credit requirement for each Degree Programme is 180

4.3. Medium of Instruction: The medium of Instruction in School of Agricultural Sciences shall be English.

4.4. Maximum Credit Load: A student can register for a maximum of 25 credits during a semester. An additional 1 or 2 credit shall be permitted at the discretion of the respective Deans of the colleges.

4.5. Course Teacher: The Dean concerned, in consultation with the respective Head of the Department, will nominate the course teacher for each course at the beginning of the semester. The course teacher shall be responsible to the Head of the Department in all matters connected with the conduct of the course. The Head of the Department will monitor the progress of the course(s) of the respective Department.

4.6. Academic Counselor: The Dean of the college will allot a group of not less than five students to the nominated Academic Counselor. The Academic Counselor will counsel the group of students in curricular and extra-curricular activities for the entire period of degree programme by conducting periodical meetings

4.7. Class Time Table: At the beginning of each semester, the Dean of the college will prepare the class time table with the help of Coordinator of the respective year.

4.8. Working Days and Time Schedule: Except Sundays and other listed holidays, all other days of a week including Saturdays are working days for the students. Normal Working Hours: 7.30 a.m. to 5.00 p.m. Depending upon the need, the respective Dean will decide about the timings. Time schedule may vary in each teaching campus to suit the local needs.

4.9. Commencement and Closure of Semesters: The date of commencement and closure of semesters as well as inter-semester break shall be announced by the Dean of School of Agricultural Sciences after the approval of the Deans' committee. The schedule of the final theory examinations shall be announced by the Controller of Examinations in consultation with Dean of School of Agricultural Sciences. The University through the Deans' Committee should approve any deviation after dates are announced.

4.10. Inter-semester Break: A break of about 15 (fifteen) days shall normally be allowed between any two consecutive semesters. A longer inter-semester break during summer may be allowed every year, subject to a maximum of 30 days during May - June.

4.11. Academic Calendar: A common academic calendar shall be prepared by the Faculty Dean (Agriculture) every year by including the date of registration, date of mid semester examinations, final theory examinations, inter-semester break and summer holidays for all the undergraduate programmes. The Dean of School of Agricultural Sciencesshall schedule the academic activities within the specified period without deviation.

4.12. Condensation of Semesters: The Dean concerned has the responsibility to adhere to the common Academic Calendar. However, under extraordinary situation upon the recommendation of Deans' Committee and with the permission of the BIHER, condensation of semester may be made up to a maximum of 10 days to cope up for examination schedule. The loss of classes in such cases should be compensated by special time table.

5. REGISTRATION OF COURSES

5.1. A course shall be offered only once in an academic year during the semester as listed in the course curricula and syllabi.

5.2. All eligible candidates shall register the requisite courses at the beginning of each semester IN PERSON under the guidance of the Co-ordinator. IN ABSENTIA registration will not be permitted under any circumstance.

5.3. Registration without fine: The courses prescribed for a semester can be registered on the date scheduled in the academic calendar. The registration is also permitted on the second day (which is the first working day of the semester) without fine.

5.4. Registration with fine: Late registration shall be permitted by the Deans concerned up to seven working days inclusive of the date of registration on payment of a late registration fee.

5.5. Procedure to get permission for late registration: The student concerned shall apply with proper reason to the Dean concerned through the Academic Counselor and Coordinator to get the permission of the Dean for the late registration of the courses. Beyond the prescribed time limit, no student shall be permitted to register the courses for a particular semester.

5.6. For calculating 105 working days for a semester, the second day of registration will be counted as the first working day of the semester.

Model

Date of Registration	:	06.01.2020 (Monday)	1st Day
Last date for Registration without fine	:	07.01.2020 (Tuesday)	
	:	08.01.2020 (Wednesday)	
	:	09.01.2020 (Thursday)	
	:	10.01.2020 (Friday)	
	:	11.01.2020 (Saturday)	
		12.01.2020 (Sunday)	
Last date for Registration with fine		30.07.2012 (Monday)	7th Day

6. ATTENDANCE REQUIREMENTS

6.1. A minimum of 80 per cent attendance separately in theory and practical of the concerned course is a must, failing which the student shall not be permitted to appear for both final theory and practical examination in the course concerned and grade 'E' (incomplete) will be awarded. The student must re-register the course when offered again, with the permission of the Dean.

6.2. For the first year first semester students, for calculating 80 per cent attendance the number of working days will be calculated only from the date of joining of the student.

6.3. Students failing to attend the classes/ examinations on unofficial ground will be treated as 'absent'. Hundred per cent attendance is compulsory individually in each of the courses like RAWE, VSP, AITP, ADO/ADA/NGO placement and All India study tour and similar other programmes.

6.4. The PED, NCC/NSS courses shall be registered during first semester and evaluated at the end

of the fourth semester.

6.5. Students deputed for sports, cultural meets, etc., with prior permission of the Deans of the colleges shall be given attendance for the period of absence. However, students under this category must have attended a minimum of 50% classes in the total theory and practical classes conducted.

6.6. Calculation of Attendance

a) **THEORY CLASS**: Number of classes conducted for a course from the first working day as per the time table to the last theory class of that semester is to be construed as the total number of theory classes conducted by the course teacher. The mid-semester examinations are normally conducted during class hours. The attendance for mid semester examination will be counted as a theory class. Final theory examinations will be conducted after 105 working days.

b) **PRACTICAL CLASS**: The final practical examination will be conducted in the last practical class as per the time table which will not be considered as attendance for practical class of a particular course. The student belonging to a batch will attend classes and earn attendance in the particular batch only as per the time table. No student shall be permitted to attend along with another batch to gain attendance either in theory or in practical.

7. EXAMINATIONS

7.1. The evaluation of student's performance shall be made separately for each course registered by the student.

7.2. Distribution of Marks: Each course shall carry a maximum of 100 marks for the purpose of grading. The distribution of marks shall be as follows.

S.No.	COURSES WITH BOTH THEORY AND PRACTICAL	MARKS
1.	Mid –Semester Examination	20
2.	Practical Examination	40
	Practical Marks Split up	
	Written	20
	Assignment / Specimen Collection	10
	Record	05
	Viva -Voce	05
3.	Final Theory Examination	40
	Total	**100**
	COURSES WITH ONLY THEORY	
1.	Mid –Semester Examination	60
2.	Final Theory Examination	40
	Total	**100**
	COURSES WITH ONLY PRACTICAL	
1.	Practical Work	60
2.	Final Examination	40
	Total	**100**

7.2. Evaluation of course work: The results of the course shall be indicated by grade points ranging from 0 to 10.0. The minimum grade point to be secured for the successful completion of a course will be 6.00. Securing a grade point less than 6.00 in a course will be treated as 'RA' and the grade point will be 0 for calculating the GPA/OGPA. In case of course with theory and practical, minimum of 50% mark separately in theory and practical with an aggregate of 60 per cent is essential. An OGPA of 6.50 shall be the minimum requirement for the award of Degree. The following symbols shall be used in the grade sheets.

E	Incomplete (Lack of Attendance)
AB	Absent
RR	Re-registration
RA	Re-appearance
IE	Improvement Examination
EE	Incomplete for reasons other than attendance

7.3. Evaluation pattern for courses with only practical:

The evaluation of courses with only practical's is grouped and mark distribution is tabulated. The pattern of questions is to be decided by the course teacher and external examiner. Wherever specimen collections are required a portion of marks shall be allotted either from written test mark or record mark. In the event of difference of opinion between internal and external examiner, the Deans concerned shall decide the pattern of examination.

7.3.1. U18HPED101 PHYSICAL EDUCATION (0+1)

The students will be evaluated for 100 marks. The course teacher will evaluate the performance and behavior of students in the classes and marks will be awarded at the end of the first semester as detailed below.

Particulars	Max marks
Attendance & routine activities	60
Behavior	10
Participation in tournaments / Camps	20
Viva-voce	10
Total	100

7.3.2.U18HPED 102 YOGA FOR HUMAN EXCELLENCE (0+1)

Each student has to undergo 60 hours of face to face course work in a year.

Particulars	Max marks
Written Examination	40
Yoga Practical Examination	30
Viva –voce	10
Record	20
Total	100

7.3.3. U18HNSS/U18HNCC (0+1)

The duration of NCC /NSS training is for four semesters (I, II, III and IV).NCC/NSS courses shall be registered during first semester and evaluated at the end of fourth semester.

NSS

Each student enrolled in NSS should also attend at least one special camp not exceeding 10 days duration. 80% attendance is mandatory for attending special camp. Marks will be awarded as follows

Particulars		Max marks
NSS Regular Programme		
1. Semester I 2. Semester II 3. Semester III **4.** Semester IV	15 15 15 15	60
NSS Special Camp		
1. Attendance in daily activities during special camp 2. Special camp activity report **3.** *Viva - voce* on the 10th day of the special camp	30 05 05	40
Total		**100**

At the end of fourth semester, the course teacher shall send the marks awarded to theController of Examinations through the Dean, School of Agricultural Sciences.

NCC

Each student enrolled in NCC should attend 10 parades per semester, thus 40 parades in four semesters.

S.No.	Particulars	Sem I	Sem II	Sem III	Sem IV	Total
1.	Regular activities and Behaviour	10	10	10	10	40
2.	Participation in camps and special assignments	5	5	5	5	20
3.	Written test and viva	10	10	10	10	40
	Total	**25**	**25**	**25**	**25**	**100**

7.3.4.COURSES HAVING BOTH THEORY AND PRACTICALS (1+1 / 2+1 / 1+2)

Particulars	Max marks
Practical	20
Assignment 2 Nos.	7
Questions from CD show / Guest Lecture/Short Tour	3
Continuous evaluation and record	5
Viva-Voce	5
	40

7.3.5. COURSES HAVING ONLY PRACTICAL (0+1/0+2)

A. Practical involving field work

Particulars	Mid-Sem	Final
Field evaluation (identification, specimen collection etc.)	30	30
Assignment	5	10
Questions from CD show/ Guest Lecture/ Short Tour	-	5
Continuous evaluation and record	-	5
Viva – Voce	5	10
Total	**40**	**60**

B. Practical involving class room activities

Particulars	Mid-Sem	Final
Written test	30	30
Assignment	5	10
Questions from CD show/ Guest Lecture/ Short Tour	-	5
Continuous evaluation and record	-	5
Viva – Voce	5	10
Total	**40**	**60**

C. Practical involving lab works including workshop

Particulars	Mid-Sem	Final
Lab practical including procedures and identification	30	30
Assignment	5	10
Questions from CD show/ Guest Lecture/ Short Tour	-	5
Continuous evaluation and record	-	5
Viva – Voce	5	10
Total	**40**	**60**

7.3.6. Rural Agricultural Work Experience (RAWE)

Course on Rural Agricultural Work Experience will be offered in the VII Semester for eight weeks. The village attachment will be organized by the Department of Agricultural Extension. For each batch of students, there will be a designated RAWE Co-ordinator from the Department of Agricultural Extension, who will continuously guide, supervise and monitor the work of students during their placements in rural areas. The designated Teachers from the courses related to the subject matter areas will alsovisit and guide the students on technological aspects and to solve the problems, which are beyond the competence of students as well as to, evaluate the performance of the students on the concerned subject. They will also support the students during the extension educational activities.

Orientation programme will be organized by different departments during the first week of the semester followed by Village attachment.The students would be required to record their observations in field on daily basis and will prepare their project report based on these observations. ForAgro Industrial attachment the students will be attached to Agro based industries which is organized by Department of Agricultural Economics. The final examination will be conducted separately for each attachment at the end of the semester. The marks will be awarded as detailed below.

Components	VSP (60days)	ADA (10days)	NGO (10days)	Industry (10 days)	Total (90days)
Participation and oral presentation	30 marks	10 marks	10 marks	10 marks	60 marks
Record	10 marks	5 marks	5 marks	5 marks	25 marks
Overall exhibition	-	-	-	-	15 marks
Total	**40 marks**	**15 marks**	**15 marks**	**15 marks**	**100 marks**

7.3.7. Educational Tours-U18AAGR202(0+1) & U18AAEX402(0+1)

Educational tour courses U18AAGR202Study tour-I and U18AAEX402All India Tour (0+1) are compulsory. Those who miss the study tours for any valid reason must re-register and undertake the tour along with juniors to complete the degree programmeThe tours will be under taken during fourth and seventh semester, respectively. The duration of U18AAGR202shall not exceed 7 days and that of U18AAEX402shall not exceed 14 days. The study tour shall be conducted within the 105 working days. The tours will be arranged by the respective departments of the study in consultation with the Dean, School of Agricultural Sciences. The final examination will be conducted separately at the end of the semester by the University. The Marks for the tours are to be awarded as follows

Particulars	Max marks
Attendance	10
Behavior	15
Tour diary	15
Tour record	15
Written examination	30
Viva -voce	15
Total	**100**

7.3.8.Project Work

S. No.	Particulars	Evaluation	Marks
1.	Research area identification and collection of literature	7th semester	20
2.	Work done	8th semester	30
3.	Report	8th semester	20
4.	Presentation	8th semester	20
5.	Viva voce	8th semester	10
	Total		**100**

7.3.9.Experiential learning

These courses will be offered in the VIII semester. A student can choose any two experiential learning programme ofhis/her choice. The maximum number of students allowed to register in a department will be decided by the Dean depending on enrolment. If more number of students opt for a same department the particular subject mark is considered for selecting a student.Periodical evaluation of the above course will be done by the course teacher during different stages of work. Final evaluation of the above course will be done by the teacher in charge and another staff member appointed as examiner by the Head of the Department. The final examination will be conducted by the University before the commencement of regular final semester examinations.

S.No.	Particulars	Max marks
1.	Project Planning and Writing	10
2.	Presentation	10
3.	Regularity	10
4.	Monthly Assessment	10
5.	Output Delivery	10
6.	Entrepreneurship skills	10
7.	Technical Skill Development/ Business networking	**20**
8.	Report Writing Skills	**10**
9.	Final Presentation	**10**
	Total	**100**

7.4. Mid Semester Examination: Writing the mid-semester examination is a prerequisite for writing the final theory and practical examinations. Students failing to write mid-semester examination will not be permitted to attend the classes further in the course concerned and the student will be awarded 'E' grade. The mid-semester examination mark list should reach the office of the Controller of Examinations within fifteen days from the date of conduct of mid-semester examination

7.5. Missing Examination: A student who fails to attend a mid-semester examination due to unavoidable circumstances shall be permitted with prior approval of the Dean to take up missing examination of the particular course, subject to payment of fee for each missing mid-semester examination. Students deputed for official programmes of the University are exempted from paying the fee for missing test. Such missing examinations should be completed outside the regular class hours within 15 working days of the respective examinations. Attendance will not be given for taking up missing examinations. The missing examinations are allowed only for mid-semester examinations and not for final theory and practical examinations.

7.6. Theory Examination: An examination schedule approved by the Dean and the Controller of Examinations for the mid-semester and final examinations, respectively, shall be final.

Duration for mid-semester and final theory examinations

Mid semester : 1 hour

Final theory (Handwritten)

1+1, 2+1, 1+2 and 2+2 Credits	: 2½ hours (40 marks)
1+0, 2+0 and 3+0 Credits	: 3 hours (60 marks)
0+1 and 0+2 credits	: 3 hours (60 marks)

Exam pattern

Mid Semester examination – Online Mode/Hand written mode

Final Theory Examination – Hand written mode

7.7. Practical Examination: The Deans of Colleges will announce the schedule of final practical examinations. The Controller of Examinations, based on the proposal sent by the Deans concerned, will nominate the external examiner and the course teacher shall be the internal examiner. In the event of external/ internal examiner nominated for practical examination could not conduct the examination, then the Dean concerned shall nominate an alternative examiner to conduct practical examination in anticipation of approval by the Controller of

Examinations. Submission of bonafide practical records certified by the Course Teacher is a pre-requisite for appearing in the practical examinations failing which 'F' grade will be awarded. The duration of practical examination shall be two and a half hours. The practical marks should be communicated to Controller of Examinations within 10 days of the last working day.If a student fails to write practical examination, `F' grade will be awarded if he/she has 80% attendance. The student has to appear for the reappearance examination.

7.8. Question Paper Setting and Evaluation

a) The mid semester question papers will be set and answer papers evaluated by the course teacher concerned and the mid semester exam is on line / hand written
b) The semester final theory question paper for all the courses will be set by the Controller of Examinations after obtaining question papers from external examiners outside the University.
c) The practical examination will be conducted and evaluated by the external examiner with the help of internal examiner.
d) The Controller of Examinations will arrange for evaluation of semester final theory papers with external examiners.

7.9. Postponement of Final Examination: Whenever the Government declares holidays on the dates of final examinations, the examination that falls on the particular date will be postponed to the date after the last examination as per the original examination schedule.

7.10. Improvement and Re-examination: Improvement and re-examination is permitted only for the final theory and practical examinations. The students are permitted to write the improvement and re-examinations as and when conducted with the permission of Deans of Colleges. Improvement and re-examination fee ofRs. 500/ paper or as per BIHER norms. A student is permitted to write either theory or practical examination alone or both in the reappearance examination for the failed subjects. A student is permitted to write reappearance examination for the failed subjects only three times during n+4 years duration excluding the regular final examination (Mid-term assignment and continuous evaluation record marks will be retained as such and student must produce the evaluated record). In the event of a student failing to secure a pass in the three re-examinations permitted he/she has to reregister the course along with juniors. The registration for the improvement/re-examination shall be done on the date specified by the Controller of Examinations. Each registration is considered as an attempt even if the student is absent for the examination. The latest theory / practical examination marks will be retained for the subsequent reappearance examinations for which the student has not opted.

The student having an OGPA of less than 6.50 is eligible to improve the grade point only once in courses with grade point less than 8.00. A student who has an OGPA of 6.50 and above is not eligible to improve his/her grade points in any course. In case a student fails to secure higher grade point in the subsequent attempts, the higher grade point secured by the student either in regular or improvement examination will be accounted. Improvement and re-examination will not be applicable to industry and institutional educational tours, RAWE, agro industrial tie-up programmes, crop production, NSS, NCC and physical education courses. The camp requirement in NSS and NCC may be allowed along with juniors if the student has secured more than 80% attendance in the regular courses.

7.11. Mess due clearance certificate has to be produced by every student before taking the final examinations.

7.12. The minimum grade point to be secured for a pass in a course is 6.00.

7.13. A student has to maintain a minimum OGPA of 6.50 out of 10.00 at the end of final year (VIII semester) to become eligible for the award of degree.

7.14. Reappearance examination for the undergraduate failed subjects shall be conducted once in six months, during the semester breaks for 100 marks.

7.15. Return of evaluated answer papers

a) The evaluated answer papers of mid-semester shall be shown to the students after the examination. Discrepancies if any, in awarding marks, the student can approach the teacher concerned immediately, for rectification. The answer papers should be retained with the course teacher for six months and then disposed off.

b) Evaluated final theory answer papers may be retained up to six months by the Controller of Examinations after the conduct of examination and then disposed off. The same is applicable to improvement / re-examination also.

c) In the event of a candidate who has failed to secure minimum required mark to pass in the subject shall be permitted to write the re-appearance either final theory or practical or both examinations.

d) A student who desires to forego the chance of improvement / re-examination is also permitted to reregister the failed courses as and when the course(s) are offered with the permission of the Dean concerned on payment of re-registration fee as specified by the BIHER.

7.16. Revaluation/Re-totaling

a) A student can submit request for revaluation/ retotaling in the prescribed format to the Controller of Examinations through the Dean concerned not later than ten working days after the issue of class grade charts to the student. Appeals received thereafter will be summarily rejected. The fee for revaluation or re-totaling per subject to be paid in the form of demand draft drawn in favor of the Controller of Examinations.

b) Revaluation is not permissible normally for practical examinations. However, the Dean of college, if satisfied, may constitute a committee consisting of at least three faculty members to moderate the marks of practical examinations. The report of the committee in such cases should be submitted within two days. The decision of the Dean of the college shall be final.

7.17. Late for Examinations

The students who are late by 30 minutes shall not be allowed to enter the examination hall. Similarly no student will be allowed to leave the examination hall within 30 minutes of the commencement of the examination

8. DISCONTINUANCE AND READMISSION

8.1. A student who discontinues the first semester (I year) without getting permission from the Dean concerned will not be re-admitted. However, the student whodiscontinues the first semester (I year) for genuine reasons with the prior permission of the Dean (within 30 days) will be re-admitted in the first semester of the next year along with the junior batch (I year) of students with the approval of the Academic Council.

8.2. Students admitted to any of the courses discontinuing their studies with permission of concerned Dean before completing the course may be re-admitted to the course, if they should have completed at least one semester before such discontinuance.

8.3. A student discontinuing studies temporarily on valid and genuine grounds with prior permission of the Dean of the College will be awarded Grade 'E' for all the registered courses. The student has to rejoin with the permission of the Dean at the beginning of same semester along with junior batch of students on payment of a re-registration fee and semester fee.

8.4. When a student discontinues his/her studies in a semester (other than the first semester) on his/her own accord after getting the written permission of the Dean concerned or by the order of the University, he/she shall be re-admitted in the same semester where he/she discontinued, along with the junior batch of students.

8.5. In case of revision of curricula and syllabi the student has to complete all the course works in the original syllabus in which he/she has joined, by registering equivalent / special semester courses (or) the student has to forgo all the courses registered so far in the original curricula and syllabi and register all the courses from first semester in the new syllabus along with juniors.

8.6. A student shall not be allowed to discontinue consecutively, beyond a period of two semesters. If the discontinuance period exceeds two semesters the name of the student will be removed from the roll.

8.7. A student who discontinues a course in the undergraduate degree programme is not eligible for admission again to any other undergraduate degree programme of the University. An undertaking to this effect shall be obtained from the student by the Dean concerned at the time of discontinuation.

9. MALPRACTICES IN EXAMINATIONS AND MISCONDUCT OF STUDENTS

9.1. The Deans of the Colleges shall be responsible for dealing all cases of unfair means by students in writing records, assignments and examinations.

9.2. The invigilator or the course teacher concerned shall report each case of unfair means with full details of the evidence and written explanation of the student concerned to the Dean immediately.

9.3. The Dean shall take appropriate action on receipt of the report and the penalty may be as indicated below:

a) Students found using unfair means during the mid-semester examination may be debarred from the College for the remaining period of semester and deemed to have failed in all the courses during the semester.

b) Students found using unfair means during the final theory / practical examination may be deemed to have failed in all the courses in that semester and also debarred from the College for the next semester.

c) For using unfair means of a serious nature (which will be decided by the committee nominated by the Dean concerned) warranting higher penalties than those indicated in clauses (a) and (b) of 12.3 the student may be debarred from the University for a period of two semesters or more or permanently with the approval of the Vice-Chancellor. In such cases, the students concerned shall not be allowed to sit for the remaining examinations in the concerned course or other courses.

9.4. Details of each case together with all material evidence and recommendations of the Dean shall be communicated forthwith to the Registrar of the University. The Dean shall issue necessary orders and report each case falling under clauses (a), (b) and (c) of 12.3 of above to the Registrar immediately.

9.5. **Ragging Rules:**Students found involved in ragging or in any other misconduct, or if a complaint is received from the affected student(s) to that effect, will be immediately expelled from the current semester and the Dean shall further constitute a committee to probe and conduct enquiry into the matter and based on the report of the committee, the Dean shall pass the final orders on merit of case within three working days.

9.6. **Unlawful Activities:**In case of students found involved in any unlawful activities either within or outside the Hostel/College Campus, besides expulsion both from the Hostel and College, at the discretion of the Dean, the matter will be reported to the Police of the jurisdiction to be dealt with, in accordance with the appropriate law in force.

10. AWARD OF DEGREE

The degree namely B.Sc.(Hons.)Agriculture shall be awarded during convocation under the seal of the Bharath Institute of Higher Education and Research (BIHER) to the students who have successfully completed the entire graduation requirement as detailed below.

The candidates should have undergone successfully the prescribed course of Study in the University. They shall further be required to have completed and passed 180 course credits and shall have earned an overall grade point average (OGPA) of 6.50 out of 10 for all courses completed in B.Sc. (Hons.) Agriculturedegree programme. In addition to the above, students shall in the judgment of the Faculty, possess good conduct and character.

The University shall issue Provisional Certificate (PC) to the candidates after having passed all provisional examinations.

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B.Sc. (Hons.) AGRICULTURE

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

Program Educational Objectives (PEOs)

Graduates of Agriculture program will,

PEO1: PREPARATION

To educate the students about the basics of agriculture and guide them to utilize the knowledge in tackling the problems on a scientific mode with a cost effective approach.

PEO2: CORE COMPETENCE

To inculcate the reasoning power through understanding the fundamentals of agriculture and to evaluate the practical problems in crop production, processing, storage, and marketing and to make appropriate decision based on technical and scientific knowledge acquired during education in solving any problem in practical agriculture. To understand the scientific aspects of agriculture and apply various technologies in research activities of crop improvement andevolving new technologies.

PEO3: PROFESSIONALISM

To acquire knowledge and to establish oneself as a successful and dynamic professional in the field of agriculture both locally and globally. To pursue lifelong learning participation in post graduation, research programme and to utilize the knowledge for advancement in teaching, research and in practical Agriculture.

PEO4: SKILL

To provide various types of training and field demonstration to inculcate skills like proficiency in languages, technical communication, analytical capacity, planning for research on various branches of agriculture both at laboratory and field. To streamline the thinking ablity to be a team leader, with a good interpersonal relationship and as a technical advisor.

PEO5: ETHICS

To apply the ethical and social aspects of modern agriculture innovations by using various tools like genetic engineering, data collection and processing and its application for a higher agriculture production with a view to make farming as a commercial venture.

PROGRAMME OUTCOMES (PO) & PROGRAMME SPECIFIC OUTCOMES (PSO)

PROGRAMME OUTCOMES (PO)		
PO-1	**Domain Knowledge**	Impart knowledge of basic sciences, applied sciences, fundamentals in agriculture and related fields.
PO-2	**Problem analysis**	To identify, review, analyze and formulate the problem in agricultural practices and post-harvest techniques.
PO-3	**Problem solutions**	Understand the impact of the professional agricultural solutions in societal and environmental contexts, and demonstrate the knowledge and need for sustainable development. To demonstrate capacity to think critically and select viable solutions to solve problems.
PO-4	**Conduct surveys and investigations**	Understand how all aspects of agriculture are linked by scientists, marketers and producers to understand for the production output and to make an economically viable decision. To understand how employer characteristics and decision-making at various levels enhance the success of an agricultural enterprise. To understand components of agri-business and economics of market.
PO-5	**Usage of Modern Tools**	Knowledge of Weather codes and Symbols, Reading and Recording of weather and climatic data. To get trained to maintain climatological records, soil data, soil nutrition and modern biotechnology usage in agriculture. Communication methods and to develops such product through financial supports of banks etc.,
PO-6	**Societal role**	To demonstrate research based knowledge of the legal and ethical environment impacting agricultural organizations and exhibit an understanding and appreciation of the ethical implications of decisions.
PO-7	**Environment and Sustainability**	Demonstrate knowledge and understanding in agriculture and horticulture production and the breadth and depth of the profession of agriculture and horticulture. Basic biology: taxonomy, anatomy, morphology, and physiology. The characteristics of the environment and their influence on plant growth and development. Current applications of agricultural and horticultural principles and practices for propagation, pest management, production, maintenance, and business practices. Comprehensive knowledge of agricultural and horticultural production.
PO-8	**Ethics**	To develop critical and self-critical opinion and approach aiming at solving the most important practical problems in the field of agriculture by applying gained competencies and in accordance with high standards of academic integrity (ethics and moral) both in the profession and in society as a whole.
PO-9	**Individual and Team Work**	To demonstrate an understanding of and appreciation for the importance of the impact of globalization and diversity in modern agriculture organizations. Understanding of globalization and NGO working. To develop competence to work in Government, public and private sectors as an individual and as a team for sustainable agriculture.

PO-10	**Communication**	To demonstrate the ability to analyze data and draw appropriate statistical conclusions. To demonstrate the ability to communicate effectively both orally and in writing.
PO-11	**Project Management and Finance**	Able to demonstrate critical thinking and prepare projects to solve the problem and apply them to a variety of animal and or plant production systems.
PO-12	**Life-long learning**	This programme will also help students to enhance their employability for jobs in different sectors including self-employment as an agri-entrepreneur.
PROGRAMME SPECIFIC OUTCOMES (PSO)		
PSO-1	Applying the knowledge of crop cultivation, crop improvement, soil and crop management for sustainable organic agricultural production and development.	
PSO-2	Analysing and identifying complex agricultural problems and formulating ethical solutions using the principles of agricultural science, engineering, and business management.	
PSO-3	Developing innovative processes, products, and technologies to meet the challenges in Agriculture farming practices and through transfer of technology using various extension tools.	

BIHER - SCHOOL OF AGRICULTURAL SCIENCES

Curriculum and Syllabus of B.Sc. (Hons.) Agriculture

(Applicable to the students admitted from July 2018)

SEMESTER WISE COURSE & CREDIT DISTRIBUTION

SEMESTER I

Sl. No.	Code No.	Category	Course Title	Contact Periods	L	T	P	C
			THEORY + PRACTICAL					
1	U18CAGR101	PC	Fundamentals of Agronomy and Agricultural Heritage	56	1	0	1	2
2	U18CBIC101	PC	Fundamentals of Plant Biochemistry	72	2	0	1	3
3	U18CSAC101	PC	Fundamentals of Soil Science	72	2	0	1	3
4	U18CFOR111	PC	Introduction to Forestry	56	2	0	1	2
5	U18HENG101	HS	Comprehension & Communication Skills in English	56	1	0	1	2
6	U18CHOR111	PC	Fundamentals of Horticulture	56	1	0	1	2
7	U18BMAT111	BS	Elementary Mathematics	56	1	0	1	2
8	U18CPBG101	PC	Introduction to Agricultural Botany	56	1	0	1	2
			THEORY					
9	U18AAEX101	AS	Rural Sociology & Educational Psychology	32	2	0	0	2
			PRACTICAL					
10	U18HTAM101 /U18HENG103	HS	□□□□□□□□□□□□□□□ □□□□□□□□□□□□□ □□□□□□□□□ □□□□□ □□□□□□□□□□□□ / Development Education	40	0	0	1	1
			ACTIVITY BASED COURSES					
11	U18HNSS/ NCC101	HS	NSS/NCC*	40	0	0	1	1
12	U18HPED 101	HS	Physical Education*	40	0	0	1	1
13	U18HPED102	HS	Yoga for human excellence*	40	0	0	1	1
*Non-gradial compulsory courses			**Total**	**552**	**12**	**0**	**9**	**21**

SEMESTER II

Sl. No.	Code No.	Category	Course Title	Contact Periods	L	T	P	C
			THEORY + PRACTICAL					
1	U18CSWE 112	PC	Soil and Water Conservation Engineering	56	1	0	1	2
2	U18CCRP 101	PC	Fundamentals of crop Physiology	72	2	0	1	3
3	U18AAEC 102	AS	Fundamentals of Agricultural Economics	56	1	0	1	2
4	U18CAGM 101	PC	Fundamentals of Microbiology	72	2	0	1	3
5	U18AAEX 102	AS	Fundamentals of Agricultural Extension Education	72	2	0	1	3
6	U18AFSN 111	AS	Principles of Food Science and Nutrition	56	1	0	1	2
7	U18CAGR 102	PC	Introductory Agro-meteorology & Climate Change	56	1	0	1	2
8	U18CHOR 112	PC	Production Technology for Fruit and Plantation Crops	56	1	0	1	2
			THEORY					
9	U18ARSG 101	AS	Geo- informatics for Precision Farming	16	1	0	0	1
			ACTIVITY BASED COURSES					
10	U18HNSS/NCC101	HS	NSS/NCC	40	0	0	1	1
11	U18HPED 101	HS	Physical Education	40	0	0	1	1
*Non-gradial compulsory courses			**Total**	**512**	**12**	**0**	**8**	**20**

SEMESTER III

Sl. No.	Code No.	Category	Course Title	Contact Periods	L	T	P	C
THEORY + PRACTICAL								
1	U18CPAT 201	PC	Fundamentals of Plant Pathology	72	2	0	1	3
2	U18CAEN 201	PC	Fundamentals of Entomology	72	2	0	1	3
3	U18CSST 201	PC	Principles of Seed Technology	72	2	0	1	3
4	U18CAGR 201	PC	Crop Production Technology – I (Kharif crops)	56	1	0	1	2
5	U18CHOR 211	PC	Production Technology for Vegetables and Spices	56	1	0	1	2
6	U18AENS 201	AS	Environmental Studies & Disaster Management	72	2	0	1	3
7	U18AAMP 201	AS	Livestock and Poultry Management	72	2	0	1	3
8	U18AAEC 201	AS	Farm Management, Production & Resource Economics	56	1	0	1	2
9	U18CSAC 201	PC	Soil Resource Inventory	56	1	0	1	2
10	U18AFMP 211	AS	Farm Machinery and Power	56	1	0	1	2
PRACTICAL								
11	U18AAGR 202	AS	Study tour	40	0	0	1	1
ACTIVITY BASED COURSES								
12	U18HNSS/NCC 101	HS	NSS/NCC	40	0	0	1	1
13	U18HPED 101	HS	Physical Education	40	0	0	1	1
***Non-gradial compulsory courses**			**Total**	**680**	**15**	**0**	**10**	**25**

SEMESTER IV

Sl. No.	Code No.	Category	Course Title	Contact Periods	L	T	P	C
THEORY + PRACTICAL								
1	U18CPBG 201	PC	Fundamentals of Genetics	72	2	0	1	3
2	U18AAEX 201	AS	Communication Skills and Personality Development	56	1	0	1	2
3	U18BSTA 211	BS	Statistical Methods	56	1	0	1	2
4	U18CPAT 202	PC	Principles of Plant Disease Management	56	1	0	1	2
5	U18CAEN 202	PC	Management of Beneficial and Harmful Insects	72	2	0	1	3
6	U18CAGR 203	PC	Crop Production Technology – II (*Rabi* crops)	56	1	0	1	2
7	U18CAGR 204	PC	Farming System & Sustainable Agriculture	56	1	0	1	2
8	U18CHOR 212	PC	Production Technology for Ornamental Crops, MAP and Landscaping	56	1	0	1	2
9	U18AERG 211	AS	Renewable Energy and green technology	56	1	0	1	2
THEORY								
10	U18CSAC 202	PC	Problematic soils and their management	32	2	0	0	2
11	U18ANST 201	AS	Fundamentals and Applications of nanotechnology	16	1	0	0	1
PRACTICAL								
12	U18CANM 201	PC	Introductory Nematology	40	0	0	1	1
ACTIVITY BASED COURSES								
13	U18HNSS/NCC 101	HS	NSS/NCC	40	0	0	1	1
	U18HPED 101	HS	Physical Education	40	0	0	1	1
***Non-gradial compulsory courses**			**Total**	**704**	**14**	**0**	**10**	**24**

SEMESTER V

Sl. No.	Code No.	Category	Course Title	Contact Periods	L	T	P	C
THEORY + PRACTICAL								
1	U18CPBG301	PC	Fundamentals of Plant Breeding	72	2	0	1	3
2	U18AAEC301	AS	Agricultural Marketing, Trade & Prices	72	2	0	1	3
3	U18CAGM301	PC	Agricultural Microbiology	56	1	0	1	2
4	U18CPAT 301	PC	Diseases of Field and Horticultural crops and their management - I	56	1	0	1	2
5	U18AARM301	AS	Entrepreneurship Development and Business Management	56	1	0	1	2
6	U18CHOR311	PC	Post harvest management and value addition of fruits and vegetable crops	56	1	0	1	2
7	U18CSAC301	PC	Manures, Fertilizers and Soil Fertility Management	72	2	0	1	3
8	U18AAPE 311	AS	Protected Cultivation and Secondary Agriculture	56	1	0	1	2
9	U18CAGR302	PC	Rainfed Agriculture & Watershed Management	56	1	0	1	2
10	U18CAEN 301	PC	Pests of Field crops and stored produces and their management	56	1	0	1	2
PRACTICAL								
11	U18CAGR301	PC	PRACTICAL Crop Production - I *(Kharif* crops*)*	80	0	0	2	2
ACTIVITY BASED COURSES								
12	U18HNCC101	HS	NCC*	40	0	0	1	1
***Non-gradial compulsory courses**			**Total**	**688**	**13**	**0**	**12**	**25**

SEMESTER VI

Sl. No.	Code No.	Category	Course Title	Contact Periods	L	T	P	C
THEORY + PRACTICAL								
1.	U18AAEC302	AS	Agricultural Finance and Co-Operation	72	2	0	1	3
2.	U18CPAT 302	PC	Diseases of Field and Horticultural crops and their management -II	72	2	0	1	3
3.	U18HCOM311	HS	Agro Informatics	56	1	0	1	2
4.	U18AENS 301	AS	Environmental Pollution and Management	56	1	0	1	2
5.	U18CAEN 302	PC	Pests of Horticultural Crops and Stored grain and their Management	56	1	0	1	2
6.	U18CAGR304	PC	Principles of organic Farming	56	1	0	1	2
7.	U18CABT 301	PC	Plant Bio technology	72	2	0	1	3
8.	U18CPBG 302	PC	Crop Improvement	72	2	0	1	3
9.	U18OOPT 301	OC	Optional courses**	56	1	0	1	2
PRACTICAL								
10.	U18CAGR303	PC	Practical Crop Production - II (Rabi crops)	80	0	0	2	2
ACTIVITY BASED COURSES								
11.	U18HNCC101	HS	NCC*	40*	0	0	1	1
***Non-gradial compulsory courses**			**Total**	**648**	**13**	**0**	**11**	**24**

List of Optional Courses for Semester VI**

Sl. No.	Code No.	Category	Course Title	Contact Periods	L	T	P	C
1.	U18OCRP 351	OC	Physiological Techniques in crop production	56	1	0	1	2
2.	U18OSAC351	OC	Designer fertilizer Production	56	1	0	1	2
3.	U18OSAC352	OC	Rejuvenation of Deteriorated lands	56	1	0	1	2
4.	U18OSAC353	OC	Soilless crop production	56	1	0	1	2
5.	U18OSAC354	OC	Instrumental methods of analysis	56	1	0	1	2
6.	U18OSST 351	OC	Seed entrepreneurship skill development and management	56	1	0	1	2
7.	U18OAGR351	OC	Weed and water management	56	1	0	1	2
8.	U18OPGP 351	OC	Plant Genetic Resources Collection, Conservation and Utilization	56	1	0	1	2
9.	U18ONEM351	OC	Commercial Production of Nematode Antagonistic bio-agents	56	1	0	1	2
10.	U18OAGM351	OC	Downstream Processing for Industrially Important Microbial Products	56	1	0	1	2
11.	U18OAGM352	OC	Microbial Enzymes	56	1	0	1	2
12.	U18OAGM353	OC	Microbial Quality and Safety of Foods	56	1	0	1	2
13.	U18OAGM354	OC	Plant –Microbe InterAStion	56	1	0	1	2
14.	U18OAGM355	OC	Quality Control of Bio-inoculants	56	1	0	1	2
15.	U18OSAC 355	OC	Crop and Pesticide Chemistry	56	1	0	1	2

SEMESTER VII

Sl. No.	Code No.	Category	Course Title	Contact Periods	L	T	P	C
1.	U18AAEX401	AS	Student READY programme (Rural Agricultural Work Experience and Agro-industrial Attachment)	320	0	0	20	20
2.	U18CAGR401	PR	Project Report Preparation, presentation and Evaluation	40	0	0	1	1
3.	U18AAEX 402	AS	All India Study Tour*	40	0	0	1	1
*Non-gradial compulsory courses			**Total**	**400**	**0**	**0**	**22**	**22**

SEMESTER VIII

Sl. No.	Code No.	Category	Course Title	Contact Periods	L	T	P	C
PRACTICAL								
1.	Module I	EL	Experiential Learning Programme/	160	0	0	10	10
2.	Module II	EL	Hands on training (HOT)	160	0	0	10	10
			Total	**320**	0	0	20	20

List of Experiential Learning Courses for Semester VIII**

Sl. No.	Code No.	Category	Course Title	Contact Periods	L	T	P	C
1.	U18EAGM451	EL	Bio-inoculant production technology	160	0	0	10	10
2.	U18EHOR451	EL	Hybrid Seed Production in Vegetable Crops	160	0	0	10	10
3.	U18ESAS451	EL	On Farm Advisory for Soil Health, Water Quality & Plant Nutrition	160	0	0	10	10
4.	U18EAEN451	EL	Commercial Beekeeping	160	0	0	10	10
5.	U18ESER451	EL	Commercial Cocoon Production	160	0	0	10	10
6.	U18EABT451	EL	Commercial Plant Tissue Culture	160	0	0	10	10
7.	U18EHOR452	EL	Commercial Nursery Technology of Horticultural Crops	160	0	0	10	10
8.	U18EHOR453	EL	Commercial Landscape Gardening	160	0	0	10	10
9.	U18EPAT451	EL	Commercial production of Bio-control agents	160	0	0	10	10
10.	U18EPAT452	EL	Commercial mushroom production	160	0	0	10	10
11.	U18EAMP451	EL	Commercial broiler and layer production	160	0	0	10	10
12.	U18ESST451	EL	Commercial seed production	160	0	0	10	10
13.	U18EPBG451	EL	Hybrid pearl millet seed production	160	0	0	10	10
14.	U18EPBG452	EL	Hybrid rice parental line seed production	160	0	0	10	10
15.	U18EARM451	EL	Managerial skills for Agribusiness	160	0	0	10	10
16.	U18EAGR451	EL	Development of Integrated Farming system Model	160	0	0	10	10
17.	U18EHOR454	EL	Protected cultivation of Vegetable crops	160	0	0	10	10
18.	U18EENS451	EL	Composting technology	160	0	0	10	10
19.	U18EAGR452	EL	Organic Agriculture	160	0	0	10	10

Total No. of Contact Hours : 4424

Total No. of Credits : 181

SUMMARY OF CURRICULUM STRUCTURE AND CREDIT & CONTACT HOUR DISTRIBUTION

Sl. No.	Category of Courses	Semester wise Credits								Total No. of Credits	% of Credits
		I	II	III	IV	V	VI	VII	VIII		
1.	Professional Core (PC)	13	12	15	17	18	15	-	-	90	49.72
2.	Allied Sciences (AS)	2	8	11	5	7	5	21	-	59	32.60
3.	Basic Sciences (BS)	2	-	-	2	-	-	-	-	4	2.21
4.	Humanities and Social Sciences (HS)	3	-	-	-	-	2	-	-	5	2.76
5.	Professional Electives (PE)	-	-	-	-	-	2	-	20	22	12.15
6.	Project Work, (PR)	-	-	-	-	-	-	1	-	1	0.55
Total Credits		**20**	**20**	**26**	**24**	**25**	**24**	**22**	**20**	**181**	**100.00**

Sl. No.	Category of Courses	Semester wise Contact hours								Total No. of Contact Hours	% of Contact Hours
		I	II	III	IV	V	VI	VII	VIII		
1.	Professional Core (PC)	368	312	384	440	504	408	-	-	54.61	54.61
2.	Allied Sciences (AS)	32	200	296	128	184	128	360	-	30.02	30.02
3.	Basic Sciences (BS)	56	-	-	56	-	-	-	-	2.53	2.53
4.	Humanities and Social Sciences (HS)	96	-	-	-	-	56	-	-	3.44	3.44
5.	Professional Electives (PE)	0	-	-	-	-	56	-	320	8.50	8.50
6.	Project Work, (PR)	0	-	-	-	-	-	40	-	0.90	0.90
Total Contact Hours		**552**	**512**	**680**	**624**	**688**	**648**	**400**	**320**	**4464**	**100.00**

LIST OF COURSES UNDER PROFESSIONAL CORE (PC)

Sl. No.	Code No.	Category	Course Title	Contact Periods	L	T	P	C
THEORY + PRACTICAL								
1.	U18CAGR101	PC	Fundamentals of Agronomy and Agricultural Heritage	56	1	0	1	2
2.	U18CBIC101	PC	Fundamentals of Plant Biochemistry	72	2	0	1	3
3.	U18CSAC101	PC	Fundamentals of Soil Science	72	2	0	1	3
4.	U18CFOR111	PC	Introduction to Forestry	56	1	0	1	2
5.	U18CHOR111	PC	Fundamentals of Horticulture	56	1	0	1	2
6.	U18CPBG101	PC	Introduction to Agricultural Botany	56	1	0	1	2
7.	U18CSWE112	PC	Soil and Water Conservation Engineering	56	1	0	1	2
8.	U18CCRP 101	PC	Fundamentals of crop Physiology	72	2	0	1	3
9.	U18CAGM101	PC	Fundamentals of Microbiology	72	2	0	1	3
10.	U18CAGR102	PC	Introductory Agro-meteorology & Climate Change	56	1	0	1	2
11.	U18CHOR112	PC	Production Technology for Fruit and Plantation Crops	56	1	0	1	2
12.	U18CPAT 201	PC	Fundamentals of Plant Pathology	72	2	0	1	3
13.	U18CAEN201	PC	Fundamentals of Entomology	72	2	0	1	3
14.	U18CSST201	PC	Principles of Seed Technology	72	2	0	1	3
15.	U18CAGR 201	PC	Crop Production Technology – I (Kharif crops)	56	1	0	1	2
16.	U18CHOR211	PC	Production Technology for Vegetables and Spices	56	1	0	1	2
17.	U18CSAS201	PC	Soil Resource Inventory	56	1	0	1	2
18.	U18CPBG201	PC	Fundamentals of Genetics	72	2	0	1	3
19.	U18CPAT202	PC	Principles of Plant Disease Management	56	1	0	1	2
20.	U18CAEN202	PC	Management of Beneficial and Harmful Insects	72	2	0	1	3
21.	U18CAGR203	PC	Crop Production Technology – II (*Rabi* crops)	56	1	0	1	2
22.	U18CAGR204	PC	Farming System & Sustainable Agriculture	56	1	0	1	2
23.	U18CHOR212	PC	Production Technology for Ornamental Crops, MAP and Landscaping	56	1	0	1	2
24.	U18CPBG 301	PC	Fundamentals of Plant Breeding	72	2	0	1	3
25.	U18CAGM301	PC	Agricultural Microbiology	56	1	0	1	2
26.	U18CPAT301	PC	Diseases of Field and Horticultural crops and their management - I	56	1	0	1	2
27.	U18CHOR311	PC	Post harvest management and value addition of fruits and vegetable crops	56	1	0	1	2
28.	U18CSAC301	PC	Manures, Fertilizers and Soil Fertility Management	72	2	0	1	3
29.	U18CAGR302	PC	Rainfed Agriculture & Watershed Management	56	1	0	1	2
30.	U18CAEN301	PC	Pests of Field crops and stored produces and their management	56	1	0	1	2
31.	U18CPAT302	PC	Diseases of Field and Horticultural crops and their management -II	72	2	0	1	3
32.	U18CAEN302	PC	Pests of Horticultural Crops and Stored grain and their Management	56	1	0	1	2
33.	U18CAGR304	PC	Principles of organic Farming	56	1	0	1	2
34.	U18CABT301	PC	Plant Bio technology	72	2	0	1	3
35.	U18CPBG302	PC	Crop Improvement	72	2	0	1	3
THEORY								
36.	U18CSAC202	PC	Problematic soils and their management	32	2	0	0	2
PRACTICAL								

37.	U18CANM201	PC	Introductory Nematology	40	0	0	1	1
38.	U18CAGR301	PC	PRACTICAL Crop Production - I *(Kharif* crops*)*	80	0	0	2	2
			Total	**2416**	**52**	**0**	**38**	**90**

LIST OF COURSES UNDER ALLIED SCIENCES (AS)

Sl. No.	Code No.	Category	Course Title	Contact Periods	L	T	P	C
THEORY + PRACTICAL								
1.	U18AAEC 102	AS	Fundamentals of Agricultural Economics	56	1	0	1	2
2.	U18AAEX 102	AS	Fundamentals of Agricultural Extension Education	72	2	0	1	3
3.	U18AFSN 111	AS	Principles of Food Science and Nutrition	56	1	0	1	2
4.	U18AENS 201	AS	Environmental Studies & Disaster Management	72	2	0	1	3
5.	U18AAMP 201	AS	Livestock and Poultry Management	72	2	0	1	3
6.	U18AAEC 201	AS	Farm Management, Production & Resource Economics	56	1	0	1	2
7.	U18AFMP 211	AS	Farm Machinery and Power	56	1	0	1	2
8.	U18AAEX 201	AS	Communication Skills and Personality Development	56	1	0	1	2
9.	U18AERG 211	AS	Renewable Energy and green technology	56	1	0	1	2
10.	U18AAEC 301	AS	Agricultural Marketing, Trade & Prices	72	2	0	1	3
11.	U18AARM301	AS	Entrepreneurship Development and Business Management	56	1	0	1	2
12.	U18AAPE 311	AS	Protected Cultivation and Secondary Agriculture	56	1	0	1	2
13.	U18AAEC 302	AS	Agricultural Finance and Co-Operation	72	2	0	1	3
14.	U18AENS 301	AS	Environmental Pollution and Management	56	1	0	1	2
THEORY								
15.	U18AAEX101	AS	Rural Sociology & Educational Psychology	32	2	0	0	2
16.	U18ARSG 101	AS	Geo- informatics for Precision Farming	16	1	0	0	1
17.	U18ANST 201	AS	Fundamentals and Applications of nanotechnology	16	1	0	0	1
PRACTICAL								
18.	U18AAGR 202	AS	Study tour	40	0	0	1	1
19.	U18AAEX 401	AS	Student READY programme (Rural Agricultural Work Experience and Agro-industrial Attachment)	320	0	0	20	20
20.	U18AAEX 402	AS	All India Study Tour*	40	0	0	1	1
			Total	**1328**	**23**	**0**	**36**	**59**

LIST OF COURSES UNDER BASIC SCIENCES (BS)

Sl. No.	Code No.	Category	Course Title	Contact Periods	L	T	P	C
THEORY + PRACTICAL								
1.	U18BMAT111	BS	Elementary Mathematics	56	1	0	1	2
2.	U18BSTA211	BS	Statistical Methods	56	1	0	1	2
			Total	**112**	**2**	**0**	**2**	**4**

LIST OF COURSES UNDER HUMANITIES AND SOCIAL SCIENCES INCLUDING MANAGEMENT STUDIES (HS)

Sl. No.	Code No.	Category	Course Title	Contact Periods	L	T	P	C
THEORY + PRACTICAL								
1	U18HENG 101	HS	Comprehension & Communication Skills in English	56	1	0	1	2
2	U18HCOM 311	HS	Agro Informatics	56	1	0	1	2
PRACTICAL								
3	U18HTAM101/ U18HENG103	HS	□□□□□□□□□□□□□□□ □□□□□□□□□□□□ □□□□□□□□ □□□□□ □□□□□□□□□□□□ / Development Education	40	0	0	1	1
			Total	**152**	**2**	**0**	**3**	**5**
ACTIVITY BASED COURSES (Non Gradial Compulsory courses)								
4	U18HNSS/ NCC101	HS	NSS/NCC*	40	0	0	1	1
5	U18HPED 101	HS	Physical Education*	40	0	0	1	1
6	U18HPED102	HS	Yoga for human excellence*	40	0	0	1	1
7	U18HNSS/NCC 101	HS	NSS/NCC	40	0	0	1	1
8	U18HPED 101	HS	Physical Education	40	0	0	1	1
9	U18HNSS/NCC 101	HS	NSS/NCC	40	0	0	1	1
10	U18HPED 101	HS	Physical Education	40	0	0	1	1
11	U18HNSS/NCC 101	HS	NSS/NCC	40	0	0	1	1
12	U18HPED 101	HS	Physical Education	40	0	0	1	1
			Total	**360**	**2**	**0**	**9**	**19**

LIST OF COURSES UNDER PROFESSIONAL ELECTIVE COURSES

Sl. No.	Code No.	Category	Course Title	Contact Periods	L	T	P	C
PRACTICAL								
1.	U18OOPT301	OC	Optional courses**	56	1	0	1	2
2.	Module I	EL	Experiential Learning Programme/	160	0	0	10	10
3.	Module II	EL	Hands on training (HOT)	160	0	0	10	10
			Total	**376**	**0**	**0**	**20**	**2**

LIST OF COURSES UNDER (PR) PROJECT WORK

Sl. No.	Code No.	Category	Course Title	Contact Periods	L	T	P	C
PRACTICAL								
1.	U18CAGR 401	PR	Project Report Preparation, presentation and Evaluation	40	0	0	1	1
			Total	**40**	**0**	**0**	**1**	**1**

ABSTRACT OF DEPARTMENT –WISE CREDIT

Department / Division	Credit Hours		
	Theory	Practical	Total
Agronomy	7	13	07+13=20
Agricultural Entomology	6	6	06+06=12
Agricultural Extension	5	23	05+23=28
Agricultural Economics	7	5	07+05=12
Agricultural Microbiology	3	2	03+02=5
Agricultural Engineering	4	4	04+04=8
Horticulture	5	5	05+05=10
Plant Pathology	6	4	06+04=10
Plant Breeding and Genetics	7	4	07+04=14
Plant Biotechnology	2	1	02+01=03
Seed Science and Technology	2	1	02+01=13
Soil Science and Agricultural Chemistry	9	4	09+04=5
Environmental Sciences	3	2	03+02=2
Food Science and Nutrition	1	1	01+01=2
Forestry	1	1	01+01=3
Crop Physiology	2	1	02+01=1
Nanotechnology	1	0	01+00=1
Remote Sensing	1	0	01+00=3
Animal Husbandry	2	1	02+01=3
Agricultural Statistics	2	2	02+02=4
Languages	1	2	01+02=2
Optional Course	1	1	01+01=2
Experiential Learning	0	20	00+20=20
Common Courses*	0	9	00+09=9
Total	**78**	**103**	**181**
***Non Gradial Compulsory Courses**			

DEPARTMENT WISE LIST OF COURSES OFFERED

DEPARTMENT OF AGRONOMY

S. No.	Semester	Course Code	Title	Credit
1.	I	U18CAGR101	Fundamentals of Agronomy and Agricultural Heritage	**1+1**
2.	II	U18CAGR102	Introductory Agro-meteorology & Climate Change	1+1
3.	III	U18CAGR201	Crop Production Technology – I (Kharif crops)	1+1
4.	III	U18AAGR202	Study Tour - I	0+1*
5.	IV	U18CAGR203	Crop Production Technology – II (Rabi crops)	1+1
6.	IV	U18CAGR204	Farming System & Sustainable Agriculture	1+1
7.	V	U18CAGR301	Practical Crop Production - I (Kharif crops)	0+2
8.	V	U18CAGR302	Rainfed Agriculture & Watershed Management	1+1
9.	VI	U18CAGR303	Practical Crop Production - II (Rabi crops)	0+2
10.	VI	U18CAGR304	Principles of organic Farming	1+1
11.	VII	U18CAGR401	Project Report Preparation, presentation and Evaluation	0+1
			Total	**7+13**

DEPARTMENT OF AGRICULTURAL ENTOMOLOGY

S.No.	Semester	Course Code	Title	Credit
1.	III	U18CAEN201	Fundamentals of Entomology	2+1
2.	IV	U18CAEN202	Management of Beneficial and Harmful Insects	2+1
3.	IV	U18CANM201	Introductory Nematology	0+1
4.	V	U18CAEN301	Pests of Field crops and stored produces and their management	1+1
5.	VI	U18CAEN301	Pests of Horticultural Crops and Stored grain and their Management	1+1
			Total	**6+6**

DEPARTMENT OF AGRICULTURAL EXTENSION

S. No.	Semester	Course Code	Title	Credit
1.	I	U18AAEX101	Rural Sociology & Educational Psychology	2+0
2.	II	U18AAEX102	Fundamentals of Agricultural Extension Education	2+1
3.	IV	U18AAEX201	Communication Skills and Personality Development	1+1
4.	VII	U18AAEX401	Student READY programme (Rural Agricultural Work Experience and Agro-industrial Attachment)	0+20
5.	VII	U18AAEX402	All India Study Tour*	0+1
			Total	**5+23**

DEPARTMENT OF AGRICULTURAL ECONOMICS

S. No.	Semester	Course Code	Title	Credit
1.	II	U18AAEC102	Fundamentals of Agricultural Economics	1+1
2.	III	U18AAEC201	Farm Management, Production & Resource Economics	1+1
3.	V	U18AAEC301	Agricultural Marketing, Trade & Prices	2+1
4.	V	U18AARM301	Entrepreneurship Development and Business Management	1+1
5.	VI	U18AAEC302	Agricultural Finance and Co-Operation	2+1
			Total	**7+5**

DEPARTMENT OF AGRICULTURAL MICROBIOLOGY

S.No.	Semester	Course Code	Title	Credit
1.	II	U18CAGM101	Fundamentals of Microbiology	2+1
2.	V	U18CAGM301	Agricultural Microbiology	1+1
			Total	**3+2**

DEPARTMENT OF AGRICULTURAL ENGINEERING

S. No.	Semester	Course Code	Title	Credit
1.	II	U18CSWE112	Soil and Water Conservation Engineering	1+1
2.	III	U18AFMP211	Farm Machinery and Power	1+1
3.	IV	U18AERG211	Renewable Energy and green technology	1+1
4.	V	U18AAPE311	Protected Cultivation and Secondary Agriculture	1+1
			Total	**4+4**

DEPARTMENT OF HORTICULTURE

S.No.	Semester	Course Code	Title	Credit
1.	I	U18CHOR111	Fundamentals of Horticulture	1+1
2.	II	U18CHOR112	Production Technology for Fruit and Plantation Crops	1+1
3.	III	U18CHOR211	Production Technology for Vegetables and Spices	1+1
4.	IV	U18CHOR212	Production Technology for Ornamental Crops, MAP and Landscaping	1+1
5.	V	U18CHOR311	Post harvest management and value addition of fruits and vegetable crops	1+1
			Total	**5+5**

DEPARTMENT OF PLANT PATHOLOGY

S.No.	Semester	Course Code	Title	Credit
1.	III	U18CPAT201	Fundamentals of Plant Pathology	2+1
2.	IV	U18CPAT202	Principles of Plant Disease Management	1+1
3.	V	U18CPAT301	Diseases of Field and Horticultural crops and their management - I	1+1
4.	VI	U18CPAT302	Diseases of Field and Horticultural crops and their management -II	2+1
			Total	**6+4**

DEPARTMENT OF PLANT BREEDING AND GENETICS & BIOTECHNOLOGY

S.No.	Semester	Course Code	Title	Credit
1.	I	U18CPBG101	Introduction to Agricultural Botany	1+1
2.	IV	U18CPBG201	Fundamentals of Genetics	2+1
3.	V	U18CPBG301	Fundamentals of Plant Breeding	2+1
4.	VI	U18CPBG302	Crop Improvement	2+1
5.				
			Total	**7+4**

DEPARTMENT OF PLANT BIOTECHNOLOGY

S.No.	Semester	Course Code	Title	Credit
1.	VI	U18CABT301	Plant Bio technology	2+1
			Total	**2+1**

DEPARTMENT OF SEED SCIENCE AND TECHNOLOGY

S.No.	Semester	Course Code	Title	Credit
1.	III	U18CSST201	Principles of Seed Technology	2+1
			Total	**2+1**

DEPARTMENT OF SOIL SCIENCE AND AGRICULTURAL CHEMISTRY

S.No.	Semester	Course Code	Title	Credit
1.	I	U18CSAC101	Fundamentals of Soil Science	2+1
2.	I	U18CBIC 101	Fundamentals of Plant Biochemistry	2+1
3.	III	U18CSAC201	Soil Resource Inventory	1+1
4.	IV	U18CSAC202	Problematic soils and their management	2+0
5.	V	U18CSAC301	Manures, Fertilizers and Soil Fertility Management	2+1
			Total	**9+4**

DIVISION OF ENVIROMENTAL SCIENCES

S. No.	Semester	Course Code	Title	Credit
1.	III	U18AENS201	Environmental Studies & Disaster Management	2+1
2.	VI	U18AENS301	Environmental Pollution and Management	1+1
			Total	**3+2**

DIVISION OF FOOD SCIENCE AND NUTRITION

S. No.	Semester	Course Code	Title	Credit
1.	II	U18AFSN111	Principles of Food Science and Nutrition	1+1
			Total	**1+1**

DIVISION OF FORESTRY

S. No.	Semester	Course Code	Title	Credit
1.	I	U18CFOR111	Introduction to Forestry	1+1
			Total	**1+1**

DIVISION OF CROP PHYSIOLOGY

S. No.	Semester	Course Code	Title	Credit
1.	II	U18CCRP101	Fundamentals of Crop Physiology	2+1
			Total	**2+1**

DIVISION OF NANOTECHNOLOGY

S. No.	Semester	Course Code	Title	Credit
1.	IV	U18ANST201	Fundamentals and Applications of nanotechnology	1+0
			Total	**1+0**

DIVISION OF REMOTE SENSING & GEINFORMATICS

S.No.	Semester	Course Code	Title	Credit
1.	II	U18ARSG101	Geo- informatics for Precision Farming	1+0
			Total	1+0

DIVISION OF ANIMAL HUSBANDRY & LIVESTOCK

S. No.	Semester	Course Code	Title	Credit
1.	III	U18AAMP201	Livestock and Poultry Management	2+1
			Total	**2+1**

DIVISION OF AGRICULTURAL STATISTICS

S. No.	Semester	Course Code	Title	Credit
1.	I	U18BMAT111	Elementary Mathematics	1+1
2.	IV	U18BSTA211	Statistical Methods	1+1
			Total	**2+2**

LANGUAGES

S. No.	Semester	Course Code	Title	Credit
1.	I	U18HENG101	Comprehension and Communication Skills in English	1+1
2.	I	U18HTAM101/ U18HENG103	□□□□□□□□□□□□□□□ □□□□□□□□□□□□□ □□□□□□□□□ □□□□□ □□□□□□□□□□□□ / Development Education	0+1
			Total	**1+2**

OPTIONAL COURSES

S.No.	Semester	Code No.	Title	Credit
1.	VI	U18OCRP351	Physiological Techniques in crop production	1+1
2.	VI	U18OSAC351	Designer fertilizer Production	1+1
3.	VI	U18OSAC352	Rejuvenation of Deteriorated lands	1+1
4.	VI	U18OSAC353	Soilless crop production	1+1
5.	VI	U18OSAC354	Instrumental methods of analysis	1+1
6.	VI	U18OSST 351	Seed entrepreneurship skill development and management	1+1
7.	VI	U18OAGR351	Weed and water management	1+1
8.	VI	U18OPGP351	Plant Genetic Resources Collection, Conservation and Utilization	1+1
9.	VI	U18ONEM351	Commercial Production of Nematode Antagonistic bio-agents	1+1
10.	VI	U18OAGM351	Downstream Processing for Industrially Important Microbial Products	1+1
11.	VI	U18OAGM352	Microbial Enzymes	1+1
12.	VI	U18OAGM353	Microbial Quality and Safety of Foods	1+1
13.	VI	U18OAGM354	Plant –Microbe Interaction	1+1
14.	VI	U18OAGM355	Quality Control of Bio-inoculants	1+1
15.	VI	U18OSAC355	Crop and Pesticide Chemistry	1+1

EXPERIENTIAL LEARNING COURSES

S.No	Semester	Course code	Course Title	Credit
1.	VIII	U18EAGM451	Bio-inoculant production technology	0+10
2.	VIII	U18EHOR451	Hybrid Seed Production in Vegetable Crops	0+10
3.	VIII	U18ESAC451	On Farm Advisory for Soil Health, Water Quality & Plant Nutrition	0+10
4.	VIII	U18EAEN451	Commercial Beekeeping	0+10
5.	VIII	U18ESER451	Commercial Cocoon Production	0+10
6.	VIII	U18EABT451	Commercial Plant Tissue Culture	0+10
7.	VIII	U18EHOR452	Commercial Nursery Technology of Horticultural Crops	0+10
8.	VIII	U18EHOR453	Commercial Landscape Gardening	0+10
9.	VIII	U18EPAT451	Commercial production of Bio-control agents	0+10
10.	VIII	U18EPAT 452	Commercial mushroom production	0+10
11.	VIII	U18EAMP451	Commercial broiler and layer production	0+10
12.	VIII	U18ESST451	Commercial seed production	0+10
13.	VIII	U18EPBG451	Hybrid pearl millet seed production	0+10
14.	VIII	U18EPBG452	Hybrid rice parental line seed production	0+10
15.	VIII	U18EARM451	Managerial skills for Agribusiness	0+10
16.	VIII	U18EAGR451	Development of Integrated Farming system Model	0+10
17.	VIII	U18EHOR454	Protected cultivation of Vegetable crops	0+10
18.	VIII	U18EENS451	Composting technology	0+10
19.	VIII	U18EAGR452	Organic Agriculture	0+10

COMMON COURSES

S. No.	Semester	Course Code	Title	Credit
1.	I	U18HNSS101/NCC 101	NSS/NCC	0+1*
2.	I	U18HPED 101	Physical Education	0+1*
3.	I	U18HPED102	Yoga for human excellence	0+1*
4.	II	U18HNSS/NCC 101	NSS/NCC	0+1*
5.	II	U18HPED101	Physical Education	0+1*
6.	III	U18HNSS/NCC 101	NSS/NCC	0+1*
7.	III	U18HPED 101	Physical Education	0+1*
8.	IV	U18HNSS/NCC 101	NSS/NCC	0+1*
9.	IV	U18HPED 101	Physical Education	0+1*
			Total	**0+9**
***Non gradial compulsory courses**				

I YEAR I SEMESTER

S.No.	Course Code	Course Title	Credit Hours
1.	U18CAGR101	Fundamentals of Agronomy and Agricultural Heritage	1+1
2.	U18CBIC101	Fundamentals of Plant Biochemistry	2+1
3.	U18CSAC101	Fundamentals of Soil Science	2+1
4.	U18CFOR111	Introduction to Forestry	1+1
5.	U18HENG101	Comprehension & Communication Skills in English	1+1
6.	U18CHOR111	Fundamentals of Horticulture	1+1
7.	U18BMAT111	Elementary Mathematics	1+1
8.	U18CPBG101	Introduction to Agricultural Botany	1+1
9.	U18AAEX101	Rural Sociology & Educational Psychology	2+0
10.	U18HTAM101/ U18HENG103	□□□□

Subject Code : U18CAGR101	FUNDAMENTALS OF AGRONOMY AND AGRICULTURAL HERITAGE	L	T	P	C
	Total Contact Hours – 56	1	0	1	2
	Prerequisite course: Basic Biology at Higher Secondary level				
	Course Coordinator Name & Department: Mr.S.Senthilkumar, School of Agricultural Sciences				

COURSE OBJECTIVES:-

- To acquire knowledge on basic thing in agriculture
- To get knowledge on basic principles of Agronomy
- To get practical knowledge about the crop production aspects

THEORY

UNIT I:IMPORTANCE OF AGRICULTURE **2**

Agriculture - Definition - Importance and scope - Branches of agriculture - Evolution of human and agriculture - History of agricultural development in the World and India.

UNIT II:AGRICULTURAL HERITAGE **2**

Agriculture heritage - Agriculture in ancient India - Chronological agricultural technology development in India - Kautilya'sArthasasthra - Sangam literature - KambarEaerEzhupathu - Development of scientific Agriculture - National and International Agricultural Research Institutes in India - Indian agriculture.

UNIT III :AGROCLIMATIC ZONES, CROPS AND SOILS **4**

Agronomy - Definition - Importance and scope - Agro-climatic zones of Tamil Nadu - Agro ecological zones of India - Crops and their classification - Economic and agronomic - Major crops of India and Tamil Nadu - Major soils of Tamil Nadu - Factors affecting crop production - climatic - edaphic - biotic - physiographic and socio economic factors.

UNIT IV :TILLAGE AND AFTER CULTIVATION **4**

Tillage - Definition - Types - Objectives - Modern concepts of tillage - Main field preparations - Seeds - seed rate - sowing methods - Crop establishment methods - Planting geometry and its effect on growth and yield - After cultivation -Thinning - Gap filling - Weeds - Definition - Weed control methods.

UNIT V:CROPPING AND FARMING SYSTEMS **4**

Manures and fertilizers (organic, in-organic, green manure) - time and method of application – Irrigation - Principles and concepts - Cropping patterns and cropping systems - Sustainable agriculture - integrated farming systems - Organic agriculture - Principles and concepts - Dry farming - Principles and concepts.

PRACTICAL – LIST OF PRACTICAL SCHEDULE

1. Visit to college farm to observe wetland farming system and identification of crops. **2.5**
2. Visit to college farm to observe garden land and dry land farming systems and identification of crops. **2.5**
3. Identification of seeds, manures, fertilizers, green manures and green leaf manures. **2.5**
4. Identification of tools and implements. **2.5**
5. Acquiring skill in handling primary and secondary tillage implements. **2.5**
6. Practicing different methods of land configuration for raising nursery for wet land crops. **2.5**
7. Practicing different methods of land configuration for raising nursery for garden land crops. **2.5**

8.	Practicing different methods of seed treatments, methods of sowing and seeding implements.	**2.5**
9.	Working out seed rates and practicing thinning, gap filling operations for optimum crop stand and intercultural operations.	**2.5**
10.	Working out manure and fertilizer requirement of crops.	**2.5**
11.	Practicing methods of application: manures and fertilizers and incorporation of green manure and green leaf manure.	**2.5**
12.	Identification of weeds, weeding practices and handling of weeding tools and implements.	**2.5**
13.	Observing various irrigation methods.	**2.5**
14.	Practicing harvesting operations in major field crops.	**2.5**
15.	Participation in on-going field operations during on campus / off campus visit.	**2.5**
16.	Visit to nearby Agricultural Research station	**2.5**

TEXT BOOKS:

1. Yellamananda Reddy, T. and G.H. SankaraReddi. 1997. Principles of Agronomy. Kalyani Publishers, New Delhi.
2. 2.Sankaran, S. and V.T. SubbiahMudaliar. 1997. Principles of Agronomy. The Bangalore Printing and Publishing Co. Ltd., Bangalore.
3. Reddy,S.R. Principles of Agronomy.2016.Kalyani Publishers, New Delhi.
4. Somasundaram,E.2017. Agronomy: Principles and Practices. New India Publishing agency, New Delhi.ICAR. 2015. Handbook of Agriculture. Indian Council of Agricultural Research, New Delhi.

E-REFERENCES:

1. http://icar.res.in
2. ww.webcast.gov.in
3. ww.icar.org.in/nasm.html

COURSE OUTCOMES (COs)	
CO1	To know the definition of Agriculture, branches of agriculture, history of agriculture and development in agriculture in ancient and modern India and World.
CO2	**S**tudents get knowledge about the agricultural heritage and information about National and International research institutes
CO3	Students get knowledge in Agronomy, scope and importance of agronomy in agriculture
CO4	To know about the different agro climatic and agro ecological zones and soil types and classification and factors affecting crop production
CO5	Students get hands on experience on different types of tillage,fieldpreparation, sowing, weeds and weed management methods
CO6	To know about manures and fertilizers, different irrigation methods,concepts in farming systems, integrated farming systems

Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low																
1	**COs/POs**	**PO1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**PSO1**	**PSO2**	**PSO3**
2	**CO1**	3	2	3	-	-	1	-	1	-	-	-	-	3	2	-
	CO2	3	1	3	-	-	1	-	1	-	-	-	-	3	2	-
	CO3	3	3	2	-	-	1	-	1	-	-	-	-	3	2	-
	CO4	3	3	3	-	1	1	-	1	-	-	-	-	3	2	-
	CO5	3	2	2	-	2	1	-	1	-	-	-	-	3	2	-
	CO6	3	3	3	-	1	1	-	1	-	-	-	-	3	2	-
3	**Category**	ProfessionalCore (PC)														
4	**Approval**	Academic Council, Aug 2018														

Subject Code : U18CBIC101	FUNDAMENTALS OF BIOCHEMISTRY	L	T	P	C
	Total Contact Hours – 72	2	0	1	3
	Prerequisite course	Higher Secondary Biology and Chemistry			
	Course Coordinator Name & Department	Dr. S. Kanimozhi Department of Agricultural Biotechnology			
COURSE OBJECTIVES:-	Provides the fundamental knowledge of biochemistry and specific knowledge of compounds and biochemical pathways that occur in plants				

THEORY

UNIT I :CARBOHYDRATES **6**

Carbohydrates - occurrence and classification. Structure of monosaccharides, oligosaccharides and polysaccharides. Physical and chemical properties of carbohydrates – optical isomerism, optical activity, mutarotation, reducing property, reaction with acids and alkalies. Glycoconjugates - Glycoproteins and Lectin - structure and significance**.**

UNIT II :LIPIDS **6**

Lipids - occurrence and classification. Storage lipids - fatty acids, triacyl glycerol, essential fatty acids, waxes. Structural lipids - role of lipids in biological membrane - glycolipids and phospholipids - types and importance; Sterols - basic structure and their importance. Physical and chemical constants of oils. Rancidity of oils.

UNIT III :PROTEINS AND ENZYMES **9**

Amino acids - classification and structure. Essential amino acids. Properties of amino acids - amphoteric nature and isomerism. Classification of proteins based on functions and solubility. Structure of proteins: primary structure, secondary structure, tertiary structure and quaternary structure - protein folding and denaturation. Properties and reactions of proteins. Enzymes - Properties, classification and nomenclature. Mechanism of enzyme action. Factors affecting enzyme activity. Enzyme inhibition - Competitive, Non-competitive and Uncompetitive inhibition; Allosteric enzymes. Coenzymes, cofactors and isoenzyme.

UNIT IV: METABOLISM **9**

Carbohydrate metabolism - breakdown of starch by amylases, glycolysis, TCA cycle and pentose phosphate pathway. Respiration - electron transport chain and oxidative phosphorylation. Bioenergetics of glucose. Lipid metabolism - lipases and phospholipases. Beta-oxidation of fatty acids and bioenergetics. Biosynthesis of fatty acids and triacyl glycerol. General catabolic pathyway for amino acids - transamination, deamination and decarboxylation. Ammonia assimilating enzymes. Metabolic inter-relationship.

UNIT V: SECONDARY METABOLITES **2**

Secondary metabolites - occurrence, classification and functions of phenolics, terpenes and alkaloids.

PRACTICAL – LIST OF EXPERIMENTS

1. Qualitative analysis of carbohydrates **2.5**
2. Estimation of starch **2.5**
3. Estimation of amylose **2.5**
4. Determination of reducing sugars **2.5**
5. Qualitative analysis of amino acids **2.5**
6. Sorenson’s formal titration of amino acids **2.5**

7.	Estimation of amino acids by Ninhydrin method	**2.5**
8.	Estimation of protein by Biuret method	**2.5**
9.	Determination of free fatty acid of an oil	**2.5**
10.	Determination of iodine number of an oil	**2.5**
11.	Estimation of ascorbic acid by dye method	**2.5**
12.	Assay of amylase	**2.5**
13.	Estimation of total phenols	**2.5**
14.	Extraction and estimation of lycopene and carotenoids	**2.5**
15.	Separation of amino acids by paper chromatography	**2.5**
16.	Separation of phenols by thin layer chromatography	**2.5**

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1. Berg JM, Tymoczko JL and Stryer L, (2007), Biochemistry, 7th Ed. Wiley Eastern Ltd. ISBN:0-7167-8724-5.
2. Thayumanavan, B, Krishnaveni, S and Parvathi, K, (2004), Biochemistry for Agricultural Sciences, Galgotia Publications Pvt Ltd., New Delhi. ISBN :81-7515-459-4.

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2. https:// freemedebooks. files.wordpress.com
3. http://www.irb.hr/users/ precali/ Znanost.o.Moru/Biokemija/Literatura/Lubert%20Stryer%20-%20Biochemistry.pdf
4. www.ncbi.nlm.nih.gov
5. www.sciencedirect.com

COURSE OUTCOMES (COs)	
CO1	Describe the fundamentals of carbohydrates, their classification and structure
CO2	List the structure, function of essential lipid molecules including their key chemical and physical properties.
CO3	Learn amino acid structures and relate their chemical properties to the synthesis and function of proteins and enzymes.
CO4	Illustrate the carbon flow from glycolysis to carbohydrate synthesis
CO5	Identify central metabolism, its plant-specific components, and their functional significance at multiple levels.
CO6	Demonstrate the rich diversity of secondary compounds and metabolism in plants

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	**COs/POs**	**PO1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**PSO1**	**PSO2**	**PSO3**
2	**CO1**	2	-	-	-	-	-	-	-	-	-	-	1	3	–	-
	CO2	1	-	-	-	-	-	-	-	-	-	-	2	3	-	-
	CO3	2	-	-	-	-	-	-	-	-	-	-	2	3	-	-
	CO4	2	-	-	-	-	-	-	-	-	-	-	1	3	-	-
	CO5	1	-	-	-	-	-	-	-	-	-	-	2	3	-	-
	CO6	3	1	-	-	-	-	-	-	-	-	-	3	3	-	-
3	**Category**	ProfessionalCore (PC)														
4	**Approval**	Academic Council, Aug 2018														

Subject Code: U18CSAC101	FUNDAMENTALS OF SOIL SCIENCE		L	T	P	C
	Total Contact Hours – 72		2	0	1	3
	Prerequisite course	Basic geology in intermediate level				
	Course Coordinator Name & Department	Dr.S.Sivagnanam, School of Agricultural Sciences				
COURSE OBJECTIVES:-	To impart knowledge about formation soil, pedological and edaphological approaches and physical, chemical and biological properties of soils.					

THEORY

UNIT I : EARTH, ROCKS AND MINERALS **9**

Soil as a natural body, Pedological and edaphological concepts of soil. Components of soil. Soil genesis: Composition of Earth's crust- soil forming rocks and minerals – Primary and secondary minerals. Weathering of rocks and minerals. Factors of soil formation. Soil forming processes. Soil Profile

UNIT II : NUTRIENT DYNAMICS **9**

Soil physical properties: Soil texture, structure, density and porosity, soil colour, consistence and plasticity. Soil water retention, movement and availability. Soil air, composition, gaseous exchange-problem and its effect on crop growth. Source, amount and flow of heat in soil, Soil temperature and crop growth.

UNIT III : PHYSICAL AND CHEMICAL PROPERTIES OF SOIL **8**

Soil physic-chemical and chemical properties: Soil reaction-pH, soil acidity and alkalinity, buffering, effect of pH on nutrient availability. Electrical conductivity. Soil colloids - inorganic and organic. Silicate clays: constitution and properties, sources of charge, ion exchange, cation and anion exchange capacity and base saturation.

UNIT IV : SOIL BIOLOGICAL PROPERTIES **6**

Soil organic matter: composition, properties and its influence on soil properties. Humic substances - nature and properties. Soil Biology: Soil organisms: macro and micro-organisms, their beneficial and harmful effects. Soil enzymes. Soil pollution – Types and behaviour of pesticides. Inorganic contaminants. Prevention and mitigation of soil pollution.

PRACTICAL – LIST OF EXPERIMENTS

1.	Identification of rocks and minerals	**2.5**
2.	Collection and processing of soil samples	**2.5**
3.	Determination of soil pH (Potentiometry)	**2.5**
4.	Determination of soil electrical conductivity (EC)	**2.5**
5.	Determination of pore space, apparent specific gravity (bulk density) and real specific gravity (particle density)	**2.5**
6.	Estimation of organic carbon (Walkley and Black, 1934)	**2.5**
7.	Determination of soil texture (Feel method)	**2.5**
8.	Determination of soil texture by international pipette method	**2.5**
9.	Determination of bulk density by wax	**2.5**
10.	Determination of infiltration of soil (Double ring infiltrometer method)	**2.5**
11.	Estimation of soil water potentials using tensiometer	**2.5**
12.	Determination of moisture content under different suction levels (pressure plate method)	**2.5**
13.	Measurement of soil temperature	**2.5**

14.	Estimation of moisture content in soil	**2.5**
15.	Determination of soil texture (International pipette method/ Robinson's pipette method)	**2.5**
16.	Determination of Field Capacity of Soil	**2.5**

TEXT BOOKS:

1. Brady, N.C. and Raymond, C.Weil. 2013. The Nature and Properties of Soils (14th Edition). Pearson Education, Inc. Publishing as Prentice Hall.
2. Sehgal, J. 2005. Pedology concepts and applications, Kalyani Publishers, New Delhi.
3. Dilip Kumar Das. 2006. Introductory Soil Science, Kalyani Publishers, New Delhi.

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1. Arun Kumar Saha and AnuradhaSaha. 2012. Text book of Soil Physics. Kalyani Publishers. New Delhi.
2. Bear, Firman.E. 2012. Soil Science. Vol. 8. Scientific Publishers, Jodhpur, India.
3. Bear, Firman.E. 2014. Chemistry of the soil. 2nd Edition. Scientific Publishers, Jodhpur, India.
4. Biswas T.D. and Mukherjee S.K., 1987. Text Book of Soil Science-Tata McGraw Hill Publishing Co. Ltd., New Delhi.
5. Black, C.A. 1965. Agronomy Monograph. Methods of Soil Analysis. Part 1. Physical and Mineralogical properties including Statistics of Measurement and Sampling. Wiley, New York.

COURSE OUTCOMES (COs)	
CO1	Describe the details of the earth formations.
CO2	Classify the different types of rocks and it's mineral composition
CO3	Observe the methods of soil formation at various process
CO4	Compare the different types of soil physical properties and support to growth and development of plants.
CO5	Correlate different types of the soil physio-chemical properties.
CO6	Interpret the knowledge of soil biological properties and it's reaction

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	**COs/POs**	**PO1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**PSO1**	**PSO2**	**PSO3**
2	**CO1**	1	2	-	3	-	-	3	2	-	-	-	3	–	2	-
	CO2	-	-	-	3	2	-	3	2	-	-	-	2	-	2	-
	CO3	3	1	-	1	-	-	3	-	-	-	-	3	-	2	-
	CO4	-	3	-	-	3	-	2	-	-	-	-	2	-	2	-
	CO5	2	2	2	-	-	-	-	-	-	-	-	2	-	2	-
	CO6	-	3	-	-	-	-	1	2	-	-	3	2	-	2	-
3	**Category**	ProfessionalCore (PC)														
4	**Approval**	Academic Council, Aug 2018														

Subject Code : U18CAGR101	FUNDAMENTALS OF AGRONOMY AND AGRICULTURAL HERITAGE	L	T	P	C
	Total Contact Hours – 56	1	0	1	2
	Prerequisite course: Basic Biology at Intermediate level				
	Course Coordinator Name & Department: Dr.M. Dhivya, School of Agricultural Sciences				

COURSE OBJECTIVES:-

- To impart knowledge about the basic facts of forestry as well as forest mensuration, social forestry, agroforestry
- Familiarize the students with important trees suitable for agroforestry and various agroforestry systems.

THEORY

UNIT I : FOREST AND FORESTRY **2**

Introduction - Definition of Forest and Forestry - Role of Forest (Production, Protection and Amelioration) - Classification of Forest (Regeneration, Age, Composition. ownership, object of management, growing stock) - National Forest Policy 1988.

UNIT II : SILVICULTURE AND FOREST PLANTATION **4**

Forest regeneration - Natural regeneration- Seeds and vegetative parts (Coppice , Root suckers) - Artificial regeneration , Objectives - Nurseries - Types of nurseries, Quality seedling production techniques - Silvicultural practices for *Eucalyptus spp, Casuarina equisetifolia, Tectona grandis, Ailanthus excelsa, Meliadubia, Leucaena leucocephala*. Tending operations - Weeding, Cleaning, Thinning and pruning.

UNIT III : FOREST MENSURATION **4**

Forest Mensuration - Objectives- Diameter measurements, instruments used in diameter measurement-Height measurement, instrumental methods of height measurement - Tree form, form factor, Volume estimation of standing and felled trees.

UNIT IV :SOCIAL FORESTRY AND AGROFORESTRY **4**

Social Forestry and its branches - Extension Forestry, Urban forestry - Agroforestry, definition- Importance- Agroforestry systems - Shifting Cultivation, Taungya, Alley cropping, Wind break, Shelter belt, Home garden - Tree and crop combination in Agroforestry - Tree crop interaction in Agroforestry - National Agroforestry Policy 2014.

UNIT V : FOREST UTILIZATION **2**

Forest Utilization - Definition - Wood products - solid wood and composite wood.- Non Wood Forest Products - fibres , floss, bamboo, tan, dye, resin, oleoresin.

PRACTICAL – LIST OF PRACTICAL SCHEDULE

1.	Identification of important farm grown trees	**2.5**
2.	Identification of tree seeds and seedlings	**2.5**
3.	Site selection for tree nursery and layout of nursery	**2.5**
4.	Study of nursery techniques for Casuarina equisetifolia	**2.5**
5.	Study of nursery techniques for Tectona grandis	**2.5**
6.	Practicing clonal propagation in trees Eucalyptus / Casuarina	**2.5**
7.	Practicing land preparation, stacking, pitting,	**2.5**
8.	Planting techniques in plantation	**2.5**
9.	After care operations in plantations	**2.5**
10.	Height measurement in trees	**2.5**

11.	Diameter measurement in trees	**2.5**
12.	Volume estimation in standing and felled trees	**2.5**
13.	Identification and study of wood products	**2.5**
14.	Identification and study non- wood forest products	**2.5**
15.	Visit to Agroforestry plantations	**2.5**
16.	Visit to forest based industry	**2.5**

TEXT BOOKS

1. Dwivedi, A.P. 1992. Principles and Practices of Indian Silviculture. Surya publications, Dehradun.177p
2. Khanna. L.S. 1981. Principles and Practice of Silviculture. Khanna Bandhu publications, Dehradun.472p
3. Chaturvedi, A.N and L.S.Khanna. 1982. Forest Mensuration. International Book Distributors, Dehradun.350p
4. Negi, S.S. 1986. A Hand book of Social Forestry. International Book Distributors, Dehradun.177p

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1. Gupta. R.K 1993. Multipurpose trees for Agroforestry and Wasteland utilization. Oxford and IBH Publishing Company, New Delhi. 580p.
2. Nair.P.K.R. 1993. Introduction to Agroforestry. Kluwer Academic Publishers, Dordrecht, Netherlands.499p
3. Puri, S and P.K.Khosla. 1993. Nursery Technology for Agroforestry - applications in Arid and Semi arid regions. Oxford and IBH Publishing Company, New Delhi.392p
4. Tirubhawan Mehta. 1981. Hand book of Forest Utilization. International Book Distributors, Dehradun.208 p.

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1. Agroforestry Systems, Netherlands
2. International Journal of Agroforestry and Silviculture, International Scholars Journals Publishing Corporation, USA
3. Indian Journal o f Agroforestry, CAFRI, Jhansi
4. Agroforestry Today, ICRAF, Nairobi, Kenya
5. Range management and Agroforestry, IGFRI, Jhansi

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1. www.worldagroforestry.org
2. www.fao.org/forestry/9469/en
3. www.global-saf.com
4. www.agroforestry.net.au

COURSE OUTCOMES (COs)	
CO1	Learn about the basic concepts of forestry and classification of forest
CO2	Acquire knowledge on nursey practices and silviculture techniques of forest trees
CO3	Acquire knowledge on forest mensuration to quantify forests data
CO4	Learn about the social forestry, agroforestry systems and forest products
CO5	Demonstrate propagation techniques and special practices in forest trees
CO6	Acquire practical knowledge and demonstrate forest mensuration techniques

Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low																
1	**COs/POs**	**PO1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**PSO1**	**PSO2**	**PSO3**
2	**CO1**	3	-	-	-	-	-	3	-	-	-	-	2	1	-	-
	CO2	2	2	2	-	3	-	2	-	-	-	-	3	2	2	-
	CO3	3	1	3	-	2	-	3	-	-	-	-	2	2	1	-
	CO4	3	3	1	-	2	-	2	-	-	-	-	3	1	1	-
	CO5	2	-	3	-	3	2	3	-	2	2	-	2	-	-	-
	CO6	2	-	3	-	3	2	3	-	2	2	-	2	-	-	-
3	**Category**	ProfessionalCore (PC)														
4	**Approval**	Academic Council, Aug 2018														

Subject Code : U18HENG101	COMPREHENSION AND COMMUNICATION SKILLS IN ENGLISH	L	T	P	C
	Total Contact Hours – 56	1	0	1	2
	Prerequisite course: HSC English				
	Course Coordinator Name & Department: Ms.Raagavi A S, Department of English				

COURSE OBJECTIVES:-

- Enhance the learner's communication skills by giving adequate exposure in LSRW – Listening, Speaking, Reading, Writing skills and the related sub-skills.
- Help the learners recognize and operate in various styles and registers in English.

THEORY

UNIT I : LISTENING **4**

Prose: War Minus Shooting- The sporting Spirit**(**A lesson from the Text Book, "The Sporting Spirit" by George Orwell) textualgrammar pertaining to factual comprehension and inferential comprehension & referential comprehension - global comprehension and attitudinal comprehension - synonyms – antonyms – prefix – suffix – homonyms - homophones – TOEFL & IELTS vocabulary.

UNIT II :READING **4**

Prose: A Dilemma- A layman looks at science Raymond B. Fosdick- textualgrammar – verbs – auxiliary verbs - modals and basic tense forms - sentence pattern and sentence forms (simple, compound and complex sentences- transformation of sentences) - subject – verb – agreement. Reading skills: reading dialogues, rapid reading, intensive reading, improving reading skills.

UNIT III :SPEAKING **3**

Prose: You and Your English – Spoken English and broken English G.B. Shaw- textual grammar – synthesis of sentences – reported speech (direct and indirect speech)- Oral Communication: Phonetics, stress and intonation, Conversation practice. Conversation:rate of speech, clarity of voice, speaking and Listening, politeness.

UNIT IV :WRITING **3**

Written Skills: Paragraph writing, Precise writing, Report writing and Proposal writing. The Style: Importance of professional writing. Preparation of Curriculum Vitae and Job applications. Synopsis Writing- paragraph writing (thesis sentences, supporting statements, inferential statements) - four principles of writing - professional writing – summary writing and paraphrasing, synopsis writing and citation - Graham's flow chart on writing skills.

UNIT V :LANGUAGE DEVELPOMENT **3**

Principles and practice of presentation skills - PowerPoint preparation and presentation - Handout preparation - lecture notes preparation - practice and evaluation - Interview skills – types of interview -Group Discussion.

PRACTICAL – LIST OF PRACTICAL SCHEDULE

1. Process of Listening - methods of enhancing listening - barriers to listening and ways to overcome them – practice **2.5**
2. Oral communication –organs of speech- English Phonemes (Consonant table, vowel table) - practice **2.5**
3. English Stress & Intonation - exercises **2.5**
4. Conversion techniques and practice **2.5**
5. Rate of speech (slow pace, medium pace, rhetoric) **2.5**

6.	Reading - types - skimming and scanning - SQ4R - critical reading - analytical reading – exercises	**2.5**
7.	Principles and practice of presentation skills - PowerPoint preparation and presentation	**2.5**
8.	Handout preparation –lecture notes preparation – practice and evaluation	**2.5**
9.	Writing skills - note taking – precise writing – abstract writing – practice	**2.5**
10.	Mind-mapping and article writing	**2.5**
11.	Letter writing and rejoinder writing	**2.5**
12.	Text writing - practice on table to text conversion	**2.5**
13.	Interview skills – types of interview (group interview – panel interview – telephone interview – behavioural interview – video-conferencing interview – mock interview)	**2.5**
14.	Practice on speaking skills – welcome address - vote of thanks - short extemporal speech	**2.5**
15.	Group discussion – techniques – types and practice.	**2.5**
16.	Writing skills - note taking – precise writing – abstract writing – practice	**2.5**

REFERENCES:

1. Goodale, Malcolm, Professional Presentations, Cambridge University, 2005.
2. Greenbaum Sidney, Oxford English Grammar, New Delhi, Oxford University Press. Peregoy, 2009.
3. Jones Daniel, English Pronouncing Dictionary, Cambridge University Press,2006.
4. Lynch, Tony and Kenneth Anderson, Study Speaking, Cambridge University, 1992.
5. Martin Cutts, Oxford Guide to Plain English, Oxford University Press, 2004.
6. SahaneyaWandy, et.al., IELTS, Preparation and Practice, Oxford University, 2005.
7. Sundararajan, N, Attentive Listening: How it Matters, University News, March 19-25, 2005.

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2. www.essays.com
3. www.onestopenglish.com
4. www.bogglesworld.com
5. www.eltweb.com
6. www.reportingskills.com
7. www.writing-skills.com
8. www.negotiation.com
9. www.teachersdesk.com
10. www.flexbilelearning.net.an

COURSE OUTCOMES (COs)	
CO1	Understanding and differentiating the concept of comprehension and its types with enhancement of listening skills that helps interpret texts and its basic grammatical structure. (understand)
CO2	Describing the techniques involved in interpretation of content and enhancing the syntax structure gradually (remember)
CO3	Identifying the linguistic process and enabling the students to experiment on speaking English effectively with regular practice and exercises (remember)
CO4	Practicing the students to learn the convincing writing techniques and approaches that may help them in future aspect. (apply)
CO5	Experimenting and preparing the students compatible and competitive enough based on work place environment with sharing knowledge on interview skill and interpersonal skill.

	(apply)
CO6	Focusing on creating an amicable environment for the students to anticipate the communication and help them apply the learned techniques in real life. (analyze)

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	**COs/POs**	**PO1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**PSO1**	**PSO2**	**PSO3**
2	**CO1**	-	-	-	-	-	-	-	-	-	3	-	-	2	–	-
	CO2	-	-	-	-	-	-	-	-	-	3	-	-	2	-	-
	CO3	-	-	-	-	-	-	-	-	-	3	-	-	1	-	-
	CO4	-	-	-	-	2	-	-	-	-	3	-	2	2	-	-
	CO5	-	-	-	-	3	-	-	-	-	3	-	3	2	-	-
	CO6	-	-	-	-	-	3	-	3	-	3	-	1	2	-	-
3	**Category**	Humanities and Social Sciences (HS**)**														
4	**Approval**	Academic Council, Aug 2018														

Subject Code : U18CHOR111	FUNDAMENTALS OF HORTICULURE	L	T	P	C
	Total Contact Hours – 56	1	0	1	2
	Prerequisite course	None			
	Course Coordinator Name & Department	Dr.M. Dhivya School of Agricultural Sciences			
COURSE OBJECTIVES:-	• To inculcate the basic concepts, technical knowhow of horticultural operations • To impart basic knowledge in various branches of horticulture				

THEORY

UNIT I : HISTORY, EVOLUTION AND SCOPE OF HORTICULTURE 4

Origin of horticulture – history – evolution – definitions – scope and importance of horticulture – division and classification of horticultural crops – fruits, vegetables, spices and plantation crops, floriculture, landscaping, ornamental gardening, medicinal and aromatic crops – nutritive value and global and national scenario of horticultural crops.

UNIT II :SEXUAL PROPAGATION 2

Sexual propagation – importance, advantages and disadvantages – methods of enhancement of seed viability – types of dormancy – seed invigoration – seed treatments.

UNIT III : ASEXUAL PROPAGATION 4

Asexual propagation, importance, advantages and disadvantages - Asexual propagation types *viz.*, Types of cutting, layering, grafting and budding. Use of specialized plant parts in propagation. Propagation structures and their role. Rootstock influence – stock / scion relationship in fruit crops. Scope and importance of micro propagation in horticultural crops. Direct and indirect organogenesis – media for micro propagation and hardening.

UNIT IV: PLANTING SYSTEMS AND POLLINATION 4

Principles of orchard establishment - Methods of planting systems including HDP and UHDP in horticultural crops – crop regulatory practices for horticultural crops – training, pruning, special operations in horticultural crops – off season production of horticultural crops. Flowering, pollination, fruit set, fruit drop, parthenocarpy, fruit ripening and senescence – Unfruitfulness and its causes.

UNIT V : PRINCIPLES AND TYPES OF GARDEN2

Principles and types of garden – principles and types of parks – principles of herbal garden

PRACTICAL – LIST OF PRACTICAL SCHEDULE

1.	Visit to orchard and identifying its components	**2.5**
2.	Identification of garden tools, implements and machineries	**2.5**
3.	Identification of horticultural crops and herbarium making	**2.5**
4.	Preparation of pot mixture, potting and repotting	**2.5**
5.	Preparation of nursery beds for raising rootstocks and seedlings	**2.5**
6.	Practicing asexual methods of propagation- cutting and layering	**2.5**
7.	Practicing asexual methods of propagation – budding and grafting	**2.5**
8.	Plant propagation structures and specialized plant parts for propagation	**2.5**
9.	Layout and planting of fruit trees	**2.5**
10.	Training and pruning of fruit trees	**2.5**

11.	Transplanting and care of vegetable seedlings	**2.5**
12.	Making of herbaceous and shrubbery borders	**2.5**
13.	Practicing irrigation, fertilizer and manures application in different crops	**2.5**
14.	Preparation and application of Plant Growth Regulators	**2.5**
15.	Visit to tissue culture lab	**2.5**
16.	Visit to commercial nurseries / garden	**2.5**

TEXT BOOKS:

1. Kumar, N.2014, Introduction to Horticulture, Oxford IBH Publications, New Delhi.
2. Jitendra Singh, 2014. Basic Horticulture. Kalyani Publishers. New Delhi.
3. Hartman, H.T. and Kester, D.E. 1986. Plant propagation – Principles and Practices – Prentice Hall of India Ltd., New Delhi.

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1. Sadhu, M.K.1989. Plant Propagation. Wiley Eastern Ltd., 4835/24, Ansari Road, Daryaganj, New Delhi- 110 002.
2. Bose, T.K., S.K. Mitra, M. K. Sadhu and B. Mitra. 1991. Propagation of Tropical and Subtropical Horticultural Crops. NayaPrakash 206, BidhanSarani, Calcutta-6.
3. George Acquaah, 2002. Horticulture – principles and practices. Prentice Hall of India Pvt. Ltd., New Delhi.
4. Jagadish Chandra Jana., Tanmay Kumar Koley., Arghya Mani., ChandanKarak., Dipak Kumar Murmu. 2018. Advances in post harvest management, processing and value addition of horticultural crops-Part 2: Vegetables, spices and plantation crops. Today and Tomorrow's Printers and Publishers, India.
5. Jules Janick.1979.Horticultural Science. Surjeet Publications. New Delhi.

JOURNALS

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2. Chronica Horticulture
3. Hort technology

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2.http://www/britannica.com/
3.http://www.horticulture.com.au/export/hmac.asp.asp
4.http://www.horticultureworld.net/hort-india.htm
5.http://www.fao.org/

COURSE OUTCOMES (COs)	
CO1	Learn about history, evolution and basic concepts of horticulture
CO2	Acquire knowledge on various propagation techniques
CO3	Learn the different types of planting systems, training, pruning, special horticultural practices and pollination behaviour
CO4	Gain practicalknowledge on principles, types and designing a garden
CO5	Acquire practical knowledge on orchardand nursery layout
CO6	Demonstrate fertilizer and irrigation scheduling and special horticultural operations like training, pruning etc.

Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low																
1	**COs/POs**	**PO1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**PSO1**	**PSO2**	**PSO3**
2	**CO1**	3	-	-	-	-	-	3	-	-	-	-	2	1	-	-
	CO2	2	2	2	-	3	-	2	-	-	-	-	3	2	2	-
	CO3	3	1	3	-	2	-	3	-	-	-	-	2	2	-	-
	CO4	3	3	1	-	2	-	2	-	-	-	-	3	2	-	-
	CO5	3	2	2	-	2	-	3	-	-	-	-	2	2	2	-
	CO6	2	-	3	-	3	2	3	-	3	2	-	2	-	-	-
3	**Category**	ProfessionalCore (PC)														
4	**Approval**	Academic Council, Aug 2018														

Subject Code : U18BMAT111	ELEMENTARY MATHEMATICS		L	T	P	C
	Total Contact Hours – 56		1	0	1	2
	Prerequisite course	School Level Mathematics				
	Course Coordinator Name & Department	Dr. T.Muthulakshmi Department of Mathematics				
COURSE OBJECTIVES:-	• The aim is to develop mathematical curiosity and use inductive and deductive reasoning when solving problems. • Develop the knowledge, skills and attitudes necessary to pursue further studies in Mathematics and to become confident in using Mathematics to analyze and solve problems in real – life situations.					

THEORY

UNIT I : ALGEBRA **3**

Permutation and Combination -meaning of nPr and nCr (simple problems). Matrices- Definitionof Matrices, Addition, Subtraction, Multiplication, Transpose and Inverse up to 3^{rd} order by adjoint method, Properties of determinants up to 3^{rd} order and their evaluation**.**

UNIT II:ANALYTICAL GEOMETRY **4**

Distance formula, section formula (internal and external division), Change of axes(only origin changed), Equation of co-ordinate axes, Equation of lines parallel to axes, Slope-intercept form of equation of line, Slope-point form of equation of line, Two point form of equation of line, Intercept form of equation of line, Normal form of equation of line, General form of equation of line, Point of intersection of two straight lines, Angles between two straight lines, Parallel lines, Perpendicular lines.Equation of circle whose centre and radius is known, General equation of a circle, Equation of circle passing through three given points, Equation of circle whose diameters is line joining two points (x1, y1) & (x2,y2).

UNIT III :DIFFERENTIAL CALCULUS **4**

Definition of function, limit and continuity, Simple problems on limit, Simpleproblems on continuity, Differentiation of x^n , e^x , sin x &cos x from first principle, Derivatives of sum, difference, product and quotient of two functions, Differentiation of functions of functions (Simple problem based on it), Logarithmic differentiation (Simple problem based on it), Differentiation by substitution method and simple problems based on it, Differentiation of Inverse Trigonometric functions. Partial differentiation with first and second order -Maxima and Minima of the functions of the form y = f (x) and y = f(x1,x2) (Simple problems based on it).

UNIT IV:INTEGRAL CALCULUS **3**

Integration of simple functions, Integration of Product of two functions, Integration bysubstitution method, Definite Integral (simple problems based on it), Area under simple well-known curves (simple problems based on it).

UNITV:MATHEMATICAL MODELS **2**

Agricultural systems - Mathematical models - classification of mathematicalmodels- Fitting of Linear, quadratic and exponential models to experimental data.

PRACTICAL – LIST OF PRACTICAL SCHEDULE

1.	Simple problems in Permutation and Combination.	**2.5**
2.	Problems in Addition, Subtraction, Multiplication and Transpose of a matrix.	**2.5**
3.	Problems in determinants and Inverse up to 3rd order by adjoint method.	**2.5**
4.	Problems in Straight lines using distance formula, section formula (internal and external division), Change of axes (only origin changed)- Equation of co-ordinate axes- Equation of lines parallel to axes.	**2.5**
5.	Problems in Slope-intercept form of equation of line, Slope-point form of equation of line, two point forms of equation of line, Intercept form of equation of line.	**2.5**
6.	Problems in Normal form of equation of line, General form of equation of line, Point of intersection of two straight lines.	**2.5**
7.	Problems in Angles between two straight lines, Parallel lines, Perpendicular lines, Angle of bisectors between two lines.	**2.5**
8.	Problems in Equation of circle whose centre and radius is known, General equation of a circle, Equation of circle passing through three given points, Equation of circle whose diameters is line joining two points (x1, y1) & (x2,y2).	**2.5**
9.	Simple problems in limit and continuity.	**2.5**
10.	Problems in differentiation of xn , ex , sin x &cos x, derivatives of sum, difference, product , quotient of two functions and differentiation of functions of functions.	**2.5**
11.	Simple problem based on Logarithmic differentiation and differentiation by substitution method	**2.5**
12.	Problems in Maxima and Minima of the functions of the form y=f (x) and y=f(x1,x2)	**2.5**
13.	Problems in integration of simple functions and product of two functions using integration by parts-Definite Integral.	**2.5**
14.	Integration by substitution method-Problems in Area under simple well-known curves	**2.5**
15.	Problems in fitting linear models to experimental data.	**2.5**
16.	Problems in fitting Quadratic and Exponential models to experimental data.	**2.5**

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1. Mehta, B. C. and G. M. K. Madnani, 2014, Mathematics for Economists, Sultan Chand & Sons, New Delhi.
2. Kailasam.C, PangayarSelvi. R and Vasanthi. R, 2010 , Applied Mathematics, Agrobios (India), Jodhpur
3. James Stewart and Barhara Frank, Calculus, 2008, International Thomson Publishers, Singapore
4. Duraipandian, 2007, Calculus and Analytical Geometry, Emerald Publishers, Chennai.
5. Ranganathan.C.R. 2006, A First Course in Mathematical Models of Population Growth (with MATLAB programs), Associated publishing company, NewDelhi.
6. ManickavasagamPillai, T. K and Natarajan, T. 2004. Calculus, Viswanathan Publications, Madras.

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2. http://patrickjmt.com/
3. https://www.khanacademy.org/
4. https://www.mathportal.org/
5. https://www.symbolab.com/
6. https://www.freemathhelp.com/

COURSE OUTCOMES (COs)	
CO1	Know the basic concepts of matrices, permutation & combination and evaluating the problems which involves matrices
CO2	Analyze the problems involving two-dimensional geometry
CO3	Understand the differentiable functions and solving the differential equations
CO4	Evaluate the differentiable functions and optimizes the problems with single variable functions
CO5	Apply simple integrals to compute area and volume over curves, surface and evaluating the problems involving two dimensional and three-dimensional spaces
CO6	Apply mathematical model in real life agricultural problems

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	COs/POs	PO1	2	3	4	5	6	7	8	9	10	11	12	PSO1	PSO2	PSO3
2	**CO1**	3	3	1	-	-	-	-	-	-	-	-	2	-	-	-
	CO2	3	2	2	-	-	-	-	-	-	-	-	3	-	-	-
	CO3	3	2	2	-	-	-	-	-	-	-	-	3	-	-	-
	CO4	3	2	1	-	-	-	-	-	-	-	-	2	-	-	-
	CO5	3	3	2	-	-	-	-	-	-	-	-	3	-	-	-
	CO6	3	2	1	-	-	-	-	-	-	-	-	2	-	-	-
3	**Category**	Basic Sciences (BS)														
4	**Approval**	Academic Council, Aug 2018														

Subject Code : U18CPBG 101	INTRODUCTION TO AGRICULTURAL BOTANY	L	T	P	C
	Total Contact Hours – 56	1	0	1	2
	Prerequisite course	Basic Biology at Intermediate level			
	Course Coordinator Name & Department	Dr. S.AnandhiLavanya School of Agricultural sciences			
COURSE OBJECTIVES:-	• To existence the students to the basic features of botanical description, economic parts and importance of different field and horticultural crops. • Collection and characterization of crop seeds of cultivated and traditional varieties. • Preparation of herbarium specimens Collection				

THEORY

UNIT I : SYSTEMS OF CLASSIFICATION AND GENERAL MORPHOLOGICAL DESCRIPTION 3

Bentham and Hooker's classification of plant kingdom — International code of nomenclature and its major guidelines – author citation – Agricultural classification of crops; General morphology: Life span, habit, root, stem, leaf - petiole, leaf margin, leaf apex, leaf shape, venation and phyllotaxy; Modification of roots and leaf; Floral morphology: Kinds of bracts, inflorescence; Structure of flower, androecium, gynoecium, placentation, types of fruits.

UNIT II :BOTANICAL DESCRIPTION AND ECONOMIC USES OF POACEAE 2

List of cultivated crops, economic parts, chromosome number and family description of Poaceae: Key botanical features of Rice, Wheat, Sorghum, Maize, Pearl millet, Finger millet, list of small millets, Guinea grass, Napier grass, *Cenchrus* and Sugarcane.

UNIT III : BOTANICAL DESCRIPTION AND ECONOMIC USES OF PAPILIONACEAE 3

List of cultivated crops, economic parts, chromosome number and family description of Papilionaceae: Key botanical features of Red gram, Bengal gram, Soybean, Black gram, Green gram, Cowpea, Lablab, Horse gram, Groundnut, Lucerne, *Stylosanthes*, Clitoria, Agathi and Sunnhemp.

UNIT IV: BOTANICAL DESCRIPTION AND ECONOMIC USES OFPEDALIACEAE, ASTERACEAE, OLEACEAE,BRASSICACEAE, EUPHORBIACEAE,ARECACEAE AND MALVACEAE 3

List of cultivated crops, economic parts, chromosome number and family description of the following families and Key botanical features of the crops given against them:Pedaliaceae - Gingelly; Asteraceae - Sunflower, Safflower, Chrysanthemum; Oleaceae – Jasmine; Brassicaceae - Rapeseed and Mustard, Cabbage, Cauliflower; Euphorbiaceae: Castor; Jatropha and Tapioca; Arecaceae: Coconut, Arecanut, Oilpalm, Sugarpalm; Malvaceae: Cotton, Mesta and Bhendi.

UNIT V :BOTANICAL DESCRIPTION AND ECONOMIC USES OF TILIACEAE, PIPERACEAE, CHENOPODIACEAE, SOLANACEAE, MIMOSAE, MORACEAE,CUCURBITACEAE, ALLIACEAE, MUSACEAE, RUBIACEAE, THEACEAE4

List of cultivated crops, economic parts, chromosome number and family description of the following families and key botanical features of the crops given against them. Tiliaceae: Jute; Piperaceae: Betelvine; Chenopodiaceae: Sugar beet; Solanaceae: Tobacco, Potato, Chilli, Tomato and Brinjal; Mimosae: Desmanthes, Subabul and Acacia; Moraceae: Mulberry;Cucurbitaceae: Cucumber, Pumpkin, Ashgourd; Alliaceae: Onion and Garlic; Musaceae: Banana, Manila hemp;Rubiaceae: Coffee; Theaceae: Tea

PRACTICAL – LIST OF PRACTICAL SCHEDULE

1.	Observing general morphology of roots, stems and leaves.	**2.5**
2.	Observing general morphology of inflorescence - flowers, stamens and pistils.	**2.5**
3.	Family characters, Botany, Economic parts, Floral diagram and Floral formula of the following crop plants:-Poaceae: Rice and Wheat	**2.5**
4.	Poaceae: Sorghum, Maize, Pearl millet, Finger millet.	**2.5**
5.	Poaceae: Guinea grass, Napier grass, Cenchrus and Sugarcane.	**2.5**
6.	Papilionaceae: Redgram, Bengal gram and Soybean.	**2.5**
7.	Papilionaceae: Blackgram, Greengram, Cowpea, Lab-lab, Horse gram and Groundnut.	**2.5**
8.	Papilionaceae: Lucerne, Stylosanthes, Clitoria, Agathi, Sunnhemp, and Sesbania.	**2.5**
9.	Pedaliaceae: Gingelly; Asteraceae: Sunflower, Safflower and Chrysanthemum Oleaceae: Jasmine	**2.5**
10.	Brassicaceae: Rapeseed and Mustard, Cabbage, Cauliflower.	**2.5**
11.	Euphorbiaceae: Castor, Jatropha, Tapioca; Arecaceae: Coconut, Arecanut, Oilpalm and Sugar palm.	**2.5**
12.	Malvaceae: Cotton, Mesta, Bhendi	**2.5**
13.	Tiliaceae: Jute; Piperaceae: Betelvine; Chenopodiaceae: Sugar beet;	**2.5**
14.	Solanaceae: Tobacco, Potato, Chilli, Tomato and Brinjal; Mimosae: Desmanthes, Subabul ,Moraceae:Mulberry	**2.5**
15.	Cucurbitaceae: Cucumber,Pumpkin, Ashgourd; Alliaceae: Onion and Garlic	**2.5**
16.	Musaceae: Banana, Manila hemp; Rubiaceae: Coffee; Theaceae: Tea	**2.5**

REFERENCES:

1. Daniel Sundararaj, D. and G. Thulasidas, 1993. Botany of field crops. MacMillan India Ltd., New Delhi.
2. Sambamurthy, V.S. and N.S. Subramanian, 1989. Text Book of Economic Botany, Wiley Eastern, New Delhi
3. Albert F. Hill and O.P. Sharma, 1996. Economic Botany. Tata McGraw - Hill Publishing Co. Ltd., New Delhi.
4. John Joel, A., C. Vanniarajan, T.S. Raveendran, and A. Gopalan 2006. Fundamentals of Crop Botany, Directorate of ODL, Tamil Nadu Agricultural University, Coimbatore–641 003.

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1. www.nmsu.edu
2. www.biology200.gsu.edu

COURSE OUTCOMES (Cos)	
CO1	Describe to Morphology of crops andcharacterize crops based on its anatomical characters such as root, shoot, leaf venation will also be learned.
CO2	Erudition different class of plant species based on its economic importance and Plant parts will also be learn
CO3	Identify the family to which a particular crop belongs to and learn
CO4	Demonstrate the Botanical features and economic importance of different crop plants belonging to 20 families will bedetermine
CO5	Discuses and show the Morphology of crops and Floral Formula and Economic Parts of Field Crops.
CO6	Explain the Morphology, Floral biology and formula of crops. Economic Parts of Horticultural Crops.

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	COs/POs	PO1	2	3	4	5	6	7	8	9	10	11	12	PSO1	PSO2	PSO3
2	**CO1**	3	-	-	-	-	-	2	-	-	-	-	2	3	–	-
	CO2	3	2	-	-	-	-	-	-	-	-	-	1	3	-	-
	CO3	2	2	-	2	-	-	-	-	-	-	-	2	2	-	-
	CO4	3	3	2	-	-	-	-	2	-	-	-	2	2	-	-
	CO5	3	2	-	2	-	-	3	-	-	-	-	1	3	-	-
	CO6	3	2	-	2	-	-	3	-	-	-	-	2	3	-	-
3	**Category**	ProfessionalCore (PC)														
4	**Approval**	Academic Council, Aug 2018														

Subject Code : U18AAEX101	RURAL SOCIOLOGY AND EDUCATIONAL PSYCHOLOGY		L	T	P	C
	Total Contact Hours – 32		2	0	0	2
	Prerequisite course	Basic knowledge in social sciences at intermediate level				
	Course Coordinator Name & Department	Dr. R.Thulasiram, School of Agricultural Sciences				
COURSE OBJECTIVES:-	To teach about the rural society and its structure, customs, control and characteristics and also to educate the students about educational psychology and teaching learning principles and methods used in extension teaching					

THEORY

UNIT I :INTRODUCTION TO SOCIOLOGY, SOCIAL GROUPS, CULTURE AND SOCIAL VALUES 6

Sociology and Rural Sociology – definitions; Society – rural and urban, characteristics, differences and relationships, important characteristics of Indian rural society; Social groups – definition, classification, role of social groups in extension; Culture – concept, cultural traits, characteristics, functions, Ethnocentrism, Acculturation, Cultural lag, Cultural diffusion, Marginal man, Ethos. Social Values – definition, values and norms, characteristics of values, functions.

UNIT II :SOCIAL STRUCTURE, SOCIAL STRATIFICATION AND MIGRATION 6

Structure of Rural Society – patterns of rural settlement, social institutions, social organizations, ecological entities (Region, Community, Neighbourhood, Family); Social Stratification – concept, functions, types, differences between class and caste system; Migration – concept, factors influencing migration.

UNIT III :SOCIAL CONTROL, SOCIAL CUSTOMS 6

Social Control – definition; Customs – conventions, folkways, mores, rituals, taboos; Social Interaction Process – definition, basic social processes; Social Change – concept, factors influencing social change, indicators of social change; Social development

UNIT IV :INTRODUCTION TO EDUCATIONAL PSYCHOLOGY, INTELLIGENCE, TEACHING-LEARNING PROCESS 8

Education – Psychology – Educational Psychology – Social Psychology – definitions, importance in extension; Basic principles of Human behaviour – Sensation, Attention, Cognitive, affective, psychomotor domain Perception – meaning, characteristics; Intelligence – concept, types, measurement, factors affecting intelligence; Personality – concept, types, measurement, factors influencing personality; Teaching–Learning Process – Teaching – definition, meaning, principles of teaching, steps in extension teaching; Learning – definition, meaning, principles, types of learning, learning situation.

UNIT V :MOTIVATION, ATTITUDE 6

Motivation – concept, Maslow's hierarchy of needs, intrinsic and extrinsic motivation, techniques of motivation, importance in extension; Attitude – concept, factors influencing the development of attitudes.

TEXT BOOKS:

1. Adivi Reddy, A. 2001. Extension Education, Sree Lakshmi Press, Bapatla, Andhra Pradesh. Chatterjee, S. 2000. Advanced Educational Psychology, Books & Allied (P) Ltd., Calcutta.
2. Chauhan, S.S. 2001. Advanced Educational Psychology, Vikas Publishing House Pvt. Ltd.,

New Delhi. Chitambar, J.B.1997. Introductory Rural Sociology, New Age International (P) Ltd., Publishers, New Delhi.
3. Dahama, O.P. and O.P. Bhatnagar. 2007. Education and Communication for Development, Oxford &

REFERENCES:

1. Kundu, C.L and Tutoo, D.N. 2001. Educational Psychology, Sterling Publishers Pvt. Ltd., New Delhi.
2. Lester Crow, D and Alice Crow. 1973. Educational Psychology, Eurasia Publishing House Pvt. Ltd.,
3. Madumita Gupta. 2011. Fundamentals of Sociology, Pacific Publications, New Delhi. Mangal, S.K. 2000. Educational Psychology, Prakash Brothers, Ludhiana

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2. http://www.tnau.ac.in/cards/dept-of-aers-ug-courses/
3. http://www.hillagric.ac.in/edu/coa/AgriEcoExtEduRSocio/Study%20Materials/Ext121.pdf

COURSE OUTCOMES (COs)	
CO1	To classify the rural social groups of India
CO2	To know about the structure of the rural society, their stratification and migration
CO3	To learn about the social controls and customs of the Indian rural society with the indicators of social change
CO4	To deal with the concept of educational psychology and assess farmers based on personality determinants
CO5	To bring behavioral changes among the students
CO6	To bring in new extension activities suitable for the society

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	**COs/POs**	**PO1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**PSO1**	**PSO2**	**PSO3**
2	**CO1**	-	1	1	1	-	-	-	1	1	-	-	3	-	–	-
	CO2	2	2	2	-	1	-	1	2	2	-	-	3		-	-
	CO3	1	1	2	-	3	1	2	1	1	2	-	2	2	2	1
	CO4	-	-	-	3	2	1	-	-	-	3	-	2	-	-	2
	CO5	-	-	-	3	2	-	-	-	-	3	1	2	-	-	-
	CO6	-	-	-	3	3	-	-	-	2	3	1	3	1	1	3
3	**Category**	Allied Sciences (AS)														
4	**Approval**	Academic Council, Aug 2018														

Subject Code : U18HTAM103	□□□□

gy;fiyf;fHfk;/ j";rht{h;.

COURSE OUTCOMES	
CO1	gz;ilaf; fhye;bjhl;L ,yf;fpa';fspy; fhzg;gLk; ntshz;ikFwpj;jbra;jpfismwpe;Jbfhs;tu;/ mjd;tHpjw;fhyntshz;ikf;fhdjPu;t[fs; fpilf;Fk;/
CO2	bkhHpbgah;g;g[.[gad;fismwpth; fiyr;brhy;yhf;fk; Fwpj;Jtpsf;Fjy;
CO3	gHbkhHpfs;.kug[j; bjhlu;fs; tHpntshz;ikrhu;e;jbra;jpfismwpa[k; jpwd; bgw;wpUg;gu;/
CO4	fiyr;brhw;fSf;fhdbghUismwpe;Jbfhs;tnjhL. gpwbkhHpapypUe;JjkpGf;Fntshz;ikrhu;e;jfiyr;brhw;fiscUthf;Fk; jpwd; khztu;fSf;FVw;gLk;/
CO5	ntshz;ikrhu;e;jfl;Liufs; vGJtjw;fhdgapw;rpbfhLf;fg;gLtjhy;. gpiHapd; El;gkhdtifapy; fl;Liufs; vGJtu;/
CO6	ngr;Rg; gapw;rpmspf;fg;gLtjhy;. tptrhak; rhu;e;jbra;jpfisClf';fSf;Ftpsf;fpf; TWk; mDgtk; Vw;gLfpwJ/

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	COs/POs	PO1	2	3	4	5	6	7	8	9	10	11	12	PSO1	PSO2	PSO3
2	**CO1**	2	–	–	2	–	3	–	–	–	2	–	–	2	–	-
	CO2	2	-	-	2	-	3	-	-	-	2	-	-	2	-	-
	CO3	2	-	-	3	-	3	-	-	-	2	-	-	2	-	-
	CO4	2	-	-	3	-	3	-	-	-	2	-	-	2	-	-
	CO5	2	-	-	3	-	3	-	-	-	2	-	-	2	-	-
	CO6	2	-	-	2	-	3	-	-	-	2	-	-	2	-	-
3	**Category**	Humanities and Social Sciences (HS**)**														
4	**Approval**	Academic Council, Aug 2018														

Subject Code : U18HENG103	DEVELOPMENT EDUCATION	L	T	P	C
	Total Contact Hours – 40	0	0	1	1
	Prerequisite course	HSC English			
	Course Coordinator Name & Department	Ms.Raagavi A S, Department of English			

COURSE OBJECTIVES:-

- To create awareness on thrust areas of Teaching- learning and give them a chance on exploring the opportunities.
- To enhance the student's communication with exercises both orally and verbally

LIST OF PRACTICAL SCHEDULE

1.	Basic principles of learning - binary terms viz., growth and development, education – for – life and life – long education, motivation and morale.	**2.5**
2.	Occupation and profession, training and education, lateral thinking and convergent thinking, teaching and learning – discussion.	**2.5**
3.	Bloom's classification of educational objectives – cognitive, affective, psychomotor domain(s)	**2.5**
4.	Career development – opportunity for graduates of agriculture and allied sciences – discussion	**2.5**
5.	Success story of a farmer / entrepreneur – factors involved – role – play.	**2.5**
6.	Brainstorming – demonstration.	**2.5**
7.	Simulation – Educational Simulation-Interactive Teaching - Business Simulation – Company's annual report for analysis	**2.5**
8.	Interpersonal communication – Transactional communication – ice breaker	**2.5**
9.	The conduct of a symposium	**2.5**
10.	Conferencing – the concept and presentation of a paper	**2.5**
11.	Scientific Article Writing and Editing	**2.5**
12.	Popular Article Writing, Editing and Blogging	**2.5**
13.	Project proposal	**2.5**
14.	Project Report – writing	**2.5**
15.	Entrepreneur – intrapreneur – Managing an intrapreneur – motivation and entrepreneurship development – planning, monitoring and evaluation.	**2.5**

REFERENCES:

1. Sudarsanam.R 1985. "Development Education" Chapter 1,2
2. Krishna Mohan and Meera Banerji, (1990). "Developing Communication Skills", Macmillan Pub. Co., Ch.6,9,10,13 and 15.

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2. https://www.engvid.com/
3. https://www.indeed.com/career-advice/career-development/entrepreneurial-skills
4. https://library.sacredheart.edu/c.php?g=29803&p=185933

COURSE OUTCOMES (COs)	
CO1	Discovering the basic principles of learning and understanding the methodology involved in teaching-learning process. (understand)
CO2	Simulating the aspects of career development and enabling the students to apply them in their day-to-day life. (Apply)

CO3	Explaining the terms of entrepreneurship and motivating the students to explore their ideas. (understand)
CO4	Describing communication and interpersonal skill development to help them build a healthy workplace atmosphere and to explore the opportunities through writing. (remember)
CO5	Illustrating the concept involved in teaching and its process using the modern techniques. (Analyze)
CO6	Relating the techniques involved in interpretation of content and enhancing the syntax structure gradually (remember)

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	**COs/POs**	**PO1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**PSO1**	**PSO2**	**PSO3**
2	**CO1**	-	-	-	-	-	-	-	-	-	3	-	-	√	–	-
	CO2	-	-	-	-	-	-	-	-	-	3	-	2	√	-	-
	CO3	-	-	-	-	-	-	-	3	-	3	-	3	√	-	-
	CO4	-	-	-	-	3	-	-	2	-	3	-	2	√	-	-
	CO5	-	-	-	-	-	-	-	-	-	3	-	-	√	-	-
	CO6	-	-	-	-	-	-	-	3	-	3	-	-	√	-	-
3	**Category**	Humanities and Social Sciences (HS**)**														
4	**Approval**	Academic Council, Aug 2018														

Subject Code : U18HNSS101	NSS 101 NATIONAL SERVICE SCHEME (0+1)		L	T	P	C
	Total Contact Hours – 40		0	0	1	1
	Prerequisite course	Nil				
	Course Coordinator Name & Department	Dr. S. P. Vijayaragavan NSS Program Co-ordinator				
COURSE OBJECTIVES:-	Enable the students to understand the community in which they work and to understand themselves in relation to their community					

PRACTICAL SCHEDULE– NSS

1.	Orientation of NSS volunteers and programme coordinator and Programme officers.	**2.5**
2.	Origin of NSS in India and its development	**2.5**
3.	NSS motto, symbol and NSS awards	**2.5**
4.	Organizational set up of NSS at Central, State University and college levels.	**2.5**
5.	Programme planning – Theme of the year – planning implementation at PC, PO and NSS volunteer level.	**2.5**
6.	Visit to selected village - gathering basic data on socio economic status.	**2.5**
7.	Participatory rural appraisal – studying the needs of the target group.	**2.5**
8.	Visit of urban slum and gathering data on socio economic status.	**2.5**
9.	Self involvement and methods of creating rapport with the target group.	**2.5**
10.	Awareness campaign on welfare schemes of the central and state government.	**2.5**
11.	Formation career guidance group with NSS volunteers and students welfare unit	**2.5**
12.	Cycle rally on environmental protection.	**2.5**
13.	Campus development activities – clean environment campaign, formation of plastic free zones.	**2.5**
14.	Campus development activities – clean environment campaign, formation of plastic free zones	**2.5**
15.	Campus development, tree planting maintenance and greening the campus cleaning	**2.5**
16.	Campus development, tree planting maintenance and greening the campus cleaning	**2.5**

Besides the above, NSS volunteers will attend work during important occasions like Convocation, Farmers day, Sports meet and other University / College functions. For all out door regular activities villages / slums nearby the campus may be selected to avoid transport cost (cycle able distance)

COURSE OUTCOMES (COs)	
CO1	To evoke social consciousness among students through various activities.
CO2	To develop youth leadership in the students
CO3	To utilize their knowledge in finding practical solutions to individual and community problems
CO4	To create the awareness of all kinds of discipline to the students
CO5	To practice national integration and social harmony, To Gain skills in mobilizing community participation
CO6	To identify the needs and problems of the community and involve them in problem solving process
Category	Humanities and Social Sciences (HS**)**
Approval	Academic Council, Aug 2018

Subject Code : U18HNCC101	NATIONAL CADET CORPS	L	T	P	C
	Total Contact Hours – 40	0	0	1	1
	Prerequisite course	Nil			
	Course Coordinator Name & Department	Dr. R. Udaya Kumar NCC Officer			

PRACTICAL SCHEDULE – NCC

1.	NCC song – Aims and Motto of NCC – Motivation of cadets	**2.5**
2.	History of NCC and organization of NCC	**2.5**
3.	Food drill – General and word of Command	**2.5**
4.	Human Resource Development – Motivation – Duties of Good citizen	**2.5**
5.	National Integration – Indian History and Culture	**2.5**
6.	Health and Hygiene – Structure and Function of a human body, hygiene and Sanitation	**2.5**
7.	Social Service – weaker sections of our society and their needs	**2.5**
8.	Self Defence – Theory and practice, prevention of untoward incidence	**2.5**
9.	Map reading – introduction to map, and lay out of map	**2.5**
10.	Disaster Management Civil defence organization and its duties	**2.5**
11.	Communication – Different types – media	**2.5**
12.	Signals – introduction to radio, telephony procedures	**2.5**
13.	Field Engineering – principles and applications, camouflage and concealment	**2.5**
14.	Adventure training introduction, different types	**2.5**
15.	First Aid – methods and practices	**2.5**
16.	Environment and Ecology – conservation	**2.5**

Besides the above schedule, NCC cadets will be involved during important occasions during convocation, Independence day, Republic day, etc.

Category	Humanities and Social Sciences (HS**)**
Approval	Academic Council, Aug 2018

Subject Code : U18HPED101	PHYSICAL EDUCATION		L	T	P	C
	Total Contact Hours – 40		0	0	1	1
	Prerequisite course	Nil				
	Course Coordinator Name & Department	Dr. V.Prakash School of Agricultural Sciences				
COURSE OBJECTIVES:-	• Participation in sports will yield optimum physical fitness and positive health for all. • Physical activities play an important role in the development of students to have a tremendous energy and desire to explore. These activities increase strength, speed and overall development and have considerable import not only in their physical growth but also on social and emotional development. • Physical education and sports, being an integral part of education, experience the impact of scientific advancements. • Physical education in the development of neuro muscular skills.					

PRACTICAL SCHEDULE

Exercises for strength, agility, co-ordination, flexibility, co-operation, vitalcapacity endurance, speed and for various systems of our body and team spirit.

Exercise for Good Posture – Conditioning and calisthenics for various Athletic activities *i.e (*a) Before start – Arm stretch, hand stretch and cat stretch (b) Loosening up jogging, bending and twisting (c) Standing – Lateral Arc, triangle and hands to feet pose (d) Sitting – camel kneel, spinal twist and supine knee bend (e) Relaxation – The corpse pose, quick and deep relaxation. Basic gymnastic exercises – participation of athletic events – running, throwing and jumping events.

SKILL DEVELOPMENT IN ANYONE OF THE FOLLOWINGGAMES

Warming up, suitable exercise, lead up games, advance skill for all the games.

Basket Ball	**:**	Dribbling, pass, two or three men pass, pivot, lay up shot, shooting, pass break, hook pass,screening, positional play, defence and offence tactics.
Volley Ball	**:**	Fingering, under arm pass, over head pass, setting, spiking, back pass, jump pass, stunts,elementarty dive, flaying dive, roll, blacking and various types of services.
Ball Badminton	**:**	Grip, service, foot work, fore hand stroke, back hand stroke, lob, smash, volley, wallpractice, spin service and defence tactics.
Foot ball	**:**	Dribbling, passing, dodging, kicking, heading, screening, chest pass, throwing, dragging, goalkick, defence and offence tactics.
Hockey	**:**	Grip, bully, dribbling, hitting, drive, push strokes, scoop, flick, stopping, various types ofpasses, dodging, defence and offience tactics.
Kho-Kho	**:**	Quadra ped, bi-ped, how to given kho, taking a direction, recede, parallel toe method, bullettow method, distal method, foot out, dive, ring game, chains and persue and defence skills.
Chess	**:**	Moves, move of king, move of pawns, move of rooks, move of bishops, move of queen, move ofknights, en passant, castling, check and notation.
Kabaddi	**:**	Raid, touch, cant, catch, struggle, various types of defence and offence tactics.
Cricket	**:**	Grip, bowling, spin, leg spin, off spin, medium, batting, dive, sweep, mode of delivery, fielding,rolling etc.
Tennis	**:**	Grip, forehand drive, back hand drive, stroke, backhand ground stroke, service, volley, smash,wall practice, foot work, defence and offence tactics.

Table Tennis	**:**	Grip, tossing and serving, spin serve, rally, smash, flick, defence and offence tactics
Shuttle Badminton	**:**	Grip, foot work, service, setting, smash, volley, forehand and back hand stroke,back hand serve and defence.
Gymnastics	**:**	Balanced walk, execution, floor exercise, tumbling/acrobatics, grip, release, swinging,parallel bar exercise, horizontal bar exercise, flic-flac-walk and pyramids.

ATHLETICS

a) Sprint	**:**	Medium start, long start, bunch start, set, pick up, finish, upsweep, downsweep,placement, receiving and exchanging
b) Jumps	**:**	Western roll, belly roll, eastern cut off, fass ferry flop, approach, take off, straddle,hitch-kick, handging, clearance, landing, strides etc
c) Throws	**:**	Grip, momentum, pre shift, sub phase, the wind up, foot work, entry to the turn, shift,angle of release, follow throw, delivery, front cross step, rear cross step, hop step, fuck method paryobraine, discoput, rotation, carry and glide.
d) Hurdles	**:**	Finding lead leg, use of lead leg and trial leg, flight, clearing, finish

Lead up games, advance skills and game for any one of the above games.

COURSE OUTCOMES (COs)	
CO1	Physical education encourage through games and sports sportsmanship, Co-operation loyalty, sociality, self-control, leadership, patriotism, friendship, kindness, sympathy, tolerance, forgiveness and other similar qualities.
CO2	Physical Education helps to improve one's ability for work and self expression in the competitive condition of our modern life.
CO3	Physical fitness is the combination of strength, flexibility, agility, power, speed, muscular endurance and cardio vascular endurance. It is the ability to enjoy our life and to achieve our goals without undue fatigue or stress. It is the production against the degenerative diseases and feeling of youthfulness, even when we are growing old.

3	**Category**	Humanities and Social Sciences (HS**)**
4	**Approval**	Academic Council, Aug 2018

Subject Code : U18HPED102	YOGA FOR HUMAN EXCELLENCE (0+1)		L	T	P	C
	Total Contact Hours – 40		0	0	1	1
	Prerequisite course	Nil				
	Course Coordinator Name & Department	Dr. S. Prabakaran Department of Humanities and Social Sciences				
COURSE OBJECTIVES:-	• Knowledge of physical health and rejuvenation of life force through Yoga. • Ability to use relationship based approaches to catalyze the positive changes. • Critical thinking skills and science based literacy to advance the evolution of Yoga • PracticeYoga as an integrative health practice.					

UNIT I : PHYSICAL HEALTH AND REJUVENATION OF LIFE-FORCE

Significance of Value Education - Types of Education – Yoga for Human Excellence Principles and Purpose of living - Body structure – Body functions – Reasons for Diseases and Prevention - Concept of Health – Role of limit and method in five deeds for good health - Importance of Naturopathy - Objectives of physical exercises Benefits of physical exercises - Kayakalpa yoga philosophy - Youthfulness practices Enriching bio-magnetism.

UNIT II :MENTAL PROSPERITY AND SOCIAL WELFARE

Mind functions – Mental frequency – Thought – Brain and Memory power – Problem solving and Decision making skills - Need and benefits for meditation - SKY Yoga types of meditation Part 1: Eye brow centre meditation - Genetic centre meditation - Spinal cord clearance - Crown centre meditation - Analysis of thoughts – Moralization of desires - Neutralization of Anger – Eradication of Worries – Benefits of blessings - Human culture and values – Five-fold culture - Time management – Personality Assessment - Environment awareness and protection - Family peace – World peace - Five duties - Harmonious friendship – Greatness of Womanhood.

UNIT III:YOGA PRACTICES – I

PHASE I - Simplified Physical Exercises: Hand exercise - Leg exercise – Neuro muscular breathing exercise – Eye exercise – Kapalabathi - PHASE II – Makarasana Part 1 & 2 – Body massage - Acu-pressure – Relaxation exercise - Youthfulness practices (Kayakalpa) - SKY Yoga types of meditation Part 1: Eye Brow centre meditation - Genetic centre meditation - Spinal Clearance - Crown centre meditation.

PRACTICAL SCHEDULE –

1. Significance of Value Education - Types of Education – Yoga for Human Excellence – Eye brow centre meditation (Agna) - Simplified Physical Exercises – Objective of physical exercises – Benefits of exercises.
2. Principles and Purpose of living - Genetic centre meditation - Explanation and initiation of Genetic centre - SPE – Hand exercises, Leg Exercises, Neuro Muscular Breathing exercises, Eye exercises, Kapalabathi and Relaxation
3. Kayakalpa yoga philosophy - Youthfulness practices - Enriching bio-magnetism - Eye browcentre meditation Practice (Agna) - Kayakalpa Yoga – Explanation and Kayakalpa Practice
4. Body structure – Body functions - Genetic centre meditation Practice - Simplified Physical Exercises - Makarasana, Massage and Acupressure and Relaxation - Kayakalpa
5. Concept of Health – Role of limit and method in five deeds for good health - Spinal cord

Clearance - Explanation and practice - Simplified Physical Exercises Full exercises – Kayakalpa

6. Reasons for Diseases and Prevention - Crown centre meditation- Initiation (Thuriyam)
7. Importance of crown centre meditation - Simplified Physical Exercises Full exercises - Kayakalpa
8. Importance of Naturopathy - Crown centre meditation- (Thuriyam) - Simplified Physical Exercises Full exercises - Kayakalpa
9. Mind functions – Mental frequency – Thought – Brain and Memory power - Crown centre meditation- (Thuriyam) - Simplified Physical Exercises Full exercises - Kayakalpa
10. Analysis of thought - Moralization of desire - Genetic centre meditation Practice - Simplified Physical Exercises Full exercises - Kayakalpa
11. Neutralization of Anger – Eradication of Worries – Eye brow centre meditation Practice (Agna) - Simplified Physical Exercises Full exercises - Kayakalpa
12. Benefits of blessings - Human culture and values – Crown centre meditation- (Thuriyam) - Simplified Physical Exercises Full exercises - Kayakalpa
13. Fivefold culture – Time management - Crown centre meditation- (Thuriyam) - Simplified Physical Exercises Full exercises - Kayakalpa
14. Environment awareness and protection - Genetic centre meditation Practice - Simplified Physical Exercises Full exercises - Kayakalpa
15. Family peace – World peace - Harmonious friendship – Crown centre meditation- (Thuriyam)
16. Simplified Physical Exercises Full exercises – Kayakalpa
17. Greatness of Womanhood - Five duties - Genetic centre meditation Practice - Simplified
18. Physical Exercises Full exercises - Kayakalpa
19. Personality Assessment - Crown centre meditation- (Thuriyam) - Simplified Physical Exercises Full exercises – Kayakalpa
20. Physical health and mental health – revision

COURSE OUTCOMES (COs)	
CO1	Knowledge of Yoga Philosophy.
CO2	Ability to establish the personal health and social health skills to apply.
CO3	Appropriate application with practice ofAsanas, Pranayama, Meditation and relaxation.
Category	Humanities and Social Sciences (HS**)**
Approval	Academic Council, Aug 2018

I YEAR II SEMESTER

S.No.	Course code	Course Title	Credit hours
1.	U18CSWE112	Soil and Water Conservation Engineering	1+1
2.	U18CCRP101	Fundamentals of Crop Physiology	2+1
3.	U18AAEC102	Fundamentals of Agricultural Economics	1+1
4.	U18CAGM101	Fundamentals of Microbiology	2+1
5.	U18AAEX102	Fundamentals of Agricultural Extension Education	2+1
6.	U18AFSN111	Principles of Food Science and Nutrition	1+1
7.	U18CAGR102	Introductory Agro-meteorology & Climate Change	1+1
8.	U18CHOR112	Production Technology for Fruit and Plantation Crops	1+1
9.	U18ARSG101	Geo- informatics for Precision Farming	1+0
10.	U18HNSS/NCC 101	NSS/NCC	0+1*
11.	U18HPED101	Physical Education	0+1*
		Total	**12+8=20**

***Non-gradial compulsory courses**

Subject Code : U18CSWE112	SOIL AND WATER CONSERVATION ENGINEERING	L	T	P	C
	Total Contact Hours – 56	1	0	1	2
	Prerequisite course	Weed and Water Management			
	Course Coordinator Name & Department	Ms.K.Y. Rajalakshmi School of Agriculture sciences			
COURSE OBJECTIVES:-	• To enable the students for better understanding on surveying and leveling instruments. • To study about the various types of water and soil erosion and the soil and water conservation for erosion control methods. • To gain knowledge about various methods of irrigation and drainage methods. • To enable the students on better understanding on various types of wells and problem solving techniques for various types of conservation methods.				

THEORY

UNIT I: SURVEYING **3**

Surveying and levelling – chain and compass – levelling – land measurement – difference in elevation.

UNIT II:SOIL EROSION **2**

Soil Erosion – causes and evil effects of soil erosion – geologic and accelerated erosion – universal soil loss equation - water erosion - causes - stages of water erosion - splash, sheet, rill and gully erosion - ravines - land slides – wind erosion - factors influencing wind erosion - mechanics of wind erosion – suspension, saltation, surface creep.

UNIT III : SOIL CONSERVATION AND WATERSHED MANAGEMENT **4**

Erosion control measures for agricultural lands – biological measures – contour cultivation – strip cropping – cropping systems – vegetative barriers - windbreaks and shelterbelts - shifting cultivation - mechanical measures – contour bund – graded bund – broad beds and furrows – basin listing – random tie ridging – mechanical measures for hill slopes – contour trench – bench terrace – contour stone wall – Rain water harvesting — Runoff computation - rational formula - water harvesting – farm ponds and percolation ponds -watershed concept – integrated approach and management.

UNIT IV: IRRIGATION AND DRAINAGE **6**

Irrigation - measurement of flow in open channels - velocity area method - rectangular weir - Cippoletti weir - V notch - orifices - Parshall flume - duty of water - irrigation efficiencies - conveyance of irrigation water - surface irrigation methods - borders, furrows and check basins - drip and sprinkler irrigation component– agricultural drainage - surface and sub-surface drainage systems - drainage coefficient.

UNIT V :WELLS AND PUMPS **1**

Types of wells– pump types – reciprocating pumps – centrifugal pumps – turbine pumps – submersible pumps – jet pumps – airlift pumps.

PRACTICAL – LIST OF PRACTICAL SCHEDULE

1.	Study of survey instruments - chains - compass - dumpy level.	**2.5**
2.	Chains and cross staff surveying - linear measurement - plotting and finding areas.	**2.5**
3.	Compass survey - observation of bearings - computation of angles.	**2.5**
4.	Compass - radiation, intersection.	**2.5**
5.	Levelling – fly levels	**2.5**
6.	Computation of area	**2.5**
7.	Computation determination of difference in elevation.	**2.5**
8.	Design of contour bund and graded bund.	**2.5**
9.	Design of drip Irrigation systems.	**2.5**
10.	Design of sprinkler irrigation system	**2.5**
11.	Problems on water measurement.	**2.5**
12.	Problems on duty of water, irrigation efficiencies.	**2.5**
13.	Problems on water requirement - agricultural drainage.	**2.5**
14.	Study of different types of wells	**2.5**
15.	Study of pumps and Selection of pumps.	**2.5**
16.	Visit to soil and water conservation areas.	**2.5**

TEXT BOOKS:

1. Basak, N.N. 2008. Surveying and Levelling. 25th reprint. Tata Mc-Graw Hill Publishing Company Ltd
2. Michael, A.M. and Ojha, T.P. 2008. Irrigation Theory and Practice. Second Edition. Vikas Publication House, New Delhi

E- REFERENCES:

1. http://nptel.ac.in/courses/105107122/13
2. http://soilwater.okstate.edu/courses/lectures-powerpoint

COURSE OUTCOMES (COs)	
CO1	This course gives various informationrelated to erosion such as causes of soil erosion, its different types and different forms.
CO2	Course gives the knowledge of soil loss equation for erosion control and various erosion measures to control it by semi-permanent and permanent structures.
CO3	This course helps the students to learn about various agronomical measures to control the erosion.
CO4	This course helps the students toget the knowledge on design of mechanical erosion control measures.
CO5	Students able to understand about the various types and need of surface and sub-surface drainage system.
CO6	It also gives briefknowledge to the students about selection of the pumps.

Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low																
1	**COs/POs**	**PO1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**PSO1**	**PSO2**	**PSO3**
2	**CO1**	3	3	2	-	-	-	-	-	3	-	-	3	–	2	2
	CO2	1	3	2	-	-	1	-	3	-	-	2	3	-	2	2
	CO3	2	3	2	-	-	2	-	3	2	-	-	3	-	2	1
	CO4	2	2	2	-	-	2	-	3	2	-	2	2	-	2	2
	CO5	2	1	2	-	-	2	-	2	1	-	2	3	-	2	2
	CO6	3	1	2	-	3	2	-	2	1	-	2	3	-	2	1
3	**Category**	ProfessionalCore (PC)														
4	**Approval**	Academic Council, Aug 2018														

Subject Code : U18CCRP 101	FUNDAMENTALS OF CROP PHYSIOLOGY	L	T	P	C
	Total Contact Hours – 72	2	0	1	3
	Prerequisite course	Basic Biology and Crop Botany			
	Course Coordinator Name & Department	Mr. B. SuriyaSabarinath School of Agricultural Sciences			
COURSE OBJECTIVES:-	• To impart basic knowledge on various functions and processes related to crop production, mineral nutrition, plant growth regulators and environmental stresses, mechanism of absorption and translocation of water and nutrients from soil to plants. • To study the various pathways of photosynthesis, respiration and application plant growth regulators and stress physiology in plants				

THEORY

UNIT I **6**

Introduction to Crop Physiology and importance of Crop Physiology in Agriculture – Plant cell: an overview, organelles- plasma membrane, chloroplast, mitochondria, peroxisome and vacuole, Structure and role of water, water potential and its components, diffusion and osmosis; imbibition, plasmolysis, Field Capacity and Permanent Wilting Point, Absorption of water, Mechanisms of water absorption, Pathways of water movement, Apoplast and symplast, Translocation of water, ascent of sap and its mechanisms - Transpiration and Stomatal physiology: structure of stomatal pore, mechanisms of stomatal opening and closing, guttation, antitranspirants.

UNIT II **6**

Mineral nutrition of plants: Criteria of essentiality, classification of nutrients, macro, micro, mobile, immobile and beneficial elements, Physiological functions and deficiency symptoms of nutrients, nutrient uptake mechanism; Hidden hunger, Foliar nutrition, root feeding and fertigation, sand culture, hydroponics and aeroponics.

UNIT III **7**

Photosynthesis: Light and dark reactions, Photosystems, red drop and Emerson enhancement effect, Photolysis of water and photophosphorylation, Z scheme, C3, C4 and CAM plants; Photosynthetic pathways of C3, C4 and CAM plants, difference between three pathways, Factors affecting photosynthesis, Photorespiration – pathway and its significance, Phloem transport, Munch hypothesis, Phloem loading and unloading, Source and sink strength and their manipulations. Respiration: Glycolysis, TCA cycle and electron transport chain; Oxidative phosphorylation – difference between photo and oxidative phosphorylation –- energy budgeting - respiratory quotient. Fat metabolism: fatty acid synthesis and breakdown.

UNIT IV **8**

Plant growth regulators: physiological roles and agricultural uses, Hormones- classifications - Biosynthetic pathway and role of auxins, gibberellins, cytokinins, ethylene and ABA, Novel and new generation PGRs, Brassinosteroids and salicylic acid, Growth retardants, Commercial uses of PGRs. Photoperiodism - short, long and day neutral plants, Chailakhyan's theory of flowering, Forms of phytochrome, Pr and Pfr, regulation of flowering, Vernalisation - Theories of vernalisation, Lysenko theories, Seed germination - physiological and biochemical changes, seed dormancy and breaking methods, Senescence and abscission, physiological and biochemical changes, Physiology of fruit ripening, climacteric and non-climacteric fruits, factors affecting ripening, Manipulations.

Physiological aspects of growth and development of major crops: growth analysis, role of physiological growth parameters in crop productivity.

UNIT V **5**

Classification of stresses - Physiological changes and adaptations to drought, flooding, high and low temperature, salinity and UV radiation – compatible osmolytes – membrane properties - compartmentalization – stress alleviation - Global warming – green house gases – physiological effects on crops - Carbon Sequestration.

PRACTICAL – LIST OF PRACTICAL SCHEDULE

1.	Preparation of solutions.	**2.5**
2.	Study of leaf epidermal, xylem and phloem cells	**2.5**
3.	Determination of stomatal index and stomatal frequency	**2.5**
4.	Measurement of plant water potential	**2.5**
5.	Measurement of water imbibition by seed mass test	**2.5**
6.	Estimation of photosynthetic pigments	**2.5**
7.	Determination of photosynthetic efficiency in crops	**2.5**
8.	Measurement of transpiration and photosynthesis by IRGA	**2.5**
9.	Diagnosis of nutritional and physiological disorders in crops	**2.5**
10.	Rapid tissue test for mineral nutrients	**2.5**
11.	Estimation of relative water content	**2.5**
12.	Measurement of osmosis and plasmolysis	**2.5**
13.	Growth Analysis	**2.5**
14.	Bioassay for gibberellin and cytokinin	**2.5**
15.	Estimation of chlorophyll stability index	**2.5**
16.	Estimation of proline content	**2.5**

REFERENCES:

1. Salisbury F.B. and C.W.Ross., 1992 (Fourth Edition). Plant Physiology. Publishers: Wadsworth Publishing Company, Belmont, California, USA.
2. Boominathan P., R. Sivakumar, A. Senthil, and D. Vijayalakshmi. 2014. Introduction to Plant
3. Physiology, A.E. Publications. Coimbatore
4. Jain, V.K. 2007. Fundamentals of plant physiology, S.Chand& Company Ltd., New Delhi.
5. Taiz. L. and Zeiger. E., 2015 (Sixth edition). Plant Physiology and Development. Publishers: Sinauer Associates, Inc., Massachusetts, USA.

E – REFERENCES:

1. http://www.plantphys.org
2. http://www. Biologie. Uni-hamburg. de/b-online
3. http://6e.plantphys.net

COURSE OUTCOMES (COs)	
CO1	Define the basics aspects of various functions and processes related to crop productivity
CO2	Classify the mineral nutrient deficiencies and their symptoms
CO3	Investigate about the various plant growth regulators, competent in enzyme assays and environmental stresses.
CO4	Examine the hands-on exposure to preparation of solutions, analysis of pigment composition, estimation of growth analytical parameters and the nutrient deficiencies in crops
CO5	In addition, hands on exposure to preparation of solutions, analysis of pigment

	composition, estimation of growth analytical parameters.
CO6	Perform skillfully to diagnose nutrient deficiencies in crop and ameliorate them and will be competent in enzyme assays and applications of plant growth regulators.

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	**COs/POs**	**PO1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**PSO1**	**PSO2**	**PSO3**
2	**CO1**	3	-	-	-	1	2	3	-	-	-	-	-	2	–	-
	CO2	3	2	1	-	3	2	3	-	-	-	-	-	2	-	-
	CO3	3	-	-	-	3	2	3	-	-	-	-	-	2	-	-
	CO4	3	-	-	-	3	2	3	-	-	-	-	-	2	-	-
	CO5	3	2	2	-	2	1	2	-	-	-	-	3	2	-	-
	CO6	3	2	-	-	3	3	3	-	-	-	-	3	1	-	-
3	**Category**	ProfessionalCore (PC)														
4	**Approval**	Academic Council, Aug 2018														

Subject Code : U18AAEC101	FUNDAMENTALS OF AGRICULTURAL ECONOMICS	L	T	P	C
	Total Contact Hours – 56	1	0	1	2
	Prerequisite course	Higher Secondary Maths and Economics			
	Course Coordinator Name & Department	Dr.R. Thulasiram, School of Agricultural sciences			
COURSE OBJECTIVES:-	To study the basic micro and macro-economic principles, economic theories applied to agriculture and its role in Indian Economy				

THEORY

UNIT I:NATURE AND SCOPE OF ECONOMICS **3**

Economics: Meaning, scope and subject matter, definitions, activities, approaches to economic analysis; micro and macroeconomics, positive and normative analysis. Nature of economic theory; rationality assumption, concept of equilibrium, economic laws as generalization of human behavior. Basic concepts: Goods and services, classification and characteristics, desire, want - meaning and characteristics, demand, utility, cost and price, wealth, capital, income and welfare. Agricultural economics: meaning, definition, characteristics of agriculture, importance and its role in economic development. Agricultural planning and development in the country.

UNIT II: THEORY OF CONSUMPTION **3**

Demand: meaning, kinds of demand, law of demand, demand schedule and demand curve, determinants; *Utility theory* - cardinal and ordinal utility; law of diminishing marginal utility, equi-marginal utility principle, Indifference curve analysis and properties - budget line: definition, assumptions, limitations and applications - consumer's equilibrium and derivation of demand curve. Concept of consumer surplus and its importance. *Elasticity of demand*: concept and measurement of price elasticity, income elasticity and cross elasticity. Factors influencing elasticity of demand - Importance of elasticity of demand – Standard of Living: Definition, Engel's Law of Family Expenditure.

UNIT III:THEORY OF PRODUCTION **3**

Production: process, creation of utility, factors of production definition and characteristics - Input Output Relationship. *Laws of returns*: Law of variable proportions and Law of returns to scale. *Cost:* Cost concepts, short run and long run cost curves. *Supply:* Stock versus supply, law of supply, supply schedule, supply curve, determinants of supply, elasticity of supply.

UNIT IV: EXCHANGE AND THEORY OF DISTRIBUTION **3**

Market structure: meaning and types of market, basic features of perfectly competitive and imperfect markets. Price determination under perfect competition; short run and long run equilibrium of firm and industry, shut down and break-even points. *Distribution theory*: meaning, factor market and pricing of factors of production - Concepts of Rent and Quasi rent - *Wages:* Real wage and money wage - *Interest:* Pure interest and gross interest – *Profit:* Meaning of economic profit.

UNITV:MACROECONOMIC CONCEPTS **4**

National income: Meaning and importance, circular flow, concepts of national income - accounting and approaches to measurement, difficulties in measurement. *Population:* Importance, Malthusian and Optimum population theories, natural and socio-economic determinants, current policies and programmes on population control. *Money:* Barter system of exchange and its problems, evolution,

meaning and functions of money, classification of money, money supply, general price index, inflation and deflation. *Banking:* Role in modern economy, types of banks, functions of commercial and central bank, credit creation policy. *Agricultural and public finance:* meaning, micro versus macro finance, need for agricultural finance, public revenue and public expenditure. *Tax:* meaning, direct and indirect taxes, agricultural taxation, VAT and GST. *Economic systems:* Concepts of economy and its functions, important features of capitalistic, socialistic and mixed economies, elements of economic planning.

PRACTICAL – LIST OF PRACTICAL SCHEDULE

1.	Law of Diminishing Marginal Utility.	**2.5**
2.	Law of Equi - Marginal Utility.	**2.5**
3.	Indifference Curve analysis - Properties, budget line and consumer equilibrium.	**2.5**
4.	Individual and market demand - Graphical derivation of individual and market demand	**2.5**
5.	Measurement of Arc and Point elasticities of demand – own price, income and cross price elasticities of demand	**2.5**
6.	Estimation of Consumer surplus.	**2.5**
7.	Law of Diminishing Marginal Returns: Relationship among TPP, APP and MPP.	**2.5**
8.	Cost concepts and graphical derivation of cost curves.	**2.5**
9.	Estimation of total revenue and profit.	**2.5**
10.	Estimation of Producer surplus.	**2.5**
11.	Estimation of Supply elasticity.	**2.5**
12.	Exchange: Market Structure and Price determination.	**2.5**
13.	Computation of National Income – Analysis of Trends in National Income - Study of structural changes in the economy.	**2.5**
14.	Estimation of Growth rate of population and Food grain production.	**2.5**
15.	Money: Quantity theory of money.	**2.5**
16.	Measures of standard of living – Human Development Index -Physical Quality of Life Index – Gender Development Index	**2.5**

TEXT BOOKS:

1. Reddy S S ,Raghuram.PNeelakantaSastry,T.VBhavaniDevi,I. 2009. Agricultural Economics. 2Ed Published by Oxford & IBH Publishing Co. Pvt. Ltd. New Delhi.
2. Samuelson, P. 2004. Economics, (18/e), Tata Mc-graw-Hill, New Delhi
3. Seth, M. L. 2005.Principles of Economics, Lakshmi NarainAgarwal Co., Agra. New Delhi.
4. Edwin Griswold Nourse. 2017.Agricultural Economics: A Selection of Materials in Which Economic Principles Are Applied to the Practice of Agriculture.CHIZINE PUBN. Canada.
5. Thomas Sowell. 2010. Basic Economics 4th Edition: A Common Sense Guide to the Economy. Blackstone Audio, Inc., Unabridged edition.USA

REFERENCES:

1. Ahuja.H.L. 2016. Macro Economics Theory and Policy. 20 thed, S. Chand and Company Limited, New Delhi.
2. Dewett, K.K and Navalur, M.H. 2013. Modern Economic Theory. S. Chand & Sons, New Delhi.
3. Dewett, K.K.andVerma. 2004. Elementary Economic Theory. S.Chand, New Delhi
4. Jhingam, M.L.2001. Micro Economic Theory. Konark publishers, NewDelhi

E- REFERENCES

1. https://www.agrimoon.com /principles-of-agricultural-economics-pdf-book/
2. https://ecourses.icar.gov.in /e-Leaarningdownload3_new.aspx?Degree_Id=01

3. https://agritech.tnau.ac.in
4. https://eagri.org

COURSE OUTCOMES (COs)	
CO1	To study micro and macroeconomic theories
CO2	To Understand the application of theories on agriculture
CO3	To Gain knowledge on fundamental concepts about factors of production.
CO4	To understand the characteristic features of market structures
CO5	To study thetheory of macro and welfare economics.
CO6	To integrate Agri-economics knowledge with real time applications

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	COs/POs	PO1	2	3	4	5	6	7	8	9	10	11	12	PSO1	PSO2	PSO3
2	**CO1**	-	-	-	2	-	-	1	1	1	1	-	3	-	2	-
	CO2	-	-	-	1	-	-	-	-	-	-	-	-	-	2	1
	CO3	1	-	-	1	-	-	-	-	-	-	-	1	1	1	1
	CO4	-	-	-	3	-	-	2	-	3	-	-	2	-	-	-
	CO5	-	-	-	-	-	-	-	-	2	-	-	3	-	-	-
	CO6	-	-	-	2	-	-	1	-	-	-	3	3	1	1	1
3	**Category**	Allied Sciences (AS)														
4	**Approval**	Academic Council, Aug 2018														

Subject Code : U18CAGM101	FUNDAMENTALS OF MICROBIOLOGY	L	T	P	C
	Total Contact Hours – 72	2	0	1	3
	Prerequisite course	Basic knowledge in Intermediate Course			
	Course Coordinator Name & Department	Mr. B. Suriya Sabarinath School of Agricultural Sciences			
COURSE OBJECTIVES:-	• To enable better understanding of students about the various groups of microorganisms. • To familiarize students with the basic laboratory techniques, instruments and equipment use in the field of microbiology. • To develop experimental skills, such as handling,culturing & maintenance of Microorganisms.				

THEORY

UNIT I : INTRODUCTION **6**

Definition and scope of Microbiology. Milestones in Microbiology; biogenesis and abiogenesis theory; contributions of Antonie Van Leeuwenhoek, Louis Pasteur, John Tyndall, Robert Koch, Edward Jenner, Joseph Lister, Alexander Fleming and Waksman. Germ theory of diseases and fermentation.

UNIT II : MICROBIOLOGICAL TECHNIQUES **7**

General principles of light microscopy - magnification, resolving power and numerical aperture. Different types of light and electron microscopes; three-dimensional imaging - Atomic force and Confocal scanning laser microscopy. Staining techniques - principle and types of stains; simple, negative, differential and structural staining. Sterilization and disinfection techniques; principles and methods of sterilization - physical methods – heat, filters and radiation; chemical methods. Isolation, enrichment and purification techniques of bacteria, yeast, molds and actinobacteria. Preservation of microbial cultures.

UNIT III : MICROBIAL WORLD **7**

Evolutionary relationship among the living organisms. Whittaker's five kingdom concept of living organism and Carl Woesesystems.Procaryotic and eukaryotic microorganisms. Three domains of life – similarities and differences; Modern approach to the bacterial systematics. Bergey's Manual of Systematic Bacteriology. Bacteria - bacterial size, shape and arrangement; bacterial cell structure and function.Morphology of fungi and algae. General properties of viruses: different types; overview of bacteriophages; morphology of bacteriophages: Lytic and lysogenic cycles; lytic and temperate phages.

UNIT IV: MICROBIAL GROWTH AND METABOLISM **6**

Bacterial growth- population growth- growth cycles of population; environment on growth – temperature, oxygen, pH and salts; nutritional classification – chemoautotrophy and photo autotroph. Energy generation in bacteria.Aerobic and anaerobic respiration and fermentation in bacteria.

UNIT V : MICROBIAL GENETICS AND IMMUNOLOGY **6**

Central dogma of life. Genetic elements of bacteria; bacterial chromosomal DNA, plasmids, IS elements and transposons; Mutation - types and mutagens. Genetic recombination's; transformation, transduction and conjugation.Genetic engineering – an introduction.Basic concepts of immunology – antigen – antibody reactions and vaccines

PRACTICAL – LIST OF PRACTICAL SCHEDULE

1.	Safety in Microbiology laboratory. Microscopes – handling light microscope	**2.5**
2.	Micrometry-measurement of microorganisms	**2.5**
3.	Aseptic techniques – working with equipment and apparatus	**2.5**
4.	Preparation of growth media for bacteria, yeast, molds and actinobacteria	**2.5**
5.	Isolation of microorganisms by serial dilution and plating technique	**2.5**
6.	Purification of bacteria and actinobacteria	**2.5**
7.	Purification of yeasts and molds	**2.5**
8.	Preservation of bacteria, fungi and actinobacteria	**2.5**
9.	Staining techniques - positive and negative staining	**2.5**
10.	Differential staining - Gram staining	**2.5**
11.	Turbidometric assessment of growth of bacteria	**2.5**
12.	Morphological characteristics of bacteria and actinobacteria	**2.5**
13.	Biochemical characteristics of bacteria and actinobacteria	**2.5**
14.	Identification of yeasts, molds and algae - morphological characterization	**2.5**
15.	Isolation of bacteriophages	**2.5**
16.	Isolation of bacterial mutants by UV irradiation / chemical mutagenesis	**2.5**

TEXT BOOKS:

1. Michael T. Madigan , Kelly S. Bender Daniel H. Buckley , W. Matthew Sattley, David A. Stahl 2017. Brock Biology of Microorganisms, 15th edition
2. ebook.:Prescott, Harley and Klein, 2013. Microbiology, 9 th edition, McGraw Hill Publishing
3. ebook: Michael J. Leboffee and Burton E.Pierce 2011. A photographic Atlas for the Microbiology Laboratory 4th edition, Marton Publishing Company

REFERENCES:

1. Hans G. Schlegel, 2012. General Microbiology, 7 th edition
2. Ronald M. Atlas, 1997. Principles of Microbiology, Second edition
3. Tortora, G.J., B.R.Funke and C.L. Case, 2009. Microbiology- An Introduction, 9 th edition
4. Stanier, R.Y., Adelberg, E.A. and Ingram, J.L. (1991). General Microbiology, 5th Ed., Prentice Hall of India Pvt. Ltd., New Delhi.

E- REFERENCES:

1. http://www.microbes.info
2. http://aem.asm.org
3. http://microbelibrary.com
4. http://www.rapidmicrobiology.com

COURSE OUTCOMES (COs)	
CO1	Understand about the historical developments and contributions of some scientist in the field of microbiology.
CO2	Impart knowledge to the students about the basic and applied aspects of understanding and exploitation of microorganisms for the welfare of human kind.
CO3	Students expose practical hands-on experience in the basic skills employed in microbiological laboratories, which will equal them to carryout independent research in microbiological/ biotechnology in feature
CO4	Students thoroughly exposed to modern approaches in classification, nutrition, cytology, cultivation, purification and preservation of microorganisms.
CO5	Students know about the microbial growth such as phases of growth, growth cycle in various environments and metabolic activities of microorganisms.

CO6	Students gain knowledge on biotechnological principle like genetic recombination, mutation and Immunological science such as role of antigen, antibodies and development of vaccines

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	COs/POs	PO1	2	3	4	5	6	7	8	9	10	11	12	PSO1	PSO2	PSO3
2	**CO1**	3	-	-	2	2	1	2	1	-	-	-	-	2	–	-
	CO2	3	-	-	-	3	2	3	-	-	-	-	2	2	-	-
	CO3	3	-	-	-	3	2	3	-	-	-	-	2	2	-	-
	CO4	3	-	-	-	3	2	3	-	-	-	-	1	2	-	-
	CO5	3	-	-	-	2	1	2	-	-	-	-	1	2	-	-
	CO6	3	-	-	-	3	3	3	-	-	-	-	2	2	-	-
3	**Category**	Allied Sciences (AS)														
4	**Approval**	Academic Council, Aug 2018														

Subject Code : U18AAEX 102	FUNDAMENTALS OF AGRICULTURAL EXTENSION EDUCATION	L	T	P	C
	Total Contact Hours – 72	2	0	1	3
	Prerequisite course: Rural Sociology and Educational Psychology				
	Course Coordinator Name & Department: Dr.R.Thulasiram, School of Agricultural sciences				
COURSE OBJECTIVES:-	This course intends to expose students to the fundamentals of extension education, extension systems in India, programme planning and rural development efforts and extension administration.				

THEORY

UNIT I :EXTENSION EDUCATION AND PROGRAMME PLANNING 4

Education- meaning, definition & types; extension education –meaning, definition, scope and process; objectives and principles of extension education. Programme planning – definition, meaning, process, principles and steps in programme development.

UNIT II :EXTENSION SYSTEM IN INDIA 5

Extension efforts in pre-independence era (Sriniketan, Marthandam, Firka Development scheme, Gurgaon Experiment, etc.) Post – independence era (Etawah pilot project, Nilokheri Experiment, etc.,) Various extension/ agricultural development programmes launched by ICAR/Govt. of India(IADP, IAAP, HYVP,KVK, ORP, ND, NATP, NAIP etc.,).

UNIT III :RURAL DEVELOPMENT, ADMINISTRATION, MONITORING AND EVALUATION 7

Rural Development –Concept, meaning, definition: various rural development programmes launched by Govt. of India. Community development –meaning, definition, concepts and principles, physiology of community development. Rural leadership: concept and definition, types of leaders in rural context: extension administration: meaning, concept, principles and functions. Monitoring and evaluation: concept and definition, monitoring and evaluation of extension programmes.

UNIT IV :NEW TRENDS IN AGRICULTURAL EXTENSION 8

New trends in agricultural extension **–**Privatization of extension, Cyber extension/ E-extension, (Internet, cyber cafes, video and teleconferencing, Interactive Multimedia Compact disk (IMCD), Agri portals, Information Kiosks, Kisan Call Centre (KCC), Mobile phone, Village Knowledge Centre (VKC), DEMIC, Geographical Information System (GIS), market led extension, farmer led extension, expert systems etc.,

UNIT V :TRANSFER OF TECHNOLOGY, DIFFUSION OF INNOVATIONS AND EXTENSION METHODS 8

Transfer of technology concept, models, capacity building of extension personnel, extension teaching methods: meaning, classification, individual, group and mass contact methods, media mix strategies: communication: meaning, definition, models elements, characteristics and barriers to communication Agricultural Journalism: Agricultural journalism (Print media) - definition, principles, importance, ABC of news, types of news. Diffusion of Innovations – definition, elements; Innovation – definition, attributes; Adoption – meaning, steps in adoption process, adopter categories,factors influencing adoption of innovations; process and stages of adoption, adopter categories.

PRACTICAL – LIST OF PRACTICAL SCHEDULE

1.	Visit to State department of Agri/ Horti to understand the organizational setup, roles, functions and various schemes.	**2.5**
2.	Study the organizational set up and functions of DRDA.	**2.5**
3.	Visit to NGO and learning from their experience in rural development	**2.5**
4.	Visit to KVK to study the mandated activities	**2.5**
5.	To study the ToT system of SAUs / Agricultural colleges	**2.5**
6.	Exercise on practicing group discussion technique and presentation skills	**2.5**
7.	Study on Art of Photography, Video techniques and preparing multimedia presentations and handling of AV aids and LCD projectors	**2.5**
8.	Preparation of Posters, charts, leaflet, folder, booklet and Pamphlet	**2.5**
9.	Preparation of news stories and success stories.	**2.5**
10.	Exercise on practicing Art of Public Speaking (micro teaching skills)	**2.5**
11.	To visit the village and understand the socio cultural and agricultural related problems being encountered by the villagers/ farmers	**2.5**
12.	Practicing selected PRA techniques in a village setting	**2.5**
13.	Visit to Community Radio/ Educational Media Centre to understand the process of programme production.	**2.5**
14.	Exercise on Script writing for Radio and TV programme	**2.5**
15.	Visit to All India Radio Station / TV to study the various activities &programmes	**2.5**
16.	Visit to the News Agency /TNAU press to study the process	**2.5**

TEXT BOOKS:

1. Ahuja, B.N. 1997. Theory and Practice of Journalism, Surjeet Publications, New Delhi.
2. Benor Daniel, Q. James Harrison and Baxter Michael. 1984. Agricultural Extension – The Training and Visit System, A World Bank Publication, Washington, USA.
3. ChauhanNikulsinh. 2013. Use of ICTs in Agricultural Extension, Biotech Books.
4. Satyanarayana, G. and S, M.H. 2012. Rural Development and Poverty Alleviation in India: Policies and Programmes. New Century Publications. India.
5. Gupta, K.R. 2010. Rural Development in India. Atlantic. India.

REFERENCES:

1. Gamble Dennis, Blunden, S. and Wallace, G. 2000. A Systematic Framework for understanding and Improving a Farming or Equine System, (AgPak SA 22), University of Western Sydney, Hawkesbury, NSW, Australia.
2. Hough George, A. 2004. News Writing. Kanishka Publishers, New Delhi.
3. Dahama, O.P and O.P. Bhatnagar. 1985. Education and Communication for Development, Oxford & IBH Publishing Co. Pvt. Ltd., New Delhi.

COURSE OUTCOMES (COs)	
CO1	To impart knowledge to the students on extension education and development programmes offered in India
CO2	To acquire knowledge on extension systems in India
CO3	To provide opportunity to students to visit organizations involved in extension activities
CO4	To gain knowledge on transfer of technology and innovations towards agricultural development
CO5	To enable students to develop practical skills on preparation of extension teaching methods to survey farmers
CO6	To disseminate information and technology through audio visual aids

Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low																
1	**COs/POs**	**PO1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**PSO1**	**PSO2**	**PSO3**
2	**CO1**	-	-	-	1	-	-	-	-	-	-	-	1	-	-	2
	CO2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
	CO3	2	1	-	1	-	-	-	-	-	-	1	-	-	-	2
	CO4	2	1	1	-	2	-	-	1	-	1	-	1	-	-	1
	CO5	-	2	2	3	2	-	-	2	1	3	3	3	-	-	2
	CO6	-	1	1	2	3	1	-	-	1	3	-	3	-	-	1
3	**Category**	Allied Sciences (AS)														
4	**Approval**	Academic Council, Aug 2018														

Subject Code : U18AFSN111	PRINCIPLES OF FOOD SCIENCE AND NUTRITION	L	T	P	C
	Total Contact Hours – 56	1	0	1	2
	Prerequisite course: Basic Biology				
	Course Coordinator Name & Department: Dr.M. Dhivya, School of Agricultural Sciences				

COURSE OBJECTIVES:-

- To impart knowledge about the importance, metabolism, functions and sources of all the nutrients
- To impart hands on experience to analyze the food biochemically and identification of food adulterants.

THEORY

UNIT I: PRINCIPLES OF FOOD SCIENCE AND NUTRITION 2

Food Science - definition – classification of foods – functional and nutritional classification. Food groups and food pyramid. Methods of cooking - moist, dry and microwave - principles, merits and demerits. Importance and scope of nutrition – relation of nutrition to health.

UNIT II :CARBOHYDRATE, PROTEIN AND FAT 4

Carbohydrate – classification, functions, digestion and absorption, sources and Recommended Dietary allowance (RDA). Energy value of foods – determination. Protein – classification, functions digestion and absorption, sources and requirements. Protein quality of foods – supplementary value of protein. Fat - classification functions, digestion and absorption, sources and requirements. Rancidity – types of rancidity and prevention. Deficiency states of protein, carbohydrate and fat nutrition – signs and symptoms.

UNIT III:VITAMIN AND MINERAL NUTRITION 4

Fat Soluble vitamins – A, D, E and K- functions, sources, requirements and deficiency. Water soluble vitamins – thiamine , riboflavin , niacin, pyridoxine, folic acid, cyanacobalamin, biotin, pantothenic acid ascorbic acid – functions, sources, deficiency and requirements. Minerals - calcium, iron, phosphorus, iodine, magnesium, zinc, sodium, potassium, fluorine and chlorine – functions, sources, deficiency and requirements. Importance of water – maintenance of electrolyte balance. Dietary fibre - importance, health benefits, sources and requirements.

UNIT IV :FOOD PRESERVATION AND PROCESSING 3

Introduction – preservation by sugar - processing of jam, squash, jelly, marmalade and beverages. Preservation by using salt, chemicals, dehydration technology, canning technology, preservation by low temperature and irradiation techniques. Processing of puffed, flaked and extruded products. Quality control of raw and processed products.

UNIT V:FOOD QUALITY AND SAFETY 3

Food packaging materials – requirements – methods – nutrition labeling. Food adulterants and their detection methods. Food laws and regulations and quality control standards - FSSAI, ISO, EU standards, FDA, HACCP and Codex Alimentarius Commission.

PRACTICAL – LIST OF PRACTICAL SCHEDULE

1. Cooking tests for cereals and pulses **2.5**
2. Determination of energy value of food **2.5**
3. Estimation of moisture **2.5**
4. Estimation of protein **2.5**
5. Estimation of fat **2.5**

6.	Estimation of ascorbic acid	**2.5**
7.	Estimation of iron	**2.5**
8.	Estimation of crude fibre	**2.5**
9.	Processing of jam and jelly	**2.5**
10.	. Processing of squash and RTS	**2.5**
11.	. Puffing of pulses	**2.5**
12.	. Extrusion of cereals and millets	**2.5**
13.	. Canning of fruits and vegetables	**2.5**
14.	. Processing of dehydrated fruits and vegetables	**2.5**
15.	. Identification of common food adulterants	**2.5**
16.	. Visit to food processing unit and quality control lab	**2.5**

TEXT BOOKS:

1. Srilakshmi, B. 2005. Food Science. New Age International (P) Ltd., Publishers, New Delhi.
2. Srivastava, R.P., and Sanjeevkumar. S. 2013. Fruit and Vegetable preservation. International Book Distributing Co. Lucknow.
3. Srilakshmi .B. 2015. Nutrition Science. New Age International Pvt. Ltd. New Delhi.

REFERENCES:

1. William C Frazier, Dennis C Westhoff and N M Vanitha. 2013. McGraw Hill education (India) Pvt. Ltd.
2. Avantina Sharma. 2017. Text book of food science and technology. 2nd edition, CBS Publishers & Distributors Pvt. Ltd, New Delhi.

JOURNALS

1. The Indian Journal of Nutrition and Dietetics
2. Journal of Food Science and Technology
3. Critical Reviews of Food Science and Nutrition

E-REFERENCES

1. www.cellinteractive.com
2. www.nutrition.org.uk
3. www.fnic.nal.usda.gov
4. www.myfooddiary.com

COURSE OUTCOMES (COs)	
CO1	Learn about the importance of food science and nutrition
CO2	Acquire wide knowledge on metabolism and functions of carbohydrates, protein and fat
CO3	Acquire wide knowledge on metabolism and functions of vitamins and minerals
CO4	Gain knowledge on food preservation techniques and processing methods
CO5	Comprehend food regulatory laws and quality standards
CO6	Analyze foods biochemically and identify the food adulterants

Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low																
1	**COs/POs**	**PO1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**PSO1**	**PSO2**	**PSO3**
2	**CO1**	3	-	-	-	-	-	3	-	-	-	-	1	1	-	-
	CO2	2	2	2	-	3	-	2	-	-	-	-	3	2	2	-
	CO3	3	1	3	-	2	-	3	-	-	-	-	2	2	1	-
	CO4	3	3	1	-	2	-	2	-	-	-	-	3	2	1	-
	CO5	3	2	2	-	2	-	3	-	-	-	-	2	2	2	1
	CO6	2	-	3	-	3	-	3	-	-	-	-	2	-	-	-
3	**Category**	Allied Sciences (AS)														
4	**Approval**	Academic Council, Aug 2018														

Subject Code : U18CAGR102	INTRODUCTORY TO AGRO METEOROLOGY AND CLIMATE CHANGE	L	T	P	C
	Total Contact Hours – 56	1	0	1	2
	Prerequisite course: Fundamentals of Agronomy and Agricultural heritage				
	Course Coordinator Name & Department: Dr. V. Prakash, School of Agriculture Sciences				

COURSE OBJECTIVES:-

1. To know about the basic idea about the agro meteorology and agroclimatology
2. To get the knowledge about various weather phenomenon
3. To know about the rainfall pattern and practical knowledge about using various agro meteorology instruments on crop production

THEORY

UNIT I:CLIMATE AND WEATHER **4**

Meteorology - Agricultural Meteorology - Importance and scope in crop production - Co-ordinates of India and Tamil Nadu - Atmosphere - Composition and vertical layers of atmosphere (stratification) - Climate - Weather - Factors affecting climate and weather - Climatic types - Different agricultural seasons of India and Tamil Nadu and climatic characteristics of India.

UNIT II :SOLAR RADIATION, RH AND WIND **4**

Solar radiation - Light intensity, quality, direction and duration - Air and Soil temperature - Diurnal variation - importance in crop production. Heat unit and its importance in agriculture. Relative Humidity and its importance - vapor pressure deficit and its importance - Wind and its effect on crops.

UNIT III :ATMOSPHERIC PRESSURE AND PRECIPITATION **4**

Atmospheric pressure - cyclones, anticyclones, tornado, hurricane and storms - Wind systems of the world -. Clouds - types and their classification. Precipitation - forms - monsoon - Seasons of India- rainfall variability drought, flood and their effect - Cloud seeding - Evaporation - transpiration - Evapotranspiration - PET.

UNIT IV :AGROCLIMATIC ZONES AND REMOTE SENSING **2**

Agro climatic Zones of India and Tamil Nadu - Agro climatic normals - Weather forecasting - synoptic chart - crop weather calendar - Remote sensing - Impact of climate and weather on crop production and pest and diseases.

UNIT V :CLIMATE CHANGE **2**

Climate change- climate variability - definition and causes of climate change - Impact of climate change on Agriculture.

PRACTICAL – LIST OF PRACTICAL SCHEDULE

1. Site selection and layout for Agromet Observatory - Calculation of local time - Time of observation of different weather elements - Reviewing agromet registers. **2.5**
2. Measurements of solar radiation (pyranometers), sunshine hours (sunshine recorder) - working out weekly and monthly mean for graphical representation. **2.5**
3. Measurement of air and soil temperature and grass minimum thermometers and thermographs - drawing isolines. **2.5**
4. Humidity measurements - use of wet and dry bulb thermometers - Psychrometers - Hygrograph - Measurement of wind direction and wind speed and conversion (KMPH, **2.5**

	KNOT, and M/Sec.) - Beaufort's scale.	
5.	Measurement of atmospheric pressure - barograph - Fortein-s barometer - Isobars based on past data for different seasons.	**2.5**
6.	Measurement of rainfall - Ordinary and self-recording rain gauges - Measurement of Dew - dew gauge- study of Automatic weather station.	**2.5**
7.	Measurement of Evaporation - Open pan evaporimeter- application of evaporation data-Measurement of Evapotranspiration- Lysimeter.	**2.5**
8.	Heat Unit concept- GDD, HTU, PTU for fixing time of sowing.	**2.5**
9.	Probability analysis of rainfall for crop planning.	**2.5**
10.	Drawing Synoptic charts for understanding weather.	**2.5**
11.	Preparation of crop weather calendars and forecast based agro advisories.	**2.5**
12.	Preparation pest weather calendar and pest forewarning.	**2.5**
13.	Estimation of length of growing periods using weekly rainfall data.	**2.5**
14.	Water balance studies.	**2.5**
15.	Identification of efficient cropping zone- RYI, RSI.	**2.5**
16.	Mapping of agro climatic Zones of India and Tamil Nadu and its characterization	**2.5**

TEXT BOOK:

1. Reddy, S.R. 2014. Introduction to Agriculture and Agrometeorology. Kalyani Publishers, NewDelhi. Patra, A.K. 2016. Principles and applications of Agricultural Meteorology. New India Publishing Agency, New Delhi
2. Smith, J.W. 2013. Agricultural meteorology. Axis Books (India), Jodhpur
3. Rao, P.2008. Agricultural Meteorology. Prentice Hall of India Pvt. Ltd, New Delhi
4. Murthy, R.V. 2002. Basic Principles of Agricultural Meteorology. BS Publications, Hyderabad
5. Singh, J. 2014. Textbook of Agricultural meteorology. Oxford Book Company, New Delhi

REFERENCES:

1. Mavi, H.S., 1996. Introduction to Agrometeorology, oxford and IBH Publishing Co., New Delhi. Gopalaswamy, N. 1994. Agricultural Meteorology, Rawat publications, Jaipur. Prasad, Reddy, S.R. and Reddy, D.S. 2014. Agro meteorology. Kalyani Publishers, New Delhi.
2. Rao, G.S.L.H.V. 2005. Agricultural Meteorology. Kerala Agricultural University Press, Thrissur.

E- REFERENCES:

1. www.tawn.tnau.ac.in
2. www.usbr.gov/pn/agri.met
3. www.imd.gov.in

COURSE OUTCOMES (COs)	
CO1	To know about the importance of agricultural meteorology and its impact on crop production and seasons and monsoons in India
CO2	It gives knowledge about various weather factors and its effect on crops
CO3	It deals with different atmospheric pressure systems ,wind systems of the world
CO4	It gives information about various agroclimatic zones of India and Tamil Nadu
CO5	Weather forecasting and impact of climate and weather on crop production
CO6	Climate variability ,causes of climate change

Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low																
1	**COs/POs**	**PO1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**PSO1**	**PSO2**	**PSO3**
2	**CO1**	1	1	1	-	3	-	2	-	-	-	-	-	1	-	3
	CO2	1	1	1	-	3	-	2	-	-	-	-	-	1	-	3
	CO3	1	1	1	-	3	-	2	-	-	-	-	-	1	-	3
	CO4	1	1	1	-	3	-	2	-	-	-	-	-	1	-	3
	CO5	1	1	1	-	3	-	2	-	-	-	-	-	1	-	3
	CO6	1	1	1	-	3	-	2	-	-	-	-	-	1	-	3
3	**Category**	ProfessionalCore (PC)														
4	**Approval**	Academic Council, Aug 2018														

Subject Code : U18CHOR112	PRODUCTION TECHNOLOGY FOR FRUIT AND PLANTATION CROPS	L	T	P	C
	Total Contact Hours – 56	1	0	1	1
	Prerequisite course: Fundamentals of Horticulture				
	Course Coordinator Name & Department: Dr.M. Dhivya, School of Agricultural Sciences				

COURSE OBJECTIVES:-

- To impart wide knowledge on the production technology of tropical, sub-tropical, temperate fruit and plantation crops.
- To impart hands on experience on the propagation techniques and processing techniques of fruit and plantation crops

THEORY

UNIT I :PRODUCTION STATUS OF FRUIT AND PLANTATION CROPS 2

Importance and scope of fruit and plantation crop industry in India – nutritional value of fruit crops - classification of fruit crops – area, production, productivity and export potential of fruit and plantation crops.

UNIT II :CROP PRODUCTION TECHNIQUES IN TROPICAL FRUIT CROPS 4

Climate and soil requirements – varieties – propagation and use of rootstocks- planting density and systems of planting - High density and ultra high density planting - cropping systems - after care - training and pruning - water, nutrient and weed management –fertigation - special horticultural techniques - plant growth regulation - important disorders – maturity indices and harvest- value addition.

Fruit crops: Mango, Banana, Papaya, Guava, Sapota

UNIT III :CROP PRODUCTION TECHNIQUES IN SUBTROPICAL FRUIT CROPS 4

Climate and soil requirements – varieties – propagation and use of rootstocks- planting density and systems of planting - High density and ultra high density planting - cropping systems - after care - training and pruning - water, nutrient and weed management – fertigation - special horticultural techniques - plant growth regulation - important disorders – maturity indices and harvest and value addition.

Fruit crops: Citrus, Grape, Litchi, Pineapple, Pomegranate, Jackfruit and Minor Fruits

UNIT IV:CROP PRODUCTION TECHNIQUES TEMPERATE FRUIT CROPS 2

Climate and soil requirements – varieties – propagation and use of rootstocks - planting density and systems of planting -High density and ultra high density planting -cropping systems - after care - training and pruning - water, nutrient and weed management –fertigation - special horticultural techniques - plant growth regulation - important disorders – maturity indices and harvest and value addition.

Fruit crops: Apple, Pear, peach, Strawberry, Nut crops.

UNIT V :CROP PRODUCTION TECHNIQUES IN PALMS AND PLANTATION CROPS 4

Climate and soil requirements - varieties - propagation - nursery management - planting and - planting systems - cropping systems - after care - water, nutrient and weed management - intercropping - multi-tier cropping system - mulching - special horticultural practices - maturity indices, harvest and yield - pests and diseases - processing - value addition

Palms: Coconut, Arecanut, Oil palm and Palmyrah

Climate and soil requirements - varieties- propagation - nursery management - planting and planting systems - cropping systems- after care- training and pruning - water, nutrient and weed management - shade management - intercropping - mulching - cover cropping - special horticultural practices -

maturity indices, harvest and yield - pests and diseases - processing - value addition.
Plantation crops: Tea, Coffee, Cocoa, Cashew, Rubber

PRACTICAL – LIST OF PRACTICAL SCHEDULE

1.	Propagation techniques, selection of planting material, varieties, important cultural practices for **Mango**	**2.5**
2.	Propagation techniques, selection of planting material, varieties, important cultural practices for **Banana**	**2.5**
3.	Propagation techniques, selection of planting material, varieties, important cultural practices for **Papaya**	**2.5**
4.	Propagation techniques, selection of planting material, varieties, important cultural practices for **Guava**	**2.5**
5.	Propagation techniques, selection of planting material, varieties, important cultural practices for **Sapota**	**2.5**
6.	Propagation techniques, selection of planting material, varieties, important cultural practices for **Grapes**	**2.5**
7.	Propagation techniques, selection of planting material, varieties, important cultural practices for **Citrus (Mandarin and acid lime)**	**2.5**
8.	Propagation techniques, selection of planting material, varieties, important cultural practices for **Pomegranate**	**2.5**
9.	Propagation techniques, selection of planting material, varieties, important cultural practices for **Jackfruit**	**2.5**
10.	Preparation and application of PGR's for propagation.	**2.5**
11.	Micro propagation, protocol for mass multiplication and hardening of fruit crops.	**2.5**
12.	Identification and description of varieties - mother palm and seed nut selection - nursery practices- seedling selection – fertilizers - application - nutritional disorders - pests and diseases of **Coconut**	**2.5**
13.	Identification and description of varieties - mother palm and seed nut selection- nursery practices- fertilizers - application - nutritional disorders - pests and diseases of **Arecanut and cocoa**	**2.5**
14.	Identification and description of varieties - nursery practices - training and pruning - pests and diseases – processing of **Tea and coffee**	**2.5**
15.	Identification and description of varieties, clones - bud wood nursery practices - propagation techniques - top working – preparation of plant bio regulators and its uses- pests and diseases - processing of **Rubber and cashew**	**2.5**
16.	Visit to commercial orchard and plantation industries.	**2.5**

TEXT BOOKS:

1. Kumar, N. 2014. Introduction to Horticulture. Oxford & IBH Publishing co. Pvt. Ltd.
2. Kumar, N. 2014. Introduction to Spices, Plantation, Medicinal and Aromatic crops, IBH Publishing Co. Pvt. Ltd., New Delhi.
3. Veeeraragavathatham, D and et al.,2004. Scientific fruit culture, Sun Associates, Coimbatore.

REFERENCES:

1. Chadha, K.L and Pareek, O.P. 1996. (Eds.). Advances in Horticulture. Vols. IIIV. Malhotra Publ. House
2. Alice Kurian and Peter, K.V. 2007. Horticulture science series Vol. 08, New India Publishing Agency, New Delhi.

E-REFERENCES :

1. http://www.jhortscib.com
2. http://journal.ashspublications.org
3. http://www.actahort.org/
4. http://www.aphorticulture.com/crops.htm
5. http://cpcri.nic.in/
6. http://indiancoffee.org

COURSE OUTCOMES (COs)	
CO1	Learn about the importance, nutrition and production status of fruits and plantation crops
CO2	Acquire knowledge and practical experience on production technology of tropical fruits
CO3	Acquire knowledge and practical experience on production technology of subtropical fruit crops
CO4	Learn about the crop production techniques of temperate fruits
CO5	Gain knowledge and experience on the crop production and processing techniques of palms and plantation crops
CO6	Demonstrate various propagation methods, important cultural practices and processing techniques of major fruit and plantation crops

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	**COs/POs**	**PO1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**PSO1**	**PSO2**	**PSO3**
2	**CO1**	3	-	-	-	-	-	3	-	-	-	-	2	1	-	-
	CO2	2	2	2	-	3	-	2	-	-	-	-	3	2	2	-
	CO3	3	1	3	-	2	-	3	-	-	-	-	2	2	1	-
	CO4	3	3	1	-	2	-	2	-	-	-	-	3	2	1	-
	CO5	3	2	2	-	2	-	3	-	-	-	2	2	2	2	1
	CO6	2	-	3	-	3	2	3	-	2	2	-	2	-	-	-
3	**Category**	Professional Core (PC)														
4	**Approval**	Academic Council, Aug 2018														

Subject Code : U18ARGS101	GEO- INFORMATICS FOR PRECISION FARMING		L	T	P	C
	Total Contact Hours – 16		1	0	0	1
	Prerequisite course	Application of remote sensing in agriculture.				
	Course Coordinator Name & Department	Dr.S.Sivagnanam, School of Agricultural Sciences				
COURSE OBJECTIVES:-	To apply remote sensing techniques in precision farming systems					

THEORY

UNIT I **4**

Remote sensing: Concepts - Electromagnetic radiation: principles and theories- Energy interaction: atmosphere and earth surface features- Spectral reflectance of earth features- Platforms and sensors: types and characteristics. Image Processing and Interpretation – Digital image processing: Image Classification - Optical, Microwave and Drones

UNIT II **3**

GIS: Definition, Components and functions- Raster and vector data models and non-spatial data types - Raster Data Analysis: Local, Neighborhood and Regional Operations- Vector Data Analysis: Querying, Buffering, Overlay

UNIT III **3**

Geodesy and its basic principles -Global Positioning System – components and its functions. GPS survey methods- Error sources - DEM – Sources, Generation and application.

UNIT IV **3**

Precision agriculture: concepts and techniques; their issues and concerns –STCR / VRT approach for precision agriculture - Soil moisture, Pest and Disease incidence – nutrient deficiencies – linking with VRT using Geospatial Technologies

UNIT V **3**

Crop discrimination and Yield monitoring, soil mapping; fertilizer recommendation using geospatial technologies. Introduction to crop Simulation Models and their uses for optimization of Agricultural Inputs – Drones for precision agriculture

TEXT BOOKS:

- Anji Reddy, M. 2008. Textbook of Remote Sensing and Geographic Information Systems. Third Edition. BS Publication, Hyderabad
- Rolf A.de By. 2001. Principles of Geographic Information Systems. ITC Educational Textbook Series I
- Roy, P.S., R.S.Dwivedi and D.Vijayan.2010. Remote Sensing Applications. NRSC Publication. ISBN: 978-81-909460-0-1

E- REFERENCES:

1. www.physicalgeography.net
2. www.gisdevelopment.net
3. www.gis.nic.in
4. www.geos.iitb.ac.in/remotesensing.html
5. www.dimensionigis.com/remote_sensing.html

COURSE OUTCOMES (COs)																
CO1	Discover the different types of electromagnetic radiation and spectral reflection**(Knowledge)**															
CO2	Demonstrate the GIS (Geographic Information Systems) and data analyzing techniques **(Apply)**															
CO3	Explain the geodesy basic principle and remote sensing survey in agriculture. **(Analyze)**															
CO4	Validate the precision farming concept and techniques in agriculture. **(Create)**															
CO5	Relate the crop growth monitoring, water and nutrient application through remote sensing techniques**. (Apply)**															
CO6	Summarize the drone application in modern agriculture. **(Evaluate)**															
Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low																
1	**COs/POs**	**PO1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**PSO1**	**PSO2**	**PSO3**
2	**CO1**	2	-	-		3	1	1	2	3	-	3	-	–	2	1
	CO2	3	-	-	1	2	3	3	-	1	-	--	1	-	2	1
	CO3	1	-	-	1	-	3	-	3	2	-		1	-	2	2
	CO4	2	2	3	3	-	1	-	1	2	2	3	2	-	2	2
	CO5	3	3	2	3	1	1	3	1	2	3	3	2	-	1	2
	CO6	1	3	1	2	3	1	3	1	2	2	3	3	-	2	1
3	**Category**	Allied Sciences (AS)														
4	**Approval**	Academic Council, Aug 2018														

Subject Code : U18HNSS101	NSS 101 NATIONAL SERVICE SCHEME (0+1)	L	T	P	C
	Total Contact Hours – 40	0	0	1	1
	Prerequisite course	Nil			
	Course Coordinator Name & Department	Dr. S. P. Vijayaragavan NSS Program Co-ordinator			
COURSE OBJECTIVES:-	Enable the students to understand the community in which they work and to understand themselves in relation to their community				

PRACTICAL SCHEDULE – NSS

1.	Motivation of rural and urban youth for formation of SHG (Self Help Groups) in collaboration with Government machineries and NGOs.	**2.5**
2.	Motivation of rural and urban youth for formation of SHG (Self Help Groups) in collaboration with Government machineries and NGOs.	**2.5**
3.	Motivation of rural and urban youth for formation of SHG (Self Help Groups) in collaboration with Government machineries and NGOs.	**2.5**
4.	Campaign on ill effects of plastics in the adjoining campus areas – Villages / urban areas.	**2.5**
5.	Campaign on *Parthenium* eradication	**2.5**
6.	Cycle rally on air pollution – Vehicle exhaust and other means	**2.5**
7.	Popularization of biogas and smokeless chulah	**2.5**
8.	Demonstration on the use of wind energy and solar energy	**2.5**
9.	Demonstration of water harvesting techniques	**2.5**
10.	Demonstration on soil conservation techniques wherever possible	**2.5**
11.	Campaign on Community health programmes of central and state Government – involving Health department officials	**2.5**
12.	AIDS awareness campaign ; campaign on diabetes and healthy food habits and drug abuse	**2.5**
13.	Planning formation of blood donors club – involving NGOs.	**2.5**
14.	Campaign on gender equality and women empowerment	**2.5**
15.	Campaign on child health care – immunization, food habits and child labour abolition	**2.5**
16.	Campaign on child health care – immunization, food habits and child labour abolition	**2.5**

Besides the above, NSS volunteers will attend work during important occasions like Convocation, Farmers day, Sports meet and other University / College functions. For all out door regular activities villages / slums nearby the campus may be selected to avoid transport cost (cycle able distance)

COURSE OUTCOMES (COs)	
CO1	To evoke social consciousness among students through various activities.
CO2	To develop youth leadership in the students
CO3	To utilize their knowledge in finding practical solutions to individual and community problems
CO4	To create the awareness of all kinds of discipline to the students
CO5	To practice national integration and social harmony, To Gain skills in mobilizing community participation
CO6	To identify the needs and problems of the community and involve them in problem solving process

Category	Humanities and Social Sciences (HS**)**
Approval	Academic Council, Aug 2018

Subject Code : U18HNCC101	NATIONAL CADET CORPS	L	T	P	C
	Total Contact Hours – 40	0	0	1	1
	Prerequisite course	Nil			
	Course Coordinator Name & Department	Dr. R. Udaya Kumar NCC Officer			

PRACTICAL SCHEDULE – NCC

1.	Drill – Weapon drill – Word of Commands	**2.5**
2.	National integration- unity in diversity	**2.5**
3.	Guard of Honour and Ceremonial drill	**2.5**
4.	Types of weapon, Parts, Stripping and Assembling of light gun.	**2.5**
5.	Rifle firing and follow up activities	**2.5**
6.	Camps, types of Camps, Preparation and participation	**2.5**
7.	Awards, different types, Ranks of officers and Cadets	**2.5**
8.	Map reading – judging distance, conventional signs and uses of compass	**2.5**
9.	Leadership traits, types, perception	**2.5**
10.	Fire Fighting, Role of NCC during natural hazards	**2.5**
11.	Field Engineering – section formation	**2.5**
12.	Obstacle training	**2.5**
13.	Health and Sanitation – preventable diseases, Fractures and types of treatments	**2.5**
14.	Environment and Ecology-Pollution and its control	**2.5**
15.	Social Service – contribution of youth towards social welfare	**2.5**
16.	First Aid – Snake bite and other common medical Emergencies	**2.5**

Besides the above schedule, NCC cadets will be involved during important occasions during convocation, Independence day, Republic day, etc.

Category	Humanities and Social Sciences (HS**)**
Approval	Academic Council, Aug 2018

Subject Code : U18HPED101	PHYSICAL EDUCATION		L	T	P	C
	Total Contact Hours – 40		0	0	1	1
	Prerequisite course	Nil				
	Course Coordinator Name & Department	Dr. V.Prakash School of Agricultural Sciences				
COURSE OBJECTIVES:-	• Participation in sports will yield optimum physical fitness and positive health for all. • Physical activities play an important role in the development of students to have a tremendous energy and desire to explore. These activities increase strength, speedand overall development and have considerable import not only in their physical growth but also on social and emotional development. • Physical education and sports, being an integral part of education, experience the impact of scientific advancements. • Physical education in the development of neuro muscular skills.					

PRACTICAL SCHEDULE

Exercises for strength, agility, co-ordination, flexibility, co-operation, vitalcapacity endurance, speed and for various systems of our body and team spirit.

Exercise for Good Posture – Conditioning and calisthenics for various Athletic activities *i.e (*a) Before start – Arm stretch, hand stretch and cat stretch (b) Loosening up jogging, bending and twisting (c) Standing – Lateral Arc, triangle and hands to feet pose (d) Sitting – camel kneel, spinal twist and supine knee bend (e) Relaxation – The corpse pose, quick and deep relaxation. Basic gymnastic exercises – participation of athletic events – running, throwing and jumping events.

SKILL DEVELOPMENT IN ANYONE OF THE FOLLOWINGGAMES

Warming up, suitable exercise, lead up games, advance skill for all the games.

Basket Ball	**:**	Dribbling, pass, two or three men pass, pivot, lay up shot, shooting, pass break, hook pass,screening, positional play, defence and offence tactics.
Volley Ball	**:**	Fingering, under arm pass, over head pass, setting, spiking, back pass, jump pass, stunts,elementarty dive, flaying dive, roll, blacking and various types of services.
Ball Badminton	**:**	Grip, service, foot work, fore hand stroke, back hand stroke, lob, smash, volley, wallpractice, spin service and defence tactics.
Foot ball	**:**	Dribbling, passing, dodging, kicking, heading, screening, chest pass, throwing, dragging, goalkick, defence and offence tactics.
Hockey	**:**	Grip, bully, dribbling, hitting, drive, push strokes, scoop, flick, stopping, various types ofpasses, dodging, defence and offience tactics.
Kho-Kho	**:**	Quadra ped, bi-ped, how to given kho, taking a direction, recede, parallel toe method, bullettow method, distal method, foot out, dive, ring game, chains and persue and defence skills.
Chess	**:**	Moves, move of king, move of pawns, move of rooks, move of bishops, move of queen, move ofknights, en passant, castling, check and notation.
Kabaddi	**:**	Raid, touch, cant, catch, struggle, various types of defence and offence tactics.
Cricket	**:**	Grip, bowling, spin, leg spin, off spin, medium, batting, dive, sweep, mode of delivery, fielding,rolling etc.
Tennis	**:**	Grip, forehand drive, back hand drive, stroke, backhand ground stroke, service, volley, smash,wall practice, foot work, defence and offence tactics.

Table Tennis	**:**	Grip, tossing and serving, spin serve, rally, smash, flick, defence and offence tactics
Shuttle Badminton	**:**	Grip, foot work, service, setting, smash, volley, forehand and back hand stroke,back hand serve and defence.
Gymnastics	**:**	Balanced walk, execution, floor exercise, tumbling/acrobatics, grip, release, swinging,parallel bar exercise, horizontal bar exercise, flic-flac-walk and pyramids.

ATHLETICS

e) Sprint	**:**	Medium start, long start, bunch start, set, pick up, finish, upsweep, downsweep,placement, receiving and exchanging
f) Jumps	**:**	Western roll, belly roll, eastern cut off, fass ferry flop, approach, take off, straddle,hitch-kick, handging, clearance, landing, strides etc
g) Throws	**:**	Grip, momentum, pre shift, sub phase, the wind up, foot work, entry to the turn, shift,angle of release, follow throw, delivery, front cross step, rear cross step, hop step, fuck method paryobraine, discoput, rotation, carry and glide.
h) Hurdles	**:**	Finding lead leg, use of lead leg and trial leg, flight, clearing, finish

Lead up games, advance skills and game for any one of the above games.

- Rules and regulations of anyone of the games and athletic events.
- Aims and objectiaves of yoga – asanas :ie. padmasana, pujankasana, sarvangasana, chakrasana,dhanurasana, halasana, mayurasana and savasana, asanas for ailments, back pain, arthritis, abdominal problesm, stress, fatiguel, Insomnia, obsity, circulation, hypertension, varicose veins, respiration, heart, digenstion, headaches, depression, addiction and eye problems.
- Mental balance and importance – development of concentration suriyanamaskar – advance skills of any one of the games which were taught in the I semester.

COURSE OUTCOMES (COs)	
CO1	Physical education encourage through games and sports sportsmanship, Co-operation loyalty, sociality, self-control, leadership, patriotism, friendship, kindness, sympathy, tolerance, forgiveness and other similar qualities.
CO2	Physical Education helps to improve one's ability for work and self expression in the competitive condition of our modern life.
CO3	Physical fitness is the combination of strength, flexibility, agility, power, speed, muscular endurance and cardio vascular endurance.
Category	Humanities and Social Sciences (HS**)**
Approval	Academic Council, Aug 2018

II YEAR III SEMESTER

S.No.	Course Code	Course Title	Credit Hours
1.	U18CPAT 201	Fundamentals of Plant Pathology	2+1
2.	U18CAEN201	Fundamentals of Entomology	2+1
3.	U18CSST201	Principles of Seed Technology	2+1
4.	U18CAGR201	Crop Production Technology – I (Kharif crops)	1+1
5.	U18CHOR211	Production Technology for Vegetables and Spices	1+1
6.	U18AENS201	Environmental Studies & Disaster Management	2+1
7.	U18AAMP201	Livestock and Poultry Management	2+1
8.	U18AAEC201	Farm Management, Production & Resource Economics	1+1
9.	U18CSAC201	Soil Resource Inventory	1+1
10.	U18AFMP211	Farm Machinery and Power	1+1
11.	U18AAGR202	Study tour	0+1*
12.	U18HNSS/NCC 101	NSS/NCC	0+1*
13.	U18HPED 101	Physical Education	0+1*
		Total	**15+10=25**

***Non-gradial compulsory courses**

Subject Code : U18CPAT201	FUNDAMENTALS OF PLANT PATHOLOGY	L	T	P	C
	Total Contact Hours – 72	2	0	1	3
	Prerequisite course	Basic Biology at Higher Secondary School			
	Course Coordinator Name & Department	Dr. T. MEERA School of Agricultural Sciences			
COURSE OBJECTIVES:-	1. To study the basic concepts of Plant Pathology and causes of plant diseases 2. To know about pathogenesis and plant defense mechanisms 3. To study the general characters and classification of fungal kingdom Protozoa 4. To study the general characters and classification of Phylum Ascomycota and basidiomycota 5. 5. Study of general characters of bacteria, virus, virusoids, algae				

THEORY

UNIT I: INTRODUCTION TO PLANT PATHOLOGY **4**

Plant Pathology- Definition – Importance of plant diseases, scope and objectives of Plant Pathology. History of Plant Pathology with special reference to Indian work.Terms and concepts in Plant Pathology. Causes and classification of plant diseases. Important plant pathogenic organisms, different groups**:** fungi, bacteria, fastidious vesicular bacteria, phytoplasmas, spiroplasmas, viruses, viroids, algae, protozoa and phanerogamic parasites

UNIT II: PATHOGENESIS **8**

Koch's postulates- Types of parasitism- Pathogenesis - Mode of infection – pre-penetration, penetration and post penetration - Role of enzymes and toxins on disease development-Effect of pathogen on physiological functions of the plants

UNIT III: GENERAL CHARACTERS AND TAXONOMY OF PROTOZOA, CHROMISTA AND FUNGI **4**

General characters, definition of fungus, somatic structures, types of fungal thalli, fungal tissues, modifications of thallus, reproduction (asexual and sexual). Binomial system of nomenclature and rules of nomenclature of fungi. Classification of fungi. Key to divisions, sub-divisions, orders and classes based on Ainsworth and Bisby's dictionary of fungi 10th edition complied by Kirk *et al.*, (2008). General characters and symptoms of **Kingdom: *Protozoa*, Phylum: *Plasmodiophoromycota***, *Plasmodiophorabrassicae*. **Kingdom**:***Chromista*, Phylum:*Oomycota***-*Pythium*, *Phytophthora*, *Sclerospora*, *Plasmopara* and *Albugo* **Kingdom:*Fungi* ,Phylum:*Chytridiomycota***-*Synchytrium*, **Phylum: *Zygomycota*** -*Mucor*, *Rhizopus*

UNITIV:GENERAL CHARACTERS AND TAXONOMY OF FUNGI-*ASCOMYCOTA* AND *BASIDIOMYCOTA* **11**

Phylum: ***Ascomycota***: Classification , symptoms and taxonomy characters of *Taphrina, Capnodium, Mycosphaerella, Macrophomina, Cochliobolus, Lewia, Venturia, Eurotium, Talaromyces, Sclerotinia, Erysiphe, Leveillula, Phyllactinia,Claviceps, Gibberella, Ustilaginoidea, Verticillium, Glomerella, Pestalotiopsis and Magnaporthe*

Phylum:***Basidiomycota*:** Classification, symptoms and life cycle of *Puccinia, Uromyces, Hemileia*and*Ustilago*. Important taxonomic characters of *Ganoderma ,Agaricus, Pleurotous* and *Calocybe*. Symptoms and Important taxonomic characters of *Athelium, Rhizoctonia* and *Exobasidium*

UNIT V:BACTERIA, PHYTOPLASMA, VIRUS, VIROID, ALGAE, PHANEROGAMS AND ABIOTIC DISORDERS **6**

General characters and symptoms- phytopathogenic bacteria,*Candidatus Phytoplasma*, Spiroplasma, Fastidious vascular bacteria, viruses, viroids, algae, Phanerogams –Abiotic disorders.

PRACTICAL – LIST OF PRACTICAL SCHEDULE

1.	Acquaintance with light microscope- Preparation of media for isolation and proving koch's postulates	**2.5**
2.	General characters of fungi – Types of mycelia -Types of vegetative, asexual and sexual spores- asexual and sexual fruiting bodies	**2.5**
3.	Study of important taxonomic characters and symptoms produced by *Plasmodiophora, Pythium* and *Phytophthora*	**2.5**
4.	Study of important taxonomic characters and symptoms produced by *SclerosporaPlasmopara*and*Albugo*	**2.5**
5.	Study of important taxonomic characters and symptoms produced by *Rhizopus, Taphrina, Capnodium, Cercospora,* (*Mycospaerella*), *Botryodiplodia*(*Botryosphaeria*), *Drechslera* (*Helminthosporium)* and *Alternaria*	**2.5**
6.	Study of important taxonomic characters and symptoms produced by *Eurotium, Talaromyces, Erysiphe, Leveillula, Phyllactinia, Uncinula ,Podosphaera and Sphaerotheca*	**2.5**
7.	Study of important taxonomic characters and symptoms produced by *Claviceps,Fusarium* (*Gibberella, Nectria*) and *Verticillium*	**2.5**
8.	Study of important taxonomic characters and symptoms produced by *Colletotrichum (Glomerella), Pestalotia (Pestalosphaeria), Pyricularia*(*Magnoporthe*)*Sarocladium*and *Macrophomina*	**2.5**
9.	Study of important taxonomic characters and symptoms produced by *Puccinia, Uromyces,* and *Hemileia*	**2.5**
10.	Field visit for exposing students on different crop diseases	**2.5**
11.	Study of important taxonomic characters and symptoms produced by*Ustilago, Sphacelotheca (Sporisorium), Tolyposporium (Moesziomyces),and Exobasidium*	**2.5**
12.	Study of important taxonomic characters of *Agaricus, Pleurotus, Calocybe*and*Volvariella*	**2.5**
13.	Study of important taxonomic characters and symptoms produced by *Athelium,Thanetephorus* and *Ganoderma*	**2.5**
14.	Symptoms of bacterial diseases – leaf blight, leaf streak, canker, scab, crown gall, wilt and soft rot.	**2.5**
15.	Symptoms and vectors of viral diseases – mosaic, chlorosis, leaf curl, stem pitting, spotted wilt, necrosis , ring spot, vein clearing, leaf crinkle, rosette and bunchy top	**2.5**
16.	Symptoms of *CandidatusPhytoplasma* , Algae, Phanerogamic parasites and non-parasitic diseases	**2.5**

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1. Alice D, and Jeyalakshmi C 2014. Plant Pathology. A.E Publications ,Coimbatore
2. Agrios, G.N. 2005. Plant Pathology – (5th Edition). Academic Press, New York.
3. Kirk, P.M., P.F. Cannon, D.W. Minter and J.A. Stalpers, (2008). Ainsworth and Bisby's dictionary of fungi , 10th edition. CAB international Wallingford, UK.

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1. Agrios, G.N. 2005. Plant Pathology – (5th Edition). Academic Press, New York.
2. Richard N. Strange. 2003. Introduction of Plant Pathology - John Wiley & Sons Ltd, London

3. John Webster and Ronald Weber, 2007. Introduction to fungi by Cambridge University Press, UK.

COURSE OUTCOMES (COs)	
CO1	Aware of basic principles of plant pathology,causes and importance of crop diseases.
CO2	Having knowledge of pathogenesis and plant defence mechanisms.
CO3	Having in depth knowledge of fungal kingdom protozoa.
CO4	Having in depth knowledge of phylum Ascomycota and Basidiomycota.
CO5	Knowing the general characters of bacteria and virus.
CO6	Knowing the general characters of virisoids and algae.

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	**COs/POs**	**PO1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**PSO1**	**PSO2**	**PSO3**
2	**CO1**	3	2	-	-	-	-	-	-	-	-	-	-	3	-	-
	CO2	2	3	-	-	-	-	-	-	-	-	-	-	3	-	-
	CO3	2	3	3	-	-	1	-	-	-	-	-	-	3	-	-
	CO4	1	3	3	-	-	-	-	-	-	-	-	-	3	-	-
	CO5	3	3	3	-	-	-	-	-	-	-	-	-	3	-	-
	CO6	-	3	3	-	2	-	-	-	-	-	-	-	3	-	-
3	**Category**	Professional Core (PC)														
4	**Approval**	Academic Council, Aug 2018														

Subject Code : U18CAEN201	FUNDAMENTALS OF ENTOMOLOGY	L	T	P	C
	Total Contact Hours – 72	2	0	1	3
	Prerequisite course	Basic Biology at Intermediate level			
	Course Coordinator Name & Department	Ms. V. Sushmetha Faculty of Agricultural Sciences			
COURSE OBJECTIVES:-	To study about basic entomology and impart knowledge on insects morphology, physiology and detailed taxonomy of different insect orders.				

THEORY

UNIT I :HISTORY AND IMPORTANCE OF ENTOMOLOGY; INSECT MORPHOLOGY 6

History of Entomology in India; Position of insects in the animal kingdom and their relationship with other classes of Arthropoda; Reasons for insect dominance. General organisation of insect body wall - structure and function, cuticular appendages, moulting; Body regions - insect head, thorax and abdomen, their structure and appendages.

UNIT II :ANATOMY AND PHYSIOLOGY PART – I 6

Digestive, excretory, respiratory, circulatory and nervous systems in insects.

UNIT III:ANATOMY AND PHYSIOLOGY PART – II 6

Reproductive systems in insects, sense organs and their functions, exocrine and endocrine glands; Embryonic and post embryonic development.

UNIT IV : TAXONOMY OF APTERYGOTA AND EXOPTERYGOTA 7

Insect systematics; Distinguishing characters of agriculturally important orders and families of Hexapoda. Apterygota (Thysanura, Diplura, Protura and Collembola); Exopterygota (Ephemeroptera, Odonata, Orthoptera, Phasmida, Dictyoptera, Embioptera, Dermaptera, Hemiptera, Isoptera, Psocoptera, Mallophaga, Thysanoptera and Siphunculata).

UNIT V :TAXONOMY OF ENTOPTERYGOTA 7

Distinguishing characters of agriculturally important families of Lepidoptera, Coleoptera, Diptera, Hymenoptera, Siphonaptera, Neuroptera and Strepsiptera.

PRACTICAL – LIST OF PRACTICAL SCHEDULE

1.	Observations on external features of grasshopper / cockroach and other members of phylum Arthropoda	**2.5**
2.	Methods of insect collection, preservation, display and storage	**2.5**
3.	Types of insect head and antenna	**2.5**
4.	Mouth parts of cockroach, modifications in the mouth parts in plant bug, female mosquito, honeybee, thrips, antlion grub, house fly, moths and butterflies	**2.5**
5.	Structure of thorax and their appendages modifications in insect legs and wings, wing venation, regions and angles - wing coupling.	**2.5**
6.	Structure of abdomen and their appendages	**2.5**
7.	Types of immature stages of insects	**2.5**
8.	Study of digestive system, male and female reproductive systems	**2.5**
9.	Observing the characters of Apterygota - Collembola and Thysanura and Exopterygota -Odonata and Ephemeroptera and Phasmida	**2.5**
10.	Observing the characters of Dictyoptera, Dermaptera, Embioptera, Orthoptera (Ensifera - Tettigonidae, Gryllidae and Gryllotalpidae; Caelifera-Acrididae and Tetrigidae), Mallophaga and Siphunculata	**2.5**

11.	Observing the characters of Exopterygota-Isoptera and Hemiptera-Homoptera (Delphacidae,Flatidae, Cercopidae, Cicadidae, Membracidae, Cicadellidae, Psyllidae, Aleyrodidae, Aphididae, Margarodidae, Kerridae, Pseudococcidae, Coccidae, Asterolecaniidae and Diaspididae) Heteroptera (Tingidae, Reduviidae, Cimicidae, Anthocoridae, Miridae, Lygaeidae, Pyrrhocoridae, Coreidae, Scutellaridae, Pentatomidae,	**2.5**
12.	Veliidae, Gerridae, Naucoridae, Belastomatidae, Nepidae, Notonectidae and Corixidae	**2.5**
13.	Observing the characters of orders Thysanoptera and Diptera- Nematocera (Tipulidae, Psychodidae, Culicidae, Bibionidae, and Cecidomyiidae), Brachycera (Tabanidae, Asilidae and Bombylidae,), Cyclorrapha (Syrphidae, Drosophillidae, Muscidae, Calliphoridae, Tachinidae, Hippoboscidae, Micropezidae, Agromyzidae, Chloropidae and Tephritidae)	**2.5**
14.	Observing the characters of Hymenoptera-Symphyta (Tenthredinidae) Apocrita (Ichneumonidae, Braconidae, Evaniidae, Agaonidae, Chalcididae, Encyrtidae, Eulophidae, Trichogrammatidae, Bethylidae, Chrysididae, Scoliidae, Mutillidae, Formicidae, Vespidae, Sphecidae, Megachilidae, Anthophoridae, Xylocopidae and Apidae)	**2.5**
15.	Observing the characters of Coleoptera - Adephaga (Carabidae, Cicindellidae, Dytiscidae, Gyrinidae) Polyphaga (Hydrophilidae, Staphylinidae, Passalidae, Lucanidae, Scarabaeidae, Dynastidae, Melolonthidae, Cetonidae, Buprestidae, Elateridae, Lampyriidae, Cantharidae, Dermestidae, Anobiidae, Bostrychidae, Coccinellidae, Tenebrionidae, Meloidae, Cerambycidae, Bruchidae, Chrysomelidae, Apionidae and Curculionidae)	**2.5**
16.	Observing the characters of Lepidoptera - Butterfly families (Nymphalidae, Lycaenidae, Pieridae, Papilionidae, Satyriidae and Hesperiidae), Moth families (Psychidae, Gelechiidae, Metarbellidae, Cochlidiidae, Pyralidae, Crambidae, Pterophoridae, Geometridae, Bombycidae, Saturniidae, Sphingidae, Arctiidae, Noctuidae and Lymantriidae)	**2.5**

TEXT BOOKS:

1. Chapman, R.F. 1998. The Insects: Structure and Function. Fourth Edition. Cambridge University Press. 770p. {ISBN 0 521 78732 7}
2. Snodgrass, R.E. 1994. Principles of Insect Morphology. CBS publishers and distributors, New Delhi. 667p.
3. David, B.V. and V.V. Ramamurthy. 2011. Elements of Economic Entomology, NamruthaPublications,Chennai, 386 p. {ISBN: 978-81-921477-0-3}

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1. Srivastava, P. D. and R. P. Singh. 1997. An Introduction to Entomology. Concept Publishing Company, New Delhi.
2. Richards O.W. and R.G. Davies. 1977. Imm's General Text Book of Entomology. Vol. I and II. Chapman and Hall Publication, London. 1354p.{ISBN 0412 15220 7}.

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2. https://courses.cit.cornell.edu/ent201/content/anatomy2.pdf
3. www.insectsexplained.com/03external.htm
4. www.earthlife.net/insects/anatomy.html
5. www.insectidentification.org/orders_insect.as

COURSE OUTCOMES (COs)

CO1	To get knowledge about history of entomology and also learn about insects relation with other classes of Athropoda
CO2	To impart knowledge to student about General organisation of insect body wall and Body regions of insect head, thorax and abdomen, their structure and appendages
CO3	To get knowledge on digestive, excretory, circulatory, respiratory, nervous system reproductive system, exocrine and endocrine gland function of insect.
CO4	Students expose to practical observations on external features of grasshopper / cockroach and other members of phylum Arthropoda and also learn methods of insect collection, preservation, display and storage
CO5	Students gain knowledge on taxaonomic characters of Apterygota and Exopterygota insect orders by practical Observing and theoretical learning.
CO6	Students gain knowledge on taxanomic characters of Entopterygota in insect orders by practical Observation and Theoretical learning

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	**COs/POs**	**PO1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**PSO1**	**PSO2**	**PSO3**
2	**CO1**	3	-	1	2	1	2	3	-	-	-	-	-	2	–	-
	CO2	3	-	1	2	1	2	3	-	-	-	-	-	2	-	-
	CO3	3	-	1	2	1	2	3	-	-	-	-	-	2	-	-
	CO4	3	-	1	2	1	2	3	-	-	-	-	-	2	-	-
	CO5	3	-	1	2	1	1	3	-	-	-	-	-	2	-	-
	CO6	3	-	1	2	1	1	3	-	-	-	-	-	2	-	-
3	**Category**	Professional Core (PC)														
4	**Approval**	Academic Council, Aug 2018														

Subject Code : U18CSST 201	PRINCIPLES OF SEED TECHNOLOGY		L	T	P	C
	Total Contact Hours – 72		2	0	1	3
	Prerequisite course	1. Introduction to Agricultural Botany 2. Fundamentals of Crop Physiology				
	Course Coordinator Name & Department	Dr. R. Anbarasan School of Agricultural Sciences				
COURSE OBJECTIVES:-	• To make the students understand the importance and principles involved in Quality seed production and Seed storage.					

THEORY

UNIT I : SEED : IMPORTANCE AND BIOLOGY **6**

Seed and seed technology: definition -importance -Characters of good quality seed -Seed development and maturation - Germination - phases of seed germination - Dormancy - types of seed dormancy - Different classes of seed - generation system of seed multiplication in supply chain - Seed replacement rate and varietal replacement - Seed Multiplication Ratio -Seed renewal period. Varietal deterioration of crops - causes and maintenance.

UNIT II :SEED PRODUCTION **6**

Principles of seed production- Foundation and certified seed production of varieties and hybrids - Cereals - rice, maize, sorghum and bajra - Pulses - greengram, blackgram and redgram - Oilseeds - groundnut, sesame, sunflower and castor - Cotton, Forage crops - Cenchrus sp and lucerne - Vegetables - tomato, brinjal, chillies, bhendi, onion and gourds - bittergourd, ashgourd, snakegourd, ribbedgourd, bottlegourd and pumpkin. Principles of GM crop and organic seed production.

UNIT III : POST HARVEST HANDLING OF SEEDS **7**

Post harvest handling of seeds - threshing methods - drying - methods of seed drying - Seed processing - seed cleaning and grading - Processing equipments -cleaner cum grader -Upgrading equipments - specific gravity separator, colour sorter, indented cylinder separator, spiral separator, magnetic separator, needle separator - working principles - Seed quality enhancement techniques - importance - seed fortification, seed priming, seed coating, seed pelleting.

UNIT IV: SEED QUALITY CONTROL AND SEED TESTING **7**

Seed certification - phases of certification, procedure for seed certification, field inspection, field counts, field and seed standards. Post harvest inspection - processing, bagging and tagging. Seed Act and Rules - Seed law enforcement. Duty and powers of seed inspector, offences and penalties. Seeds Control Order 1983 - Salient features of PPV&FRA 2001 - National Seed Policy 2002 - Seed Bill 2004. Seed testing for quality assessment - importance - Varietal identification through grow out test, molecular and biochemical test. Detection of genetically modified crops.

UNIT V : SEED STORAGE AND MARKETING **6**

Seed storage – principles- factors affecting seed longevity during storage – Seed treatments and packaging materials - measures for pest and disease control during storage and godown sanitation. Seed marketing - structure and organization - sales promotional activities. factors affecting seed marketing and demand - International seed movement - role of international organizations, WTO and OECD in seed trade.

PRACTICAL – LIST OF PRACTICAL SCHEDULE

1.	Study on external and internal seed structure and identification of major cereals - pulses - oilseeds - cotton - forage crops and vegetable crops.	**2.5**
2.	Practicing supplementary pollination techniques in hybrid rice and detasselling techniques in hybrid maize.	**2.5**
3.	Practicing emasculation and dusting technique in cotton and supplementary pollination in sunflower.	**2.5**
4.	Practicing pre-germinative technique and female flowers production enhancement techniques in cucurbits.	**2.5**
5.	Assessment of physiological maturity indices in various crops and seed extraction methods in vegetables.	**2.5**
6.	Visit to seed production farms.	**2.5**
7.	Seed enhancement techniques - Seed coating - seed priming and seed pelleting.	**2.5**
8.	Seed certification - field inspection and counting procedure - identification of physical and genetic contaminants in seed production plots and roguing.	**2.5**
9.	Seed testing - seed sampling - mixing - dividing - equipments.	**2.5**
10.	Estimation of seed moisture content and physical purity.	**2.5**
11.	Seed germination testing - tetrazolium test for viability - evaluation.	**2.5**
12.	Genetic purity test - grow out test - electrophoresis.	**2.5**
13.	Seed health testing - methods.	**2.5**
14.	Seed and seedling vigour test - brick gravel test, paper piercing test - cool and cold test - accelerated ageing test.	**2.5**
15.	Seed production planning - economics.	**2.5**
16.	Visit to seed processing plant and seed testing laboratory.	**2.5**

REFERENCES:

1. Agrawal, R.L. 1996. Seed Technology, Oxford & IBH Publishing Co., New Delhi.
2. Bhaskaran, M., A.Bharathi and K.Vanangamudi. 2013. Text Book on Principles of seed production and quality control. Kalyani Publishers, New Delhi.
3. Indian Minimum Seed Certification Standards. 2014. Published by GOI, MOA, New Delhi.
4. Seed legislations. 2014. Published by GOI, MOA, New Delhi.

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1. www.fao.org
2. www.seednet.gov.in
3. www.agricoop.nic.in
4. www.online library.willey.com
5. www.sciencedirect.com
6. Seed Science Research (www.jgateplus.com)
7. Seed Science and Technology (www.jgateplus.com)

COURSE OUTCOMES (COs)	
CO1	Acquire knowledge on Seed quality characteristics and its significance
CO2	Understand the Seed production techniques of Agricultural crops and Horticulture crops.
CO3	Understand the Post harvest seed handling techniques and seed quality enhancement

	techniques
CO4	Understand the Seed Legislation and seed certification procedures
CO5	Understand the Seed quality testing, Storage and Marketing
CO6	Understand the seed germination, method of testing the seed for various quality parameters and production technology of seeds of crop varieties and hybrids as well as genetically modified crops. Apply all these principles in practice

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	**COs/POs**	**PO1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**PSO1**	**PSO2**	**PSO3**
2	**CO1**	3	2	-	-	-	-	-	-	-	-	-	2	2	–	-
	CO2	3	2	2	-	-	-	-	-	-	-	-	2	2	-	-
	CO3	3	3	2	-	-	-	-	2	-	-	-	2	2	-	-
	CO4	3	3	2	-	-	-	-	2	-	-	-	3	2	-	-
	CO5	3	3	2	-	-	-	-	-	-	-	-	1	2	-	-
	CO6	3	3	3	-	-	-	-	-	-	-	-	3	2	-	-
3	**Category**	Professional Core (PC)														
4	**Approval**	Academic Council, Aug 2018														

Subject Code : U18CHOR211	PRODUCTION TECHNOLOGY FOR VEGETABLES AND SPICES	L	T	P	C
	Total Contact Hours – 56	1	0	1	2
	Prerequisite course: Fundamentals of Horticulture				
	Course Coordinator Name & Department: Dr.M. Dhivya, School of Agricultural Sciences				

COURSE OBJECTIVES:-

- To impart knowledge on the production techniques of major vegetables and spice crops
- To impart hands on experience on the propagation techniques and processing techniques of spices

THEORY

UNIT I :SCOPE, IMPORTANCE AND CLASSIFICATION OF VEGETABLES 2

Importance of vegetable growing –area and production of vegetables in India and Tamil Nadu- National economy- nutritive value of vegetables and human nutrition.

UNIT II: PRODUCTION TECHNOLOGY OF TROPICAL VEGETABLE CROPS 4

Origin - climate and soil – varieties and hybrids – seeds and sowing – transplanting – water and nutrient management – fertigation – weed management – use of micronutrients and plant growth regulators - physiological disorders - maturity indices – harvest – pest and diseases – seed production

Crops: Tomato, chilli, brinjal, bhendi, gourds (ash gourd, pumpkin, bitter gourd, ridge gourd, bottlegourd, snake gourd and watermelon) onion, cassava, amaranthus and moringa.

UNIT III : PRODUCTION TECHNOLOGY OF TEMPERATE VEGETABLE CROPS 4

Origin -climate and soil – varieties and hybrids – seeds and sowing – transplanting - water and nutrient management – fertigation – weed management – use of micronutrient and plant growth regulators-physiological disorders- maturity indices – harvest – pest and diseases – seed production

Crops: Cabbage, cauliflower, potato, carrot, radish, beetroot, peas and french beans, Protected cultivation of vegetables (tomato, capsicum and cucumber).

UNIT IV: CROP PRODUCTION TECHNIQUES OF MAJOR SPICES 3

Spices- scope and importance - classification of spices - origin, area and production - role of commodity boards- export potential of spices.

Climate and soil - varieties - propagation - nursery management and planting – cropping systems- training practices - nutrient, water and weed management - shade regulation - maturity indices - harvest and yield - pests and diseases - processing - value addition.

Crops : Black pepper, Cardamom, Turmeric, Ginger and Garlic

UNIT V: CROP PRODUCTION TECHNIQUES IN SEED SPICES, TREE SPICES AND OTHER SPICES 3

Climate and soil- varieties - propagation, nursery management and planting- training , pruning canopy management- weed and water management- shade regulation- nutrient management including drip and fertigation – harvest and yield – pests and diseases – processing – value addition.

Crops : Coriander, Fenugreek, Cumin, Fennel, Clove, Nutmeg, Cinnamon, Curry leaf, Tamarind and Herbal spices.

PRACTICAL – LIST OF PRACTICAL SCHEDULE

1. Layout of kitchen garden. **2.5**
2. Seed treatment and sowing practices in direct sown vegetables **2.5**
3. Nursery management of transplanted ,bulb and tuber vegetable crops **2.5**

4.	Grafting in vegetable crops	**2.5**
5.	Water and nutrient management – fertigation in vegetable crops	**2.5**
6.	Practices in use of plant growth regulators in vegetable crops	**2.5**
7.	Special horticultural practices in vegetable production	**2.5**
8.	Identification of physiological disorders in vegetable crops	**2.5**
9.	Study of maturity standards and harvesting of vegetables	**2.5**
10.	Practices in protected cultivation of vegetable crops	**2.5**
11.	Visit to vegetable nurseries/protected vegetable cultivation unit	**2.5**
12.	Black pepper and cardamom- identification and description of varieties – seed propagation and vegetative propagation – fertilizers application - preparation of plant bio regulators and application- pests and diseases- harvest and post harvest practices.	**2.5**
13.	Turmeric and ginger- identification and description of varieties- propagation, fertilizers application - preparation of plant bio regulators and application – pests and diseases- harvest and post harvest practices.	**2.5**
14.	Coriander and Fenugreek - identification and description of varieties - seed treatment, sowing fertilizer application - pests and diseases- harvest and post harvest practices.	**2.5**
15.	Clove, Nutmeg and Cinnamon - identification and description of varieties – seed collection and extraction - propagation – fertilizer application – training and pruning – pests and diseases- harvest and post harvest practices.	**2.5**
16.	Tamarind and curry leaf - identification and description of varieties – seed collection and extraction - propagation – fertilizer - application – canopy management – pests and diseases- harvest and post harvest practices.	**2.5**

TEXT BOOKS

1. Veeraragavaththam ,D., M.Jawaharlal and SeemanthiniRamadas 2000 " A guide on vegetable Culture"
2. Kumar, N. 2014. Introduction to Spices, Plantation, Medicinal and Aromatic crops., IBH Publishing Co. Pvt. Ltd., New Delhi.
3. Thamburaj, S. and Narendra Singh. 2014. Textbook Of Vegetables Tubercrops& Spices. ICAR, New Delhi.

REFERENCES

1. Gopalakrishnan, T.R. 2007. Vegetable Crops. Horticultural Science Series (Series Editor K.V.Peter). New India Publishing Agency.
2. Vishnu Swarup, S. 2012. Vegetable Science and technology in India , Kalyani publisher,New Delhi.
3. SandhnaPandey, S.N. Pandey and P.H.Pandy, 2013. Spice crop management and technology, Kalyani publisher, New Delhi.
4. Selvakumar, R. 2014. A Textbook of GlaustasOlericulture. New Vishal Publications, India.

JOURNALS

1. Indian Horticulture
2. Vegetable Science
3. Indian Journal of Horticulture Science
4. Journal of Horticultural Sciences
5. Acta Horticulturae
6. South Indian Horticulture
7. Hort Science

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3. http://www.actahort.org/
4. .http://www.aphorticulture.com/crops.htm
5. http://cpcri.nic.in/http://indiancoffee.org

COURSE OUTCOMES (COs)	
CO1	Learn about importance, nutritive value and classification of vegetables
CO2	Acquire knowledge and experience on production technology of tropical vegetables under open and protected cultivation
CO3	Acquire knowledge and experience on production technology of temperate vegetables
CO4	Learn about the commercial crop production techniques of major spices, seed spices, tree spices and other spices
CO5	Gain knowledge and practical experience on nursery management, fertilizer and irrigation scheduling and identifying the physiological disorders which undermining the yield.
CO6	Demonstrate various propagation methods, special practices and post harvest practices of major vegetables and spices

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	**COs/POs**	**PO1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**PSO1**	**PSO2**	**PSO3**
2	**CO1**	3	-	-	-	-	-	3	-	-	-	-	2	1	-	-
	CO2	2	2	2	-	3	-	2	-	-	-	-	3	2	2	-
	CO3	3	1	3	-	2	-	3	-	-	-	-	2	2	1	-
	CO4	3	3	1	-	2	-	2	-	-	-	-	3	1	1	-
	CO5	3	2	2	-	2	-	3	-	-	-	2	2	1	2	-
	CO6	2	-	3	-	3	2	3	-	2	2	-	2	-	-	-
3	**Category**	Professional Core (PC)														
4	**Approval**	Academic Council, Aug 2018														

Subject Code : U18CAGR201	CROP PRODUCTION TECHNOLOGY – I (Kharif crops)	L	T	P	C
	Total Contact Hours – 56	1	0	1	2
	Prerequisite course: Fundamentals of agronomy and agricultural heritage				
	Course Coordinator Name & Department: Dr. V. Prakash, School of Agricultural Sciences				
COURSE OBJECTIVES:-	• Students will acquire knowledge about cultivation of cereals, millets, pulses and oil seeds in different ecosystem, their planting techniques and about harvesting methods and processing				

THEORY

UNIT I: CEREALS **2**

Rice, Maize, - Origin, geographic distribution, economic importance, soil and climatic requirements, varieties, cultural practices (from land preparation to harvest) and yield.

UNIT II: MILLETS **3**

Sorghum, Pearl millet, Small millets - Finger millet, Foxtail millet, little millet, Kodo millet, Barnyard millet and Proso millet - Origin, geographic distribution, economic importance, soil and climatic requirement, varieties, cultural practices and yield.

UNIT III: PULSES **4**

Redgram, Blackgram, Greengram,, Cowpea, - Origin, geographic distribution, economic importance, soil and climatic requirement, varieties, cultural practices and yield.

UNIT IV: OILSEEDS (KHARIF) **3**

Groundnut, sesame, Soybean- Origin, and geographic distribution, economic importance, soil and climatic requirement, varieties, cultural practices, yield.

UNIT V: FIBRE AND FORAGE **4**

Cotton, jute, fodder sorghum, cumbu napier- Origin, geographic distribution, economic importance, soil and climatic requirement, varieties, cultural practices, yield.

Cereals	Rice, maize
Millets	Sorghum, pearl millet, finger millet and minor millets
Pulses	Pigeonpea, green gram, black gram, cowpea,
Oilseeds	Groundnut, sesame, soybean
Fibre & Forage	Cotton, jute, fodder sorghum, Cumbu napier

PRACTICAL – LIST OF PRACTICAL SCHEDULE

1.	Identification of cereals, millets, pulses and oilseed crops in the crop cafeteria	**2.5**
2.	Practicing various nursery types and main field preparation for rice crop	**2.5**
3.	Nursery and main field preparation for important millets, pulses and oilseeds	**2.5**
4.	Acquiring skill in different seed treatment techniques in important kharif crops	**2.5**
5.	Estimation of plant population per unit area for important kharif crops	**2.5**
6.	Acquiring skill in field preparation, sowing and manuring of crops under pure and intercropping situations for cereals and millets	**2.5**
7.	Acquiring skill in field preparation, sowing and manuring of crops under pure and	**2.5**

	intercropping situations for pulses and oilseeds	
8.	Acquiring skill in using seed drill for sowing operations	**2.5**
9.	Acquiring skill in foliar nutrition for important field crops	**2.5**
10.	Observations on growth parameters of cereals and millets	**2.5**
11.	Observations on growth parameters of pulses and oilseeds	**2.5**
12.	Study of yield parameters and estimation of yield in cereals and millets	**2.5**
13.	Study of yield parameters and estimation of yield in pulses and oilseeds	**2.5**
14.	Working out cost and returns of important cereals, millets, pulses and oilseeds crops	**2.5**
15.	Visit to farmers field / research stations to study the cultivation techniques of cereal, millets, pulses , cotton and oilseeds	**2.5**
16.	Visit to nearby Agricultural Research Station / Farmer's field	**2.5**

REFERENCES:

1. Ahlawat, I.P.S., Om Prakash and G.S. Saini. 1998. Scientific Crop Production in India. Rama publishing House, Meerut.
2. Chidda Singh. 2010. Modern techniques of raising field crops. Oxford and IBH Publishing Co. Pvt. Ltd, New Delhi.
3. Singh.S.S. 2015.Crop management under irrigated and rainfed conditions.Kalyani Publishers, New Delhi.
4. Reddy,S.R. 2012. Agronomy of field crops.Kalyani publishers, New Delhi. Joshi, M. 2015. Textbook of Field crops.PHI Learning Pvt. Ltd., New Delhi ICAR 2015. Hand book of Agriculture. Indian Council of Agricuture, New Delhi Crop production Guide 2012. Directorate of Agriculture, Chennai.

E- REFERENCES:

1. www.crida.org
2. www.cgiar.org
3. www.tnau.ac.in/agriportal

COURSE OUTCOMES (COs)	
CO1	Knowledge about origin, geographical distribution, and economic importance of Kharif crops
CO2	Knowledge about Soil and climatic requirements, varieties, cultural practices and yield of Kharif crops.
CO3	Knowledge on crop production technologies of different Kharif crops.
CO4	Analysis of comparative benefits of the different kharif crops
CO5	Constraints in production of oilseeds and pulses maybe identified through course content
CO6	Production technology of kharif cereals and millets fulfill the need of human consumption and milch cattle

Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low																
1	**COs/POs**	**PO1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**PSO1**	**PSO2**	**PSO3**
2	**CO1**	1	-	1	-	2	1	-	-	-	-	-	-	3	-	2
	CO2	2	2	3	-	1	-	-	-	-	-	-	-	3	-	2
	CO3	2	2	3	-	1	-	-	-	-	-	-	-	3	-	1
	CO4	2	3	3	-	1	-	-	-	-	-	-	-	3	-	1
	CO5	2	3	3	-	1	-	1	-	-	-	-	-	3	-	1
	CO6	-	1	1	3	-	-	-	-	-	-	3	-	3	-	1
3	**Category**	Professional Core (PC)														
4	**Approval**	Academic Council, Aug 2018														

Subject Code : U18AENS301	ENVIRONMENTAL STUDIES AND DISASTER MANAGEMENT		L	T	P	C
	Total Contact Hours – 72		2	0	1	3
	Prerequisite course	Basic Sciences				
	Course Coordinator Name & Department	Mr. B. Suriya Sabarinath School of Agricultural sciences				
COURSE OBJECTIVES:-	Impart basic knowledge about natural resources, ecosystems, biodiversity, environmental pollution and disaster management.					

THEORY

UNIT I **1**

Multidisciplinary nature of environmental studies Definition, scope and importance

UNIT II **5**

Natural Resources: Renewable and non-renewable resources Natural resources and associated problems. a) Forest resources: Use and over-exploitation, deforestation, case studies. Timber extraction, mining, dams and their effects on forest and tribal people. b) Water resources: Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems. c) Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies. d) Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies. e) Energy resources: Growing energy needs, renewable and non-renewable energy sources, use of alternate energy sources. Case studies. f) Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification. • Role of an individual in conservation of natural resources. • Equitable use of resources for sustainable lifestyles.

UNIT III **4**

Ecosystems • Concept of an ecosystem. • Structure and function of an ecosystem. • Producers, consumers and decomposers. • Energy flow in the ecosystem. • Ecological succession. • Food chains, food webs and ecological pyramids. • Introduction, types, characteristic features, structure and function of the following ecosystem. a. Forest ecosystem. b. Grassland ecosystem. c. Desert ecosystem d. Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)

UNIT IV **4**

Biodiversity and its conservation:- Introduction, definition, genetic, species & ecosystem diversity and biogeographical classification of India. Value of biodiversity: consumptive use, productive use, social, ethical, aesthetic and option values. Biodiversity at global, National and local levels, India as a mega-diversity nation. Hot-sports of biodiversity. Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts. Endangered and endemic species of India. Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity.

UNIT V **4**

Environmental Pollution: Definition, cause, effects and control measures of : a. Air pollution. b. Water pollution. c. Soil pollution. d. Marine pollution. e. Noise pollution. f. Thermal pollution. g. Nuclear hazards. Solid Waste Management: causes, effects and control measures of urban and industrial wastes. Role of an individual in prevention of pollution. Pollution case studies.

UNIT VI **4**

Social Issues and the Environment: From Unsustainable to Sustainable development. Urban problems related to energy. Water conservation, rain water harvesting, watershed management.

Environmental ethics: Issues and possible solutions, climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. Wasteland reclamation. Consumerism and waste products. Environment Protection Act. Air (Prevention and Control of Pollution) Act. Water (Prevention and control of Pollution) Act. Wildlife Protection Act. Forest Conservation Act. Issues involved in enforcement of environmental legislation. Public awareness.

UNIT 7 **4**

Human Population and the Environment: population growth, variation among nations,population explosion, Family Welfare Programme. Environment and human health: Human Rights, Value Education, HIV/AIDS. Women and Child Welfare. Role of Information Technology in Environment and human health. Case Studies.

DISASTER MANAGEMENT

UNIT VIII **2**

Natural Disasters- Meaning and nature of natural disasters, their types and effects. Floods, drought, cyclone, earthquakes, landslides, avalanches, volcanic eruptions, Heat and cold waves, Climatic change: global warming, Sea level rise, ozone depletion.

UNIT IX **2**

Man Made Disasters- Nuclear disasters, chemical disasters, biological disasters, building fire, coal fire, forest fire, oil fire, air pollution, water pollution, deforestation, industrial waste water pollution, road accidents, rail accidents, air accidents, sea accidents.

UNIT X **2**

Disaster Management- Effect to migrate natural disaster at national and global levels. International strategy for disaster reduction. Concept of disaster management, national disaster management framework; financial arrangements; role of NGOs, community - based organizations and media. Central, state, district and local administration; Armed forces in disaster response; Disaster response; Police and other organizations.

PRACTICAL – LIST OF PRACTICAL SCHEDULE

1.	Visit to a local area to document environmental assets river/forest/grassland/hill/mountain	**2.5**
2.	Energy: Biogas production from organic wastes	**2.5**
3.	Visit to wind mill / hydro power / solar power generation units	**2.5**
4.	Biodiversity assessment in farming system	**2.5**
5.	Floral and faunal diversity assessment in polluted and un polluted system	**2.5**
6.	Visit to local polluted site-Urban/Rural/Industrial/Agricultural to study of common plants, insects and birds	**2.5**
7.	Environmental sampling and preservation	**2.5**
8.	Water quality analysis: pH, EC and TDS	**2.5**
9.	Estimation of Acidity, Alkalinity	**2.5**
10.	Estimation of water hardness	**2.5**
11.	Estimation of DO and BOD in water samples	**2.5**
12.	Estimation of COD in water samples	**2.5**
13.	Enumeration of E. coli in water sample	**2.5**
14.	Assessment of Suspended Particulate Matter (SPM)	**2.5**
15.	Study of simple ecosystem – pond/river/hills	**2.5**
16.	Visit to areas affected by natural disaster	**2.5**

REFERENCES:

1. Erach Bharucha, Text book for Environmental studies. University Grants Commission, New Delhi
2. Tyler Miller and Scot Spoolman. 2009. Living in the Environment (Concepts, Connections, and Solutions). Brooks/cole, Cengage learning publication, Belmont, USA
3. P.D. Sharma, 2009, Ecology and Environment, Rastogi Publications, Meerat, India
4. De. A.K., 2010. Environmental chemistry. Published by New Age International Publishers, New Delhi. ISBN:13–978 81 224 2617 5. 384 pp

E- REFERENCES:

1. Dhar Chakrabarti. P.G., 2011. Disaster management - India's risk management policy frameworks
2. and key challenges. Published by Centre for Social Markets (India), Bangalore. 36 pp.
3. Proceedings of 2nd India disaster management congress, New Delhi. Organized by National Institute of Disaster Management, New Delhi during 4 – 6, November 2009.

COURSE OUTCOMES (COs)	
CO1	To learn about the basic concepts of environmental sciences and natural resources and its associated problems
CO2	Students will learn about the different ecosystems
CO3	Students will learn the different types of environmental pollution and its management
CO4	Attain knowledge on social issues related to environment and environmental ethics
CO5	Gain Knowledge on biodiversity and its conservation
CO6	Gain knowledge on different forms of disaster and its management.

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	**COs/POs**	**PO1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**PSO1**	**PSO2**	**PSO3**
2	**CO1**	3	3	2	-	-	-	-	1	-	-	-	3	-	2	-
	CO2	3	2	2	-	-	2	3	1	-	-	-	3	-	2	-
	CO3	3	2	2	-	-	3	3	1	-	1	-	3	-	2	-
	CO4	3	3	3	-	-	3	3	1	-	1	-	3	-	2	-
	CO5	3	3	3	-	-	3	3	2	-	1	-	3	-	2	-
	CO6	3	3	3	-	-	3	3	2	-	1	-	3	-	2	-
3	**Category**	Allied Sciences (AS)														
4	**Approval**	Academic Council, Aug 2018														

Subject Code : U18AAMP201	LIVESTOCK AND POULTRY MANAGEMENT		L	T	P	C
	Total Contact Hours – 72		2	0	1	3
	Prerequisite course	Livestock and Poultry management in agriculture.				
	Course Coordinator Name & Department	Dr.S.Sivagnanam, Faculty of Agriculture				
COURSE OBJECTIVES:-	To impart knowledge on effective management of livestock and poultry to generate farmers additional income in agriculture.					

THEORY

UNIT I: INTRODUCTION TO LIVESTOCK MANAGEMENT **7**

Significance of Livestock and Poultry in Indian Economy – Livestock and Poultry census – Different livestock development programs of Government of India and Tamil Nadu- Various systems of livestock production-extensive – semi intensive - intensive- mixed- Integrated and specialized farms.

UNIT II: DAIRY CATTLE MANAGEMENT **8**

Important White and Black cattle breeds-classification-indigenous and exotic – Breed characteristics – Breeding - Cross breeding- Upgrading - Economic traits of cattle –Culling - Estrus Cycle – Artificial Insemination – Introduction to Embryo transfer – Housing – Space requirement calf and adult stock – System and types of housing - Feeding and Management of Calf, Heifer, Pregnant, Milch animal and working animals – Nutrition – Ration – Balanced Ration - Characteristics of ration and classification of feed and fodder –Total Mixed Ration **–** composition of concentrate mixture for different stage - Milking methods - Clean milk production – Factors affecting milk composition – Common diseases of cattle – classification – symptoms - preventing and control measures.

UNIT III: SHEEP AND GOAT MANAGEMENT **6**

Breeds - Sheep and goat classification — Economic traits - system of rearing - Housing Management – Floor space requirement - Care and Management of young and adult stock – Nutrition – Feed and fodders of Small ruminants – Flushing - Common diseases – prevention and control.

UNIT IV: MANAGEMENT OF SWINE **6**

Classification of breeds – Economic traits - Housing - Nutrition – creep feeding - Care and Management of Adult and Young Stock - Common disease- prevention and control.

UNIT V: POULTRY MANAGEMENT **5**

Classification of breeds - Commercial Strains of broilers and layers – Housing – brooding – deep litter and cage system – care and Management of broilers and layers -Nutrition of Chick, grower, Layer and broiler – Incubation and Hatching of Eggs - Common Diseases - Control and prevention.

PRACTICAL – LIST OF PRACTICAL SCHEDULE

1.	Study of external parts of livestock	**2.5**
2.	Identification of livestock and poultry	**2.5**
3.	Common restraining methods of livestock	**2.5**
4.	Disbudding, Dehorning, Castration and Dentition of livestock	**2.5**
5.	Study of type design of animal and poultry house	**2.5**
6.	Selection of dairy cow and work bullock	**2.5**
7.	Determination of specific gravity, fat %, total solids, solids not fat of photosynthetic efficiency in crops	**2.5**
8.	Demonstration of cream separation	**2.5**

9.	Identification of feed &fodder	**2.5**
10.	Economics of dairy, goat and swine Farming	**2.5**
11.	Study of external parts of fowl. Preparation of brooder house	**2.5**
12.	Identification of layer and non- layer	**2.5**
13.	Debeaking, delousing, deworming of poultry Vaccination schedule for broiler and layer	**2.5**
14.	Demonstration of dressing of broiler. Economics of layer and broiler farming	**2.5**
15.	Visit to a modern dairy and commercial layer and broiler farms	**2.5**
16.	Demonstration of incubator and setter	**2.5**

TEXT BOOK:

1. ICAR (2002) Hand of Animal Husbandry, ICAR, New Delhi.

REFERENCES:

1. http://www.elearnvet.net/
2. http://agridr.in/expert_system/cattlebuffalo/Breeding%20management%20of%20cattle%20and%20b uffaloes-2.html

COURSE OUTCOMES (COs)	
CO1	Students will learn livestock and poultry play an important role on our nation economy.
CO2	To get knowledge on different livestock production
CO3	Acquire knowledge on dairy and cattle management.
CO4	Learn the techniques of sheep and goat management
CO5	Gain advance knowledge of breed classification and management techniques of swine.
CO6	Import classification of breeds and poultry management systems.

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	**COs/POs**	**PO1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**PSO1**	**PSO2**	**PSO3**
2	**CO1**	3	1	1	3	3	3	3	3	3	3	3	3	-	–	2
	CO2	3	3	3	3	3	3	3	3	3	3	3	3	-	-	2
	CO3	3	3	3	3	3	3	3	3	3	3	3	3	-	-	2
	CO4	3	3	3	3	3	3	3	3	3	3	3	3	-	-	2
	CO5	3	3	3	3	3	3	3	3	3	3	3	3	-	-	2
	CO6	3	3	3	2	2	2	2	3	3	2	3	3	-	-	2
3	**Category**	Allied Sciences (AS)														
4	**Approval**	Academic Council, Aug 2018														

Subject Code : U18AAEC 201	FARM MANAGEMENT, PRODUCTION AND RESOURCE ECONOMICS	L	T	P	C
	Total Contact Hours – 56	1	0	1	2
	Prerequisite course: Fundamentals of Agricultural Economics				
	Course Coordinator Name & Department: Dr.R.Thulasiram, School of Agricultural sciences				
COURSE OBJECTIVES:-	• To introduce principles and tools of analysis as applied to practical farm management decisions and to impart basic knowledge on economics of production and natural resource economics				

THEORY

UNIT I: PRODUCTION ECONOMICS AND FARM MANAGEMENT - NATURE AND SCOPE **3**

Meaning and concept of farm management, objectives and relationship with other sciences. Meaning and definition of farms, its types and characteristics, factors determining types and size of farms. Types of farming: Specialized, Diversified, and Mixed farming – Systems of farming: Peasant Farming, State Farming, Capitalistic, Collective and Co – operative Farming.

UNIT II: FACTOR – PRODUCT, FACTOR – FACTOR AND PRODUCT – PRODUCT RELATIONSHIPS **4**

Principles of farm management: concept of production function and its characteristics and its type, use of production function in decision-making on a farm. Factor-Product relationship. Meaning, Definition – Laws of Returns. Meaning and concept of cost, types of costs, cost curves - and their inter-relationship - shut down and break-even points, importance of cost in managing farm business and estimation of gross farm income, net farm income, family labor income and farm business income. Economies of Scale – Economies of Size - Determination of Optimum Input and Output – Physical and Economic Optimum. Factor – Factor relationship: Least Cost Combination of inputs; Product – Product relationship: Optimum Combination of Products – Principle of Equi – Marginal Returns – Principle of Opportunity Cost and Minimum Loss Principle. Law of Comparative Advantage.

UNIT III: FARM PLANNING AND BUDGETING **3**

Farm business analysis: meaning and concept of farm income and profitability, technical and economic efficiency measures in crop and livestock enterprises. Importance of farm records and accounts in managing a farm, various types of farm records needed to maintain on farm, farm inventory, balance sheet, profit and loss accounts. Meaning and importance of farm planning and budgeting, partial and complete budgeting, steps in farm planning and budgeting - linear programming, appraisal of farm resources, selection of crops and livestock's enterprises.

UNIT IV: RISK AND UNCERTAINTY IN AGRICULTURE PRODUCTION **2**

Concept of risk and uncertainty occurrences in agriculture production, nature and sources of risks and their management strategies**,** Crop / livestock / machinery insurance. Weather based crop insurance - Features and determinants of compensations.

UNIT V: RESOURCE ECONOMICS **4**

Resource Economics: Concepts, Classification, differences between Natural Resource Economics (NRE) and agricultural economics, unique properties of natural resources. Natural Resources - Issues – Scarcity of resources – Factors mitigating scarcity – Property Rights: Common Property Resources (CPRs): meaning and characteristics of CPRs – Externalities: meaning and types - positive and negative externalities in agriculture, Inefficiency and welfare loss, solutions; Important issues in

economics and management of common property resources of land, water, pasture and forest resources.

PRACTICAL – LIST OF PRACTICAL SCHEDULE

1.	Preparation of farm layout. Determination of cost of fencing of a farm.	**2.5**
2.	Computation of depreciation and cost of farm assets: Valuation of assets by different methods	**2.5**
3.	Application of equi - marginal returns / opportunity cost principle in allocation of farm resources	**2.5**
4.	Determination of most profitable level of inputs use in a farm production process.	**2.5**
5.	Determination of least cost combination of inputs	**2.5**
6.	Selection of most profitable enterprise combination	**2.5**
7.	Application of cost principles including CACP concepts in the estimation of cost of cultivation and cost of production of agricultural crops.	**2.5**
8.	Estimation of cost of cultivation and cost of production of perennial crops / horticultural crops	**2.5**
9.	Estimation of cost of returns of livestock products.	**2.5**
10.	Preparation of farm plan and budget	**2.5**
11.	Farm records and accounts: Usefulness, types of farm records: farm production records and farm financial records.	**2.5**
12.	Preparation of Cash flow statement	**2.5**
13.	Preparation and Analysis of Net worth Statement and Profit and Loss statement	**2.5**
14.	Estimation of Break – even analysis.	**2.5**
15.	Graphical solution to Linear Programming problem	**2.5**
16.	Collection and analysis of data on various resources in India.	**2.5**

TEXT BOOKS:

1. Sankayan, P.L. 1983. Introduction to Farm Management. Tata McGraw Hill Publishing Company Ltd. New Delhi.Johl, S.S & Kapoor, T.R. 1973. Fundamentals of Farm Business Management. Kalyani Publishers, Ludhiana.
2. Kahlon, A.S and Singh K. 1992. Economics of Farm Management in India. Allied Publishers. New Delhi.
3. Doll, J.P. and F. Orazem. 1983. Theory of Production Economics with Applications to Agriculture. John Wiley, New York.

REFERENCES:

1. Debertin, D.L. 1986. Agricultural Production Economics. Macmillan. New York.
2. Heady, E.O. and H.R. Jensen. 1954. Farm Management Economics. Prentice – Hall. Englewood Cliffs.
3. Kay, Ronald D., and William M. Edwards, and Patricia Duffy. 2004. Farm Management. Fifth Edition. McGraw–Hill Inc. New York.
4. Panda, S.C. 2007. Farm Management and Agricultural Marketing. Kalyani Publishers. Ludhiana. India.

E- REFERENCES:

1. https:// www.eagri.org
2. https://www.agrimoon.org
3. https://www.tnauagritech.ac.in

COURSE OUTCOMES (COs)	
CO1	To know optimum use of land, labour, and capital use in Agricultural production
CO2	To understand the art and principles underlying decision over: What-to-produce, Where-to-produce and How-to-produce.
CO3	To analyse ways for optimal resource-use for production of crops, livestock and allied enterprises.
CO4	To know how to manage a farm
CO5	To learn about economic importance of natural resources
CO6	To devise plans to overcome risks and manage farm resources

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	**COs/POs**	**PO1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**PSO1**	**PSO2**	**PSO3**
2	**CO1**	2	1	-	1	-	-	-	-	-	-	1	2	-	2	-
	CO2	2	1	1	2	1	-	-	-	-	-	-	1	-	2	-
	CO3	1	-	1	3	1	-	-	-	1	1	2	-	-	2	-
	CO4	2	1	1	-	-	2	1	-	3	-	3	3	-	2	-
	CO5	-	-	-	-	-	-	1	1	1	-	-	-	-	2	-
	CO6	-	-	-	-	-	-	-	-	2	-	2	3	-	2	-
3	**Category**	Allied Sciences (AS)														
4	**Approval**	Academic Council, Aug 2018														

Subject Code : U18CSAC201	SOIL RESOURCE INVENTORY		L	T	P	C
	Total Contact Hours – 56		1	0	1	2
	Prerequisite course	Fundamentals of Soil Science				
	Course Coordinator Name & Department	Dr.S.Sivagnanam, School of Agricultural Sciences				
COURSE OBJECTIVES:-	To impart knowledge about soil survey, maps, USDA soil taxonomy classification and soil survey report and soil fertility classification.					

THEORY

UNIT I **5**

Soil Survey: Importance-Definition-Purpose of soil survey- Standard soil survey - Scope and objectives - Fundamental and Applied. Soil systematics- pedon and polypedon, control section and three dimensional nature of soil body. Soil mapping units: Soil series, soil association, soil complex, variants, inclusions and miscellaneous land types.

UNIT II **4**

Methods of soil survey:Base maps, Traversing: Grid survey and Free survey.Types of soil survey:Detailed, Reconnaissance, Detailed- Reconnaissance and Semi–Detailed soil survey. Soil mapping.

UNIT-III **4**

Soil Classification -Purpose -Early and modern systems -USDA system of soil classification and its advantages. Soil taxonomy - Diagnostic horizons: surface and sub surface-structure and differentiating characteristics and limitations. Soil orders – description. Distribution of Soil orders in world. Soils of India and Tamil Nadu.

UNIT-IV **3**

Soil survey reports - Soil Survey Interpretations - Land Capability Classification - Soil and Land Irrigability Classification - Storie Index Rating - Productivity potential - Fertility Capability Classification - Crop suitability: Field crops, horticultural crops and forest trees. Delineation of soils for fertility – Nutrient indexing. Land Use Planning concepts and objectives.

PRACTICAL – LIST OF EXPERIMENTS

1.	Site characteristics and Soil Profile description	**2.5**
2.	Morphological study of soil profile 1 (Red soil)	**2.5**
3.	Morphological study of soil profile 2 (Black soil)	**2.5**
4.	Morphological study of soil profile 3 (Alluvial / Laterite soil)	**2.5**
5.	Estimation of CEC in soil	**2.5**
6.	Estimation of cations and free CaCO3	**2.5**
7.	Study of base maps- Topo sheets and cadastral maps	**2.5**
8.	Study of base maps- Aerial photographs or satellite imageries	**2.5**
9.	Interpretation of soil survey data and maps	**2.5**
10.	Interpretation of soil data for land capability.	**2.5**
11.	Interpretation of soil data for crop suitability for field crops	**2.5**
12.	Interpretation of soil data for crop suitability for horticultural crops	**2.5**
13.	Interpretation of soil data for crop suitability for forest trees	**2.5**
14.	Interpretation of soil data for fertility capability classes	**2.5**
15.	Interpretation of soil data for productivity rating	**2.5**
16.	Interpretation of soil data for Nutrient Indexing.	**2.5**

REFERENCES:

1. Buol, S.W., Hole, F.D., McCracken, R.J., (1973). Soil genesis and classification. Oxford and IBH publishing Co., New Delhi.
2. Lillesand, T.M. and Kiefer, R.W., 1987. Remote sensing and image interpretation, John Wiley and sons, inc, New York.
3. Sehgal, J.2005. Pedology concepts and applications, Kalyani Publishers, New Delhi.
4. Soil Survey Division Staff 1999. Soil Survey Manual, USDA publication.
5. Steven, M.D. and Clark, J.A. 1990. Applications of Remote Sensing in Agriculture, Cambridge University, UK.
6. USDA 1954. Diagnosis and improvements of Saline and alkali soils. (Ed) L.A.Richards. Handbook No.60. USDA Washington DC.
7. Anji Reddy, M., 2002. Remote sensing and geographical information systems, BS publication, Hyderabad.
8. Somani, L.L. and K.L.Totawat 1993. Management of Salt Affected Soils and Water

E-REFERENCES:

1. ftp://ftp-fc.sc.egov.usda.gov/NSSC/NCSS/Conferences/scanned/
2. ftp://ftp-fc.sc.egov.usda.gov/NSSC/Lab_References/SSIR_51.pdf
3. tp://ftp-fc.sc.egov.usda.gov/NSSC/Lab_References/SSIR_51.pdf
4. www.iuss.org/Bulletins/00000096.pdf
5. www.oosa.unvienna.org/pdf/sap/centres/rscurrE.pdf -
6. en.wikipedia.org/wiki/Geographic_information_system
7. ww.annauniv.edu/cia/Curric%20Syllabi/M.../Remote%20Sensing.pdf
8. www.csre.iitb.ac.in/~dd/detail.html

COURSE OUTCOMES (COs)	
CO1	Describe the soil survey and mapping units. **(Knowledge)**
CO2	Classify the different methods of soil survey and land types.**(Understand)**
CO3	Demonstrate the purpose of soil classification by USDA and soil taxonomy. **(Apply)**
CO4	Assess the different types of soils in Tamil Nadu and India.**(Evaluate)**
CO5	Validate the lands based on capability and fertility classification.**(Create)**
CO6	Evaluate the land for crop suitability based on soil quality.**(Evaluate)**

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	**COs/POs**	**PO1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**PSO1**	**PSO2**	**PSO3**
2	**CO1**	3	1	3	1	1	-	-	2	1	3	-	-	2	-	-
	CO2	2	1	3	1	1	-	-	2	1	3	-	-	2	3	-
	CO3	3	-	3	2	1	-	-	2	1	2	-		2	-	-
	CO4	3	-	2	2	1	2	1	3	3	3	-	3	2	-	-
	CO5	3	3	3	2	3	3	1	3	3	3	-	3	2	2	2
	CO6	3	3	3	2	3	3	1	3	3	3	-	3	2	1	2
3	**Category**	Professional Core (PC)														
4	**Approval**	Academic Council, Aug 2018														

Subject Code : U18CFMP211	FARM MACHNERY AND POWER		L	T	P	C
	Total Contact Hours – 56		1	0	1	2
	Prerequisite course	Fundamentals of Agronomy and Agricultural Heritage				
	Course Coordinator Name & Department	Mrs. K Y Rajalakshmi School of Agricultural Sciences				
COURSE OBJECTIVES:-	• To enable the students for better understanding on the availability of farm power resources and have a clear understanding about the working and components of engine. • To gain knowledge about various tillage, sowing, intercultural, plant protection and harvesting equipments. • To enable the students for better understanding in problem solving on the cost analysis of tractors and tractor with attached implements					

THEORY

UNIT I: FARM POWER & IC ENGINES **4**

Status of Farm Power in India, Sources of Farm Power, I.C. engines, working principles of IC engines, comparison of two stroke and four stroke cycle engines , Study of different components of IC engine, I.C. engine terminology and solved problems, Familiarization with different systems of I.C. engines: Air cleaning, cooling, lubrication, fuel supply.

UNIT II :TRACTOR & FUNCTIONAL COMPONENTS **3**

Hydraulic control system of a tractor, Familiarization with Power transmission system clutch, gear box, differential and final drive of a tractor,Tractor types, Cost analysis of tractor power and attached implement.

UNIT III: TILLAGE IMPLEMENTS **3**

Familiarization with Primary and Secondary Tillage implement, Implement for hill agriculture.

UNIT IV: SOWING & INTERCULTURAL IMPLEMENTS **4**

Familiarization with sowing and planting equipment, calibration of a seed drill and solved examples, implement for intercultural operations.

UNIT V: PLANT PROTECTION AND HARVESTING EQUIPMENTS **2**

Familiarization with Plant Protection equipment, Familiarization with harvesting and threshing equipment.

PRACTICAL – LIST OF PRACTICAL SCHEDULE

1.	Study of working of two and four stroke IC engines and their systems with solved problems.	**2.5**
2.	Study of Tractor clutch, gearbox, differential and final drive. Study of brake steering, and hydraulic control.	**2.5**
3.	Learning driving of tractor and power tiller	**2.5**
4.	Study of tractors and power tillers – their operation and maintenance	**2.5**
5.	Study of mould board plough, - methods of ploughing- with solved problems.	**2.5**
6.	Disc plough and subsoiler and their components- Hitching and adjustment of plough - field operation of different tractor drawn primary tillage machinery.	**2.5**
7.	Study of cultivator, disc harrows, Rotavator, bund former, ridger, leveller and puddling implements and their operation.	**2.5**

8.	Study of seed drills, planters and seed-cum-fertilizer drills and their components and metering mechanisms - calibration- simple problems on calibration.	**2.5**
9.	Study and operation of machinery for rice cultivation - puddling implements- rotary puddlers and cage wheels, tray seeder for rice nursery, transplanters- types operation and maintenance- Drum seeder, conoweeder, power weeder and finger type weeder.	**2.5**
10.	Study of different inter-cultivation equipment for uplands - manual, animal drawn, power operated - tractor and power tiller operated - field operation	**2.5**
11.	Study of plant protection equipment – manually operated sprayers and dusters, knapsack mist blower cum duster, tractor operated sprayers- their operation, adjustment, calibration and safety requirements	**2.5**
12.	Study of tools for Hill agriculture and horticultural crops – propagation tools, vegetable transplanter, harvesting tools -lawn mower, hole diggers, tree climber, shredders for crop residue.	**2.5**
13.	Threshing machinery for paddy and identification of its components- different threshing drums - calculation of efficiency and losses.	**2.5**
14.	Study of paddy reaper and paddy combine- their systems, method of operation and adjustment.	**2.5**
15.	Study of harvesters for root crops - turmeric and tapioca and groundnut diggers	**2.5**
16.	Problems on cost of operation of tractor operated machinery.	**2.5**

TEXT BOOKS:

1. Jagadishwar Sahay, 2010 - Elements of Agricultural Engineering. Standard Publishers Distributers, Delhi. ISBN 978-8180140440
2. Ojha, T. P. and Michael, A.M. Principles of Agricultural Engineering. Vol. I, Jain Brothers, 16/893, East Park Road, Karol Bagh, New Delhi – 110005.

REFERENCES:

1. S.C.Jain and C.R.Rai. Farm Tractor – Maintenance and Repair. Standard Publishers, 1705-B, NaiSarak, Delhi – 110006
2. Senthilkumar, T., R. Kavitha and V.M.Duraisamy 2015. A Text Book of Farm Machinery, Thannambikkai Publications, Coimbatore . ISBN: 978-9381102305

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1. www.agricoop.nic.in/dacdivision/Machinery1/directory.htm
2. www.farmmachineryshow.org
3. http://www.hillagric.ac.in/edu/coa/agengg/lecture/243/agriengg-243.htm
4. http://www.digitalbookindex.org/subject_search/search010agricultureequipmenta
5. http://ecoursesonline.iasri.res.in/course/view.php?id=540

COURSE OUTCOMES (COs)	
CO1	Students will able to know about the importance and contribution of various sources of farm power and their availability in India.
CO2	Students will learn about the different Components of IC Engines and various system associated with it such as cooling system, lubrication system fuel system and its components
CO3	Student learns about different components of IC Engines and transmission system of tractor.
CO4	Student gains information about various primary and secondary tillage systems which can

	operate manually or by animal power.
CO5	This course also gives information related sowing and various plant protection equipment such as seed drill, planter, sprayers and duster.
CO6	It also gives brief knowledge about various harvesting and threshing equipment and on cost analysis of tractor and with attached implements.

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	**COs/POs**	**PO1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**PSO1**	**PSO2**	**PSO3**
2	**CO1**	3	2	2	3	3	2	-	2	2	2	2	3	–	√	√
	CO2	1	3	2	2	-	1		3	2	-	-	3	-	-	√
	CO3	1	3	2	2	-	1		3	2	-	-	3	-	-	√
	CO4	2	2	2	3	3	2	-	2	2	-	1	2	-	√	√
	CO5	2	1	2	3	3	2	-	2	1	-	2	3	-	√	√
	CO6	3	1	2	3	3	2	-	2	1	-	2	3	-	√	√
3	**Category**	Professional Core (PC)														
4	**Approval**	Academic Council, Aug 2018														

Subject Code : U18CAGR202	STUDY TOUR		L	T	P	C
	Total Contact Hours – 40		0	0	1	1
	Prerequisite course	Fundamentals of B.Sc.(Hons). Agriculture courses				
	Course Coordinator Name & Department	Dr. V. Prakash School of Agricultural Sciences				
COURSE OBJECTIVES:-	Students will visit important Agricultural research stations and institutions and also visit familiar with various agro based industries and its operation					

PRACTICAL

The students will undertake the short tour during third semester for seven days covering KVK's, Research stations, Sister campuses and ICAR institutes in the southern part of Tamil Nadu. The study tour will provide an exposure to the students to know about the soil, climatic conditions and cropping patterns in the respective agro-climatic zones. The students will also have first-hand information on latest technologies on various crops and allied activities.

COURSE OUTCOMES (COs)	
CO1	Gain knowledge about various soil types presented in different regions
CO2	Formulate different cropping systems followed in various agro climatic regions
CO3	Understand information pertaining to the different crops and their cultivation methods.
CO4	Create awareness about different agro based industries
CO5	Apply new post harvest management technologies and value addition of crops
CO6	Understand the practical constraints in production technologies and post harvest management for various crops in farmers field

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	COs/POs	PO1	2	3	4	5	6	7	8	9	10	11	12	PSO1	PSO2	PSO3
2	**CO1**	3	-	-	1	2	2	2	-	1	-	-	2	3	2	1
	CO2	3	-	-	1	2	2	2	-	1	-	-	2	3	-	1
	CO3	3	-	-	-	2	2	2	-	-	-	-	2	3	-	1
	CO4	3	-	-	-	2	2	2	-	-	-	-	3	3	-	1
	CO5	3	-	-	-	2	2	2	-	-	-	-	3	3	-	1
	CO6	3	-	-	-	2	2	2	-	-	-	-	3	3	-	1
3	**Category**	Professional Core (PC)														
4	**Approval**	Academic Council, Aug 2018														

Subject Code : U18HNSS101	NSS 101 NATIONAL SERVICE SCHEME (0+1)		L	T	P	C
	Total Contact Hours – 40		0	0	1	1
	Prerequisite course	Nil				
	Course Coordinator Name & Department	Dr. S. P. Vijayaragavan NSS Program Co-ordinator				
COURSE OBJECTIVES:-	Enable the students to understand the community in which they work and to understand themselves in relation to their community					

PRACTICAL SCHEDULE – NSS

1.	Conducting field days with KVK to popularize improved agro techniques	**2.5**
2.	Conducing seminar / workshop in a nearby village to motivate the youth on agribusiness (involving DEE, KVK, NGO and local agro-entrepreneurs)	**2.5**
3.	Campaign on self employment opportunities like Apiculture, mushroom cultivation, Food processing and value addition, production of biocontrol agents and biofertilizers, nursery techniques, seed production, tissue culture, vermicompost, manucacture of small gadgets and agricultural implements as per local needs and feasibility.	**2.5**
4.	Campaign on self employment opportunities like Apiculture, mushroom cultivation, Food processing and value addition, production of biocontrol agents and biofertilizers, nursery techniques, seed production, tissue culture, vermicompost, manucacture of small gadgets and agricultural implements as per local needs and feasibility	**2.5**
5.	Campaign on self employment opportunities like Apiculture, mushroom cultivation, Food processing and value addition, production of biocontrol agents and biofertilizers, nursery techniques, seed production, tissue culture, vermicompost, manucacture of small gadgets and agricultural implements as per local needs and feasibility	**2.5**
6.	Animal health care campaign – Dairy and poultry farming - Forage production techniques and silage making.	**2.5**
7.	Training the NSS volunteers on road safety measures in involving traffic wardens and RTO.	**2.5**
8.	Training NSS volunteers on First AID and emergency call involving NGOs and organizations like St. John's Ambulance, Red Cross, etc.,	**2.5**
9.	Organizing road safety rally	**2.5**
10.	Motivating NSS Volunteers on small savings concept and conveying the message to the public through them	**2.5**
11.	Observation of National integration and communal harmony	**2.5**
12.	Campus development and greening activities	**2.5**
13.	Campus development and greening activities	**2.5**
14.	Campus development and greening activities	**2.5**
15.	Campus development and greening activities	**2.5**
16.	Campus development and greening activities	**2.5**

Besides the above, NSS volunteers will attend work during important occasions like Convocation, Farmers day, Sports meet and other University / College functions. For all out door regular activities villages / slums nearby the campus may be selected to avoid transport cost (cycle able distance)

COURSE OUTCOMES (COs)	
CO1	To evoke social consciousness among students through various activities.
CO2	To develop youth leadership in the students
CO3	To utilize their knowledge in finding practical solutions to individual and community problems
CO4	To create the awareness of all kinds of discipline to the students
CO5	To practice national integration and social harmony, To Gain skills in mobilizing community participation
CO6	To identify the needs and problems of the community and involve them in problem solving process
Category	Humanities and Social Sciences (HS**)**
Approval	Academic Council, Aug 2018

Subject Code : U18HNCC101	NATIONAL CADET CORPS	L	T	P	C
	Total Contact Hours – 40	0	0	1	1
	Prerequisite course	Nil			
	Course Coordinator Name & Department	Dr. R. Udaya Kumar NCC Officer			

PRACTICAL SCHEDULE – NCC

1.	Drill – Individual word of command	**2.5**
2.	Weapon training – parts of heavy weapons	**2.5**
3.	Stripping and assembling of heavy weapons	**2.5**
4.	Importance of team work values, code of ethics	**2.5**
5.	Disaster management during Earth Quake	**2.5**
6.	Evacuation of Causalities	**2.5**
7.	Map reading – Camposs and Service Protractor	**2.5**
8.	Aids to civil authority	**2.5**
9.	Section and platoon formation	**2.5**
10.	Social service, NGO's and their contribution to the society	**2.5**
11.	Roll of NCC cadets in civil administration	**2.5**
12.	Traffic rules and Road signs	**2.5**
13.	Mines and types of mine fields	**2.5**
14.	Dressing of Wounds, physical and mental health	**2.5**
15.	Field signals	**2.5**
16.	Air raid warning, Fire fighting	**2.5**

Besides the above schedule, NCC cadets will be involved during important occasions during convocation, Independence day, Republic day, etc.

Category	Humanities and Social Sciences (HS**)**
Approval	Academic Council, Aug 2018

II YEAR IV SEMESTER

S.No.	Course Code	Course Title	Credit Hours
1.	U18CPBG201	Fundamentals of Genetics	2+1
2.	U18AAEX201	Communication Skills and Personality Development	1+1
3.	U18BSTA211	Statistical Methods	1+1
4.	U18CPAT202	Principles of Plant Disease Management	1+1
5.	U18CAEN202	Management of Beneficial and Harmful Insects	2+1
6.	U18CAGR203	Crop Production Technology – II (Rabi crops)	1+1
7.	U18CAGR204	Farming System & Sustainable Agriculture	1+1
8.	U18CSAC202	Problematic soils and their management	2+0
9.	U18CHOR 212	Production Technology for Ornamental Crops, MAPs and Landscaping	1+1
10.	U18CANM201	Introductory Nematology	0+1
11.	U18ANST201	Fundamentals and Applications of nanotechnology	1+0
12.	U18AERG211	Renewable Energy and green technology	1+1
13.	U18HNSS/NCC 101	NSS/NCC	0+1*
14.	U18HPED 101	Physical Education	0+1*
		Total	**14+10=24**

***Non-gradial compulsory courses**

Subject Code : U18CPBG201	FUNDAMENTALS OF GENETICS	L	T	P	C
	Total Contact Hours – 72	2	0	1	3
	Prerequisite course: Basic Biology at Intermediate level				
	Course Coordinator Name & Department: Dr. S.Anandhi Lavanya, School of Agricultural sciences				

COURSE OBJECTIVES:-

- To understand the basic concepts of genetics, principles and their application, ultra structure of cell and cell organelles.
- To impart knowledge on inheritance and variation and to understand the parallelism between the behavior of chromosomes and genes.
- To understand the modern concepts of genetics at molecular level.

THEORY

UNIT I: CYTOLOGY **10**

Definition of genetics, heredity, inheritance, cytology, cytogenetics; Brief history of developments in genetics and cytogenetics.Physical basis of heredity. Structure and function of cell and cell organelles – Differences between Prokaryotes and Eukaryotes.Cell division – mitosis- meiosis and their significance - Gametogenesis and syngamy in Plants- identical and fraternal twins. Chromosome structure, chemical composition, nucleosome, centromere, telomere, euchromatin, heterochromatin, NOR, satellite chromosome, karyotype, ideogram. Types of chromosomes based on position of centromere, based on structure and function: normal and special chromosomes - polytene, lampbrush, Bchromosomes, ring and isochromosomes.Chromosomal aberration: Variation in chromosome structure – deletion, duplication, inversion and translocation – genetic and cytological implications.Chromosomal aberration: Variation in chromosome number – euploid, aneuploid, types of aneuploids and their origin; Klinefelter syndrome and Turner syndrome; Polyploid - auto and allopolyploids, their characters; meaning of genome; evolution of wheat, triticale, cotton, tobacco, *Brassica*

UNIT II: MENDELIAN LAWS AND MODIFICATIONS OF MENDELIAN LAWS **9**

Pre-Mendelian ideas about heredity – Vapour and fluid theory, Magnetic power theory, Preformation theory, Lamarck's theory, Darwin's theory, Germplasm theory and Mutation theory.Mendel's complete dominance, codominance, incomplete dominance,thresholdcharacters.Deviation from Mendelian inheritance – Non allelic interaction without modification in Mendelian ratio – Bateson and Punnett's experiment on fowl comb shape. Non allelic interaction with modification in Mendelian ratio – i.) Dominant epistasis (12:3:1). ii.) Recessive epistasis(9:3:4) iii.) Duplicate and additive epistasis(9:6:1). iv.) Duplicate dominant epistasis(15:1). v) Duplicate recessive epistasis (9:7) vi.) Dominant and recessive epistasis (13:3); Summary of epistatic ratios (i)to (vi).Lethal genes, Pleiotrophy, penetrance and expressivity, Multiple alleles, blood group in human, coat colour in rabbits, self incompatibility in plants; pseudo alleles, isoalleles.experiments and laws of inheritance.Rediscovery of Mendel's work.Terminologies: gene, allele, locus, homozygous, heterozygous, hemizygous, genotype, phenotype, monohybrid, dihybrid, trihybrid, polyhybrid.Chromosomal theory of inheritance.Allelic interactions – Dominance vs recessive.

UNIT III: QUANTITATIVE INHERITANCE, LINKAGE AND CROSSING OVER **7**

Quantitative inheritance – Multiple factor hypothesis – Nilsson Ehle experiment on wheat kernel colour.Polygenes – transgressive segregation, comparison of quantitatively and qualitatively inherited characters; modifiers; Linkage - coupling and repulsion; Experiment on Bateson and Punnet. Chromosomal theory of linkage of Morgan – Complete and incomplete linkage- Linkage group.Crossing over – significance of crossing over; cytological proof for crossing over - Stern's experiment - Factors controlling crossing over.Strength of linkage and recombination; Two point and

three point test cross.Double cross over, interference and coincidence; genetic map, physical map.

UNIT IV: SEX DETERMINATION, SEX LINKAGE AND CYTOPLASMIC INHERITANCE **5**

Sex determination: Autosomes and sex chromosomes - chromosomal theory of sex determination - different types – sex determination in human, fowl, butterfly, grasshopper, honey bee, fumea; Sex determination in plants – *Melandrium*, papaya, maize.Genic balance theory of Bridges – Gynandromorphs.Sex linked inheritance – criss cross inheritance – reciprocal difference; holandric genes; sex influenced and sex limited inheritance - Genetic disorders.Cytoplasmic inheritance and maternal effects – features of cytoplasmic inheritance, chloroplast, mitochondrial - plastid colour in *Mirabilis jalapa*- cytoplasmic male sterility in maize, kappa particles of paramecium.

UNIT V: MODERN CONCEPT OF GENETICS AND MUTATION **4**

DNA, the genetic material – Griffith's experiment, Avery, McCleod and McCarthy Experiment – confirmation by Hershey and Chase; RNA as genetic material – Frankel, Conrat and Singer experiment.Structure of DNA – Watson and Crick model. Proof for semi conservative method of DNA replication; Models of DNA replication; steps involved in DNA replication. RNA types - mRNA, tRNA, rRNA. Protein synthesis - Regulation of gene expression – Operon model of Jacob and Monad – Lac and Trpoperons.Cistron,muton and recon.Mutation – characteristics of mutation – micro and macro mutation – ClB technique - molecular basis of mutation- Transition and transversion; major physical and chemical mutagens.

PRACTICAL – LIST OF PRACTICAL SCHEDULE

17.	Use of microscopes	**2.5**
18.	Principles of killing and fixing; preparation of stains and preservatives	**2.5**
19.	Study of behaviour of chromosomes in mitosis	**2.5**
20.	Study of mitotic phases in root tips of onion / *Aloe sp*	**2.5**
21.	Procedure for fixing and observing different meiotic phases in the inflorescence of rice, maize	**2.5**
22.	Procedure for fixing and observing different meiotic phases in the inflorescence in pearl millet, sorghum	**2.5**
23.	Repetition of meiotic studies in maize/ sorghum/ pearl millet and making temporary and permanent slides.	**2.5**
24.	Principles of dominance, recessive, back cross, test cross, incomplete dominance, codominance and lethal factor; Chi square test; Monohybrid genetic ratio with dominance, with incomplete dominance and test cross	**2.5**
25.	Dihybrid ratio with dominance, with incomplete dominance and test cross	**2.5**
26.	Simple interaction of genes-comb character in fowls; Dominant epistasis	**2.5**
27.	Recessive epistasis, Duplicate and additive epistasis	**2.5**
28.	Duplicate dominant epistasis, Duplicate recessive epistasis, Dominant and recessive epistasis	**2.5**
29.	Multiple alleles and polygenic inheritance	**2.5**
30.	Estimation of linkage with F_2 and test cross data; Coupling and repulsion	**2.5**
31.	Problems on three point test cross; Working out interference, coincidence and drawing genetic maps	**2.5**
32.	Studies on sex linked inheritance in Humans and Drosophila	**2.5**

REFERENCES:

1. Gupta P.K., 1997. Cytogenetics. Rastogi Publications, Meerut
2. Verma,P.S. and V.K.Agarwal. 2007. Genetics. S.Chand and Company Ltd./ New Delhi.
3. Stansfield, W.D.1990. Theory and problems of genetics. Mc-Graw Hill Book Co.,New York
4. Pundhan singh. 2014. Elements of Genetics. Kalyani Publishers
5. Benjamin Lewin. 2005. Genes IX Oxford University Press, Oxford.
6. Russel, P.J. 2000. Fundamentals of genetics. Addition Wesley Longman Publishers, USA
7. Daniel Sundara raj, G. Thulasidas and M.StephenDorairaj, 1997. Introduction to Cytogenetics and Plant Breeding. Popular Book Depot, Chennai –15.
8. Strickberger. M.W. 1996. Genetics. Prentice-Hall of India Pvt. Ltd. New Delhi.
9. Singh, B.D. 2004. Fundamentals of Genetics, Kalyani Publishers, Chennai

E- REFERENCES:

1. www.nmsu.edu,
2. www.biology200.gsu.edu

COURSE OUTCOMES (COs)	
CO1	Explain the basic principles of inheritance and Cell structure
CO2	Discuses about the practical hands on experience in the basic skills employed in Microscopes
CO3	Developed the capacity to work out the various classical examples in genetics, crossing over and their interactions and Sex determination
CO4	Explain the Structure and Models of DNA, RNA and Protein Synthesis.
CO5	Discriminate to the carryout cytological analysis in breeding populations.
CO6	Enumerate the various principles modern concepts of genetics and Regulation of gene expression

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	**COs/POs**	**PO1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**PSO1**	**PSO2**	**PSO3**
2	**CO1**	3	-	-	-	-	-	2	-	-	-	-	2	3	–	-
	CO2	3	-	2	-	-	-	2	-	-	-	-	2	3	-	-
	CO3	3	-	-	-	2	2	-	-	-	-	-	2	2	-	-
	CO4	3	-	2	-	2	-	-	-	-	-	-	2	2	-	-
	CO5	3	-	2	-	-	-	-	-	-	-	-	1	3	-	-
	CO6	3	-	3	-	2	-	-	-	-	-	-	2	3	-	-
3	**Category**	Professional Core (PC)														
4	**Approval**	Academic Council, Aug 2018														

Subject Code : U18AAEX201	COMMUNICATION SKILLS AND PERSONALITY DEVELOPMENT	L	T	P	C
	Total Contact Hours – 56	1	0	1	2
	Prerequisite course	1. Comprehension and Communication Skills in English 2. Development Education			
	Course Coordinator Name & Department	Dr.R.Thulasiram, School of Agricultural sciences			
COURSE OBJECTIVES:-	To enhance communication skills, develop writing and reading skills and Imparting knowledge on developing presentation skills				

THEORY

UNIT I **3**

Communication Skills: meaning and process of communication, verbal and nonverbal communication

UNIT II **4**

Listening and note taking, writing skills, oral presentation skills; field diary and lab record; indexing, footnote and bibliographic procedures

UNIT III **3**

Reading and comprehension of general and technical articles, precise writing, summarizing, abstracting

UNIT IV **3**

Individual and group presentations, impromptu presentation, public speaking.

UNIT V **3**

Group discussion. Organizing seminars and conferences

PRACTICAL – LIST OF PRACTICAL SCHEDULE

1.	Practicing active listening	**2.5**
2.	Exercise on note taking methods	**2.5**
3.	Exercise on technical writing and practicing proof correction	**2.5**
4.	Practicing oral presentation	**2.5**
5.	Exercise on writing field diary and Lab record	**2.5**
6.	Visit to library and learn indexing	**2.5**
7.	Exercise on preparing foot notes and citations	**2.5**
8.	Practice on effective reading skills	**2.5**
9.	Comprehension of technical article	**2.5**
10.	Comprehension of general article	**2.5**
11.	Exercise on precise writing	**2.5**
12.	Practice on summarizing articles	**2.5**
13.	Practice on preparing abstracts	**2.5**
14.	Developing skill on individual presentation	**2.5**
15.	Developing skill on individual presentation	**2.5**
16.	Developing skill on group presentation	**2.5**

TEXT BOOKS:

1. G.L. Ray and Sagar mondal. 2010. Journalism –Farm journalism and communication skills. Kalyani publishers
2. Sagar Mondal. 2016. Agricultural extension , Kalyani publishers
3. G. L. Ray 2007 Extension Communication and Management , Kalyani publishers
4. Communication and Instructional Technology, By: Indu Grover, Shusma Kaushik, Lali Yadav, Deepak Grover & Shashikanta Verma

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1. Indu Grover, Lali Yadav & Deepak Grover Extension Management, Agrotech
2. Everett Rogers, and Floyd Shoemaker, Communication of Innovation – a Cross Cultural Approach, New York Free Press
3. Knapp, Mark L., & Hall, Judith A .(2007) Nonverbal Communication in Human Interaction. (8th ed.) Wadsworth: Thomas Learning
4. Kathleen M. German, Bruce E Gronbeck Principles of Public Speaking

E- REFERENCES:

1. https:// www.eagri.org
2. https://www.agrimoon.org
3. https://www.tnauagritech.ac.in

COURSE OUTCOMES (COs)	
CO1	To impart the knowledge on Communication Skills
CO2	To learn about communication models and modes
CO3	To gain basic knowledge on listening, reading and writing skills
CO4	To get knowledge on parts and types of research
CO5	To get knowledge on technical writings and library sciences
CO6	To provide skills on public, oral, group speaking and application of communication in Agriculture

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	**COs/POs**	**PO1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**PSO1**	**PSO2**	**PSO3**
2	**CO1**	-	-	-	1	-	-	-	1	-	2	1	3	-	-	2
	CO2	-	-	-	-	2	-	-	-	-	2	-	-	-	-	2
	CO3	-	-	-	2	-	-	-	-	-	3	2	2	-	-	2
	CO4	-	-	-	2	-	-	-	-	-	2	3	1	-	-	2
	CO5	-	-	-	1	-	-	-	-	-	2	1	1	-	-	2
	CO6	-	-	-	2	-	-	-	-	-	3	1	2	-	-	2
3	**Category**	Allied Sciences (AS)														
4	**Approval**	Academic Council, Aug 2018														

Subject Code : U18BSTA211	STATISTICAL METHODS		L	T	P	C
	Total Contact Hours – 56		1	0	1	2
	Prerequisite course	Basic knowledge in Probability and Statistics				
	Course Coordinator Name & Department	Dr. T.Muthulakshmi Department of Mathematics				
COURSE OBJECTIVES:-	To impart knowledge about important tools in Statistics to apply and solve real life problems in Agricultural Science.					

THEORY

UNIT I: DESCRIPTIVE STATISTICS **4**

Basic concepts – statistics – variable – types and sources of data – classification and tabulation of data. Diagrammatic and graphical representation of data – simple, multiple, component and percentage bar diagrams, pie diagram – frequency polygon, frequency curve and histogram. Construction of frequency distribution tables. Measures of central tendency: arithmetic mean, geometric mean, harmonic mean, median and mode – merits and demerits. Measures of dispersion: range, quartile deviation, mean deviation, standard deviation, and coefficient of variation – skewness and kurtosis – merits and demerits.

UNIT II: PROBABILITY DISTRIBUTIONS AND SAMPLING THEORY **3**

Probability – basic concepts – additive and multiplicative laws (without proof). Probability distributions – Discrete distributions: Binomial and Poisson. Continuous distribution: Normal distribution – definitions and properties. Sampling theory – population – sample – parameter and statistic – sampling distribution – sampling vs complete enumeration – Types of sampling – simple random sampling – selection of simple random sample using random number tables.

UNIT III: TESTING OF HYPOTHESES **3**

Null and alternative hypothesis – types of errors – critical region and level of significance – degrees of freedom. Large sample test – single proportion and difference between two proportions – single mean and difference between two means. Small sample tests – F-test – t-test for testing the significance of single mean – independent t test and paired t test – chi square test for goodness of fit – chi square test for testing the association of attributes by m x n contingency table – 2 x 2 contingency table – Yates' correction for continuity.

UNIT IV: CORRELATION AND REGRESSION **3**

Correlation – Scatter diagram – Karl Pearson's correlation coefficient definition – computation – types of correlation and properties. Regression – simple linear regression – fitting of simple linear regression equation – properties of regression coefficient.

UNITIV: CORRELATION AND REGRESSION **3**

Correlation – Scatter diagram – Karl Pearson's correlation coefficient definition – computation – types of correlation and properties. Regression – simple linear regression – fitting of simple linear regression equation – properties of regression coefficient.

UNIT V: ANALYSIS OF VARIANCE AND EXPERIMENTAL DESIGNS **3**

Analysis of Variance (ANOVA) – assumptions – one way and two way classifications. Basic principles of experimental designs – Completely Randomized Design (CRD) – Randomized Block Design (RBD) – Latin Square Design (LSD) – lay out, analysis, merits and demerits of the above mentioned designs.

PRACTICAL – LIST OF PRACTICAL SCHEDULE

1.	Construction of frequency distribution tables	**2.5**
2.	Diagrammatic representation – simple, multiple, component and percentage bar diagrams, pie diagram. Graphical representation – frequency polygon, frequency curve and histogram	**2.5**
3.	Computation of arithmetic mean, geometric mean, harmonic mean, median and mode for ungrouped and grouped data	**2.5**
4.	Computation of range, standard deviation, variance, coefficient of variation for ungrouped and grouped data. Computation skewness and kurtosis for ungrouped and grouped data	**2.5**
5.	Simple problems in Binomial distribution and Poisson distribution	**2.5**
6.	Simple problems in Normal distribution	**2.5**
7.	Selection of simple random sample using simple random sampling method.	**2.5**
8.	Large sample test – test for single proportion and difference between two proportions	**2.5**
9.	Large sample test – test for single mean and difference between two means.	**2.5**
10.	Small samples test – t-test for single mean – independent t test for difference between two sample means (equal variances only) – Paired t-test	**2.5**
11.	Chi square test for goodness of fit – Chi square test for testing the association of attributes	**2.5**
12.	Computation of Karl Pearson's correlation coefficient	**2.5**
13.	Fitting of simple linear regression equation y on x.	**2.5**
14.	One way ANOVA – analysis of experimental data using Completely Randomised Design (CRD) (for equal replications only).	**2.5**
15.	Two way ANOVA – analysis of experimental data using Randomised Block Design (RBD)	**2.5**
16.	Analysis of experimental data using Latin Square Design (LSD)	**2.5**

REFERENCES:

1. G. NageshwaraRao, 2007, Statistics for Agricultural Sciences, BS Publications, Andhra Pradesh
2. Gupta. S.P., 2007, Statistical Methods, Sultan Chand and Sons, New Delhi
3. S.C. Gupta and V.K. Kapoor, Fundamentals of Mathematical Statistics, 2003, Sultan Chand and Sons, New Delhi
4. S.C. Gupta and V.K. Kapoor, Fundamentals of Applied Statistics, 2003, Sultan Chand and Sons, New Delhi
5. Gomez, K.A. and Gomez, A.A., 1984, Statistical Procedures for Agricultural Research, John Wiley and Sons, New York
6. Panse, V.G. and Sukhatme, P.V. 1961, Statistical methods for Agricultural Workers, ICAR, New Delhi
7. Zar. J.H., 1974, Bio-statistical analysis, Prentice - Hall, Inc., New Jersey
8. Cochran, W.G. and Cox, G.M. 1962. Experimental Design, Asia Publishing House, New Delhi
9. M.N. Das and Narayan C. Giri, Design and Analysis of Experiments, New Age Publishers, New Delhi
10. D.C. Sanchetti and V.K. Kapoor**,** 2007, Statistics (Theory, Methods and Application), Sultan Chand and Sons, New Delhi.

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1. http://www.statistics.com/resources/glossary/
2. www.statsoft.com
3. http://www.iasri.res.in/ebook/EB_SMAR/index.htm

4. http://www.iasri.res.in/design/analysis of data/analysis of data.html
5. www.stats.gla.ac.uk/steps/glossary/index.html
6. http://davidmlane.com/hyperstat/
7. http://www.stattrek.com/
8. http://www.businessbookmall.com/Statistics Internet Library.htm
9. http://www.stat-help.com/
10. www.statsci.org/jourlist.html

COURSE OUTCOMES (COs)	
CO1	Understand the computation of basic measures in Statistics
CO2	Apply the concept of probability and various distributions in Agricultural Science.
CO3	Analyze testing of hypothesis and various statistical test to find the solution in various agricultural problems.
CO4	Analyze the sampling and testing the parameters
CO5	Evaluate Correlation, and Regression coefficients of bivariates.
CO6	Evaluate and analyze the variance in experiments.

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	**COs/POs**	**PO1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**PSO1**	**PSO2**	**PSO3**
2	**CO1**	3	3	2	2	-	-	-	-	-	-	-	2	-	-	-
	CO2	3	3	3	1	-	-	-	-	-	-	-	3	-	-	-
	CO3	3	2	1	1	-	-	-	-	-	-	-	3	-	-	-
	CO4	3	2	1	3	-	-	-	-	-	-	-	2	-	-	-
	CO5	3	2	2	2	-	-	-	-	-	-	-	3	-	-	-
	CO6	3	3	3	3	-	-	-	-	-	-	-	2	-	-	-
3	**Category**	Basic Sciences (BS)														
4	**Approval**	Academic Council, Aug 2018														

Subject Code : U18CPAT202	PRINCIPLES OF INTEGRATED PLANT DISEASE MANAGEMENT		L	T	P	C
	Total Contact Hours – 56		1	0	1	2
	Prerequisite course	Fundamentals of Plant Pathology				
	Course Coordinator Name & Department	Dr.T.Meera School of Agricultural sciences				
COURSE OBJECTIVES:-	• To study the classification, disease surveillance and Molecular detection of plant pathogens • To study the General Principles and legislative method of plant disease management • To study about methods eradicating disease causing pathogen • To study about methods of protection the host from disease causing pathogen • To learn about biological and Biotechnological approaches for crop disease management					

THEORY

UNIT I: EPIDEMIOLOGY AND DIAGNOSIS Of PLANT DISEASES **6**

Classification of plant diseases - Disease triangle/ Disease Pyramid - Epidemiology of plant diseases- role of weather factors in disease development - Disease surveillance, assessment and forecasting– Diagnosis of plant diseases- Seed health tests- chemodiagnosis, serodiagnosis and Molecular diagnosis

UNIT II: PRINCIPLES - AVOIDANCE & EXCLUSION **1**

Avoidance- Role of cultural practices in plant disease management. Exclusion- Plant quarantine – domestic, International and Embargo - Phytosanitary certificate- Quarantine in India- Post Entry Quarantine- Exotic diseases introduced into India- Pest risk analysis.

UNIT III: ERADICATION **1**

Eradication of pathogens from seed and Planting materials – Eradication of diseased plants- Surgery and Rouging – Eradication of Alternate and Collateral host- different methods of eradication- Mechanical, physical , chemical and Biological methods.

UNIT IV: PROTECTION **4**

Protection of crops from air borne, seed borne, soil borne and vector borne plant diseases-Physical methods- soil solarization, Hot water treatment, Incineration. Chemical control of plant diseases- fungicides- Different group of fungicides and antibiotics in plant disease management- Biological control of plant diseases - Plant products, Plant activators and Antiviral principles- method of application- plant protection appliances.

UNIT V: IMMUNIZATION, BIOTECHNOLOGICAL APPROACHES AND IPM MODULE4

Immunization - cross protection and host plant resistance – Types of resistance - vertical and horizontal resistance – resistance breeding and Resistant varieties. Mechanism of resistance- structural and bio chemical resistance in plants -Biotechnological approaches for crop disease management. Implementation and impact of IPM. IPM module for Soil borne, air borne, Seed borne and vector borne plant disease management

PRACTICAL – LIST OF PRACTICAL SCHEDULE

1.	Survey and assessment of important plant diseases	**2.5**
2.	Diagnosis of plant diseases: Tetrazolium test, Iodine test , ELISA test and ooze test, paraquat test	**2.5**
3.	Seed health tests for diagnosis of seed borne pathogens - dry seed examination, seed washing, blotter tests	**2.5**
4.	Classification and grouping of fungicides	**2.5**
5.	Preparation of Bordeaux mixture (1%) and Bordeaux paste (10%)	**2.5**
6.	Calculation of spray fluid and methods of application of fungicides – seed (wet and dry) soil, foliar and post harvest dipping	**2.5**
7.	Special methods of application: swabbing, acid delinting, pseudostem injection, capsule application	**2.5**
8.	Special methods of application: corm injection, paring and prolinage, root feeding and trunk injection.	**2.5**
9.	*In vitro* assay of fungicides against fungal pathogens	**2.5**
10.	*In vitro* assay of biocontrol agents and their compatibility with agrochemicals	**2.5**
11.	*Trichoderma viride* -mass production and methods of application	**2.5**
12.	*Pseudomons fluorescens* and *Bacillus subtilis* -mass production & methods of application	**2.5**
13.	Visit to commercial biocontrol production unit /seed and pesticide testing laboratories	**2.5**
14.	Preparation of leaf extracts, oil emulsion of neem and antiviral principles.	**2.5**
15.	Cross protection: production of pre immunized citrus seedlings against tristeza virus.	**2.5**
16.	Tissue culture – Production of virus free plants through meristem tip culture technique.	**2.5**

REFERENCES:

1. Arjunan.G. Karthikeyan, G, Dinakaran ,D. Raguchander,T. 1999 Diseases of Horticultural Crops, AE Publications, Coimbatore.
2. Rangasawmi ,G and Mahadevan, A. 1998. Diseases of crop Plants in India, Prentice Hall of India Pvt. Ltd., New Delhi
3. Prakasam, V., Valluvaparidasan, V., Raguchander, T. and K.Prabakar. 1997. Field crop diseases, AE Publication, Coimbatore

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1. Agrobios, G.N. 2008. Plant Pathology, Academic Press, New York
2. Rangaswami, G. 2005. Diseases of Crop plants in India. Prentice Hall of India Pvt. Ltd., New Delhi
3. Thakur, B.R. 2006. Diseases of field crops and their management

COURSE OUTCOMES (COs)	
CO1	Having knowledge of classification, disease surveillance and molecular detection of plant pathogens.
CO2	Having knowledge of general principles and legislative method of plant disease management.
CO3	Trained in eradicating disease causing pathogen and expertise in protection the host from disease causing pathogen.
CO4	Trained in exclusion method to control the plant pathogens.
CO5	Aware of biotechnology approaches for crop disease management.
CO6	Knowing about biological control for plant diseases.

Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low																
1	**COs/POs**	**PO1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**PSO1**	**PSO2**	**PSO3**
2	**CO1**	3	-	2	-	-	2	-	-	-	-	-	-	2	-	-
	CO2	2	3	-	-	-	-	-	-	-	-	-	-	2	-	-
	CO3	3	3	1	-	-	-	1	-	-	-	-	-	2	-	-
	CO4	3	3	-	-	-	-	-	-	-	-	-	-	2	-	-
	CO5	3	3	-	-	-	-	-	-	-	-	-	-	2	-	-
	CO6	3	3	-	-	-	-	-	-	-	-	-	-	2	-	-
3	**Category**	Professional Core (PC)														
4	**Approval**	Academic Council, Aug 2018														

Subject Code : U18CAEN202	MANAGEMENT OF BENEFICIAL AND HARMFUL INSECTS		L	T	P	C
	Total Contact Hours – 72		2	0	1	3
	Prerequisite course	Fundamentals of Entomology				
	Course Coordinator Name & Department	Ms. V. Sushmetha School of Agricultural sciences				
COURSE OBJECTIVES:-	To impart knowledge about apiculture, moriculture, sericulture lac culture and uses other beneficial insects and management of harmful insects by integrated pest management					

THEORY

UNIT I :APICULTURE **6**

Classification of insects based on economic importance - Apiculture - Bee species – comparison-castes of bees, bee behaviour and bee dance; Apiary management practices – bee pasturage, foraging, seasonal variations; Bee products – properties and uses; Effect of agricultural inputs on bee activity – pesticide poisoning.

UNIT II :MORICULTURE AND LAC CULTURE **6**

Moriculture; Silkworm rearing; Lac insect- biology-strains-natural enemies of lac insect and lac products; Weed killers, pollinators, scavengers and soil builders; Balance of life in nature – population dynamics – role of abiotic and biotic factors. Life table – interspecific and intraspecific relationships

UNIT III :PEST CATEGORIES AND INTEGRATED PEST MANAGEMENT **7**

Pests – definition and categories – pest outbreak – factors governing pest outbreak– pest monitoring, surveillance and forecasting. Economic Threshold Level – Economic Injury Level- Integrated Pest Management – history, principles and strategies – requirements for successful pest management programme; Cultural, physical, mechanical, ecological engineering methods and host plant resistance in pest management

UNIT IV : BIOLOGICAL AND LEGAL METHOD PEST CONTROL **7**

Parasitoids, predators and microbial agents in pest management. Legal methods – definition – pest introductions – quarantine – phytosanitary certificate – pest legislation. Pesticides – history, classification – mode of action of insecticides. Pesticides compatibility, safety and hazards in the use of pesticides – pesticide poisoning - impact of pesticides in agro-ecosystem

UNIT V :BIOTECHNOLOGY IN PEST MANAGEMENT **6**

Insecticide act. Insecticides residues and resistance. Semiochemicals – allomones – kairomones – pheromones- semiochemicals in pest management. Sterile male technique – chemosterilants, insect growth regulators – moult inhibitors – Juvenile Hormone mimics – antifeedants and repellents. Natural pesticides. Biotechnology in pest management. Bio safety of transgenic plants. Impact of global warming on pests. Bio-intensive/Bio-rational/ Eco-friendly Integrated Pest Management – Indigenous/traditional technologies in Integrated Pest Management

PRACTICAL – LIST OF PRACTICAL SCHEDULE

1. Identification, morphology and structural adaptations in honey bees **2.5**
2. Bee keeping appliances, bee enemies and diseases **2.5**
3. Mulberry nursery bed preparation – methods of planting - Pruning methods – leaf / shoot harvest– preservation of leaves. **2.5**
4. Identification of damage symptoms of insects, diseases and nematodes of mulberry **2.5**

5.	Chawki rearing and shoot rearing	**2.5**
6.	Lac insect-life history, hosts and culturing of lac, natural enemies and lac products	**2.5**
7.	Study of useful insects-Pollinators, weed killers, scavengers and soil builders	**2.5**
8.	Symptoms and types of damage caused by insect pests , Assessment of insect population and their damage in rice, cotton and brinjal	**2.5**
9.	Cultural, mechanical and physical control of insects	**2.5**
10.	Identification and mass culturing of different types of parasitoids	**2.5**
11.	Identification and mass culturing of different types of predators	**2.5**
12.	Identification and mass production of entomopathogens	**2.5**
13.	Behavioral approaches in pest management – Pheromone traps, light traps, sticky traps and others	**2.5**
14.	Pesticide formulations and toxicity parameters	**2.5**
15.	Pesticide application techniques, Preparation of spray fluids and botanicals for field application	**2.5**
16.	Plant protection appliances	**2.5**

TEXT BOOKS:

1. Pedigo, L.P. and M.E.Rice.1996. Entomology and Pest Management. Prentice-Hall of Idia Pvt Ltd, New Delhi. 812p. {ISBN-978-8120338869}
2. Dhaliwal, G.S. and R.Arora. 2001. Integrated Pest Management – Concepts and approaches. Kalyani publishers, New Delhi. 427p. {ISBN: 81-7663-904-4}

REFERENCES:

1. Dandin, S.B., J.Jayaswal and K. Giridhar.2003. Hand book of Sericulture Technologies. Central Silk Board, Bangalore, 287 p.
2. David, B.V. and V.V. Ramamurthy. 2011. Elements of Economic Entomology, Namrutha Publications, Chennai, 386 p. {ISBN: 978-81-921477-0-3}

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2. http://www.ncipm.org.in/recent-publications.htm
3. http://www.ipmnet.org
4. www.silkbase.org
5. www.papilo.ab.a.u.tokyo.ac.jp

COURSE OUTCOMES (COs)	
CO1	Students will learn about classification of insects based on economic importance and impart knowledge about Identification, morphology and structural adaptations in honey bees and apiculture management practically
CO2	To get knowledge about Moriculture, sericulture, lac culture, weed killer, pollinators, scavengers, soil buliders and role of biotic and abiotic faction in insect population
CO3	Acquire knowledge practically about Symptoms and types of damage caused by insect pests, Assessment of insect population and their damage in different crops and pest outbreak.
CO4	Student learn about pest categories, Economic threshold level , economic injury level and history and principles of IPM
CO5	To get knowledge about identification and mass culturing of different types of parasitoids, predators and entomo pathogens and their effective control against different pest. History, classification and mode action of different pesticides, their compatibility, safety and

	hazards in the use of pesticides
CO6	Students will learn about biotechnology in pest management like Bio-intensive, Bio-rational, Eco-friendly Integrated Pest Management and Indigenous or traditional technologies in Integrated Pest Management and impact of global warming on pests

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	**COs/POs**	**PO1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**PSO1**	**PSO2**	**PSO3**
2	**CO1**	2	-	-	-	-	2	1	-	-	-	-	2	2	–	-
	CO2	3	-	-	-	-	2	1	-	-	-	-	2	2	-	-
	CO3	3	-	-	3	-	2	1	-	-	-	-	2	2	-	-
	CO4	3	-	-	3	3	2	3	-	-	-	-	-	2	-	-
	CO5	3	-	-	3	2	1	3	-	-	-	-	-	2	-	-
	CO6	3	-	-	3	2	1	3	-	-	-	-	-	2	-	-
3	**Category**	Professional Core (PC)														
4	**Approval**	Academic Council, Aug 2018														

Subject Code : U18CAGR203	**CROP PRODUCTION TECHNOLOGY – II (RABI CROPS)**		L	T	P	C
	Total Contact Hours – 56		1	0	1	2
	Prerequisite course	1. Fundamentals of agronomy and agricultural heritage 2. Crop production I (Kharif crops)				
	Course Coordinator Name & Department	Dr. V. Prakash School of Agricultural Sciences				
COURSE OBJECTIVES:-	To study the Origin, geographical distribution, economic importance and different practices and yield of Rabi crops					

THEORY

UNIT I : CEREALS **4**

Wheat, barley, Oats - Origin, geographic distribution, economic importance, soil and climatic requirement, varieties, cultural practices, yield.

UNIT II : PULSES **4**

Chickpea, lentil, peas - Origin, geographic distribution, economic importance, soil and climatic requirement, varieties, cultural practices, yield.

UNIT III :OILSEEDS **4**

Rapeseed, mustard and sunflower- Origin, geographic distribution, economic importance, soil and climatic requirement, varieties, cultural practices, yield.

UNIT IV: SUGAR CROPS **2**

Sugarcane - Origin, geographic distribution, economic importance, soil and climatic requirement, varieties, cultural practices, yield.

UNIT V: FORAGE CROPS **2**

Berseem, Lucerne , Fodder maize : Origin, geographic distribution, economic importance, soil and climatic requirement, varieties, cultural practices.

PRACTICAL – LIST OF PRACTICAL SCHEDULE

1.	Identification of rabi crops and recording their importance in the crop cafeteria	**2.5**
2.	Acquiring skill in field preparation, sowing and manuring of rabi crops under pure and intercropping situations.	**2.5**
3.	Acquiring skill in different seed treatment techniques and foliar nutrition of rabi crops.	**2.5**
4.	Estimation of plant population per unit area for rabi crops.	**2.5**
5.	Nursery preparation for Sugarcane.	**2.5**
6.	Acquiring skill in after - cultivation practices in sugarcane - detrashing, and Propping.	**2.5**
7.	Study on growth parameters of sugarcane.	**2.5**
8.	Study on yield parameters and estimation of yield in sugarcane.	**2.5**
9.	Study on yield parameters and estimation of yield in rabi crops.	**2.5**
10.	Estimating Cost and returns of important rabi crops.	**2.5**
11.	Visit to Sugarcane Breeding Institute/ Research Station to study cultivation of sugarcane and its by products.	**2.5**
12.	Visit to - nearby sugar mill, for observing juice extraction, quality assessment, sugar manufacture and by products.	**2.5**
13.	Silage making.	**2.5**
14.	Practicing field preparation and sowing Lucerne.	**2.5**

15.	Practicing field preparation and sowing for fodder maize.	**2.5**
16.	Visit to Wheat research station, Wellington to study rabi crops – wheat, barley, rye, oats.	**2.5**

REFERENCES:

1. Rajendra Prasad. 2012. Text Book on Field Crop Production, Indian Council of Agrl. Research, New Delhi. Ahlawat,I.P.S., Om Prakash and G.S. Saini. 2010. Scientific Crop Production in India. Rama publishing, House, Meerut.
2. Chidda Singh, Prem Singh and Rajbir Singh. 2011. Modern Techniques of Raising Field Crops. Oxford and IBH Pub. Co. Pvt. Ltd., New Delhi.
3. Reddy,S.R. 2012. Agronomy of field crops. Kalyani publishers, New Delhi.
4. Crop production guide.2012. Directorate of Agriculture, Chennai
5. ICAR 2015. Hand book of Agriculture. Indian Council of Agricuture, New Delhi

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1. http://sugarcane.tn.nic.in
2. http://fibre.tn.nic.in ,
3. www.tnau.ac.in/agriportal

COURSE OUTCOMES (COs)	
CO1	To know the Origin, geographical distribution, economic importance, soil and climatic requirements, varieties, cultural practices and yield of rabi crops
CO2	Student will able to understand the cultural practices and yield of Rabi crops
CO3	Identify weeds in rabi season crops, Pulses-chickpea, lentil, peas; oilseeds-rapeseed, mustard and sunflower; sugar crops-sugarcane, Medicinal and aromatic crops-mentha, lemon grass and citronella, Forage crops-berseem, lucerne and oat.
CO4	Through proper knowledge of irrigation scheduling in rabi crops, additional area can be increased of low water requiring crops.
CO5	Students will be able to know about the economic importance of medicinal and Aromatic crops in present sphere
CO6	It will be helpful to know about basic morphological characteristics of rabi crops.

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	**COs/POs**	**PO1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**PSO1**	**PSO2**	**PSO3**
2	**CO1**	2	3	3	-	-	1	1	-	-	-	-	-	3	-	2
	CO2	2	3	3	-	-	1	1	-	-	-	-	-	3	-	2
	CO3	2	3	3	-	-	1	1	-	-	-	-	-	3	-	2
	CO4	2	3	3	-	-	1	1	-	-	-	-	-	3	-	2
	CO5	2	3	3	-	-	1	1	-	-	-	-	-	3	-	2
	CO6	2	3	3	-	-	1	1	-	-	-	-	-	3	-	2
3	**Category**	Professional Core (PC)														
4	**Approval**	Academic Council, Aug 2018														

Subject Code : U18CAGR204	FARMING SYSTEM & SUSTAINABLE AGRICULTURE	L	T	P	C
	Total Contact Hours – 56	1	0	1	2
	Prerequisite course	1. Fundamentals of agronomy and agricultural heritage 2. Crop production I (*Kharif crops*) 3. Crop production II *(Rabi crops*)			
	Course Coordinator Name & Department	Mr. S. Senthil Kumar School of Agricultural Sciences			
COURSE OBJECTIVES:-	Basic knowledge of farming system and concepts, importances and advantages of sustainable agriculture.				

THEORY

UNIT I: CROPPING SYSTEM **4**

Cropping systems - Definition - Principles - Concepts - Classification - mono cropping – intensive cropping systems of India and Tamil Nadu - Interaction between different cropping systems - Cropping system management - Resource management - land, nutrient, water and weed.

UNIT II: EVALUATION OF CROPPING SYSTEM **2**

Index for evaluation of cropping systems - Land use - yield advantages - Economic evaluation - sustainability.

UNIT III: FARMING SYSTEM **4**

Farming systems - Definition - Principles - Concepts - Enterprises selection and management - interaction between different enterprises with cropping - scope and advantages of Integrated Farming system - Integrated farming system models for different agro eco-systems - interaction between enterprises.

UNIT IV: EVALUATION OF FARMING SYSTEM **2**

Resource recycling in IFS - Evaluation indicators of integrated farming system - LEISA & HEIA - concepts and principles - Conservation agriculture - principles, concept and scope.

UNIT V: RESOURCE AND LABOUR MANAGEMENT IN FARMING SYSTEM **2**

Resource management under constraint situation - Cost reduction strategies in crop production - Non-monetary inputs and low cost technologies - Labour management - farming system and environment.

PRACTICAL – LIST OF PRACTICAL SCHEDULE

1.	Visit to cropping system experiments in wetland.	**2.5**
2.	Visit to cropping system experiments in irrigated upland and dryland.	**2.5**
3.	Preparation of cropping scheme for wetland and working out input requirement.	**2.5**
4.	Preparation of cropping scheme for irrigated upland and working out input requirement.	**2.5**
5.	Calendar of operations for wet land and irrigated upland cropping system.	**2.5**
6.	Working out indices for evaluating the cropping system - land use, yield advantage.	**2.5**
7.	Working out indices for evaluating the cropping system - Economics, sustainability.	**2.5**
8.	Visit to dairy, goat and poultry units.	**2.5**
9.	Visit to mushroom unit.	**2.5**
10.	Visit to sericulture and biogas unit.	**2.5**

11.	Preparation of integrated farming system models : wetland eco-system.	**2.5**
12.	Preparation of integrated farming system models : irrigated upland and dryland eco systems.	**2.5**
13.	Resource recycling in integrated farming system models of different eco systems.	**2.5**
14.	Evaluation of integrated farming system models : wetland eco-system.	**2.5**
15.	Evaluation of integrated farming system models : irrigated upland and dryland eco systems.	**2.5**
16.	On-farm visit to cropping fields and integrated farming system units.	**2.5**

REFERENCES:

1. Palaniappan, SP and K. Sivaraman.1996. Cropping systems in the tropics Principles and management.New Age International (P) Ltd., New Delhi.
2. Jayanthi, C. Devasenapathy, P and C. Vennila. 2007. Farming Systems. Principles and practices. Satish Serial Publishing House.Delhi.
3. S.C. Panda. 2003. Cropping and Farming Systems. Agrobios Publishers. Jodhpur.
4. Jana, B.L. 2014. Farming Systems. Agrotech Publishing Academy, Udaipur
5. Shagufta. 2015. Cropping and Farming Systems. APH Publishing Corporation

E- REFERENCES:

1. www.agriinfo.in
2. www.fao.org
3. www.agritech.tnau.ac.in

COURSE OUTCOMES (COs)	
CO1	Student will able to understand different farming and cropping system
CO2	Student will able to understand Sustainable agriculture problems and its impact
CO3	Knowledge about modern agriculture in relation to sustainable agriculture and discuss the sustainable indicators on ecological basis.
CO4	Understand the sustainable agriculture in relation to tillage, fertilizers, irrigation, weed management and plant protection measures.
CO5	Analyze the definition, type and method of farming system which help to solve the problem of soil health degradation and conservation of natural resources including soil and water as a part of sustainable resource management.
CO6	Understand the important cropping system for sustainable agriculture in India.

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	**COs/POs**	**PO1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**PSO1**	**PSO2**	**PSO3**
2	**CO1**	2	2	1	-	-	-	1	-	-	-	-	-	3	-	2
	CO2	2	2	3	-	-	-	2	-	-	-	-	-	3	-	2
	CO3	2	2	1	-	-	-	1	-	-	-	-	-	3	-	2
	CO4	2	2	1	-	2	-	1	-	-	-	-	-	3	-	2
	CO5	2	2	3	-	-	-	2	-	-	-	-	-	3	-	2
	CO6	2	2	1	-	-	-	-	-	-	-	-	-	3	-	2
3	**Category**	Professional Elective (PE)														
4	**Approval**	Academic Council, Aug 2018														

Subject Code : U18CSAC202	PROBLEMATIC SOILS AND THEIR MANAGEMENT		L	T	P	C
	Total Contact Hours – 32		2	0	0	2
	Prerequisite course	Soil Resource Inventory				
	Course Coordinator Name & Department	Dr.S.Sivagnanam, School of Agricultural sciences				
COURSE OBJECTIVES:-	To impart knowledge of problematic soil and their management practices					

THEORY

UNIT I **8**

Soil quality and health, Distribution of Waste land and problem soils in India and Tamil Nadu.

UNIT II **9**

Characteristics, reclamation and management of soil physical and chemical constraints - Eroded and Compacted soils, Flooded soils, Saline and sodic soils, Acid soils, Acid Sulphate soils, degraded alkali soils and Polluted soils. Effect of salts on soil and plants.

UNIT III **6**

Remote sensing and GIS in assessment and management of problem soils. Irrigation water – quality and standards. Utilization of saline water in agriculture.

UNIT IV **9**

Multipurpose tree species, bio remediation of soils through MPTs, land capability classification, land suitability classification. Problematic soils under different Agro ecosystems - Soil fertility improvement through carbon build up.

REFERENCES:

1. Sehgal, J. 2005. Pedology concepts and applications, Kalyani Publishers, New Delhi.
2. Gupta, S.K. and I.C. Gupta 2014. Salt affected soils: Reclamation and Management. Scientific Publishers.
3. Richards, L.A. 2012. Diagnosis and improvement of saline and alkali soils. Scientific Publishers.
4. Soil Survey Staff. 2006. Keys to Soil Taxonomy. United States Department of Agriculture, Natural Resources Conservation Service.
5. Maliwal, G.L. and L.L. Somani. 2010. Nature, Properties and Management of saline and alkali soils. Agrotech publishing academy, Udaipur.

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2. ftp://ftp-fc.sc.egov.usda.gov/NSSC/Lab References/SSIR 51.pdf
3. ftp://ftp-fc.sc.egov.usda.gov/NSSC/Lab_References/SSIR 51 .pdf
4. www.iuss.org/Bulletins/00000096.pdf
5. www.oosa.unvienna.org/pdf/sap/centres/rscurrE.pdf-
6. www.csre.iitb.ac.in/~dd/detail.html
7. www.dvsinstitute.org/forms/pg/M.Sc.%20-%20RS%20&%20GIS-350.pdf
8. inkinghub.elsevier.com/retrieve/pii/S0166248197800335
9. www.scribd.com/doc/40246764/Description-Pedon-Copy-

10. www.angrau.net/BSc(Aq)Course Curriculum.htm
11. www.euroiournals.com/ejsr 42 2 10.pdf
12. www.springerlink.com/index/R177R744722222UN.pdf-Similar
13. content.alterra.wur.nl/lnternet/webdoc$/ilri-publicaties/.../Bib10.pdf
14. www-wds.worldbank.org/external/.../INDEX/multi_..page.txt-Cached
15. openaccess.icrisat.org/.../Proceedings-integrated-watershed-management-for-land-Asia.pdf

COURSE OUTCOMES (COs)	
CO1	Describe the problem soils and their distributions in India and Tamil Nadu. **(Knowledge)**
CO2	Classification of soils based on their chemical properties. **(Understand)**
CO3	Discriminate the soil on the basic of physical and chemical properties.**(Analyze)**
CO4	Assess the different types of soil physical problems and their management practices. **(Evaluate)**
CO5	Identify the soil chemical problems and management practices.**(Knowledge)**
CO6	Demonstrate the uses of multipurpose tree planting in problem soils.**(Apply)**

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	**COs/POs**	**PO1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**PSO1**	**PSO2**	**PSO3**
2	**CO1**	3	3	1	-	2	1	-	3	-	-	-	-	-	-	√
	CO2	2	3	3	-	1	-	1	3	3	3	3	3	√	√	-
	CO3	2	1	2	-	3	1	2	3	3	3	3	3	√	√	-
	CO4	2	1	3	3	3	2	3	3	3	3	3	3	√	√	-
	CO5	3	3	3	3	2	3	3	3	3	3	3	3	√	√	√
	CO6	3	3	3	3	2	3	3	3	3	3	3	3	√	√	√
3	**Category**	Professional Core (PC)														
4	**Approval**	Academic Council, Aug 2018														

Subject Code : U18CHOR212	PRODUCTION TECHNOLOGY FOR ORNAMENTAL CROPS, MAPs & LANDSCAPING	L	T	P	C
	Total Contact Hours – 56	1	0	1	2
	Prerequisite course: Fundamentals of Horticulture				
	Course Coordinator Name & Department: Dr.M. Dhivya, School of Agricultural sciences				

COURSE OBJECTIVES:-

- To impart knowledge on the production techniques of major cut flowers, loose flowers, medicinal crops and aromatic crops both under open and protected conditions
- To impart knowledge and hands on training on landscaping and value addition of ornamentals.

THEORY

UNIT I – LANDSCAPING **2**

Importance and scope of ornamental crops landscaping. Principles of landscaping. Landscape uses of trees, shrubs and climbers.

UNIT II - PRODUCTION TECHNOLOGY OF CUT FLOWER CROPS UNDER PROTECTED CONDITIONS **4**

Production technology of important cut flowers like rose, gerbera, carnation, lilium and orchids under protected conditions

UNIT III - PRODUCTION TECHNOLOGY OF FLOWERS UNDER OPEN CONDITIONS AND VALUE ADDITION IN ORNAMENTAL CROPS **4**

Production technology of important cut flowers like gladiolus, tuberose, chrysanthemum under open conditions. Package of practices for loose flowers like marigold and jasmine under open conditions. Processing and value addition in ornamental crops

UNIT IV - PRODUCTION TECHNOLOGY OF MEDICINAL CROPS **3**

Medicinal crops- importance and scope – current status - soil and climate – varieties – propagation– planting methods – nutrient, irrigation and organic practices – harvest – post-harvest handling – storage, packaging of Periwinkle, Asparagus, Aloe, Costus, Isabgol, Glory lily, extraction and value addition of medicinal crops.

UNIT V - PRODUCTION TECHNOLOGY OF AROMATIC CROPS **3**

Aromatic crops - importance and scope – current status -- soil and climate – varieties – propagation– planting methods – nutrient, irrigation and organic practices – harvest – post-harvest handling – storage, packaging of Ocimum, Mint, Geranium, Citronella, Lemon grass, Palmarosa and Vetiver – Distillation of oil and value addition.

PRACTICAL – LIST OF PRACTICAL SCHEDULE

1.	Identification, planting, care and maintenance of trees, shrubs and climbers used in garden	**2.5**
2.	Identification of varieties in cut flowers under protected conditions.	**2.5**
3.	Identification of varieties in flowers under open conditions	**2.5**
4.	Practices of nursery bed preparation, seed sowing in ornamental plants	**2.5**
5.	Training and pruning and intercultural operations in Ornamental plants	**2.5**
6.	Planning and layout of garden.	**2.5**

7.	Protected structures – care and maintenance	**2.5**
8.	Harvesting and post harvest handling of cut and loose flowers	**2.5**
9.	Identification of medicinal and aromatic plants –economic parts	**2.5**
10.	Propagation techniques, planting, cultural operations in Periwinkle, Asparagus and Aloe.	**2.5**
11.	Propagation techniques, planting, cultural operations in Costus, Isabgol and poppy.	**2.5**
12.	Propagation techniques, planting, cultural operations in Ocimum, Mint, Geranium	**2.5**
13.	Propagation techniques, planting, cultural operations in lemon grass, palmarosa, vetiver and citronella	**2.5**
14.	Extraction and distillation of medicinal & Aromatic crops.	**2.5**
15.	Visit to commercial floriculture and floral oil extraction units	**2.5**
16.	Visit to commercial medicinal and aromatic crops field and extraction unit.	**2.5**

TEXT BOOKS:

1. Kumar, N. Introduction to Horticulture. 2010. Oxford and IBH Publications, New Delhi.
2. Kumar, N. Introduction to Spices, Plantation, Medicinal and Aromatic crops. 1995. Oxford
3. and IBH Publications, New Delhi.
4. Bhattacharjee, S.K and De L.C (2003) Advanced Commercial Floriculture Vol. (1)
5. Aavishkar publishers, Distributors, Jaipur.
6. Bhattacharjee, S.K and De L.C (2005) Medicinal Herbs & Flowers, Aarishkar, Jaipur.
7. Bhattacharjee, S.K., 2004. Hand book of medicinal plants, Pointer publications, Jaipur.
8. Bose, T.K., Yadav, L.P., Pal. P., Parthasarathy, V.A., Das. P., 2003. Commercial flowers.
9. Vol. I and II. Naya udyog, Kolkata-6.

REFERENCES:

1. Ravindrasharma (2004) Agro techniques of Medicinal plants. Daya publishing, New Delhi.
2. Trivedi, P.C. (2004) Medicinal Plants: Utilization and Conservation, Aavishkar Publisher, Distributors, Jaipur.
3. Allan M. Armitage and Judy M. Laushman “Speciality Cut Flowers” , Second Edition, Published by Timber press 2003, ISBN – 0881925799
4. Atal. C. K. and B. M. Kapur. 1992. Cultivation and utilisation of medicinal plants RRL. CSIR, Jammu – Tawi.
5. Bose, T.K., Yadav, L.P., Pal. P., Das. P. and Parthasarathy, V.A., (2002) Commercial Flowers. Vol.1, Naya Prakash, Calcutta.
6. Chadha, K.L.1994. Advances in Horticulture, Vol.10. Malhotra Publishing house, New Delhi.
7. Chadha, K.L.1994. Advances in Horticulture, Vol.11. Malhotra Publishing house, New Delhi.
8. Farooqi, M., M. M. Khan and M. Vasundhara. 2004. Production technology of medicinal and aromatic crops. Natural Remedies Pvt. Ltd., Bangalore – 561229.
9. Surendraprasad and Updesh Kumar (1998), Commercial floriculture, Agrobotanica, Bikaner.

JOURNALS:

8. Indian Horticulture
9. Indian Journal of Horticulture Science
10. Journal of Horticultural Sciences
11. Acta Horticulturae
12. Floriculture Today

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1. http://www.theflowerexport.com
2. http://www.webct.uark.edu

3. http://www.pubmed.com
4. http://www.bestgarden.net/
5. http://www.indiaagronet.com/
6. http://www.intuxford.tripod.com/
7. http://www.lawngrasses.com/
8. http://www.frlht.org
9. www.herbs.org

COURSE OUTCOMES (COs)	
CO1	Learn about the importance of landscaping design, principles and types of garden
CO2	Acquire knowledge and experience on commercial production technology of cut flowers under protected condition
CO3	Acquire knowledge and experience on commercial production technology of flowers under open condition and value addition of ornamentals
CO4	Gain knowledge on the crop production techniques of medicinal and aromatic crops
CO5	Demonstrate various propagation methods, special practices and post harvest practices of major flower crops and value addition of ornamental plants
CO6	Acquire knowledge on extraction methods and distillation of medicinal and aromatic crops.

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	**COs/POs**	**PO1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**PSO1**	**PSO2**	**PSO3**
2	**CO1**	3	-	-	-	-	-	3	-	-	-	-	2	1	-	-
	CO2	2	2	2	-	3	-	2	-	-	-	-	3	2	2	-
	CO3	3	1	3	-	2	-	3	-	-	-	-	2	2	1	-
	CO4	3	3	1	-	2	-	2	-	-	-	-	3	2	1	-
	CO5	3	2	2	-	2	2	3	-	2	2	2	3	1	2	1
	CO6	2	-	3	-	3	-	3	-	-	-	-	2	-	-	-
3	**Category**	Professional Core (PC)														
4	**Approval**	Academic Council, Aug 2018														

Subject Code : U18CANM201	INTRODUCTORY NEMATOLOGY		L	T	P	C
	Total Contact Hours – 40		0	0	1	1
	Prerequisite course	Basic biology at Intermediate level				
	Course Coordinator Name & Department	Ms. V. Sushmetha School of Agricultural sciences				
COURSE OBJECTIVES:-	To impart knowledge about extraction, preservation and observation of different nematodes and their also life stages. Symptoms of damage caused in field level and their management.					

PRACTICAL – LIST OF PRACTICAL SCHEDULE

1.	Soil and root sampling. Extraction of nematodes by Cobb's sieving method; Baermannfunnel Technique and modified Baermann funnel technique	**2.5**
2.	Extraction of nematodes by sugar flotation technique; Extraction of cysts by conical flask technique and fenwick can method	**2.5**
3.	Extraction of nematodes from roots and staining of roots infested with endoparasitic and semi – endoparasitic nematodes.	**2.5**
4.	Preservation of nematodes and preparation of temporary and permanent slides	**2.5**
5.	Observing morphology of the order Tylenchida (Hoplolaimus) and Dorylaimida (Xiphinema, Longidorus)	**2.5**
6.	Identification of nematodes – Tylenchorhynchus, Helicotylenchus	**2.5**
7.	Identification of nematodes – Pratylenchus, Hirschmanniella	**2.5**
8.	Identification of nematodes – Hemicriconemoides – Criconema, Heterodera – Globodera	**2.5**
9.	Identification of nematodes – Tylenchulus, Aphelenchoides	**2.5**
10.	Study of life stages of Meloidogyne, Rotylenchulus	**2.5**
11.	Study of life stages of Radopholus	**2.5**
12.	Study of Entomo pathogenic nematodes	**2.5**
13.	Study of life stages of Nematodes diseases of rice (White tip and rice root nematode)	**2.5**
14.	Damage caused by root – knot and reniform nematodes indifferent crops	**2.5**
15.	Symptoms of damage caused by citrus nematode; the lesion nematode and the burrowing nematode of banana	**2.5**
16.	Study of types of nematicides, application methods and calculation of dosages; study of biocontrol agent	**2.5**

TEXT BOOKS:

1. Dropkin, V.H.1980. Introduction to plant nematology. John Wiley and sons, INC. New York.
2. Singh, R.S and Sitaramaiah, K. 1994. Plant pathogens. The plant parasitic nematodes. Oxford & IBH pub. Co. Pvt. Ltd. New Delhi.
3. Paravata Reddy, P.1983. Plant nematology. Agricole Pub. Co., New Delhi.
4. Southey, J. F. Laboratory methods for work with plant and soil nematodes Tech. Bull. Min. Agric. Fish. Food. Her Majesty's Stationary office, London.

E- REFERENCES:

1. http://agritech.tnau.ac.in/

COURSE OUTCOMES (COs)	
CO1	Students will learn extraction of endoparasitic and semi-endoparasitic nematode
CO2	To get knowledge on preservation and preparation of slides
CO3	To get knowledge on observation and identification different species of nematode and their life stages
CO4	Learn about damage caused by root knot nematode and reniform nematode
CO5	To get knowledge on Entomopathogenic nematodes
CO6	To get knowledge on symptoms of damage caused and application and study of bio control agents

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	**COs/POs**	**PO1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**PSO1**	**PSO2**	**PSO3**
2	**CO1**	3	-	2	3	-	3	3	-	-	-	-	-	2	-	-
	CO2	3	-	2	3	-	3	3	-	-	-	-	-	2	-	-
	CO3	3	-	3	3	-	3	3	-	-	-	-	-	2	-	-
	CO4	2	-	3	3	-	3	3	-	-	-	-	-	2	-	-
	CO5	2	-	3	3	-	3	3	-	-	-	-	-	2	-	-
	CO6	1	3	3	3	-	3	3	-	-	-	-	-	2	-	-
3	**Category**	Professional Core (PC)														
4	**Approval**	Academic Council, Aug 2018														

Subject Code : U18ANST201	FUNDAMENTALS AND APPLICATIONS OF NANOTECHNOLOGY (1+0)	L	T	P	C
	Total Contact Hours – 16	1	0	0	1
	Prerequisite course: Crop production Technology				
	Course Coordinator Name & Department: Dr. S. Kanimozhi, Biotechnology				

COURSE OBJECTIVES:-

- This course will cover the fundamentals of nanoscience and nanotechnology from historical development, concepts and principles to nanomaterial manufacturing and its property, characterization
- Learn the application of nanotechnology in agriculture, food, environment

THEORY

UNIT I : PRINCIPLES OF NANOSCIENCE **4**

History, definition, terminologies in nanoscience - Importance of Moore's law- Introduction to nanomaterials – Semiconductor – Diode – Quantum Dots- Buckyball - CNT - Polymers- types – PLGA – coreshell nanoparticles - micelle - Introduction to nanobiosensor- types- properties and applications

UNIT II : SYNTHESIS OF NANOMATERIALS **2**

Top-down and bottom-up approaches - Physical, Mechanical, Chemical and Biological synthesis of nanomaterials

UNIT III : PROPERTIES AND CHARACTERIZATION OF NANOMATERIALS **2**

Physical, Mechanical, optical, magnetic, thermal and electrical properties – Characterization – SEM, TEM, AFM, FT-IR, XRD

UNIT IV : APPLICATION OF NANOTECHNOLOGY **2**

Agriculture and Food Systems

UNIT V : APPLICATION OF NANOTECHNOLOGY **2**

Energy, Environment, Health – Social, Economic and Ethical issues – Nano toxicology

REFERENCES:

3. Nano: The essentials understanding nanoscience and Nano- T.Pradeep - 2009 - Mc Graw Hill.
4. Nano materials - B.Viswanathan - 2009 -Narosa.
5. Introduction to nanotechnology - Charles P. Poole; Frank J. Owens – 2008 – Wiley.
6. Fundamentals of biomems and medical microdevices - Steven S.Saliterman – 2006 - Wiley Interscience.
7. Instrumental methods of analysis - Hobart H. Willam; Lynne L. Merrit – 2006 -CBS.
8. Fundamentals of physics - David Halliday; Robert Resnick – 2007 – Willey.
9. Chemistry Raymond Chang – 2009 - Tata Mcgraw Hill.
10. Nanomaterial chemistry - C.N. Rao, A. K . Chettam, A. Muller – 2007 – Wiley – VCH.
11. Nanotechnology Applications in Agriculture – C.R. Chinnamuthu, B.Chandrasekaran and C. Ramasamy – 2008.

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1. www.nptel.com
2. www.ncbi.nlm.nih.gov
3. www.online library.willey.com
4. www.sciencedirect.com

COURSE OUTCOMES (COs)	
CO1	Describe the concept of nanomolecules and nanotechnology
CO2	Infer the science behind nanoparticles
CO3	Interpret of nanomaterial using different techniques
CO4	Relate the principle of nanotechnology in food technology
CO5	Determine the approach of nanotechnology in agriculture
CO6	Describe the ethical and social issues in nanotechnology

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	**COs/POs**	**PO1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**PSO1**	**PSO2**	**PSO3**
2	**CO1**	3	2	-	-	-	-	-	-	-	-	-	-	-	–	3
	CO2	2	-	-	-	-	-	-	-	-	-	-	2	-	-	3
	CO3	-	-	2	-	2	-	-	-	-	-	-	1	-	-	3
	CO4	-	2	-	-	-	-	-	-	-	-	-	1	-	-	3
	CO5	-	2	-	-	-	-	-	-	-	-	-	2	-	-	3
	CO6	-	-	3	-	-	-	-	2	-	-	-	2	-	-	3
3	**Category**	Allied Sciences (AS)														
4	**Approval**	Academic Council, Aug 2018														

Subject Code : U18AERG211	RENEWABLE ENERGY AND GREEN TECHNOLOGY	L	T	P	C
	Total Contact Hours – 56	1	0	1	2
	Prerequisite course	Basic Science at Intermediate Level			
	Course Coordinator Name & Department	Mrs. K Y Rajalakshmi School of Agricultural sciences			
COURSE OBJECTIVES:-	To enable better understanding of students about identifying the new methodologies / technologies for effective utilization of renewable energy sources.				

THEORY

UNIT I: INTRODUCTION TO RENEWABLE ENERGY SOURCES **1**

Energy crisis – classification of energy sources – renewable energy – significance – potential - achievements in India. Biomass – methods of energy conversion.

UNIT II : BIOCHEMICAL ENERGY CONVERSION **5**

Biofuels – importance – biodiesel and bioethanol production method – flowchart – by products utilization. Biogas technology – classification - types - factors affecting biogas plants- alternate feedstocks – applications - biodigested slurry and enrichment.

UNIT III : THERMOCHEMICAL ENERGY CONVERSION **4**

Briquetting –methods- advantages and disadvantages -combustion –definition- Improved chulhas – types – construction features - applications. Pyrolysis – methods for charcoal /biochar production- comparion of slow and fast pyrolysis. Gasification – chemistry – types – updraft gasifier -downdraft gasifier – working principles – operation and applications.

UNIT IV : SOLAR ENERGY CONVERSION **4**

Solar Energy – characteristics - types of radiation – solar constant-solar thermal devices – solar water heater – solar cooker – solar pond – solar distillation – working principles and applications. Solar PV systems – principle – solar lantern - water pumping. Solar driers – natural and forced convection types – solar tunnel drier – working principles and operation.

UNIT V: WIND AND OTHER RENEWABLE ENERGY SOURCES **2**

Wind – formations - Wind mills – types – horizontal and vertical axis – components – working principles – applications. Geothermal energy – wave energy – tidal energy – ocean energy – principle and operation - types – advantages and disadvantages

PRACTICAL – LIST OF PRACTICAL SCHEDULE

1.	Basic principles of working of renewable energy gadgets	**2.5**
2.	Experiments on biodiesel production	**2.5**
3.	Experiments on bioethanol production process	**2.5**
4.	Construction and working principle of KVIC biogas plant	**2.5**
5.	Construction and working principle of deenbandhu biogas plant	**2.5**
6.	Experiments on biogas applications	**2.5**
7.	Experiments on briquetting technology	**2.5**
8.	Performance evaluation of improved chulha	**2.5**
9.	Evaluation of bio char production systems	**2.5**
10.	Experiments on bio oil production method	**2.5**

11.	Performance evaluation of producer gas production system	**2.5**
12.	Performance evaluation of solar dryers	**2.5**
13.	Experiments on solar cookers and distillation systems	**2.5**
14.	Performance evaluation of solar water heaters	**2.5**
15.	Experiments on solar water pumping system	**2.5**
16.	Performance assessment of solar street light and fencing	**2.5**

TEXT BOOKS:

1. S. Pugalendhi, R. Shalini, J. Gitanjali and P. Subramanian. 2017. Introduction to Renewable Sources of Energy. TNAU, Coimbatore
2. G.D. Rai. 2012. Nonconventional Energy Sources. Khanna Publishers, New Delhi.

REFERENCES:

5. C.S. Solanki, 2009. Renewable Energy Technologies : A Practical Guide for Beginners. PHI Learning Pvt. Ltd., New Delhi.
6. S. Rao and B.B. Parulekar. 2007. Energy Technology: Non-Conventional, Renewable and Conventional. Khanna Publishers, Naisarak, Delhi.
7. G.D. Rai. 1993. Solar Energy Utilisation. Khanna Publishers, New Delhi.
8. J. F. Manwell, J. G. McGowan and A. L. Rogers. 2009. Wind Energy Explained: Theory, Design and Application. Wiley & Sons Ltd.,

COURSE OUTCOMES (COs)	
CO1	Students will understand the need, importance and scope of non-conventional energy resources.
CO2	Students shall learn about the engineering techniques and principles and functioning of various solar energy gadgets.
CO3	Students understand the role and significance of wind energy.
CO4	Students will able to learn about various biochemical conversion process of biomass.
CO5	Students gain the knowledge on basic methodology of thermo chemical conversion process from biomass.
CO6	Students learn about other renewable sources such as ocean, tidal and wave energy.

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	**COs/POs**	**PO1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**PSO1**	**PSO2**	**PSO3**
2	**CO1**	3	-	2	3	2	1	-	2	2	1	-	3	–	–	2
	CO2	3	2	2	3	3	-	-	2	1	-	-	2	-	2	3
	CO3	3	1	2	3	-	3	-	1	2	-	-	2	-	1	1
	CO4	2	2	2	3	2	-	-	1	2	-	-	2	-	2	2
	CO5	3	1	2	3	2	2	-	2	2	-	-	3	-	2	1
	CO6	3	1	2	3	3	2	-	2	1	-	-	3	-	2	2
3	**Category**	Allied Sciences (AS)														
4	**Approval**	Academic Council, Aug 2018														

Subject Code : U18HNSS101	NSS 101 NATIONAL SERVICE SCHEME (0+1)	L	T	P	C
	Total Contact Hours – 40	0	0	1	1
	Prerequisite course	Nil			
	Course Coordinator Name & Department	Dr. S. P. Vijayaragavan NSS Program Co-ordinator			
COURSE OBJECTIVES:-	Enable the students to understand the community in which they work and to understand themselves in relation to their community				

PRACTICAL SCHEDULE – NSS

1. Visit to orphanages and old age homes to look after their needs.
2. Personality development programmes – Building up self confidence in youth.
3. Teaching NSS volunteers on mediation Yoga and art of healthy living with trained teachers
4. Visit of nearby National Monument / Places of tourist importance and campaign on cleanliness and preservation.
5. Exploration of hidden talents of village youth and public on folklore, traditional art, sports, martial arts and cultural heritage .
6. Campus improvement activities
7. Visit to special camp village and pre camp planning.

COURSE OUTCOMES (COs)	
CO1	To evoke social consciousness among students through various activities.
CO2	To develop youth leadership in the students
CO3	To utilize their knowledge in finding practical solutions to individual and community problems
CO4	To create the awareness of all kinds of discipline to the students
CO5	To practice national integration and social harmony, To Gain skills in mobilizing community participation
CO6	To identify the needs and problems of the community and involve them in problem solving process

Category	Humanities and Social Sciences (HS**)**
Approval	Academic Council, Aug 2018

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Subject Code : U18HNCC101	NATIONAL CADET CORPS	L	T	P	C
	Total Contact Hours – 40	0	0	1	1
	Prerequisite course	Nil			
	Course Coordinator Name & Department	Dr. R. Udaya Kumar NCC Officer			

PRACTICAL SCHEDULE – NCC

1.	Drill – Foot drill	**2.5**
2.	Formation of squad and squad drill	**2.5**
3.	Man Management, Morale	**2.5**
4.	Time Management, stress management	**2.5**
5.	Ecology and Environment wild life conservation	**2.5**
6.	Adventure Activities, Trekking Camp	**2.5**
7.	Map reading – Field to Map – Map to Field – Grids and scale systems	**2.5**
8.	Communication systems – Internet – Faxi mail – Satellites	**2.5**
9.	Collection and Distribution of Aid material	**2.5**
10.	Field Engineering – Mines, anti tanks, explosives	**2.5**
11.	Opportunities for NCC cadets in Army and other services	**2.5**
12.	Social Service, Family Planning	**2.5**
13.	Section battle drill	**2.5**
14.	Roll of NCC cadets in National programmes.	**2.5**
15.	Visit to Wellington, Coonoor.	**2.5**
16.	Self defence mechanisms	**2.5**

Besides the above schedule, NCC cadets will be involved during important occasions during convocation, Independence day, Republic day, etc.

Category	Humanities and Social Sciences (HS**)**
Approval	Academic Council, Aug 2018

III YEAR V SEMESTER

S.No.	Course Code	Course Title	Credit Hours
1.	U18CPBG301	Fundamentals of Plant Breeding	2+1
2.	U18AAEC301	Agricultural Marketing, Trade & Prices	2+1
3.	U18CAGM301	Agricultural Microbiology	1+1
4.	U18CPAT301	Diseases of Field and Horticultural crops and their management - I	1+1
5.	U18AARM301	Entrepreneurship Development and Business Management	1+1
6.	U18CAGR301	Practical Crop Production - I (Kharif crops)	0+2
7.	U18CHOR311	Post harvest management and value addition of fruits and vegetable crops	1+1
8.	U18CSAC301	Manures, Fertilizers and Soil Fertility Management	2+1
9.	U18AAPE311	Protected Cultivation and Secondary Agriculture	1+1
10.	U18CAGR302	Rainfed Agriculture & Watershed Management	1+1
11.	U18CAEN301	Pests of Field crops and stored produces and their management	1+1
		Total	**13+12=25**

Subject Code : U18CPBG 301	FUNDAMENTALS OF PLANT BREEDING	L	T	P	C
	Total Contact Hours – 72	2	0	1	3
	Prerequisite course	Introduction to Agricultural Botany			
	Course Coordinator Name & Department	Dr. S.AnandhiLavanya Faculty of Agricultural sciences			
COURSE OBJECTIVES:-	To expose the students to basic and applied principles of plant breeding, mode of reproduction, breeding methods for plant breeding. To impart knowledge on emasculation and pollination techniques of various crops To impart knowledge on application of various genetic principles in crop improvement.				

THEORY

UNIT I: REPRODUCTIVE SYSTEMS IN PLANT BREEDING 9

Objectives and role of plant breeding - historical perspective – activities in Plant Breeding. Centres of origin – contribution of Vavilov, Harlan, Zhukovosky – law of homologous series. Plant genetic resources– importance – germplasm – types – activities – gene erosion - gene bank – collection - conservation – types of conservation. Germplasm: evaluation – use of descriptors, documentation, utilization; Agencies– national and international; germplasm exchange – quarantine. Modes of reproduction – sexual – asexual – mechanisms promoting self and cross pollination – significance of pollination. Self incompatibility – classifications – mechanisms – application – measures to overcome and limitations. Sterility – male sterility – introduction – classification – CMS, GMS, CGMS -inheritance and applications. EGMS - TGMS, PGMS, Gametocides, Transgenic Male sterility and applications. Apomixis – introduction– classification - applications; Parthenocarpy and its types.

UNIT II: BREEDING METHODS OF SELF POLLINATED CROPS 9

Polygenic variation-components of variance - phenotypic, genotypic and environmental variance-heritability and genetic advance. Plant introduction as a breeding method – types of introduction – objectives – quarantine - acclimatization – achievements - merits and demerits. Genetic basis of self pollinated crops – Vilmorin's principle of progeny selection - Johannsen's pure line theory. Breeding methods for self pollinated crops without involving artificial hybridization: Pure line selection – procedure – merits and demerits – achievements; Mass selection– procedure - types – merits and demerits-achievements- comparison of mass and pureline selection. Breeding methods of self pollinated crops involving artificial hybridization: Creating variability in self pollinated crops - Hybridization and selection – objectives – steps in hybridization - choice of parents – kinds of emasculation – hybridization- transgressive breeding. Handling segregating generations- Pedigree breeding – procedure – mass pedigree – merits – demerits – achievements; Bulk breeding – procedure – merits – demerits – achievements. Comparison of pedigree and bulk breeding methods. Single Seed Descent (SSD) method – procedure – application – merits and demerits. Backcross breeding – genetic basis — procedures for transferring dominant and recessive genes. Back cross breeding – merits – demerits – multilines- types- procedure- merits and demerits.

UNIT III: BREEDING METHODS OF CROSS POLLINATED CROPS AND CLONALLY PROPAGATED CROPS 7

Genetic structure of a population in crosses pollinated crops – Hardy Weinberg law – gene frequencies in random mating population. Breeding methods of cross pollinated crops without involving artificial hybridization: Mass selection in cross pollinated crops – modified mass selection – Grid selection – progeny selection. Breeding methods of cross pollinated crops involving artificial hybridization: Recurrent selection principles – types – merits and demerits. Heterosis breeding – theories - genetic basis – hybrid vigour – estimation of heterosis – inbreeding depression. Heterosis breeding – procedure– development of inbreds- evaluation of inbred lines – top cross method and

single cross method-prediction of double cross performance- hybrids – single cross- double cross-three way cross hybrids. achievements – merits and demerits. Synthetics and composites - steps in development of synthetics and composites – achievements – merits and demerits. Genetic characters of asexual reproduction – clonal selection – hybridization and clonal selection – merits and demerits – achievements.

UNIT IV: SPECIAL BREEDING METHODS **5**

Polyploidy breeding – classification – induction of polyploidy - achievements – limitations. Wide hybridization-importance-barriers and techniques for overcoming barriers-utilization- Pre-breeding. Mutation breeding: mutation – types – mutagens – breeding procedure – achievements – limitations. Concepts in biotic stress resistance breeding- diseases and pests - gene for gene hypothesis-mechansims of resistance - sources of resistance- multilines-gene pyramiding-gene deployment-Breeding methods. Concepts in abiotic stress resistance breeding- drought- mechansims of drought resistance – basis of drought resistance- morphological and physiological characters-sources of drought resistance- Breeding methods.

UNIT V: VARIETAL RELEASE, SEED PRODUCTION, MARKERS AND IPR **3**

Procedure for release of new varieties-stages in seed multiplication-steps in nucleus and breeder seed production. Introduction to markers – morphological – biochemical- DNA markers – advantages and disadvantages- marker assisted selection in plant breeding. Participatory plant breeding- Intellectual Property Rights- Patenting- Plant Breeders and Farmers Rights.

PRACTICAL – LIST OF PRACTICAL SCHEDULE

1.	Reproduction in plants - Alternation of generation and life cycle.	**2.5**
2.	Mode of pollination - Mechanisms enforcing self and cross pollination in crops- Working out extent of natural out crossing	**2.5**
3.	Breeder's kit and its components	**2.5**
4.	Basic techniques for selfing and crossing in crop plants.	**2.5**
5.	Emasculation and pollination techniques in field crops.	**2.5**
6.	Emasculation and pollination techniques in horticultural crops.	**2.5**
7.	Handling of segregating populations- Layout of different yield trials-maintenance of records.	**2.5**
8.	Study of Cytoplasmic genic male sterility system in Rice	**2.5**
9.	Study of Genic male sterility system in Redgram	**2.5**
10.	Mutagenesis study using physical and chemical mutagens	**2.5**
11.	Germ plasm collection and conservation.	**2.5**
12.	Experimental designs used in plant breeding-RBD analysis	**2.5**
13.	Calculation of mean, range, PCV, GCV, heritability, genetic advance	**2.5**
14.	Estimation of heterosis and prediction performance of double cross hybrids	**2.5**
15.	Screening techniquesfor biotic stresses in rice	**2.5**
16.	Screening techniques for abiotic stresses in rice	**2.5**

REFERENCES:

1. Singh, B. D. 2005. Plant breeding - Principles and Methods. Kalyani Publishers, New Delhi.
2. Phundhan Singh. 2001. Essentials of Plant Breeding, Kalyani publishers, New Delhi.
3. Allard, R. 1989. Principles of Plant Breeding. John Wiley and Sons, New Delhi.
4. D. N. Bharadwaj. 2012. Breeding Field Crops. Agrobios (India), Jodhpur
5. Chahal, G. S. and S. S. Gosal. 2002. Principles and Procedures of Plant
6. Breeding: Biotechnological and Conventional Approaches. Narosa Publishing House (India)

7. Daniel Sundararaj, G. Thulasidas and M. Stephen Dorairaj. 1997. Introduction to Cytogenetics and Plant Breeding. Popular Book Depot. Chennai – 15.
8. Chopra, V. L. , 1994. Plant breeding theory and practice. Oxford and IBH Publishing Co. Pvt. Ltd. New Delhi
9. Sharma, J. R. 1994. Principles and practice of plant breeding. Tata McGraw-Hill publishing Co., New Delhi.
10. Chaudhary, H. K. 1980. Elementary Principles of plant breeding. Oxford and IBH publication Co. , New Delhi
11. R. K. Singh and B. D. Choudhary. Biometrical methods in quantitative Genetics. Kalyani Publishers, Ludhiana

E-REFERENCES

1. http://www. edugreen. teri. res. in/explore/bio/breed. htm
2. http://cuke. hort. ncsu. edu/gpb/
3. http://www. stumbleupon. com/tag/plant-breeding
4. http://www. iaea. org/

COURSE OUTCOMES (COs)	
CO1	Understand about the historical developments and contributions of some scientist in the field of Plant Breeding.
CO2	Learning different plant breeding methodologies and applications employed for self, cross and vegetatively propagated crops will also be learned.
CO3	Impart knowledge to the students about the basic and applied aspects of understanding and exploitation of Self and Cross Pollination.
CO4	Students will develop the capacity to carry out independent plant breeding experiments and multiply and modify the vegetatively propagated crops.
CO5	Students will learn develop expertise in the various crossing and emasculation techniques in various crops.
CO6	Understand the development of Special Breeding methods , Seed Production Technology and Learning the IPR

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	**COs/POs**	**PO1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**PSO1**	**PSO2**	**PSO3**
2	**CO1**	3	2	-	-	-	-	-	-	-	-	-	2	3	–	-
	CO2	3	2	2	-	-	-	-	-	-	-	-	2	3	-	-
	CO3	3	3	2	-	-	-	2	-	-	-	-	2	3	-	-
	CO4	3	3	2	-	-	-	2	-	-	-	-	3	2	-	-
	CO5	3	3	2	-	-	-	-	-	-	-	-	1	2	-	-
	CO6	3	3	3	-	-	-	-	-	-	-	-	3	2	-	-
3	**Category**	Professional Core (PC)														
4	**Approval**	Academic Council, Aug 2018														

Subject Code : U18AAEC 301	AGRICULTURAL MARKETING, TRADE & PRICES	L	T	P	C
	Total Contact Hours – 72	2	0	1	3
	Prerequisite course: Fundamentals of Agricultural Economics				
	Course Coordinator Name & Department: Dr.R.Thulasiram, School of Agricultural sciences				
COURSE OBJECTIVES:-	To explore the knowledge on agricultural marketing system in India, institutions responsible for the sector and various schemes in facilitating agricultural marketing.				

THEORY

UNIT I: AGRICULTURAL MARKETING – NATURE AND SCOPE 3

Agricultural Marketing: Concepts and definitions of market, marketing, agricultural marketing, market structure, marketing mix and market segmentation, classification and characteristics of agricultural markets**;** nature and determinants of demand and supply of farm products. Producer's surplus – meaning and its types, marketable and marketed surplus, factors affecting marketable surplus of agri-commodities. Approaches to the study of marketing - Market functionaries and Market forces. Marketing of agricultural versus manufactured goods.

UNIT II: MARKETING FUNCTIONS, PRICING AND PROMOTION STRATEGIES 4

Marketing process and functions: Marketing process - concentration, dispersion and equalization; exchange functions – buying and selling; physical functions – storage, transport and processing; facilitating functions – packaging, branding, grading, quality control and labeling (AGMARK); Standardization, Finance, Storage and Warehousing, Processing, Value Addition and Risk Taking - Market Structure, Conduct and Performance paradigm (SCP) – Market Structure: Meaning, Components, Dynamics of Conduct and Performance – Market structure and Price determination under perfect and imperfect competition, .Product Life Cycle (PLC) and competitive strategies: Meaning and stages in PLC; characteristics of PLC; strategies in different stages of PLC; pricing and promotion strategies: pricing considerations and approaches – cost based and competition based pricing; market promotion – advertising, personal selling, sales promotion and publicity – their meaning and merits and demerits.

UNIT III: MARKETING EFFICIENCY AND MARKETING INSTITUTIONS 4

Market functionaries and marketing channels: Types and importance of agencies involved in agricultural marketing; meaning and definition of marketing channel; number of channel levels; marketing channels for different farm products; Integration over space, time and form: Meaning, definition and types of market integration; marketing efficiency; marketing costs, margins and price spread; factors affecting cost of marketing reasons for higher marketing costs of farm commodities; ways of reducing marketing costs; Modern marketing systems versus traditional agricultural marketing systems; Role of Government in agricultural marketing - Public sector institutions - CWC, SWC, FCI and DMI – their objectives and functions; cooperative marketing in India; Market Intelligence -Legal measures for improving agricultural marketing: APMC Act. New EXIM policy of India – Advantages of AEZs, ITPO, Export Promotion Councils, APEDA, MPEDA, and Commodity Boards.

UNIT IV: TRADE IN AGRICULTURAL PRODUCTS 3

International Trade: Concept of International Trade and its need - Free trade, Autarky and it needs - Theories of Trade: Absolute and comparative advantage; Present status and prospects of Agricultural exports / imports from India and their share - Barriers to Trade: Tariff and non tariff barriers - Trade policy instruments – Terms of Trade - Role of institutions like UNCTAD and GATT - WTO in promoting trade in agricultural products - Free Trade Agreements – AoA and its implications on

Indian agriculture: Sanitary and Phyto-sanitary issues, Market Access, Domestic Support and Export Subsidies - IPR.

UNIT 5: AGRICULTURAL PRICES AND RISK ANALYSIS **2**

Agricultural Prices and Policy: Meaning and functions of price; administered prices; need for agricultural price policy; Objectives of Price Policy and Price Stabilization – Role of CACP – Concept of MSP, FRP (SMP) and SAP – Price Parity - Procurement of food grains and buffer stock - Risk in marketing: Meaning and Importance - Types of risk in marketing: Speculation and Hedging and Forward and Futures trading; an overview of futures trading; – Role of Contract Farming in risk mitigation.

PRACTICAL – LIST OF PRACTICAL SCHEDULE

1.	Preparation of farm survey schedule	**2.5**
2.	Visit to a farm to collect information on marketing practices of agricultural commodities and marketing problems.	**2.5**
3.	Plotting and study of demand and supply curves and calculation of elasticities.	**2.5**
4.	Computation of marketable and marketed surplus of important commodities.	**2.5**
5.	Visit to a local market / weekly shandy / farmers' market to study various marketing functions performed by different agencies.	**2.5**
6.	Study of relationship between market arrivals and prices of some selected commodities	**2.5**
7.	Identification of marketing channels for selected commoditycollection of data regarding marketing costs, margins; price spread estimation for major agricultural and allied agricultural products to assess their marketing efficiency; and presentation of report in the class.	**2.5**
8.	Visit to market committee and regulated market to study their organization and functioning	**2.5**
9.	Visit to co-operative marketing society to study its organization and functioning	**2.5**
10.	Visit to market institutions – SWC / CWC to study their organization and functioning	**2.5**
11.	Visit to AGMARK Laboratory / Grading institutions.	**2.5**
12.	Farm input marketing: Visit to Farm input dealer to study marketing of farm inputs	**2.5**
13.	Visit to Commodity Boards / AEZ / Export oriented units.	**2.5**
14.	Time Series Analysis of prices–TCSI Study of price behavior over time for some selected commodities.	**2.5**
15.	Construction of Index Numbers and their uses.	**2.5**
16.	Application of principles of comparative advantage of international trade.	**2.5**

TEXT BOOKS:

1. Acharya S. S. and N. L. Agarwal. 2002. Agricultural Marketing in India. Oxford and IBH Publishing Co. Pvt. Ltd. New Delhi.
2. Acharya S. S. and N. L. Agarwal. 1994. Agricultural Prices - Analysis and Policy. Oxford and IBH Publishing Co. Pvt. Ltd. New Delhi.
3. Kahlon A. S. and S. D. Tyagi, 2000. Agricultural Price Policy in India - Allied Publishers Pvt. Ltd. Bombay.

REFERENCES:

1. SakOnkvisit. John J. Shaw. 1999. International Marketing Analysis and Strategy. Prentice Hall of India. New Delhi.
2. Sivarama Prasad A. 1999. Agricultural Marketing in India. Mittal Publications, New Delhi.
3. Kohls R. L. and N. Uhl. Joseph. 1980. Marketing of Agricultural Products. Collier Macmillan. New York.

E-REFERENCES

1. http://www.eagri.org
2. https://www.agrimoon.com/fundamental-of-agricultural extension-education /
3. http://www.tnau.ac.in
4. http://www.hillagric.ac.in
5. http://www.apeda.com
6. http://www.mpeda.com

COURSE OUTCOMES (COs)	
CO1	To understand the basics about Agricultural marketing, markets, types and its structure
CO2	To gain information on Marketing Functions, Pricing and Promotion strategies
CO3	To impart knowledge about Marketing Efficiency and price spread in Agricultural marketing
CO4	To learn about the marketing Institutions with regard to domestic and international export
CO5	To learn about basic concepts in export and principles and agreements involved in international trade
CO6	To detail about Agricultural Prices, types, fixation and risks in Agriculture

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	**COs/POs**	**PO1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**PSO1**	**PSO2**	**PSO3**
2	**CO1**	-	-	-	1	-	-	-	-	-	-	-	2	-	2	-
	CO2	-	-	-	2	-	-	-	-	-	-	-	2	-	2	-
	CO3	-	-	-	3	-	-	-	-	-	-	-	2	-	2	-
	CO4	-	-	-	3	2	-	1	-	-	1	1	3	-	2	-
	CO5	-	2	-	2	1	1	2	-	-	2	1	3	-	2	-
	CO6	-	1	-	2	2	-	1	-	-	1	1	3	-	2	-
3	**Category**	Allied Sciences (AS)														
4	**Approval**	Academic Council, Aug 2018														

Subject Code : U18CAGM 301	AGRICULTURAL MICROBIOLOGY		L	T	P	C
	Total Contact Hours – 56		1	0	1	2
	Prerequisite course	Fundamentals of Microbiology				
	Course Coordinator Name & Department	Mr. B. SuriyaSabarinath School of Agricultural sciences				
COURSE OBJECTIVES	• To illuminate the students with the knowledge of microbial diversity in soils and their interaction with plants and the role of soil microorganisms in soil fertility, plant growth promotion and biodegradation in soil. • To develop experimental skills in Agricultural microbiology this includes isolation of beneficial microorganisms from soil and plant and their mass production and practical aspects of production of industrial products					

THEORY

UNIT I : INTRODUCTION **3**

Soil microorganisms and their role in soil fertility and crop production. Historical developments in soil microbiology. Diversity of soil microorganisms - culturable (bacteria, actinobacteria, yeasts, molds and algae) and unculturable microorganisms - metagenomic approach; factors influencing soil microbial diversity. Soil enzymes and their role in soil fertility.

UNIT II : BIOGEOCHEMICAL CYCLING OF NUTRIENTS **4**

Carbon cycle; organic matter decomposition in oxygenic and anoxygenic environments; humus formation. Nitrogen cycle – ammonification, nitrification, denitrification and biological nitrogen fixation (BNF) – bacterial and algal nitrogen fixers (diazotrophs) ; free living, associative, symbiotic, endophytic and epiphytic diazotrophs; nodulation in leguminous and non-leguminous plants; biochemistry and molecular biology of BNF. Phosphorus cycle – mineralization, phosphate mobilization and solublization Microbial transformation of sulphur, potassium, zinc and silica in soil.

UNIT III :MICROBIAL DEGRADATION AND BIOREMEDIATION **3**

Role of microbes in reclamation of problematic soils. Microbes in solid waste management. Biodegradation of agricultural residues and chemicals – processes involved in remediation.

UNIT IV: MICROBIOMES AND PLANT GROWTH **3**

Rhizosphere, spermosphere, phyllosphere, epiphytic and endophyticmicrobiomes and their significance. Plant growth promoting rhizobacteria. Soil microorganisms and their interactions – positive and negative interactions.

UNIT V: MICROBES IN HUMAN WELFARE **3**

An overview of industrially important microorganisms and products. Silage production. Bioinoculants (biofertilizers and biopesticides); types of biofertilisers – nitrogen fixers, phosphate, zinc and silicate solubilizers, potassium releasers, phosphate mobilizers, sulphur oxidizers and Pink Pigmented Facultative Methylotroph (PPFM). Biopesticides- types and mechanism of action. Mass production and quality control of bacterial and fungal bioinoculants. Methods of application of bioinoculants. Biofuel production.

PRACTICAL – LIST OF PRACTICAL SCHEDULE

1.	Enumeration of soil microorganisms - quantitative Conn's direct microscopic method – qualitative buried slide technique	**2.5**
2.	Enumeration of rhizosphere and bulk soil microorganisms and determination of R:S ratio	**2.5**

3.	Studying organic matter decomposition by measurement of CO2 evolution	**2.5**
4.	Isolation of *Rhizobium* from root nodules and *Azotobacter*from soil	**2.5**
5.	Isolation of *Azospirilum*by MPN technique	**2.5**
6.	Isolation of *Gluconoacetobacter* from sugarcane phllosphere / rhizosphere and PPFM from phyllosphere	**2.5**
7.	Isolation of phosphobacteria, potassium releasing and zinc solubilizing bacteria from soil	**2.5**
8.	Isolation of PGPR (*Pseudomonas*sp) and sulphur oxidizing bacteria from soil	**2.5**
9.	Examination of AM infection in roots and recovery of spores from soil	**2.5**
10.	Mass production of bacterial bioinoculants and AM fungi	**2.5**
11.	Examination of blue green algae from soil and azolla	**2.5**
12.	Mass multiplication of blue green algae and azolla	**2.5**
13.	Methods of application of different bioinoculants	**2.5**
14.	Antibiosis in soil – Crowded plate technique	**2.5**
15.	Visit to biopesticides production unit	**2.5**
16.	Visit to silage production and compost yard	**2.5**

TEXT BOOKS:

1. Alexander, M. 1977. Soil Microbiology. John Wiley and Sons. New York
2. Paul , E . A. 2014. Soil Microbiology, Ecology and Biochemistry. 4th Ed. , Academic Press, USA
3. e book: Waksman, S. A 1952. Soil Microbiology John Wiley & Sons, Inc.
4. ebook:Paul , E . A. 2007. Soil Microbiology, Ecology and Biochemistry. 3rd Ed. , Academic Press, USA.

REFERENCES:

1. Rangaswamy,G. andBagyaraj, D. J. 1992. Agricultural Microbiology, Asia Publishing House, New Delhi.
2. SubbaRao,N. S. 1999. Soil Microorganisms and plant Growth. Oxford and IBH, New Delhi
3. Osborn, M. , Smith, C. J. 2005. Molecular Microbial Ecology. Taylor and Francis.

E- REFERENCES:

1. fire. biol. wwu. edu/hooper/416_05Ncycle1. ppt
2. www. fao. org/docrep/009/a0100e/a0100e05. Html

COURSE OUTCOMES (COs)	
CO1	Understand about the role of microorganisms in soil and their influence on the plant growth and industrial production with historical developments.
CO2	The students exposed to soil microbial diversity, their functions in soil and microbial transformation of nutrient and humus formation.
CO3	The students exposed to the role of soil microbes in Biogeochemical cycles such as Carbon cycle, Nitrogen cycle, Phosphorus cycle and Sulphur cycle
CO4	The students should know about the role of microbes in reclamation of problematic soils, solid waste management, Biodegradation of agricultural residues and chemicals and processes involved in remediation.
CO5	The students would expose to the beneficial and harmful relationships between soil microorganism and different parts of plants.
CO6	The students gained hands on experience on production and quality control aspects of different microbial inoculants and to have self-confidence to become successful entrepreneur.

Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low																
1	**COs/POs**	**PO1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**PSO1**	**PSO2**	**PSO3**
2	**CO1**	3	-	-	2	1	2	3	-	-	-	-	-	2	–	-
	CO2	3	-	-	3	3	3	3	-	-	-	-	-	2	-	-
	CO3	3	-	-	3	3	3	3	-	-	-	-	-	2	-	-
	CO4	3	-	-	3	3	3	3	2	-	-	-	-	2	-	-
	CO5	3	-	-	3	3	3	3	2	-	-	-	-	2	-	-
	CO6	2	2	2	-	3	3	3	-	-	-	-	3	1	-	-
3	**Category**	Professional Core (PC)														
4	**Approval**	Academic Council, Aug 2018														

Subject Code : U18CPAT 301	DISEASES OF FIELD AND HORTICULTURAL CROPS AND THEIR MANAGEMENT - I	L	T	P	C
	Total Contact Hours – 60	1	0	1	2
	Prerequisite course: Principles of Integrated Plant Disease Management				
	Course Coordinator Name & Department: Dr.T.MEERA, Faculty of Agricultural Sciences				
COURSE OBJECTIVES:-	To acquire knowledge on etiology, symptoms, epidemiology, mode of spread, survival and integrated management of important diseases due to fungi, bacteria, viruses, phytoplasma, phanerogamic parasites and non-parasitic causes of the field and horticultural crops.				

THEORY

UNIT I : DISEASES OF CEREALS AND MILLETS **3**

Cereals: Rice and Maize; **Millets:** Sorghum, Bajra, Finger millet and Small millets

UNIT II : DISEASES OF PULSES AND OILSEEDS **2**

Pulses : pigeon pea, urd bean, mung bean, soyabean, cowpea; **Oilseeds:** ground nut, castor and Sesame

UNIT III : DISEASES OF CASH CROPS **1**

Tobacco, Jute and Mulberry

UNIT IV: DISEASES OF FRUITS AND VEGETABLES CROPS **6**

Fruits: banana, guava, papaya, pomegranate; **Vegetables:** tomato, brinjal, okra , cruciferous vegetables, beans, colacasia and sweet potato

UNIT V : DISEASES OF PLANTATION CROPS **4**

Plantation: coconut, arecanut, tea, coffee, rubber and cocoa

PRACTICAL – LIST OF PRACTICAL SCHEDULE

1.	Diseases of rice	**2.5**
2.	Diseases of maize and sorghum	**2.5**
3.	Diseases of pearl millet, finger millet and small millets,	**2.5**
4.	Diseases of pigeonpea, urdbean, mungbean, soybean and cowpea	**2.5**
5.	Diseases of groundnut , sesame and castor	**2.5**
6.	Diseases of tobacco, jute and mulberry	**2.5**
7.	Diseases of banana	**2.5**
8.	Diseases of guava, papaya and pomegranate	**2.5**
9.	Diseases of crucifers	**2.5**
10.	Field visit/ exposure visit to hilly fruits , vegetables and plantation crops	**2.5**
11.	Diseases of tomato, brinjal and okra	**2.5**
12.	Diseases of sweet potato and beans	**2.5**
13.	Diseases of coconut and arecanut	**2.5**
14.	Diseases of tea	**2.5**
15.	Diseases of coffee	**2.5**
16.	Diseases of rubber and cocoa	**2.5**

TEXT BOOKS:

1. Arjunan.G. Karthikeyan, G, Dinakaran ,D. Raguchander,T. 1999 Diseases of Horticultural

Crops, AE Publications, Coimbatore.
2. Rangasawmi ,G and Mahadevan, A. 1998. Diseases of crop Plants in India, Prentice Hall of India Pvt. Ltd., New Delhi
3. Prakasam, V., Valluvaparidasan, V., Raguchander, T. and K.Prabakar. 1997. Field crop diseases, AE Publication, Coimbatore.

E- BOOKS:

1. Agrobios, G.N. 2008. Plant Pathology, Academic Press, New York.
2. Rangaswami, G. 2005. Diseases of Crop plants in India. Prentice Hall of India Pvt. Ltd., New Delhi.
3. Thakur, B.R. 2006. Diseases of field crops and their management.

COURSE OUTCOMES (COs)	
CO1	To acquire the knowledge on about new emerging diseases of cereals and millets.
CO2	Having expertise in identifying and managing diseases in pulses and oil seeds.
CO3	Having expertise in identifying and managing diseases in cash crops.
CO4	Having expertise in identifying and managing diseases in fruit crops.
CO5	Having expertise in identifying and managing diseases in vegetable crops.
CO6	Trained in identifying and managing diseases of plantation crops.

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	**COs/POs**	**PO1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**PSO1**	**PSO2**	**PSO3**
2	**CO1**	3	-	3	-	-	-	-	-	-	-	-	1	2	–	-
	CO2	3	2	3	-	-	-	-	1	-	-	-	2	2	-	-
	CO3	3	2	3	-	-	-	-	-	-	-	-	-	2	-	-
	CO4	3	2	3	-	-	-	-	-	-	-	-	2	2	-	-
	CO5	3	2	3	-	-	-	-	-	-	-	-	1	2	-	-
	CO6	3	2	3	-	-	-	-	2	-	-	-	3	2	-	-
3	**Category**	Professional Core (PC)														
4	**Approval**	Academic Council, Aug 2018														

Subject Code : U18AARM 301	ENTREPRENEURSHIP DEVELOPMENT AND BUSINESS MANAGEMENT	L	T	P	C
	Total Contact Hours – 56	1	0	1	2
	Prerequisite course	1. Fundamentals of Agricultural Economics 2. Communication Skills and Personality Development			
	Course Coordinator Name & Department	Dr.R.Thulasiram, School of Agricultural sciences			
COURSE OBJECTIVES:-	To explain entrepreneurship development to Imparting managerial and project planning skills				

THEORY

UNIT I : ENTREPRENEUR AND ENTREPRENEURIAL PROCESS **3**

Concept and Types of Entrepreneurship - Characteristics of Entrepreneurs and Entrepreneurial Skills - Entrepreneurial process – Importance of Entrepreneurship.

UNIT II : ENTREPRENEURSHIP OPPORTUNITIES **4**

Innovation - principles of innovation - Sources of innovative opportunities - Business environment – Micro and Macro environment - MSME Classification and Opportunities for rural enterpreneurship - KVIC classification, Startup and Business incubators. Agribusiness – Importance, Opportunities and Challenges.

UNIT III : MANAGERIAL FUNCTIONS – PLANNING AND ORGANIZING **3**

Management Functions – Planning – Types of Plans and Steps in Planning, Organizing – Principles and Departmentation.

UNIT IV – MANAGERIAL FUNCTIONS – STAFFING, DIRECTING AND CONTROL **3**

Staffing – Job Analysis, Human Resource Planning Process, Recruitment and Selection, Directing- Principles, Techniques and Supervision, Controlling – Process and Types.

UNIT V – FUNCTIONAL AREAS OF MANAGEMENT **3**

Operations Management – Meaning and Scope, Supply Chain Management – Drivers and flows and Total Quality Management – Meaning and Principles, Marketing Management – Market Segmentation and Marketing Mix Financial Management – Meaning, Objectives and Scope.

PRACTICAL – LIST OF PRACTICAL SCHEDULE

1.	Assessment of entrepreneurial traits	**2.5**
2.	Identification of new business opportunities	**2.5**
3.	Exercise on SWOC Analysis of Agribusiness sector in India	**2.5**
4.	Market survey for understanding customer needs	**2.5**
5.	Starting new business - Visit to firms / discussion with entrepreneurs	**2.5**
6.	Documenting Procedure for Establishing Agribusiness Firms	**2.5**
7.	Government programs and institutions for entrepreneurship development	**2.5**
8.	Financing new agribusiness ventures - Visit to banks / discussion	**2.5**
9.	Exercise on Demand Forecasting for Agricultural Inputs/Products	**2.5**
10.	Preparation of Advertisement and Sales Promotion Measures for Agribusiness	**2.5**
11.	Exercise on Inventory Management – EOQ Model and ABC Analysis	**2.5**
12.	Exercise on discounted measures of capital budgeting	**2.5**
13.	Calculation of Break Even Point and its Business Implication	**2.5**
14.	Business Plan Preparation	**2.5**

15. Understanding balance sheet and income statement **2.5**
16. Financial Performance Analysis - Ratio Analysis **2.5**

TEXT BOOKS:

1. Chandrasekaran N. and G. Raghuram. Agribusiness Supply Chain Management. 2014. CRC Press, Taylor & Francis Group, Brooklyn.
2. Joseph, L. Massie. 1995. Essentials of Management. Prentice Hall of India Pvt. Ltd. , New Delhi.
3. Mark J Dollinger. 1999. Entrepreneurship Strategies and Resources. Prentice-Hall, Upper Saddal Rover, New Jersey.

REFERENCES:

1. Mohanty S K. 2007. Fundamentals of Entrepreneurship. Prentice Hall India Ltd. , New Delhi.
2. Peter F. Drucker, 2006. Innovation and Entrepreneurship. HarperBusiness; Reprint edition, New York.
3. Poornima M. Charantimath 2005. Entrepreneurship Development and Small Business Enterprise, Pearson Education India, New Delhi.
4. Prasanna Chandra, 2007. Financial Management: Theory and Practice, McGraw-Hill Education, New Delhi.

Web pages

1. http://www.eagri.org
2. https://www.agrimoon.com
3. http://www.tnau.ac.in
4. http://www.hillagric.ac.in
5. http://www.apeda.com
6. http://www.mpeda.com

COURSE OUTCOMES (COs)	
CO1	To explore agri-business opportunities that are commercially successful and the procedures involved in start-ups.
CO2	To learn skills possessed by an entrepreneur
CO3	To teach art and science of business plan and project formulation.
CO4	To perform SWOT analysis of an entity for any prospective agribusiness/ideas.
CO5	To formulate business proposal for successful implementation of the business plan
CO6	To comprehend Agri-business projects, property and diversity protections

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	COs/POs	PO1	2	3	4	5	6	7	8	9	10	11	12	PSO1	PSO2	PSO3
2	**CO1**	1	-	-	1	-	-	-	-	-	-	-	1	-	2	-
	CO2	1	-	-	1	-	-	-	-	1	2	1	1	-	2	-
	CO3	-	-	-	3	-	-	-	-	1	3	2	2	-	2	-
	CO4	-	-	-	2	-	-	-	-	-	1	2	1	-	2	-
	CO5	-	-	-	3	2	-	1	-	-	2	3	3	-	2	-
	CO6	-	-	-	3	1	1	1	-	2	2	3	3	-	2	-
3	**Category**	Allied Sciences (AS)														
4	**Approval**	Academic Council, Aug 2018														

Subject Code : U18CAGR 301	PRACTICAL CROP PRODUCTION - I (KHARIF CROPS)		L	T	P	C
	Total Contact Hours – 80		0	0	2	2
	Prerequisite course	1.Fundamentals of agronomy and agricultural heritage 2. Crop production I (*Karif crops*)				
	Course Coordinator Name & Department	Dr. V. PRAKASH Faculty of Agricultural Sciences				
COURSE OBJECTIVES:-	To study the economic importance and different practices and yield of Kharif crops.					

PRACTICAL – LIST OF PRACTICAL SCHEDULE

TRANSPLANTED RICE:

1&2	Study of rice ecosystems, climate, weather, seasons and varieties of Tamil Nadu.	**2.5**
3&4	Selection of nursery area, preparation of nursery, application of manures and fertilizer to nursery	**2.5**
5&6	Acquiring skill in seed treatment, seed soaking and incubation, nursery sowing and management.	**2.5**
7&8	Study and Practice of main field preparation and puddling operations.	**2.5**
9&10	Practicing of field preparatory operations - sectioning of field bunds and plastering, leveling and basal application of fertilizers	**2.5**
11&12	Practicing transplanting techniques in lowland rice	**2.5**
13&14	Estimation of plant population and acquiring skill in gap filling and thinning.	**2.5**
15&16	Study of weeds and weed management in rice	**2.5**
17&18	Study and practice of green manuring and bio-fertilizer application in rice	**2.5**
19&20	Acquiring skill in nutrient management and practicing top dressing techniques.	**2.5**
21&22	Study of water management practices for lowland rice	**2.5**
23&24	Observation of insect pests and diseases and their management.	**2.5**
25&26	Recording growth and other related characters of rice.	**2.5**
27&28	Estimation of yield and yield parameters in rice	**2.5**
29&30	Harvesting, threshing	**2.5**
31&32	Cleaning, drying and calculating the yield of produce	**2.5**
33.	Working out cost of cultivation and economics	**2.5**

REFERENCES:

1. Ahlawat, I. P. S. , Om Prakash and G. S. Saini.1998. Scientific Crop Production in India. Rama Publishing House, Meerut.
2. Chidda Singh. 1997. Modern techniques of raising field crops. Oxford and IBH Publishing Co. Pvt. Ltd. , New Delhi.
3. Crop Production Guide.2012. Directorate of Agriculture, Chennai and Tamil Nadu Agricultural University, Coimbatore.
4. Rajendra Prasad. 2004. Text Book on Field Crop Production, Indian Council of Agrl. Research, New Delhi.

5. K Annadurai and B Chandrasekaran. 2009. A Text Book Of Rice Science. Scientific Publishers.
6. Reddy,S. R. 2012. Agronomy of field crops.Kalyani publishers, New Delhi.
7. ICAR 2015. Hand book of Agriculture. Indian Council of Agricuture, New Delhi.

E-References:

1. WWw. irri. org
2. www. crri. nic. in
3. www. drrindia. org

COURSE OUTCOMES (COs)	
CO1	In the course study students will be acquainted with the knowledge of profitable crop production technology.
CO2	Course content will help to students/farmers about ruminative crop production techniques.
CO3	It helps to adopt diversified farming system according to available farming situation.
CO4	It will assist to encourage the sustainable agriculture system.
CO5	Understand the Profitable based farming system can we adopted with the help of course content
CO6	To construct different methods of planting techniques, harvesting and processing

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	**COs/POs**	**PO1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**PSO1**	**PSO2**	**PSO3**
2	**CO1**	2	2	1	-	-	-	1	-	-	-	-	-	3	-	2
	CO2	2	2	3	-	-	-	2	-	-	-	-	-	3	-	2
	CO3	2	2	1	-	-	-	1	-	-	-	-	-	3	-	2
	CO4	2	2	1	-	2	-	1	-	-	-	-	-	3	-	2
	CO5	2	2	3	-	-	-	2	-	-	-	-	-	3	-	2
	CO6	2	2	1	-	-	-	-	-	-	-	-	-	3	-	2
3	**Category**	Professional Core (PC)														
4	**Approval**	Academic Council, Aug 2018														

Subject Code : U18CHOR 311	POST HARVEST MANAGEMENT AND VALUE ADDITION OF FRUITS AND VEGETABLES	L	T	P	C
	Total Contact Hours – 56	1	0	1	2
	Prerequisite course: Fundamentals of Horticulture				
	Course Coordinator Name & Department: Dr.M. Dhivya, Faculty of Agriculture				
COURSE OBJECTIVES:-	• To impart wide knowledge on post-harvest management and value addition of fruits and vegetables. • To impart hands on training on processing of different fruits and vegetables				

THEORY

UNIT I : SCOPE AND IMPORTANCE OF POST HARVEST MANAGEMENT **4**

Scope and Importance of postharvest technology of fruits and vegetables- factors responsible for postharvest losses – constraints – preharvest factors affecting postharvest quality - postharvest operation – precooling, grading, cleaning, waxing on shelf life of fruits and vegetables.

UNIT II : PHYSIOLOGICAL AND BIOCHEMICAL CHANGES **2**

Physiological and biochemical changes occurring during maturity and ripening- Respiration and factors affecting respiration rate - role of ethylene in regulation of ripening.

UNIT III : PACKAGING AND STORAGE **2**

Packaging and storage of fruits and vegetables - heat, chilling and freezing injury - storage (ZECC, cold storage, CA, MA and hypobaric) - cold chain management for fruits and vegetables

UNIT IV : VALUE ADDITION IN FRUITS AND VEGETABLES **4**

Value addition concepts, principles and methods of preservation, intermediate moisture food –Jam, jelly, marmalade, preserve, candy- concepts and standards of fermented and non fermented beverages. Tomato products – Concepts and Standards

UNIT V : DRYING, CANNING AND QUALITY STANDARDS OF FOOD PRODUCTS **4**

Drying and dehydration of fruits and vegetables, concepts and methods, osmotic drying. Canning-concepts-processing of canned products-spoilage and prevention. Packaging of products –quality standards - GMP, HACCP, FSSAI, Codex alimentarius and ISO certification.

PRACTICAL – LIST OF PRACTICAL SCHEDULE

1.	Preharvest operations to improve post harvest shelf life of fruits and vegetable crops	**2.5**
2.	Assessment of maturity indices and harvest criteria for fruits and vegetable crops	**2.5**
3.	Methods of packaging in fruits and vegetables	**2.5**
4.	Identification and causes of chilling and freezing injury in vegetables and fruits	**2.5**
5.	Estimations of ethylene evolution in fruit crops	**2.5**
6.	Identification of postharvest diseases and disorders of fruits and vegetable crops	**2.5**
7.	Postharvest machineries for fruits and vegetables crops	**2.5**
8.	Postharvest handling of the produce (washing, fungicide treatment, grading, sorting, precooling, waxing and nano coating).	**2.5**
9.	Preparation of jam/Jelly and quality evaluation of products	**2.5**
10.	Preparation of RTS, nectar, squash and quality evaluation of products	**2.5**
11.	Processing of dried and dehydrated fruits and vegetables	**2.5**
12.	Preparation of fruit bar and candy and quality evaluation of products	**2.5**
13.	Preparation of tomato products	**2.5**
14.	Processing of canned fruits and vegetables	**2.5**

15. 15 Quality evaluation of products –physio-chemical and sensory evaluation. .	**2.5**
16. Visit to processing unit/ industry and cold storage / packaging unit	**2.5**

TEXT BOOKS:

1. Verma, L. R and V. K. Joshi. 2000. Post harvest technology of fruits and vegetables –Handling, Processing, Fermentation and Waste Management. Indus publishing House.
2. Srivastava, RP and Kumar, Sanjeev. 2017. Fruits and Vegetable Preservation Principles and Practices. 3rd Edition. CBS Publishers & Distributors, India.
3. S.Saraswathy, T.L. Preethi, S. Balasubramanyan, J. Suresh, N. Revathi, S.Natarajan. 2010. Post harvest management of horticultural crops, Agrobios publications, Jodhpur, India.

REFERENCES BOOKS:

1. Adel A. Kader. 2002. Post Harvest Technology of Horticultural Crops. University of California Agrl. And Natural Resources Publication.
2. Ashwani. S. and Goel. 2007. Post harvest management and value addition. Daya publishing house, New Delhi.
3. Swati Barche and K. S. Kirad. 2010. Post harvest handling of fruits, vegetables and flowers. Jain Brothers, New Delhi.
4. Sudheer,K. P. and V. Indira. 2007. Post harvest technology of horticultural crops, New India publishing agency, New Delhi.
5. Pruthi, J. S. 2000. Major Spices and condiments. Productions and post harvest technologies. ICAR publications, New Delhi.

E- REFERENCES

1. www. fao. org/inpho
2. www. postharvest. ucdavis. edu
3. www. postharvest. com. au

COURSE OUTCOMES (COs)	
CO1	Learn about the importance of post harvest technology of fruits and vegetables
CO2	Acquire knowledge on the physiological and biochemical changes occur during ripening
CO3	Acquire knowledge on different packaging and storage methods
CO4	Learn about the value addition principles and preservation methods
CO5	Gain knowledge on the drying, canning and food product standards
CO6	Acquire practical experience on post harvest handling and preparation of various processed products from fruits and vegetables

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	**COs/POs**	**PO1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**PSO1**	**PSO2**	**PSO3**
2	**CO1**	3	-	-	-	-	-	3	-	-	-	-	2	1	-	-
	CO2	2	2	2	-	3	-	2	-	-	-	-	3	2	2	-
	CO3	3	1	3	-	2	-	3	-	-	-	-	2	2	1	2
	CO4	3	3	1	-	2	-	2	-	-	-	-	3	2	2	1
	CO5	3	2	2	-	2	-	3	-	-	-	2	2	1	2	-
	CO6	2	1	2	-	2	-	3	-	-	-	-	2	-	-	2
3	**Category**	Professional Core (PC)														
4	**Approval**	Academic Council, Aug 2018														

Subject Code : U18CSAC 301	MANURES, FERTILIZERS AND SOIL FERTILITY MANAGEMENT	L	T	P	C
	Total Contact Hours – 72	2	0	1	3
	Prerequisite course: Basic knowledge of soil physical and chemical behaviour				
	Course Coordinator Name & Department: Dr.S.SIVAGNANAM, School of Agricultural Sciences				
COURSE OBJECTIVES:-	To impart knowledge about soil fertility management with application of manures and fertilizers.				

THEORY

UNIT I : CLASSIFICATION OF DIFFERENT MANURES **7**

Introduction and importance of organic manures, properties and methods of preparation ofbulky and concentrated manures. Green manuring and green leaf manuring. Integrated nutrient management. Carbon sequestration- Carbon trading.

UNIT II: IMPORTANT OF CHEMICAL FERTILIZERS, THEIR USE EFFICIENCY AND NORMS OF FCO **7**

Chemical fertilizers: classification, composition and properties of major nitrogenous, phosphatic, potassic fertilizers, secondary & micronutrient fertilizers. Mixed/ Complex/customized/designer fertilizers, water soluble and liquid fertilizers, nano fertilizers & Soil amendments. Fertilizer Storage and Fertilizer Control Order.

UNITIII: HISTORY OF SOIL FERTILITY STATUS AND NUTRIENT INTERACTION IN PLANTS **7**

History of soil fertility and plant nutrition. Criteria of essentiality. Role, deficiency andtoxicity symptoms of essential plant nutrients. Mechanisms of nutrient transport to plants, factors affecting nutrient availability to plants. Chemistry of soil nitrogen, phosphorus, potassium, calcium, magnesium, sulphur and micronutrients.

UNIT V : DIFFERENT METHODS OF SOIL FERTILITY EVALUATIONS **6**

Soil fertility evaluation-Soil testing, Critical levels of different nutrients in soil. Forms ofnutrients in soil, plant analysis, and rapid plant tissue tests. Indicator plants.

UNIT V : EFFECTIVE METHODS OF FERTILIZER APPLICATION **5**

Methods of fertilizer recommendations to crops. Factor influencing nutrient use efficiency(NUE), methods of application under rainfed and irrigated conditions

PRACTICAL – LIST OF PRACTICAL SCHEDULE

1.	Analytical instruments : Principles, calibration and applications – Colorimetry and Spectrophotometry	**2.5**
2.	Flame photometry and Atomic absorption spectroscopy	**2.5**
3.	Estimation of available N in soil	**2.5**
4.	Estimation of available P (Olsen P and Bray P) in soil	**2.5**
5.	Estimation of available K in soil	**2.5**
6.	Estimation of available sulphur in soil by turbidimetry	**2.5**
7.	Estimation of available Ca and Mg in soils.	**2.5**
8.	Estimation of DTPA extractable micronutrients in soil	**2.5**
9.	Estimation of N content in plant	**2.5**
10.	Estimation of P content in plant	**2.5**

11.	Estimation of K content in plant.	**2.5**
12.	Estimation of S content in plant	**2.5**
13.	Estimation of N content in manure	**2.5**
14.	Estimation of P content in manure	**2.5**
15.	Estimation of K content in manure.	**2.5**
16.	Colloquium on establishment of soil testing laboratories -Fertilizer calculations-Soil test based fertilizer prescription	**2.5**
17.	Visit to STL and FTL / Fertilizer manufacturing or mixing unit	

TEXT BOOKS:

1. John L. Havlin, James D. Beaton, Samuel L. Tisdale and Werner L. Nelson. 2011. Soil Fertility and Fertilizers- An Introduction to Nutrient Management. PHL Learning Pvt. Ltd. ,New Delhi
2. Gupta, P. K. 2012. A Handbook of Soil, Fertilizer and Manure. Agrobios (India), Jodhpur.
3. Michael, A. M. 2009. Irrigation Theory and Practice. Second Edition. Vikas Publishing House Pvt. Ltd. , New Delhi.
4. Ramesh Chandra and S. K. Singh. 2009. Fundamental and Management of soil quality. Westville Publishing House, New Delhi.

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1. www. fspublishers. org/ijab/past-issues/IJAB Vol_5_No_3/47. pdf
2. www. springerlink. com/index/IQ11256h8t325054. pdf
3. www. ipni. net/ppiweb/bcrops. nsf/$webindex/. . . /Better_Crops_2009-4 J_. pdf
4.

COURSE OUTCOMES (COs)	
CO1	Discriminate the bulky organic manure, concentrated organic manure and relationship of carbon and soil. **(Knowledge)**
CO2	Compare the chemical fertilizers and its composition. **(Analyze)**
CO3	Describe the history of fertilizers and its role in agriculture. **(Knowledge)**
CO4	Validates the nutrient movements on plant. **(Create)**
CO5	Explain the important of soil testing and nutrient management. **(Analyze)**
CO6	Demonstrate the methods of fertilizer application and nutrient use efficiency. **(Understand)**

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	**COs/POs**	**PO1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**PSO1**	**PSO2**	**PSO3**
2	**CO1**	**1**	**1**	**-**		**2**	**3**	**1**	**3**	**3**	**-**	**3**	**-**	√	√	√
	CO2	**2**	**2**	**-**		**1**	**3**	**2**	**3**	**3**	**-**	**3**	**-**	√	√	√
	CO3	**1**	**1**	**-**		**1**	**3**	**2**	**3**	**3**	**-**	**3**	**-**	√	√	√
	CO4	**3**	**3**	**2**		**3**	**3**	**3**	**3**	**3**	**3**	**3**	**-**	√	√	√
	CO5	**3**	**3**	**3**	**1**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	√	√	√
	CO6	**3**	**3**	**3**	**2**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	√	√	√
3	**Category**	Professional Core (PC)														
4	**Approval**	Academic Council, Aug 2018														

Subject Code : U18AAPE 311	PROTECTED CULTIVATION AND SECONDARY AGRICULTURE	L	T	P	C
	Total Contact Hours – 56	1	0	1	2
	Prerequisite course	1. Fundamentals of Horticulture 2. Fundamentals of Agronomy			
	Course Coordinator Name & Department	Mrs. K Y RAJALAKSHMI School of Agriculture sciences			
COURSE OBJECTIVES:-	The objective of this course is to familiarize the students with techniques involved in various designing aspects of greenhouse technology, drying and dehydration technology. It aims the students to gain knowledge on various material handling equipments.				

THEORY

UNIT I: INTRODUCTION TO PROTECTED CULTIVATION AND GREENHOUSES 4

Protected cultivation – need, advantages and limitations – present status. Green house technology – Introduction – Types of greenhouses- Plant response to greenhouse environment.

UNIT II :DESIGN OF GREENHOUSES 3

Planning and design of greenhouses - Design criteria of green house for cooling and heating purposes - Green house equipment - Materials for construction of greenhouses - Irrigation systems used in greenhouses.

UNIT III: APPLICATIONS OF GREENHOUSES 2

Typical applications - Passive solar greenhouse - Hot air greenhouse heating systems - Greenhouse drying - Cost estimation and economic analysis.

UNIT IV: ENGINEERING PROPERTIES OF FOOD MATERIALS 3

Physical properties- size-shape,Aero-hydro dynamic properties, thermal properties- specific heat-thermal conductivity- thermal diffusivity, and their application in PHT equipment design and operation.

UNIT V: DRYING AND DEHYDRATION 2

Drying and dehydration, Moisture determination- direct method and indirect method of moisture determination, drying rate curves- constant rate period, CMC- Falling rate period, EMC, Drying methods- contact type dryers- convective type dryer- radiation dryer, commercial grain dryer -deep bed dryer-flat bed dryer- tray dryer-fluidized bed dryer. -Recirculatory dryer- solar dryer.

UNIT VI: MATERIAL HANDLING 2

Introduction- selection of material handling machines, Belt conveyor- belt conveyor idlers- idler spacing- belt material- belt tension, Bucket conveyor- head section-Boot section-elevator legs-elevator belts- bucket drive mechanism. Screw conveyor- Details -various shapes screw trough-capacity – horse power, pneumatic conveyor – advantages and limitations.

PRACTICAL – LIST OF PRACTICAL SCHEDULE

1. Study of different types of greenhouses based on shape, etc **2.5**
2. Measurement of weather data in green houses **2.5**
3. Computing the rate of air exchange in an active summer and winter cooling systems **2.5**
4. Experiment on determination of shape and size of the cereal grains **2.5**
5. Experiment on determination of bulk density and porosity of biomaterials **2.5**

6.	Determination of Moisture content of various grains by direct method	**2.5**
7.	Determination of Moisture content of various grains by indirect method	**2.5**
8.	Experiment on determination of terminal velocity of different grains	**2.5**
9.	Performance evaluation of available screen cleaner	**2.5**
10.	Performance evaluation of fluidized bed dryer	**2.5**
11.	Performance evaluation of tray dryer	**2.5**
12.	Determination of Capacity of a belt conveyor and its performance evaluation	**2.5**
13.	Determination of Capacity of a bucket conveyor and its performance evaluation	**2.5**
14.	Field visit to greenhouse	**2.5**
15.	Visit to Horticulture Research Station, Udhagamandalam	**2.5**
16.	Visit to food modern rice mill	**2.5**

TEXT BOOKS:

1. Singh Brahma and Balraj Singh., 2014. Advances in Protected Cultivation, New India Publishing Company.
2. Greenhouse Management for Horticulture crops – S.Prasad&U.Kumar., 2013. AGROBIOS (INDIA).
3. Greenhouse Management for Horticulture crops – SandhyaSharaf., 2012. Oxford Book Company.
4. Greenhouse for Homeowners and Gardeners - John W. Bartok, Jr., 2000. NRAES
5. Greenhouse Engineering - Robert A. Aldrich and John W. Bartok, Jr., 1994. NRAES
6. Chakraverty A. Post-harvest technology of cereals, Pulses and Oil seeds. published by Oxford & IBH publishers. New Delhi.
7. M.N.Dabhi and N.K. DhamsananiyaAgricultural Processing and food engineering (A basic approach). published by Kalyani Publisher. New Delhi.

REFERENCE BOOKS:

1. Brennan J.G. Food engineering operations. Second edition. Published by applied science Publisher limited, London.
2. Fellows, P. 2000. Food processing technology Principles and Practice. Second Edition. Published by Woodhead Publishing Limited Abington Hall, Abington Cambridge CB1 6AH, England.
3. Kudra, T. and Mujumdar, A.S. Advanced drying technologies. Marcel Dekker, Inc.

E – BOOKS:

1. A. Chakraverty, Arun S. Mujumdar, G. S. VijayaRaghavan, H. S. Ramaswamy.2003. Handbook of Postharvest Technology (cereals, fruits, vegetables, tea and spices), Marcel Dekker, Inc.New York, USA.

COURSE OUTCOMES (COs)	
CO1	Students able to know about the present status, need and practical application of protected cultivation.
CO2	Students will understand about the designing and practical application of greenhouse technology.
CO3	Student learns about the cost and economic analysis of greenhouse technology.
CO4	Student gains information about designing and operation of various post-harvest equipments.
CO5	This course also gives brief information on drying, dehydration technology and different types of dryer.
CO6	It also gives brief knowledge on designing aspects of various material handling equipments.

Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low																
1	**COs/POs**	**PO1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**PSO1**	**PSO2**	**PSO3**
2	**CO1**	3	2	2	1	3	2	2	3	2	-	2	3	–	√	√
	CO2	1	3	2	1	2	1	-	3	2	-	-	3	-	-	√
	CO3	1	3	2	2	-	1	-	3	2	-	-	3	-	√	√
	CO4	2	2	2	3	3	2	-	2	2	-	1	2	-	√	√
	CO5	2	1	2	1	3	2	-	2	1	-	2	3	-	√	√
	CO6	3	1	-	3	3	2	-	2	1	-	2	3	-	√	√
3	**Category**	Allied Sciences														
4	**Approval**	Academic Council, Aug 2018														

Subject Code : U18CAGR 302	RAINFED AGRICULTURE & WATERSHED MANAGEMENT	L	T	P	C
	Total Contact Hours – 56	1	0	1	2
	Prerequisite course: Fundamentals of agronomy and agricultural heritage				
	Course Coordinator Name & Department: Dr. V. Prakash, School of Agricultural Sciences				
COURSE OBJECTIVES:-	Students learn basic knowledge of rain fed agriculture and water shed management. Crop adaptation, mitigation strategies, crop planning and crop management techniques.				

THEORY

UNIT I **4**

Dryland farming - India and Tamil Nadu - Major crops of Dryland in India and Tamil Nadu - rainfed farming - Significance, Characteristics and constraints of dry farming in India - Distribution of Arid and semiarid regions in World, India and Tamil Nadu.

UNIT II **4**

Rainfall climatology - Length of growing period - Drought - Definition - Types and effects of Drought on crop production - Mechanism of drought tolerance in plants - Drought management - Contingent crop planning - Mid season correction - Mulching - anti transpirants.

UNIT III **3**

Soil moisture conservation approaches: agronomical, engineering and agrostological measures - In-situ water harvesting, storage and recycling - water harvesting - farm pond, percolation pond.

UNIT IV **3**

Integrated dry land technologies - Mechanization - Resource management under constraint situation - Cost reduction strategies in crop production - Non-monetary inputs and low cost technologies.

UNIT V **2**

Watershed management - alternate land use system - Agro forestry systems - Role of institutions - government policies for promotion of dryland farming.

PRACTICAL – LIST OF PRACTICAL SCHEDULE

1.	Studies on rainfall pattern in rainfed areas of the country and pattern of onset and withdrawal of monsoons	**2.5**
2.	Agroclimatic, Agro ecological zones and characteristics	**2.5**
3.	Zonation of dry farming regions of Tamil Nadu, India and World	**2.5**
4.	Characteristics of ACZs of Tamil Nadu and cropping pattern	**2.5**
5.	Cropping and farming systems in dryland	**2.5**
6.	Skill development in Seed hardening technique.	**2.5**
7.	Input management and efficiency in dryland	**2.5**
8.	Soil erosion and soil conservation practices.	**2.5**
9.	Water harvesting structures and their use.	**2.5**
10.	Study of methods to reduce evaporation and transpiration.	**2.5**
11.	Study of tools, implements, and machineries for tillage, sowing and after cultivation and assessing their efficiencies	**2.5**
12.	Indices in dry farming - working out LGP and planning for cropping system.	**2.5**
13.	Drought management technologies in dryland agriculture.	**2.5**
14.	Preparation of contingency crop plan for aberrant rainfall situations	**2.5**
15.	Alternate land use system and their merits.	**2.5**
16.	Visit to watershed area to study the impact of various soil and moisture conservation methods.	**2.5**

REFERENCES:

1. GovindanK.and V. Thirumurugan. 2003. Principles and practice of Dryland Agriculture, Kalyani Publishers, Chennai.
2. Rengasamy P. 1990.Dry farming Technology in India.Agri publishing Academy, New Delhi.
3. Reddy, G. S. , Reddy, Y. V. R. , Vittal, K. P. R. , Thyagaraj, C. R. , Ramakrishna, Y. S. and L. L Somani. 2008. Dryland Agriculture. Agrotech Publishing Academy, Udaipur
4. Jat. , Bharkar. , Sharma and Kothari. 2013. Dryland Technology. Scientific Publishers,
5. Jodhpur Pradeep, S. 2014. Dryland Agriculture. Discovery Publishing House Pvt. Ltd, NewDelhi
6. Widtsoe, J. A. 2012. Dry Farming for Sustainable Agriculture. Agrobios (India), Jodhpur

E- REFERENCES

1. www. tnau. ac. in
2. www. crida. org
   www. icrisat. Org

COURSE OUTCOMES (COs)	
CO1	Student can able to understand objective, principles and component of watershed management
CO2	The term Rain fed agriculture is used to describe farming practices that rely on rainfall for water.
CO3	Rainfall water can be used for a larger area by suitable watershed management techniques
CO4	Conservation of soil by adopting latest soil conservation techniques will help in obtaining higher production of Rainfed crops
CO5	A major study into water uses by agriculture, known as the Comprehensive Assessment of Water Management in Agriculture
CO6	Student can able to understand about rainfed agriculture and its introduction, problem and prospects in India

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	**COs/POs**	**PO1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**PSO1**	**PSO2**	**PSO3**
2	**CO1**	1	2	3	1	3	-	-	-	-	-	-	-	3	-	2
	CO2	1	2	3	1	3	-	-	-	-	-	-	-	3	-	2
	CO3	1	2	3	1	3	-	-	-	-	-	-	-	3	-	2
	CO4	1	2	3	1	3	-	-	-	-	-	-	-	3	-	2
	CO5	1	2	3	1	3	-	-	-	-	-	-	-	3	-	2
	CO6	1	2	3	1	3	-	-	-	-	-	-	-	3	-	2
3	**Category**	Allied Sciences (AS)														
4	**Approval**	Academic Council, Aug 2018														

Subject Code : U18CAEN301	PESTS OF FIELD CROPS AND STORED PRODUCES AND THEIR MANAGEMENT	L	T	P	C
	Total Contact Hours – 56	1	0	1	2
	Prerequisite course: Management of beneficial and harmful insects				
	Course Coordinator Name & Department: Ms. V. Sushmetha, School of Agricultural Sciences				
COURSE OBJECTIVES:-	To impart knowledge about Distribution, bionomics, symptoms of damage and management strategies of insects and non-insect pests of field crops and stored produces				

THEORY

UNIT I : Pests of Cereals and Millets **4**

Distribution,bionomics, symptoms of damage and management strategies for insects and non-insect pests of rice, wheat, maize, sorghum, cumbu, ragi, tenai. Integrated Pest Management - case studies in rice.

UNIT II : Pests of Pulses and Oilseeds **4**

Distribution, bionomics, symptoms of damage and management strategies of insects and non-insect pests of pulses (redgram, green gram, black gram, bengal gram, cowpea.), groundnut, castor, gingelly, sunflower, safflower, jatropa, soybean and mustard. Integrated Pest Management - case studies in groundnut.

UNIT III : Pests of Cotton and Sugarcane **4**

Distribution,bionomics, symptoms of damage and management strategies of insects and non-insect pests of cotton and sugarcane. Integrated Pest Management - case studies in cotton.

UNIT IV :Pests of Green Manures, Forage Crops, Stored Products and Non Insect **4**

Distribution,bionomics, symptoms of damage and management strategies of pests of green manures (Sunnhemp, Sesbania, Daicha. Glyricidia), forage crops (Lucere and Subabul) and stored products. Rodents and birds of agricultural importance and their management. Locusts and their management.

PRACTICAL – LIST OF PRACTICAL SCHEDULE

1.	Pests of rice (sucking pests)	**2.5**
2.	Pests of rice (borers and defoliators)	**2.5**
3.	Pests of maize, sorghum and cumbu	**2.5**
4.	Pests of wheat, ragi and tenai	**2.5**
5.	Pests of redgram and bengalgram	**2.5**
6.	Pests blackgram, greengram and cowpea	**2.5**
7.	Pests of groundnut, gingelly and sunflower	**2.5**
8.	Pests of castor, soybean, safflower, jatropha and mustard	**2.5**
9.	Pests of cotton (sucking pests)	**2.5**
10.	Pests of cotton (bollworms and defoliators)	**2.5**
11.	Pests of sugarcane	**2.5**
12.	Pests of green manures-sunnhemp, sesbania, daincha, lucerne, subabul and gliricidia	**2.5**
13.	Pests of stored products	**2.5**
14.	Gadgets for management of stored product insects	**2.5**
15.	Rodents and Birds pests in field and storage	**2.5**
16.	Visit to FCI godown and farmer's fields	**2.5**

TEXT BOOKS:

1. Manisegaran, S. and R.P.Soundararajan. 2010. Pest Management in Field Crops- Principles and Practices. Agrobios, Jodhpur, India. 316p. {ISBN (10): 81-7754-321-0}
2. David, B.V. and V.V. Ramamurthy. 2011. Elements of Economic Entomology, Namrutha Publications, Chennai. 386 p. {ISBN: 978-81-921477-0-3}

E- REFERENCES:

1. http://www.ncipm.org.in
2. http://agritech.tnau.ac.in/
3. http://www.nbaii.res.in/
4. http://www.nrcg.res.in/

COURSE OUTCOMES (COs)	
CO1	Student can able to understand objective, principles and component of watershed management
CO2	The term Rain fed agriculture is used to describe farming practices that rely on rainfall for water.
CO3	Rainfall water can be used for a larger area by suitable watershed management techniques
CO4	Conservation of soil by adopting latest soil conservation techniques will help in obtaining higher production of Rainfed crops
CO5	A major study into water uses by agriculture, known as the Comprehensive Assessment of Water Management in Agriculture
CO6	Student can able to understand about rainfed agriculture and its introduction, problem and prospects in India

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	**COs/POs**	**PO1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**PSO1**	**PSO2**	**PSO3**
2	**CO1**	2	3	3	2	-	-	2	-	-	-	-	3	2	-	-
	CO2	2	3	3	2	-	-	2	-	-	-	-	3	2	-	-
	CO3	2	3	3	2	-	-	2	-	-	-	-	3	2	-	-
	CO4	2	3	3	2	-	-	2	-	-	-	-	3	2	-	-
	CO5	2	3	3	2	-	-	2	-	-	-	-	3	2	-	-
	CO6	2	3	3	2	-	-	2	-	-	-	-	3	2		-
3	**Category**	Professional Core (PC)														
4	**Approval**	Academic Council, Aug 2018														

III YEAR VI SEMESTER

S.No	Course code	Course Title	Credit Hours
1.	U18AAEC302	Agricultural Finance and Co-Operation	2+1
2.	U18CPAT302	Diseases of Field and Horticultural crops and their management -II	2+1
3.	U18HCOM311	Agro Informatics	1+1
4.	U18AENS301	Environmental Pollution and Management	1+1
5.	U18CAEN301	Pests of Horticultural Crops and Stored grain and their Management	1+1
6.	U18CAGR303	Practical Crop Production - II (Rabi crops)	0+2
7.	U18CAGR304	Principles of organic Farming	1+1
8.	U18CABT301	Plant Bio technology	2+1
9.	U18CPBG302	Crop Improvement	2+1
10.	U18OOPT301	Optional course**	1+1
		Total	**13+11=24**

**** List of Optional courses attached below**

**LIST OF OPTIONAL COURSES (OC) FOR 6th SEMESTER

S.No.	Code No.	Courses	Credit Hours
16.	U18OCRP351	Physiological Techniques in crop production	1+1
17.	U18OSAC351	Designer fertilizer Production	1+1
18.	U18OSAC352	Rejuvenation of Deteriorated lands	1+1
19.	U18OSAC353	Soilless crop production	1+1
20.	U18OSAC354	Instrumental methods of analysis	1+1
21.	U18OSST 351	Seed entrepreneurship skill development and management	1+1
22.	U18OAGR351	Weed and water management	1+1
23.	U18OPGP351	Plant Genetic Resources Collection, Conservation and Utilization	1+1
24.	U18ONEM351	Commercial Production of Nematode Antagonistic bio-agents	1+1
25.	U18OAGM351	Downstream Processing for Industrially Important Microbial Products	1+1
26.	U18OAGM352	Microbial Enzymes	1+1
27.	U18OAGM353	Microbial Quality and Safety of Foods	1+1
28.	U18OAGM354	Plant –Microbe Interaction	1+1
29.	U18OAGM355	Quality Control of Bio-inoculants	1+1
30.	U18OSAC355	Crop and Pesticide Chemistry	1+1

Subject Code : U18AAEC302	AGRICULTURAL FINANCE AND COOPERATION	L	T	P	C
	Total Contact Hours – 72	2	0	1	3
	Prerequisite course	1. Fundamentals of Agricultural Economics 2. Farm Management, Production and Resource Economics			
	Course Coordinator Name & Department	Dr.R.Thulasiram, School of Agricultural sciences			
COURSE OBJECTIVES:-	To study Indian financial institutions purveying agricultural credit in the country, requirements and options for loan availability for farmers				

THEORY

UNIT 1: AGRICULTURAL FINANCE – NATURE AND SCOPE 3

Agricultural Finance- meaning, scope and significance, credit needs and its role in Indian agriculture. Agricultural credit: meaning, definition, need, classification. Sources of credit - advantages and disadvantages - Rural indebtedness- History and Development of rural credit in India.

UNIT 2: FINANCIAL INSTITUTIONS 3

Sources of agricultural finance: institutional and non-institutional sources and their roles, commercial banks - social control and nationalization of commercial banks. Micro financing including KCC, Micro finance – SHG Models, Lead Bank Scheme, RRBs, Scale of finance and unit cost. Cost of credit. An introduction to higher financing institutions – RBI, NABARD, ADB, IMF, world bank, Insurance and Credit Guarantee Corporation of India. Recent development in agricultural credit: Rural credit policies of Government – Subsidized farm credit - Differential Interest Rate (DIR) Scheme – Loan relief measures

UNIT 3: FARM FINANCIAL ANALYSIS 3

Credit analysis: 4 R's, 7 P's and 3C's of credit. Preparation of bankable projects / Farm credit proposals – Feasibility; Appraisal - Time value of money: Compounding and Discounting - Undiscounted and Discounted measures. Preparation and analysis of financial statements– Balance Sheet, Income Statement and Cash Flow Statement. Basic guidelines for preparation of project reports - Bank norms – SWOT analysis.

UNIT 4: CO-OPERATION 3

Agricultural Cooperation in India – Meaning, brief history of cooperative development in India - Pre and Post - Independence periods and Co-operation in different plan periods, objectives, principles of cooperation, significance of cooperatives in Indian agriculture. Co-operating credit structure: short term and long term. Agricultural Cooperation - credit, marketing, consumer and multi-purpose cooperatives, farmers' service cooperative societies, processing cooperatives, farming cooperatives, cooperative warehousing; role of ICA, NCUI, NCDC, NAFED. Strength and weakness of co-operative credit system, Policies for revitalizing co-operative credit.

UNIT 5: BANKING AND INSURANCE: 4

Negotiable Instruments: Meaning, Importance and Types - Central bank:RBI – functions - Credit control – Objectives and Methods: CRR, SLR and Repo rate - Credit rationing -Dear money and cheap money - Financial Inclusion and Exclusion: credit widening and credit deepening monetary policies. Credit gap: Factors influencing credit gap. Non - Banking Financial Institutions (NBFI). NPA – Causes, consequences and mitigation. Crop Insurance: Schemes, Coverage, Advantages and Limitations in Implementation - Estimation of Crop Yields - Assessment of crop losses,

Determination of compensation - Weather based crop insurance, features, determinants of compensation. Livestock Insurance Schemes Agricultural Insurance Company of India Ltd (AIC): Objectives and functions.

PRACTICAL – LIST OF PRACTICAL SCHEDULE

1.	Determination of most profitable level of capital use	**2.5**
2.	Optimum allocation of limited amount of capital among different enterprise	**2.5**
3.	Analysis of progress and performance of cooperatives using published data	**2.5**
4.	Analysis of progress and performance of commercial banks and RRBs using published data.	**2.5**
5.	Visit to a commercial bank, cooperative bank / cooperative society to acquire first - hand knowledge of their management, schemes and procedures.	**2.5**
6.	Visit to District Central Co-operative Bank (DCCB) to study its role, functions and procedures for availing loan – Fixation of Scale of Finance	**2.5**
7.	Guest lecture on Role and functions of Commercial Bank and Lead Bank / NABARD and its Role and Functions.	**2.5**
8.	Estimation of credit requirement of farm business – A case study	**2.5**
9.	Preparation and analysis of Balance Sheet and Cash Flow Statement – A case study	**2.5**
10.	Exercise on Financial Ratio Analysis. Appraisal of farm credit proposals – A case study	**2.5**
11.	Preparation and analysis of income statement – A case study	**2.5**
12.	Preparation of Bankable projects / Farm Credit Proposals and appraisal	**2.5**
13.	Undiscounted methods and Discounted methods	**2.5**
14.	Techno-economic parameters for preparation of projects for various agricultural products and its value added products	**2.5**
15.	Analysis of Different Crop Insurance Products / Visit to crop insurance implementing agency.	**2.5**
16.	Seminar on selected topics.	**2.5**

TEXT BOOKS:

1. Muniraj, R. 1987. Farm Finance for Development. Oxford & IBH. New Delhi.
2. Subba Reddy, S and P. Raghu Ram. 2011. Agricultural Finance and Management. Oxford & IBH. New Delhi.
3. Lee, W.F., M.D. Boehlje, A.G. Nelson and W.G. Murray. 1998. Agricultural Finance. Kalyani Publishers. New Delhi.

REFERENCES:

1. Mammoria, C.B. and R.D. Saxena. 1973. Cooperation in India. Kitab Mahal. Allahabad. Patnaik, V.E. and A.K. Roy. 1988. Cooperation and Cooperative Management. Kalyani Publishers. Ludhiana.

E- REFERENCES:

1. http://www.eagri.org
2. https://www.agrimoon.com
3. http://www.tnau.ac.in
4. http://www.hillagric.ac.in
5. http://www.apeda.com
6. http://www.mpeda.com

COURSE OUTCOMES (COs)	
CO1	To know the financial opportunities for the farmers of India.
CO2	To become aware of principles of banking, credit and deposit services of private and public

	sector banks.
CO3	To understand various financial statements for checking farm business viability
CO4	To gain practical knowledge in dealing with bankers, loan application procedures.
CO5	To analyze farmer-friendly schemes under Crop insurance, Cooperative warehousing and their contribution to farmers' welfare.
CO6	To analyze the functions of Indian financial institutes

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	**COs/POs**	**PO1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**PSO1**	**PSO2**	**PSO3**
2	**CO1**	1	-	-	1	-	-	-	-	-	-	-	1	-	2	-
	CO2	-	-	-	2	-	-	-	-	-	-	-	2	-	2	-
	CO3	-	-	-	1	-	-	-	-	1	3	3	2	-	2	-
	CO4	-	-	-	2	1	2	1	-	2	1	2	3	-	2	-
	CO5	-	-	1	2	2	-	-	-	2	-	-	-	-	2	-
	CO6	-	-	-	3	2	-	-	-	1	1	-	-	-	2	-
3	**Category**	Allied Sciences (AS)														
4	**Approval**	Academic Council, Aug 2018														

Subject Code : U18CPAT302	DISEASES OF FIELD AND HORTICULTURAL CROPS AND THEIR MANAGEMENT-II	L	T	P	C
	Total Contact Hours – 72	2	0	1	3
	Prerequisite course: Basic Biology and Basic Concepts of Microorganisms				
	Course Coordinator Name & Department: Dr. T.MEERA, School of Agricultural sciences				
COURSE OBJECTIVES:-	To acquire knowledge on etiology, symptoms, epidemiology, mode of spread, survival and integrated management of important diseases due to fungi, bacteria, viruses, phytoplasma, phanerogamic parasites and non-parasitic causes of the field and horticultural crops.				

THEORY

UNIT: I DISEASES OF CEREALS: 1

Wheat

UNIT:II DISEASES OF PULSES, OILSEEDS AND CASH CROPS 4

Pulses: chick pea and lentil; **Oilseeds:** sunflower and mustard; **Cash crops:** sugarcane and cotton

UNIT: III DISEASES OF FRUITS AND VEGETABLES CROPS 10

Fruits: mango, citrus, grapevine, sapota, jackfruit, pineapple, ber, apple, peach plum and strawberry; **Vegetables:** cucurbits, peas, potato, beet root, radish, cassava, colacasia and yam

UNIT: IV DISEASES OF SPICES, PLANTATION AND FLOWER CROPS 9

Spices: chillies, turmeric, ginger, onion, garlic, coriander, cardamom; **Plantation crops:** black pepper and vanilla; **Flower crops:** rose, Jasmine, marigold, crossandra, chrysanthemum, tube rose , carnation, lillium and orchids

UNIT: V DISEASES OF MEDICINAL CROPS AND MUSHROOM CULTIVATION 8

Medicinal crops: gloriosa, coleus, stevia and aloe; **Mushroom cultivation:** Importance of mushroom and cultivation of button mushroom, oyster mushroom, milky mushroom and paddy straw mushroom-pest and diseases of mushroom.

PRACTICAL – LIST OF PRACTICAL SCHEDULE

1.	Diseases of wheat	**2.5**
2.	Diseases of chick pea, lentil, sunflower and mustard	**2.5**
3.	Diseases of cotton and sugarcane	**2.5**
4.	Diseases of mango and sapota	**2.5**
5.	Diseases of citrus and grapevine	**2.5**
6.	Diseases of jackfruit , pineapple, ber, apple , peach, plum , strawberry	**2.5**
7.	Diseases of cucurbits	**2.5**
8.	Diseases of potato , peas , beet root and radish	**2.5**
9.	Diseases of cassava, colacasia and yam	**2.5**
10.	Field visit/ exposure visit to hilly fruits , vegetables and plantation crops / mushroom unit	**2.5**
11.	Diseases of chillies, turmeric and ginger	**2.5**
12.	Diseases of coriander, cardamom, black pepper and vanilla,	**2.5**
13.	Diseases of rose, Jasmine, marigold and crossandra	**2.5**
14.	Diseases of tube rose , carnation, lillium and orchids,	**2.5**
15.	Diseases of gloriosa, coleus, stevia and aloe	**2.5**
16.	Cultivation of oyster , milky and paddy straw mushroom cultivation	**2.5**

\REFERENCES:

1. Arjunan.G. Karthikeyan, G, Dinakaran ,D. Raguchander,T. 1999 Diseases of Horticultural Crops, AE Publications, Coimbatore.
2. Rangasawmi ,G and Mahadevan, A. 1998. Diseases of crop Plants in India, Prentice Hall of India Pvt. Ltd., New Delhi
3. Prakasam, V., Valluvaparidasan, V., Raguchander, T. and K.Prabakar. 1997. Field crop diseases, AE Publication, Coimbatore.

E- BOOKS:

1. Agrios, G.N. 2008. Plant Pathology, Academic Press, New York
2. Rangaswami, G. 2005. Diseases of Crop plants in India. Prentice Hall of India Pvt. Ltd., New Delhi
3. Thakur, B.R. 2006. Diseases of field crops and their management.

COURSE OUTCOMES (COs)	
CO1	To acquire the knowledge on about new emerging diseases of cereals.
CO2	Having expertise in identifying and managing diseases in pulses, oil seeds and cash crops
CO3	Having expertise in identifying and managing diseases in fruits and vegetable crops.
CO4	Having expertise in identifying and managing diseases in spices, plantation and flower crops.
CO5	Having expertise in identifying and managing diseases in medicinal crops.
CO6	Trained in identifying mushroom cultivation and managing diseases of mushroom.

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	**COs/POs**	**PO1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**PSO1**	**PSO2**	**PSO3**
2	**CO1**	3	2	3	-	-	-	-	-	-	-	-	1	2	–	-
	CO2	3	2	3	-	-	-	-	1	-	-	-	2	2	-	-
	CO3	3	2	3	-	-	-	-	-	-	-	-	2	2	-	-
	CO4	3	2	3	-	-	-	-	-	-	-	-	2	2	-	-
	CO5	3	2	3	-	-	-	-	-	-	-	-	1	2	-	-
	CO6	3	2	3	-	-	-	-	3	-	-	-	3	2	-	-
3	**Category**	Professional Core (PC)														
4	**Approval**	Academic Council, Aug 2018														

Subject Code : U18HCOM311	AGRO- INFORMATICS		L	T	P	C
	Total Contact Hours – 56		1	0	1	2
	Prerequisite course	Basic Knowledge on Working of Computer				
	Course Coordinator Name & Department	Mrs. Asha Judi Department of Computer Sciences				
COURSE OBJECTIVES:-	To Create a document in Microsoft Word with formatting and editing works. Write functions in Microsoft Excel to perform basic calculations and to convert number to text and text to number. Create a presentation in Microsoft PowerPoint that is interactive and legible content.					

THEORY

UNIT I: INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) 3

ICT and its importance – Computer Fundamentals - Basic anatomy of the computer system: Input devices, CPU, Output devices, Memory: Primary and secondary - Software – Types: System software, Application software and Utility software – Software terminologies: Firmware, Liveware, Freeware, Shareware, Commercial software, Proprietary software, Semi-free software - Internet - World Wide Web– URL – Domain names - Protocols: HTTP, HTTPS - Internet Applications: Email, File sharing web apps,Social Networks, Online shopping, Video Conferencing – HTML: Introduction, Editor, HTML Documents –Tags: <head>, <body>, <title>, <heading>, <paragraph>, </br>, <table>, <li>, <ul>, <href>, <img>, <hr> and <marquee>.

UNIT II: SPREADSHEET AND DATABASE 3

Electronic spreadsheet – Microsoft Excel - Worksheet manipulation: insert, delete, move, copy and hide worksheet – Cell manipulation: copy, edit and format cell data – Charts - Create Bar and Pie charts - PIVOT table - DBMS: Database terms: Data, Database, DBMS, RDBMS, Row, Column, Table – Database Architecture – Data types: char, varchar(), int, float() – Use of databases in agriculture.

UNIT III: C PROGRAMMING 4

Introduction to Computer Programming – Programming languages - Translators: Compilers and Interpreters - Algorithm – Flowchart - Introduction to C – Structure of C program - Data types, Variables, Constants, Operators: Arithmetic, Relational, Logical, Assignment - Input/Output: scanf(), printf() - Control statements: if, if else – Loop: while, do while, for.

UNIT IV: AGROINFORMATICS 4

Agroinformatics – Needs and objectives - e-Agriculture : Concept, Meaning, Terminologies and Importance - e-Agriculture – National and International scenario - ICT for Data collection, formation of development programmes, monitoring and evaluation of programmes - Decision support systems: Taxonomy, Components, Framework, Classification and applications in Agriculture -Expert systems - Concepts and Importance – Components – User Interface – Knowledge Base – Inference Mechanism – Inference Rule - Designing an Expert Systems - Advantages and disadvantages of Expert Systems - Information systems for supporting farm decisions.

UNIT V: MODELS AND COMPUTER CONTROLLED DEVICES 3

Introduction to computer based agricultural models: Model, Simulation, Systems analysis models, Subsystems, Types: Mechanistic process models, Operational models, Statistical models and dynamic simulation models - List of agricultural models - Computer controlled devices – Sensor – Drones – Robots– Internet of Things (IoT) and Cloud Computing for Agriculture.

PRACTICAL – LIST OF PRACTICAL SCHEDULE

1.	Innards of computer – Boot and shutdown – Windows apps: Sticky Notes, Steps Recorder, Snipping Tool – Pin and unpin the programs – System tray customization – Shortcut keys.	**2.5**
2.	Software practices – Installation / Uninstallation – Practice of DOS commands: dir, cd, mkdir, rmdir, del, cls, attrib, ren, copy, move, ipconfig, ping.	**2.5**
3.	Microsoft Excel - Entering a formula in a cell, Built-in functions: SUM, AVERAGE, MIN, MAX, COUNT, COUNTIF, IF – Import and export data - Charts - Create Bar and Pie charts – PIVOT table.	**2.5**
4.	MS-ACCESS: Creating agriculture database – Entering, editing, deleting data – Creating Forms	**2.5**
5.	Query wizard: select, update, delete – Reports.	**2.5**
6.	Internet Applications: Email, File sharing web apps: Dropbox, Google drive - Social Networks, Online	**2.5**
7.	shopping, Video Conferencing – Creating a web page: HTML editor – Tags: <head>, <body>, <title>, <heading>, <paragraph>, </br>, <table>, , , <href>, <img>, <hr> and <marquee>.	**2.5**
8.	Develop algorithms and represent the same in the flowchart for the following problems -To calculate Leaf Area Index (LAI) -To calculate the Crop Growth Rate (CGR) - To find the greatest average seed sales of two districts during samba season.	**2.5**
9.	Familiarizing with the Integrated Development Environment of C Editor for coding, saving, compiling, debugging and executing – C Programs: Display TNAU motto "Till, Toil, Triumph" – Calculate Leaf Area Index (LAI) – Calculate the Crop Growth Rate (CGR) - Find the greatest average seed sales of two districts during samba season.	**2.5**
10.	Looping statements: Calculate the average yield of last 10 years Rice yield of our District - Write a C program to find total, maximum, minimum and average rain fall of last five years in our District.	**2.5**
11.	e-Agriculture – Leveraging social media in agriculture (Social networks).	**2.5**
12.	ICT in agriculture – Paperless data collection using google survey tools - Online photo and video editing tools.	**2.5**
13.	Simulating crop yield: InfoCrop - Base file creation for rice and maize (Weather, Varietal characters, Agronomy practices, Soil data) – Interpretation.	**2.5**
14.	InfoCrop – Climate change impact studies on rice and maize.	**2.5**
15.	Smartphone mobile apps in Agriculture for farm advices, crop protection, market price, postharvest management.	**2.5**
16.	Decision support systems-Expert systems - Information systems for supporting farm decisions-Crop calendar – Crop planning tool for farmers.	**2.5**

REFERENCES:

1. Introduction to Information Technology, 2012, Second Edition, ITL Education Solutions Limited, PEARSON Education.
2. Firuza Aibara, HTML 5 for Beginners, 2012, Shroff Publications.
3. John Walkenbach, Excel 2010 Bible, Wiley publishing, Inc
4. Balagurusamy, E., Programming in ANSI C, 2017, Seventh Edition, McGraw Hill Education.
5. Saravanan, R., Kathiresan, C and Indra Devi, T., 2011. Information & communication technology for agriculture and rural development. New India Publ. Agency.
6. Aggarwal, P.K., Naveen Kalra and Subhash Chander, Infocrop: A generic simulation model for annual crops in tropical environments, Indian Agricultural Research Institute, New Delhi.
7. Malcolm J. Blackie, Information Systems for Agriculture, 2012, Springer Netherlands.

8. Smart Sensing Technology for Agriculture and Environmental Monitoring, 2012, Editors: Mukhopadhyay and Subhas Chandra (Ed.), Springer
9. Introduction to Expert Systems, 3rd Edition by Peter Jackson
10. Introduction to Artificial Intelligence and Expert Systems, 2007 by Dan W. Patterson.
11. Balagurusamy, E., Computing Fundamentals & C Programming, Second Edition, 2017, McGraw Hill Education.
12. A.S. Sandhu, 2004. Text book on Agricultural Communication Process and Methods. Oxford & TBH.

E- REFERENCES

1. https://www.scribd.com/document/249057939/InfoCrop-Help
2. InfoCrop: A dynamic simulation model for the assessment of crop yields, losses due to pests, and environmental impact of agro-ecosystems in tropical environments. P.K. Aggarwal et al., Agricultural Systems 89 (2006) 47–67.
3. http://www.sciencedirect.com/science/article/pii/S0168169916303623
4. Web-based crop model: Web InfoCrop – Wheat to simulate the growth and yield of wheat
5. http://excelpro.ir/wp-content/uploads/2015/10/Excel-2010-Bible.pdf

COURSE OUTCOMES (COs)	
CO1	Know the basic components of the computer and working of each device
CO2	Know about the need of information technology in agriculture and also about e-Agriculture.
CO3	Know the fundamentals of Computer Networking and Database.
CO4	Learn to perform common basic functions like editing, formatting, printing, scanning etc using tools for agricultural statistical data analysis .
CO5	Learn about the programming languages, structures and writing of C program
CO6	Study about the agricultural based model and its subsystems.

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	**COs/POs**	**PO1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**PSO1**	**PSO2**	**PSO3**
2	**CO1**	-	-	-	-	-	-	-	-	1	1	1	2	–	1	-
	CO2	1	3	2	1	2	1	-	3	2	-	-	3	-	2	-
	CO3	1	3	2	2	-	1	-	3	2	-	-	3	-	3	-
	CO4	2	2	2	3	3	2	-	2	2	-	1	2	-	2	-
	CO5	2	1	2	1	3	2	-	2	1	-	2	3	-	3	-
	CO6	3	1	-	3	3	2	-	2	1	-	2	3	-	3	-
3	**Category**	Humanities and Social Sciences (HS)														
4	**Approval**	Academic Council, Aug 2018														

Subject Code : U18AENS301	ENVIRONMENTAL POLLUTION AND MANAGEMENT	L	T	P	C
	Total Contact Hours – 56	1	0	1	2
	Prerequisite course: Environmental Studies and Disaster Management				
	Course Coordinator Name & Department: Mr. B. Suriya Sabarinath, School of Agricultural sciences				
COURSE OBJECTIVES:-	Impart basic knowledge about environment and create awareness about environmental problems. Develop attitude to tackle these problems				

THEORY

UNIT I : POLLUTION IN ENVIRONMENT **2**

Introduction-Pollution- Pollutants – Contaminants – Source and types of pollution in Soil-Water-Air-Impact on environment-Pollution Status in India.

UNIT II : WASTE WATER MANAGEMENT: **3**

Waste water – Different types of waste water-pollutants and contaminants-Impact of waste water on ecosystem –Eutrophication – Biomagnification – Water borne diseases –Wastewater treatment methods – Physical, chemical and Biological – General water treatments-Wastewater recycling – Constructed wetlands-Reed bed system -Legislation and standards.

UNIT III : MANAGEMENT OF POLLUTED SOILS **2**

Soil pollutants – Sources – Urban and Industrial – Heavy metal – Pesticides – PAH's and PCB's-E-Waste-Fate of pollutants in Soil - Management of soil pollution – Bio and phyto remediation of polluted soil.

UNIT IV : AIR POLLUTION AND ITS MANAGEMENT **3**

Air pollutants from industrial and domestic sources – Fate of air pollutants-Air pollution indicators - Monitoring and Control measures – Role of plants in controlling air pollutants-Legislation and Air quality standards - – Noise Pollution – Sources, Effect and Control Measures-Indoor air pollution and control measures.

UNIT V : SOLID WASTE MANAGEMENT: **3**

Solid waste –Sources – Sludge from Industry and farm waste-Characteristics – Environmental problems – Management of sludge and farm wastes – Disposal methods – Sanitary landfills – Incineration – Pyrolysis - Recycling –Energy recovery –Composting – Vermicomposting – Maturity indices assessment-Standards and Legislation.

UNIT VI : ENVIRONMENTAL STANDARDS, REGULATION AND EIA **3**

Environmental standards-CPCB Norms for discharging industrial effluents to public sewers- CDM and Carbon foot print-Environmental Impact Assessment: Stages of EIA -Monitoring and Auditing – Environmental clearance procedure in India.

PRACTICAL – LIST OF PRACTICAL SCHEDULE

1.	Sample collection and preservation from contaminated sites	**2.5**
2.	Waste water treatment by physical (column study with vermiculite and activated charcoal) and chemical (Alum treatment)	**2.5**
3.	Waste water treatment through constructed wetland system and charecterisation	**2.5**
4.	Estimation of Chlorides, Phosphates in waste water.	**2.5**
5.	Analysis of Nitrogen in industrial effluent and sludge.	**2.5**
6.	Collection of PAH's contaminated soils and analysis by GC-MS.	**2.5**
7.	Biosorption of heavymetal (Cr) by using Water hyacinth and analysis through AAS.	**2.5**
8.	Pesticide Residue analysis in contaminated water.	**2.5**

9.	Analysis of SPM in air, Methane and CO2 in Municipal dumping site.	**2.5**
10.	Assessing the efficiency of plants to control Indoor air pollutants.	**2.5**
11.	Analysis of Organic carbon in Sludge and Organic manure.	**2.5**
12.	Composting and Vermicomposting of farm wastes.	**2.5**
13.	Energy recovery from wastes.	**2.5**
14.	Maturity indices of compost- C:N ratio and Phytotoxicity test.	**2.5**
15.	Maturity indices of compost: starch iodine test and sulphide test.	**2.5**
16.	Visit to water treatment plant.	**2.5**

REFERENCES:

1. Tyler Miller and Scot Spoolman. 2009. Living in the Environment (Concepts, Connections, and Solutions). Brooks/cole, Cengage learning publication, Belmont, USA
2. P.D. Sharma, 2009, Ecology and Environment, Rastogi Publications, Meerat, India

E-BOOKS:

1. Chiras D.D., 2016. Environmental Science, Tenth Edition. Jones & Bartlett Learning, Burlington, MA. ISBN: 978-1-284-05705-8, 708 Pages

COURSE OUTCOMES (COs)	
CO1	To learn the sources of pollution and various types of pollutants and its impact on the environment including soil water and air.
CO2	Students will learn the causes of water pollution and types of waste water pollutants as well as various water borne diseases and treating the waste water and recycling the same for various uses.
CO3	Students will learn the sources of soil pollution and understand the management system in soil pollution control.
CO4	Attain knowledge on air pollution, noise pollution and its management
CO5	Gain Knowledge on Environmental standards, regulations and EIA.
CO6	Gain knowledge on various pollution control method are practically demonstrated by the students to use them on a large scale in the future.

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	**COs/POs**	**PO1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**PSO1**	**PSO2**	**PSO3**
2	**CO1**	3	3	2	-	-	-	-	1	-	-	-	3	-	2	-
	CO2	3	2	2	-	-	2	3	1	-	-	-	3	-	2	-
	CO3	3	2	2	-	-	3	3	1	-	1	-	3	-	2	-
	CO4	3	3	3	-	-	3	3	1	-	1	-	3	-	2	-
	CO5	3	3	3	-	-	3	3	2	-	1	-	3	-	2	-
	CO6	3	3	3	-	-	3	3	2	-	1	-	3	-	2	-
3	**Category**	Allied Sciences (AS)														
4	**Approval**	Academic Council, Aug 2018														

Subject Code : U18CAEN302	PESTS OF HORTICULTURAL CROPS AND STORED PRODUCES AND THEIR MANAGEMENT	L	T	P	C
	Total Contact Hours – 56	1	0	1	2
	Prerequisite course: Pests of Field crops and stored produces and their management				
	Course Coordinator Name & Department: Ms. V. Sushmetha, School of Agricultural sciences				

COURSE OBJECTIVES:-

- To impart knowledge about Distribution, bionomics, symptoms of damage and management strategies of insects and non-insect pests of field crops and stored produces

THEORY

UNIT I: PESTS OF VEGETABLE CROPS **3**

Distribution, bionomics, symptoms of damage and management strategies of insect and non insect pests of Brinjal, Bhendi, Tomato, Chillies, Onion, Garlic, Moringa, Amaranthus Crucifers, Cucurbits.

UNIT II: PESTS OF FRUIT CROPS **4**

Distribution, bionomics, symptoms of damage and management strategies of insect and non insect pests of Mango, Citrus, Banana, Guava, Grapevine, Sapota, Pomegranate, Papaya, Aonla, Apple, Pine apple, Custard apple and Jack

UNIT III: PESTS OF TUBER CROPS **3**

Distribution, bionomics, symptoms of damage and management strategies of insect and non insect pests of Potato, Sweet potato, Tapioca, Yam and Colocasia

UNIT IV: PESTS OF SPICES AND PLANTATION CROPS **3**

Distribution, bionomics, symptoms of damage and management strategies of insect and non insect pests of Coconut, Arecanut, Tea, Coffee, Cashew, Cocoa, Betelvine, Ginger, Turmeric, Coriander, Cardamom, Pepper, Curry leaf and Tamarind

UNIT V: PESTS OF FLOWER CROPS, MEDICINAL PLANTS, LAWN AND STORED PRODUCTS **3**

Distribution, bionomics, symptoms of damage and management strategies of insect and non insect pests of Rose, Jasmine, Crossandra, Chrysanthemum, Tuberose, Cut flowers, Gloriosa, Coleus, Phyllanthus, Aswagantha, Senna, Periwinkle, Lawn and Stored products.

PRACTICAL – LIST OF PRACTICAL SCHEDULE

1.	Pests of Brinjal, Bhendi and Tomato	**2.5**
2.	Pests of Chillies, Onion, Garlic, Moringa and Amaranthus	**2.5**
3.	Pests of Crucifers and Cucurbits	**2.5**
4.	Pests of Mango, Citrus and Sapota	**2.5**
5.	Pests of Banana, Grapevine and Guava	**2.5**
6.	Pests of Pomegranate, Aonla, Papaya	**2.5**
7.	Pests of Jack, Pine apple, Custard apple, Ber and Apple	**2.5**
8.	Pests of Potato, Sweet potato, Tapioca, Yam and Colocasia	**2.5**
9.	Pests of Coconut and Arecanut	**2.5**
10.	Pests of Coffee and Tea	**2.5**
11.	Pests of Cashew, Cocoa and Betelvine	**2.5**
12.	Pests of Turmeric, Ginger and Coriander	**2.5**
13.	Pests of Cardamom, Pepper, Curry leaf and Tamarind	**2.5**
14.	Pests of Rose, Jasmine, Crossandra, Chrysanthemum, Tuberose and Cut flowers	**2.5**
15.	Pests of Gloriosa, Coleus, Phyllanthus, Aswagantha, Senna and Periwinkle	**2.5**
16.	Pests of Lawn and stored produces	**2.5**

TEXT BOOK:

1. Muthukrishnan,N., N.Ganapathy, R.Nalini and R.Rajendran.2005. *Pest Management in Horticultural Crops.* New Madura Publishers, Madurai. 325p. {ISBN: 81-902832-0-0}

REFERENCE BOOKS:

1. Nair,M.R.G.K.1986. *Insects and mites of crops in India.* Publications and Information Division, ICAR, NewDelhi. 408p.
2. ParvathaReddy.2010. *Insect, Mite and Vertebrate Pests and their Management in Horticultural Crops.* Scientific Publishers, Jodhpur. 384p. {ISBN: 978-81-7233-628-8}
3. David, B.V. and V.V.Ramamurthy.2011. *Elements of Economic Entomology*. Namrutha Publications, Chennai. 386 p. {ISBN: 978-81-921477-0-3}
4. Butani, D.K. and M.G.Jotwani.2013. *Insects in Vegetables.* Daya Publishing House, NewDelhi. 356p.
5. Regupathy,A. and R.Ayyasamy.2013. *A Guide on Crop Pests.* Namrutha Publications, Chennai.368p. {ISBN: 978-81-921477-1-0}

E- REFERENCES:

1. http://agritech.tnau.ac.in/horticulture/horti_plantprotection_pest.html
2. http://www.nbaii.res.in/insectpests/pestsearch.php?cropname=Mango
3. http:www.ncipm.org.in/data bases.htm

COURSE OUTCOMES (COs)	
CO1	Students will learn about pests of Vegetable crops- symptoms of damage and management
CO2	Students will learn about Fruits crops – Symptoms of damage and their management
CO3	To get knowledge on pests of Tuber crops- Symptoms of damage and their management
CO4	To get knowledge on pests of Species and plantation – symptoms of damage and their management
CO5	Learn about Pests of flower crops and medical plant symptoms of damage and their management
CO6	To get knowledge on Pest of Lawn and stored produces and their management

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	**COs/POs**	**PO1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**PSO1**	**PSO2**	**PSO3**
2	**CO1**	2	3	3	2	-	-	1		-	-	-	3	2	-	-
	CO2	2	3	3	2	-	-	1		-	-	-	3	2	-	-
	CO3	2	3	3	2	-	-	1		-	-	-	3	2	-	-
	CO4	2	3	3	2	-	-	1		-	-	-	3	2	-	-
	CO5	2	3	3	2	-	-	1		-	-	-	3	2	-	-
	CO6	2	3	3	2	-	-	1		-	-	-	3	2	-	-
3	**Category**	Professional Core (PC)														
4	**Approval**	Academic Council, Aug 2018														

Subject Code : U18CAGR303	PRACTICAL CROP PRODUCTION - II (Rabi crops)		L	T	P	C
	Total Contact Hours – 80		0	0	2	2
	Prerequisite course	3. Fundamentals of agronomy and agricultural heritage 4. Crop production I (Kharif crops)				
	Course Coordinator Name & Department	Mr. S. Senthil Kumar School of Agricultural Sciences				
COURSE OBJECTIVES:-	• To study the economic importance and different package of practices and yield of Rabi crops					

WORK PLAN

- Each student will be allotted a minimum land area of 100/200 m2 and he / she will do all field operations in the allotted land from field preparation to harvest and processing.
- Field preparation, seed, treatment, nursery raising, sowing, nutrient, water and weed management and management of insect-pests diseases of crops, harvesting, threshing, drying winnowing, storage and marketing of produce.
- Any irrigated dry crop (maize / sorghum / pearl millet / finger millet / cotton / groundnut / sunflower / sesame)

Practical Schedule for Irrigated dry crop (Eg. Maize):

Ecosystem - Climate and weather - Seasons and varieties of Tamil Nadu- Selection of field - Main field preparation - seed treatment - Application of manures and fertilizers - Sowing - Weed management and practicing pre- emergence application of herbicides - Thinning and gap filling - Estimation of plant population - Top dressing - Weed management - Water management - Pest management - Observation on nutrient and weeds - Recording growth, yield attributes and yield.

LIST OF PRACTICAL SCHEDULE

1.	Study of ecosystems, climate, weather, seasons and varieties of Tamil Nadu	**5**
2.	Selection of field for maize cultivation	**5**
3.	Acquiring skill in seed treatment practices	**5**
4.	Study and Practice of main field preparation for maize	**5**
5.	Practicing of application of manures and fertilizers for maize	**5**
6.	Practicing sowing of maize	**5**
7.	Acquiring skill in pre-emergence application of herbicides	**5**
8.	Estimation of plant population and acquiring skill in gap filling and thinning	**5**
9.	Observation on nutritional deficiency symptoms and corrective measures	**5**
10.	Study of weeds and weed management in maize	**5**
11.	Recording growth parameters and assessing dry matter production	**5**
12.	Study of water management practices for maize	**5**
13.	Observation of insect pests and diseases and their management	**5**
14.	Estimation of yield and yield parameters in maize	**5**
15.	Harvesting, threshing and cleaning of the produce	**5**
16.	Working out cost of cultivation and economics	**5**

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1. Ahlawat, I.P.S., Om Prakash and G.S.Saini.2010.Scientific Crop Production in India.Rama Publishing House, Meerut.

2. Crop Production Guide. 2012. Directorate of Agriculture, Chennai and Tamil Nadu Agricultural University, Coimbatore.
3. Rajendra Prasad. 2012. Text Book on Field Crop Production, Indian Council of Agrl. Research, New Delhi. Reddy,S.R. 2012. Agronomy of field crops.Kalyani publishers, New Delhi.
4. Chidda Singh.1997. Modern techniques of raising field crops. Oxford and IBH Publishing Co. Pvt. Ltd., New Delhi. Crop Production Guide. 2012. Directorate of Agriculture, Chennai and Tamil Nadu Agricultural University, Coimbatore.

E-REFERENCES:

1. www.cimmyt.org

COURSE OUTCOMES (COs)	
CO1	To acquire skill in various agronomic practices that can bring improved crop yield.
CO2	To gain hands on experience on cultivation of crops individually.
CO3	To understand the different sowing methods for garden land crops
CO4	To apply different seed treatment techniques
CO5	To evaluate different harvesting methods and processing
CO6	It will be helpful to know about basic morphological characteristics of rabi crops.

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	**COs/POs**	**PO1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**PSO1**	**PSO2**	**PSO3**
2	**CO1**	2	2	1	-	-	-	1	-	-	-	-	-	3	-	2
	CO2	2	2	3	-	-	-	2	-	-	-	-	-	3	-	2
	CO3	2	2	1	-	-	-	1	-	-	-	-	-	3	-	2
	CO4	2	2	1	-	2	-	1	-	-	-	-	-	3	-	2
	CO5	2	2	3	-	-	-	2	-	-	-	-	-	3	-	2
	CO6	2	2	1	-	-	-	-	-	-	-	-	-	3	-	2
3	**Category**	Professional Core (PC)														
4	**Approval**	Academic Council, Aug 2018														

Subject Code : U18CAGR304	PRINCIPLES OF ORGANIC FARMING	L	T	P	C
	Total Contact Hours – 56	1	0	1	2
	Prerequisite course	1. Fundamentals of agronomy and agricultural heritage 2. Crop production I (Kharif crops) 3. Crop production II (Rabi crops)			
	Course Coordinator Name & Department	Dr. V. Prakash School of Agricultural Sciences			
COURSE OBJECTIVES:-	To impart knowledge and concept of organic farming and basics of soil fertility, nutrient cycle, manures and soil biota.				

THEORY

UNIT I: COMPONENTS AND PRINCIPLES OF ORGANIC COTTON **4**

Organic farming: Definition - Scope - principles and concepts - history of organic farming – global scenario - biodiversity: importance and measure to preserve biodiversity - pre requisites for Organic farming:- Soil organic carbon: status and improvement strategies.

UNIT II: ORGANIC SOURCES OF NUTRIENTS **3**

Organic sources of nutrients - manures and other inputs - on farm and off farm sources - organic waste recycling - methods - Soil and crop management - inter cropping, crop rotation, green manures, cover crops, mulching - bio fertilizers.

UNIT III: NON - CHEMICAL WEED AND PEST DISEASE MANAGEMENT **3**

Non-chemical weed management methods: preventive, physical, cultural, mechanical and biological measures - Bio-intensive pest and disease management.

UNIT IV: INDIGENOUS TECHNICAL KNOWLEDGE (ITK) **3**

Indigenous Technical Knowledge (ITK) in organic agriculture - scientific rationale - soil, nutrient, weed, water, management - prospects and problems in organic farming.

UNIT V: CERTIFICATION OF LABEL **3**

Organic certification - NPOP guidelines - Certification agencies in India - crop production standards - Quality considerations - labeling and accreditation process - marketing and export opportunities.

PRACTICAL – LIST OF PRACTICAL SCHEDULE

1.	Resource inventory of organic farm- Soil sampling and analysis for organic carbon and pesticide residues / contaminants.	**2.5**
2.	Raising of green manures (Sunnhemp / Daincha / Fodder cowpea).	**2.5**
3.	Incorporation of green manure - seed treatment and raising of field crop (Rice / Maize / Cowpea / Cotton / Gingelly).	**2.5**
4.	Hands on practice on preparatory cultivation; soil and water conservation methods.	**2.5**
5.	Hands on experience on recycling techniques; bio-composting and vermicomposting.	**2.5**
6.	Quantification of nutrients from organic sources and application of manures and bio-fertilizers.	**2.5**
7.	Exposure visit to an organic farm to learn ITK based preparations.	**2.5**
8.	Organic crop production and weed management.	**2.5**
9.	Skill development in composting farm residues.	**2.5**
10.	Organic crop production and pest management.	**2.5**
11.	Exposure visit to bio-control agent (Pseudomonas, Trichoderma etc.,) production units.	**2.5**

12.	Organic crop production and diseases management.	**2.5**
13.	Skill development in vermicompost preparation.	**2.5**
14.	Hands on training on grading, packaging and post-harvest management.	**2.5**
15.	Exposure visit to organic market out lets.	**2.5**
16.	Exposure visit to organic certification agencies / Directorate of Organic Certification, Tamil Nadu	**2.5**

REFERENCES:

1. Dahama, A.K.2009. Organic farming for sustainable agriculture, Agrobros publishers.
2. SP. Palaniappan and K Annadurai. 2008. Organic Farming: Theory and Practice. 2008. Scientific Publishers.
3. Panda, S.C. 2012.Principles and Practices of Organic Farming. Agribios (India), Jodhpur.
4. Gehlot, D. 2010. Organic Farming- Components and Management. Agribios (India), Jodhpur.
5. Dushyant Gehlot . 2010. Organic farming: Components and management.Agrobios (India), Jodhpur.
6. Ranjan Kumar Biswas.2014.Organic farming in India. N.D.Publishers.New Delhi.

COURSE OUTCOMES (COs)	
CO1	Concept of organic farming including its relevance to India and global agriculture and future prospects
CO2	Knowledge of soil fertility, nutrient cycle manures and soil biota (earthworms and vermicompost)
CO3	Concepts of marketing and export potential, certification and labeling
CO4	Knowledge of cropping and farming systems for sustainable agriculture
CO5	Knowledge of Socio-economic impact, Organic farming and national economy
CO6	Understand the contribution of organic farming to food quality, environmental and social policy objectives and outline the policy measures which have a direct influence on the extent and adoption of organic farming in India

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	**COs/POs**	**PO1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**PSO1**	**PSO2**	**PSO3**
2	**CO1**	1	2	3	1	-	-	-	-	-	-	-		3	-	2
	CO2	1	2	3	1	-	-	-	-	-	-	-		3	-	2
	CO3	1	1	3	1	1	3	-	-	-	-	-	-	3	-	2
	CO4	1	2	3	2	-	-	-	-	-	-	-	-	3	-	2
	CO5	1	2	3	-	1	3	-	-	-	-	-	-	3	-	2
	CO6	1	2	3	-	1	3	-	-	-	-	-	-	3	-	2
3	**Category**	Professional Core (PC)														
4	**Approval**	Academic Council, Aug 2018														

Subject Code : U18CABT 301	PLANT BIOTECHNOLOGY		L	T	P	C
	Total Contact Hours – 72		1	0	1	2
	Prerequisite course	Fundamentals of Genetics				
	Course Coordinator Name & Department	Dr. S.Anandhi Lavanya School of Agricultural Sciences				
COURSE OBJECTIVES:-	To impart knowledge on basic and applied aspects of plant biotechnology and various aspects of Plant Tissue culture. To familiarize recent strides in molecular biology					

THEORY

UNIT I :BASICS OF PLANT TISSUE CULTURE **5**

Plant tissue culture: Concepts, history and scope - Media and Culture Conditions - Sterilization techniques- Regeneration methods - morphogenesis, organogenesis and embryogenesis - culture types - callus culture and cell suspension culture; shoot tip and meristem tip culture; anther and pollen culture; ovule and embryo culture

UNIT II : APPLIED PLANT TISSUE CULTURE **5**

Micropropagation - banana and ornamental plants; National certification and Quality management of TC plants- Applications of organ culture - Meristem tip culture (virus free plants) and anther culture (doubled haploids)- Protoplast isolation and fusion- somaclonal variation- synthetic seeds - secondary metabolite production- invitro germplasm conservation

UNIT III : BASIC MOLECULAR BIOLOGY **9**

Genome organization- prokaryotes vs eukaryotes- Central dogma of life - Structure of nucleic acids - DNA replication, aminoacids and their classification- genetic codes- transcription, translation and Plant tissue culture: Concepts, history and scope - Media and Culture Conditions - Sterilization techniques- Regeneration methods - morphogenesis, organogenesis and embryogenesis - culture types - callus culture and cell suspension culture; shoot tip and meristem tip culture; anther and pollen culture; ovule and embryo culture

UNIT IV :RECOMBINANT DNA TECHNOLOGY AND GENETIC TRANSFORMATION **8**

DNA manipulation enzymes: Polymerases, restriction endonucleases and ligases - Different types of vectors: plasmids, phagemids, cosmids, BAC - Construction of recombinant DNA molecules- Bacterial transformation - Direct and indirect gene transfer methods in plants: microinjection, electroporation, particle bombardment, *Agrobacterium* mediated method - Tissue specific promoters, selectable and scorable markers, reporter genes- Molecular analysis of transgenic plants – Transgenic plants: herbicide, pest and disease resistant, abiotic stress resistant, nutritional enhancement and traits for improved quality- Detection of GMOs – regulations and biosafety.

UNIT V : MOLECULAR MARKER TECHNOLOGY AND MOLECULAR BREEDING **6**

DNA markers - hybridization based markers (RFLP) - PCR based markers: RAPD, SSR, AFLP, and SNPs - DNA fingerprinting of crop varieties – Development of mapping populations- linkage and QTL analysis-principles, methods and applications of Marker Assisted Selection in crop improvement- Applications of Plant Genomics and genome databases

PRACTICAL – LIST OF PRACTICAL SCHEDULE

1. Biotech Laboratory: Organization and Safety Regulations **2.5**

2.	Basics of Reagents and Solution Preparation	**2.5**
3.	Plant Tissue Culture Media Preparation	**2.5**
4.	Shoot Tip Culture of Rose	**2.5**
5.	Meristem Tip Culture of Tapioca	**2.5**
6.	Micropropagation of Banana	**2.5**
7.	Callus Culture	**2.5**
8.	Isolation of Bacterial Plasmid DNA	**2.5**
9.	Restriction Digestion and Ligation	**2.5**
10.	Competent Cell Preparation and Bacterial Transformation	**2.5**
11.	Confirmation of Transformation through Colony Screening	**2.5**
12.	Genomic DNA Extraction from Plants	**2.5**
13.	Quantification of DNA and Quality Check through Agarose Gel Electrophoresis	**2.5**
14.	DNA Fingerprinting using PCR	**2.5**
15.	NTSys- Analysis of Diversity in Crop Plants	**2.5**
16.	Visit to Tissue Culture Units /Biotech Lab in Seed Industry/Bt Cotton Field – Lateral Flow Strip Assay	**2.5**

REFERENCES:

1. Chawla. H S. 2009. **Introduction to Plant Biotechnology (3/e).** CRC Press , London. 730 P ISBN 9781578086368
2. Boopathi, N. M. 2013. Genetic Mapping and Marker Assisted Selection - Basics, Practice and Benefits. Springer Publications
3. Brown, T. A. 2010. **Gene Cloning and DNA Analysis: An Introduction,** 6th Edition, Wiley-Blackwell- Companion site (Chapters 1 to 12 and 15)
4. Chahal, G. S. and Gosal, S. S. 2003. *Principles and Procedures of Plant Approaches Breeding Biotechnological and Conventional*. Narosa Publishing House, New Delhi
5. Dubey, R. C. 2014. A textbook of Biotechnology. 5th revised Edn. S. Chand Publications. New
6. DelhiGeorge, E. F, Hall M. A. and Geert-Jan De Klerk. 2009. **Plant Propagation by Tissue Culture,**3rd Edition, Springer, The Netherlands. 501p
7. Gupta, P. K. , 2015. *Elements of Biotechnology* 2nd Edn. Rastogi and Co. , Meerut
8. Neal Stewart, Jr. C. 2008. Plant Biotechnology and Genetics: Principles, Techniques and Applications John Wiley & Sons, Inc ISBN: 978-0-470-04381-3
9. Nelson, D. S. and M. M. Cox. 2012. **Lehninger's Principles of Biochemistry. Sixth edition.**
10. **Chapters- 1,3,8,9,25,26,28** (weblinks, tutorials and lecture companion art)
11. W. H. Freeman and Razdan M K, 2014. *Introduction to plant Tissue Culture* 2nd Edn. Science Publishers, inc. USA
12. Singh, B. D. 2012. *Plant Biotechnology*. Kalyani publishers, Ludhiana
13. Tomar, R. S. , Parakhia, M. V. , Patel, S. V. and Golakia, B. A. , 2010. *Molecular markers and Plant Biotechnology*, New Publishers, New Delhi
14. Xu**,** Y 2010. **Molecular Plant Breeding.** International Maize and Wheat Improvement Centre (CIMMYT). 752 Pages

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1. http://www. isaaa. org/india/- Briefs
2. http://www. nal. usda. gov.
3. http://www. agbiotechnet. com.
4. http://www. agbioworld. org
5. http://www. cropgen. org.
6. http://www. agbiosafety. unl. edu/.

COURSE OUTCOMES (COs)	
CO1	Understand about the historical developments and contributions of some scientist in the plant tissue and basic biotechnology.
CO2	Discuss the mother plant or explants for initiation of tissue culture
CO3	Classify the DNA and RNA , Replication and DNA Sequencing Methods
CO4	Explain the development of pathogen and Virus free plant
CO5	To demonstrate the various sterilization methods
CO6	Students gain knowledge on biotechnological principle like genetic recombination, mutation .Application of Genomics and genome database

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	COs/POs	PO1	2	3	4	5	6	7	8	9	10	11	12	PSO1	PSO2	PSO3
2	**CO1**	3	-	-	2	-	-	2	-	-	-	-	-	2	-	-
	CO2	-	-	-	-	2	-	-	-	-	-	-	1	2	-	-
	CO3	2	2	-	2	-	-	-	-	-	-	-	-	2	-	-
	CO4	3	-	2	-	-	-	-	2	-	-	-	2	2	-	-
	CO5	3	-	-	2	-	-	3	-	-	-	-	1	2	-	-
	CO6	3	-	-	2	2	-	3	-	-	-	-	2	2	-	-
3	**Category**	Professional Core (PC)														
4	**Approval**	Academic Council, Aug 2018														

Subject Code : U18CPBG 302	CROP IMPROVEMENT		L	T	P	C
	Total Contact Hours – 72		2	0	1	3
	Prerequisite course	Fundamentals of Plant Breeding				
	Course Coordinator Name & Department	Dr. R. Anbarasan School of Agricultural Sciences				
COURSE OBJECTIVES:-	• To acquire the knowledge about the breeding of field and horticultural crops • To impart knowledge on specific breeding techniques followed in crop improvement of various Field crops and Horticultural crops.					

THEORY

UNIT I: CEREALS **7**

Place of origin – putative parents – related wild species – breeding objectives–breeding methods– conventional and innovative methods-heterosis breeding and important varieties in following cereals: Rice, Wheat,Maize,Sorghum, Pearl millet,Finger millet

UNIT II: PULSES AND OILSEEDS **7**

Place of origin – putative parents – related wild species – breeding objectives–breeding methods– conventional and innovative methods-heterosis breeding and important varieties in following crops Pulses: Redgram , Bengal gram, Greengram, Blackgram, Cowpea, Soybean. Oilseeds: Groundnut, Sunflower,Gingelly, Castor, Rape and Mustard.

UNIT III:CASH CROPS, FODDER AND HORTICULTURAL CROPS **8**

Place of origin – putative parents – related wild species – breeding objectives–breeding methods– conventional and innovative methods-heterosis breeding and important varieties in following crops Fibres: Cotton; Sugars: Sugarcane; Starch: Potato; Fumitories: Tobacco, Fodder: Guinea grass, Napier,
Cumbu – Napier, Lucerne, *Stylosanthes*; Horticultural crops: Bhendi, Tomato, Brinjal, Papaya, Banana

UNIT IV: BREEDING FOR BIOTIC AND ABIOTIC STRESSES AND QUALITY **6**

Breeding for insect resistance – mechanisms, basis, genetics of insect resistance - suitable breeding methods- merits and demerits of resistance breeding; Breeding for disease resistance – horizontal and vertical resistance- Gene for gene hypothesis – mechanisms, genetics of disease resistance; Suitable breeding methods for disease resistance- exploitation of vertical resistance in plant breeding- multilines, gene pyramiding, gene deployment.

Breeding for Abiotic stress – drought – mechanisms, basis, genetics of drought resistance - suitable breeding methods -limitations of drought resistance breeding; Breeding for Abiotic stress – salinity and alkalinity;

Breeding for quality traits- Important quality traits in different crops- nutritional quality of cereals and pulses-Genetics of nutritional traits-breeding methods- Breeding for low toxic substances-limitations of breeding for enhanced nutritional quality

UNIT V: HYBRID SEED PRODUCTION TECHNIQUES AND IDEOTYPE BREEDING **4**

Hybrid seed production techniques in rice, maize and redgram Ideotype breeding- main features-difference between traditional and ideotype breeding- - crop ideotypes in rice, wheat, cotton- steps in ideotype breeding- merits and demerits of ideotype breeding.

PRACTICAL – LIST OF PRACTICAL SCHEDULE

Observation on floral biology – anthesis and pollination – selfing – crossing techniques – observation on cultivated germplasm, wild species – Experimental design – handling segregating generations- Yield trials in following crops.

1.	Rice	**2.5**
2.	Maize and Sorghum	**2.5**
3.	Pearl millet and Finger millet	**2.5**
4.	Redgram, Bengal gram and Soybean	**2.5**
5.	Green gram, Black gram and Cowpea	**2.5**
6.	Groundnut and Sunflower.	**2.5**
7.	Sesame and Castor	**2.5**
8.	Cotton	**2.5**
9.	Sugarcane	**2.5**
10.	Guinea grass, Cumbu – Napier hybrids Lucerne and *Stylosanthes*	**2.5**
11.	Bhendi, Brinjal, Tomato	**2.5**
12.	Papaya and Banana	**2.5**
13.	Study of quality characters in rice	**2.5**
14.	Study of donor parents for different characters	**2.5**
15.	General seed production techniques in field crops	**2.5**
16.	Visit to AICRP and seed production plots of different field crops	**2.5**

REFERENCES:

1. Singh, B.D. 2007. Plant breeding - Principles and methods.
2. Phundan Singh. 2015. Essentials of Plant Breeding. Kalyani Publishers, New Delhi
3. Harihar Ram and HariGovind Singh, 1994. Crop breeding and Genetics. Kalyani Publishers, New Delhi.
4. D.N.Bharadwaj.2012. Breeding Field Crops. Agrobios (India),Jodhpur - 342002
5. HariHar Ram, 2011. Vegetable Breeding– Principles and Practice, Kalyani Publishers, New Delhi.
6. N.Kumar.2006. Breeding of horticultural crops- Principles and Practices. New India Publishing Agency. New Delhi
7. D.A.Sleper and J.M.Poehlman. 2007. Breeding Field Crops. Blackwell Publishing Professional (USA)
8. H.H.Ram. 2011. Crop Breeding and Biotechnology. Kalyani Publishers (India)
9. Chopra, V.L. 1990. Plant Breeding. Theory and Practice. Oxford and IBH Publishing Co., New Delhi.
10. Daniel Sundararaj, D., G.Thulasidas, and M. Stephan Dorairaj. 1997. Introduction to Cytogenetics and Crop improvement. Popular Book Depot, Chennai - 15.
11. Sharma, J.R. 1994. Principles and practice of Plant Breeding. Tata McGraw - Hill Publishing Co. Ltd., New Delhi.
12. Singh, R.B., R.M. Singh and B.D. Singh, 1984. Advances in Cytogenetics and crop improvement. Kalyani Publishers, New Delhi.

COURSE OUTCOMES (COs)	
CO1	Able to identify putative parents and wild relatives
CO2	Differentiate the crops based on its floral biology
CO3	The students will be in a position to identify and understand the methodologies employed for self, cross and vegetatively propagated crops

CO4	Understand the various crossing and emasculation techniques in various crops
CO5	Understand the problems in hybrid seed production
CO6	The students will have enchased knowledge in the current trends in plant breeding

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	**COs/POs**	**PO1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**PSO1**	**PSO2**	**PSO3**
2	**CO1**	3	-	-	-	-	-	1	-	-	-	-	1	2	-	-
	CO2	3	2	-	-	-	-	3	-	-	-	-	2	2	-	-
	CO3	3	3	-	-	2	-	2	-	-	-	-	1	2	-	-
	CO4	3	-	-	-	3	-	3	-	1	-	-	1	2	-	-
	CO5	3	3	2	-	2	-	-	-	-	-	-	3	2	-	-
	CO6	3	2	2	-	3	-	2	-	-	-	-	2	2	-	-
3	**Category**	Professional Core (PC)														
4	**Approval**	Academic Council, Aug 2018														

**LIST OF OPTIONAL COURSES (OC) FOR 6th SEMESTER

S.No.	Code No.	Courses	Credit Hours
1.	U18OCRP351	Physiological Techniques in crop production	1+1
2.	U18OSAC351	Designer fertilizer Production	1+1
3.	U18OSAC352	Rejuvenation of Deteriorated lands	1+1
4.	U18OSAC353	Soilless crop production	1+1
5.	U18OSAC354	Instrumental methods of analysis	1+1
6.	U18OSST 351	Seed entrepreneurship skill development and management	1+1
7.	U18OAGR351	Weed and water management	1+1
8.	U18OPGP351	Plant Genetic Resources Collection, Conservation and Utilization	1+1
9.	U18ONEM351	Commercial Production of Nematode Antagonistic bio-agents	1+1
10.	U18OAGM351	Downstream Processing for Industrially Important Microbial Products	1+1
11.	U18OAGM352	Microbial Enzymes	1+1
12.	U18OAGM353	Microbial Quality and Safety of Foods	1+1
13.	U18OAGM354	Plant –Microbe Interaction	1+1
14.	U18OAGM355	Quality Control of Bio-inoculants	1+1
15.	U18OSAC355	Crop and Pesticide Chemistry	1+1

Subject Code : U18OCRP351	PHYSIOLOGICAL TECHNIQUES IN CROP PRODUCTION	L	T	P	C
	Total Contact Hours – 56	1	0	1	2
	Prerequisite course	Fundamentals of Crop Physiology			
	Course Coordinator Name & Department	Mr. B. Suriya Sabarinathan School of Agricultural Sciences			
COURSE OBJECTIVES:-	To impart knowledge on the role of various physiological techniques in crop production				

THEORY

UNIT I STRESS PHYSIOLOGY **5**

Abiotic Stress: Water deficit – impact of drought on crop productivity - characteristic features of drought tolerant plants, Drought resistance and tolerance mechanisms, Osmotic adjustment and osmoregulation, stress proteins, Water use efficiency – carbon isotope discrimination-Physiological traits associated with drought and Mitigation techniques. Flooding: Physiological mechanism of adaptation, Mitigation techniques, Temperature stress: High and Low Temperature, Tolerance mechanisms - Functions of HSPs and CSPs, Oxidative stress: Reactive Oxygen Species (ROS). Role of scavenging systems – Enzymatic and Non-Enzymatic, Physiological traits associated with high and low temperature, Mitigation techniques. Salt stress: Physiological basis of tolerance mechanisms, Physiological traits associated with salt stress, Mitigation techniques. UV stress and climate change: Physiological adaptation of crops to UV radiation and tolerance mechanisms.

UNIT II NUTRIOPHYSIOLOGY **3**

Diagnosis and correction measures for nutritional disorders including Macro, Micro and secondary nutrients in Cereals, Pulses, Oilseeds, Fibre and Sugar crops; Fruits, Vegetables, Flowers, Spices, Plantation and Aromatic crops. Impact of heavy metals on physiology and productivity of crops, Phytoremediation, Importance of beneficial elements – Na, Si, Se, Co.

UNIT III HORMONAL PHYSIOLOGY **3**

Role of hormones in plant growth and yield enhancement, stress management and quality improvement - Auxins, Gibberellins, Cytokinins, Abscisic acid, Ethylene and Brassinosteroids. Role of other phytohormones in crop production-triacontanol, polyamines, jasmonates and salicylic acid, New generation PGRs - 1- MCP, Triazoles, strigalactone, pro-hexadione Ca.

UNIT IV PRODUCTION PHYSIOLOGY **3**

Physiological limitations of crop productivity, Physiological and genetic basis of crop environment interaction, Plant architecture – Ideotype concept, Crop photosynthetic efficiency – C3 , C4 and CAM Strategies to improve the crop photosynthesis, Source- sink balance and Harvest Index.

UNIT V POSTHARVEST PHYSIOLOGY **2**

Environmental factors influencing senescence, ripening and postharvest life of fruits, flowers, vegetables and seeds. Physiological and biochemical aspects of senescence and fruit ripening. Regulatory role of ethylene in senescence and ripening, Pre and post harvest measures to influence shelf life.

PRACTICAL – LIST OF PRACTICAL SCHEDULE

1.	Determination of osmotic potential	**2.5**
2.	Gas Exchange measurements using Infra Red Gas Analyzer	**2.5**
3.	Stress induction response techniques	**2.5**
4.	Water Use Efficiency or Transpiration Efficiency of crops	**2.5**
5.	Estimation of anti oxidant enzymes activity – Catalase and peroxidase	**2.5**
6.	Estimation of Membrane thermal stability	**2.5**
7.	Bioassay for Cytokinins	**2.5**
8.	Effect of PGRs on flowering	**2.5**
9.	Effect of PGRs on fruit ripening	**2.5**
10.	Influence of ABA on stomatal regulation	**2.5**
11.	Diagnosis of nutritional disorders and their amelioration measures	**2.5**
12.	Nutrient application techniques	**2.5**
13.	Estimation of Macro nutrients in plant samples	**2.5**
14.	Estimation of micro and secondary nutrients using AAS	**2.5**
15.	Field Visit I- Diagnosis of nutrient disorders	**2.5**
16.	Field Visit II-Postharvest storage facilities	**2.5**

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1. Barker AB &Pilbeam DJ. 2007. Handbook of Plant Nutrition. 2nd Edition, CRC Press, Taylor & Francis Group. Pp 1-773.
2. Bewley, J. D. and Black, M. 1985. Seed Physiology of Development and Germination. Plenum Publishing Corp. New York, NY. pp 70-73.
3. Bleasdale, J. K. A. 1984. Plant Physiology in Relation to Horticulture. 2nd Ed. MacMillan & Avi Publishing Company, USA.
4. Leopold, A. C. and Kriedemann, P. E. 1985. Plant Growth and Development. 3rd Ed. McGraw-Hill, New York, pp 545.
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6. Taiz. L. and Zeiger. E. , 2015 (Sixth edition). Plant Physiology and Development. Publishers: Sinauer Associates, Inc. , Massachusetts, USA.
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E-REFERENCES:

1. http://www. plantphys. net
2. http://www. plantstress. com
3. http://www. ipni. net
4. http://www. edis. ifas. ufl. edu
5. http://www. greenair. com/plantlnk. htm
6. http://www. tvdsb. on. ca

COURSE OUTCOMES (COs)	
CO1	Gain Knowledge and critically analyze the abiotic stress and its management
CO2	Gain knowledge Physiological adaptation of crops to UV radiation and tolerance mechanisms
CO3	Learn about Diagnosis and correction measures for nutritional disorders
CO4	Understand the role of hormones in plant growth and yield enhancement, stress

	management and quality improvement
CO5	Learn about the physiological and genetic basis of crop environment interaction and its limitations.
CO6	Able to understand the post harvest physiology and the role of ethylene

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	**COs/POs**	**PO1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**PSO1**	**PSO2**	**PSO3**
2	**CO1**	3	2	-	-	-	-	-	-	-	-	-	2	2	–	-
	CO2	3	2	1	-	-	-	-	-	-	-	-	2	2	-	-
	CO3	3	1	2	-	-	-	-	-	-	-	-	2	2	-	-
	CO4	3	3	-	1	-	-	-	2	-	-	-	-	2	-	-
	CO5	3	3	2	-	-	-	-	2	-	-	-	3	2	-	-
	CO6	3	3	1	-	-	-	-	2	-	-	-	3	2	-	-
3	**Category**	Professional Elective (PE)														
4	**Approval**	Academic Council, Aug 2018														

Subject Code : U18OSAC351	DESIGNER FERTILIZER PRODUCTION	L	T	P	C
	Total Contact Hours – 56	1	0	1	2
	Prerequisite course	Basic knowledge of different types of manures and its behaviours.			
	Course Coordinator Name & Department	Dr.S.Sivagnanam, School of Agriculture Science			
COURSE OBJECTIVES:-	To impart knowledge on the production, characterization, evaluation and economics of various designer fertilizers. Further, it also provides guidelines for establishing a designer fertilizer production unit.				

THEORY

UNIT I **3**

Designer Fertilizers - Definitions - Concepts - Historical development - Scope and Need - Scenario of Multi nutrient deficiencies in soils and plants.

UNIT II **3**

Designer Fertilizers – Classification- Production and Characterisation - Speciality / Customized fertilizer mixtures - Fortified fertilizers - Pelleted fertilizers - Multi nutrient liquid formulations.

UNIT III **3**

Foliar Formulations - Leaf nutrient analysis -Value added fertilizers- enriched with organics/chelates- methods and guidelines for preparing designer Fertilizers- Filler materials- Industries and approved formulations.

UNIT IV **4**

Quality of Designer fertilizers- Compatibility of fertilizer materials - issues in storability, hygroscopicity, clogging, etc. - Toxicity - Advantages and Disadvantages - Key Challenges - Crop response to designer fertilizers - Agricultural, Horticultural, high value crops- yield and quality - Soil health - Nutrient use efficiencies

UNIT V **3**

Feasibility of using designer fertilizers for drip fertigation- Poly houses - roof gardening- Quality Standards- Specifications - Guidelines for Patenting, Licensing and Registration of newer products

PRACTICAL – LIST OF PRACTICAL SCHEDULE

1. Preparation of Designer Fertilizer Mixtures for major agricultural crops: Rice/ Pulse **2.5**
2. Preparation of Designer Fertilizer Mixtures for major horticultural crops : Banana/ Tapioca **2.5**
3. Preparation of Designer Fertilizer Mixtures for high value crops : Turmeric / Cotton **2.5**
4. Preparation of multi nutrient liquid formulations for drip fertigation : Sugarcane/Turmeric **2.5**
5. Preparation of multi nutrient liquid formulations for poly houses: Tomato/ Cucumber/Capsicum **2.5**
6. Preparation of pelletised fertilizer mixtures for high value crops : Maize/ Turmeric/Cotton **2.5**
7. Preparation of pelletised fertilizer mixtures for roof gardening :Chillies/ Brinjal/ Greens. **2.5**

8.	Preparation of fortified fertilizer mixtures for major agricultural crops: Maize, Groundnut	**2.5**
9.	Preparation of fortified fertilizer mixtures for major horticultural crops: Onion, Bhendi	**2.5**
10.	Preparation of value added fertilizers	**2.5**
11.	Assessing the storability of the mixtures and formulations	**2.5**
12.	Machineries in designer fertilizer production	**2.5**
13.	Computation of cost effectiveness of the designer fertilizers	**2.5**
14.	Visit to Designer Fertilizer manufacturing Unit	**2.5**
15.	Protocols for establishing a Designer Fertilizer Production Unit - Guidelines and budget.	**2.5**
16.	Procedures for Licensing, registration and Patenting	**2.5**

REFERENCES:

1. Hagin, J. and B. Tucker (2012). Fertilization of Dry land and Irrigated Soils, Springer Science & Business Media, 06-Dec-2012 - Technology & Engineering, 190 pages
2. John Havlin, Samuel L. Tisdale, James D. Beaton, Werner L. Nelson (2013) Soil Fertility and Fertilizers: An Introduction to Nutrient Management, Pearson, 2013 - Technology & Engineering - 516 pages
3. HariLal Singh Tandon (2012) Fertilizer Management: Balance-efficiency-profitability Fertilizer Development and Consultation Organization, Arid regions agriculture - 187 pages
4. Anac,D. and P.MartinPravel (1999).Improved crop quality by nutrient management , Kluwer Academic Publications, LondonSpringer Science & Business Media, 30-Sep,1999 - Science - 310 pages
5. Gustafson,A.F. (2013) Handbook of Fertilizers - Their Sources, Make-Up, Effects, And Use,Read Books Ltd, 16-Apr-2013 - Technology & Engineering - 170 pages
6. Kolay,A.K.(2007) Manures and Fertilizers Atlantic Publishers &Dist, Fertilizers - 173 pages
7. UN Industrial Development Organization(1998), Fertilizer Manual, Int'l Fertilizer Development Center, Springer Science & Business Media, 31-Mar-1998 - Nature - 616 pages
8. Casper, **M. S. (1973).**Liquid fertilizers, Noyes Data Corp., 1973 - Technology & Engineering - 268 pages

COURSE OUTCOMES (COs)	
CO1	Describe the knowledge of designer fertilizer and its importance. **(Knowledge)**
CO2	Compare the different types of designer fertilizer and their chemical composition **(understand)**
CO3	Apply designer fertilizer to plants and measure plant nutrient uptakes. **(Analyze)**
CO4	Appraise new designer fertilizer quality, cost, crop production and environmental issues.**(Create)**
CO5	Facilitate to get certificate, licensing, registration and Patenting of new designer fertilizers. **(Create)**
CO6	Explain the protocols for establishing a designer fertilizer production Unit. **(Apply)**

Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low															
1	**COs/POs**	**PO1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**PSO1**	**PSO2**	**PSO3**
2	**CO1**	3	3	1	3	3	3	-	-	1	2	-	-	-	2	3
	CO2	2	3	1	2	3	2	-	-	-	-	-	1	-	2	2
	CO3	2	1	1	2	1	1	-	-	-	-	-	1	-	2	1
	CO4	3	2	2	2	2	1	3	-	-	2	-	-	2	2	2
	CO5	3	2	3	1	2	3	3	3	2	3	3	3	1	2	2
	CO6	3	2	3	1	3	3	3	3	3	3	3	3	2	3	3
3	**Category**	Professional Elective (PE)														
4	**Approval**	Academic Council, Aug 2018														

Subject Code : U18OSAC352	REJUVENATION OF DETERIORATED LANDS		L	T	P	C
	Total Contact Hours – 56		1	-	1	2
	Prerequisite course	Basic characters of soil, plant and manure application techniques				
	Course Coordinator Name & Department	Dr.S.Sivagnanam, School of Agriculture Science				
COURSE OBJECTIVES:-	To impart knowledge related to various factors and processes of land deterioration and their rejuvenation techniques.					

THEORY

UNIT I **3**

Type, factors and processes of soil / land deterioration and its impact on soil productivity, including soil fauna, bio deterioration and environment. Land rejuvenation and conservation / management techniques; afforestation and silviculture and soil carbon restoration.

UNIT II **4**

Causes, reclamation and management of soil physical deterioration- surface and sub surface hard pans, shallow, slowly permeable and highly permeable and fluffy paddy soils; soil erosion, ravine and sand dune, coastal and seasonally inundated soils and mined land.

UNIT III **3**

Causes, reclamation and management of salt-affected soils – saline, sodic and saline sodicsoils; acid and acid sulphate soils; laterite soils.

UNIT IV **3**

Extent, diagnosis and mapping of land deterioration by conventional and modern RS-GIS tools. Monitoring land deterioration by fast assessment and modern tools.

UNIT V **3**

Land use policy, incentives and participatory approach for reversing land deterioration; global issues for twenty first century.

PRACTICAL – LIST OF PRACTICAL SCHEDULE

1.	Practicing field reclamation of saline soils and assessing its impact and cost benefit.	**2.5**
2.	Practicing field reclamation of saline-sodic soils and assessing its impact and cost benefit	**2.5**
3.	Practicing field reclamation of saline-sodic soils and assessing its impact and cost benefit	**2.5**
4.	Practicing field reclamation of sodic soils by press mud application and assessing its impact and cost benefit	**2.5**
5.	Practicing field reclamation of sodic soils by spent wash application and assessing its impact and cost benefit.	**2.5**
6.	Practicing field reclamation of acid soils and assessing its impact and cost benefit	**2.5**
7.	Practicing management of surface and sub surface hard pans and assessing its impact and cost benefit.	**2.5**
8.	Practicing management of slowly permeable and highly permeable and fluffy paddy soils and assessing its impact and cost benefit	**2.5**
9.	Field visit and characterization of eroded, ravine and mined out lands, sand dune, coastal, seasonally inundated and laterite soils and assessing its management impact and cost benefit.	**2.5**

10.	Field visit	**2.5**
11.	Field visit	**2.5**
12.	Field visit	**2.5**
13.	Field visit	**2.5**
14.	Field visit to agro forestry and silviculture farms and assessing its impact on soil conservation	**2.5**
15.	Assessing the suitability of industrial byproducts for eco-friendly recycling through soil conservation and rejuvenization	**2.5**
16.	Diagnosis and mapping of land degradation using RS and GIS tools	**2.5**

REFERENCES:

1. Biswas TD and Narayanasamy G. (Eds.). 1996. Soil Management in Relation to Land Degradation and Environment. Bull. Indian Soc. Soil Sci.17, New Delhi.
2. Doran JW and Jones AJ. 1996. Methods of Assessing Soil Quality. Soil Science Society of America, Madison.
3. Greenland DJ and Szabolcs I. 1994. Soil Resilience and Sustainable Land Use. CABI.
4. Lal R, Blum WEH, Vailentine C and Stewart BA. 1997. Methods for Assessment of Soil Degradation.
5. Sehgal J &Abrol IP. 1994. *Soil Degradation in India - Status and Impact*. Oxford & IBH.

COURSE OUTCOMES (COs)	
CO1	Identify different type of land deterioration and its impacts on agriculture.**(Knowledge)**
CO2	Classify the soil physical deterioration and management practices.**(understand)**
CO3	Teach the chemical deterioration of soil by various factors and reclamation measures. **(Apply)**
CO4	Survey deteriorated lands through remote sensing tools for mapping. **(Create)**
CO5	Study global issues and policy for rejuvenation of lands **(Knowledge)**
CO6	Interpret different types of land deteriorate and management practices. **(Apply)**

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	**COs/POs**	**PO1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**PSO1**	**PSO2**	**PSO3**
2	**CO1**	3	3	1	3	3	3	-	-	1	-	-	-	-	2	3
	CO2	2	3	1	2	3	2	-	-	-	-	-	1	-	1	3
	CO3	2	1	1	2	1	1	-	-	-	-	-	1	-	1	1
	CO4	3	2	2	2	2	1	3	-	-	2	-	-	2	2	2
	CO5	3	2	3	1	2	3	3	3	2	3	3	3	2	2	2
	CO6	3	2	3	1	3	3	3	3	3	3	3	3	2	3	2
3	**Category**	Professional Elective (PE)														
4	**Approval**	Academic Council, Aug 2018														

Subject Code : U18OSAC353	SOILLESS CROP PRODUCTION		L	T	P	C
	Total Contact Hours –56		1	0	1	2
	Prerequisite course	Plants and nutrient relationship				
	Course Coordinator Name & Department	Dr.S.Sivagnanam, School of Agricultural sciences				
COURSE OBJECTIVES:-	Teach new agricultural practices of soilless crop production for get more food products in limited area					

THEORY

UNIT I **3**

Protected agriculture overview and scope - Introduction to soilless cultivation of plants - History of solution culture - Present status of hydroponics - Nutrient requirements - Absorption of nutrients by the roots and interaction between the roots and the soil solution - Nutrient ratios - Effects of pH, EC and nutrient ratios on plant growth, yield and quality.

UNIT II **3**

Containers - Grow bag / container media – formulations - their properties - Systems with aggregates as substrate - bag culture, container culture, trough culture, thin layer systems, other alternative systems - effect of volume and shape of container. Hydroponic systems - Systems involving solely water as a substrate - deep water culture, floating hydroponics, Nutrient Film Technique, plant plane hydroponics, aeroponics.

UNIT III **3**

Container media - Description of substrates -sand, gravel, rockwool, expanded minerals, pumice, zeolite, pyroclastic materials, peat, coir, tree bark, sawdust, wood fibres, etc. - Physical properties – impact of physical properties on irrigation management. Chemical properties - Container media analyses - Total and available nutrients - Microbiology and phytosanitation in container media.

UNIT IV **3**

Composition of nutrient solution: Calculation of nutrient solutions for open systems/ closed systems: concept of drainage solution plus fresh water - Management of nutrient solution - Nutrient solution recycling - Irrigation control - characteristics of irrigation systems : capacity, uniformity - Delivery Systems : overhead systems, drip irrigation, sub-irrigation. Irrigation scheduling :preset schedule, sensor-based schedule, transpiration-based schedule.

UNIT V **4**

Equipments in Soilless culture - Automated delivery of nutrient solution - sensor based monitoring - moisture, nutrient, temperature and humidity sensors - Integrated system development for electronic control of equipments for irrigation and nutrient solution recycling. Nutrient solution disinfection - heating, UV-irradiation, chemical treatments by means of ozone, hydrogen peroxide, chlorine, iodine, etc. - membrane filtration - slow sand filtration.

PRACTICAL – LIST OF PRACTICAL SCHEDULE

1.	Preparation of soilless media using different substrates for grow bag method and sowing crop	**2.5**
2.	Preparation of solution culture for hydroponics and sowing crop.	**2.5**
3.	Estimation of physical characteristics of grow bag media (cocopeat, vermiculite)	**2.5**
4.	Determination of chemical properties like pH, EC, CN ratio of grow bag media.	**2.5**
5.	Determination of water soluble and exchangeable nutrients in grow bag media.	**2.5**
6.	Evaluation of porosity of medium based on moisture characteristic/ water retention curve.	**2.5**
7.	Computation of container capacity, air filled porosity of grow bag media	**2.5**
8.	Estimation of moisture constants by pressure plate apparatus and computation of available water and water holding capacity.	**2.5**
9.	Preparation of common nutrient solution for hydroponics and drip system	**2.5**
10.	Preparation of fertilizer pellet packs for crops under matric suction irrigation.	**2.5**
11.	Nutrient monitoring study using sensors in grow bag media	**2.5**
12.	Nutrient monitoring study using sensors in continuous recycling solution culture.	**2.5**
13.	Assembling water lines and measurement of water consumption under drip / matrix suction irrigation.	**2.5**
14.	Recording of operations involved in devices – peristaltic pump, filter pump, injectors, solenoid valves	**2.5**
15.	Study of circuitry for sensor based nutrient monitoring system with wireless controls.	**2.5**
16.	Visit to successful greenhouse cultivation system	**2.5**

REFERENCES:

1. Burt, C., K. O'Connor, and T. Ruehr. 1998. Fertigation. ITRC, California Polytechnic State University, San Luis Obispo, CA.FAO. 1990. Soilless Culture for Horticultural Crop Production.
2. Jones, J. Benton. 1983. A Guide for the Hydroponic and Soilless Culture Grower. Timber Press.
3. Jones, J. Benton. 2005. Hydroponics: A Practical Guide for the Soilless Grower. 2nd ed. CRC Press. Boca Raton.
4. Kipp, J.A., G. Wever and C. de Kreij. 2000. International Substrate Manual. Elsevier, the Netherlands.
5. Marschner, H. 1995. Mineral Nutrition of Higher Plants (2nd ed.). Academic Press, London.
6. Mengel, K. and Kirkby, E.A. 2001. Principles of Plant Nutrition (5th ed). Kluwer Academic Publishers, Dordrecht.
7. Raviv, M and Lieth, J.H. (eds.) 2008. Soilless Culture, Theory and Practice. Elsevier, London.
8. Schwartz, M. 1995. Soilless Culture Management. Springer-Verlag, Berlin
9. Proceedings of the World Congress on Soilless Culture: Agriculture in the coming millennium. Editors, A. Bar-Tal, Z. Plau. 2001.

COURSE OUTCOMES (COs)	
CO1	Tabulate new soilless crop production with nutrient solution.**(Knowledge)**
CO2	Use different types of container for soilless cultivation practice.**(Apply)**
CO3	Evaluate container media of soil less crop cultivation. **(Evaluate)**
CO4	Determine the different nutrient solution preparation and application methods.**(Apply)**
CO5	Plane using of new equipments, sensors, nutrient solution. **(Create)**
CO6	Observe different types of chemical solution and reactions for soilless cultivation.**(understand)**

Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low																
1	**COs/POs**	**PO1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**PSO1**	**PSO2**	**PSO3**
2	**CO1**	3	3	1	2	1	3	1	2	1	2	1	1	2	2	-
	CO2	2	3	1	2	3	2	-	-	-	-	-	1	2	3	-
	CO3	2	1	1	-	1	1	-	-	-	-	-	1	1	1	-
	CO4	3	2	-	2	2	-	3	-	-	2	-	-	2	-	3
	CO5	3	2	3	1	2	3	3	3	2	3	3	3	3	2	2
	CO6	3	2	3	1	3	3	3	3	3	3	3	3	2	2	3
3	**Category**	Professional Elective (PE)														
4	**Approval**	Academic Council, Aug 2018														

Subject Code : U18OSAC354	INSTRUMENTAL METHODS OF ANALYSIS		L	T	P	C
	Total Contact Hours – 56		1	0	1	2
	Prerequisite course	Basic physics and chemistry				
	Course Coordinator Name & Department	Dr.S.Sivagnanam, School of Agricultural sciences				
COURSE OBJECTIVES:-	To familiarize students with the design, operational principles and practical applications of modern instruments used for the quantitative analysis of soil, plant water, manure and fertilizer samples.					

THEORY

UNIT I **4**

Principles of instrumentation- classification of instrumental methods – selection of instruments - Principles involved in digestion methods – dry ashing and wet digestion – open vs closed digestion - Block digester , microwave digester and IR digestion systems - components -operation - special consideration

UNIT II **3**

Automated methods – Principle and applications - Total N analyser, CN analyser

UNIT III **3**

Optical methods – spectrophotometry – visible, ultraviolet and infrared spectrometry - Principle - Instrumentation – sample handling and measurement - method development and validation – accuracy

UNIT IV **3**

Emission and absorption Spectroscopy - principles and applications - flame photometry, atomic absorption spectrophotometry, inductively coupled plasma emission spectrometry - instrumentation - features and operation of components - sample handling - errors - fault finding - trouble shooting

UNIT V **3**

Chromatography techniques – classification - paper chromatography, TLC - Gas chromatography- HPLC , GC – MS - principles - Instrumentation - sample preparation and handling - errors – trouble shooting .

PRACTICAL – LIST OF PRACTICAL SCHEDULE

1.	Collection and processing of samples (Soil, plant, water, manure and fertilizer)	**2.5**
2.	Digestion of samples by block digester/microwave digester and sample preparation for different analysis	**2.5**
3.	N anlyser : Calibration , sample estimation and results interpretation	**2.5**
4.	UV -Vis spectrophotometer : Getting acquainted with parts of UV -Vis spectrophotometer and preparation of standards	**2.5**
5.	UV -Vis spectrophotometer : Calibration, sample estimation (P/S/B) and results interpretation	**2.5**
6.	Flame photometer : Getting acquainted with components of flame photometer and preparation of standards, calibration, sample estimation (P/S/B) and results interpretation	**2.5**
7.	Getting acquainted with components of AAS and standards (micronutrients and heavy metal) preparation	**2.5**
8.	Calibration and sample estimation for micronutrients and heavy metals by AAS	**2.5**
9.	Getting acquainted with components of ICP	**2.5**
10.	Calibration , sample estimation for elements by ICP and results interpretation	**2.5**

11.	Analyze extraction from sample and separation for GC	**2.5**
12.	Calibration , sample introduction and interpretation of results in GC	**2.5**
13.	Analyze extraction from sample and separation for HPLC	**2.5**
14.	Calibration, sample introduction and interpretation of results in HPLC	**2.5**
15.	Visit to a analytical laboratory (Government/Private)	**2.5**
16.	Procedures for establishing a analytical laboratory – Guidelines and budget	**2.5**

REFERENCES:

1. Chatwal, G. and Anand. 2005. *Instrumental Methods of Chemical Analysis*. Academic Press.
2. MuralidharaRao, D., A.V.N Swamy and D.Dharaneeswara Reddy.2013. *Instrumental Methods of Analysis*. CBS Publishers & Distributors Pvt.Ltd., New Delhi.
3. Skoog, A., Holler, F and Nieman, A. 2007. *Principles of Instrumental Analysis* (6th Ed.). Thomson Brooks/Cole publishing. ISBN: 9780030020780.
4. Willard M, Merritt LL & Dean JA.1989. *Instrumental Methods of Analysis*. (7th Ed). Wadsworth Publishing Compnay, Boston, USA. ISBN :9780534001423.

E- REFERENCES:

1. http://blogs.rediff.com/ticconcvibi1985/2013/05/12/download-ebook-modern-hplc-for-practicing-scientists-free/
2. http://cdn.intechopen.com/pdfs-wm/26275.pdf

COURSE OUTCOMES (COs)	
CO1	Observe various instrument principle and operating techniques. **(understand)**
CO2	Study instruments for nutrient analyzing.**(Knowledge)**
CO3	Facilitate the knowledge of sample handling techniques and optical methods of nutrient analysis.**(Analyze)**
CO4	Learn the operating and problem finding techniques by using photometers. **(Create)**
CO5	Analyze various operating techniques of chromatography. **(Create)**
CO6	Study new instrument for operating and sampling purpose.**(Apply)**

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	**COs/POs**	**PO1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**PSO1**	**PSO2**	**PSO3**
2	**CO1**	2	3	3	-	2	-	2	1	2	1	-	-	2	2	1
	CO2	1	2	3	-	2	-	1	2	2	2	-	-	2	1	2
	CO3	1	1	3	-	1	-	2	1	-	2	-	-	-	1	2
	CO4	2	-	3	-	3	2	-	1	-	2	-	-	-	2	2
	CO5	1	1	3	-	3	3	-	1	-	1	-	-	-	3	2
	CO6	1	1	3	-	3	3	-	2	-	1	-	-	-	2	2
3	**Category**	Professional Elective (PE)														
4	**Approval**	Academic Council, Aug 2018														

Subject Code : U18OSST 351	SEED ENTREPRENEURSHIP SKILL DEVELOPMENT AND MANAGEMENT	L	T	P	C
	Total Contact Hours – 56	1	0	1	2
	Prerequisite course: Principles of Seed Technology				
	Course Coordinator Name & Department: Dr. R. Anabarasan, School of Agricultural sciences				
COURSE OBJECTIVES:-	To uptake the knowledge of students about seed entrepreneurship and deserve skill to manage a seed				

THEORY

UNIT I **4**

Current status of National and Global Seed Industry and future perspectives Seed plan - Supply chain management - Significance of Seed Replacement Rate (SRR) Formal and informal seed sector - Seed trade - Role of International agencies in cross border trading (UPOV, OECD, ISTA, IPPC, AOSA, AOSCA) Varietal registration - Seed legislation and regulatory frame works (Seeds Act and Rules, Seed Control Order 1983 and amendments - PPV&FRA 2001

UNIT II **4**

Seed promotional policies and programmes – NPSD 1988 - National seed policy 2002- Seeds Bill 2004 - EXIM policy - Domestic and International organizations involved in seed business - NSC, SSC,NSAI - International Seed Federation (ISF) - Asia Pacific Seed Association (APSA) - National seed quality regulatory system - Seed Certification Agencies - Notification - Seed Testing Laboratories - Central and Referral laboratories - Uniformity in quality regulation - International Seed quality regulatory system - OECD varietal certification - International Seed analysis certificate - ISTA membership and accreditation system.

UNIT III **4**

Seed Export and Import - procedures and guidelines - Germplasm exchange rules and directions - Plant Quarantine system and Sanitary and Phyto Sanitary (SPS) issues and measures for export and import of seeds - NBPGR, FAO - Human resource skill development - Financial requirements and their significance in successful seed company management - Seed company - Corporate affairs – components - Registration and establishment - Grant and issue of license - Seed preference assessment - Seed Rolling Plan - OPVs and hybrids - Role of Seed multiplication Ratio (SMR) - Varietal Replacement Rate (VRR).

UNIT IV **5**

Post harvest handling and machineries - Principles of seed drying, cleaning and upgradation - their significance in seed shelf life preservation - Risk coverage of carry over seeds - factors affecting seed storage - infrastructure facilities - ambient and advanced storage structures - Pre and post seed quality control - management checks and balances - their significance in seed trade - Linkages with various organizations for effective seed trade and business management - Farmers centric and market driven strategies for sustaining seed business and achieving seed security - Seed pricing - pricing policies of public and private agencies - strategies - methods and factors affecting prices.

PRACTICAL – LIST OF PRACTICAL SCHEDULE

1.	Basic components in establishment of seed company and organizational setup - staffing pattern Registration procedures - Company - seed producer	**2.5**
2.	Visit to public and private sector seed companies	**2.5**
3.	Preparation of seed rolling plan	**2.5**
4.	Visit to seed production plots - Study on field inspection procedures	**2.5**
5.	Lay out and designing of seed processing unit and infrastructure	**2.5**
6.	Lay out and designing of large and small scale seed storage facilities	**2.5**
7.	Layout and establishment of seed quality control laboratory	**2.5**
8.	Financial assistance for seed company establishment - Central Sector Seed Schemes - NABARD - Financing organizations	**2.5**
9.	Preparation of projects for financial assistance for establishment of seed company - Micro, small and medium enterprises etc.,	**2.5**
10.	Project preparation on establishment of seed processing units and seed storage infrastructures for financial assistance	**2.5**
11.	Visit to seed dealer and retail outlets	**2.5**
12.	Value addition techniques for seed preservation, marketing and minimizing post harvest quality losses	**2.5**
13.	Management of legal issues related to seeds - stop sale order, punitive action, punishment and appeal - appellate authority	**2.5**
14.	Visit to Seed Testing laboratories - Notified and ISTA accredited	**2.5**
15.	Preparation of company status report and analysis of critical issues on sustaining seed Business	**2.5**
16.	Downgrading of seeds - Upgradation and improvement of seed standards of "sales returned seeds" for placing in market	**2.5**

REFERENCES:

1. Dadheech, P.K. 1996. Seed Programming. Management system and concepts. Lok Sahitna Kendra. Jodhpur.
2. Gurudev Gingh and Asokan, S.R., 1997. Management of seed activity. Oxford and IBH Publishing Co., New Delhi.
3. Ramalingam, C. K.Sivasubramaniam and A. Vijayakumar. 1997. A Guide to seed legislation. Rassi Computers, Madurai
4. Trivedi, R.K. and M. Gunasekaran. 2013. Indian Minimum Seed Certification Standards. Dept. of Agriculture & Cooperation, Ministry of Agriculture, Govt. of India, New Delhi.
5. Compendium of Seed Legislation. 2013. Dept. of Agriculture & Cooperation, Ministry of Agriculture, Govt. of India, New Delhi

E- REFERENCES:

1. www.fao.org
2. www.seednet.gov.in
3. www.agricoop.nic.in
4. www.agri.nic.in

COURSE OUTCOMES (COs)	
CO1	Understand the opportunities in seed sector
CO2	Understand the seed promotional policies and programmes
CO3	Learn about the importance of seed export and import
CO4	Understand the seed marketing and seed supply chain management

CO5	To know the financial assistance for establishment of seed company															
CO6	To know the management functions and preparation of seed business company															
Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low																
1	**COs/POs**	**PO1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**PSO1**	**PSO2**	**PSO3**
2	**CO1**	3	2	-	-	-	-	-	-	-	-	-	2	2	–	-
	CO2	3	2	1	-	-	-	-	-	-	-	-	2	2	-	-
	CO3	3	1	2	-	-	-	-	-	-	-	-	2	2	-	-
	CO4	3	3	-	1	-	-	-	2	-	-	-	-	2	-	-
	CO5	3	3	2	-	-	-	-	2	-	-	-	3	2	-	-
	CO6	3	3	1	-	-	-	-	2	-	-	-	3	2	-	-
3	**Category**	Professional Elective (PE)														
4	**Approval**	Academic Council, Aug 2018														

Subject Code : U18OAGR351	WEED AND WATER MANAGEMENT		L	T	P	C
	Total Contact Hours – 56		1	0	1	2
	Prerequisite course	1. Fundamentals of agronomy and agricultural heritage 2. Rainfed Agriculture & Watershed Management				
	Course Coordinator Name & Department	Dr. V. Prakash School of Agricultural Sciences				
COURSE OBJECTIVES:-	Students will be trained to manage the weeds of field crops, aquatic and problematic weeds and also to analyses the quality of irrigation water					

THEORY

UNIT - I **4**

Weeds: Introduction, Definitions; harmful and beneficial effects, classification,; crop weed competition and allelopathy. Methods of weed control: physical, cultural, chemical and biological methods. Integrated weed management.

UNIT – II **2**

Herbicides - Classification, characteristics, formulations, methods of application; advantages-.Weed management in major field crops - aquatic and problematic weeds and their control.

UNIT – III **4**

Role of water in plant growth - Importance of irrigation- Soil - water - plant relationship - Soil Plant Atmospheric Continuum (SPAC) - Hydrological cycle - Soil water movement - soil moisture constants - Moisture extraction pattern - Absorption of water.

UNIT IV **3**

Crop water requirement- Factors affecting water requirement- Factors affecting water requirement. Scheduling of irrigation – Water use efficiency.

UNIT V **3**

Methods of irrigation: surface, sub-surface sprinkler and drip irrigation – Micro irrigation: layout, suitability, merits and scope.

PRACTICAL – LIST OF PRACTICAL SCHEDULE

1.	Identification, classification and characterization of wetland weeds.	**2.5**
2.	Identification, classification and characterization of gardenland and dryland weeds.	**2.5**
3.	Practicing skill development on cultural and non chemical weed management.	**2.5**
4.	Identification, classification and characterization of herbicides.	**2.5**
5.	Practicing skill development on herbicide application techniques.	**2.5**
6.	Practicing Skill development on spray equipment's and spray fluid calibration.	**2.5**
7.	Calculation of herbicide quantity and recommendation for different eco systems	**2.5**
8.	Working out weed index, weed control efficiency and economics in weed management studies.	**2.5**
9.	Estimation of soil moisture by gravimetric method and tensiometer.	**2.5**
10.	Estimation of soil moisture by resistance blocks and neutron probe and other improved devices.	**2.5**
11.	Measurement of irrigation water with flumes and weirs.	**2.5**

12.	Calculation of irrigation water based on source, water flow, soil moisture status and depth of irrigation.	**2.5**
13.	Land leveling and land shaping - Beds and channels - ridges and furrows.	**2.5**
14.	Layout, operation and maintenance of drip and sprinkler irrigation systems.	**2.5**
15.	Estimation of crop water requirement by direct and indirect methods.	**2.5**
16.	Calculations on irrigation efficiency parameters.	**2.5**

REFERENCES:

1. Gupta, O. P. 1998. Modern Weed Management. Agro Botanica Bikaner, India.
2. Subramanian, S. A. Mohammed Ali and R. Jayakumar. 1991. All about Weed Control. Kalyani Publishers, New Delhi.
3. Jaganathan R., and R.Jayakumar. 2003. Weed Science Principles, Kalyani Publishers, New Delhi.
4. Das, P.C. 2015. Weed Science. New India Publishing Agency, Jaipur
5. Michael, A.M. 1997. Irrigation: Theory and Practice Vikas Publishers.
6. Sankara Reddy, G.H. and T. Yellamanda Reddy. 1997. Efficient use of irrigation water. Kalyani Publishers
7. Reddy, S.R.2012.Irrigation Agronomy. Kalyani publishers, New Delhi
8. Nirmal Tripathy.2014. Irrigation, Watershed and Drainage. Agrotech Press, Jaipur
9. Gupta,A.K. 2014. Irrigation and Drainage. Oxford Book Company, Jaipur
10. Israelsen, O.W. 2012.Irrigatiom Principles and Practices. Axis Books (India), Jodhpur.
11. Michael, A.M. 2009. Irrigation- Theory and Practice, Vikas Publishing House, Noida

E- REFERENCES:

1. www.tnau.ac.in
2. www.fao.org
3. www.tnau.ac.in/agriportal
4. www.irri.org
5. www.wcc.nrcs.usda.gov/nrcsirrigwww.wcc.nrcs.sda.gov/irrig.info.htmlwww.croinfo.net/irrigschedule.html

COURSE OUTCOMES (COs)	
CO1	To create knowledge on facts and information from different sources pertaining to weed biology and management and be able to explain how they are interrelated; demonstrated through successful completion of assignments.
CO2	To understand the principles involved in estimating water requirement for different crops and various methods of irrigation scheduling and approaches.
CO3	To synthesise idea about various herbicides, formulations and adjuvants
CO4	To construct ideologies pertaining to water management in problem soils
CO5	To acquire knowledge on pressurized irrigation system to economize the water
CO6	To construct information regarding management of weeds of field crops, aquatic and problematic weeds.

Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low																
1	**COs/POs**	**PO1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**PSO1**	**PSO2**	**PSO3**
2	**CO1**	1	3	3	-	1	-	2	-	-	-	-	-	3	-	2
	CO2	1	2	3	-	2		1	-	-	-	-	-	3	-	2
	CO3	1	3	3	-	1	-	2	-	-	-	-	-	3	-	2
	CO4	1	3	3	-	1	-	2	-	-	-	-	-	3	-	2
	CO5	1	2	3	-	2		1	-	-	-	-	-	3	-	2
	CO6	1	3	3	-	1	-	2	-	-	-	-	-	3	-	2
3	**Category**	Professional Elective (PE)														
4	**Approval**	Academic Council, Aug 2018														

Subject Code : U18OPGP351	PLANT GENETIC RESOURCES COLLECTION, CONSERVATION AND UTILIZATION		L	T	P	C
	Total Contact Hours – 56		1	0	1	2
	Prerequisite course	Fundamentals of Plant Breeding				
	Course Coordinator Name & Department	Dr. S.Anandhi Lavanya School of Agricultural sciences				
COURSE OBJECTIVES:-	To inculcate the knowledge and to expose the students for experiencing on the current status and trends of the science, practices and policies of plant genetic resources with respect to collection, conservation and beneficial use for food and agriculture					

THEORY

UNIT I CONCEPTS IN AGROBIODIVERSITY **4**

Origin and history of agriculture; conservation and agricultural development; the central role of agrobiodiversity: trends and challenges; centers of crop plant origin and diversity; Crop Wild Relatives and their role in crop domestication; dynamics of domestication; concept of gene pool; agrobiodiversity regions of India- geographical distribution of crops of Indian origin.

UNIT II: PLANNING AND EXECUTION OF COLLECTION MISSIONS **4**

Importance and need for collection missions; planning and execution of collection missions ; Logistics for collection; GIS- Information on collection sites; Passport data and its importance in collection missions; use of flora and herbaria for planning collections; National and international policies and procedures to be adopted in collection missions.

UNIT III : CONCEPTS IN PGR CONSERVATION **4**

In situ and ex situ conservation: concept of biosphere reserves, gene sanctuaries, on-farm conservation, seed genebanks, field genebanks, botanical gardens, herbal gardens, in vitro repositories and cryo-genebanks; short-, medium- and long-term conservation, concept of base, active and working collections.

UNIT IV: INTERNATIONAL AND NATIONAL POLICIES **4**

International framework and PGR networks; International treaties and policies in relation to agrobiodiversity conservation and sustainable use; CBD , UPOV ; National policies and legal frame work; Organisations; Biodiversity authority; PPV and FR authority; National Biodiversity Authority, IP issues with respect to ITKs and communities safe guarding biodiversity

PRACTICAL – LIST OF PRACTICAL SCHEDULE

1.	Concepts and methods for computing biodiversity; Alpha and beta models;	**2.5**
2.	Calculation of species richness and endemism	**2.5**
3.	Field visits to biosphere reserves – in situ methods of conservation	**2.5**
4.	Visit to Field gene banks and understanding the modalities of conservation	**2.5**
5.	Visit to Ramiah Gene Bank to understand the concepts of medium and long term storage in seed gene banks – Seed acquisition, processing, packing, barcoding	**2.5**
6.	Visit to Ramiah Gene Bank to understand the concepts of medium and long term storage in seed gene banks – viability monitoring, registration and documentation	**2.5**
7.	Visit to clonal gene banks	**2.5**
8.	Biotechnology in conservation - In vitro methods of conservation	**2.5**
9.	Exposure to cryoconservation methods	**2.5**
10.	Concepts of PGR documentation and related web resources	**2.5**
11.	Crop genetic diversity - Concepts of core and mini core collections	**2.5**

12.	Molecular methods in PGR documentation and fingerprinting	**2.5**
13.	Planning a Pre breeding programme with adapted and unadapted germplasm	**2.5**
14.	Crop wild relatives - designing a Pre breeding programme with Crop Wild relatives	**2.5**
15.	PGR- Global and National policies	**2.5**
16.	Learning the institutional policies and modalities in exchange and utilization of PGR	**2.5**

REFERENCES:

1. Engels J.M. and Visser, L. (eds.). 2003. A guide to effective management of germplasm collections. IPGRI Handbook for Genebanks No.6. IPGRI, Rome, Italy.
2. Guarino, L., Rao, V.R. and Reid, R. (eds.). 1995. Collecting plant genetic diversity. CAB International, Wallingford, UK.

E-REFERENCES:

1. Food and Agriculture Organization (FAO) Commission on Biodiversity for Food and Agriculture; www.fao.org/biodiversity
2. http://www.bioversityinternational.org/uploads/tx_news/Molecular_markers_for_gene bank _management_1082.pdf

COURSE OUTCOMES (COs)	
CO1	Understand about the origin and history of agriculture. Centre of diversity
CO2	Impart knowledge to the students about the basic seed collection and GIS National and International institute
CO3	Explain the Conservation and Methods of Conservation
CO4	Discuses about the international and national polices
CO5	Explain the documentation and Web Resources
CO6	Disuses institutional policies and modalities in exchange and utilization of PGR

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	**COs/POs**	**PO1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**PSO1**	**PSO2**	**PSO3**
2	**CO1**	3	-	-	-	-	-	2	-	-	-	-	2	2	–	-
	CO2	3	-	-	2	-	-	2	-	-	-	-	-	2	-	-
	CO3	1	-	-	-	2	2	-	-	-	-	-	2	2	-	-
	CO4	3	3	2	-	-	-	-	2	-	-	-	2	2	-	-
	CO5	1	-	-	2	-	-	3	-	-	-	-	-	2	-	-
	CO6	3	-	-	2	-	2	3	-	-	-	-	2	2	-	-
3	**Category**	Professional Elective (PE)														
4	**Approval**	Academic Council, Aug 2018														

Subject Code : U18ONEM351	COMMERCIAL PRODUCTION OF NEMATODE ANTAGONISTIC BIO-AGENTS		L	T	P	C
	Total Contact Hours – 56		1	0	1	2
	Prerequisite course	Introductory Nematology				
	Course Coordinator Name & Department	Ms. V. Sushmetha School of Agricultural Sciences				
COURSE OBJECTIVES:-	To inculcate entrepreneurial skill to students and expose them to different aspects in commercial production of biocontrol agents					

THEORY

UNIT I **4**

Concepts and definition of biocontrol agents – Economic yield loss caused by plant parasitic nematodes in agricultural and horticultural crops – Ecofriendly management of plant parasitic nematodes - Types of bioagents – Fungal antagonistic organisms – Applications – Dosage - Commercial formulations available in India – Merits and demerits.

UNIT II **4**

Paecilomyces lilacinus – Pochonia chlamydosporia - Morphological identification of colony – Conidiaspore and Chalmydospores identification –- Isolation from eggs - Mode of action – Host range - virulence – effect of biotic and abiotic factors on growth – compatibility with chemical inputs.

UNIT III **3**

Sterilization – Types and Preparation of sterilizing agents – Equipments used – Principle of autoclave – Principle of Laminar Air Flow Chamber – Fermentor – Laboratory up-keep – Haemocytomenter – Assessment of spore load – colony forming units.

UNIT IV **3**

Preparation different culture media – Maintenance of pure culture - Mother culture – Subculturing – Mass culturing techniques – solid and liquid formulations - Commercial Formulations – Carrier materials – Packing – Quality control and shelf life.

UNIT V **2**

Market demand analysis - Economics – Establishment of pilot plant – Infrastructure - Budget preparation – Marketing and cost-benefit analysis – risk analysis – Environmental impact test with vertebrate and invertebrate organisms.

PRACTICAL – LIST OF PRACTICAL SCHEDULE

1.	Isolation of eggs of plant parasitic nematodes.	**2.5**
2.	Eggs parasitization tests with Purpureocillium lilacinum	**2.5**
3.	Eggs parasitization tests with Pochonia chlamydosporia	**2.5**
4.	Fungal specific media preparation – Pure culture - Preparation of common culture media	**2.5**
5.	Subculturing of P. lilacinum and Pochonia chlamydosporia	**2.5**
6.	Preparation of broth – Inoculation – Incubation in mechanical shaker	**2.5**
7.	In vitro bioefficacy test on root knot nematode with Purpureocillium lilacinum	**2.5**
8.	In vitro bioefficacy test on root knot nematode with Pochonia chlamydosporia	**2.5**
9.	Fermentation process	**2.5**
10.	Haemocytometer – Assessing spore load in broth	**2.5**

11.	Preparation of commercial formulation	**2.5**
12.	Quality control test Packing	**2.5**
13.	Analyzing market potential and demand	**2.5**
14.	Conducting environmental impacts test with termites, saprophytes,	**2.5**
15.	Conducting environmental impacts test with honeybees, earthworm	**2.5**
16.	Visit to commercial production unit (HRS, Ooty).	**2.5**

REFERENCES:

5. Dropkin, V.H.1980. Introduction to plant nematology. John Wiley and sons, INC. New York.
6. Singh, R.S and Sitaramaiah, K. 1994. Plant pathogens. The plant parasitic nematodes. Oxford & IBH pub. Co. Pvt. Ltd. New Delhi.
7. Paravata Reddy, P.1983. Plant nematology. Agricole Pub. Co., New Delhi.
8. Southey, J. F. Laboratory methods for work with plant and soil nematodes Tech. Bull. Min. Agric. Fish. Food. Her Majesty's Stationary office, London.

COURSE OUTCOMES (COs)	
CO1	Students will learn about economic yield loss caused by plant parasitic nematodes in agricultural and horticultural crops and eco-friendly management
CO2	Students will learn about Mode of action, Host range, virulence and effect of biotic and abiotic factors on growth of PPN
CO3	To know about Preparation of sterilizing agents and Assessment of spore load – colony forming unit
CO4	Experiment with Mass culturing techniques and commercial formulation of PPN
CO5	Analyse the market potential and demand
CO6	Appraise the Environmental impact test with vertebrate and invertebrate organisms.

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	**COs/POs**	**PO1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**PSO1**	**PSO2**	**PSO3**
2	**CO1**	1	1	-	-	1	-	-	-	-	-	-	-	-	2	-
	CO2	2	2	2	1	1	1	1	-	-	-	-	-	-	2	-
	CO3	-	-	2	1	1	1	1	-	-	-	-	1	-	2	-
	CO4	-	-	2	1	2	1	1	-	-	-	-	-	-	2	-
	CO5	-	-	2	1	2	1	1	-	-	-	-	-	-	2	-
	CO6	-	-	2	1	2	3	3	-	-	-	-	-	-	2	-
3	**Category**	Professional Elective (PE)														
4	**Approval**	Academic Council, Aug 2018														

Subject Code : U18OAGM 351	DOWNSTREAM PROCESSING FOR INDUSTRIALLY IMPORTANT MICROBIAL PRODUCTS	L	T	P	C
	Total Contact Hours – 56	1	0	1	2
	Prerequisite course: Fundamentals of Microbiology				
	Course Coordinator Name & Department: Mr. B. Suriya Sabarinath, School of Agricultural sciences				
COURSE OBJECTIVES:-	The student would have learnt about various purification techniques available for industrially important microbial products like, antibiotics, amino acids proteins, enzymes, organic acids etc				

THEORY

UNIT I : INTRODUCTION TO BIO SEPARATION PROCESSES **3**

Role and importance of bioseparations in biotechnological processes. Problems and requirements of bioproduct purification. Cost- cutting strategies. Characteristics of biological mixtures. Classification of bioproducts - Biological activity, Analysis of purity-Process economics- Capital and operating cost analysis

UNIT II : PHYSICAL METHODS OF SEPARATION **4**

Centrifugation and filtration. Cell disruption methods; enrichment operations: precipitation methods- with salts, organic solvents, and polymers; extractive separations - aqueous two-phase extraction, supercritical extraction; adsorption methods; membrane based separation theory - types of membranes, types of membrane processes - dialysis; ultra filtration; microfiltration and reverse osmosis.

UNIT III : PHYSICAL AND CHEMICAL METHODS - ISOLATION OF PRODUCTS **4**

Physico-chemical basis of bio-separation processes. Removal of particulate matter, biomass and insolubles: flocculation; sedimentation; adsorption: isotherm, batch, continuous and scale-up of adsorption; extraction: solvent separation, equipment and modes of extraction. Aqueous-two-phase extraction process, supercritical fluid extraction.Precipitation of proteins-methods and scale-up.

UNIT IV :ISOLATION OF PRODUCTS - CHROMATOGRAPHIC METHODS Of PURIFICATION **3**

Chromatography - principles, instruments and performance parameters. Paper, TLC, adsorption, gel filtration, reversephase, ion-exchange, hydrophobic interaction, bioaffinity, pseudo affinity chromatographic techniques; GC, HPLC, HPTLC, FPLC, parafusion chromatography and membrane based chromatographic techniques and sample preparation. Electrophoretic separations.

UNIT – V: FINISHING OPERATIONS **2**

Products polishing: Crystallization and drying; Purification of antibiotics, amino acids, enzymes and organic acids, proteins, pigments, plant growth hormones, monoclonal antibodies, human growth hormones – Insulin etc.

PRACTICAL – LIST OF PRACTICAL SCHEDULE

1. Kinetics of a bacterium / yeast in batch culture: calculation of doubling time, specific growth rate, and plotting of growth curve. **2.5**
2. Preparation of fermentor and accessories for batch cultivation of microbes: calibration of pH probe, medium preparation, sterilization, and calibration of dO_2 probe. **2.5**

3.	Inoculation of a bacterial / yeast strain in fermentor for batch production of an enzyme / biomass: estimation of kinetic parameters of product formation, biomass production and substrate utilization.	**2.5**
4.	Laboratory centrifugation for separation of biomass from fermentation broths. Filtration and microfiltration for solid-liquid separation.	**2.5**
5.	Extraction of crude enzyme and assay of enzyme	**2.5**
6.	Production of secondary metabolites from microbes and recovery	**2.5**
7.	Mechanical cell disruption by homogenization: determination of product release kinetics.	**2.5**
8.	Sonication of microbial cell suspensions and determination of product release kinetics	**2.5**
9.	Salting out of proteins by precipitation with ammonium sulphate.	**2.5**
10.	Precipitation of proteins with acids or bases: determination of isoelectric point.	**2.5**
11.	Batch adsorption of an acid on activated charcoal.	**2.5**
12.	Solvent extraction and aqueous two-phase extraction of proteins.	**2.5**
13.	Gel-filtration chromatography of a protein-salt mixture.	**2.5**
14.	Ion-exchange chromatography of a positively charged protein.	**2.5**
15.	Gas chromatography for quantitative estimation of volatiles: ethanol.	**2.5**
16.	SDS-PAGE of proteins and determination of molecular weight	**2.5**

TEXT BOOKS:

1. Sivasankar B., 2010. Bioseparations: Principles and Techniques, PHI, New Delhi .
2. Stanbury, P.F., Whitaker, A. and Hall, S.J. 2016. Principles of Fermentation Technology, BH Elsevier Publications, Third Edition.

REFERENCES:

1. Harrison, R.G. Todd, P., Rudge, S.R. andPetrides, D.P., 2003. Bioseparation Science and Engineering, Oxford University Press.
2. Costa,C.A. and CabralJ.S. 1991. Chromatographic and Membrane Processes in Biotechnology, Publisher: Kluwer Academic Publishers, The Nether lands.
3. Harrison et al. 2006. Bioseparation Science and Engineering. Oxford Univ. Press.
4. Nooralabettu Krishna Prasad, 2010. Downstream Process Technology: A New Horizon in Biotechnology, PHI, New Delhi.
5. Jenkins, R.O. 1992. Product Recovery in Bioprocess Technology, Biotechnology by Open Learning Series, Butterworth- Heinemann, London, Second Edition.

COURSE OUTCOMES (COs)	
CO1	To understand about the Bio-separation process and its problems requirements of Bio-products and their classification and its characterization.
CO2	The students should know about the physical methods of separation such as centrifugation, filtration, cell distribution, enrichment operation and precipitation methods.
CO3	To impart knowledge about physio – chemical basis of Bio-separation process that includes flocculation, sedimentation, absorption and extraction.
CO4	To learn about product isolation, purification and chromatographic methods GC, HPLC, HPTLC, FPLC, PFC and finishing operations of Bio-products.
CO5	In addition, hands on exposure about media preparation, growth analysis and cultivation of industrially important microorganisms.
CO6	Students obtain practical knowledge about to preparation and formation of Bio-products at laboratory level.

Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low																
1	**COs/POs**	**PO1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**PSO1**	**PSO2**	**PSO3**
2	**CO1**	3	–	–	1	2	1	2	-	-	-	-	3	–	–	2
	CO2	3	-	-	1	3	1	2	-	-	-	-	3	-	-	2
	CO3	3	-	-	1	3	1	3	-	-	-	-	3	-	-	2
	CO4	3	1	1	1	3	1	3	-	-	-	-	3	-	-	2
	CO5	3	1	1	1	3	2	2	-	-	-	-	3	-	-	2
	CO6	2	-	-	1	3	3	2	-	-	-	-	3	-	-	2
3	**Category**	Professional Elective (PE)														
4	**Approval**	Academic Council, Aug 2018														

Subject Code : U18OAGM 352	MICROBIAL ENZYMES		L	T	P	C
	Total Contact Hours – 56		1	0	1	2
	Prerequisite course	Fundamentals of Microbiology				
	Course Coordinator Name & Department	Mr. B. Suriya Sabarinath Faculty of Agricultural sciences				
COURSE OBJECTIVES:-	Student will learn about the microbial enzymes, their characteristics, techniques of microbial enzyme production and use in different industries					

THEORY

UNIT I: INTRODUCTION **3**

Introduction and Scope, General distinctive features and industrial applications. Enzymes: Historical perspectives, Nomenclature and classification of enzymes. Isozymes, biological roles, activation energy, chemical nature of enzymes, characteristics of enzymes, 3'D' structure of enzymes, active site, factors affecting enzyme activity, modifiers of enzyme activity, enzyme activators, enzyme inhibitors and allosteric enzymes.

UNIT II: ENZYME KINETICS **4**

Kinetics of single substrate reactions, Estimation of *Michaelis - Menten* parameters, multi substrate reactions, mechanisms and kinetics, turnover number, types of inhibition, kinetic models: substrate and product inhibition, allosteric regulation of enzymes, *Monod ChangeuxWyman* model, pH and temperature effect on enzymes and deactivation kinetics. Vitamins and their co-enzymes: structure and functions with suitable examples. Metallo enzymes and metal ions as co-factors and enzyme activators.

UNIT III: EXTRACTION AND PURIFICATION OF MICROBIAL ENZYMES **3**

Importance of enzyme purification, different sources of enzymes. Extracellular and intracellular enzymes. Physical and chemical methods used for cell disintegration. Enzyme fractionation by precipitation - using temperature, salt, solvent, pH, *etc*., Liquid-liquid extraction -ultra filtration, ionic exchange, gel chromatography, affinity chromatography and other special purification methods. Enzyme crystallization techniques. Criteria of purity of enzymes.

UNIT IV: INDUSTRIAL APPLICATIONS OF ENZYME AND ENZYME ENGINEERING **3**

Industrial applications: Microbial enzymes in textile, leather, wood industries and detergents. Enzymes in clinical diagnostics. Enzyme sensors for clinical processes and environmental analyses. Enzymes as therapeutic agents. Enzyme engineering: Chemical modification and site-directed mutagenesis to study the structure-function relationship of industrially important enzymes. Cloning-strain improvement.

UNIT V: ENZYME FORMULATION **2**

Physical and Chemical techniques for enzyme immobilization – adsorption - matrix entrapment encapsulation - cross-linking - covalent binding - examples; advantages and disadvantages of different immobilization techniques. Freeze drying and spray drying of immobilized enzymes.

PRACTICAL – LIST OF PRACTICAL SCHEDULE

1.	Amylase production using *Bacillus amyloliquefaciens* in submerged and solid state fermentation and its assay.	**5.0**
2.	Protease production using *Bacillus* isolate and its quantification.	**5.0**
3.	Production of cellulase by solid state fermentation (SSF) of rice straw through lignocellulolytic fungi - Estimation of filter paper lyase activity.	**2.5**
4.	Production of cellulase by SSF of rice straw through lignocellulolytic fungi- Estimation of carboxy methyl cellulase activity.	**2.5**
5.	Production and estimation of xylanase from rice straw through submerged fermentation.	**2.5**
6.	Immobilization of microbial cells for enzyme production.	**2.5**
7.	Protease production from *Bacillus subtili* susing soybean meal.	**2.5**
8.	Purification of fungal alpha-amylase or bacterial protease by fractionation, chromatographic techniques and electrophoretic separation.	**7.5**
9.	Studies on enzyme kinetics of alpha amylase / protease - optimization of parameters *viz*., substrate, enzyme concentration, reaction temperature, reaction pH, K_m, V_{max} and metal ions as activators and inhibitors.	**5.0**
10.	Enzyme extraction- concentration- ultrafiltration- chromatography- Microencapsulation	**5.0**

TEXT BOOKS:

1. Alexander N. Glazer, Hiroshi Nikaido. 2007. Microbial Biotechnology, Second Edition, ISBN 9780521842105, Cambridge University Press.
2. Trevor Palmer and Philip L. Bonner, 2004. Enzymes: Biochemistry, Biotechnology, Clinical Chemistry, East- West Press.

REFERENCES:

1. Shuler, M.L. and F. Kargi, 2002. Bioprocess Engineering : Basic Concepts, Second Edition, Pearson.
2. Blanch, H.W and D.S. Clark, 1997. Biochemical Engineering,
3. Marcel & Dekker, Inc.,.Bailey, J.E and D.F. Ollis, 1986.
4. Biochemical Engineering Fundamentals, Second Edition,
5. McGraw-Hill. Nicholas C. Price and Lewis Stevens, 1982.
6. Fundamentals of Enzymology, Oxford University Press. Alan Wiseman, 1999.
7. Handbook of Enzyme Biotechnology, Third Edition, Ellis Harwood Publications.

E-BOOK:

1. James Lee, M., Biochemical Engineering, PHI, USA, e-Book Version 2.1, 2002.

COURSE OUTCOMES (COs)	
CO1	To Understand about the scope, importance and general distinctive features and applications of microbial enzymes.
CO2	To impart knowledge about enzyme kinetics, different kinetics, different kinetic models and co enzymes.
CO3	Describing the technique involved in the extraction and purification of microbial enzymes.
CO4	To practice the students for industrial applications of enzyme engineering
CO5	Experimenting and preparing the formulations of enzymes and its preservation.
CO6	To do hands-on exposure in laboratory conditions to the production of enzymes by

	industrial important microorganisms.															
Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low																
1	**COs/POs**	**PO1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**PSO1**	**PSO2**	**PSO3**
2	**CO1**	3	–	–	–	2	1	2	-	-	-	-	3	–	–	2
	CO2	3	-	-	-	3	1	2	-	-	-	-	3	-	-	2
	CO3	3	-	-	-	3	1	3	-	-	-	-	3	-	-	2
	CO4	3	-	-	-	3	1	3	-	-	-	-	3	-	-	2
	CO5	3	-	-	-	3	2	2	-	-	-	-	3	-	-	2
	CO6	2	-	-	-	3	3	2	-	-	-	-	3	-	-	2
3	**Category**	Professional Elective (PE)														
4	**Approval**	Academic Council, Aug 2018														

Subject Code : U18OAGM 353	MICROBIAL QUALITY AND SAFETY OF FOODS	L	T	P	C
	Total Contact Hours – 56	1	0	1	2
	Prerequisite course: Fundamentals of Microbiology				
	Course Coordinator Name & Department: Mr. B. Suriya Sabarinath, School of Agricultural sciences				
COURSE OBJECTIVES:-	To learn the techniques of microbial quality assessment and food safety standards that will helps to become an entrepreneur to start a food industry.				

THEORY

UNIT I: INTRODUCTION **4**

Food safety risks and assessment– characteristic features of spoilage - significance of spoilage of different groups of foods - cereal and cereal products, vegetables and fruits, meat, poultry, sea foods, milk and milk products, packed and canned foods.

UNIT II: FOOD BORNE INFECTIONS AND INTOXICATIONS **3**

Food borne pathogens- food infections and intoxications of food borne diseases – bacteria, fungal, protozoa and viral. Investigation and management of food borne diseases.

UNIT III :TECHNIQUES FOR DETECTION OF PATHOGENS AND TOXINS **5**

Advanced laboratory techniques for food-borne pathogens: principle, working and application of GC-MS, HPLC, LC/MS, inductively coupled Plasma Mass Spectroscopy, TOF and PCR-real time PCR. DGGE. Metagenomics, proteomics and immunological methods

UNIT IV :FOOD STANDARDS **4**

Food standards – HACCP concepts, principles – EU, FDA and WHO standards - CODEX – Food Law & regulations - HACCP principles & applications – GM foods – SSOP – GMP & GAP – Food traceability- Food Audit - functions, duties and responsibilities of food safety regulators.

PRACTICAL – LIST OF PRACTICAL SCHEDULE

1.	Different sampling plan in food and preparation for various foods.	**2.5**
2.	Determination of aerobic plate counts in food	**2.5**
3.	Enumeration of yeasts and molds in food	**2.5**
4.	Detection and confirmation of *Bacillus cereus* in food	**2.5**
5.	Microbiological hazard analysis in processed fruit product	**2.5**
6.	Microbiological hazard analysis in water - water quality control	**2.5**
7.	Microbiological hazard analysis in fresh vegetables – *Campylobacter* and *Salmonella*	**2.5**
8.	Microbiological hazard analysis in beverages - Detection of coliforms	**2.5**
9.	Microbiological techniques for cereal based food analysis	**2.5**
10.	Microbiological hazard analysis in meat products - *Staphylococcus aureus.*	**2.5**
11.	Rapid detection of toxin producing *Escherichia coli* (STEC) in food products –PCR method.	**2.5**
12.	Detection of aflatoxin in groundnut and maize kernels	**2.5**
13.	Hazard Analysis and Critical Control Point (HACCP) of Fruits / vegetables.	**2.5**
14.	Hazard Analysis and Critical Control Point (HACCP) of processed foods	**2.5**
15.	Visit to Food Processing industry	**2.5**
16.	Microbiological examination of canned foods	**2.5**

TEXT BOOKS:

1. Adams, M.R. and Moss, M.O.1995. Food Microbiology. The Royal Society of Chemistry, Cambridge.
2. Frazier, W.C. and Westhoff, D.C.1988. Food Microbiology. TATA McGraw Hill Publishing Company Ltd., New Delhi.

REFERENCES:

1. Jay, J.M.1987. Modern Food Microbiology. CBS Publishers and distributors, New Delhi.
2. Banwart, G.J.1989. Basic Food Microbiology. Chapman & Hall New York.
3. Board, R.C.1983. A Modern Introduction to Food Microbiology. Blackwell Scientific Publications, Oxford.
4. Robinson, R.K.1990. Dairy Microbiology Elsevier Applied Science, London.
5. Hobbs, B.C. and Roberts, D.1993. Food Poisoning and Food Hygiene. Edward Arnold.
6. Lund B.M., Baird Parker A.C., and Gould G.W. 2000. The Microbiological Safety and Quality of Foods. Vol. 1-2, ASPEN Publication, Gaithersberg, MD.
7. Gould G.W. 1995. New Methods of Food Preservation. Blackie Academic and Professional, London.

COURSE OUTCOMES (COs)	
CO1	To understand the types of microorganism that present in food
CO2	To impart knowledge about contaminations and spoilage of various food products
CO3	To gain knowledge about food borne infection and intoxification.
CO4	To describe the technique for detection of pathogens and toxins by molecular tools GCMS, HPLC, LCMS, ICPMS, TOF and RTPCR.
CO5	To analyze the food quality standards such as HACCP concepts, EU, EDA, Food Law and Regulations, GM foods, GMP, GAP and FSSAI certification.
CO6	To demonstrate food audit, adulteration and examine the scientific study of microorganisms causing food spoilage.

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	**COs/POs**	**PO1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**PSO1**	**PSO2**	**PSO3**
2	**CO1**	3	-	-	2	3	2	3	-	-	-	-	3	2	–	-
	CO2	3	-	-	2	3	2	3	-	-	-	-	3	2	-	-
	CO3	3	-	-	2	3	2	3	-	-	-	-	3	2	-	-
	CO4	3	2	1	2	3	1	3	-	-	-	-	3	2	-	-
	CO5	3	2	1	2	3	1	3	-	-	-	-	3	2	-	-
	CO6	3	-	-	2	3	2	3	-	-	-	-	3	2	-	-
3	**Category**	Professional Elective (PE)														
4	**Approval**	Academic Council, Aug 2018														

Subject Code : U18OAGM 354	PLANT-MICROBE INTERACTIONS	L	T	P	C
	Total Contact Hours – 56	1	0	1	2
	Prerequisite course: Agricultural Microbiology				
	Course Coordinator Name & Department: Mr. B. Suriya Sabarinath, School of Agricultural sciences				

COURSE OBJECTIVES:-

- In this course the students will studied about the different types of plant microbe interaction such as positive interaction and negative interaction.
- The focus is on examination of the physiological, biochemical and genetic basis of these interactions, using comparisons to other prokaryotic and eukaryotic model systems.

THEORY

UNIT I: INTRODUCTION **4**

Introduction to plant - microbe interactions; types of interaction -positive and negative. Plants as microbial habitat. Spermosphere, phyllosphere and endophytic microorganisms. Bacterial secretion systems, gene regulation and quorum sensing in bacterial - plant interactions. Role of plant-microbial interactions in soil health and plant growth promotion. Signalling - effect of microbial signalling on plant productivity and plant signalling on microbial diversity and activity in the soil.

UNIT II : PLANT- MICROBE INTERACTION –I **4**

Beneficial bacteria – *Arthrobacter*, *Azospirillum*, *Azoarcus Bacillus*, *Burkholderia*, *Frankia*, ,*Gluconacetobacter*, *Herbaspirillum*,*Paenibacillus*, *Pseudomonas*, *Rhizobium*, *Streptomyces* and *Xanthomonas* - host interactions and plant growth promotion. *Agrobacterium* induced tumorigenesis and rhizogenesis. Azolla - *Anabaena* symbiosis.

UNIT III: PLANT– MICROBE INTERACTION –II **3**

Mutualistic fungal symbionts.Ectomycorrhizal and endomycorrhizal fungi. Infection processes. Interactions with host plants and other soil microbes. Infection processes- fungi and toxins. Induced resistance.Secondary product responses and fungal virulence. Lichens, algal and bacterial interaction.

UNIT IV : APPLICATIONS – AGRICULTURE AND INDUSTRIES **3**

Plant growth promoting bacteria-types and mechanism of plant growth promotion. Biocontrol agents- types and mechanism of action. Induced resistance: Protein defense responses and systemic responses. Phytoremediation**.** Industrial application and medicinal applications – antiviral, anti-cancerous, immunosuppressive and antioxidants.

UNIT V :TECHNIQUES TO STUDY PLANT–MICROBE INTERACTION **2**

Techniques to study plant- microbe interactions - Phytortron, Rhizotron and Confocal Laser Scanning Microscope.

PRACTICAL – LIST OF PRACTICAL SCHEDULE

1.	Collection of root exudates	**2.5**
2.	Assay of root exudates – growth regulator/sugars	**2.5**
3.	Studying the effect of root exudates on selected bacterial population – well diffusion assay	**2.5**
4.	Isolation and purification of ectorhizophere – rhizosphere and rhizoplane microorganisms	**2.5**
5.	Isolation and purification of endophytic microorganisms from rice	**2.5**

6.	Isolation and purification of phyllosphere microorganisms from rice	**2.5**
7.	Isolation and purification of *Rhizobium*	**2.5**
8.	Isolation and purification of *Frankia* from *Casuarina equisetifolia*	**2.5**
9.	Visit to plantations and collection of ectomycorrhizal fruiting bodies, lichens, orchid and ericaceous mycorrhizae infected root samples	**2.5**
10.	Examination of ectomycorrhizal fruiting bodies and isolation of ectomycorrhizal Fungi	**2.5**
11.	Examination of lichens associated with trees; orchidaceous and ericoid mycorrhizae fungal infection in plants	**2.5**
12.	Examination of AM fungal infection in plants	**2.5**
13.	Collection and examination of AM spores from soil	**2.5**
14.	Testing *Agrobacterium tumefaciens* induced tumour formation in dicotyledonous plants in laboratory conditions	**2.5**
15.	Testing *A. rhizogenes* induced root proliferation in laboratory conditions	**2.5**
16.	Collection and examination of endosymbiont associated with Azolla	**2.5**

TEXT BOOKS:

1. Kamal B., Normand B. and Fouad D. 2009.Plant-microbe interactions.
2. Chrispeels M.J. and D.E. Sadava. 2003. Plants, Genes, and Crop Biotechnology.Jones & Bartlett Publishers, Boston.

REFERENCES:

1. Susan I. 1992. Fungal-Plant Interactions, Chapman Hall,George A. 2005.
2. Plant Pathology, Academic Press, Fifth Edition.

E - BOOKS:

1. Nautiyal C.S. and Patrice, D. 2008. Molecular mechanism of Plant and Microbe Coexistence, Springer-Verlag Berlin Heidelberg
2. Lugtenberg, B. 2015. Principles of Plant-Microbe Interactions. Microbes for Sustainable Agriculture, Springer International Publishing Switzerland

COURSE OUTCOMES (COs)	
CO1	To recognize and distinguish between the different types of plant-microbe interactions
CO2	To understand the physiological and biochemical processes underlying major symbiotic and pathogenic relationships
CO3	To impart knowledge on connections between the biology of plant-microbe relationships, the impacts of those relationships on plant growth
CO4	Students should learn about the applications of PGPR and its beneficial role in Agriculture
CO5	To determine the techniques to study plant–microbe interactions by using tools like Phytortron, Rhizotron and Confocal Laser Scanning Microscope.
CO6	To impart practical knowledge about isolation, purification and examination of PGPR

Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low																
1	**COs/POs**	**PO1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**PSO1**	**PSO2**	**PSO3**
2	**CO1**	2	-	-	1	2	2	3	-	-	-	-	3	2	–	-
	CO2	2	-	-	1	3	2	3	-	-	-	-	3	2	-	-
	CO3	2	-	-	2	3	2	3	-	-	-	-	3	2	-	-
	CO4	2	-	-	2	3	2	3	-	-	-	-	3	2	-	-
	CO5	2	-	-	2	3	2	3	-	-	-	-	3	2	-	-
	CO6	2	-	-	1	3	2	3	-	-	-	-	3	2	-	-
3	**Category**	Professional Elective (PE)														
4	**Approval**	Academic Council, Aug 2018														

Subject Code : U18OAGM 355	QUALITY CONTROL OF BIOINOCULANTS		L	T	P	C
	Total Contact Hours – 56		1	0	1	2
	Prerequisite course	Agricultural Microbiology				
	Course Coordinator Name & Department	Mr. B. Suriya Sabarinath School of Agricultural sciences				
COURSE OBJECTIVES:-	• To study in detail about the microbial inoculants in Agriculture viz., Isolation, purification of bacterial fugal inoculants and their mass production. • The students will learn about the Quality control standards of each bio-inoculants and bio-control agents					

THEORY

UNIT I **3**

Overview of bioinoculant production and quality control. Nitrogen fixers types. P solubilizers and mobilizers. Potassium releasing bacteria. Microbial transformation of micronutrients zinc, sulphur, iron *etc*. PPFM – PGPR. Mass production methods. Introduction to quality control standards. FCO standards.

UNIT II **3**

Quality control of *Rhizobium* inoculants -Purity checking of mother culture - morphological, biochemical and cultural characteristics of *Rhizobium* - Cross inoculation groups-recent classification - methods for testing nodulation - Estimation of nitrogen fixation – direct & indirect methods - Carrier based and liquid inoculants - FCO standards-scope for new formulations - quality control at different stages of production.

UNIT III **4**

Quality control of *Azospirillum* and *Azotobacter* inoculants - purity checking of mother culture - morphological, biochemical and cultural characteristics - different species - Nitrogen fixation -ARA and micro kjeldhal method - Quality control at different stages of production - Quality control of PSB - Purity checking of mother culture - Morphological, biochemical and cultural characteristics - Quantitative and qualitative assay for P solubilization - FCO standards.

UNIT IV **3**

Endophytic nitrogen fixation in sugarcane – *Gluconacetobacter diazotrophicus* - Potash releasing bacteria – Characteristics - Mechanism of K release – PPFM - PGPR and bioinculants for micronutrients - Quality control of Mycorrhizae - Ecto and Endo mycorrhiza – AMF -Morphological and cultural characteristics - root infection test and spore count - IP by MPN technique-mechanism of P mobilization - Hairy root organ culture.

UNIT V **3**

Cyanobacterial biofertilizers - types-nitrogen fixing cyanobacteria – Heterocysts - role of akinetes in survival - soil based composite culture - new formulations - quality testing -population by MPN technique – *Azolla* - *Anabaena* symbiosis - spore inoculum production -rapid methods for quality control of biofertilizers-molecular and immunological methods. Quality of biocontrol agents - *Pseudomonas* and *Trichoderma*.

PRACTICAL – LIST OF PRACTICAL SCHEDULE

1.	Sampling methods and study of different inoculants - carrier based and liquid inoculants	**2.5**
2.	Morphological, cultural and biochemical characterization of *Rhizobium*	**2.5**
3.	Purity checking of *Rhizobium* strains-Leonard Jar, germination paper roll and tubular pot methods- MPN counts	**2.5**
4.	Morphological, cultural and biochemical characterization of *Azospirillum*	**2.5**
5.	Morphological, cultural and biochemical characterization of *Azotobacter*	**2.5**
6.	Estimation of N_2 fixation- Acetylene Reduction Assay of nodules/cultures	**2.5**
7.	Estimation of N_2 fixation in broth under *in vitro* conditions-Microkjeldahl method	**2.5**
8.	Quantitative and qualitative assay for phosphobacteria-Available P estimation in Pikosviskya's broth by Olsen's method and organic acid production by titrable acidity	**2.5**
9.	Assay of acid and alkaline phosphatase activity of phosphobacterial cultures	**2.5**
10.	Enumeration of population of *Rhizobium* at different stages of production with Congo red YEMA by SPC method	**2.5**
11.	Enumeration of population of *Azospirillum* different stages of production with N free bromothymol blue (Nfb) semi solid medium by MPN method	**2.5**
12.	Enumeration of population of *Azotobacter* at different stages of production with Waksman No.77 medium by SPC method	**2.5**
13.	Enumeration of population of phosphobacteria at different stages of production with Sperber'shydroxy appetite medium by SPC method	**2.5**
14.	Quality control of AM fungi-Spore count by wet sieving, root infection by Tryphan blue staining and Infective propagules by MPN	**2.5**
15.	Potassium releasing bacteria- quantification of K release	**2.5**
16.	Cyanobacterial inoculants-microscopic examination, determination of heterocyst Frequency & population estimation by haemocytometer count and MPN method	**2.5**

TEXT BOOKS:

1. Maheshwari, D. K. and R.C.Dubey, 2008. Potential Microorganisms for Sustainable Agriculture - A techno-Commercial Perspective. I.K.International Publishing House Pvt.Ltd., New Delhi and Bangalore
2. Rai, M.K. 2006. Hand book of microbial biofertilizers. CRC press.

REFERENCES BOOKS:

1. Bagyaraj, D.J. and A. Manjunath. 1990. Mycorrhizal symbiosis and plant growth, Univ. of Agricultural Sciences, Bangalore, India.
2. Kannaiyan S. 2002. Biotechnology of Biofertilisers.Kluwer Academic publishers &Narosa Publishing House.
3. Motsara M.R., Bhattacharya P., and Srivastava B. 1995. In: Biofertilizer Technology, Marketing and Uses -A Source Book cum Glossary. Fertilizer Development and Consultancy Organization, New Delhi.
4. Somasegaran, P. and H.J.hoben.1985. Methods in Legume-*Rhizobium* Technology, NifTAL Project and MIRCEN, University of Hawaii, Paia, USA
5. SubbaRao, N. S. 1993. Biofertilizers in Agriculture and Forestry. Oxford and IBH Publishing Co. Ltd., New Delhi.

E-BOOKS/ MATERIALS:

1. Biofertilizers and Organic Fertilizers in Fertilizer (Control) Order, 1985
2. FNCA biofertilizer project group, 2006. Biofertilizer Manual, Japan Atomic Industrial Forum, MEXT, Tokyo, Japan.

COURSE OUTCOMES (COs)	
CO1	To understand about the different group of Bio- inoculants viz., Nitrogen fixers, Phosphate solublizers and Potash mobilizers.
CO2	To impart knowledge about isolation of different group of Bio-inoculants and Bio - control agents.
CO3	To understand about the purification and confirmation techniques of different bio-inoculants.
CO4	Enhancing the skills on development of mass production on Bacterial inoculants, Mycorrhizal and Algal inoculants
CO5	To determine the Quality standards (FCO) of Bio-inoculants and Bio – control agents
CO6	Trained to identify the quality and sale of inoculants

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	COs/POs	PO1	2	3	4	5	6	7	8	9	10	11	12	PSO1	PSO2	PSO3
2	**CO1**	2	-	-	1	2	2	3	-	-	-	-	3	2	–	-
	CO2	2	-	-	1	3	2	3	-	-	-	-	3	2	-	-
	CO3	2	-	-	2	3	2	3	-	-	-	-	3	2	-	-
	CO4	2	-	-	2	3	2	3	-	-	-	-	3	2	-	-
	CO5	2	-	-	2	3	2	3	-	-	-	-	3	2	-	-
	CO6	2	-	-	1	3	2	3	-	-	-	-	3	2	-	-
3	**Category**	Professional Elective (PE)														
4	**Approval**	Academic Council, Aug 2018														

Subject Code : U18OSAC355	CROP AND PESTICIDE CHEMISTRY	L	T	P	C
	Total Contact Hours – 56	1	0	1	2
	Prerequisite course	Manures, Fertilizers and Soil Fertility Management			
	Course Coordinator Name & Department	Dr.S.Sivagnanam, School of Agricultural sciences			
COURSE OBJECTIVES:-	To impart knowledge on the chemistry and nutritional significance of various field in agriculture and also impart knowledge on different pesticides, their nature and mode of action and their fate in soil so as to monitor their effect on the environment				

THEORY

UNIT I **4**

Chemistry of Agricultural Crops: Chemical constituents of plants - Proximate and ultimate constituents - Chemical composition and nutritional quality of cereals, pulses and forage crops. Chemical composition and nutritional quality of oilseeds and sugarcane. Post harvest changes in Sugarcane.

UNIT II **3**

Chemistry of Horticultural Crops, alkaloids and Essential oils: Chemical composition and nutritional quality of fruits, vegetables, spices, condiments, tuber crops and beverages. Post harvest changes in fruits. Chemistry of medicinal and aromatic plants.

UNIT III **4**

Pesticides and its Formulations: Pesticides - Definition - Classification-Trends in pesticide use. Pesticide formulations -dusts, wettable powders, emulsifiable concentrate, granules. Insecticides - classification-. Characteristics, Mode of action and use of Organophosphates - Carbamates - Pyrethroids , Botanicals, Insect Growth Regulators and Newer insecticides.

UNIT IV **3**

Fungicides and Herbicides : Fungicides - classification of fungicides -properties, mode of action of inorganic, organic and systemic fungicides - Rhodenticides- Zinc phosphide - Aluminium phosphide - Bromodiolone Herbicides - classification - properties - mode of action of inorganic and organic herbicides like phenoxy compounds, substituted ureas, amides, thiocarbamates, triazines, pyridines, imidazolines and sulphonylureas.

UNIT V **2**

Pesticides and Environment : Insecticide Act and Insecticide Rules - Fate of pesticides in soil- Impact of pesticides on environment

PRACTICAL – LIST OF PRACTICAL SCHEDULE

1.	Sampling, processing and storage of plant materials for chemical analysis -Estimation of moisture and ash content	**2.5**
2.	Preparation of tri acid extracts of plant samples -Estimation of P and K in triple acid extract	**2.5**
3.	Estimation of crude protein	**2.5**
4.	Estimation of crude fibre	**2.5**
5.	Estimation of reducing and non-reducing sugars in jiggery	**2.5**
6.	Estimation of oil content in groundnut	**2.5**
7.	Estimation of total solids, ascorbic acid and titrable acidity in fruit samples	**2.5**

8.	Estimation of phenols in vegetables / Mucilages in Bhendi	**2.5**
9.	Determination of HCN content in Tapioca/ forage sorghum	**2.5**
10.	Determination of bulk density in dust formulation, wettability and suspensibility test in wettable powder formulations	**2.5**
11.	Estimation of emulsion stability in EC formulation	**2.5**
12.	Estimation of pesticide residues in soil using GC/HPLC	**2.5**
13.	Estimation of pesticide residues in Water / Soft drinks using GC/HPLC	**2.5**
14.	Estimation of pesticide residues in Vegetables using GC/HPLC	**2.5**
15.	Estimation of pesticide residues in Fruits using GC/HPLC & Pesticide requirement calculations	**2.5**
16.	Visit to Pesticide Testing Laboratory	**2.5**

TEXT BOOKS:

1. KonardMengel*et al.,* 2006. Principles of Plant Nutrition. 5th Edition, Springer International.
2. Vasanthi ,D, T.Chitdeshwari, M.R.Latha, C.Sudhalakshmi and A.Vadivel,2014. Text book on Crop and Pesticide Chemistry Pp.310
3. Dhakshinamoorthy, M. 2000. An Introduction to Plant Biochemistry and Chemistry of Crops, Suri Associates, Coimbatore Pp.192
4. Handa, S, K,2004. Principles of Pesticides Chemistry, Agrobios (INDIA), Jodhpur.
5. Roy,N.K, 2002. Chemistry of Pesticides.CBS Publishers & Distributors, New Delhi.

REFERENCES:

1. Brijesh Tiwari and Narpinder Singh. 2012. Pulse Chemistry and Technology. Scientific Publishers, Jodhpur, India.
2. Hand book of Agriculture, 2009. Published by Indian Council of Agricultural Research, New Delhi 110 012.Pp.1583
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COURSE OUTCOMES (COs)	
CO1	Trace chemistry of agricultural crops and its chemical composition. **(Knowledge)**
CO2	Relate different chemical composition in horticultural crops.**(understand)**
CO3	Teach different formulations and types of pesticides preparation techniques. **(Analyze)**
CO4	Observe the different types of fungicide and herbicides for effective handling.**(Create)**
CO5	Judge the various type of pesticides for environmental issues. **(Create)**
CO6	Analysis the chemical composition of markedly available pesticides. **(Apply)**

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	**COs/POs**	**PO1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**PSO1**	**PSO2**	**PSO3**
2	**CO1**	2	-	1	1	2	1	-	1	1	2	2	2	2	-	2
	CO2	1	-	1	2	3	2	2	-	-	-	-	1	1	1	1
	CO3	2	1	1	2	1	1	-	-	-	-	-	1	-	-	2
	CO4	1	2	2	2	2	1	3	-		2	-	-	2	2	2
	CO5	3	3	3	1	2	2	2	2	2	3	3	3	2	1	2
	CO6	3	3	3	1	3	3	3	3	3	3	3	3	3	3	3
3	**Category**	Professional Elective (PE)														
4	**Approval**	Academic Council, Aug 2018														

IV YEAR VII SEMESTER

S.No	Course code	Course Title	Credit Hours
1.	U18AAEX401	Student READY programme (Rural Agricultural Work Experience and Agro-industrial Attachment)	0+20
2.	U18CAGR401	Project Report Preparation, presentation and Evaluation	0+1
3.	U18AAEX402	All India Study Tour*	0+1
		Total	**0+22=22**

***Non gradial compulsory course**

STUDENT READY (RURAL ENTREPRENEURSHIP AWARENESS DEVELOPMENT YOJANA)

Student Ready Programme is conceptualized to reorient graduates of Agriculture and allied subjects for ensuring and assuring employability and to develop entrepreneurs for emerging knowledge intensive agriculture by articulating knowledge, skill, ability and experiences.

Five components of student READY are:

1. Component I : Rural Agricultural Work Experience (RAWE)
2. Component II : Internship/ In Plant Training/ Industrial attachment
3. Component III : Students Projects
4. Component IV : Experiential Learning with business mode
5. Component V : Hands-on training (HOT)/ Skill development training i.e. Experiential Learning without business mode

Component I - Rural Agricultural Work Experience (RAWE)

The Rural Agricultural Work Experience (RAWE) provides exposure to agricultural students to the natural setting of the village situations, work with the farm families, identify their problems and make use of various extension tools for transferring the latest agricultural technologies. The students also get opportunity to study the various on-going schemes related to agriculture and rural development and participate in their implementation. The students were given rigorous orientation and familiarization on various issues and problems expected on farmers' field and hence gain competence and confidence for solving problems related to agriculture and allied sciences. It has been implemented in adopted villages under the supervision of scientists. Activities focused on intensive observations/ analysis of socio-economic and technological profile of the farm families in rural areas, participatory extension approach and acquaintance with farming situations, farm practices and interaction with progressive farmers. Soil testing has become the integral part of RAWE. This helps orient our agricultural graduates for participation in various rural developmental programme. The students also gained first hand information on industries during attachment with identified agro based industries.

Component II - Internship/ In Plant Training/ Industrial attachment

Technology and globalization are ushering an era of unprecedented change. The need and pressure for change and innovation is immense. To enrich the practical knowledge of the students, in-plant training is mandatory. In this training, students will have to study a problem in industrial perspective and submit the reports to the university. Such in-plant trainings will provide an industrial

exposure to the students as well as to develop their career in the high tech industrial requirements. In-Plant training is meant to correlate theory and actual practices in the industries with the following objectives:

- To expose the students to Industrial environment, this cannot be simulated in the university.
- To familiarize the students with various Materials, Machines, Processes, Products and their applications along with relevant aspects of shop management.
- To make the students understand the psychology of the workers, and approach to problems along with the practices followed at factory
- To make the students understand the scope, functions and job responsibility-ties in various departments of an organization.
- Exposure to various aspects of entrepreneurship during the program period.

Component III - Students Projects

There are number of students interested for higher education and study abroad. Keeping in view their future requirement a component of Student Project is placed to understand and identify problems of his/ her interest and field, experimental set up, taking observation and writing and documentation in the form of thesis. Project work provides several opportunities to students to learn various aspects that cannot be taught in a class room or laboratory. In order to provide such opportunities to the graduates of agricultural science, Students Project is proposed as one of the components of the Student READY. It may be adopted based on the interest of student and expertise and facilities available with the College.The Students Project are proposed with the following objectives:

- To impart analytical skills and capability to work independently.
- To conceptualize, design and implement the proposed work plan.
- Learn to work as a team- sharing work amongst a group, and learn leadership
- Learn to solve a problem through all its stages by understanding and applying project management skills.
- Learn to do various implementations, fabrication, testing and trouble shooting.
- Learn communication report writing skills.

Component IV – Experiential Learning with business mode

Experiential Learning (EL) with business mode helps the student to develop competence, capability, capacity building, acquiring skills, expertise, and confidence to start their own enterprise and turn job creators instead of job seekers. This is a step forward for “Earn while Learn” concept. Experiential Learning is an important module for high quality professional competence and practical work experience in real life situation to Graduates. The module with entrepreneurial orientation of production and production to consumption pattern is expected to facilitate producing Job Providers rather than Job Seekers. The EL provides the students an excellent opportunity to develop analytical and entrepreneurial skills, and knowledge through meaningful hands on experience, confidence in their ability to design and execute project work. The main objectives of EL are:

- To promote professional skills and knowledge through meaningful hands on experience.
- To build confidence and to work in project mode.
- To acquire enterprise management capabilities.

Subject Code : U18AAEX 401	STUDENT READY PROGRAMME (Rural Agricultural Work Experience and Agro-industrial Attachment)	L	T	P	C
	Total Contact Hours – 90 Days	0	0	20	20
	Prerequisite course: Fundamental courses of B.Sc (Hons.) Agriculture				
	Course Coordinator Name & Department: Mr. N. Manivannan, School of Agricultural sciences				
COURSE OBJECTIVES:-	To help students primarily to understand the rural situations, status of Agricultural technologies adopted by farmers, prioritize the farmer's problems and to develop skills and attitude of working with farm families for overall development in rural area.				

WORK PLAN

UNIT I : VILLAGE RESOURCE INVENTORY AND PLANNING (using PRA tools, Rich pictures, GIS maps, secondary data, interview, etc.)

- Describe the Natural Resources - Village boundaries, topography, historical background, water resources (river, canal, tank, etc.), soil resources, vegetation (trees, crops, etc.), fodder, animal husbandry (milch cattle, poultry, goatery, fishery, etc.), wild animals, climate, land utilization pattern, etc.
- Describe the Agricultural scenario - Cropping pattern, cropping systems, farming systems, area, production and productivity of crops, adoption pattern of recommended varieties / hybrids,
- Technologies and machinery / implements, organic farming, contract farming, etc.
- Explain the Demographic details – population, literacy, land holdings, farmers, farm women, youth, caste, labour, etc.
- Analyze the Social factors – social structure, social stratification, social change, social groups, culture, social control, leadership, social processes, migration, social customs, social issues, etc.
- Study the Socio-psychological factors – group processes / dynamics, attitude towards innovations, etc.
- Assess the Village Infrastructure - Educational institutions, Government institutes / offices, private firms / offices, NGOs, Societies, Banks, Panchayat Union / Grama Panchayat, Clubs, SHGs, FPOs,
- Associations, Communication facilities, transport facilities, railway station, police station, hospitals, clinics, veterinary hospital, post office, markets, community centers, religious places of worship, etc.
- Analyze the Problems / Constraints – Problem / Constraints related to farming, marketing, processing, transport, communication, access to extension and other services, etc.
- Prepare village development plans in consultation with different stakeholders.

UNIT II: FARM RESOURCE INVENTORY AND PLANNING (using maps, Rich pictures, far system modeling, family tree charts, flow diagrams, interview, etc.)

- Describe the Farm boundaries, topography, water resources, soil resources, vegetation, animal enterprises, etc.
- Describe the cropping pattern, cropping system, farming system, agri-business, etc.
- Explore Farmers Practices – Indigenous Technical Knowledge (ITK).
- Identify the constraints of the system environment (natural, economic, social, political, legal).
- Assess the linkages with Extension agencies, Markets, Input agencies, Media, Development departments, etc.
- Identify and describe all the people involved in the farm, their work, roles, visions, needs, values, interests and relationships.

- Analyze the system in terms of satisfying current needs. What are the critical factors that need to be managed to sustain the system? Are there opportunities for growth and development to satisfy the
- Future needs of the system? Are there threats that also need to be managed?
- Describe the different sub-systems viz., production sub-system, management sub-system, marketing sub-system, human activity sub-system, landscape and natural sub-system, etc., and their relationships.
- Identify the linkages with the Supra System viz., economic, political, legal and social.
- Find out the adoption pattern of recommended varieties / hybrids, technologies, machinery / implements, etc.
- Analyze the financial status and performance of the system - Economics of production (area, production, productivity, yield gaps, net returns, cost benefit ratio, etc).
- Prepare farm development plans for different types of farmers, by involving them so as to improve their systems.

UNIT III : STUDYING ACTIVITIES OF STATE DEPARTMENT OF AGRICULTURE

Visit to Office of Assistant Director of Agriculture to study the organizational structure, functions, duties and responsibilities of extension personnel, ATMA, schemes implemented, extension activities conducted, etc. Involve in different extension activities such as village meetings, demonstrations, campaigns, exhibition, radio / TV programmes and record observations and lessons learnt.

UNIT IV : STUDYING ACTIVITIES OF AN NGO

Visit to an NGO to study the organizational pattern, functions, projects, duties and responsibilities of staff, extension activities, schemes implemented, funding sources, etc.

UNIT V : STUDYING ACTIVITIES OF AN AGRI BUSINESS FIRM

Visit to an Agri-business firm to study the business activities, projects, managerial functions viz., planning, supervision, delegation, communication, budgeting, and related aspects.

COURSE OUTCOMES (COs)	
CO1	To understand rural situation, institutions and organizations
CO2	To understand customs and value systems of the villagers.
CO3	To familiarize with cropping pattern and of adoption of agricultural practices
CO4	To undertake field visits and agricultural demonstrations.
CO5	To disseminate Agricultural technologies to the rural public
CO6	To conduct trainings, trials and research activities in rural area

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	**COs/POs**	**PO1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**PSO1**	**PSO2**	**PSO3**
2	**CO1**	3	2	2	-	-	2	-	-	2	-	-	1	-	-	2
	CO2	3	2	2	-	-	2	-	-	2	-	-	2	-	-	2
	CO3	3	3	3	3	2	-	1	3	3	-	-	2	-	-	2
	CO4	3	2	2	3	3	-	-	3	1	-	-	2	-	-	2
	CO5	3	2	2	3	3	2	-	3	3	-	2	1	-	-	2
	CO6	-	-	-	3	2	-	-	-	1	1	-	-	-	-	2
3	**Category**	Allied Sciences														
4	**Approval**	Academic Council, Aug 2018														

Subject Code : U18CAGR401	PROJECT REPORT PREPARATION, PRESENTATION AND EVALUATION		L	T	P	C
	Total Contact Hours – Nil		0	0	1	1
	Prerequisite course	Fundamental courses of B.Sc (Hons.) Agriculture				
	Course Coordinator Name & Department	Dr. V. Prakash School of Agricultural sciences				
COURSE OBJECTIVES:-	Students will gain expertise for identification of research problem, planning and setting up experiments and writing of reports, etc.					

WORK PLAN

Student Project is placed to understand and identify problems of his/ her interest and field, experimental set up, taking observation and writing and documentation in the form of thesis.

COURSE OUTCOMES (COs)	
CO1	Learn and differentiate the priority area of the project work
CO2	Develop the spirit of Team Work by a part of the team to complete any projects within stipulated time period
CO3	Analyze the learning and understand techniques for Project planning, scheduling and Execution Control
CO4	Learn the different statistical techniques to conduct scientific research precisely
CO5	Make them capable to analyze, apply and appreciate contemporary project management tools and methodologies in Indian context.
CO6	Demonstrate to synopsis preparation, presentation and submission

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	COs/POs	PO1	2	3	4	5	6	7	8	9	10	11	12	PSO1	PSO2	PSO3
2	CO1	2	2	1	-	-	-	1	-	-	-	-	-	3	-	2
	CO2	2	2	3	-	-	-	2	-	-	-	-	-	3	-	2
	CO3	2	2	1	-	-	-	1	-	-	-	-	-	3	-	2
	CO4	2	2	1	-	2	-	1	-	-	-	-	-	3	-	2
	CO5	2	2	3	-	-	-	2	-	-	-	-	-	3	-	2
	CO6	2	2	1	-	-	-	-	-	-	-	-	-	3	-	2
3	Category	Project (PR)														
4	Approval	Academic Council, Aug 2018														

Subject Code : U18AAEX 402	ALL INDIA STUDY TOUR	L	T	P	C
	Total Contact Hours – Nil	0	0	1	1
	Prerequisite course	Fundamental courses of B.Sc (Hons.) Agriculture			
	Course Coordinator Name & Department	Mr. N. Manivannan, School of Agricultural sciences			
COURSE OBJECTIVES:-	The course will provide an opportunity to the students to study the functioning of important national institutes related to agriculture and allied fields.				

WORK PLAN

Visit to important National and International institutes related to agriculture, horticulture, forestry and allied fields in various regions of the country. Exposure to varied agro-climatic zones, crops grown, cultivation practices, socio-economic and cultural features of the farming community in different parts of the country.

COURSE OUTCOMES (COs)	
CO1	To understand the functioning of important national institutes related to Agriculture
CO2	To understand the functioning of important national institutes related to allied fields.
CO3	To get exposure on various agro climatic zones and their features.
CO4	To know about the functions of various research organizations running for Agriculture
CO5	To understand the cultivation of various Agricultural crops in different zones of the country
CO6	To study the scope available for employment in National level institutes

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	COs/POs	PO1	2	3	4	5	6	7	8	9	10	11	12	PSO1	PSO2	PSO3
2	**CO1**	3	-	-	3	-	-	2	3	-	-	-	1	2	-	-
	CO2	3	-	-	3	-	-	2	3	-	-	-	1	2	-	-
	CO3	3	-	-	1	-	2	-	2	-	-	-	-	2	-	-
	CO4	3	2	3	3	2	-	-	3	-	2	-	1	2	-	-
	CO5	3	2	3	3	2	-	-	3	-	-	2	1	2	-	-
	CO6	-	-	-	3	2	-	-	-	1	1	-	-	2	-	-
3	**Category**	Allied Sciences														
4	**Approval**	Academic Council, Aug 2018														

IV YEAR VIII SEMESTER

S.No	Course code	Course Title	Credit Hours
1.	Module I	Experiential Learning Programme/	0+10
2.	Module II	Hands on training (HOT)	0+10
		Total	**0+20 = 20**

***** List of Experiential learning courses has been attached below**

***LIST OF EXPERIENTIAL COURSES (EC) FOR 8thSEMESTER

S.No	Course code	Course Title	Credit hours
20.	U18EAGM451	Bio-inoculant production technology	0+10
21.	U18EHOR451	Hybrid Seed Production in Vegetable Crops	0+10
22.	U18ESAC451	On Farm Advisory for Soil Health, Water Quality & Plant Nutrition	0+10
23.	U18EAEN451	Commercial Beekeeping	0+10
24.	U18ESER451	Commercial Cocoon Production	0+10
25.	U18EABT451	Commercial Plant Tissue Culture	0+10
26.	U18EHOR452	Commercial Nursery Technology of Horticultural Crops	0+10
27.	U18EHOR453	Commercial Landscape Gardening	0+10
28.	U18EPAT451	Commercial production of Bio-control agents	0+10
29.	U18EPAT452	Commercial mushroom production	0+10
30.	U18EAMP451	Commercial broiler and layer production	0+10
31.	U18ESST451	Commercial seed production	0+10
32.	U18EPBG451	Hybrid pearl millet seed production	0+10
33.	U18EPBG452	Hybrid rice parental line seed production	0+10
34.	U18EARM451	Managerial skills for Agribusiness	0+10
35.	U18EAGR451	Development of Integrated Farming system Model	0+10
36.	U18EHOR454	Protected cultivation of Vegetable crops	0+10
37.	U18EENS451	Composting technology	0+10
38.	U18EAGR452	Organic Agriculture	0+10

Subject Code : U18EAGM451	BIO-INOCULANTS PRODUCTION TECHNOLOGY	L	T	P	C
	Total Contact Hours – 160	0	0	10	10
	Prerequisite course	Agricultural Microbiology			
	Course Coordinator Name & Department	Mr. B. Suriya Sabarinath School of Agricultural sciences			
COURSE OBJECTIVES:-	• To study in detail about the microbial inoculants in Agriculture viz., Isolation, purification of bacterial fugal inoculants and their mass production. • The students will learn about the Quality standards and methods of bio-inoculants application.				

WORK PLAN

1. Biofertilizers - types, production and demand in India; Importance and contribution of biofertilizers in Agriculture and allied sectors. Economics of biofertilizer production. Calculation of commercial production cost – fixed cost- cost of building, equipments and glasswares and variable cost - raw materials, maintenance, labour cost *etc*.,
2. Exposure visit to biofertilizer production unit. Facilities and equipments required for laboratory scale, pilot scale and large scale biofertilizer production (liquid and carrier) – principles and specifications. Raw materials required-glass wares, chemicals, printed poly bags and carrier material - specifications of raw materials. Isolation, purification and characterization of nitrogenous biofertilizers – *Azotobacter, Azospirillum, Rhizobium* and *Gluconoacetobacter.*
3. Isolation and purification of nitrogenous biofertilizers – Azolla and Blue Green Algae (BGA). Screening of nitrogen fixers - plant nodulation tests for *Rhizobium*. Use of Gas Chromatography for nitrogenase assay. Nitrogenase activity by ARA (nodule and broth cultures of *Azotobacter*, *Azospirillum* and *Gluconoacetobacter*).
4. Isolation, purification and characterization of phosphate solubilizing and potassium releasing (silicate solubilizing) bacteria. Selection of efficient strains by testing their ability under *in vitro* conditions. Isolation of AM spores from soil and morphological characterization of AM spores.
5. Selection of efficient AM fungi by plant infection tests. Isolation, purification and characterization of sulphur oxidizing and zinc solubilizing microbes. Screening of efficient sulphur oxidizing and zinc solubilizing microbes.
6. Isolation, purification and characterization of plant growth promoting bacteria - Pink Pigmented Facultative Methylotrophs (PPFM) and screening of PPFM. Development of markers for easy identification-application of real time PCR in strain identification.
7. Preparation of medium and carrier material for large scale production. Mass production of *Azotobacter.*
8. Mass production of *Rhizobium.*
9. Mass production of *Azospirillum.*
10. Mass production of phosphate solubilizer.
11. Mass production of *Gluconoacetobacter* and potassium releasing bacterium (silicate solubilizing bacterium).
12. Mass production of PPFM.

13. Mass production of AM fungi, Azolla and BGA.
14. BIS standards / Fertilizer Control Order – Specifications and quality control measures for various biofertilizers. Storage and preservation of various microbial cultures – sub culturing, lyophilization *etc*., Establishment of Ideal biofertilizer unit; Shelf life and storage of biofertilizers. Constraints in mass production of various biofertilizers. Biofertilizers - Organic certification – processes to be followed – Agencies for Certification. *Rhizobium*, *Azospirillum* and *Azotobacter*. Quality control laboratories in India.
15. Application techniques– form, dose, method and time of application of biofertilisers – *Rhizobium*,*Azospirillum*, *Azotobacter*, *Gluconoacetobacter*, phosphate solubilizers, potash releasers andsulphur oxidizers, Azolla, BGA, AM fungi and PPFM. Exposure to advanced techniques in biofertilizer production - Tangential Flow Filtration, lyophilized cells production and automatic packing unit. Visit to biofertilizer inoculated fields in university, farmer's holding and interaction.
    a. Evaluation of plant response to biofertilizer application
16. Financing - credit facilities – assistance – facility available for establishing biofertilizer production &17 units- licensing required *etc*., Formulation and presentation of a bankable project for production of
    a. fixed quantity of various biofertilizers

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3. ATPA. (ISBN-10: 8183211968, ISBN-13: 978-8183211963)
4. NIIR 2012. The Complete Technology Book on Biofertilizer and Organic Farming NIIR Project Consultancy Services, New Delhi. P. 608. (ISBN: 9789381039076)
5. Reeta Khosla 2017. Biofertilizers and Biocontrol Agents for Organic Farming, Publishers: Kojo press. (ISBN-10: 8192756793,ISBN-13: 978-8192756790)

COURSE OUTCOMES (COs)	
CO1	To understand about the different group of Bio- inoculants viz., Nitrogen fixers, Phosphate solublizers, Potash mobilizers, Zn and Si Solublizers, PPFM, Mycorrhizae and Algal Biofertilizers
CO2	To impart knowledge about isolation of different group of Bio-inoculants and Bio - control agents.
CO3	To understand about the purification and confirmation techniques of different bio-inoculants.
CO4	Enhancing the skills on development of mass production on Bacterial inoculants, Mycorrhizal and Algal inoculants
CO5	To determine the Quality standards (of Bio-inoculants and Bio – control agents
CO6	To do Hands on exposure on method of application of different Bio – inoculants.

Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low																
1	**COs/POs**	**PO1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**PSO1**	**PSO2**	**PSO3**
2	**CO1**	2	-	-	1	2	2	3	-	-	-	-	3	2	–	-
	CO2	2	-	-	1	3	2	3	-	-	-	-	3	2	-	-
	CO3	2	-	-	2	3	2	3	-	-	-	-	3	2	-	-
	CO4	2	-	-	2	3	2	3	-	-	-	-	3	2	-	-
	CO5	2	-	-	2	3	2	3	-	-	-	-	3	2	-	-
	CO6	2	-	-	1	3	2	3	-	-	-	-	3	2	-	-
3	**Category**	Professional Elective (PC)														
4	**Approval**	Academic Council, Aug 2018														

Subject Code : U18EHOR451	HYBRID SEED PRODUCTION IN VEGETABLE CROPS	L	T	P	C
	Total Contact Hours – 160	0	0	10	10
	Prerequisite course: Fundamentals of Horticulture				
	Course Coordinator Name & Department: Dr.M. Dhivya, School of Agricultural sciences				

COURSE OBJECTIVES:-

- To impart knowledge on the hybrid seed production techniques of vegetables
- Students will be imparted with wide knowledge on seed production in vegetable crops and will gain enough confidence to establish seed industry as a successful business venture

WORK PLAN

1. Scope and importance of vegetable seed industry and vegetable seed production – principles and practices of seed production - generation system of seed multiplication.
2. Pollination behaviour - tools employed in hybrid seed production - study of morphological characters of varieties, parental line and hybrids.
3. Designing of planting ratio and border rows - physical and genetic contaminants – isolation distance
4. Planning of seed production - season and land selection - assessment of seed source and seed selection.
5. Pre sowing seed invigouration treatments - dormancy breaking treatments - seed priming - pelleting - polymer coating.
6. Practicing nursery and main field preparation - practicing the sowing of seeds in the nursery - types of nursery - media preparation for protray nursery - sowing -nursery management.
7. Main field preparation - layout - formation of beds - transplanting - fertilizer and nutrient management.
8. Weed management - irrigation management - special cultural practices - pest and disease management.
9. Identification and removal of off-types and volunteer plants - practicing hybridization techniques (emasculation and pollination) - Identification of physiological disorders and management.
10. Exposure visit to seed certification department - seed certification procedures - registration and sowing report - field inspection - field counting - visit to seed production plots – project preparation.
11. Pre-harvest sanitation spray - identification of physiological and harvestable maturity indices - harvesting methods - project preparation - project preparation
12. Post harvest verification – fruit grading - extraction of seeds - processing sequence - seed drying - seed cleaning - grading - pre-storage seed treatment - seed packing - seed storage.
13. Visit to seed processing unit and seed storage godown and learning sanitation measures - project preparation.
14. Economics of hybrid seed production (cost benefit ratio) - visit to private seed industry.
15. Seed sampling procedure and submission of samples - project preparation.
16. Seed testing procedure - estimation of seed moisture - physical purity analysis – germination test - visit to grow out test field and DNA finger printing laboratory for genetic purity assessment.
17. Visit to seed retail shop - seed marketing - project preparation and submission.

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1. Arya, P.S., 1995. Vegetable seed production principles. Kalyani Publishers. New Delhi.

2. Geetharani, P., V.Swaminathan and V.Ponnuswami. 2012. Seed Technology of Horticultural Crops. Narendra Publishing House, Delhi - 6.
3. Kulkarni, G.N. 2011. Principles of seed technology, Kalyani publishers, Ludhiana, New Delhi
4. Singh, N, and Vishal Nath, 2011. Varieties and hybrids of vegetables, Satish serial publishing house, Delhi.
5. Sumesh Chandra Gaur, 2013. A hand book of seed processing and marketing Agrobios (India), Jodhpur Udai R. Bishnoi and R.P.S. Kharb, 2012. Fundamentals of seed production and testing, Oxford book company, Jaipur.
6. Vanangamudi, K. *et al.*, 2010. Vegetable hybrid seed production and management, Agro bios (India), Jodhpur.

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1. Seednet.gov.in
2. www.dare.gov.in
3. http:sfci.nic.in
4. www.iar.org.in/Directorate1.htm
5. www.apsa.org
6. www.seedassociationofindia.com
7. www.apaseed.com
8. www.apaseed.org

COURSE OUTCOMES (COs)	
CO1	Students will learn about the quality seed production, principles and practices
CO2	Acquire knowledge and experience on seed production planning, pre sowing seed treatments and nursery management
CO3	Acquire knowledge and experience on seed crop management and hybrid seed production techniques
CO4	Learn about the pre and post harvest operations of seed
CO5	Gain knowledge on seed testing and marketing
CO6	Exposure visit to various seed certification department, seed industry and seed retail shops

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	**COs/POs**	**PO1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**PSO1**	**PSO2**	**PSO3**
2	**CO1**	3	-	-	-	-	-	3	-	-	-	-	2	1	-	-
	CO2	2	2	2	-	3	-	2	-	-	-	-	3	2	2	-
	CO3	3	1	3	-	2	-	3	-	-	-	-	2	2	1	-
	CO4	3	3	1	-	2	-	2	-	-	-	-	3	2	1	-
	CO5	3	2	2	-	2	-	3	-	-	-	2	2	1	2	-
	CO6	-	-	-	-	-	-	3	-	-	-	-	3	-	-	-
3	**Category**	Professional Elective (PC)														
4	**Approval**	Academic Council, Aug 2018														

Subject Code : U18ESAC451	ON FARM ADVISORY FOR SOIL HEALTH, WATER QUALITY AND PLANT NUTRITION	L	T	P	C
	Total Contact Hours – 160	0	0	10	10
	Prerequisite course	1. Fundamentals of Soil Science 2. Problematic soils and their management			
	Course Coordinator Name & Department	Dr.S.Sivagnanam, School of Agricultural Sciences			
COURSE OBJECTIVES:-	To impart knowledge about on farm advisory to the farming community				

WORK PLAN

1. Identification and Selection of farm holdings growing different crops
2. Studying the land features and collection of soil samples
3. Assessment of soil physical and chemical quality indices of collected soil samples
4. Assessment of soil biological quality indices and interpretation (Dept. of Agrl. Microbiology)
5. Interpretation of analytical results of collected soil samples for their quality
6. Identifying soil constraints - Interpretation of results (Soil physics)
7. Problem solving management techniques, Calculation of ameliorants
8. Assessing the Land suitability for agricultural, horticultural and tree crops (Dept.of RS&GIS)
9. Water sample collection, quality assessment
10. Assessing the land suitability for irrigation
11. Fertilizer prescription calculations for important crops - Nutrient equivalent basis -Soil Test Crop Response based recommendation for targeted yields
12. Deriving the nutrient requirement using DSSIFER software for different crops (STCR)
13. Issue of Soil Health Card and Fertilizer prescription using DSSIFER software
14. Diagnosis of nutrient deficiencies using VDK software and corrective measures
15. Formulating the plan for the selected farm holding for the existing crops
16. Formulating the most viable farm plan for the selected farm holding and Development of Soil Constraint Management Package (SCMP)

REFERENCES:

1. BaruahJ.C and D.K.Patgiri. 1996. Physics and Chemistry of Soils, New Age International Publications
2. GarisonSposito, 2008. The Chemistry of Soils. Oxford University Press, USA
3. Black, C.A. 1965. Agronomy Monograph. Methods of Soil Analysis. Part 1. Physical and Mineralogical properties including Statistics of Measurement and Sampling. Wiley, New York
4. Hessee, P.R. 1971. A Text book of Soil Chemical Analysis. John Murray (Publishers) Ltd. London
5. Indian Society of Soil Science 1991. Soil related constraints in crop production Bulletin No.15.lSSS, New Delhi
6. Jackson, ML. 1973. Soil Chemical Analysis. Prentice Hall Pvt.Ltd
7. Mani.A.K.,R.Santhi, K.M.Sellamuthu. 2007. A handbook of Laboratory Analysis.A.E.Publications, Coimbatore
8. Motsara.M.R and R.N.Roy.2008.Guide to laboratory establishment for plant nutrient analysis. Food and Agriculture organization of the United Nations.Rome.pp.220 (also available online <ftp: /ftp.fao. org/agl/ agll/docs /fpnb 19. Pdf
9. Piper, C.S 1942. Soil and plant analysis: Inter science *Publishers,* New York

10. Sehgal,J.2005. A text book of Pedology- Concepts and applications. Kalyani Publishers, Ludhiana, New Delhi
11. Subramanian,S.S, G.V.Kothandaraman, S.Natarajan and P.P.Ramaswami. ed. 1987. Soil survey and land use planning for watershed management. Directorate of Soil and Crop Management Studies, TNAU, Coimbatore
12. Tandon, HLS.1994. Fertilizers, organic manures, recyclable wastes and biofertilizers. Fertilizer Development and Consultant Organization, New Delhi
13. USDA 1954. Diagnosis and Improvements of Saline and Alkali Soils. (Ed) L.A.Richards. Handbook No.60. USDA Washington DC
14. Werner Bergmann.Ed.1992.Nutritional Disorders of Plants - Development, Visual and analytical Diagnosis. Gustav Fischer VerlagJena.Stuttgart. NewYork

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2. http://www.agric.gov.mt/soil-and-irrigation-water-lab
3. www.soiltesting.okstate.edu/
4. www.texasplantandsoillab.com/
5. www.ulm.edu/spal/
6. soilhealth.cals.cornell.edu/extension/.../managing_constraints.pdf
7. cnal.cals.cornell.edu/
8. http://agritech.tnau.ac.in/agriculture/agri_reosurcemgt_soil_soilcontraints.html
9. http://edis.ifas.ufl.edu/topicjertilization

COURSE OUTCOMES (COs)	
CO1	Describe the details of land quality for agricultural purpose.
CO2	Classify the different types of problem soils and their management.
CO3	Observe the methods of soil testing and nutrient recommendation.
CO4	Compare the different types of software's for soil test based nutrient application based on crops.
CO5	Correlate different types of the soil physio-chemical properties.
CO6	Interpret the knowledge of remote sensing techniques in agricultural crops nutrient improvement

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	**COs/POs**	**PO1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**PSO1**	**PSO2**	**PSO3**
2	**CO1**	3	2	1	3	-	2	3	2	1	-	1	3	3	3	-
	CO2	3	3	3	3	-	3	3	2	2	-	-	2	3	3	-
	CO3	3	2	3	1	-	-	3	-	2	-	1	3	2	3	-
	CO4	3	3	1	2	3	-	-	-	2	3	1	2	2	2	2
	CO5	2	2	2	1	3	3	-	-	1	3	-	2	3	1	2
	CO6	3	3	2	3	3	3	1	2	1	2	3	2	3	1	3
3	**Category**	Professional Elective (PC)														
4	**Approval**	Academic Council, Aug 2018														

Subject Code : U18EAEN451	COMMERCIAL BEEKEEPING	L	T	P	C
	Total Contact Hours – 160	0	0	10	10
	Prerequisite course	Management of Beneficial and Harmful insects			
	Course Coordinator Name & Department	Ms. V. Sushmetha School of Agricultural Sciences			
COURSE OBJECTIVES:-	To inculcate importance of Bee keeping and honey processing in relation with entrepreneurship development				

WORK PLAN

Honey bee species, castes, social biology and communication in honey bees - Bee pasturage andpreparation of bee floral calendar - Honey bees for crop pollination and seed production. - Stingless bees, littlebees, rock bees conservation and honey harvest- Beehives, beekeeping equipments specification and uses,visit to manufacturing unit - Hiving feral Indian bee colony, site selection for apiary, visit to migratory beekeeping sites, visit to commercial cerana bee farm, - Honey extraction, processing, purity testing and valueaddition, visit to honey processing unit - Hive inspection, maintenance of hive records, management in nectarflow season, dearth period, management of swarming, absconding and laying workers - Dividing, uniting beecolonies, artificial feeding, protecting bees from pesticides - Insect, mite and bird enemies of honeybees, broodand adult diseases - Mass queen rearing and production of mating nucleus, visit to beekeeping society -Methods of collection of bees wax, bee pollen, propolis, bee venom, royal jelly - Visit to commercial melliferabee farm - Marketing and economics of honey and bee products, preparation of bee keeping projects for bankfunding

REFERENCES:

1. Atwal, A.S. 2013. Mellifera Bee Keeping and Pollination. *Kalyani Publishers, Ludhiana*. 394 p.
2. TedHooper,1991.Guide to BeesandHoney (Thrid Edition), *BAS printersltd. Over Wallop, Hampshire* 271 p.
3. Roger A. Morse, 1994. The new complete guide to beekeeping. *The Countryman Press,Woodstock, Vermont*.207p.
4. ThomasD.Seeley.1995.TheWisdomoftheHive,HarvardUniversityPress,Cambridge,295p

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2. html http://agdev.anr.udel.edu/maarec/
3. http://www.aragriculture.org/insects/beekeeping.htm
4. http://tiwanabeefarm.com/
5. http://beekeeping.com/
6. http://www.apimondia.com/en

COURSE OUTCOMES (COs)	
CO1	Knowledge about Honey bee species, castes, social biology and communication in bee bees
CO2	Understand about the Beehives,beekeepingequipment specification and uses, vist to manufacturing unit
CO3	Analyze the Methodsofcollectionofbeeswax,beepollen, Propolis, bee venom, royal jelly

CO4	Evaluate Insect,miteandbirdenemiesofhoneybees, brood and adult diseases
CO5	Analyze the hive inspection maintenance of hive records, management in nectar flow season, dearth period, management of swarming, absconding and laying workers.
CO6	Knowledge about various techniques of Bee keeping and honey processing and its marketing to make them self-sustainable after graduation.

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	**COs/POs**	**PO1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**PSO1**	**PSO2**	**PSO3**
2	**CO1**	3	-	-	-	-	-	-	-	-	1	2	3	-	3	-
	CO2	1	1	3	-	-	-	-	-	-	-	2	2	-	3	-
	CO3	1	3	3	-	-	-	-	-	-	1	1	2	-	3	-
	CO4	2	1	3	-	-	-	-	-	-	-	1	2	-	3	-
	CO5	1	3	3	-	-	-	-	-	-	1	1	2	-	3	-
	CO6	-	-	2	-	2	-	-	-	-	1	3	3	-	3	-
3	**Category**	Professional Elective (PC)														
4	**Approval**	Academic Council, Aug 2018														

Subject Code : U18ESER451	COMMERCIAL COCOON PRODUCTION		L	T	P	C
	Total Contact Hours – 160		0	0	10	10
	Prerequisite course	Management of Beneficial and Harmful insects				
	Course Coordinator Name & Department	Ms. V. Sushmetha School of Agricultural Sciences				
COURSE OBJECTIVES:-	To inculcate importance of Mulberry production, Silkworm rearing and their Management in relation with entrepreneurship development					

WORK PLAN

1. Area and distribution of mulberry – Popular Varieties – climatic requirements and soil requirement. Preparation of nursery - planting material - manure application.
2. Nursery management – irrigation, weeding, fertilizer application and plant protection. Economics of nursery management.
3. Main field preparation, manuring - Planting methods - Irrigation – Weeding Intercropping
4. Training and pruning the mulberry crop. Chawki rearing garden - Pruning methods – schedule of operations. Visit to Chawki rearing garden.
5. Late age silkworm rearing - Harvest of leaf and shoot- methods of harvest.Transporting – preservation of leaves and shoots – methods.Visit to Late age silkworm rearing garden - Calculation of brushing capacity.
6. Farm machinery implements – mulberry pruner, stem cutter and power weeder.Insect pests and diseases of mulberry –natural enemies- IPM.Economics of Mulberry leaf production. Preparation of project proposals.
7. Authorized Silkworm Races –crossbreed and bivoltine silkworm rearing.Requisites, inspection and selection of site for rearing house.
8. Rearing houses – plan and maintenance. Rearing appliances – Disinfection. Agencies involved in egg production - procurement of eggs. Transportation - preservation of eggs – incubation.
9. Black boxing of eggs. - hatching - estimation of hatching percentage. Brushing of eggs – practicing brushing. Rearing of chawki worms – methods. Leaf selection and feeding for young age silkworms.
10. Moulting, Bed cleaning and bed disinfectants for chawki worms.Estimation of population of chawki worms. Establishing Chawki Rearing Centres. Record maintenance and logistics at Chawki Rearing Centres. Transport of Chawki worms. Visit to Chawki Rearing Centre.
11. Late age rearing – tray and shoot rearing methods. Leaf selection and feeding for late age silkworms. Spacing of late age worms and bed cleaning.
12. Moulting care, application of bed disinfectants and its importance. Mounting of worms and mountages. Spinning care and Harvesting.
13. Calculation of Effective rate of rearing. Maintenance of rearing records, rearing environment for successful rearing. Transporting and marketing of cocoons. Economics of rearing silkworms and maintenance of rearing records.
14. Project preparation for establishing Late age rearing centres. Large scale sericulture farming and contract farming. Visit to Chawki Rearing Centre and late age rearing centres.

REFERENCES:

1. Dandin S.B. Jayant Jayswal and K. Giridhar. 2003. Hand book of Sericulture Technologies. Central Silk Board, Bangalore.
2. Krishnaswami,S., M.N. Narasimhanna, S.K Suryanarayan and S.Kumararaj. 1978. Sericulture Manual 2 – Silkworm Rearing . FAO Agricultural Services Bulletin 15/2. Food and Agriculture Organisation of the United Nations, Rome, 131 p.

3. Somashekar, T.H. and K. Kawakami. 2003. Manual on Bivoltine Silk Reeling Technology. Central Silk Board, Bangalore. 122 p.

E- REFERENCES:

1. www.silkbase.org
2. www.papilo.ab.a.u.tokyo.ac.jp

COURSE OUTCOMES (COs)	
CO1	Knowledge about basic technique in Mulberry production
CO2	Analyze the Insect pest and disease in Mulberry and their management
CO3	Knowledge about silkworm rearing methods and their regular maintenance and management
CO4	Understand the Economics of rearing silkworms and maintenance of rearing records.
CO5	Knowledge about Silk reeling, re reeling, preparation and packing
CO6	Analyze Standards for grading raw silk and Economics of establishing reeling units. Visit to silk reeling units automatic silk reeling units

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	**COs/POs**	**PO1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**PSO1**	**PSO2**	**PSO3**
2	**CO1**	2	1	3	-	-	-	-	-	-	-	1	3	-	3	-
	CO2	2	1	1	-	-	-	-	-	-	-	2	3	-	3	-
	CO3	2	1	1	-	-	-	-	-	-	-	2	3	-	3	-
	CO4	2	2	3	-	-	-	-	-	-	-	2	3	-	3	-
	CO5	2	1	3	-	-	-	-	-	-	-	2	3	-	3	-
	CO6	2	2	3	-	2	-	-	-	-	-	2	3	-	3	-
3	**Category**	Professional Elective (PC)														
4	**Approval**	Academic Council, Aug 2018														

Subject Code : U18EABT 451	COMMERCIAL PLANT TISSUE CULTURE	L	T	P	C
	Total Contact Hours – 160	0	0	10	10
	Prerequisite course	Plant Biotechnology			
	Course Coordinator Name & Department	Dr.S.Anandhi Lavanya School of Agricultural Science			
COURSE OBJECTIVES:-	• To study in detail about the various methods in *In – vitro* culture of plants and commercial application of tissue culture techniques • The students will learn about the basic laboratory setup, handling of explant tissue, nutrient medium and establishing the culture and incubation of cultures				

WORK PLAN

1. Organization for a plant tissue culture laboratory
2. Familiarization of different chemicals
3. Stock solutions preparation for WPM medium
4. Meristem tip culture
5. Media preparation for micropropagation in banana, neem, eucalyptus, *Aloe vera, Phyllanthus* and potato
6. Micropropagation in eucalyptus, *Aloe vera, Phyllanthus*
7. Micropropagation
8. Medium preparation for subculturing
9. Subculturing in banana, neem and eucalyptus
10. Subculturing in sugarcane and bamboo
11. Medium preparation for rooting in banana, neem, eucalyptus, *Aloe vera,Phyllanthus,* bamboo, cassava and sugarcane
12. Inoculation of microshoots for rooting in eucalyptus, aloe vera, phyllanthus, bamboo, cassava and sugarcane
13. Subculturing for proliferation of callus
14. Suspension culture in *Phyllanthus and Coleus*
15. Field transfer of tissue culture plants – Hardening procedures and maintenance of regenerated plants.National certification system for tissue culture plants
16. Visit to a commercial tissue culture laboratory

REFERENCES:

1. Dubey, R. C. 2014. A textbook of Biotechnology. 5th revised Edn.
2. S. Chand Publications. New DelhiGeorge, E. F, Hall M. A. and Geert-Jan De Klerk.2009. Plant Propagation by Tissue Culture,3rd Edition, Springer, The Netherlands. 501p.
3. Singh, B. D. 2012. Plant Biotechnology. Kalyani publishers, Ludhiana
4. Chahal, G. S. and Gosal, S. S. 2003. Principles and Procedures of Plant Approaches Breeding Biotechnological and Conventional. Narosa Publishing House, New Delhi

COURSE OUTCOMES (COs)	
CO1	To understand about the different group of plant tissue culture media
CO2	To do Hands on exposure on sterile transfer chamber and equipements.
CO3	To understand about the excise explants and transfer of plant material to tissue culture medium
CO4	Enhancing the skills on development of various stages Micropropagation including morphogenesis and Subculture techniques

CO5	To determine the crop improvement , secondary metabolite production and various strategies for including genetic interference
CO6	To understand the ability to do independent tissue culture experiments by testing different growth parameters *invitro*

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	**COs/POs**	**PO1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**PSO1**	**PSO2**	**PSO3**
2	**CO1**	2	-	2	-	3	-	-	-	-	-	-	3	2	–	-
	CO2	2	-	-	-	2	-	-	-	3	-	-	3	2	-	-
	CO3	2	-	-	-	3	2	2	-	-	-	-	3	2	-	-
	CO4	2	-	-	2	3	2	3	-	-	-	-	3	2	-	-
	CO5	2	-	-	2	3	-	3	-	-	-	-	2	2	-	-
	CO6	2	-	-	-	2	-	3	-	-	-	-	3	2	-	-
3	**Category**	Professional Elective (PC)														
4	**Approval**	Academic Council, Aug 2018														

Subject Code : U18EHOR452	COMMERCIAL NURSERY TECHNOLOGY OF HORTICULTURAL CROPS	L	T	P	C
	Total Contact Hours – 160	0	0	10	10
	Prerequisite course: Fundamentals of Horticulture				
	Course Coordinator Name & Department: Dr.M. Dhivya, School of Agricultural Sciences				

COURSE OBJECTIVES:-

- To promote entrepreneurial skills and knowledge through meaningful hands-on- experience through a business model enterprise.
- To provide skills in various propagation methods and care of nursery plants.
- To provide an excellent opportunity to observe, think, analyse, synthesize, evaluate and apply the acquired knowledge with respect to commercial nursery business.

WORK PLAN

Students shall prepare a plan to start a commercial nursery and analyse its technical and financial viability. Undertake end to end approach to achieve the objectives of the approved project. Hands-on-training will be given right from project development, execution, procurement of raw materials, production, care, marketing, decision-making, individual and team coordination, approach to problem solving, accounting, marketing and resolving conflicts, etc

REFERENCES:

1. Sadhu, M.K. 1989. Plant Propagation. Wiley Eastern Ltd., New Delhi
2. Bose, T.K., S.K. Mitra, M. K. Sadhu and B. Mitra. 1991. Propagation of Tropical and Subtropical Horticultural crops. Naya Prakash Publishers, Culcutta, India.
3. Hartmann, H.T., D. E. Kester, F.T. davies and R. L. Grene. 2010. Plant Propagation – Principles and Practices. Prentice Hall of India Private Ltd., New Delhi.
4. Nanda, K. K and V. K. Kochhar. 1995. Vegetative Propagation of Plants. Kalyani Publishers, Ludhiana**.**

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1. http://www.oer.nios.ac.in
2. http://www.sas.upenn.edu
3. http://www.tmnehs.gov.in
4. http://www.instructables.com

COURSE OUTCOMES (COs)	
CO1	Students can gain knowledge on establishment and management of a commercial nursery
CO2	Can practice skills in various propagation methods and care of nursery plants and skillful in managing nursery business

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	COs/POs	PO1	2	3	4	5	6	7	8	9	10	11	12	PSO1	PSO2	PSO3
2	CO1	3	2	2	-	2	-	3	-	-	-	-	2	1	2	-
	CO2	2	2	2	-	3	-	2	-	-	-	-	3	2	2	-
3	Category	Professional Elective (PC)														
4	Approval	Academic Council, Aug 2018														

Subject Code : U18EHOR453	COMMERCIAL LANDSCAPE GARDENING	L	T	P	C
	Total Contact Hours – 160	0	0	10	10
	Prerequisite course: Fundamentals of Horticulture				
	Course Coordinator Name & Department: Dr.M. Dhivya, School of Agricultural Sciences				
COURSE OBJECTIVES:-	• To enable students to gain hands-on –experience in landscape designing and execution • To develop entrepreneurial skills and confidence among students to develop their own landscape company.				

WORK PLAN

Understanding the concept of experiential learning and identifying the broad area for experiential learning project activity in commercial Landscape Gardening - Fixing the area of interest for individual or group experiential learning project activity in commercial Landscape Gardening (Green consultancy, Green wall fixtures, Green showcases, Green wall hangings, Green furniture, Cacti buckets and flower bouquets, Green glasses, Trees indoor, Smart garden *etc*.,) - Rationale for selecting the activity in commercial Landscape Gardening and formulating the anticipated methodology for execution - Preparation of the project with budget for execution and marketing - Nurturing the students potential and innovativeness in their area of interest and facilitating the project activity (planning, development and execution) - Concept of advertising the product and developing market strategies for efficient selling - Working out the cost economics / balance sheet involved in the project - Generating a reflective report about the project and the student's potential in academic and personal development.

REFERENCES:

1. Harry Tomilson,2010. The complete book on bonsai. Abbevellie press, Glasgow. Phaidon,2014. The garden book, Phaidon book, London
2. Judith blacklock,2012. The complete guide for beginners. Flower fresh publisher, U.K.
3. Nancy Norris, 2011. Miniature garden guide book. Kalmbach Publishing company, Netherlands
4. Bose.T.K, R.G. Maiti, R.S. Dhua and P.Das. 1999. Floriculture and Landscaping. Naya prakash, Calcutta. Booth. N.K. 1983. Basic elements of landscape architectural design.
5. Randhawa, G.S. and A. Mukhopadhyay, 2001. Floriculture in India. Allied Publishers Limited, New Delhi. Foja Singh, 1997. Advances in Floriculture. Media Today Pvt Ltd., New Delhi-17
6. Chattopadhyay, S.K. 2007. Commercial Floriculture. Gene-Tech Books, New Delhi

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2. http://www.wvu.edu/~agexten/hortcult/greenhou/
3. http://www.umass.edu/umext/floriculture/fact_sheets/greenhouse_management.html
4. https://sharepoint.agriculture.purdue.edu/agriculture/flowers/GHguides.aspx
5. http://www.ag.auburn.edu/hort/landscape/structures.html
6. www.bonsaiempire.com
7. www.gardenweb.com
8. www.my-garden-school.com
9. www.florista.in
10. www.realsimple.com

COURSE OUTCOMES (COs)																
CO1	Entrepreneurship skill and buoyancy in handling commercial ventures in the domain of landscape gardening is assured															
CO2	Student's attitude in leadership quality, managerial skill and professionalism will be enriched															
Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low																
1	**COs/POs**	**PO1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**PSO1**	**PSO2**	**PSO3**
2	**CO1**	3	2	2	-	2	-	3	-	-	-	-	2	1	2	-
	CO2	2	2	2	-	3	-	2	-	-	-	-	3	2	2	-
3	**Category**		Professional Elective (PC)													
4	**Approval**		Academic Council, Aug 2018													

Subject Code : U18EPAT451	COMMERCIAL PRODUCTION OF BIO-CONTROL AGENTS	L	T	P	C
	Total Contact Hours – 160	0	0	10	10
	Prerequisite course: Principles of Integrated Plant Disease Management				
	Course Coordinator Name & Department: Dr. T. Meera, School of Agricultural sciences				
COURSE OBJECTIVES:-	• To study in detail about the bio-control agents in Agriculture viz., Isolation, purification of bacterial and fungal bio-control agents and their mass production. • The students will learn about the Quality standards and methods of bio-control agents application.				

WORK PLAN

1. Establishment of a biocontrol unit, mass production of *Corcyra cephalonica* and *Maconellicoccus hirsutus*
2. Mass production of parasitoids viz., *Trichogramma* sp., *Chelonus blackburnii*, *Bracon* sp.
3. Mass production of parasitoids viz., *Goniozus nephanitis* and *Nesolynx thymus*
4. Mass production of predators viz., *Cryptolaemus montrouzieri* and *Chryptolaemus montrouzieri* and *Chrysoperlacarnea*
5. Rearing of host insect viz., *Helicoverpa armigera and Spodoptera litura*
6. Mass production of nuclear polyhedrosis virus of *Helicoverpa armigera and Spodoptera litura*
7. Mass production of entomopathogenic fungi viz., *Metarhizium anisopliae, Beauveria bassiana and Verticillium lecanii*
8. Bio-control agents and their significance in plant disease management- Safety procedures for handling of equipments (Autoclave, Laminar Air Flow Chamber, Hot air oven, pH meter- Safety procedures for handling of equipments (Electronic balance, Fermentor, Distillation unit, Spectrophotometer, Microscopes and Spiral Kneader- Good laboratory practices of a bio control lab - Sterilization techniques
9. Preparation of PDA and Rose Bengal agar medium - Preparation of *Trichoderma* selective medium - Preparation of Kings B medium and Nutrient Agar medium - Preparation of Actinomycetes and *Chaetomium* selective medium - Collection of soil samples and isolation of *Trichoderma, Beauveria* and *Chaetomium*
10. Collection of soil samples and isolation of *Pseudomonas fluorescens* and *Bacillus subtilis* and maintenance of pure cultures of biocontrol agents - Morphological and molecular characterization of *Trichoderma* - Morphological and molecular characterization of *Pseudomonas fluorescens* - Morphological and molecular characterization of *Bacillus subtilis*
11. Keys for the identification of lab contaminants (*Salmonella, Shigella, Vibrio, Aspergillus,Penicillium, Rhizopus* etc.,- Assessing the efficacy of *Trichoderma* under *in vitro* condition.- Assessing the efficacy of *Pseudomonas and Bacillus* under *in vitro* condition- Studies on the mode of action of *Trichoderma* against soil-borne, foliar and Post harvest pathogens - Studies on mode of action of *Pseudomonas and Bacillus* against soil-borne, foliar and Post harvest pathogens
12. Fermentation systems -Different kinds of formulations- solid , liquid oil invert formulation etc.-Mass multiplication of *Trichoderma*-Mass multiplication of *Trichoderma*-Quality analysis of *Trichoderma*
13. Mass multiplication of *Pseudomonas*-Mass multiplication of Bacillus-Quality analysis of *Pseudomonas and Bacillus*-Methods of delivery of bio control agents - *Trichoderma*

Methods of delivery of bio control agents - *Pseudomonas and Bacillus*

14. Bioefficacy of *Trichoderma* against plant diseases - Bioefficacy of *Pseudomonas and Bacillus* against plant diseases - Biocontrol agents in pipeline – *Chaetomium*-Biocontrol agents - *Beauveria*-Container content compatibility, packaging methods and shelf life studies of bio control agents.- Guidelines and requirements to establish a commercial bio control lab
15. Studies on energy requirements to establish a commercial bio control lab - Legal issues involved in the establishment of commercial bio control lab and registration (Small scale and large scale).-Legal issues involved in the establishment of commercial bio control lab and registration (Small scale and large scale).-Exposure visit to commercial bio control units-Exposure visit to commercial bio control units
16. Cost Analysis and project preparation: Principles of enterprise management.-Financial management – Agricultural Finance – Source of finance– Acquisition – Ratio analysis.

REFERENCES:

1. Kennedy, J.S and Zadda Kavitha. 2006. Manual on commercial Production of biocontrol agents. Department of Agricultural Entomology, TNAU, Coimbatore. 156p
2. Gautam, R.D. 1994. Biological Pest Suppression. Westville Publishing House, New Delhi. 221 p course plan .Text Book.

COURSE OUTCOMES (COs)	
CO1	To understand about the different group of Bio- control agents viz., fungal and bacterial bio-control agents
CO2	To impart knowledge about isolation of different group of Bio - control agents.
CO3	To understand about the purification and confirmation techniques of different bio-control agents.
CO4	Enhancing the skills on development of mass production on Fungal and Bacterial bio-control agents.
CO5	To determine the Quality standards of Bio – control agents.
CO6	To do Hands on exposure on method of application of different Bio – control agents.

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	**COs/POs**	**PO1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**PSO1**	**PSO2**	**PSO3**
2	**CO1**	2	-	-	1	2	2	3	-	-	-	-	3	2	–	-
	CO2	2	-	-	1	3	2	3	-	-	-	-	3	2	-	-
	CO3	2	-	-	2	3	2	3	-	-	-	-	3	2	-	-
	CO4	2	-	-	2	3	2	3	-	-	-	-	3	2	-	-
	CO5	2	-	-	2	3	2	3	-	-	-	-	3	2	-	-
	CO6	2	-	-	1	3	2	3	-	-	-	-	3	2	-	-
3	**Category**	Professional Elective (PC)														
4	**Approval**	Academic Council, Aug 2018														

Subject Code : U18EPAT452	COMMERCIAL MUSHROOM PRODUCTION	L	T	P	C
	Total Contact Hours – 160	0	0	10	10
	Prerequisite course	Disease of field and horticultural crops and their management - II			
	Course Coordinator Name & Department	Dr.T.Meera School of Agricultural Sciences			
COURSE OBJECTIVES:-	To study in detail about the types of mushroom production in Agriculture viz., Isolation, purification of mushroom and their mass production. The students will learn about the production technology and economics of mushroom.				

WORK PLAN

1. Studying the general characters of mushrooms-Different types of mushrooms and their morphology-Identification of edible and poisonous mushrooms-Morphological characters of *Pleurotus, Agaricus, Volvariella and Calocybe*-Equipments required for culture media preparation and tissue culture - their operation
2. Equipments required for spawn preparation - their - operation Equipments required for substrate sterilization their operation -Preparation of different types of culture media-Potato Dextrose Agar (PDA) , Oats meal agar (OMA), Malt extract Agar medium (MEA)-Pure culture technique –Tissue isolation methodology -Pure culture technique **–Tissue isolation in PDA, OMA and MEA medium**
3. Sub culturing of fungal cultures and maintenance.-Spawn preparation- laboratory requirements, essentials required for mother spawn and bed spawn preparation and their usage.- Oyster mushroom: mother spawn preparation – Cooking of cholam grains , packing in polybags and autoclaving-Oyster mushroom: mother spawn preparation – inoculation-Oyster mushroom: first generation bed spawn preparation - Cooking of cholam, packing in polybags and autoclaving
4. Oyster mushroom: first generation bed spawn preparation - inoculation Observe the spawn contaminants.Oyster mushroom: second generation bed spawn preparation – Cooking of cholam, packing in polybags and autoclavingOyster mushroom: second generation bed spawn preparation - inoculation Management of contaminants in mother spawn and bed spawn
5. Oyster mushroom cultivation – essentials required, cropping room requirement-Oyster mushroom: preparation of substrates for bed preparation-Oyster mushroom – Bed preparation-Oyster mushroom – Maintenance of beds, harvest and storing Oyster mushroom – pest and their management
6. Oyster mushroom – moulds and disease management-Visit to oyster mushroom farm (spawn lab and mushroom farm)-Visit to ulavar sandai markets (Farmers' Market) and observing the marketing pattern of oyster mushroom-Milky mushroom: mother spawn preparation – Cooking of cholam grains, packing in polybags and autoclaving-Milky mushroom: mother spawn preparation - **inoculation**
7. Milky mushroom: first generation bed spawn preparation – Cooking of cholam, packing in polybags and autoclaving- Observing the spawn contaminants, their management-Milky mushroom: first generation bed spawn preparation – inoculation-Milky mushroom: second generation bed spawn preparation – Cooking of cholam, packing in polybags and

autoclaving-Milky mushroom: second generation bed spawn preparation - inoculation

8. Milky mushroom cultivation – essentials required, cropping room requirement-Milky mushroom:– substrates for bed preparation-Milky mushroom – Bed preparation-Milky mushroom- casing-Milky mushroom – Maintenance of beds, harvest and storing
9. Milky mushroom – pest and their management Milky mushroom – moulds and disease management -Visit to Milky mushroom farm (spawn lab and mushroom farm)-Visit to ulavar sandai, markets and observing the marketing pattern of milky mushroom Button - mushroom: visiting units and learning – tissue isolation, spawn preparation
10. Button mushroom: visiting units and learning compost preparation-Button mushroom: visiting units and learning: cropping, harvest and storage-Visit to ulavar sandai, markets and observing the marketing pattern of button mushroom-Paddy straw mushroom: tissue isolation-Paddy straw mushroom**: spawn preparation**
11. Paddy straw mushroom: Substrate preparation for beds-Paddy straw mushroom: bed preparation-Paddy straw mushroom cultivation – cropping room requirement, Maintenance of beds, harvest and storing-Paddy straw mushroom – pest and disease management Abiotic disorders and their management
12. Integrated pest and disease management in Mushrooms Biodegradation of agrowastes using mushroom spawn Biodegradation of agrowastes using mushroom spawn- continuation Mushroom as a component in Integrated Farming System Interaction with successful spawn producers – TNAU community radio
13. Interaction with successful mushroom producers- TNAU community radio Short term post harvest processing of oyster mushroom-Long term post harvest processing of oyster mushroom Packing methods of oyster mushrooms-Short term post harvest processing of milky mushroom
14. Long term post harvest processing of milky mushroom Packing methods of milky mushrooms-Short term post harvest processing of button mushroom-Long term post harvest processing of button mushroom-Packing methods of button mushrooms
15. Canning of button mushroom-Recipe and value added products from oyster mushroom Recipe and value added products from oyster mushroom continued Recipe and value added products from milky mushroom-Recipe and value added products from milky mushroom continued
16. Recipe and value added products from button mushroom-Recipe and value added products from button mushroom continued-Recipe and value added products from paddy straw mushroom-Project preparation on oyster -spawn production and economics-Project preparation on oyster mushroom production and cost estimation-Project preparation on milky spawn production and cost estimation-Project preparation on milky mushroom production and cost estimation-Project preparation on button -spawn production and cost estimation-Project preparation on button - mushroom production and cost estimation

REFERENCES:

1. Agarwal, R.K. and C.L.Jandaik.1986. Mushroom cultivation in India. Indian Mushroom Growers Association, Solan, Himachal Pradesh.p-83.
2. Bahl, N.1988. Hand book of Mushroom II Edn. Oxford & IBM Publishing Co. New Delhi. Reference books- further reading

3. Marimuthu, T., A.S Krishnamoorthy, K.Sivaprakasam and R.Jeyarajan, 1989. OysterMushroom Production. The Vijay Books. Sivakasi, India.P.57.
4. A.S Krishnamoorthy, Marimuthu, T., and S. Nakkeran . 2005 . Mushroom Biotechnology ,The Vijay Books. Sivakasi, India., Pub.ODL, TNAU, Cbe-3
5. Pathak,V.N. Nagendra Yadav and Maneeskas Gaur.2000.Mushroom production and processing Technology. Agribios (India) Ltd., New Delhi

E-REFERENCES

1. www.mushroomcouncil.com/grow /grow.html
2. www.krishiworld.com/html/mushroom.html
3. www.gmushrooms.com /pots.html.
4. www.mushworld.com /home/
5. www.mushroomcouncil.org

COURSE OUTCOMES (COs)	
CO1	Understand about the different types of mushroom viz., Edible and poisonous type - edible mushrooms-*Pleurotus*, *Agaricus*, *Volvariella* and *Calocybe*
CO2	Impart knowledge about isolation of different types of mushrooms.
CO3	Understand about the isolation, purification and confirmation techniques of different mushroom.
CO4	Enhancing the skills on development of mass production on types of mushrooms.
CO5	To determine the Quality standards of mushroom mother culture.
CO6	To do Hands on exposure on production technology of different types of mushroom.

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	**COs/POs**	**PO1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**PSO1**	**PSO2**	**PSO3**
2	**CO1**	2	-	-	2	2	2	3	-	-	-	-	3	2	–	-
	CO2	2	-	-	2	3	2	3	-	-	-	-	3	2	-	-
	CO3	2	-	-	1	3	3	3	-	-	-	-	3	2	-	-
	CO4	2	-	-	2	3	2	3	-	-	-	-	3	2	-	-
	CO5	2	-	-	2	3	2	3	-	-	-	-	3	2	-	-
	CO6	2	-	-	1	2	2	3	-	-	-	-	3	2	-	-
3	**Category**	Professional Elective (PC)														
4	**Approval**	Academic Council, Aug 2018														

Subject Code : U18EAMP451	COMMERCIAL BROILER AND LAYER PRODUCTION	L	T	P	C
	Total Contact Hours – 160	0	0	10	10
	Prerequisite course: Livestock and Poultry Management				
	Course Coordinator Name & Department: Dr. R. Anbarasan, School of Agricultural Sciences				
COURSE OBJECTIVES:-	• To provide a comprehensive knowledge about the scientific rearing of the broiler. • To enable the students to acquire practical knowledge to manage a profitable small-scale commercial broiler farm. • To impart the "cutting edge" technologies used in broiler industry which will reinforce the student's entrepreneurship skills.				

WORK PLAN

1. Current status of broiler and layer industry -Scope of broiler and layer production in India - Commercial strains of broilers and layers- Location and layout of commercial broiler and layer farm Preparation of poultry house
2. Equipments used in broiler and layer farm- Different system of Management - Deep litter system - Cage system of management, Raised housing - Litter management
3. Preparation of brooder house- Brooder Management, Grower management and Layer management- Summer management of broiler and layer- Winter management of broiler and layer- Lighting management
4. Common procedures followed in broiler and layer farm.-Water – Requirement-Quality analysis and its maintenance-Feeding Management of broilers and layers- Types of feed
5. Feed ingredients-Quality assessment of feed ingredients and feed-Additive and supplementation of additives-Storage of feed-Feeding Methods-Nutrient requirement of different stages of broilers and layers
6. Various standards for broilers and layers-Feed formulation-Least cost formulation-Preparation of compound feed-Components in feed mill
7. Feed mill operations-Hatchery Management-Hatchery layout and design-Hatcher and Setter Collection and handling of egg
8. Setting and hatching of eggs and chicks quality assessment-Common disease of broilers and layers-Control and Prevention-Medication and Vaccination in broilers and layers-Different vaccination methods
9. Cold chain for vaccine-Vaccination schedule for broilers and layers-Postmortem inspection Disposal of waste -dead birds and manure
10. Biosecurity measures.
11. Processing of broilers-Slaughtering of broilers and cut up parts of broilers
12. Evaluation of egg for its quality Record maintenance-Marketing Channels in broilers and layers
13. Export of egg and poultry meat -Integration method of broilers marketing
14. Team teaching along with Department of Economics on Economics of broiler and layers farming and Project preparation for broiler and layer farm unit for bank loan
15. Role of NECC and BCC in marketing of poultry and its products
16. Visit to commercial broiler farm, layer farm, feed plant, hatchery unit and processing plant.

COURSE OUTCOMES (COs)	
CO1	Practicing various techniques of scientific rearing of the broiler
CO2	Develop management of brood, litter and feeding etc.,
CO3	Understand the farm economics and marketing of broiler

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	COs/POs	PO1	2	3	4	5	6	7	8	9	10	11	12	PSO1	PSO2	PSO3
2	**CO1**	2	3	3	2	2	2	3	-	-	-	-	3	2	–	-
	CO2	2	2	1	2	3	3	3	-	-	-	-	3	2	-	-
	CO3	2	2	2	2	3	2	3	-	-	-	-	3	2	-	-
3	**Category**	Professional Elective (PC)														
4	**Approval**	Academic Council, Aug 2018														

Subject Code : U18ESST 451	COMMERCIAL SEED PRODUCTION		L	T	P	C
	Total Contact Hours – 160		0	0	10	10
	Prerequisite course	Principles of Seed Technology				
	Course Coordinator Name & Department	Dr. R. Anbarasan School of Agricultural Sciences				
COURSE OBJECTIVES:-	To give practical exposure to the students in various techniques in seed production of agriculture and horticulture crops.					

WORK PLAN

1. Scope and importance of seed industry and seed production - principles and practices of seed production - generation system of seed multiplication.
2. Pollination behaviour - tools employed in hybrid seed production - study of morphological characters of varieties, parental line and hybrids.
3. Designing of planting ratio and border rows - physical and genetic contaminants - isolation distance.
4. Planning of seed production - season and land selection - assessment of seed source and seed selection.
5. Pre sowing seed invigouration treatments - dormancy breaking treatments - seed priming - pelleting - polymer coating.
6. Practicing nursery and main field preparation - practicing the sowing of seeds in the nursery - protray nursery - sowing - nursery management.
7. Main field preparation - layout - formation of beds - transplanting - fertilizer and nutrient management
8. Weed management - irrigation management - special cultural practices - pest and disease management.
9. Identification and removal of off-types and volunteer plants - practicing hybridization techniques (emasculation and pollination and detasseling) - identification of physiological disorders and management.
10. Exposure visit to seed certification department - seed certification procedures - registration and sowing report - field inspection - field counting - visit to seed production plots - project preparation.
11. Pre-harvest sanitation spray - identification of physiological and harvestable maturity indices- harvesting methods - project preparation.
12. Post harvest verification - kapas sorting, cob sorting and pod verification - threshing / extraction of seeds - processing sequence - seed drying - seed cleaning - grading - pre-storage seed treatment - seed packing - seed storage.
13. Visit to seed processing unit and seed storage godown and learning sanitation measures - project preparation.
14. Economics of variety and hybrid seed production (cost benefit ratio) - visit to private seed industry
15. Seed sampling procedure and submission of samples - project preparation
16. Seed testing procedure - estimation of seed moisture - physical purity analysis - germination test - visit to grow out test field and DNA finger printing laboratory for genetic purity assessment.
17. Visit to seed retail shop - seed marketing - project preparation and submission.

REFERENCES:

1. Agrawal, R.L. 1996. Seed Technology, Oxford & IBH Publishing Co., New Delhi.
2. Bhaskaran, M. A.Bharathi, K.Vanangamudi, N.Natarajan, P.Natesan, R.Jerlin and K.Prabakar. 2003. Principles of seed production. Kaisher Graphics, Coimbatore.
3. Copeland LO & McDonald MB. 2001. Principles of Seed Science and Technology. 4th Ed. Chapman & Hall.
4. Singhal NC. 2003. Hybrid Seed Production in Field Crops. Kalyani Publishers, New Delhi.
5. Vanangamudi, K. 2014. Seed Science and Technology. An Illustrated Text Book. New India Publishing Agency, New Delhi.

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1. Seednet.gov.in
2. www.iar.org.in/Directorate1.htm
3. www.apsa.org
4. www.seedassociationofindia.com
5. www.apaseed.com
6. www.apaseed.org

COURSE OUTCOMES (COs)	
CO1	Ability to produce agriculture and horticulture seeds.
CO2	Improve the skills on the use latest techniques in seed production.
CO3	Improve the post harvest technologies and seed quality enhancement techniques
CO4	Learnt about seed certification and their procedures
CO5	Develop the skills on the problems in seed testing and seed storage
CO6	Acquire skills on packing and marketing to farmers and other needy people.

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	**COs/POs**	**PO1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**PSO1**	**PSO2**	**PSO3**
2	**CO1**	2	-	-	-	2	2	3	-	3	-	-	3	2	–	-
	CO2	2	-	-	-	3	3	3	-	3	-	-	3	2	-	-
	CO3	2	-	-	-	3	2	3	-	3	-	-	3	2	-	-
	CO4	3	-	-	2	3	2	3	-	3	-	-	3	2	-	-
	CO5	2	2	-	-	3	2	3	-	3	-	-	3	2	-	-
	CO6	2	-	-	-	-	3	2	-	3	-	-	3	2	-	-
3	**Category**	Professional Elective (PC)														
4	**Approval**	Academic Council, Aug 2018														

Subject Code : U18EPBG 451	HYBRID PEARL MILLET SEED PRODUCTION	L	T	P	C
	Total Contact Hours – 160	0	0	10	10
	Prerequisite course	Fundamentals of Plant Breeding			
	Course Coordinator Name & Department	Dr. R. Anbarasan School of Agricultural Sciences			
COURSE OBJECTIVES:-	To give practical exposure to the students in hybrid pearl millet seed production				

WORK PLAN

1. Studying the botany of Pearl millet, Flowering behavior and mode of pollination. Hybridization techniques, characteristics of A, B & R lines. Significance of hybrid Breeding in pearl millet. Maintenance breeding of A, B and R lines.
2. TNAU Cumbu hybrid CO 9 seed production; (ICMA 99111 x PT 0029-30 R) -Duration 75-80 days-Selection of field based on the isolation distance (500 m)-Seed treatment-Staggered sowing : Male parent (PT 6029-30) R line sowing has to be taken up seven days earlier than-female parent).-Ist sowing : PT 6029 – 30 R (male parent – R line)-Seed rate 1.5 kg/ha R line-Row Ratio : 4:2 (4 A : 2 R)-Spacing : 45 x 15 cm-Fertilizer application-Herbicide application
3. IInd sowing : ICMA 93111 (Female parent A line) After 7 days of male line sowing -Sowing of border Rows : R line - 4 Rows.
4. Thinning of seedlings in both A and R lines
5. Weeding and irrigation
6. Top dressing of fertilizer
7. IInd weeding and pest and disease control measures - Monitoring of flowering and rogueing
8. Thorough rogueing of the A line and harvesting
9. Thorough rogueing of the A line and harvesting
10. Threshing in the a separate threshing floor
11. Seed cleaning
12. Germination test - Seed treatment of hybrid seed
13. Seed packing
14. Preparation and submission

REFERENCES:

1. Singh, B.D. 2007. Plant breeding - Principles and methods.
2. Phundan Singh. 2015. Essentials of Plant Breeding. Kalyani Publishers, New Delhi
3. Singhal NC. 2003. Hybrid Seed Production in Field Crops. Kalyani Publishers, New Delhi.
4. Bharadwaj, D.N. 2012. Breeding Field Crops. Agrobios (India),Jodhpur - 342002

E - REFERENCES:

1. www.cimmyt.org
2. www.nbpgr.nic.in
3. www.irri.org
4. www.icrisat.org

COURSE OUTCOMES (COs)	
CO1	Able to identify female and male parent seeds in pearl millet
CO2	Develop skills on Selection of field based on the isolation distance
CO3	Learnt about the rouging method of genetically pure parental line seed production techniques in pearl millet hybrid
CO4	Understand the problems in agronomic practices in hybrid pearl millet seed production
CO5	Improve the harvesting technologies and seed treatment techniques
CO6	Acquire skills on packing and marketing of produced seeds.

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	COs/POs	PO1	2	3	4	5	6	7	8	9	10	11	12	PSO1	PSO2	PSO3
2	**CO1**	2	2	-	-	2	-	-	-	2	-	-	3	2	-	-
	CO2	2	2	-	-	1	2	-	-	3	-	-	3	2	-	-
	CO3	3	-	-	2	2	2	-	-	3	-	-	3	2	-	-
	CO4	3	2	2	-	-	2	-	-	2	-	-	3	2	-	-
	CO5	2	-	-	1	3	2	-	-	3	-	-	3	2	-	-
	CO6	3	-	-	1	3	2	-	-	2	-	-	3	2	-	-
3	**Category**	Professional Elective (PC)														
4	**Approval**	Academic Council, Aug 2018														

Subject Code : U18EPBG452	HYBRID RICE: PARENTAL LINE SEED PRODUCTION TECHNIQUE		L	T	P	C
	Total Contact Hours – 160		0	0	10	10
	Prerequisite course	Fundamentals of Plant Breeding				
	Course Coordinator Name & Department	Dr. S. Anandhi Lavanya School of Agricultural Sciences				
COURSE OBJECTIVES:-	To learn the method of genetically pure parental line seed production techniques inrice hybrid CORH 3					

WORK PLAN

1. Studying botany of Rice, Hybrids and their development , breeding methods used in hybrid rice parental line development, Impact of Hybrid Rice in Tamil Nadu
2. Selection of field based upon the land with adequate fertility, drainage, irrigation, sun light and free air with adequate isolation distance (100 m distance isolation or 25 days time isolation).
3. Seed treatment with Carbendazim, *Pseudomonas fluorescens* and *Azospirillum*
4. Staggered sowing of A x B line seed production in CORH 3 rice Hybrid**CORH 3**
   A - Female (Male sterile) TNAU CMS 2A,B - Male (Maintainer line) TNAU CMS 2B
   Staggered sowing of parents
   First sowing of Male line (B1) 3 days before A line sowing – 3kg - Single sowing of the entire female (A) line seeds - 20kg and second sowing of male line (B2) 3kg - on the same day -Third sowing of Male line (B3) 3 days after A line sowing – 4kg
5. Seedlings pest and disease management in nursery - Main field preparation
6. Transplanting the seedlings in the main field
7. Weedicide application : Three days after planting, application of Butacholor @ 2.5 litres / hectare with 50 kg sand retaining 1 cm water in the main field.
8. After weedicide application,the water should not be drained from the field for two days
9. Crop protection measures to be followed - Fertilizer application (Top dressing) -Panicle initiation and flowering - Adjustment of flowering date
10. Copious irrigation hastens the flowering in Male (B) line - Draining the water will delay the flowering in Male (B) line - If there is early flowering in Male (B) line than the Female (A) lines those ear heads may be jerked (removed)
11. Genetically different plants in both ‘A’ and ‘B’ lines should be removed periodically from tillering stage onwards -Pollen shedders in ‘A’ line should be removed from flowering to grain filling stage daily
12. Panicle exsertion is incomplete in ‘A’ line -Two times of GA3 spray with Knapsack sprayer is needed to make the complete panicle-exsertion-First spray of 60g GA3 in 500 litres of water/ha at the time of 20 percent flowering-Second spray 40g in 500 litres of water/ha on the next day within 24 hours after the first spray Dissolve GA3 first in Methyl alcohol 1g in 10 cc and then in water-Spray the solution at 8.00 to 10.00 a.m. or 4.00 to 6.00 p.m
13. It is done to promote higher cross pollination.-Rope pulling or stick shaking for 10 days from 20 per cent flowering Best time is 10.00 to 1.00 a.m.
14. Male (B) line should be harvested first and removed-Final rogueing should be done before the harvest of female (A) line-Harvested produce should be threshed, cleaned, dried and

stored properly at 12% moisture

15. Monitoring of farmers field for hybrid performance
16. Calculation of Economics of seed production

REFERENCES:

1. Singh, B.D. 2007. Plant breeding - Principles and methods.
2. Phundan Singh. 2015. Essentials of Plant Breeding. Kalyani Publishers, New Delhi
3. Singhal NC. 2003. Hybrid Seed Production in Field Crops. Kalyani Publishers, New Delhi.
4. Bharadwaj, D.N. 2012. Breeding Field Crops. Agrobios (India),Jodhpur – 342002

E- REFERENCES:

1. Seednet.gov.in
2. www.cimmyt.org
3. www.nbpgr.nic.in
4. www.irri.org
5. www.icrisat.org

COURSE OUTCOMES (COs)	
CO1	Able to identify female and male parent seeds
CO2	Develop skills on scientific principles of hybrid seed production in rice
CO3	Learnt about the rouging method of genetically pure parental line seed production techniques in rice hybrid
CO4	Understand the problems in Parental Line Seed Production in Rice
CO5	Develop the skills on the problems in supplementary pollination
CO6	Trained to marketing of produced seeds.

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	**COs/POs**	**PO1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**PSO1**	**PSO2**	**PSO3**
2	**CO1**	2	2	-	1	2	2	-	-	-	-	-	3	2	-	-
	CO2	2	-	-	1	3	2	-	-	-	-	-	3	2	-	-
	CO3	3	-	-	2	2	2	-	-	3	-	-	3	2	-	-
	CO4	3	2	-	2	2	2	3	-	-	-	-	3	2	-	-
	CO5	2	-	-	2	3	2	-	-	3	-	-	3	2	-	-
	CO6	3	-	-	1	3	2	-	-	2	-	-	3	2	-	-
3	**Category**	Professional Elective (PC)														
4	**Approval**	Academic Council, Aug 2018														

Subject Code : U18EARM451	MANAGERIAL SKILLS FOR AGRIBUSINESS		L	T	P	C
	Total Contact Hours – 160		0	0	10	10
	Prerequisite course	Entrepreneurship development and Business Management				
	Course Coordinator Name & Department	Dr.R.Thulasiram, School of Agricultural Sciences				
COURSE OBJECTIVES:-	To conduct Experiential Learning Programme by providing Hands on training to make students become Farm Entrepreneurs					

WORK PLAN

1. Sectors of Agribusiness – Seed, Fertilizer, PP Chemicals, Poultry, Bio inputs, Food Processing, Nursery, Logistics, Warehousing, Retail, Consultancy etc.- Discussion on Agribusiness – Input sector- Discussion on Agribusiness – Processing sector- Discussion on Agribusiness – Service sector- Presentation on identified agribusiness sector – growth and future directions
2. Institutions promoting agribusiness in India-Government schemes promoting Agribusiness – Start up India, Make in India-Visit to District Industries Centre-Visit to MSME-Presentation on promotional schemes for identified agribusiness sector
3. Business incubation – Types, Process - Business incubation models-Visit to Directorate of Agribusiness Development-Discussion with the TNAU incubate-Visit to an Agribusiness firm
4. Functions of management- Functional areas of management – Operations-Functional areas of management – Human resources-Functional areas of management – Marketing-Functional areas of management - Finance
5. Location decision for a business-Layout – Goods and Services-Demand forecasting-Planning the operations-Scheduling the operations
6. Inventory management decisions-Warehousing management-Transportation management-Packaging management-Presentation of plan of operations
7. Market segmentation-Targeting and positioning-Marketing mix – 4Ps-Product - Features, brand name, uses-Place – Distribution strategies
8. Price – Pricing strategies-Promotion – Advertising and Sales promotion-Planning display, preparation of floor layout plan-Preparation of a newspaper advertisement, selection of advertising media-Visit to retail outlets to understand the retail formats
9. Visit to local shandy -Visit to Farmers market - Visit to Regulated market-Market survey – Presentation on the survey conducted
10. Forms of business organization-Farmer Producer Organizations-Visit to FPO-Financial Assistance for promoting FPOs-Presentation on the activities carried out by FPO
11. Human Relations skills required for business-Leadership – Good and Bad cases-Communication– Verbal and written communication strategies-Emotions – Emotional Intelligence-Business Etiquettes
12. Human Resource Management Policy of Firms-Human Resource Planning-Recruitment and Selection-TrainingNegotiation
13. Company Vision and Mission statement-SWOT / TOWS Analysis-BCG / Portfolio Matrix-Levels of Management-Company – Strategy formulation
14. Source of funds-Capital Budgeting Techniques-Analyzing Financial Statements-Analyzing Financial Statements-Discussion on a Case Study
15. Business Plan – components, types-Preparation of model business plan-Preparation of model business plan-Presentation of business plan-Presentation of business plan
16. Entrepreneur – Qualities, Types of Entrepreneurship -Institutes promoting Entrepreneurship-

Writing Biography of an agribusiness entrepreneur-Writing Biography of an agribusiness entrepreneur-Finding Entrepreneurial competency level

TEXT BOOKS:

1. Chopra, R.R, Kapse, P.S, Deshmukh, P.R. 2012. Entrepreneurship Development and Communication Skills. Scientific Publishers, Jodhpur, India.
2. Singal, R.K 2006. Entrepreneurship Development and Management. S.K.Kataria and sons, New Delhi, India
3. Nandan, H 2013. Fundamentals of Entrepreneurship. PHI publishers, New Delhi, India

REFERENCE BOOKS:

1. Heady Earl O and Herald R.Jenson,1954.FarmManagement Economics. Prentice Hall,New Delhi
2. S.S. Johl, J.R. Kapur. 2006. Fundamentals of Farm Business Management. Kalyani Publishers, New Delhi
3. Karan Singh and Kahlon A S. 1981. Economics of Farm Management in India. Theory and Practice. New Delhi.
4. Koontz Harold, Weihrich, Heinz, 2007.Essentials of. *Management*. *Tata McGraw Hills*, Education Private Limited, New Delhi.

E- REFERENCES:

1. http://www.eagri.org
2. http://www.tnau.ac.in
3. http://www.hillagric.ac.in
4. http://www.apeda.com
5. http://www.mpeda.com

COURSE OUTCOMES (COs)	
CO1	To impart knowledge about Agri-business sector and Functional areas on management
CO2	To understand the roles & functions of institutions available for Agri-business
CO3	To know about the supply chain management of Agri-based finished goods
CO4	To get knowledge about the marketing of agri-business products and pricing strategies
CO5	To know about the business proposals, credit sources and loan formalities
CO6	To apply financial analysis in testing the business proposals

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	**COs/POs**	**PO1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**PSO1**	**PSO2**	**PSO3**
2	**CO1**	1	-	-	1	-	-	-	-	-	-	-	1	-	2	-
	CO2	1	-	-	1	-	-	-	-	1	2	1	1	-	2	-
	CO3	-	-	-	3	-	-	-	-	1	3	2	2	-	2	-
	CO4	-	-	-	2	-	-	-	-	-	1	2	1	-	2	-
	CO5	-	-	-	3	2	-	1	-	-	2	3	3	-	2	-
	CO6	-	-	-	3	1	1	1	-	2	2	3	3	-	2	-
3	**Category**	Professional Elective (PC)														
4	**Approval**	Academic Council, Aug 2018														

Subject Code : U18EAGR451	DEVELOPMENT OF INTEGRATED FARMING SYSTEM MODEL	L	T	P	C
	Total Contact Hours – 160	0	0	10	10
	Prerequisite course	1. Fundamentals of agronomy and agricultural heritage 2. Principles of organic Farming			
	Course Coordinator Name & Department	Dr. V. Prakash School of Agricultural Sciences			
COURSE OBJECTIVES:-	• Student will learn about Integrating as many of the enterprises as possible from crop production, horticulture, animal husbandry, forestry, fisheries, value addition, *etc*., for soil and water conservations practices as applicable to different situations.				

WORK PLAN

1. Farming system: concepts, scope, objectives and advantages
2. Cropping systems for different agro climatic zones of India and Tamil Nadu Crop diversification and intensification in farming system perspective
3. Integrated Farming System
4. Enterprises selection in Integrated Farming Systems
5. Integrated Farming System models for wetland ecosystem Management of different enterprises of wetland IFS
6. Integrated farming system models for irrigated dry land ecosystem Management of different enterprises of irrigated dry land IFS
7. Integrated farming system models for dry land ecosystem Management of different enterprises of dry land IFS
8. Interaction between different components of IFS Resource recycling in integrated farming system IFS research methodology and evaluation
9. Carbon foot-printing and green house gas emission studies in IFS models Farming system characterization for up scaling IFS models to field / farm. Preparation of bankable projects in IFS under wetland eco-system
10. Preparation of bankable projects in IFS under irrigated dry land ecosystem Preparation of bankable projects in IFS under dryland ecosystem

COURSE OUTCOMES (COs)	
CO1	Knowledgeabout o prepare integrated farming system models for different eco systems.
CO2	To acquire skill on integrated dry farming technologies .
CO3	Students will know different cropping and farming system like integrated farming system.
CO4	To get knowledge on sustainable agricultural practices such as organic farming.
CO5	Analyze and prepare an IFS model to the location specific.
CO6	Analyze optional utilization and conservation of available resources and effective recycling of farm residues within system.

Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low																
1	**COs/POs**	**PO1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**PSO1**	**PSO2**	**PSO3**
2	**CO1**	1	1	3	1	-	1	2	-	-	-	3	-	3	-	-
	CO2	1	1	3	1	-	1	2	-	-	-	3	-	3	-	-
	CO3	1	1	3	1	-	1	2	-	-	-	3	-	3	-	-
	CO4	1	1	3	1	-	1	2	-	-	-	3	-	3	-	-
	CO5	1	1	3	1	-	1	2	-	-	-	3	-	3	-	2
	CO6	1	1	3	1	-	1	2	-	-	-	3	-	3	-	2
3	**Category**	Professional Elective (PC)														
4	**Approval**	Academic Council, Aug 2018														

Subject Code : U18EHOR454	PROTECTED CULTIVATION OF VEGETABLE CROPS	L	T	P	C
	Total Contact Hours – 160	0	0	10	10
	Prerequisite course: Fundamentals of Horticulture				
	Course Coordinator Name & Department: Dr.M. Dhivya, School of Agricultural Sciences				

COURSE OBJECTIVES:-

- To promote entrepreneurial skills and knowledge through meaningful hands on experience through a business model enterprise.
- To provide skills in protected cultivation production techniques and regulatory practices
- To provide an excellent opportunity to observe, think, analyse, synthesize, evaluate and apply the acquired knowledge with respect to protected cultivation of vegetables production unit.

WORK PLAN

Understanding the concept of experiential learning and identifying the broad area for experiential learning project activity in protected cultivation in vegetable crops - Fixing the area of interest for individual or group in project activity in protected cultivation (Establishment and operation of protected structures - types of growing structures - construction of poly house and shade net house - manipulation of environmental factors - practical learning in nursery raising - growing systems - growing media - sterilization - preparation of beds- planting- and cultivation practices - harvesting practices - post harvest handling – storage - project preparation and analysis of cost economics *etc*.,) - Rationale for selecting the activity in protected cultivation and formulating the anticipated methodology for execution - Preparation of the project with budget for execution and marketing - Nurturing the students potential and innovativeness in their area of interest and facilitating the project activity (planning, development and execution) - Concept of advertising the product and developing market strategies for efficient selling - Working out the cost economics / balance sheet involved in the project - Generating a reflective report about the project and the student's potential in academic and personal development

REFERENCES:

1. Prasad, S. and U. Kumar. 2005. Green house management for horticultural crops. 2nd ed. Agrobios.
2. Tiwari, G.N. 2003. Green house technology for controlled environment. Narosa Publ. House.

COURSE OUTCOMES (COs)

CO1	Students can gain knowledge on establishment and management of a commercial nursery
CO2	Can practice skills in various propagation methods and care of nursery plants and skillful in managing nursery business

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	COs/POs	PO1	2	3	4	5	6	7	8	9	10	11	12	PSO1	PSO2	PSO3
2	CO1	3	2	2	-	2	-	3	-	-	-	-	2	1	2	-
	CO2	2	2	2	-	3	-	2	-	-	-	-	3	2	2	-
3	Category	Professional Elective (PC)														
4	Approval	Academic Council, Aug 2018														

Subject Code : U18EENS451	COMPOSTING TECHNOLOGY		L	T	P	C
	Total Contact Hours – 160		0	0	10	10
	Prerequisite course	Environmental Studies & Disaster Management				
	Course Coordinator Name & Department	Mr. B. Suriya Sabarinath School of Agricultural Sciences				
COURSE OBJECTIVES:-	• To study the nature of different types of wastes and different techniques of preparing enriched composts • To know the role of microorganism in composting techniquesand study quality standards of compost					

WORK PLAN

Collection and characterization of solid-wastes – analyzing physical and chemical properties – site selection for composting – infrastructure required for compost making – processing of solid waste for composting – carbon : nitrogen ratio maintenance – selection of microbial inoculum for composting - compost bed formation – windrow method – heap method – application of microbial inoculum – recording compost heap temperature- thermophilic phase and mesophilic phase – turning of compost pile for uniform composting – moisture maintenance in compost pile – assessing reduction in carbon and nitrogen ratio – compost maturity assessment – curing of compost material – value addition through beneficial microbes - Assessing nutritive value of compost – national and international standards for compost quality parameters – project preparation for compost making facility – Marketing of compost products – working out cost benefit ratio for compost production – Record maintenance in compost making.

REFERENCES:

1. Kelly Smith. 2012. How to build, maintain and use a compost system. Atlantic publishers, Florida.
2. Augustine Afuilio, 2014. Integrated solid waste management. Hand book for Beginners, Planners, Environmentalists, Students and policy makers. Warmra Twechoprise, Nairobi, Kenya.

E- REFERENCES:

1. http.//www.eartheasy.com
2. http.//www.composting council.org
3. http.//www.Epa.gov/compost

COURSE OUTCOMES (COs)	
CO1	Understand the Aerobic and Anaerobic method of composting
CO2	Enhancing the skills on estimation of microbial load and assessment of maturity of compost by physical and chemical tests.
CO3	Acquire skills on value addition of compost.

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	COs/POs	PO1	2	3	4	5	6	7	8	9	10	11	12	PSO1	PSO2	PSO3
2	CO1	2	-	-	1	2	2	3	-	-	-	-	3	2	–	-
	CO2	2	-	-	1	3	2	3	-	-	-	-	3	2	-	-
	CO3	2	-	-	2	3	2	3	-	-	-	-	3	2	-	-
3	Category	Professional Elective (PC)														
4	Approval	Academic Council, Aug 2018														

Subject Code : U18EAGR452	ORGANIC AGRICULTURE	L	T	P	C
	Total Contact Hours – 160	0	0	10	10
	Prerequisite course	5. Fundamentals of agronomy and agricultural heritage 6. Principles of organic Farming			
	Course Coordinator Name & Department	Dr. S. Senthil Kumar School of Agricultural Sciences			
COURSE OBJECTIVES:-	To impart incurring knowledge on various aspects of organic agriculture and its importance in present world scenario and its impact on environment and soil health.				

WORK PLAN

1. Quantification of cow dung and cow urine recovery per animal and analysis their nutrients constituent. - Methods of storing of cow dung and analysis of temperature, nutrients and microbial load in different layer
2. Quantification of yield and nutrient content of fodder crops grown organically.- Quantification of biomass for different green manures and green leaf manures grown organically.
3. Experiencing mulching techniques in weed management
4. Introduction to biofertilizers, equipments and Good Laboratory practices- Preparation of culture media for biofertilizers - Isolation of Rhizobium from root nodules of leguminous plants- Isolation of Azospirillum from roots of cereal crops/ grasses- Isolation of phosphobacteria from soil- Microscopic observation of biofertilizer cultures
5. Population assessment of bacterial biofertilizers- Method of application of bacterial biofertilizers- Mass production of Arbuscular Mycorrhizal Fungi- Identification of AM propagules in roots and soil- Mass production of Azolla and method of application PPFM and Liquid bioinoculants
6. Collection, segregation, shredding and quantification of biological wastes/ farm wastes for biocompost and vermicompost preparation and initiating the pre digestion process (15 days)
7. Procuring inputs for preparing the formulations of Panchagavya, Jeevamruth and Effective Microorganisms (EM) -EM to be prepared from mother culture obtained from progressive organic farmers for multiplication- Formation of beds and digging of compost pit of required size based on the availability of thefarm wastes. Filling the pit and bed for biocompost
8. Vermicompost process respectively. Release of earthworms onto the compost bed- Monitoring the composting process for moisture and temperature for efficient composting. Sampling of partially decomposed material for determining the nutritive value especially carbon build up.
9. Harvest of matured composts, quantification and assessment of compost maturity indices and comparing with FAO standards for marketability. Characterization of Panchagavya, Jeevamruth and EM formulations - Preparation of enriched biocompost, vermicompost and FYM using Azospirillum and - Azotobacter or Azophos
10. Establishment of model pest repellants cafeteria. - Preparation and application of herbal leaf extracts in pest management.
11. Monitoring of insect pests through traps and lures. -Fruit fly trapping survey in horticultural

crops.

12. Case study on Agro-Eco System Analysis (AESA).- Push and Pull Strategies in organic crop protection.
13. Preparation of a bankable project on Establishment of a pilot scale organic manure production unit for obtaining bank loans- Diagnosis of disease symptoms and pathogens and cultural methods of disease management- Disease assessment and scoring.
14. Removal of pathogens like ergot by mechanical methods.- Preparation and foliar spraying of Arappu butter milk extract and fliar spraying ofpseudomonas butter milk extract- Preparation and foliar spraying of garlic vasambu extracts- Preparation and foliar spraying of cowdung 20% extract for BLB management
15. Organic certification – Importance and scope- Procedure for obtaining certification- Post harvest management and value addition
16. Supply chain management in Organic Farming- Exposure visit to Tamil Nadu Organic Certification Directorate and organic outlets
17. Preparation of bankable projects- Evaluation of individual and group assignments and report submission- Visit to Nationalized Banks to learn about funding for projects.

COURSE OUTCOMES (COs)	
CO1	To understand interaction between different farm enterprises and to gain the information about the impact of organic farming and indigenous practices
CO2	Knowledge about Recycle wastes of plant and animal origin in order to return nutrients to the soil, thus minimizing the use of non-renewable resources;
CO3	Understand the healthy use of soil, water and air as well as minimize all forms of pollution that may result from agricultural practices
CO4	Analyze the careful processing methods agricultural products in order to maintain the organic integrity and vital qualities of the product at all stages
CO5	Students learn government schemes and the role of NGOs in producing organic products
CO6	To understand the procedure followed for organic certification as per NPOP guidelines and to evaluate different resource management techniques in conservation agriculture.

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	**COs/POs**	**PO1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**PSO1**	**PSO2**	**PSO3**
2	**CO1**	1	2	3	1	-	-	-	-	-	-	3	-	3	2	-
	CO2	1	2	3	1	-	-	-	-	-	-	3	-	2	2	-
	CO3	1	1	3	1	1	3	-	-	-	-	3	-	3	-	-
	CO4	1	2	3	2	-	-	-	-	-	-	3	-	1	2	-
	CO5	1	2	3	-	1	3	-	-	-	-	3	-	3	2	-
	CO6	1	2	3	-	1	3	-	-	-	-	3	-	3	2	-
3	**Category**	Professional Elective (PC)														
4	**Approval**	Academic Council, Aug 2018														

BHARATH INSTITUTE OF HIGHER EDUCATION AND RESEARCH

R-2019

CURRICULUM

School of Pharmacy

School of Pharmacy

- B.Pharm - Pharmacy

Course of study

The course of study for B. Pharm shall include Semester Wise Theory & Practical as given in Table – I to VIII. The number of hours to be devoted to each theory, tutorial and practical course in any semester shall not be less than that shown in Table – I to VIII.

Table-I: Course of study for semester I

Course code	Name of the course	No.of hours	Tutorial	Credit points
UBP1T01	Human Anatomy and Physiology I– Theory	3	1	4
UBP1T02	Pharmaceutical Analysis I – Theory	3	1	4
UBP1T03	Pharmaceutics I – Theory	3	1	4
UBP1T04	Pharmaceutical Inorganic Chemistry – Theory	3	1	4
UBP1T05	Communication skills – Theory *	2	-	2
UBP1T06 UBP1T07	Remedial Biology/ Remedial Mathematics – Theory*	2	-	2
UBP1P01	Human Anatomy and Physiology – Practical	4	-	2
UBP1P02	Pharmaceutical Analysis I – Practical	4	-	2
UBP1P03	Pharmaceutics I – Practical	4	-	2
UBP1P04	Pharmaceutical Inorganic Chemistry – Practical	4	-	2
UBP1P05	Communication skills – Practical*	2	-	1
UBP1P06	Remedial Biology – Practical*	2	-	1
	Total	**32/34$^{\$}$/36$^{\#}$**	**4**	**27/29$^{\$}$/30$^{\#}$**

$^{\#}$Applicable ONLY for the students who have studied Mathematics / Physics / Chemistry at HSC and appearing for Remedial Biology (RB)course**.**

$^{\$}$Applicable ONLY for the students who have studied Physics / Chemistry / Botany / Zoology at HSC and appearing for Remedial Mathematics (RM)course**.**

* Non University Examination (NUE)

Table-II: Course of study for semester II

Course Code	Name of the course	No.of hours	Tutorial	Credit points
UBP2T01	Human Anatomy and Physiology II – Theory	3	1	4
UBP2T02	Pharmaceutical Organic Chemistry I – Theory	3	1	4
UBP2T03	Biochemistry – Theory	3	1	4
UBP2T04	Pathophysiology – Theory	3	1	4
UBP2T05	Computer Applications in Pharmacy – Theory *	3	-	3
UBP2T06	Environmental sciences – Theory *	3	-	3
UBP2P01	Human Anatomy and Physiology II –Practical	4	-	2
UBP2P02	Pharmaceutical Organic Chemistry I– Practical	4	-	2
UBP2P03	Biochemistry – Practical	4	-	2
UBP2P04	Computer Applications in Pharmacy – Practical*	2	-	1
	Total	**32**	**4**	**29**

*****Non University Examination (NUE)

Table-III: Course of study for semester III

Course code	Name of the course	No.of hours	Tutorial	Credit points
UBP3T01	Pharmaceutical Organic Chemistry II – Theory	3	1	4
UBP3T02	Physical Pharmaceutics I – Theory	3	1	4
UBP3T03	Pharmaceutical Microbiology – Theory	3	1	4
UBP3T04	Pharmaceutical Engineering – Theory	3	1	4
UBP3P01	Pharmaceutical Organic Chemistry II – Practical	4	-	2
UBP3P02	Physical Pharmaceutics I – Practical	4	-	2
UBP3P03	Pharmaceutical Microbiology – Practical	4	-	2
UBP3P04	Pharmaceutical Engineering –Practical	4	-	2
	Total	**28**	**4**	**24**

Table-IV: Course of study for semester IV

Course code	Name of the course	No.of hours	Tutorial	Credit points
UBP4T01	Pharmaceutical Organic Chemistry III– Theory	3	1	4
UBP4T02	Medicinal Chemistry I – Theory	3	1	4
UBP4T03	Physical Pharmaceutics II – Theory	3	1	4
UBP4T04	Pharmacology I – Theory	3	1	4
UBP4T05	Pharmacognosy and Phytochemistry I– Theory	3	1	4
UBP4P01	Medicinal Chemistry I – Practical	4	-	2
UBP4P02	Physical Pharmaceutics II – Practical	4		2
UBP4P03	Pharmacology I – Practical	4	-	2
UBP4P04	Pharmacognosy and Phytochemistry I – Practical	4	-	2
	Total	**31**	**5**	**28**

Table-V: Course of study for semester V

Course code	Name of the course	No.of hours	Tutorial	Credit points
UBP5T01	Medicinal Chemistry II – Theory	3	1	4
UBP5T02	Industrial Pharmacy I– Theory	3	1	4
UBP5T03	Pharmacology II – Theory	3	1	4
UBP5T04	Pharmacognosy and Phytochemistry II– Theory	3	1	4
UBP5T05	Pharmaceutical Jurisprudence – Theory	3	1	4
UBP5P01	Industrial Pharmacy I – Practical	4	-	2
UBP5P02	Pharmacology II – Practical	4	-	2
UBP5P03	Pharmacognosy and Phytochemistry II – Practical	4	-	2
	Total	**27**	**5**	**26**

Table-VI: Course of study for semester VI

Course code	Name of the course	No.of hours	Tutorial	Credit points
UBP6T01	Medicinal Chemistry III – Theory	3	1	4
UBP6T02	Pharmacology III – Theory	3	1	4
UBP6T03	Herbal Drug Technology – Theory	3	1	4
UBP6T04	Biopharmaceutics and Pharmacokinetics – Theory	3	1	4
UBP6T05	Pharmaceutical Biotechnology – Theory	3	1	4
UBP6T06	Quality Assurance –Theory	3	1	4
UBP6P01	Medicinal chemistry III – Practical	4	-	2
UBP6P02	Pharmacology III – Practical	4	-	2
UBP6P03	Herbal Drug Technology – Practical	4	-	2
	Total	**30**	**6**	**30**

Table-VII: Course of study for semester VII

Course code	Name of the course	No.of hours	Tutorial	Credit points
UBP7T01	Instrumental Methods of Analysis – Theory	3	1	4
UBP7T02	Industrial PharmacyII – Theory	3	1	4
UBP7T03	Pharmacy Practice – Theory	3	1	4
UBP7T04	Novel Drug Delivery System – Theory	3	1	4
UBP7P01	Instrumental Methods of Analysis –Practical	4	-	2
UBP7P02	Practice School*	12	-	6
	Total	**28**	**5**	**24**

***** Non University Examination (NUE)

Table-VIII: Course of study for semester VIII

Course code	Name of the course	No.of hours	Tutorial	Credit points
UBP8T01	Biostatistics and Research Methodology	3	1	4
UBP8T02	Social and Preventive Pharmacy	3	1	4
UBP8ET03A	Pharma Marketing Management	3 + 3 = 6	1 + 1 = 2	4 + 4 = 8
UBP8ET03B	Pharmaceutical Regulatory Science			
UBP8ET03C	Pharmacovigilance			
UBP8ET03D	Quality Control and Standardization of Herbals			
UBP8ET03E	Computer Aided Drug Design			
UBP8ET03F	Cell and Molecular Biology			
UBP8ET03G	Cosmetic Science			
UBP8ET03H	Experimental Pharmacology			
UBP8ET03I	Advanced Instrumentation Techniques			
UBP8ET03J	Dietary Supplements and Nutraceuticals			
UBP8ET03K	Elective Course on Pharmaceutical Product Development			
UBPPW	Project Work	12	-	6
	Total	**24**	**4**	**22**

Table-IX: Semester wise credits distribution

Semester	Credit Points
I	**27/29$/30#**
II	29
III	26
IV	28
V	26
VI	26
VII	24
VIII	22
Extracurricular/ Co curricular activities	01*
Total credit points for the program	**209/211$/212#**

* The credit points assigned for extracurricular and or co-curricular activities shall be given by the Principals of the colleges and the same shall be submitted to the University. The criteria to acquire this credit point shall be defined by the colleges from time to time.

$Applicable ONLY for the students studied Physics / Chemistry / Botany / Zoology at HSC and appearing for Remedial Mathematics course**.**

#Applicable ONLY for the students studied Mathematics / Physics / Chemistry at HSC and appearing for Remedial Biology course**.**

Tables-X: Schemes for internal assessments and end semester examinations semester wise

Semester I

Course code	Name of the course	Internal Assessment				End Semester Exams		Total Marks
		Continuous Mode	Sessional Exams		Total	Marks	Duration	
			Marks	Duration				
UBP1T01	Human Anatomy and Physiology I– Theory	10	15	1 Hr	25	75	3 Hrs	100
UBP1T02	Pharmaceutical Analysis I – Theory	10	15	1 Hr	25	75	3 Hrs	100
UBP1T03	Pharmaceutics I – Theory	10	15	1 Hr	25	75	3 Hrs	100
UBP1T04	Pharmaceutical Inorganic Chemistry – Theory	10	15	1 Hr	25	75	3 Hrs	100
UBP1T05	Communication skills – Theory *	5	10	1 Hr	15	35	1.5 Hrs	50
UBP1T06 UBP1T07	Remedial Biology/ Mathematics – Theory*	5	10	1 Hr	15	35	1.5 Hrs	50
UBP1P01	Human Anatomy and Physiology – Practical	5	10	4 Hrs	15	35	4 Hrs	50
UBP1P02	Pharmaceutical Analysis I – Practical	5	10	4 Hrs	15	35	4 Hrs	50
UBP1P03	Pharmaceutics I – Practical	5	10	4 Hrs	15	35	4 Hrs	50
UBP1P04	Pharmaceutical Inorganic Chemistry – Practical	5	10	4 Hrs	15	35	4 Hrs	50
UBP1P05	Communication skills – Practical*	5	5	2 Hrs	10	15	2 Hrs	25
UBP1P06	Remedial Biology – Practical*	5	5	2 Hrs	10	15	2 Hrs	25
Total		**70/75$/80#**	**115/125$/130#**	**23/24$/26#Hrs**	**185/200$/210#**	**490/525$/ 540#**	**31.5/33$/ 35# Hrs**	**675/725$/ 750#**

#Applicable ONLY for the students studied Mathematics / Physics / Chemistry at HSC and appearing for Remedial Biology (RB) course**.**

$Applicable ONLY for the students studied Physics / Chemistry / Botany / Zoology at HSC and appearing for Remedial Mathematics (RM) course**.**

***** Non University Examination(NUE)

Semester II

Course code	Name of the course	Internal Assessment				End Semester Exams		Total Marks
		Continuous Mode	Sessional Exams		Total	Marks	Duration	
			Marks	Duration				
UBP2T01	Human Anatomy and Physiology II – Theory	10	15	1 Hr	25	75	3 Hrs	100
UBP2T02	Pharmaceutical Organic Chemistry I – Theory	10	15	1 Hr	25	75	3 Hrs	100
UBP2T03	Biochemistry – Theory	10	15	1 Hr	25	75	3 Hrs	100
UBP2T04	Pathophysiology – Theory	10	15	1 Hr	25	75	3 Hrs	100
UBP2T05	Computer Applications in Pharmacy – Theory*	10	15	1 Hr	25	50	2 Hrs	75
UBP2T06	Environmental sciences – Theory*	10	15	1 Hr	25	50	2 Hrs	75
UBP2P01	Human Anatomy and Physiology II –Practical	5	10	4 Hrs	15	35	4 Hrs	50
UBP2P02	Pharmaceutical Organic Chemistry I– Practical	5	10	4 Hrs	15	35	4 Hrs	50
UBP2P03	Biochemistry – Practical	5	10	4 Hrs	15	35	4 Hrs	50
UBP2P04	Computer Applications in Pharmacy – Practical*	5	5	2 Hrs	10	15	2 Hrs	25
	Total	**80**	**125**	**20 Hrs**	**205**	**520**	**30 Hrs**	**725**

***** The subject experts at college level shall conduct examinations

Semester III

Course code	Name of the course	Internal Assessment				End Semester Exams		Total Marks
		Continuous Mode	Sessional Exams		Total	Marks	Duration	
			Marks	Duration				
UBP3T01	Pharmaceutical Organic Chemistry II – Theory	10	15	1 Hr	25	75	3 Hrs	100
UBP3T02	Physical Pharmaceutics I –Theory	10	15	1 Hr	25	75	3 Hrs	100
UBP3T03	Pharmaceutical Microbiology – Theory	10	15	1 Hr	25	75	3 Hrs	100
UBP3T04	Pharmaceutical Engineering – Theory	10	15	1 Hr	25	75	3 Hrs	100
UBP3P01	Pharmaceutical Organic Chemistry II – Practical	5	10	4 Hr	15	35	4 Hrs	50
UBP3P02	Physical Pharmaceutics I – Practical	5	10	4 Hr	15	35	4 Hrs	50
UBP3P03	Pharmaceutical Microbiology – Practical	5	10	4 Hr	15	35	4 Hrs	50
UBP3P04	Pharmaceutical Engineering – Practical	5	10	4 Hr	15	35	4 Hrs	50
Total		**60**	**100**	**20**	**160**	**440**	**28Hrs**	**600**

Semester IV

Course code	Name of the course	Internal Assessment				End Semester Exams		Total Marks
		Continuous Mode	Sessional Exams		Total	Marks	Duration	
			Marks	Duration				
UBP4T01	Pharmaceutical Organic Chemistry III– Theory	10	15	1 Hr	25	75	3 Hrs	100
UBP4T02	Medicinal Chemistry I – Theory	10	15	1 Hr	25	75	3 Hrs	100
UBP4T03	Physical Pharmaceutics II – Theory	10	15	1 Hr	25	75	3 Hrs	100
UBP4T04	Pharmacology I – Theory	10	15	1 Hr	25	75	3 Hrs	100
UBP4T05	Pharmacognosy I – Theory	10	15	1 Hr	25	75	3 Hrs	100
UBP4P01	Medicinal Chemistry I – Practical	5	10	4 Hr	15	35	4 Hrs	50
UBP4P02	Physical Pharmaceutics II – Practical	5	10	4 Hrs	15	35	4 Hrs	50
UBP4P03	Pharmacology I – Practical	5	10	4 Hrs	15	35	4 Hrs	50
UBP4P04	Pharmacognosy I – Practical	5	10	4 Hrs	15	35	4 Hrs	50
Total		**70**	**115**	**21 Hrs**	**185**	**515**	**31 Hrs**	**700**

Semester V

Course code	Name of the course	Internal Assessment				End Semester Exams		Total Marks
		Continuous Mode	Sessional Exams		Total	Marks	Duration	
			Marks	Duration				
UBP5T01	Medicinal Chemistry II – Theory	10	15	1 Hr	25	75	3 Hrs	100
UBP5T02	Industrial Pharmacy I– Theory	10	15	1 Hr	25	75	3 Hrs	100
UBP5T03	Pharmacology II – Theory	10	15	1 Hr	25	75	3 Hrs	100
UBP5T04	Pharmacognosy II – Theory	10	15	1 Hr	25	75	3 Hrs	100
UBP5T05	Pharmaceutical Jurisprudence– Theory	10	15	1 Hr	25	75	3 Hrs	100
UBP5P01	Industrial Pharmacy I– Practical	5	10	4 Hr	15	35	4 Hrs	50
UBP5P02	Pharmacology II – Practical	5	10	4 Hr	15	35	4 Hrs	50
UBP5P03	Pharmacognosy II – Practical	5	10	4 Hr	15	35	4 Hrs	50
Total		**65**	**105**	**17 Hr**	**170**	**480**	**27 Hrs**	**650**

Semester VI

Course code	Name of the course	Internal Assessment				End Semester Exams		Total Marks
		Continuous Mode	Sessional Exams		Total	Marks	Duration	
			Marks	Duration				
UBP6T01	Medicinal Chemistry III – Theory	10	15	1 Hr	25	75	3 Hrs	100
UBP6T02	Pharmacology III – Theory	10	15	1 Hr	25	75	3 Hrs	100
UBP6T03	Herbal Drug Technology – Theory	10	15	1 Hr	25	75	3 Hrs	100
UBP6T04	Biopharmaceutics and Pharmacokinetics – Theory	10	15	1 Hr	25	75	3 Hrs	100
UBP6T05	Pharmaceutical Biotechnology– Theory	10	15	1 Hr	25	75	3 Hrs	100
UBP6T06	Quality Assurance– Theory	10	15	1 Hr	25	75	3 Hrs	100
UBP6P01	Medicinal chemistry III – Practical	5	10	4 Hrs	15	35	4 Hrs	50
UBP6P02	Pharmacology III – Practical	5	10	4 Hrs	15	35	4 Hrs	50
UBP6P03	Herbal Drug Technology – Practical	5	10	4 Hrs	15	35	4 Hrs	50
Total		**75**	**120**	**18 Hrs**	**195**	**555**	**30 Hrs**	**750**

Semester VII

Course code	Name of the course	Internal Assessment				End Semester Exams		Total Marks
		Continuous Mode	Sessional Exams		Total	Marks	Duration	
			Marks	Duration				
UBP7T01	Instrumental Methods of Analysis – Theory	10	15	1 Hr	25	75	3 Hrs	100
UBP7T02	Industrial Pharmacy – Theory	10	15	1 Hr	25	75	3 Hrs	100
UBP7T03	Pharmacy Practice – Theory	10	15	1 Hr	25	75	3 Hrs	100
UBP7T04	Novel Drug Delivery System – Theory	10	15	1 Hr	25	75	3 Hrs	100
UBP7P01	Instrumental Methods of Analysis – Practical	5	10	4 Hrs	15	35	4 Hrs	50
UBP7P02	Practice School*	25	-	-	25	125	5 Hrs	150
	Total	**70**	**70**	**8Hrs**	**140**	**460**	**21 Hrs**	**600**

***** The subject experts at college level shall conduct examinations

Semester VIII

Course code	Name of the course	Internal Assessment				End Semester Exams		Total Marks
		Continuous Mode	Sessional Exams		Total	Marks	Duration	
			Marks	Duration				
UBP8T01	Biostatistics and Research Methodology – Theory	10	15	1 Hr	25	75	3 Hrs	100
UBP8T02	Social and Preventive Pharmacy – Theory	10	15	1 Hr	25	75	3 Hrs	100
UBP8ET03A	Pharma Marketing Management Theory	10 + 10 = 20	15 + 15 = 30	1 + 1 = 2 Hrs	25 + 25 = 50	75 + 75 = 150	3 + 3 = 6 Hrs	100 + 100 = 200
UBP8ET03B	Pharmaceutical Regulatory Science – Theory							
UBP8ET03C	Pharmacovigilance – Theory							
UBP8ET03D	Quality Control and Standardization of Herbals – Theory							
UBP8ET03E	Computer Aided Drug Design – Theory							
UBP8ET03F	Cell and Molecular Biology – Theory							
UBP8ET03G	Cosmetic Science – Theory							
UBP8ET03H	Experimental Pharmacology – Theory							
UBP8ET03I	Advanced Instrumentation Techniques – Theory							
UBP8ET03J	Dietary Supplements and Nutraceuticals							
UBP8ET03K	Elective Course on Pharmaceutical Product Development							
UBPPW	Project Work	-	-	-	-	150	4 Hrs	150
	Total	**40**	**60**	**4 Hrs**	**100**	**450**	**16 Hrs**	**550**

SEMESTER I

Human Anatomy & Physiology I (Theory) **Course Code: UBP1T01**

After the successful completion of the course, students should be able to:

CO1. Explain gross morphology, structure and functions of various organs of the human body.

CO2. Describe various homeostatic mechanisms and their imbalances.

CO3. Identify various tissues and organs of different systems of the human body.

CO4. Appreciate coordinated working pattern of different organs of each system

CO5. Continually develop scientific reasoning and the ability to interpret data through the biochemical parameters.

CO6. Critically evaluate health articles and medical journals related to Anatomy and Physiology.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	✔	✔		✔		✔	✔			✔	✔
CO2	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
CO3	✔	✔	✔	✔		✔	✔			✔	✔
CO4		✔		✔		✔	✔	✔		✔	✔
CO5		✔	✔	✔	✔	✔	✔			✔	✔
CO6		✔		✔		✔	✔		✔	✔	✔

Pharmaceutical Analysis - I (Theory) **Course Code: UBP1T02**

After the successful completion of the course, students should be able to:

CO1. Understand the basic concepts and principles of titrimetric, gravimetric and electrochemical analyses.

CO2. Apply the principles of titrimetric and gravimetric methods in the analyses of pharmaceuticals.

CO3. Explain concentration, calculation of a solution, its preparation, standardization and its storage conditions.

CO4. Describe the sources of errors commonly developed during drug analyses and methods to minimize them.

CO5. Discuss the techniques of conductometry, potentiometry and polarography and their applications in the analysis of pharmaceuticals.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	✔		✔			✔				✔	✔
CO2			✔	✔	✔	✔	✔	✔	✔	✔	
CO3	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
CO4			✔	✔	✔	✔	✔	✔	✔	✔	
CO5			✔						✔		✔

Pharmaceutics – I (Theory) Course Code:UBP1T03

After the successful completion of the course, students should be able to:

CO1. Describe the history of pharmacy profession and its scope.

CO2. Handle the prescription in a professional manner.

CO3. Select the dose for a drug.

CO4. Identify & suggest correction method for any possible pharmaceutical incompatibility in a formulation/prescription.

CO5. Formulate and evaluate conventional dosage forms.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	✔				✔						✔
CO2		✔	✔	✔	✔	✔	✔		✔	✔	
CO3			✔	✔	✔	✔	✔	✔			
CO4	✔		✔	✔	✔	✔	✔		✔		✔
CO5			✔	✔	✔	✔	✔			✔	

Pharmaceutical Inorganic Chemistry (Theory) Course Code: UBP1T04

After the successful completion of the course, students should be able to:

CO1. Explain the effects of impurities in pharmaceuticals.

CO2. Describe the principles and methods of limit tests to control common impurities in pharmaceutical substances.

CO3. Explain different pharmaceutical buffers, their preparations, uses in pharmaceutical system, measurement of tonicity.

CO4. Explain the medicinal importance of pharmaceutical inorganic compounds.

CO5. Discuss the principles and methodology of assay of several inorganic drugs.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	✔	✔	✔					✔	✔	✔	
CO2	✔			✔	✔	✔					
CO3		✔		✔	✔		✔		✔	✔	✔
CO4	✔			✔	✔			✔			✔
CO5	✔		✔	✔	✔	✔		✔		✔	

Communication Skills (Theory) Course Code: UBP1T05

After the successful completion of the course, students should be able to:

CO1. Explain the key terminologies of process of communication.

CO2. Identify the importance of tone, body language and active listening as elements of effective communication.

CO3. Interpret the factors influencing communication perspectives.

CO4. Explain the nuances of audience – centric presentation.

CO5. Demonstrate effective interview skills.

CO6. Apply appropriate communication style in professional context.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	✔			✔		✔		✔			✔
CO2		✔	✔	✔	✔		✔		✔	✔	
CO3		✔	✔	✔	✔		✔		✔	✔	
CO4	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	
CO5		✔	✔	✔	✔		✔		✔	✔	
CO6		✔					✔				✔

Remedial Biology (Theory) Course Code: UBP1T06

After the successful completion of the course, students should be able to:

CO1. Identify a given plant part based on its macroscopic and microscopic characteristics.

CO2. Explain the classification of plants, plant cell and its organelles.

CO3. Describe the physiological processes in plants and humans.

CO4. Explain the type of tissues present in human body.

CO5. Discuss the anatomy and functions of systems of the human body.

CO6. Appraise the coordinated working pattern of different organs of human body.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	✔		✔			✔				✔	
CO2		✔		✔	✔	✔	✔	✔			✔
CO3			✔	✔	✔	✔	✔	✔	✔		
CO4	✔			✔	✔	✔	✔	✔		✔	
CO5		✔		✔	✔	✔	✔	✔			✔
CO6	✔				✔			✔			✔

Remedial Mathematics (Theory) **Course Code: UBP1T07**

After the successful completion of the course, students should be able to:

CO1. Explains the principles of matrix algebra, analytical geometry, differential and Integral calculus, differential equations and laplace Transforms.

CO2. Solve simple problems associated with functions, Limits, continuity and partial fractions.

CO3. Apply the appropriate standard form of matrix algebra and differential equation in solving problems in applications of Pharmaceutical equations.

CO4. Solve simple mathematical problems associated with matrix algebra, differential equations and Laplace transforms.

CO5. Solve complex mathematical problems associated with matrix algebra, differential and integral calculus, as well as Laplace Transforms.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	✔		✔				✔				✔
CO2			✔		✔	✔	✔	✔	✔		
CO3		✔	✔		✔	✔	✔	✔	✔	✔	
CO4			✔		✔	✔	✔	✔	✔		
CO5	✔		✔						✔		✔

Human Anatomy & Physiology - I (Practical) **Course Code: UBP1P01**

After the successful completion of the course, students should be able to:

CO1. Understand the processes involved with maintenance of homeostasis and anticipate what may occur when homeostatic balance mechanisms are lost.

CO2. Identify structures in the body and analyze their relationship when other structures.

CO3. Employ the scientific process for understanding principles of Anatomy and Physiology.

CO4. Analyze Anatomy and Physiology observations and data and determine the potential physiological consequences.

CO5. Describe development, regeneration and normal function of body systems.

CO6. Demonstrate practical knowledge of human gross and microscopic Anatomy using human cadavers and prepared histological slides.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	✔			✔		✔	✔			✔	
CO2	✔	✔		✔			✔		✔		
CO3	✔			✔	✔	✔	✔	✔	✔	✔	✔
CO4	✔		✔	✔	✔	✔	✔	✔	✔	✔	✔
CO5	✔	✔		✔			✔		✔		
CO6	✔			✔			✔			✔	

Pharmaceutical Analysis - I (Practical) **Course Code: UBP1P02**

After the successful completion of the course, students should be able to:

CO1. Prepare primary and secondary standard solutions.

CO2. Perform standardization of secondary standard solutions.

CO3. Determine percentage purity of given pharmaceutical drugs by titrimetric analysis.

CO4. Determine normality of a solution by electro-analytical methods

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1			✔					✔			
CO2	✔		✔	✔	✔	✔	✔	✔	✔	✔	✔
CO3		✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
CO4	✔		✔	✔	✔	✔	✔	✔	✔	✔	✔

Pharmaceutics – I (Practical) **Course Code: UBP1P03**

After the successful completion of the course, students should be able to:

CO1. Compound some conventional solid, liquid and semisolid dosage forms.

CO2. Select an appropriate container and storage conditions for a product.

CO3. Label the pharmaceuticals.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	✔										
CO2	✔										
CO3	✔										

Pharmaceutical Inorganic Chemistry (Practical) **Course Code: UBP1P04**

After the successful completion of the course, students should be able to:

CO1. Adjust the level of specific impurities in the given inorganic compounds by performing different limit tests.

CO2. Use different chemical methods to prepare inorganic pharmaceuticals.

CO3. Perform identification tests as per Indian Pharmacopoeia.

CO4. Determine the impurities qualitatively be performing tests for purity.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	✔					✔				✔	✔
CO2			✔	✔	✔	✔	✔	✔	✔		✔
CO3	✔		✔	✔	✔	✔	✔	✔	✔		✔
CO4			✔				✔				✔

Communication Skills (Practical) **Course Code: UBP1P05**

After the successful completion of the course, students should be able to:

CO1. Recognize phonemes for proper articulation of words

CO2. Explain the key concepts of writing skills and listening skills

CO3. Apply listening skills and reading skills for comprehension

CO4. Demonstrate conversation skills using appropriate body language and tone

CO5. Demonstrate audience – centric presentation

CO6. Develop professional written document.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	✔			✔		✔	✔		✔	✔	
CO2		✔	✔	✔	✔		✔				✔
CO3		✔	✔	✔	✔		✔	✔		✔	
CO4	✔	✔	✔	✔	✔		✔		✔	✔	
CO5		✔	✔	✔	✔	✔	✔				✔
CO6			✔				✔		✔		

Remedial Biology (Practical) **Course Code: UBP1P06**

After the successful completion of the course, students should be able to:

CO1. Identify different types of human bones

CO2. Prepare microscopic sections of parts of the plant

CO3. Identify various systems of frog using computer models

CO4. Determine Blood groups

CO5. Record blood pressure and tidal volume.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	✔		✔					✔		✔	
CO2		✔		✔	✔	✔	✔	✔			
CO3	✔		✔	✔	✔	✔	✔	✔			✔
CO4				✔	✔	✔	✔	✔		✔	
CO5		✔				✔					✔

SEMESTER II

Human Anatomy & Physiology – II (Theory) **Course Code: UBP2T01**

After the successful completion of the course, students should be able to:

CO1. Describe and integrate knowledge about the functions and needs of the various tissues, organs and organ systems, and explain how they relate to health and common pathologies and their pharmacological treatments in the context of disease, trauma and exercise.

CO2. Measure basic physiological parameters, perform basic analyses, and interpret the data, taking into account the limitations of the morphology on the conclusions that can be drawn.

CO3. Integrate knowledge of skills in human physiology with other areas of science such as sport and exercise science, and paramedical courses.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	✔			✔	✔	✔	✔				✔
CO2		✔		✔	✔	✔	✔		✔		
CO3				✔	✔	✔	✔				✔

Pharmaceutical Organic Chemistry-I (Theory) **Course Code: UBP2T02**

After the successful completion of the course, students should be able to:

CO1. Will classify organic compounds based on their general characteristics and functional groups present.

CO2. Will be able to outline synthetic strategies of important organic compounds.

CO3. Discuss the possible isomers of organic compounds.

CO4. Describe the mechanisms in organic reactions.

CO5. Outline the properties and uses of organic compounds studied.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	✔	✔			✔	✔	✔	✔			✔
CO2	✔			✔	✔	✔	✔	✔		✔	
CO3	✔		✔		✔	✔	✔	✔			
CO4	✔				✔	✔	✔	✔	✔		
CO5	✔					✔				✔	✔

Biochemistry (Theory) **Course Code: UBP2T03**

After the successful completion of the course, students should be able to:

CO1. Describe the concepts of biological oxidation and bioenergetics

CO2. Explain the role, classification and metabolism of various bio molecules i.e. carbohydrates, proteins and lipids

CO3. To study the application of enzyme inhibition in pharmaceutical industry

CO4. Discuss the Metabolism of nucleic acids and protein biosynthesis

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	✔				✔					✔	
CO2	✔	✔		✔	✔	✔	✔	✔			✔
CO3	✔			✔	✔	✔	✔	✔	✔		
CO4	✔		✔	✔	✔	✔	✔	✔		✔	

Pathophysiology (Theory) **Course Code: UBP2T04**

After the successful completion of the course, students should be able to:

CO1. Explain the signs and symptoms of diseases.

CO2. Describe the principles of Cell Injury and Adaptation.

CO3. Identify storage conditions for inorganic pharmaceuticals.

CO4. Explain the mechanisms involved in inflammation and repair.

CO5. Outline the etiology and pathogenesis of the selected disease states cuss the complications of systemic conditions to their etio-pathogenesis.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	✔		✔			✔			✔		✔
CO2	✔			✔	✔	✔	✔			✔	
CO3	✔	✔		✔	✔	✔	✔			✔	
CO4	✔			✔	✔	✔	✔				✔
CO5	✔		✔						✔		

Computer Applications in Pharmacy (Theory) **Course Code: UBP2T05**

After the successful completion of the course, students should be able to:

CO1. Explain the applications of computer in Pharmacy.

CO2. Explain bioinformatics and their impact in vaccine discovery.

CO3. Analyse the different types of databases.

CO4. Create data bases using MS Access, SQL.

CO5. Identify the role of computers for data analysis in the field of preclinical development.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	✔	✔		✔			✔				✔
CO2	✔	✔	✔	✔		✔	✔	✔		✔	
CO3	✔	✔		✔	✔	✔	✔	✔			
CO4	✔	✔		✔		✔	✔	✔	✔		✔
CO5	✔	✔		✔							

Environmental Science (Theory) **Course Code: UBP2T06**

After the successful completion of the course, students should be able to:

CO1. Describe the natural resources.

CO2. Generate interest in environment improvement.

CO3. Create awareness about ecosystems and their functions.

CO4. Develop an attitude of concern towards environmental pollution.

CO5. Recommend necessary measures for identifying and solving environmental issues.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	✔		✔							✔	✔
CO2				✔	✔	✔	✔			✔	
CO3		✔		✔	✔	✔	✔			✔	
CO4				✔	✔	✔	✔	✔		✔	✔
CO5	✔									✔	

Human Anatomy and Physiology - II (Practical) **Course Code: UBP2P01**

After the successful completion of the course, students should be able to:

CO1. Categorize nervous system and recognizes cells of the nervous system.

CO2. Explain the importance of nervous system.

CO3. Explain the physiology of skeletal muscle contraction.

CO4. Explain the properties of digestive and excretory system.

CO5. Explain the importance of respiratory system.

CO6. Explain the structure and functions of male and female reproductive systems.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	✔		✔							✔	
CO2	✔			✔	✔	✔	✔		✔		
CO3	✔	✔		✔	✔	✔	✔				✔
CO4	✔			✔	✔	✔	✔	✔			
CO5	✔		✔	✔	✔	✔	✔		✔	✔	
CO6	✔										

Pharmaceutical Organic Chemistry - I (Practical) **Course Code: UBP2P02**

After the successful completion of the course, students should be able to:

CO1. Detect the extra elements present in compounds.

CO2. Identify organic compounds by systematic qualitative analysis.

CO3. Determine the boiling point/melting point of organic compounds.

CO4. Construct molecular models of compounds using atomic models sets.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	✔		✔			✔					✔
CO2	✔	✔	✔		✔	✔	✔	✔		✔	
CO3	✔		✔		✔	✔	✔	✔			
CO4	✔		✔	✔				✔	✔		✔

Biochemistry (Practical) **Course Code: UBP2P03**

After the successful completion of the course, students should be able to:

CO1. Identify normal and abnormal biochemical constituents of urine.

CO2. Determine carbohydrates and proteins.

CO3. Perform identification tests as per Indian Pharmacopoeia.

CO4. Estimate biochemical parameters in blood and urine.

CO5. Analyse and determine the factors affecting enzyme activity.

CO6. Analyse and report the physiological and pathological constituents of urine.

CO7. Handle various instruments used in biochemical investigations.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	✔		✔								✔
CO2	✔		✔	✔		✔	✔	✔	✔		
CO3	✔		✔			✔	✔	✔	✔	✔	
CO4	✔		✔			✔	✔	✔	✔		
CO5	✔		✔		✔	✔	✔	✔	✔		
CO6	✔		✔			✔	✔	✔	✔		✔
CO7	✔		✔				✔			✔	

Computer Applications in Pharmacy (Practical) **Course Code: UBP2P04**

After the successful completion of the course, students should be able to:

CO1. Use MS Word to create questionnaires and other documentation related to pharmacy.

CO2. Use MS Access to modify the data bases created.

CO3. Handle web and XML pages to export table, forms and queries.

CO4. Generate report; work with queries on MS Access.

CO5. Create database, HTML web page.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	✔	✔		✔							✔
CO2	✔	✔	✔	✔		✔	✔	✔	✔		
CO3	✔	✔		✔	✔	✔	✔	✔	✔		
CO4	✔	✔		✔		✔	✔	✔	✔		
CO5	✔	✔		✔						✔	

SEMESTER III

Pharmaceutical Organic Chemistry-II (Theory) **Course Code: UBP3T01**

After the successful completion of the course, students should be able to:

CO1. Explain the general principles and mechanisms involved in organic reactions.

CO2. Distinguish the products obtain through simple organic reactions.

CO3. Discuss the reactivity, orientation and stability of organic reactions.

CO4. Describe the chemistry of fats and oils.

CO5. Differentiate the polynuclear organic compounds with respect to their chemistry.

CO6. Structure and uses of important organic compound

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	✔										
CO2		✔									
CO3	✔										
CO4	✔										
CO5		✔									
CO6	✔										

Physical Pharmaceutics - I (Theory) **Course Code: UBP3T02**

After the successful completion of the course, students should be able to:

CO1. Describe the principles of solubility and partition coefficient

CO2. Explain physical principles of states of matter and phase rule.

CO3. Assess the importance of pH and buffers in manufacturing pharmaceutical dosage forms and maintaining stability.

CO4. Solve problems related to states of matter, concentration expression, buffers and isotonic solutions.

CO5. Recognize basic rules and equations regarding physical principles essential for pharmaceutical applications.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	✔										
CO2		✔									
CO3			✔								
CO4			✔								
CO5							✔				

Pharmaceutical Microbiology (Theory) **Course Code: UBP3T03**

After the successful completion of the course, students should be able to:

CO1. Describe the classification, methods of identification, microbial growth/reproduction, cultivation, quantification and preservation.

CO2. Explain the microbial control techniques such as sterilization, sterility tests, disinfection and preservation of pharmaceutical products.

CO3. Recommend appropriate methods for microbiological standardization and cell culture technology.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1			✔								
CO2		✔									
CO3		✔							✔		

Pharmaceutical Engineering (Theory) **Course Code: UBP3T04**

After the successful completion of the course, students should be able to:

CO1. Explain the theoretical principles involved in unit operations

CO2. Describe the basic concepts involved in pharmaceutical operations

CO3. Perform various processes involved in pharmaceutical manufacturing processes

CO4. Explain the process of heat exchangers, filters, centrifuges, dryers, refrigeration systems etc. required for the manufacturing of various pharmaceutical formulations

CO5. Analyse the efficiency of equipment's of important operations such as filtration, drying and evaporation.

CO6. Explain the significance of construction materials in the designing and operation of equipments.

CO7. To appreciate the various preventive methods used for corrosion control in Pharmaceutical industries

CO8. Recommend the coordinated functioning of several unit operations for completion of any unit process.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	✔										
CO2	✔										
CO3		✔									
CO4			✔								
CO5		✔									
CO6		✔									
CO7										✔	
CO8								✔			

Pharmaceutical Organic Chemistry-II (Practical) **Course Code: UBP3P01**

After the successful completion of the course, students should be able to:

CO1. Take up synthesis of various organic compounds by different chemical reactions.

CO2. Purify organic compounds using various procedures like recrystallization and steam distillation.

CO3. Determine the purity of fats and oils.

CO4. Calculate the percentage yields of the products obtained by synthesis

CO5. Apply recrystallization and steam distillation methods for purification of synthesized organic compounds.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	✔										
CO2	✔										
CO3		✔									
CO4			✔								
CO5	✔										

Physical Pharmaceutics-I (Practical) **Course Code: UBP3P02**

After the successful completion of the course, students should be able to:

CO1. Perform solubility studies for different drugs.

CO2. Determine pKa values and estimate HLB values.

CO3. Perform and determine the percentage composition.

CO4. Calculate Critical Micellar Concentration of various surfactants

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1				✔							
CO2			✔								
CO3			✔								
CO4			✔								

Pharmaceutical Microbiology (Practical) **Course Code: UBP3P03**

After the successful completion of the course, students should be able to:

CO1. Study of apparatus used in microbiology

CO2. Different methods of sterilization and sterility testing of pharmaceuticals

CO3. Prepare culture media for the growth of microorganisms

CO4. Identify and isolate bacteria

CO5. Perform aseptic procedures for inoculation

CO6. Determine MIC of antimicrobial agents.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1				✔							
CO2				✔							
CO3		✔									
CO4						✔					
CO5				✔							
CO6			✔								

Pharmaceutical Engineering (Practical) **Course Code: UBP3P04**

After the successful completion of the course, students should be able to:

CO1. Perform experiments related to unit operations

CO2. Operate equipments used in the manufacture of pharmaceutical products.

CO3. Interpret results of the experiments conducted

CO4. Illustrate the material and energy requirements for optimizing the pharmaceutical unit processes.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1		✔									
CO2		✔									
CO3			✔								
CO4			✔								

SEMESTER IV

Pharmaceutical Organic Chemistry – III (Theory) **Course Code: UBP4T01**

After successful completion of this course, students will be able to:

CO1. Outline the concepts of stereochemistry of organic compounds

CO2. Explain the synthesis and medicinal uses of heterocyclic compounds and stereoisomers

CO3. Describe the chemistry of heterocyclic compounds

CO4. Explain the important named reactions for synthesis of organic compounds

CO5. Discuss the reactions of heterocyclic compounds

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	✔										
CO2		✔									
CO3		✔									
CO4		✔									
CO5								✔			

Medicinal Chemistry-I (Theory) **Course Code: UBP4T02**

After successful completion of this course, students will be able to:

CO1. Classify medicinal compounds according to their chemical structure

CO2. Identify the effect of physicochemical properties on biological action and drug metabolic pathways.

CO3. Explain the mode of action, synthesis and therapeutic uses and side effects of drugs.

CO4. Discuss the relationship between the structures of medicinal compounds and their biological activity.

CO5. Discuss the pharmacological actions and adverse effects of medicinal compounds.

CO6. Apply the principles of synthetic chemistry to predict the synthesis of drug molecules.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1			✔								
CO2						✔					
CO3		✔									
CO4						✔					
CO5	✔							✔			
CO6	✔										

Physical Pharmaceutics II (Theory) **Course Code: UBP4T03**

After undergoing this course students will be able to:

CO1. Explain the concepts of rheological sciences and flow properties of pharmaceutical preparations

CO2. Describe the factors leading to instability of dispersion systems

CO3. Discuss the effect of particle size distribution of powders on the manufacture of dosage forms

CO4. Outline the principles of chemical kinetics in stability testing

CO5. Apply the principles of micromeritics, rheology, chemical kinetics, stability and course dispersion in the formulation development and evaluation of dosage forms.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1		✔									
CO2	✔										
CO3								✔			
CO4	✔										
CO5									✔		

Pharmacology-I (Theory) **Course Code: UBP4T04**

After successful completion of this course, students will be able to:

CO1. Define the terminologies used in pharmacology

CO2. Explain the pharmacokinetics and mechanism of drug action at organ System / sub cellular/macromolecular levels

CO3. Outline the stages of drug development

CO4. Explain the pharmacology of drugs acting on Nervous System

CO5. Recognize adverse drug reactions and drug interactions

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1				✔							
CO2	✔										
CO3	✔										
CO4	✔										
CO5	✔										

Pharmacognosy & Phytochemistry I (Theory) **Course Code: UBP4T05**

After successful completion of this course, students will be able to:

CO1. Describe the scope and evolution of Pharmacognosy

CO2. Explain the chemical nature, uses and evaluation of crude drugs

CO3. Explain the cultivation, collection and processing of drugs of natural origin

CO4. Describe the role of herbal drugs in traditional systems of medicine

CO5. Discuss the medicinal importance of marine drugs

CO6. Compare the morphological characteristics of market samples with the authentic drugs.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	✔										
CO2		✔									
CO3		✔									
CO4		✔									
CO5	✔										
CO6	✔								✔		

Medicinal Chemistry-I (Practical) **Course Code: UBP4P01**

After successful completion of this course, students will be able to:

CO1. Synthesize medicinal compounds

CO2. Estimate partition coefficient of drugs

CO3. Determine the amount of drug present in a sample

CO4. Estimate purity of drugs

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1				✔							
CO2	✔										
CO3			✔								
CO4	✔										

Physical Pharmaceutics II (Practical) **Course Code: UBP4P02**

After successful completion of this course, students will be able to:

CO1. Estimate various flow properties of powders.

CO2. Determine the particle size using various methods.

CO3. Understand the effect of suspending agents on sedimentation volume.

CO4. Determine various order of reactions.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1				✔							
CO2				✔							
CO3						✔					
CO4	✔										

Pharmacology-I (Practical) **Course Code: UBP4P03**

After successful completion of this course, students will be able to:

CO1. Identify the appliances used in experimental pharmacology

CO2. Demonstrate routes of drug administration in animals

CO3. Choose suitable anesthetics for animal studies

CO4. Demonstrate drug action using computer models

CO5. Perform common laboratory techniques in animals

CO6. Recommend procedures for laboratory animal maintenance

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1						✔					
CO2	✔										
CO3		✔									
CO4				✔							
CO5				✔							
CO6							✔				

Pharmacognosy & Phytochemistry I (Practical) **Course Code: UBP4P04**

After successful completion of this course, students will be able to:

CO1. Demonstrate chemical tests to identify unorganized crude drugs

CO2. Evaluate the quality and purity of crude drugs

CO3. Perform linear measurements for crude drug identification

CO4. Develop quality control methods for standardisation of herbal drugs

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	✔										
CO2			✔								
CO3				✔							
CO4						✔					

SEMESTER V

Medicinal Chemistry - II (Theory) **Course Code: UBP5T01**

After the successful completion of this course students will be able to:

CO1. Explain the relationship between structure and biological activity of various drug molecules.

CO2. Discuss the most of various classes of drug molecules.

CO3. Depict synthetic routes of important medicinal agents.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	✔		✔	✔							
CO2				✔							
CO3	✔			✔							

Industrial Pharmacy - I (Theory) **Course Code: UBP5T02**

After successful completion of this course students will be able to:

CO1. Describe the physiochemical properties important for formulation of solid, liquid and sterile dosage forms.

CO2. Interpret formulation data and subsequent analysis data towards choice of the most relevant formulations.

CO3. Produce pharmaceutical formulations from known reference sources in a quality that is suitable for patient use.

CO4. Explain the concept and importance of testing of product performance, and the ability to interpret such data.

CO5. Describe the principles of sterile production and explain why quality assurance and validation of critical steps in the production process are of particular importance.

CO6. Develop cosmetics and with desired Safety, stability, and efficacy.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	✔			✔							
CO2			✔								
CO3	✔										
CO4			✔								
CO5	✔		✔	✔							
CO6			✔						✔		

Pharmacology - II (Theory) **Course Code: UBP5T03**

After successful completion of this course students will be able to:

CO1. Describe the principles, applications and types of bioassay

CO2. Explain the pharmacokinetics and mechanism of drug action at organ system/ sub cellular/macromolecular levels

CO3. Explain the pharmacology of drugs acting on systems

CO4. Recognize adverse drug reactions and drug interactions

CO5. Discuss drug mechanisms and their relevance in the treatment of diseases

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	✔			✔							
CO2			✔	✔							
CO3	✔										
CO4	✔										
CO5	✔			✔							

Pharmacognosy and Phytochemistry II (Theory) **Course Code: UBP5T04**

After successful completion of this course students will be able to:

CO1. Emphasizes on basic metabolic pathways, techniques employed in the elucidation of biosynthetic pathway and formation of different secondary metabolites through these pathways.

CO2. Describes the source, chemistry and therapeutic/commercial applications of secondary metabolites.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	✔			✔							
CO2	✔		✔	✔							

Pharmaceutical Jurisprudence (Theory) **Course Code: UBP5T05**

After successful completion of this course students will be able to:

CO1. Explain the importance of code of pharmaceutical ethics

CO2. Recognize the provisions of acts pertaining to drugs and cosmetics

CO3. Explain the latest amendments with respect to DPCO and Patent and design act

CO4. Discuss the concepts of price fixation of pharmaceutical products

CO5. Summarize the Pharmaceutical Acts and Laws and their implications in the development and marketing of pharmaceuticals

CO6. Analyze the labelling requirements of scheduled and non-scheduled formulations

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1							✔				
CO2						✔					
CO3				✔		✔					
CO4							✔				
CO5	✔										
CO6	✔										

Industrial Pharmacy - I (Practical) **Course Code: UBP5P01**

After successful completion of this course students will be able to:

CO1. Prepare formulations of different dosage forms as per the batch formula

CO2. Select suitable packaging container for a dosage form

CO3. Operate different equipment's used in preparation of dosage forms

CO4. Relate the physicochemical properties of drugs to dosage form characteristics

CO5. Evaluate different dosage forms by performing quality control tests

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	✔		✔								
CO2				✔							
CO3			✔								
CO4				✔							
CO5				✔							

Pharmacology II (Practical) **Course Code: UBP5P02**

After successful completion of this course students will be able to:

CO1. Choose physiological salt solutions for isolated tissue preparations

CO2. Demonstrate drug effects using computer models

CO3. Conduct experiments on isolated tissue preparation and in vivo studies

CO4. Interpret the effect of spasmogens and spamolytics on suitable tissue preparations

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	✔										
CO2				✔		✔					
CO3				✔							
CO4	✔			✔							

Pharmacognosy and Phytochemistry II (Practical) **Course Code: UBP5P03**

After successful completion of this course students will be able to:

CO1. Identify crude drugs by morphological and microscopical characteristics

CO2. Isolate phytoconstituents from crude drugs

CO3. Perform Paper and Thin Layer Chromatography

CO4. Isolate and analyse volatile oils

CO5. Carryout chemical tests for the identification of unorganized crude drugs

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	✔										
CO2	✔			✔							
CO3	✔		✔	✔							
CO4	✔			✔							
CO5	✔			✔							

SEMESTER VI

Medicinal Chemistry-III (Theory) **Course Code: UBP6T01**

After successful completion of this course students will be able to:

CO1. Explain the basis of chemotherapy.

CO2. Objectives: synthetic strategies of important medicinal agents.

CO3. Discuss the mechanism of action of various medicinal agents studied including their therapeutic use.

CO4. Correlate the relationship between structure and biological activity of drug molecules.

CO5. Discuss various strategies involved in drug design and drug discovery.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	✔										
CO2				✔							
CO3	✔			✔							
CO4				✔							
CO5			✔	✔							

Pharmacology-III (Theory) **Course Code: UBP6T02**

After successful completion of this course students will be able to:

CO1. Classify drugs based on their therapeutic utility

CO2. Explain the pharmacology of drugs

CO3. Explain the principles of toxicology and treatment of poisoning

CO4. Discuss the significance of biological clock in diseases and chronotherapy

CO5. Discuss drug mechanisms and their relevance in the treatment of diseases and poisoning.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	✔										
CO2	✔										
CO3	✔			✔							
CO4											
CO5	✔			✔							

Herbal Dug Technology (Theory) **Course Code: UBP6T03**

After successful completion of this course students will be able to:

CO1. Describe the WHO guidelines for Good agricultural and collection practices of herbal raw materials

CO2. Discuss WHO and ICH guidelines for the assessment of herbal drugs.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	✔		✔	✔							
CO2	✔		✔	✔							

Biopharmaceutics and Pharmacokinetics (Theory) **Course Code: UBP6T04**

After undergoing this course, student will be able to:

CO1. Understand the passage of drugs through the body: ADME.

CO2. Explain the biopharmaceutical factors associated with each administration route.

CO3. Assess the absolute and relative bioavailability of drugs from different dosage forms using either plasma or urine data.

CO4. Describe the different pharmacokinetic models.

CO5. Evaluate and estimate drug changes in the body by using pharmacokinetic models.

CO6. Ability to estimate drug clearance.

CO7. Evaluate drug bioavailability and bioequivalence.

CO8. Analyze the pharmacokinetic parameters influencing drug dosing.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	✔		✔	✔							
CO2	✔			✔							
CO3	✔			✔							
CO4			✔								
CO5	✔										
CO6		✔									
CO7				✔							

Pharmaceutical Biotechnology (Theory) **Course Code: UBP6T05**

After successful completion of this course students will be able to:

CO1. Describe the applications of immobilized enzymes and microbes in Pharmaceutical industries

CO2. Explain the aspects of genetic engineering in relation to production of pharmaceuticals

CO3. Illustrate the applications of Recombinant DNA technology

CO4. Explain the process of production of products by fermentation

CO5. Discuss the significance of immunology and monoclonal antibodies in Pharmaceutical Sciences

CO6. Identify the market samples containing biotechnological products.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	✔	✔									
CO2				✔							
CO3				✔	✔						
CO4	✔										
CO5				✔							
CO6			✔	✔							

Quality Assurance (Theory) **Course Code:UBP6T06**

After the successful completion of the course, students should be able to:

CO1. Acquire knowledge on various quality assurance systems, processes and current regulatory guidelines related to manufacturing and distribution.

CO2. Address quality issues and provide solutions needed to attain Quality leadership in an environment of continual improvement.

CO3. Understand the importance of effective documentation.

CO4. To prepare professionally competent individuals with Quality concept being engrained to achieve global quality standards in pharmaceutical industries.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1			✔	✔							
CO2					✔						
CO3				✔							
CO4			✔								

Medicinal Chemistry – III (Practical) **Course Code: UBP6P01**

After successful completion of this course students will be able to:

CO1. Explain the physio chemical properties of drugs using drug design software.

CO2. Draw chemical structures and reactions by Chem draw software.

CO3. Analyze the purity of medicinal compounds.

CO4. Prepare medicinally important compounds / intermediates.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1			✔	✔							
CO2				✔							
CO3			✔								
CO4	✔					✔					

Pharmacology III (Practical) **Course Code: UBP6P02**

After successful completion of this course students will be able to:

CO1. Calculate doses for laboratory animals

CO2. Perform toxicity studies following standard guidelines

CO3. Estimate biochemical parameters in body fluids, Demonstrate effect of drugs using computer models

CO4. Apply statistical methods for interpretation of experimental results

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1				✔							
CO2	✔										
CO3				✔							
CO4			✔	✔							

Herbal Drug Technology (Practical) **Course Code: UBP6P03**

After undergoing this course students will be able to:

CO1. Perform phytochemical screening of the extracts

CO2.Prepare herbal formulations and herbal cosmetics using standardised extracts.

CO3. Evaluate excipients of natural origin

CO4. Carryout monograph analysis of herbal drugs

CO5. Determine alcohol content, aldehyde content, total alkaloids and phenol content

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	✔										
CO2			✔								
CO3		✔									
CO4			✔								
CO5				✔							

SEMESTER VII

Instrumental Methods of Analysis (Theory) **Course Code: UBP7T01**

After successful completion of this course students will be able to:

CO1. Explain the importance of modern instrumentation in pharmaceutical analysis

CO2. Describe the fundamental principles and applications of spectroscopic techniques Viz., UV- Visible, IR, FTIR, Flame photometry and Nephelo-turbidimetry

CO3. Discuss the principle and applications of chromatographic and Electrophoretic techniques

CO4. Identify appropriate instrumental techniques for the analysis of drugs in bulk or in various dosage forms.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	✔			✔							
CO2	✔			✔							
CO3	✔			✔							
CO4	✔		✔	✔							

Industrial Pharmacy II – Theory **Course Code: UBP7T02**

After successful completion of this course students will be able to:

CO1. Manage the scale up process in pharmaceutical industry.

CO2. Assist in technology transfer.

CO3. Critically examine and evaluate scientific data and conclusions intended for regulatory review

CO4. Enable improvement of the regulatory environment by implementing and upholding good regulatory practices

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1		✔	✔	✔							
CO2			✔								
CO3			✔								
CO4	✔						✔				

Pharmacy Practice (Theory) **Course Code: UBP7T03**

After successful completion of this course students will be able to:

CO1. Know the business and professional practice management skills in community pharmacy

CO2. Conduct medication history interview and provide patient counselling

CO3. Identify and resolve various prescription related problems

CO4. Identify, categorize, assess and report Adverse Drug Reactions

CO5. Answer drug and poison information queries

CO6. Interpret clinical laboratory test(s) for specific diseases.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	✔					✔			✔		
CO2									✔		
CO3			✔								
CO4									✔		
CO5									✔		
CO6			✔								

Novel Drug Delivery Systems (Theory) **Course Code: UBP7T04**

After successful completion of this course students will be able to:

CO1. Understand the concepts and applications of Novel Drug Delivery Systems.

CO2. Apply knowledge in developing various novel formulations as per requirements.

CO3. Analyze various evaluation parameters for oral, parenteral, topical etc. drug delivery systems.

CO4. Formulate industrially feasible, cost effective strategy for development of new dosage forms.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	✔										
CO2	✔										
CO3			✔								
CO4		✔		✔							

Instrumental methods of Analysis (Practical) **Course Code: UBP7P01**

After successful completion of this course students will be able to:

CO1. Discuss the effect of impurities on the quality of drugs and behavioural pattern of drugs

CO2. Understand the SOP and usage of software associated with various analytical instruments

CO3. Gain knowledge of interpretation of spectra and of chromatograms.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1				✔							
CO2				✔							
CO3	✔		✔								
CO4											

Practice School (Theory) **Course Code: UBP7P02**

After successful completion of this course students will be able to:

CO1. Acquire knowledge about hospital, hospital pharmacy and its organization with different policies implemented.

CO2. Know various drug distribution methods and inventory control involved in a hospital.

CO3. Know the concept of Therapeutic Drug Monitoring and implementation.

CO4. Identify drug related problems, detect and monitor adverse drug reactions.

CO5. Organize and know pharmaceutical care services.

CO6. Develop skills and services needed to perform unbiased medication information functions.

CO7. Interpret clinical laboratory test(s) for specific diseases.

CO8. Know the significance and practice of rational drug use.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	✔										
CO2	✔										
CO3					✔						
CO4									✔		
CO5									✔		
CO6					✔						
CO7			✔								
CO8	✔					✔			✔		

SEMESTER VIII

Biostatistics and Research Methodology (Theory) **Course Code: UBP8T01**

After successful completion of this course students will be able to:

CO1. Recognize the importance of biostatistics in pharmacy

CO2. Select appropriate clinical study design for clinical studies.

CO3. Write the components of protocol used in clinical experiments

CO4. Statistically calculate the sample size required for the clinical studies.

CO5. Display the outcome of the clinical studies by selecting appropriate graphs.

CO6. Present, organize, and summarize the collected clinical data by descriptive statistics.

CO7. Generalize the results from the sample study to the appropriate population by testing of hypothesis with the help of inferential statistics.

CO8. Demonstrate the operation of M.S. Excel, SPSS, MINITAB(R), DoE (Design of Experiment)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	✔										
CO2		✔									
CO3		✔									
CO4		✔	✔								
CO5			✔								
CO6								✔			
CO7			✔								
CO8		✔									

Social and Preventive Pharmacy (Theory) **Course Code: UBP8T02**

After successful completion of this course students will be able to:

CO1. Explain the concepts of health, disease, hygiene and socio cultural factors related to health

CO2. Explain the concepts of prevention, control and cause of diseases.

CO3. Analyse the different national health intervention programmes

CO4. Describe the Objectives:, functioning and importance of national programmes for prevention and control of diseases.

CO5. Discuss the types of community services offered in urban and rural areas.

CO6. Illustrate the general measures of prevention and control of infections and diseases.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	✔										
CO2	✔										
CO3			✔								
CO4			✔						✔		
CO5									✔	✔	
CO6		✔							✔	✔	

Pharma Marketing Management (Theory) **Course Code: UBP8ET03A**

After successful completion of this course students will be able to:

CO1. Marketing concepts and techniques and the application of the same in the pharmaceutical industry.

CO2. Market research and distribution channels along with their implementation in the pharmaceutical industry.

CO3. Concepts of branding and product management

CO4. Theories on promotion, sales and pricing of a product.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1		✔									✔
CO2		✔									✔
CO3								✔		✔	
CO4								✔			

Pharmaceutical Regulatory Science (Theory) **Course Code: UBP8ET03B**

After successful completion of this course students will be able to:

CO1. Take independent responsibility for the development of novel drug and generic drug along with their drug products, from concepts to clinics.

CO2. Independently initiate and carry out proper actions between regulatory authorities and the marketing application authorization applicant/holder.

CO3. Critically examine and evaluate scientific data and conclusions intended for regulatory review

CO4. Enable improvement of the regulatory environment by implementing and upholding good regulatory practices.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1					✔						
CO2					✔						
CO3			✔		✔						
CO4			✔		✔						

Pharmacovigilance (Theory) **Course Code:UBP8ET03C**

After successful completion of this course students will be able to:

CO1.Appreciate the historical development and describe the national and international scenario of pharmacovigilance.

CO2.Describe the drug disease classification, coding and terminologies used in pharmacovigilance.

CO3. Detect, assess and manage the adverse drug reactions.

CO4. Learn the vaccine safety surveillance, pharmacogenomics, ICH guidelines and CIOMS.

CO5. Assess the methods to generate safety data during post approval phases of the drug.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	✔										
CO2	✔										
CO3			✔						✔		
CO4			✔						✔		
CO5			✔						✔		

Quality Control and Standardization of Herbals (Theory) **Course Code: UBP8ET03D**

After successful completion of this course students will be able to:

CO1. Explain the WHO guidelines for herbal drugs

CO2. Describe the quality assurance processes in herbal drug industry

CO3. Describe the regulatory approval processes and their registration in Indian and International markets

CO4. Discuss the application of chromatographic techniques in standardization of herbal drugs

CO5. Discuss EU and ICH guidelines for quality control of herbal drugs

CO6. Prepare the documents for New Drug

CO7. Application and herbal drugs export registration

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	✔								✔		
CO2	✔								✔		
CO3											✔
CO4				✔							
CO5											✔
CO6											✔
CO7											✔

Computer Aided Drug Design (Theory) **Course Code: UBP8ET03E**

After successful completion of this course students will be able to:

CO1. Explain the methodology involved in Design and discovery of lead molecules

CO2. Identify the Objectives: of QSAR, molecular modeling and virtual screening methods

CO3. Discuss the concepts of QSAR and docking

CO4. Apply the strategies of drug design to develop new molecules with therapeutic activity

CO5. Design new drugs using informatics and databases

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1				✔							
CO2			✔	✔							
CO3			✔	✔							
CO4			✔	✔							
CO5		✔		✔							

Cell and Molecular Biology (Theory) **Course Code: UBP8ET03F**

After successful completion of this course students will be able to:

CO1. Explain the receptor signal transduction processes and molecular pathways affected by drugs.

CO2. It also appreciate the applicability of molecular pharmacology and biomarkers in drug discovery process.

CO3. Explain the flow of genetic information from DNA to Proteins

CO4. Apply the concepts of rDNA technologies and genomics analysis to discover new therapeutic drug molecules

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	✔										
CO2	✔										
CO3	✔										
CO4	✔			✔							

Cosmetic Science (Theory) **Course Code: UBP8ET03G**

After undergoing this course, student will be able to:

CO1. Classification and key components used in different cosmetics and cosmeceuticals.

CO2. Recognize the role of the ingredients and herbs used

CO3. Advanced current technologies used for manufacturing the cosmetics at lab scale and industry scale

CO4. Justify the need for skin care and sun screen products

CO5. Scientific learning's to develop cosmetics and cosmeceuticals with desired Safety, sensory, stability, and efficacy

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	✔										
CO2	✔	✔									
CO3			✔	✔							
CO4	✔								✔		
CO5		✔							✔		

Experimental Pharmacology (Theory) **Course Code: UBP8ET03H**

After successful completion of this course students will be able to:

CO1. Describe the regulatory guideline for maintenance and conduct of experiments on laboratory animals

CO2. Design the protocol for preclinical drug discovery

CO3. Expertise in routes of drug administration and blood withdrawal techniques using animals

CO4. Adeptness in animal dose calculations

CO5. Proficiency in interpretation of preclinical statistical preclinical data

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1							✔		✔		
CO2							✔		✔		
CO3							✔		✔		
CO4							✔		✔		
CO5							✔		✔		

Advanced Instrumentation Techniques (Theory) **Course Code: UBP8ET03I**

After successful completion of this course students will be able to:

CO1. Understand significance and concept of advanced instrumentation

CO2. Understand the benefits of advanced instruments in comparison with other conventional methods.

CO3. To work on downsizing the conventional methods.

CO4. Become proficient in advanced instruments

CO5. Implement the knowledge of choosing the right instruments

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	✔			✔							
CO2	✔			✔							
CO3		✔		✔							
CO4	✔			✔							
CO5	✔		✔	✔							

Dietary Supplements and Nutraceuticals **Course Code: UBP8ET03J**

After the successful completion of the course, the student should be able to:

CO1. Describe the need of supplements by the different group of people to maintain healthy life.

CO2. Explain the concepts behind the applications of dietary supplements

CO3. Describe the outcome of deficiencies in dietary supplements.

CO4. List the components in dietary supplements and their application.

CO5. Recognize the regulatory and commercial aspects of dietary supplements including health claims.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	✔				✔						✔
CO2		✔	✔	✔	✔	✔	✔		✔	✔	
CO3			✔	✔	✔	✔	✔	✔			
CO4	✔		✔	✔	✔	✔	✔		✔		✔
CO5			✔	✔	✔	✔	✔			✔	

Project Work **Course Code: UBPPW**

After successful completion of this course students will be able to:

CO1. Work in team and undertake a project in the area of Pharmacy

CO2. Apply concepts of pharmaceutical sciences for executing the project

CO3. Apply appropriate research methodology while formulating a project

CO4. Define specifications, synthesize, analyse, develop and evaluate a project

CO5. Present, exhibit and document the project work

CO6. Develop a project report.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	✔	✔	✔	✔	✔				✔		
CO2	✔								✔	✔	
CO3	✔	✔						✔			
CO4	✔				✔					✔	
CO5	✔				✔		✔				
CO6	✔	✔			✔						

CHAPTER - II: SYLLABUS

Semester I

UBP1T01. HUMAN ANATOMY AND PHYSIOLOGY-I (Theory)

45 Hours

Scope: This subject is designed to impart fundamental knowledge on the structure and functions of the various systems of the human body. It also helps in understanding both homeostatic mechanisms. The subject provides the basic knowledge required to understand the various disciplines of pharmacy.

Objectives: Upon completion of this course the student should be able to

1. Explain the gross morphology, structure and functions of various organs of the human body.
2. Describe the various homeostatic mechanisms and their imbalances.
3. Identify the various tissues and organs of different systems of human body.
4. Perform the various experiments related to special senses and nervous system.
5. Appreciate coordinated working pattern of different organs of each system

Course Content:

Unit I **10 hours**

- **Introduction to human body**
  Definition and scope of anatomy and physiology, levels of structural organization and body systems, basic life processes, homeostasis, basic anatomical terminology.
- **Cellular level of organization**
  Structure and functions of cell, transport across cell membrane, cell division, cell junctions. General principles of cell communication, intracellular signaling pathway activation by extracellular signal molecule, Forms of intracellular signaling: a) Contact-dependent b) Paracrine c) Synaptic d) Endocrine
- **Tissue level of organization**
  Classification of tissues, structure, location and functions of epithelial, muscular and nervous and connective tissues.

Unit II **10 hours**

- **Integumentary system**
  Structure and functions of skin
- **Skeletal system**
  Divisions of skeletal system, types of bone, salient features and functions of bones of axial and appendicular skeletal system
  Organization of skeletal muscle, physiology of muscle contraction, neuromuscular junction
- **Joints**
  Structural and functional classification, types of joints movements and its articulation

Unit III **10 hours**

- **Body fluids and blood**
- Body fluids, composition and functions of blood, hemopoeisis, formation of hemoglobin, anemia, mechanisms of coagulation, blood grouping, Rh factors, transfusion, its significance and disorders of blood, Reticulo endothelialsystem.
- **Lymphaticsystem**

  Lymphatic organs and tissues, lymphatic vessels, lymph circulation and functions of lymphatic system

Unit IV **08 hours**

Peripheral nervous system:

Classification of peripheral nervous system: Structure and functions of sympathetic and parasympathetic nervous system.

Origin and functions of spinal and cranial nerves.

- **Specialsenses**

  Structure and functions of eye, ear, nose and tongue and their disorders.

Unit V **07 hours**

- **Cardiovascularsystem**

  Heart – anatomy of heart, blood circulation, blood vessels, structure and functions of artery, vein and capillaries, elements of conduction system of heart and heart beat, its regulation by autonomic nervous system, cardiac output, cardiac cycle. Regulation of blood pressure, pulse, electrocardiogram and disorders of heart.

UBP1P01. HUMAN ANATOMY AND PHYSIOLOGY (Practical)

4 Hours/week

Practical physiology is complimentary to the theoretical discussionsin physiology. Practicals allow the verification of physiological processes discussed in theory classes through experiments on living tissue, intact animals or normal human beings. This is helpful for developing an insight on thesubject**.**

1. Study of compoundmicroscope.
2. Microscopic study of epithelial and connectivetissue
3. Microscopic study of muscular and nervoustissue
4. Identification of axialbones
5. Identification of appendicularbones

6. Introduction tohemocytometry.
7. Enumeration of white blood cell (WBC)count
8. Enumeration of total red blood corpuscles (RBC)count
9. Determination of bleedingtime
10. Determination of clottingtime
11. Estimation of hemoglobincontent
12. Determination of bloodgroup.
13. Determination of erythrocyte sedimentation rate(ESR).
14. Determination of heart rate and pulserate.
15. Recording of bloodpressure.

Recommended Books (Latest Editions)

1. Essentials of Medical Physiology by K. Sembulingam and P. Sembulingam. Jaypee brothers medical publishers, New Delhi.
2. Anatomy and Physiology in Health and Illness by Kathleen J.W. Wilson, Churchill Livingstone, NewYork
3. Physiological basis of Medical Practice-Best and Tailor. Williams & Wilkins Co,Riverview,MIUSA
4. Text book of Medical Physiology- Arthur C,Guyton andJohn.E. Hall. Miamisburg, OH, U.S.A.
5. Principles of Anatomy and Physiology byTortora Grabowski. Palmetto, GA, U.S.A.

6. Textbook of Human Histology by Inderbir Singh, Jaypee brother's medical publishers, NewDelhi.
7. Textbook of Practical Physiology by C.L. Ghai, Jaypee brother's medical publishers, NewDelhi.
8. Practical workbook of Human Physiology by K. Srinageswari and Rajeev Sharma, Jaypee brother's medical publishers, NewDelhi.

Reference Books (Latest Editions)

1. Physiological basis of Medical Practice-Best and Tailor. Williams & Wilkins Co, Riverview, MIUSA
2. Text book of Medical Physiology- Arthur C, Guyton and John. E. Hall. Miamisburg, OH, U.S.A.
3. Human Physiology (vol 1 and 2) by Dr. C.C. Chatterrje ,Academic PublishersKolkata

UBP1T02. PHARMACEUTICAL ANALYSIS (Theory)

45 Hours

Scope: This course deals with the fundamentals of analytical chemistry and principles of electrochemical analysis of drugs

Objectives: Upon completion of the course student shall be able to

- understand the principles of volumetric and electro chemicalanalysis
- carryout various volumetric and electrochemicaltitrations
- develop analyticalskills

Course Content:

UNIT-I **10Hours**

(a) Pharmaceutical analysis- Definition andscope

i) Different techniques ofanalysis
ii) Methods of expressingconcentration
iii) Primary and secondarystandards.
iv) Preparation and standardization of various molar and normal solutions- Oxalic acid, sodium hydroxide, hydrochloric acid, sodium thiosulphate, sulphuric acid, potassium permanganate and ceric ammoniumsulphate

(b) Errors: Sources of errors, types of errors, methods of minimizing errors, accuracy, precision and significant figures

(c) Pharmacopoeia, Sources of impurities in medicinal agents,limittests.

UNIT-II **10Hours**

- **Acid base titration**: Theories of acid base indicators, classification of acid base titrations and theory involved in titrations of strong, weak,and very weak acids and bases, neutralizationcurves
- **Non aqueous titration**: Solvents, acidimetry and alkalimetry titration and estimation of Sodium benzoate and EphedrineHCl

UNIT-III **10Hours**

- **Precipitation titrations**: Mohr's method, Volhard's, Modified Volhard's, Fajans method, estimation of sodiumchloride.
- **Complexometric titration**: Classification, metal ion indicators, masking and demasking reagents, estimation of Magnesium sulphate, and calcium gluconate.
- **Gravimetry**: Principle and steps involved in gravimetric analysis. Purity of the precipitate: co-precipitation and post precipitation, Estimation of bariumsulphate.

- Basic Principles,methods and application of diazotisationtitration.

UNIT-IV **08Hours**

Redox titrations

(a) Concepts of oxidation andreduction

(b) Types of redox titrations (Principles andapplications)

Cerimetry, Iodimetry, Iodometry, Bromatometry, Dichrometry, Titration with potassium iodate

UNIT-V **07Hours**

- **Electrochemical methods ofanalysis**
  - **Conductometry**- Introduction, Conductivity cell, Conductometric titrations,applications.
  - **Potentiometry -** Electrochemical cell, construction and working of reference (Standard hydrogen, silver chloride electrode and calomel electrode) and indicator electrodes (metal electrodes and glass electrode), methods to determine end point of potentiometric titration andapplications.
  - **Polarography** - Principle, Ilkovic equation, construction and working of dropping mercury electrode and rotating platinum electrode,applications

UBP1P02. PHARMACEUTICAL ANALYSIS (Practical)

4 Hours / Week

I Limit Test of thefollowing

(1) Chloride
(2) Sulphate
(3) Iron
(4) Arsenic

II Preparation and standardizationof

(1) Sodiumhydroxide
(2) Sulphuricacid
(3) Sodiumthiosulfate
(4) Potassiumpermanganate
(5) Ceric ammonium sulphate

III Assay of the following compounds along with Standardization ofTitrant

(1) Ammonium chloride by acid basetitration
(2) Ferrous sulphate byCerimetry
(3) Copper sulphate byIodometry
(4) Calcium gluconate bycomplexometry
(5) Hydrogen peroxide byPermanganometry
(6) Sodium benzoate by non-aqueoustitration
(7) Sodium Chloride by precipitationtitration

IV Determination of Normality by electro-analyticalmethods

(1) Conductometric titration of strong acid against strongbase
(2) Conductometric titration of strong acid and weak acid against strongbase
(3) Potentiometric titration of strong acid against strongbase

Recommended Books: (Latest Editions)

1. A.H. Beckett & J.B. Stenlake's, Practical Pharmaceutical Chemistry Vol I &II, Stahlone Press of University ofLondon
2. A.I. Vogel, Text Book of Quantitative Inorganicanalysis
3. P. Gundu Rao, Inorganic PharmaceuticalChemistry
4. Bentley and Driver's Textbook of PharmaceuticalChemistry
5. John H. Kennedy, Analytical chemistryprinciples
6. IndianPharmacopoeia.

UBP1T03. PHARMACEUTICS- I (Theory)

45 Hours

Scope: This course is designed to impart a fundamental knowledge on the preparatory pharmacy with arts and science of preparing the different conventional dosage forms.

Objectives: Upon completion of this course the student should be able to:

- Know the history of profession ofpharmacy
- Understand the basics of different dosage forms, pharmaceutical incompatibilities and pharmaceuticalcalculations
- Understand the professional way of handling theprescription
- Preparation of various conventional dosageforms

Course Content:

UNIT– I **10Hours**

- **Historical background and development of profession of pharmacy**: History of profession of Pharmacy in India in relation to pharmacy education, industry and organization, Pharmacy as a career, Pharmacopoeias: Introduction to IP, BP, USP and ExtraPharmacopoeia.
- **Dosage forms:** Introduction to dosage forms, classification anddefinitions
- **Prescription:** Definition, Parts of prescription, handling of Prescriptionand Errors inprescription.
- **Posology:** Definition, Factors affecting posology. Pediatric dosecalculations based on age, body weight and body surfacearea.

UNIT– II **10Hours**

- **Pharmaceutical calculations**: Weights and measures – Imperial &Metric system, Calculations involving percentage solutions, alligation, proof spirit and isotonic solutions based on freezing point and molecularweight.

- **Powders:** Definition, classification, advantages and disadvantages,Simple & compound powders – official preparations, dusting powders, effervescent, efflorescent and hygroscopic powders, eutectic mixtures. Geometricdilutions.

- **Liquid dosage forms:** Advantages and disadvantages of liquid dosage forms. Excipients used in formulation of liquid dosage forms. Solubility enhancement techniques

UNIT– III **08Hours**

- **Monophasic liquids:** Definitions and preparations of Gargles, Mouthwashes, Throat Paint, Eardrops, Nasal drops, Enemas, Syrups, Elixirs, Liniments and Lotions.
- **Biphasicliquids:**
- **Suspensions:** Definition, advantages and disadvantages, classifications, Preparation of suspensions; Flocculated and Deflocculated suspension & stability problems and methods toovercome.
- **Emulsions:** Definition, classification, emulsifying agent, test for the identification of type ofEmulsion, Methods of preparation & stability problems and methods to overcome.

UNIT– IV **08Hours**

- **Suppositories**: Definition, types, advantages and disadvantages, types of bases, methods of preparations. Displacement value & its calculations, evaluation of suppositories.
- **Pharmaceutical incompatibilities**: Definition, classification, physical, chemical and therapeutic incompatibilities withexamples.

UNIV– V **07Hours**

- **Semisolid dosage forms:** Definitions, classification, mechanisms and factors influencing dermal penetration of drugs. Preparation of ointments, pastes, creams and gels. Excipients used in semi solid dosage forms. Evaluation of semi solid dosagesforms

UBP1P03. PHARMACEUTICS I (Practical)

3 Hours / week

1 .Syrups

a) SyrupIP'66

b) Compound syrup of Ferrous PhosphateBPC'68

2. Elixirs a) Piperazine citrateelixir

b) Paracetamol pediatric elixir

3.Linctus a) Terpin Hydrate LinctusIP'66

b) Iodine Throat Paint (Mandles Paint)

4. Solutions

a) Strong solution of ammoniumacetate

b) Cresol with soapsolution

c) Lugol'ssolution

5. Suspensions

a) Calaminelotion

b) Magnesium Hydroxidemixture

c) Aluminimum Hydroxidegel

6. Emulsions a) TurpentineLiniment

b) Liquid paraffin emulsion

7. Powders and Granules

a) ORS powder(WHO)

b) Effervescentgranules

c)Dustingpowder

d)Divdedpowders

8. Suppositories

a) Glycero gelatinsuppository

b) Coca buttersuppository

c) Zinc Oxidesuppository

8. Semisolids

a) Sulphurointment

b) Non staining-iodine ointment with methylsalicylate

c) Carbopalgel

9. Gargles andMouthwashes

a) Iodinegargle

b) Chlorhexidinemouthwash

Recommended Books: (Latest Editions)

1. H.C. Ansel et al., Pharmaceutical Dosage Form and Drug Delivery System, Lippincott Williams and Walkins, NewDelhi.
2. Carter S.J., Cooper and Gunn's-Dispensing for Pharmaceutical Students, CBS publishers, NewDelhi.
3. M.E. Aulton, Pharmaceutics, The Science& Dosage Form Design, Churchill Livingstone, Edinburgh.
4. Indianpharmacopoeia.
5. Britishpharmacopoeia.
6. Lachmann. Theory and Practice of Industrial Pharmacy,Lea& Febiger Publisher, The University ofMichigan.
7. Alfonso R. Gennaro Remington. The Science and Practice of Pharmacy, Lippincott Williams, NewDelhi.
8. Carter S.J., Cooper and Gunn's. Tutorial Pharmacy, CBS Publications, NewDelhi.
9. E.A. Rawlins, Bentley's Text Book of Pharmaceutics, English Language Book Society, Elsevier Health Sciences,USA.
10. Isaac Ghebre Sellassie: Pharmaceutical Pelletization Technology, Marcel Dekker, INC, NewYork.
11. Dilip M. Parikh: Handbook of Pharmaceutical Granulation Technology, Marcel Dekker, INC, NewYork.
12. Francoise Nieloud and Gilberte Marti-Mestres: Pharmaceutical Emulsions and Suspensions, Marcel Dekker, INC, NewYork.

UBP1T04. PHARMACEUTICAL INORGANIC CHEMISTRY (Theory)

45 Hours

Scope: This subject deals with the monographs of inorganic drugs and pharmaceuticals.

Objectives: Upon completion of course student shall be able to

- know the sources of impurities and methods to determine the impurities ininorganic drugs and pharmaceuticals
- understand the medicinal and pharmaceutical importance of inorganiccompounds

Course Content:

UNITI **10Hours**

- **Impurities in pharmaceutical substances:** History of Pharmacopoeia, Sources and types of impurities, principle involved in the limit test for Chloride, Sulphate, Iron, Arsenic, Lead and Heavy metals, modified limit test for Chloride andSulphate

  General methods of preparation, assay for the compounds superscripted with **asterisk (*),** properties and medicinal uses of inorganic compounds belonging to the followingclasses

UNITII **10Hours**

- **Acids, Bases and Buffers:** Buffer equations and buffer capacity in general, buffers in pharmaceutical systems, preparation, stability, buffered isotonic solutions, measurements of tonicity, calculations and methods of adjusting isotonicity.
- **Major extra and intracellular electrolytes**: Functions of major physiological ions, Electrolytes used in the replacement therapy: Sodium chloride*, Potassium chloride, Calcium gluconate* and Oral Rehydration Salt (ORS), Physiological acid basebalance.
- **Dental products**: Dentifrices, role of fluoride in the treatment of dental caries, Desensitizing agents, Calcium carbonate, Sodium fluoride, and Zinc eugenolcement.

UNITIII **10Hours**

- **Gastrointestinalagents**

  Acidifiers: Ammonium chloride* and Dil. HCl

  Antacid: Ideal properties of antacids, combinations of antacids,Sodium

Bicarbonate*, Aluminum hydroxide gel, Magnesium hydroxide mixture

Cathartics: Magnesium sulphate, Sodium orthophosphate, Kaolin and Bentonite

Antimicrobials: Mechanism, classification, Potassium permanganate, Boric acid, Hydrogen peroxide*, Chlorinated lime*, Iodine and its preparations

UNITIV **08Hours**

- **Miscellaneouscompounds**

  Expectorants: Potassium iodide, Ammonium chloride*.

  Emetics: Copper sulphate*, Sodium potassium tartarate

  Haematinics: Ferrous sulphate*, Ferrous gluconate

  Poison and Antidote: Sodium thiosulphate*, Activated charcoal, Sodium nitrite333

  Astringents: Zinc Sulphate, Potash Alum

UNITV **07Hours**

- **Radiopharmaceuticals**: Radio activity, Measurement of radioactivity, Properties of α, β, γ radiations, Half life, radio isotopes and study of radio isotopes - Sodium iodide I^{131}, Storage conditions, precautions & pharmaceutical application of radioactivesubstances.

UBP1P04. PHARMACEUTICAL INORGANIC CHEMISTRY (Practical)

4 Hours / Week

I **Limit tests for followingions**

Limit test for Chlorides and Sulphates
Modified limit test for Chlorides and Sulphates
Limit test for Iron
Limit test for Heavymetals
Limit test forLead
Limit test forArsenic

II **Identification test**

Magnesium hydroxide
Ferrous sulphate
Sodium bicarbonate
Calcium gluconate
Copper sulphate

III **Test forpurity**

Swelling power of Bentonite
Neutralizing capacity of aluminum hydroxide gel
Determination of potassium iodate and iodine in potassium Iodide

IV **Preparation of inorganicpharmaceuticals**

Boric acid
Potash alum
Ferrous sulphate

Recommended Books (Latest Editions)

1. A.H. Beckett & J.B. Stenlake's, Practical Pharmaceutical Chemistry Vol I &II, Stahlone Press of University of London, 4th edition.
2. A.I. Vogel, Text Book of Quantitative Inorganic analysis
3. P. Gundu Rao, Inorganic Pharmaceutical Chemistry, 3rd Edition
4. M.L Schroff, Inorganic PharmaceuticalChemistry
5. Bentley and Driver's Textbook of PharmaceuticalChemistry
6. Anand & Chatwal, Inorganic PharmaceuticalChemistry
7. Indian Pharmacopoeia

UBP1T05. COMMUNICATION SKILLS (Theory)

30 Hours

Scope: This course will prepare the young pharmacy student to interact effectively with doctors, nurses, dentists, physiotherapists and other health workers. At the end of this course the student will get the soft skills set to work cohesively with the team as a team player and will add value to the pharmaceutical business.

Objectives:

Upon completion of the course the student shall be able to

1. Understand the behavioral needs for a Pharmacist to function effectively in the areas of pharmaceuticaloperation
2. Communicate effectively (Verbal and NonVerbal)
3. Effectively manage the team as a teamplayer
4. Develop interviewskills
5. Develop Leadership qualities andessentials

Course content:

UNIT– I **07Hours**

- **Communication Skills:** Introduction, Definition, The Importance of Communication, The Communication Process – Source, Message, Encoding, Channel, Decoding, Receiver, Feedback, Context
- **Barriers to communication:** Physiological Barriers, Physical Barriers, Cultural Barriers, Language Barriers, Gender Barriers, Interpersonal Barriers, Psychological Barriers, Emotionalbarriers
- **Perspectives in Communication:** Introduction, Visual Perception, Language, Other factors affecting our perspective - Past Experiences, Prejudices, Feelings,Environment

UNIT– II **07Hours**

- **Elements of Communication:** Introduction, Face to Face Communication - Tone of Voice, Body Language (Non-verbal communication), Verbal Communication, Physical Communication
- **Communication Styles:** Introduction, The Communication Styles Matrix with example for each -Direct Communication Style, Spirited Communication Style, Systematic Communication Style, Considerate CommunicationStyle

UNIT– III **07Hours**

- **Basic Listening Skills:** Introduction, Self-Awareness, Active Listening, Becoming an Active Listener, Listening in DifficultSituations
- **Effective Written Communication:** Introduction, When and When Not to Use Written Communication - Complexity of the Topic, Amount of Discussion' Required, Shades of Meaning, FormalCommunication
- **Writing Effectively:** Subject Lines, Put the Main Point First, Know Your Audience, Organization of theMessage

UNIT– IV **05Hours**

- **Interview Skills:** Purpose of an interview, Do's and Dont's of aninterview
- **Giving Presentations:** Dealing with Fears, Planning your Presentation, Structuring Your Presentation, Delivering Your Presentation, Techniques ofDelivery

UNIT– V **04Hours**

- **Group Discussion:** Introduction, Communication skills in group discussion, Do's and Dont's of groupdiscussion

UBP1P05. COMMUNICATION SKILLS (Practical)

2 Hours / week

Thefollowing learning modules are to be conducted using words worth® English language lab software

Basic communication covering the following topics

Meeting People

Asking Questions

Making Friends

What did you do?

Do's and Dont's

Pronunciations covering the following topics

Pronunciation (Consonant Sounds)

Pronunciation and Nouns

Pronunciation (Vowel Sounds)

Advanced Learning

Listening Comprehension / Direct and Indirect Speech

Figures of Speech

Effective Communication

Writing Skills

Effective Writing

Interview Handling Skills

E-Mail etiquette

Presentation Skills

Recommended Books: (Latest Edition)

1. Basic communication skills for Technology, Andreja. J. Ruther Ford, 2nd Edition, Pearson Education,2011
2. Communication skills, Sanjay Kumar, Pushpalata, 1stEdition, Oxford Press,2011
3. Organizational Behaviour, Stephen .P. Robbins, 1stEdition, Pearson,2013
4. Brilliant- Communication skills, Gill Hasson, 1stEdition, Pearson Life,2011
5. The Ace of Soft Skills: Attitude, Communication and Etiquette for success, Gopala Swamy Ramesh, 5thEdition, Pearson,2013
6. Developing your influencing skills, Deborah Dalley, Lois Burton, Margaret, Green hall, 1st Edition Universe of Learning LTD,2010
7. Communicationskillsforprofessionals,Konarnira,2ndEdition,Newarrivals–PHI, 2011
8. Personality development and soft skills, Barun K Mitra, 1stEdition, Oxford Press, 2011
9. Soft skill for everyone, Butter Field, 1st Edition, Cengage Learning india pvt.ltd, 2011
10. Soft skills and professional communication, Francis Peters SJ, 1stEdition, Mc Graw Hill Education,2011
11. Effective communication, John Adair, 4thEdition, Pan MacMillan,2009
12. Bringing out the best in people, Aubrey Daniels, 2ndEdition, Mc Graw Hill,1999

UBP1T06. REMEDIAL BIOLOGY (Theory)

30 Hours

Scope: To learn and understand the components of living world, structure and functional system of plant and animal kingdom.

Objectives: Upon completion of the course, the student shall be able to

- know the classification and salient features of five kingdoms oflife
- understand the basic components of anatomy & physiology ofplant
- know understand the basic components of anatomy & physiology animalwith special reference tohuman

UNITI **07Hours**

Living world:

- Definition and characters of livingorganisms
- Diversity in the livingworld
- Binomialnomenclature
- Five kingdoms of life and basis of classification. Salient features of Monera, Potista, Fungi, Animalia and Plantae,Virus,

Morphology of Flowering plants

- Morphology of different parts of flowering plants – Root, stem,inflorescence, flower, leaf, fruit,seed.
- General Anatomy of Root, stem, leaf of monocotyledons &Dicotylidones.

UNITII **07Hours**

Body fluids and circulation

- Composition of blood, blood groups, coagulation ofblood
- Composition and functions oflymph
- Human circulatorysystem
- Structure of human heart and bloodvessels
- Cardiac cycle, cardiac output andECG

Digestion and Absorption

- Human alimentary canal and digestiveglands
- Role of digestiveenzymes
- Digestion, absorption and assimilation of digestedfood

Breathing and respiration

- Human respiratorysystem
- Mechanism of breathing and itsregulation
- Exchange of gases, transport of gases and regulation ofrespiration
- Respiratoryvolumes

UNIT III **07Hours**

Excretory products and their elimination

- Modes ofexcretion
- Human excretory system- structure andfunction
- Urineformation
- Rennin angiotensinsystem

Neural control and coordination

- Definition and classification of nervoussystem
- Structure of aneuron
- Generation and conduction of nerveimpulse
- Structure of brain and spinalcord
- Functions of cerebrum, cerebellum, hypothalamus and medullaoblongata

Chemical coordination and regulation

- Endocrine glands and theirsecretions
- Functions of hormones secreted by endocrineglands

Human reproduction

- Parts of female reproductivesystem
- Parts of male reproductivesystem
- Spermatogenesis andOogenesis
- Menstrualcycle

UNIT IV **05Hours**

Plants and mineral nutrition:

- Essential mineral, macro andmicronutrients
- Nitrogen metabolism, Nitrogen cycle, biological nitrogenfixation

Photosynthesis

- Autotrophic nutrition, photosynthesis, Photosynthetic pigments, Factors affecting photosynthesis.

UNIT V **04Hours**

Plant respiration: Respiration, glycolysis, fermentation (anaerobic).

Plant growth and development

- Phases and rate of plant growth, Condition of growth,Introduction to plant growth regulators

Cell - The unit of life

- Structure and functions of cell and cell organelles.Celldivision

Tissues

- Definition, types of tissues, location andfunctions.

Text Books

a. Text book of Biology by S. B.Gokhale
b. A Text book of Biology by Dr. Thulajappa and Dr.Seetaram.

Reference Books

a. A Text book of Biology by B.V. SreenivasaNaidu
b. A Text book of Biology by Naidu andMurthy
c. Botany for Degree students ByA.C.Dutta.
d. Outlines of Zoology by M. Ekambaranatha ayyer and T. N. Ananthakrishnan.
e. A manual for pharmaceutical biology practical by S.B. Gokhale and C. K. Kokate

UBP1P06. REMEDIAL BIOLOGY (Practical)

30 Hours

1. Introduction to experiments in biology
    a) Study of Microscope
    b) Section cutting techniques
    c) Mounting and staining
    d) Permanent slide preparation
2. Study of cell and its inclusions
3. Study of Stem, Root, Leaf, seed, fruit, flower and their modifications
4. Detailed study of frog byusing computer models
5. Microscopic study and identification of tissues pertinent to Stem, Root Leaf, seed, fruit and flower
6. Identification of bones
7. Determination of bloodgroup
8. Determination of bloodpressure
9. Determination of tidal volume

Reference Books

1. Practical human anatomy and physiology. byS.R.Kale andR.R.Kale.
2. A Manual of pharmaceutical biology practical by S.B.Gokhale, C.K.Kokateand S.P.Shriwastava.
3. Biology practical manual according to National core curriculum .Biologyforum of Karnataka. Prof.M.J.H.Shafi

UBP1T07. REMEDIAL MATHEMATICS (Theory)

30 Hours

Scope: This is an introductory course in mathematics. This subject deals with the introduction to Partial fraction, Logarithm, matrices and Determinant, Analytical geometry, Calculus, differential equation and Laplacetransform.

Objectives: Upon completion of the course the student shall be able to:-

1. Know the theory and their application inPharmacy
2. Solve the different types of problems by applyingtheory
3. Appreciate the important application of mathematics inPharmacy

Course Content:

UNIT– I **06Hours**

- **Partialfraction**

Introduction, Polynomial, Rational fractions, Proper and Improper fractions, Partial fraction , Resolving into Partial fraction, Application of Partial Fraction in Chemical Kinetics andPharmacokinetics

- **Logarithms**

Introduction, Definition, Theorems/Properties of logarithms, Common logarithms, Characteristic and Mantissa, worked examples, application of logarithm to solve pharmaceutical problems.

- **Function***:*

Real Valued function, Classification of real valued functions,

- **Limits and continuity**:

Introduction , Limit of a function,Definition of limit of a function ($\in$- δ definition) , $\lim_{x \to a} \frac{x^n - a^n}{x - a} = na^{n-1}$, $\lim_{\theta \to 0} \frac{\sin\theta}{\theta} = 1$,

UNIT–II **06Hours**

- **Matrices and Determinant:**

Introduction matrices, Types of matrices, Operation on matrices, Transpose of a matrix, Matrix Multiplication, Determinants, Properties of determinants , Product of determinants, Minors and co-Factors, Adjoint or adjugate of a square matrix , Singular and non-singular matrices, Inverse of a matrix, Solution of system of linear of equations using matrix method, Cramer's rule, Characteristic equation and roots of a square matrix, Cayley–Hamilton theorem,Applicationof Matrices in solving Pharmacokineticequations

UNIT– III **06Hours**

- **Calculus**

Differentiation : Introductions, Derivative of a function, Derivative of a constant, Derivative of a product of a constant and a function , Derivative of the sum or difference of twofunctions, Derivative of the product of two functions(productformula), Derivative of the quotient of two functions (Quotient formula) –**WithoutProof**, Derivative of x^n *w.r.t*x,where *n* is any rationalnumber, Derivative of e^x,, Derivative of $\log_e x$, Derivative of a^x,Derivative of trigonometric functions from first principles**(without Proof)**, Successive Differentiation, Conditions for a function to be a maximum or a minimum at a point.Application

UNIT– IV **06Hours**

- **Analytical Geometry**

Introduction: Signs of the Coordinates, Distance formula,

Straight Line : Slope or gradient of a straight line, Conditions for parallelism and perpendicularity of two lines, Slope of a line joining two points, Slope – intercept form of a straightline

Integration:

Introduction, Definition, Standard formulae, Rules of integration , Method of substitution, Method of Partial fractions, Integration by parts, definite integrals, application

UNIT-V **06Hours**

- **Differential Equations** : Some basic definitions, Order and degree, Equations in separable form , Homogeneous equations, Linear Differential equations, Exact equations, **Application in solving Pharmacokineticequations**
- **Laplace Transform** : Introduction, Definition, Properties of Laplace transform, Laplace Transforms of elementary functions, Inverse Laplace transforms, Laplace transform of derivatives, Application to solve Linear differential equations, **Application in solving Chemical kinetics and Pharmacokinetics equations**

Recommended Books (LatestEdition)

1. Differential Calculus byShanthinarayan
2. Pharmaceutical Mathematics with application to Pharmacy byPanchaksharappa GowdaD.H.
3. Integral Calculus byShanthinarayan
4. Higher Engineering Mathematics byDr.B.S.Grewal

Semester II

UBP2T01. HUMAN ANATOMY AND PHYSIOLOGY-II (Theory)

45 Hours

Scope: This subject is designed to impart fundamental knowledge on the structure and functions of the various systems of the human body. It also helps in understanding both homeostatic mechanisms. The subject provides the basic knowledge required to understand the various disciplines ofpharmacy.

Objectives: Upon completion of this course the student should be able to:

1. Explain the gross morphology, structure and functions of various organs of the humanbody.
2. Describe the various homeostatic mechanisms and theirimbalances.
3. Identify the various tissues and organs of different systems of humanbody.
4. Perform the hematological tests like blood cell counts, haemoglobin estimation, bleeding/clotting time etc and also record blood pressure, heart rate, pulse and respiratoryvolume.
5. Appreciate coordinated working pattern of different organs of eachsystem
6. Appreciate the interlinked mechanisms in the maintenance of normal functioning (homeostasis) of human body.

Course Content:

UnitI **10 hours**

- **Nervoussystem**

Organization of nervous system, neuron, neuroglia, classification and properties of nerve fibre, electrophysiology, action potential, nerve impulse, receptors, synapse,neurotransmitters.

Central nervous system: Meninges, ventricles of brain and cerebrospinal fluid.structure and functions of brain (cerebrum, brain stem, cerebellum), spinal cord (gross structure, functions of afferent and efferent nerve tracts, reflexactivity)

UnitII **06 hours**

- **Digestivesystem**

Anatomy of GI Tract with special reference to anatomy and functions of stomach, (Acid production in the stomach, regulation of acid production through parasympathetic nervous system, pepsin role in protein digestion) small intestine

and large intestine, anatomy and functions of salivary glands, pancreas and liver, movements of GIT, digestion and absorption of nutrients and disorders of GIT.

- **Energetics**

  Formation and role of ATP, Creatinine Phosphate and BMR.

Unit III

- **Respiratorysystem** **10 hours**

  Anatomy of respiratory system with special reference to anatomy of lungs, mechanism of respiration, regulation of respiration

  Lung Volumes and capacities transport of respiratory gases, artificial respiration, and resuscitation methods.

- **Urinarysystem**
  Anatomy of urinary tract with special reference to anatomy of kidney and nephrons, functions of kidney and urinary tract, physiology of urine formation, micturition reflex and role of kidneys in acid base balance, role of RAS in kidney and disorders of kidney.

UnitIV **10 hours**

- **Endocrinesystem**
  Classification of hormones, mechanism of hormone action, structure and functions of pituitary gland, thyroid gland, parathyroid gland, adrenal
  gland, pancreas, pineal gland, thymus and their disorders.

UnitV **09 hours**

- **Reproductivesystem**

  Anatomy of male and female reproductive system, Functions of male and female reproductive system, sex hormones, physiology of menstruation, fertilization, spermatogenesis, oogenesis, pregnancy and parturition

- **Introduction togenetics**

  Chromosomes, genes and DNA, protein synthesis, genetic pattern of inheritance

UBP2P01. HUMAN ANATOMY AND PHYSIOLOGY (Practical)

4 Hours/week

Practical physiology is complimentary to the theoretical discussionsin physiology. Practicals allow the verification of physiological processes discussed in theory classes through experiments on living tissue, intact animals or normal human beings. This is helpful for developing an insight on thesubject**.**

1. To study the integumentary and special senses using specimen, models,etc.,
2. To study the nervous system using specimen, models,etc.,
3. To study the endocrine system using specimen, models,etc
4. To demonstrate the general neurologicalexamination
5. To demonstrate the function of olfactorynerve
6. To examine the different types oftaste.
7. To demonstrate the visualacuity
8. To demonstrate the reflexactivity
9. Recording of bodytemperature
10. To demonstrate positive and negative feedbackmechanism.
11. Determination of tidal volume and vitalcapacity.
12. Study of digestive, respiratory, cardiovascular systems, urinary and reproductive systems with the help of models, charts and specimens.
13. Recording of basalmassindex .
14. Study of familyplanning devices and pregnancy diagnosis test.
15. Demonstration of total blood count by cellanalyser
16. Permanent slides of vital organs andgonads.

Recommended Books (Latest Editions)

1. Essentials of Medical Physiology by K. Sembulingam and P. Sembulingam. Jaypee brothers medical publishers, New Delhi.
2. Anatomy and Physiology in Health and Illness by Kathleen J.W. Wilson, Churchill Livingstone, NewYork
3. Physiological basis of Medical Practice-Best and Tailor. Williams & Wilkins Co,Riverview,MIUSA

4. Text book of Medical Physiology- Arthur C,Guyton andJohn.E. Hall. Miamisburg, OH, U.S.A.
5. Principles of Anatomy and Physiology byTortora Grabowski. Palmetto, GA, U.S.A.
6. Textbook of Human Histology by Inderbir Singh, Jaypee brothers medical publishers, NewDelhi.
7. Textbook of Practical Physiology by C.L. Ghai, Jaypee brothers medical publishers, New Delhi.
8. Practical workbook of Human Physiology by K. Srinageswari and Rajeev Sharma, Jaypee brother's medical publishers, New Delhi.

Reference Books:

1. Physiological basis of Medical Practice-Best and Tailor. Williams & Wilkins Co, Riverview, MIUSA
2. Text book of Medical Physiology- Arthur C, Guyton and John. E. Hall. Miamisburg, OH, U.S.A.
3. Human Physiology (vol 1 and 2) by Dr. C.C. Chatterrje ,Academic PublishersKolkata

UBP2T02. PHARMACEUTICAL ORGANIC CHEMISTRY –I (Theory)

45 Hours

Scope: This subject deals with classification and nomenclature of simple organic compounds, structural isomerism, intermediates forming in reactions, important physical properties, reactions and methods of preparation of these compounds. The syllabus also emphasizes on mechanisms and orientation of reactions.

Objectives: Upon completion of the course the student shall be able to

1. write the structure, name and the type of isomerism of the organiccompound
2. write the reaction, name the reaction and orientation ofreactions
3. account for reactivity/stability ofcompounds,
4. identify/confirm the identification of organiccompound

Course Content:

General methods of preparation and reactions of compounds superscripted with asterisk (*) to be explained

To emphasize on definition, types, classification, principles/mechanisms, applications, examples and differences

UNIT-I **07 Hours**

- **Classification, nomenclature andisomerism**

  Classification of Organic Compounds

  Common and IUPAC systems of nomenclature of organic compounds

  (up to 10 Carbons open chain and carbocyclic compounds)

Structural isomerisms in organic compounds

UNIT-II **10 Hours**

- **Alkanes*, Alkenes* and Conjugateddienes***

  SP^3hybridizationinalkanes, Halogenation of alkanes, uses of paraffins.

  Stabilities of alkenes, SP^2 hybridization inalkenes

  E_1 and E_2 reactions – kinetics, order of reactivity of alkyl halides, rearrangement of carbocations, Saytzeffs orientation and evidences. E_1 verses E_2 reactions, Factors affecting E_1 and E_2 reactions. Ozonolysis, electrophilic addition reactions of alkenes, Markownikoff's orientation, free radical addition reactions of alkenes, Anti Markownikoff's orientation.

  Stability of conjugated dienes, Diel-Alder, electrophilic addition, free radical addition reactions of conjugated dienes, allylic rearrangement

UNIT-III **10 Hours**

- **Alkyl halides***

  SN_1 and SN_2 reactions - kinetics, order of reactivity of alkyl halides, stereochemistry and rearrangement of carbocations.

  SN_1 versus SN_2 reactions, Factors affecting SN_1 and SN_2 reactions

  Structure and uses of ethylchloride, Chloroform, trichloroethylene, tetrachloroethylene, dichloromethane, tetrachloromethane and iodoform.

- **Alcohols*-** Qualitative tests, Structure and uses of Ethyl alcohol, Methyl alcohol, chlorobutanol, Cetosteryl alcohol, Benzyl alcohol, Glycerol, Propyleneglycol

UNIT-IV10 Hours

- **Carbonyl compounds* (Aldehydes andketones)**

  Nucleophilic addition, Electromeric effect, aldol condensation, Crossed Aldol condensation, Cannizzaro reaction, Crossed Cannizzaro reaction, Benzoin condensation, Perkin condensation, qualitative tests, Structure and uses of Formaldehyde, Paraldehyde, Acetone, Chloral hydrate, Hexamine, Benzaldehyde, Vanilin,Cinnamaldehyde.

UNIT-V **08Hours**

- **Carboxylicacids***

  Acidity of carboxylic acids, effect of substituents on acidity, inductive effect and qualitative tests for carboxylic acids, amide and ester

  Structure and Uses of Acetic acid, Lactic acid, Tartaric acid, Citric acid, Succinic acid. Oxalic acid, Salicylic acid, Benzoic acid, Benzyl benzoate, Dimethyl phthalate, Methyl salicylate and Acetyl salicylic acid

- **Aliphatic amines* -** Basicity, effect of substituent on Basicity. Qualitative test, Structure and uses of Ethanolamine, Ethylenediamine,Amphetamine

UBP2P02. PHARMACEUTICAL ORGANIC CHEMISTRY -I (Practical)

4 Hours /week

1. Systematic qualitative analysis of unknown organic compoundslike
    1. Preliminary test: Color, odour, aliphatic/aromatic compounds, saturation and unsaturation, etc.
    2. Detection of elements like Nitrogen, Sulphur and Halogen by Lassaigne'stest
    3. Solubilitytest
    4. Functional group test like Phenols, Amides/ Urea, Carbohydrates, Amines, Carboxylic acids, Aldehydes and Ketones, Alcohols, Esters, Aromatic and Halogenated Hydrocarbons, Nitro compounds and Anilides.
    5. Melting point/Boiling point of organiccompounds
    6. Identification of the unknown compound from the literature using melting point/ boilingpoint.
    7. Preparation of the derivatives and confirmation of the unknown compound by melting point/ boilingpoint.
    8. Minimum 5 unknown organic compounds to be analysedsystematically.
2. Preparation of suitable solid derivatives from organiccompounds
3. Construction of molecularmodels

Recommended Books (Latest Editions)

1. Organic Chemistry by Morrison andBoyd
2. Organic Chemistry by I.L. Finar ,Volume-I
3. Textbook of Organic Chemistry by B.S. Bahl & ArunBahl.
4. Organic Chemistry byP.L.Soni
5. Practical Organic Chemistry by Mann andSaunders.
6. Vogel's text book of Practical OrganicChemistry
7. Advanced Practical organic chemistry byN.K.Vishnoi.
8. Introduction to Organic Laboratory techniques by Pavia, Lampman andKriz.
9. Reaction and reaction mechanism byAhluwaliah/Chatwal.

UBP2T03. BIOCHEMISTRY (Theory)

45 Hours

Scope: Biochemistry deals with complete understanding of the molecular levels of the chemical process associated with living cells. The scope of the subject is providing biochemical facts and the principles to understand metabolism of nutrient molecules in physiological and pathological conditions. It is also emphasizing on genetic organization of mammalian genome and hetero & autocatalytic functions ofDNA.

Objectives: Upon completion of course student shell able to

1. Understand the catalytic role of enzymes, importance of enzyme inhibitors in design of new drugs, therapeutic and diagnostic applications ofenzymes.
2. Understand the metabolism of nutrient molecules in physiological and pathologicalconditions.
3. Understand the genetic organization of mammalian genome and functions of DNA in the synthesis of RNAs and proteins.

Course Content:

UNIT I **08 Hours**

- **Biomolecules**

  Introduction, classification, chemical nature and biological role of carbohydrate, lipids, nucleic acids, amino acids and proteins.

- **Bioenergetics**

  Concept of free energy, endergonic and exergonic reaction, Relationship between free energy, enthalpy and entropy; Redox potential.

  Energy rich compounds; classification; biological significances of ATP and cyclic AMP

UNITII **10Hours**

- **Carbohydratemetabolism**

  Glycolysis – Pathway, energetics and significance

  Citric acid cycle- Pathway, energetics and significance

  HMP shunt and its significance; Glucose-6-Phosphate dehydrogenase (G6PD) deficiency

  Glycogen metabolism Pathways and glycogen storage diseases (GSD)

  Gluconeogenesis- Pathway and its significance

  Hormonal regulation of blood glucose level and Diabetes mellitus

- **Biologicaloxidation**

  Electron transport chain (ETC) and its mechanism.

  Oxidative phosphorylation & its mechanism and substrate level phosphorylation

Inhibitors ETC and oxidative phosphorylation/Uncouplers

Unit III

- **Lipid Metabolism**

β – Oxidation of saturated fatty acid (Palmitic acid)

Formation and utilization of ketone bodies; ketoacidosis

De novo synthesis of fatty acids (Palmitic acid)

Biological significance of cholesterol and conversion of cholesterol into bile acids, steroid hormone and vitamin D

Disorders of lipid metabolism: Hypercholesterolemia, atherosclerosis, fatty liver andobesity.

- **Amino acidmetabolism**

General reactions of amino acid metabolism: Transamination, deamination & decarboxylation, urea cycle and itsdisorders

Catabolism of phenylalanine and tyrosine and their metabolic disorders (Phenyketonuria, Albinism, alkeptonuria, tyrosinemia)

Synthesis and significance of biological substances; 5-HT, melatonin, dopamine, noradrenaline, adrenaline

Catabolism of heme; hyperbilirubinemia and jaundice

UNIT IV **10Hours**

- **Nucleic acid metabolism and genetic informationtransfer**

Biosynthesis of purine and pyrimidine nucleotides

Catabolism of purine nucleotides and Hyperuricemia and Gout disease

Organization of mammalian genome

Structure of DNA and RNA and their functions

DNA replication (semi conservative model)

Transcription or RNA synthesis

Genetic code, Translation or Protein synthesis and inhibitors

UNITV **07Hours**

- **Enzymes**

  Introduction, properties, nomenclature and IUB classification of enzymes

  Enzyme kinetics (Michaelis plot, Line Weaver Burke plot)

  Enzyme inhibitors with examples

  Regulation of enzymes: enzyme induction and repression, allosteric enzymes regulation

  Therapeutic and diagnostic applications of enzymes and isoenzymes

  Coenzymes –Structure and biochemical functions

UBP2P03. BIOCHEMISTRY (Practical)

4 Hours / Week

1. Qualitative analysis of carbohydrates (Glucose, Fructose, Lactose,Maltose, Sucrose andstarch)
2. Identification tests for Proteins (albumin andCasein)
3. Quantitative analysis of reducing sugars (DNSA method) andProteins (Biuretmethod)
4. Qualitative analysis of urine for abnormalconstituents
5. Determination of bloodcreatinine
6. Determination of bloodsugar
7. Determination of serum totalcholesterol
8. Preparation of buffer solution and measurement ofpH
9. Study of enzymatic hydrolysis ofstarch
10. Determination of Salivary amylaseactivity
11. Study the effect of Temperature on Salivary amylaseactivity.
12. Study the effect of substrate concentration on salivary amylaseactivity.

Recommended Books (Latest Editions)

1. Principles of Biochemistry byLehninger.
2. Harper's Biochemistry by Robert K. Murry, Daryl K. Granner and Victor W.Rodwell.
3. Biochemistry byStryer.
4. Biochemistry by D. Satyanarayan andU.Chakrapani
5. Textbook of Biochemistry by RamaRao.
6. Textbook of Biochemistry byDeb.
7. Outlines of Biochemistry by Conn andStumpf
8. Practical Biochemistry by R.C. Gupta and S.Bhargavan.
9. Introduction of Practical Biochemistry by David T. Plummer. (3rdEdition)
10. Practical Biochemistry for Medical students by Rajagopal andRamakrishna.
11. Practical Biochemistry by HaroldVarley.

UBP2T04. PATHOPHYSIOLOGY (THEORY)

45Hours

Scope: Pathophysiology is the study of causes of diseases and reactions of the body to such disease producing causes.This course is designed to impart a thorough knowledge of the relevant aspects of pathology of various conditions with reference to its pharmacological applications, and understanding of basic pathophysiological mechanisms. Hence it will not only help to study the syllabus of pathology, but also to get baseline knowledge required to practice medicine safely, confidently, rationally and effectively.

Objectives: Upon completion of the subject student shall be able to –

1. Describe the etiology and pathogenesis of the selected diseasestates;
2. Name the signs and symptoms of the diseases;and
3. Mention the complications of thediseases.

Course content:

UnitI **10Hours**

- **Basic principles of Cell injury andAdaptation:**
  Introduction, definitions, Homeostasis, Components and Types of Feedback systems, Causes of cellular injury**,**Pathogenesis (Cell membrane damage, Mitochondrial damage, Ribosome damage, Nuclear damage)**,**Morphology of cell injury – Adaptive changes (Atrophy, Hypertrophy, hyperplasia, Metaplasia, Dysplasia)**,**Cell swelling, Intra cellular accumulation, Calcification, Enzyme leakage and Cell Death Acidosis &Alkalosis,Electrolyteimbalance

- **Basic mechanism involved in the process of inflammation andrepair:**
  Introduction, Clinical signs of inflammation, Different types of Inflammation,Mechanism of Inflammation – Alteration in vascular permeability and blood flow, migration of WBC's,Mediators of inflammation,Basic principles of wound healing in the skin,Pathophysiology of Atherosclerosis

Unit II **10Hours**

- **CardiovascularSystem:**
  Hypertension, congestive heart failure, ischemic heart disease (angina, myocardial infarction, atherosclerosis and arteriosclerosis)
- **Respiratory system:** Asthma, Chronic obstructive airwaysdiseases.
- **Renal system:** Acute and chronicrenalfailure .

Unit II **10Hours**

- **HaematologicalDiseases:**
  Iron deficiency, megaloblastic anemia (Vit B12 and folic acid), sickle cell anemia, thalasemia, hereditary acquired anemia, hemophilia
- **Endocrine system:** Diabetes, thyroid diseases, disorders of sexhormones
- **Nervous system:** Epilepsy, Parkinson's disease, stroke, psychiatricdisorders: depression, schizophrenia and Alzheimer'sdisease.
- **Gastrointestinal system:** PepticUlcer
-

UnitIV **8Hours**

- Inflammatory bowel diseases, jaundice, hepatitis (A,B,C,D,E,F) alcoholicliver disease.
- **Disease of bones and joints:** Rheumatoid arthritis, osteoporosis andgout
- **Principles of cancer:** classification, etiology and pathogenesis ofcancer
- **Diseases of bones and joints:**Rheumatoid Arthritis,Osteoporosis,Gout

- **Principles of Cancer:** Classification, etiology and pathogenesis ofCancer

UnitV **7Hours**

- **Infectiousdiseases:**Meningitis,Typhoid,Leprosy,Tuberculosis

Urinary tractinfections

- **Sexually transmitted diseases:**AIDS, Syphilis,Gonorrhea

Recommended Books (Latest Editions)

1. Vinay Kumar, Abul K. Abas, Jon C. Aster; Robbins &Cotran Pathologic Basis of Disease; South Asia edition; India; Elsevier;2014.
2. Harsh Mohan; Text book of Pathology; 6th edition; India; Jaypee Publications;2010.
3. Laurence B, Bruce C, Bjorn K. ; Goodman Gilman's The Pharmacological Basis of Therapeutics; 12th edition; New York; McGraw-Hill;2011.
4. Best, Charles Herbert 1899-1978; Taylor, Norman Burke 1885-1972; West, John B (John Burnard); Best and Taylor's Physiological basis of medical practice; 12th ed; unitedstates;
5. William and Wilkins, Baltimore;1991 [1990printing].
6. Nicki R. Colledge, Brian R. Walker, Stuart H. Ralston;Davidson's Principles and Practice of Medicine; 21st edition; London; ELBS/Churchill Livingstone;2010.
7. Guyton A, John .E Hall; Textbook of Medical Physiology; 12th edition; WB Saunders Company;2010.
8. Joseph DiPiro, Robert L. Talbert, Gary Yee, Barbara Wells, L. Michael Posey; Pharmacotherapy: A Pathophysiological Approach; 9th edition; London; McGraw-Hill Medical; 2014.
9. V. Kumar, R. S. Cotran and S. L. Robbins; Basic Pathology; 6th edition; Philadelphia; WB Saunders Company;1997.
10. Roger Walker, Clive Edwards; Clinical Pharmacy and Therapeutics; 3rd edition; London; Churchill Livingstone publication;2003.

Recommended Journals

1. The Journal of Pathology. ISSN: 1096-9896(Online)
2. The American Journal of Pathology. ISSN:0002-9440
3. Pathology. 1465-3931 (Online)
4. International Journal of Physiology, Pathophysiology and Pharmacology. ISSN: 1944-8171 (Online)
5. Indian Journal of Pathology and Microbiology.ISSN-0377-4929.

UBP2T05. COMPUTER APPLICATIONS IN PHARMACY (Theory)

30 Hrs (2 Hrs/Week)

Scope: This subject deals with the introduction Database, Database Management system, computer application in clinical studies and use of databases.

Objectives: Upon completion of the course the student shall be able to

1. know the various types of application of computers inpharmacy
2. know the various types ofdatabases
3. know the various applications of databases inpharmacy

Course content:

UNIT– I **06 hours**

Number system: Binary number system, Decimal number system, Octal number system, Hexadecimal number systems, conversion decimal to binary, binary to decimal, octal to binary etc, binary addition, binary subtraction – One's complement ,Two's complement method, binary multiplication, binary division

Concept of Information Systems and Software : Information gathering, requirement and feasibility analysis, data flow diagrams, process specifications, input/output design, process life cycle, planning and managing the project

UNIT –II **06 hours**

Web technologies: Introduction to HTML, XML,CSS and Programming languages, introduction to web servers and Server Products

Introduction to databases, MYSQL, MS ACCESS, Pharmacy Drug database

UNIT– III **06 hours**

Application of computers in Pharmacy – Drug information storage and retrieval, Pharmacokinetics, Mathematical model in Drug design, Hospital and Clinical Pharmacy, Electronic Prescribing and discharge (EP) systems, barcode medicine identification and automated dispensing of drugs, mobile technology and adherence monitoring

Diagnostic System, Lab-diagnostic System, Patient Monitoring System, Pharma Information System

UNIT –IV **06 hours**

Bioinformatics: Introduction, Objective of Bioinformatics, Bioinformatics Databases, Concept of Bioinformatics, Impact of Bioinformatics in Vaccine Discovery

UNIT-V **06 hours**

Computers as data analysis in Preclinical development:
Chromatographic dada analysis (CDS), Laboratory Information management System (LIMS) and Text Information Management System (TIMS)

UBP2P04. COMPUTER APPLICATIONS IN PHARMACY (Practical)

1. Design a questionnaire using a word processing package to gatherinformation about a particulardisease.
2. Create a HTML web page to show personalinformation.
3 Retrieve the information of a drug and its adverse effects using onlinetools
4 Creating mailing labels Using Label Wizard , generating label in MSWORD
5 Create a database in MS Access to store the patient information with therequired fields Usingaccess
6. Design a form in MS Access to view, add, delete and modify the patient recordin thedatabase
7. Generating report and printing the report from patientdatabase
8. Creating invoice table using – MSAccess
9. Drug information storage and retrieval using MSAccess
10. Creating and working with queries in MSAccess
11. Exporting Tables, Queries, Forms and Reports to webpages
12. Exporting Tables, Queries, Forms and Reports to XMLpages

Recommended books (Latest edition):

1. Computer Application in Pharmacy – William E.Fassett –Lea and Febiger,600 South Washington Square, USA, (215)922-1330.
2. Computer Application in Pharmaceutical Research and Development –Sean Ekins– Wiley-Interscience, A John Willey and Sons, INC., Publication, USA
3. Bioinformatics (Concept, Skills and Applications) – S.C.Rastogi-CBS Publishersand Distributors, 4596/1- A, 11 Darya Gani, New Delhi – 110002(INDIA)
4. Microsoft office Access - 2003, Application Development Using VBA, SQLServer, DAP and Infopath– Cary N.Prague – Wiley Dreamtech India (P) Ltd., 4435/7, Ansari Road, Daryagani, New Delhi -110002

UBP2T06. ENVIRONMENTAL SCIENCES (Theory)

30 hours

Scope: Environmental Sciences is the scientific study of the environmental system and the status of its inherent or induced changes on organisms. It includes not only the study of physical and biological characters of the environment but also the social and cultural factors and the impact of man onenvironment.

Objectives: Upon completion of the course the student shall be able to**:**

1. Create the awareness about environmental problems amonglearners.
2. Impart basic knowledge about the environment and its alliedproblems.
3. Develop an attitude of concern for theenvironment.
4. Motivate learner to participate in environment protection andenvironment improvement.
5. Acquire skills to help the concerned individuals in identifying andsolving environmentalproblems.
6. Strive to attain harmony withNature.

Course content:

Unit-I **10hours**

The Multidisciplinary nature of environmental studies

Natural Resources

Renewable and non-renewable resources:

Natural resources and associated problems

a) Forest resources; b) Water resources; c) Mineral resources; d) Food resources; e) Energy resources; f) Land resources: Role of an individual in conservation of naturalresources.

Unit-II **10hours**

Ecosystems

- Concept of anecosystem.
- Structure and function of anecosystem.
- Introduction, types, characteristic features, structure and function of the ecosystems: Forest ecosystem; Grassland ecosystem; Desert ecosystem; Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)

Unit-III **10hours**

Environmental Pollution: Air pollution; Water pollution; Soil pollution

Recommended Books (Latest edition):

1. Y.K. Sing, Environmental Science, New Age International Pvt, Publishers, Bangalore
2. Agarwal, K.C. 2001 Environmental Biology, Nidi Publ. Ltd.Bikaner.
3. Bharucha Erach, The Biodiversity of India, Mapin Pu blishing Pvt. Ltd., Ahmedabad – 380 013,India,
4. Brunner R.C., 1989, Hazardous Waste Incineration, McGraw Hill Inc.480p
5. Clark R.S., Marine Pollution, Clanderson PressOxford
6. Cunningham, W.P. Cooper, T.H. Gorhani, E & Hepworth, M.T. 2001, Environmental Encyclopedia, Jaico Publ. House, Mumbai,1196p
7. De A.K., Environmental Chemistry, Wiley EasternLtd.
8. Down of Earth, Centre for Science andEnvironment

SEMESTER III

UBP3T01. PHARMACEUTICAL ORGANIC CHEMISTRY –II (Theory)

45 Hours

Scope: This subject deals with general methods of preparation and reactions of some organic compounds. Reactivity of organic compounds are also studied here. The syllabus emphasizes on mechanisms and orientation of reactions. Chemistry of fats and oils are also included in thesyllabus.

Objectives: Upon completion of the course the student shall be able to

1. write the structure, name and the type of isomerism of the organiccompound
2. write the reaction, name the reaction and orientation ofreactions
3. account for reactivity/stability ofcompounds,
4. prepare organiccompounds

Course Content:

General methods of preparation and reactions of compounds superscripted with asterisk (*) to be explained

To emphasize on definition, types, classification, principles/mechanisms, applications, examples and differences

UNITI **10Hours**

- **Benzene and itsderivatives**
  - **A.** Analytical, synthetic and other evidences in the derivation of structure of benzene, Orbital picture, resonance in benzene, aromatic characters, Huckel'srule
  - **B.** Reactions of benzene - nitration, sulphonation, halogenation-reactivity, Friedelcrafts alkylation- reactivity, limitations, Friedelcraftsacylation.
  - **C.** Substituents, effect of substituents on reactivity and orientation of mono substituted benzene compounds towards electrophilic substitutionreaction
  - **D.** Structure and uses of DDT, Saccharin, BHC andChloramine

UNITII **10Hours**

- **Phenols*** - Acidity of phenols, effect of substituents on acidity, qualitative tests, Structure and uses of phenol, cresols, resorcinol,naphthols
- **Aromatic Amines* -** Basicity of amines, effect of substituents on basicity, and synthetic uses of aryl diazoniumsalts
- **Aromatic Acids* –**Acidity, effect of substituents on acidity and important reactions of benzoicacid.

UNIT III

10 Hours

- **Fats andOils**

a. Fatty acids –reactions.

b. Hydrolysis, Hydrogenation, Saponification and Rancidity of oils, Drying oils.
c. Analytical constants – Acid value, Saponification value, Ester value, Iodine value, Acetyl value, Reichert Meissl (RM) value – significance and principle involved in theirdetermination.

UNITIV **08Hours**

- **Polynuclearhydrocarbons:**

a. Synthesis, reactions
b. Structure and medicinal uses of Naphthalene, Phenanthrene,Anthracene, Diphenylmethane, Triphenylmethane and theirderivatives

UNITV **07Hours**

- **Cycloalkanes***

Stabilities – Baeyer's strain theory, limitation of Baeyer's strain theory, Coulson and Moffitt's modification, Sachse Mohr's theory (Theory of strainless rings), reactions of cyclopropane and cyclobutane only

UBP3P01. PHARMACEUTICAL ORGANIC CHEMISTRY -II (Practical) 4 Hrs/week

I Experiments involving laboratorytechniques

- Recrystallization
- Steamdistillation

II Determination of following oil values (including standardization of reagents)

- Acidvalue
- Saponificationvalue
- Iodinevalue

III Preparation ofcompounds

- Benzanilide/Phenyl benzoate/Acetanilide from Aniline/ Phenol /Aniline by acylation reaction.
- 2,4,6-Tribromo aniline/Para bromo acetanilide fromAniline/
- Acetanilide by halogenation (Bromination) reaction.
- 5-Nitro salicylic acid/Meta di nitro benzene from Salicylic acid / Nitro benzene by nitrationreaction.
- Benzoic acid from Benzyl chloride by oxidationreaction.
- Benzoic acid/ Salicylic acid from alkyl benzoate/ alkyl salicylate by hydrolysisreaction.
- 1-Phenyl azo-2-napthol from Aniline by diazotization and coupling reactions.
- Benzil from Benzoin by oxidationreaction.
- Dibenzal acetone from Benzaldehyde by Claison Schmidtreaction
- Cinnammic acid from Benzaldehyde by Perkinreaction
- *P*-Iodo benzoic acid from *P*-amino benzoicacid

Recommended Books (Latest Editions)

1. Organic Chemistry by Morrison andBoyd
2. Organic Chemistry by I.L. Finar ,Volume-I
3. Textbook of Organic Chemistry by B.S. Bahl & ArunBahl.
4. Organic Chemistry byP.L.Soni
5. Practical Organic Chemistry by Mann andSaunders.
6. Vogel's text book of Practical OrganicChemistry
7. Advanced Practical organic chemistry byN.K.Vishnoi.
8. Introduction to Organic Laboratory techniques by Pavia, Lampman andKriz.

UBP3T02. PHYSICAL PHARMACEUTICS-I (Theory)

45 Hours

Scope: The course deals with the various physica and physicochemical properties, and principles involved in dosage forms/formulations. Theory and practical components of the subject help the student to get a better insight into various areas of formulation research and development, and stability studies of pharmaceutical dosage forms.

Objectives: Upon the completion of the course student shall be able to

1. Understand various physicochemical properties of drug molecules in the designing the dosageforms
2. Know the principles of chemical kinetics & to use them for stability testing nad determination of expiry date offormulations
3. Demonstrate use of physicochemical properties in the formulation development and evaluation of dosageforms.

Course Content:

UNIT-I **10 Hours**

Solubility of drugs: Solubility expressions, mechanisms of solute solvent interactions, ideal solubility parameters, solvation & association, quantitative approach to the factors influencing solubility of drugs, diffusion principles in biological systems. Solubility of gas in liquids, solubility of liquids in liquids, (Binary solutions, ideal solutions) Raoult's law, real solutions.Partially miscible liquids, Critical solution temperature and applications. Distribution law, its limitations andapplications

UNIT-II **10 Hours**

States of Matter and properties of matter: State of matter, changes in the state of matter, latent heats, vapour pressure, sublimation critical point, eutectic mixtures, gases, aerosols – inhalers, relative humidity, liquid complexes, liquid crystals, glassy states, solid-crystalline, amorphous & polymorphism.

Physicochemical properties of drug molecules: Refractive index, optical rotation, dielectric constant, dipole moment, dissociation constant, determinations and applications

UNIT-III **08 Hours**

Surface and interfacial phenomenon: Liquid interface, surface & interfacial tensions, surface free energy, measurement of surface & interfacial tensions, spreading coefficient, adsorption at liquid interfaces, surface active agents, HLB Scale, solubilisation, detergency, adsorption at solidinterface.

UNIT-IV **08 Hours**

Complexation and protein binding: Introduction, Classification of Complexation, Applications, methods of analysis, protein binding, Complexation and drug action, crystalline structures of complexes and thermodynamic treatment of stability constants.

UNIT-V **7Hours** **4 Hrs/week**

pH, buffers and Isotonic solutions: Sorensen's pH scale, pH determination (electrometric and calorimetric), applications of buffers, buffer equation, buffer capacity, buffers in pharmaceutical and biological systems, buffered isotonicsolutions.

UBP3P02. PHYSICAL PHARMACEUTICS – I (Practical)

1. Determination the solubility of drug at room temperature
2. Determination of pKa value by Half Neutralization/ HendersonHasselbalch equation.
3. Determination of Partition co- efficient of benzoic acid in benzene andwater
4. Determination of Partition co- efficient of Iodine in CCl_4 andwater
5. Determination of % composition of NaCl in a solution using phenol-water system by CSTmethod
6. Determination of surface tension of given liquids by drop count and dropweight method
7. Determination of HLB number of a surfactant by saponificationmethod
8. Determination of Freundlich and Langmuir constants using activated charcoal
9. Determination of critical micellar concentration of surfactants
10. Determination of stability constant and donor acceptor ratio ofPABA-Caffeine complex by solubilitymethod
11. Determination of stability constant and donor acceptor ratio ofCupric-Glycine complex by pH titrationmethod

Recommended Books: (Latest Editions)

1. Physical Pharmacy by AlfredMartin
2. Experimental Pharmaceutics by Eugene, Parott.
3. Tutorial Pharmacy by Cooper andGunn.
4. Stocklosam J. Pharmaceutical Calculations, Lea &Febiger, Philadelphia.
5. Liberman H.A, Lachman C., Pharmaceutical Dosage forms, Tablets, Volume-1to 3, MarcelDekkarInc.
6. Liberman H.A, Lachman C, Pharmaceutical Dosage forms.Disperse systems, volume 1, 2, 3. Marcel Dekkar Inc.
7. Physical Pharmaceutics by Ramasamy C andManavalanR.
8. Laboratory Manual of Physical Pharmaceutics, C.V.S. Subramanyam,J. Thimmasettee
9. Physical Pharmaceutics by C.V.S.Subramanyam

10. Test book of Physical Phramacy, by Gaurav Jain & Roop K.Khar

UBP3T03. PHARMACEUTICAL MICROBIOLOGY (Theory)

45Hours

Scope:

- Studyofallcategoriesofmicroorganisimsespeciallyfortheproductionofalchol antibiotics, vaccines, vitamins enzymesetc..

Objectives: Upon completion of the subject student shall be able to;

1. Understand methods of identification, cultivation and preservation of variousmicroorganisms
2. To understand the importance and implementation of sterlization in pharmaceutical processing andindustry
3. Learn sterility testing of pharmaceuticalproducts.
4. Carried out microbiological standardization ofPharmaceuticals.
5. Understand the cell culture technology and its applications in pharmaceutical industries.

Course content:

UnitI **10Hours**

Introduction, history of microbiology, its branches, scope and its importance.
Introduction to Prokaryotes and Eukaryotes
Study of ultra-structure and morphological classification of bacteria, nutritional requirements, raw materials used for culture media and physical parameters for growth, growth curve, isolation and preservation methods for pure cultures, cultivation of anaerobes, quantitative measurement of bacterial growth (total & viablecount).
Study of different types of phase constrast microscopy, dark field microscopy and electron microscopy.

UnitII **10Hours**

Identification of bacteria using staining techniques (simple, Gram's &Acid fast staining) and biochemical tests (IMViC).

Study of principle, procedure, merits, demerits and applications of physical, chemical gaseous,radiation and mechanical method of sterilization.

Evaluation of the efficiency of sterilization methods.

Equipments employed in large scale sterilization.

Sterility indicators.

UnitIII **10Hours**

Study of morphology, classification, reproduction/replication and cultivation of Fungi andViruses.

Classification and mode of action of disinfectants

Factors influencing disinfection, antiseptics and their evaluation. For bacteriostatic and bactericidal actions

Evaluation of bactericidal & Bacteriostatic.

Sterility testing of products (solids, liquids, ophthalmic and other sterile products) according to IP, BP and USP.

UnitIV **08Hours**

Designing of aseptic area, laminar flow equipments; study of different sources of contamination in an aseptic area and methods of prevention, clean areaclassification.
Principles and methods of different microbiological assay.Methods for standardization of antibiotics, vitamins and amino acids.
Assessment of a new antibiotic.

UnitV **07Hours**

Types of spoilage, factors affecting the microbial spoilage of pharmaceutical products, sources and types of microbial contaminants, assessment of microbial contamination andspoilage.

Preservation of pharmaceutical products using antimicrobial agents, evaluation of microbial stability of formulations.

Growth of animal cells in culture, general procedure for cell culture, Primary, established and transformed cell cultures.

Application of cell cultures in pharmaceutical industry and research.

UBP3P03. PHARMACEUTICAL MICROBIOLOGY (Practical)

4 Hrs/week

1. Introduction and study of different equipments and processing, e.g., B.O.D. incubator, laminar flow, aseptic hood, autoclave, hot air sterilizer, deep freezer, refrigerator, microscopes used in experimentalmicrobiology.
2. Sterilization of glassware, preparation and sterilization ofmedia.
3. Sub culturing of bacteria and fungus. Nutrient stabs and slantspreparations.
4. Staining methods- Simple, Grams staining and acid fast staining (Demonstration with practical).
5. Isolation of pure culture of micro-organisms by multiple streak plate technique and other techniques.
6. Microbiological assay of antibiotics by cup plate method and othermethods
7. Motility determination by Hanging dropmethod.
8. Sterility testing ofpharmaceuticals.
9. Bacteriological analysis ofwater
10. Biochemicaltest.

Recommended Books (Latestedition)

1. W.B. Hugo and A.D. Russel: Pharmaceutical Microbiology, BlackwellScientific publications, Oxford London.
2. Prescott and Dunn., Industrial Microbiology, 4th edition, CBS Publishers &Distributors, Delhi.
3. Pelczar, Chan Kreig, Microbiology, Tata McGraw Hill edn.
4. Malcolm Harris, Balliere Tindall and Cox: PharmaceuticalMicrobiology.
5. Rose: IndustrialMicrobiology.
6. Probisher, Hinsdill et al: Fundamentals of Microbiology, 9th ed.Japan
7. Cooper and Gunn's: Tutorial Pharmacy, CBS Publisher andDistribution.
8. Peppler: MicrobialTechnology.
9. I.P., B.P., U.S.P.- latesteditions.
10. Ananthnarayan : Text Book of Microbiology, Orient-Longman,Chennai
11. Edward: Fundamentals ofMicrobiology.
12. N.K.Jain: Pharmaceutical Microbiology, Vallabh Prakashan, Delhi
13. Bergeys manual of systematic bacteriology, Williams and Wilkins- A Waverlycompany

UBP3T04. PHARMACEUTICAL ENGINEERING (Theory)

45 Hours

Scope: This course is designed to impart a fundamental knowledge on the art and science of various unit operations used in pharmaceutical industry.

Objectives: Upon completion of the course student shall be able:

1. To know various unit operations used in Pharmaceuticalindustries.
2. To understand the material handlingtechniques.
3. To perform various processes involved in pharmaceutical manufacturingprocess.
4. To carry out various test to prevent environmentalpollution.
5. To appreciate and comprehend significance of plant lay out design for optimum use ofresources.
6. To appreciate the various preventive methods used for corrosion control in Pharmaceuticalindustries.

Course content:

UNIT-I **10Hours**

- **Flow of fluids:** Types of manometers, Reynolds number and its significance, Bernoulli's theorem and its applications, Energy losses, Orifice meter, Venturimeter, Pitot tube andRotometer.
- **Size Reduction:** Objectives, Mechanisms & Laws governing size reduction, factors affecting size reduction, principles, construction, working, uses, merits and demerits of Hammer mill, ball mill, fluid energy mill, Edge runner mill & end runnermill.
- **Size Separation:** Objectives, applications & mechanism of size separation, official standards of powders, sieves, size separation Principles, construction, working, uses, merits and demerits of Sieve shaker, cyclone separator, Air separator, Bag filter & elutriationtank.

UNIT-II **10Hours**

- **Heat Transfer:** Objectives, applications & Heat transfer mechanisms. Fourier's law, Heat transfer by conduction, convection & radiation. Heat interchangers & heatexchangers.

- **Evaporation:** Objectives, applications and factors influencing evaporation, differences between evaporation and other heat process. principles, construction, working, uses, merits and demerits of Steam jacketed kettle, horizontal tube evaporator, climbing film evaporator, forced circulation evaporator, multiple effect evaporator& Economy of multiple effectevaporator.

- **Distillation:** Basic Principles and methodology of simple distillation,flash distillation, fractional distillation, distillation under reduced pressure, steam distillation & moleculardistillation

UNIT-III **08Hours**

- **Drying:** Objectives, applications & mechanism of drying process, measurements & applications of Equilibrium Moisture content, rate of drying curve. principles, construction, working, uses, merits and demerits of Tray dryer, drum dryer spray dryer, fluidized bed dryer, vacuum dryer, freezedryer.

- **Mixing:** Objectives, applications & factors affecting mixing, Difference between solid and liquid mixing, mechanism of solid mixing, liquids mixing and semisolids mixing. Principles, Construction, Working, uses, Merits and Demerits of Double cone blender, twin shell blender, ribbon blender, Sigma blade mixer, planetary mixers, Propellers, Turbines, Paddles & SilversonEmulsifier,

UNIT-IV **08Hours**

- **Filtration:** Objectives, applications, Theories & Factors influencing filtration, filter aids, filter medias. Principle, Construction, Working, Uses, Merits and demerits of plate & frame filter, filter leaf, rotary drum filter, Meta filter & Cartridge filter, membrane filters and Seidtzfilter.
- **Centrifugation:** Objectives, principle & applications of Centrifugation, principles, construction, working, uses, merits and demerits of Perforated basket centrifuge, Non-perforated basket centrifuge, semi continuous centrifuge & super centrifuge.

UNIT-V **07Hours**

- **Materials of pharmaceutical plant construction, Corrosion and its prevention:** Factors affecting during materials selected for Pharmaceutical plant construction, Theories of corrosion, types of corrosion and there prevention. Ferrous and nonferrous metals, inorganic and organic non metals, basic of material handlingsystems.

Recommended Books: (Latest Editions)

1. Introduction to chemical engineering – Walter L Badger & Julius Banchero, Latest edition.
2. Solid phase extraction, Principles, techniques and applications by Nigel J.K. Simpson-Latestedition.
3. Unit operation of chemical engineering – Mcabe Smith, Latestedition.
4. Pharmaceutical engineering principles and practices – C.V.S Subrahmanyam et al., Latest edition.
5. Remington practice of pharmacy- Martin, Latestedition.
6. Theory and practice of industrial pharmacy byLachmann.,Latest edition.
7. Physical pharmaceutics- C.V.S Subrahmanyam et al., Latestedition.
8. Cooper and Gunn's Tutorial pharmacy, S.J. Carter, Latestedition.

UBP3P04 - PHARMACEUTICAL ENGINEERING (Practical) 4 Hours/week

I. Determination of radiation constant of brass, iron, unpainted and paintedglass.
II. Steam distillation – To calculate the efficiency of steamdistillation.
III. To determine the overall heat transfer coefficient by heatexchanger.
IV. Construction of drying curves (for calcium carbonate andstarch).
V. Determination of moisture content and loss ondrying.
VI. Determination of humidity of air – i) From wet and dry bulb temperatures –use of Dew pointmethod.
VII. Description of Construction working and application of Pharmaceutical Machinery such as rotary tablet machine, fluidized bed coater, fluid energy mill, dehumidifier.
VIII. Size analysis by sieving – To evaluate size distribution of tablet granulations – Construction of various size frequency curves including arithmetic andlogarithmic probabilityplots.
IX. Size reduction: To verify the laws of size reduction using ball mill and determining Kicks, Rittinger's, Bond's coefficients, power requirement and critical speed of BallMill.
X. Demonstration of colloid mill, planetary mixer, fluidized bed dryer, freeze dryer and such othermajorequipment.
XI. Factors affecting Rate of Filtration and Evaporation (Surface area,Concentration and Thickness/viscosity
XII. To study the effect of time on the Rate ofCrystallization.
XIII. To calculate the uniformity Index for given sample by using Double Cone Blender.

SEMESTER IV

UBP4T01. PHARMACEUTICAL ORGANIC CHEMISTRY –III (Theory)

45 Hours

Scope: This subject imparts knowledge on stereo-chemical aspects of organic compounds and organic reactions, important named reactions, chemistry of important hetero cyclic compounds. It also emphasizes on medicinal and other uses of organic compounds.

Objectives: At the end of the course, the student shall be able to

1. understand the methods of preparation and properties of organiccompounds
2. explain the stereo chemical aspects of organic compounds and stereo chemical reactions
3. know the medicinal uses and other applications of organiccompounds

Course Content:

Note: To emphasize on definition, types, mechanisms, examples, uses/applications

UNIT-I **10Hours**

Stereo isomerism

Optical isomerism –

Optical activity, enantiomerism, diastereoisomerism, meso compounds

Elements of symmetry, chiral and achiral molecules

DL system of nomenclature of optical isomers, sequence rules, RS system of nomenclature of optical isomers

Reactions of chiral molecules

Racemic modification and resolution of racemic mixture.

Asymmetric synthesis: partial and absolute

UNIT-II **10Hours**

Geometrical isomerism

Nomenclature of geometrical isomers (Cis Trans, EZ, Syn Anti systems)

Methods of determination of configuration of geometrical isomers.

Conformational isomerism in Ethane, n-Butane and Cyclohexane.

Stereo isomerism in biphenyl compounds (Atropisomerism) and conditions for optical activity.

Stereospecific and stereoselective reactions

UNIT-III **10Hours**

Heterocyclic compounds:

Nomenclature and classification, Synthesis, reactions and medicinal uses of following compounds/derivatives Pyrrole, Furan, and Thiophene

Relative aromaticity and reactivity of Pyrrole, Furan and Thiophen

UNIT-IV **8 Hours**

Synthesis, reactions and medicinal uses of following compounds/derivatives

Pyrazole, Imidazole, Oxazole and Thiazole.

Pyridine, Quinoline, Isoquinoline, Acridine and Indole. Basicity of pyridine

Synthesis and medicinal uses of Pyrimidine, Purine, azepines and their derivatives

UNIT-V **07 Hours**

Reactions of syntheticimportance

Metal hydride reduction ($NaBH_4$ and $LiAlH_4$), Clemmensen reduction, Birch reduction, Wolff Kishnerreduction.

Oppenauer-oxidation and Dakin reaction.

Beckmanns rearrangement and Schmidt rearrangement.

Claisen-Schmidt condensation

Recommended Books (Latest Editions)

1. Organic chemistry by I.L. Finar, Volume-I &II.
2. A text book of organic chemistry – Arun Bahl, B.S.Bahl.
3. Heterocyclic Chemistry by Raj K.Bansal
4. Organic Chemistry by Morrison andBoyd
5. Heterocyclic Chemistry by T.L.Gilchrist

UBP4T02. MEDICINAL CHEMISTRY – I (Theory)

45 Hours

Scope: This subject is designed to impart fundamental knowledge on the structure, chemistry and therapeutic value of drugs. The subject emphasizes on structure activity relationships of drugs, importance of physicochemical properties and metabolism of drugs. The syllabus also emphasizes on chemical synthesis of important drugs under each class.

Objectives: Upon completion of the course the student shall be able to

1. understand the chemistry of drugs with respect to their pharmacologicalactivity
2. understand the drug metabolic pathways, adverse effect and therapeutic value of drugs
3. know the Structural Activity Relationship (SAR) of different class ofdrugs
4. write the chemical synthesis of somedrugs

Course Content:

Study of the development of the following classes of drugs, Classification, mechanism of action, uses of drugs mentioned in the course, Structure activity relationship of selective class of drugs as specified in the course and synthesis of drugs superscripted (*)

UNIT-I **10Hours**

Introduction to Medicinal Chemistry

History and development of medicinal chemistry

physicochemical properties in relation to biological action

Ionization, Solubility, Partition Coefficient, Hydrogen bonding, Protein binding, Chelation, Bioisosterism, Optical and Geometrical isomerism.

Drug metabolism

Drug metabolism principles - Phase I and Phase II.

Factors affecting drug metabolism including stereo chemical aspects.

UNIT-II **10Hours**

Drugs acting on Autonomic Nervous System

Adrenergic Neurotransmitters:

Biosynthesis and catabolism of catecholamine.

Adrenergic receptors (Alpha & Beta) and their distribution.

Sympathomimetic agents: SAR of Sympathomimetic agents

Direct acting: Nor-epinephrine, Epinephrine, Phenylephrine*, Dopamine,

Methyldopa, Clonidine, Dobutamine, Isoproterenol, Terbutaline, Salbutamol*, Bitolterol, Naphazoline, Oxymetazoline and Xylometazoline.

- Indirect acting agents: Hydroxyamphetamine, Pseudoephedrine, Propylhexedrine.
- Agents with mixed mechanism: Ephedrine, Metaraminol.

Adrenergic Antagonists:

Alpha adrenergic blockers: Tolazoline*, Phentolamine, Phenoxybenzamine, Prazosin, Dihydroergotamine, Methysergide.

Beta adrenergic blockers: SAR of beta blockers, Propranolol*, Metibranolol, Atenolol, Betazolol, Bisoprolol, Esmolol, Metoprolol, Labetolol, Carvedilol.

UNIT-III **10Hours**

Cholinergic neurotransmitters:

Biosynthesis and catabolism of acetylcholine.

Cholinergic receptors (Muscarinic & Nicotinic) and their distribution.

Parasympathomimetic agents: SAR of Parasympathomimetic agents

Direct acting agents: Acetylcholine, Carbachol*, Bethanechol, Methacholine, Pilocarpine.

Indirect acting/ Cholinesterase inhibitors (Reversible & Irreversible): Physostigmine, Neostigmine*, Pyridostigmine, Edrophonium chloride, Tacrine hydrochloride, Ambenonium chloride, Isofluorphate, Echothiophate iodide, Parathione, Malathion.

Cholinesterase reactivator: Pralidoxime chloride.

Cholinergic Blocking agents: SAR of cholinolytic agents

Solanaceous alkaloids and analogues: Atropine sulphate, Hyoscyamine sulphate, Scopolamine hydrobromide, Homatropine hydrobromide, Ipratropium bromide*.

Synthetic cholinergic blocking agents: Tropicamide, Cyclopentolate hydrochloride, Clidinium bromide, Dicyclomine hydrochloride*, Glycopyrrolate, Methantheline bromide, Propantheline bromide, Benztropine mesylate, Orphenadrine citrate, Biperidine hydrochloride, Procyclidine hydrochloride*, Tridihexethyl chloride, Isopropamide iodide, Ethopropazinehydrochloride.

UNIT-IV **08Hours**

Drugs acting on Central Nervous System

A. Sedatives and Hypnotics:

Benzodiazepines: SAR of Benzodiazepines, Chlordiazepoxide, Diazepam*, Oxazepam, Chlorazepate, Lorazepam, Alprazolam, Zolpidem

Barbiturtes: SAR of barbiturates, Barbital*, Phenobarbital, Mephobarbital, Amobarbital, Butabarbital, Pentobarbital, Secobarbital

Miscelleneous:

Amides & imides: Glutethmide.

Alcohol & their carbamate derivatives: Meprobomate, Ethchlorvynol.

Aldehyde & their derivatives: Triclofos sodium, Paraldehyde.

B. Antipsychotics

Phenothiazeines: SAR of Phenothiazeines - Promazine hydrochloride, Chlorpromazine hydrochloride*, Triflupromazine, Thioridazine hydrochloride, Piperacetazine hydrochloride, Prochlorperazine maleate, Trifluoperazine hydrochloride.

Ring Analogues of Phenothiazeines: Chlorprothixene, Thiothixene, Loxapine succinate, Clozapine.

Fluro buterophenones: Haloperidol, Droperidol, Risperidone.

Beta amino ketones: Molindone hydrochloride.

Benzamides: Sulpieride.

C. Anticonvulsants: SAR of Anticonvulsants**,** mechanism of anticonvulsant action

Barbiturates: Phenobarbitone, Methabarbital. **Hydantoins:**

Phenytoin*, Mephenytoin, Ethotoin **Oxazolidine diones:**

Trimethadione, Paramethadione **Succinimides:**

Phensuximide, Methsuximide, Ethosuximide* **Urea and**

monoacylureas: Phenacemide, Carbamazepine*

Benzodiazepines: Clonazepam

Miscellaneous: Primidone, Valproic acid , Gabapentin, Felbamate

UNIT– V **07Hours**

Drugs acting on Central Nervous System

General anesthetics:

Inhalation anesthetics: Halothane*, Methoxyflurane, Enflurane, Sevoflurane, Isoflurane, Desflurane.

Ultra short acting barbitutrates: Methohexital sodium*, Thiamylal sodium, Thiopentalsodium.

Dissociative anesthetics: Ketamine hydrochloride.*

Narcotic and non-narcotic analgesics

Morphine and related drugs: SAR of Morphine analogues, Morphine sulphate, Codeine, Meperidine hydrochloride, Anilerdine hydrochloride, Diphenoxylate hydrochloride, Loperamide hydrochloride, Fentanyl citrate*, Methadone hydrochloride*, Propoxyphene hydrochloride, Pentazocine, Levorphanol tartarate.

Narcotic antagonists: Nalorphine hydrochloride, Levallorphan tartarate, Naloxone hydrochloride.

Anti-inflammatory agents: Sodium salicylate, Aspirin, Mefenamic acid*, Meclofenamate, Indomethacin, Sulindac, Tolmetin, Zomepriac, Diclofenac, Ketorolac, Ibuprofen*, Naproxen, Piroxicam, Phenacetin, Acetaminophen, Antipyrine, Phenylbutazone.

UBP4P01. MEDICINAL CHEMISTRY – I (Practical) **4 Hours/Week**

I Preparation of drugs/intermediates

1 1,3-pyrazole

2 1,3-oxazole

3 Benzimidazole

4 Benztriazole

5 2,3- diphenylquinoxaline

6 Benzocaine

7 Phenytoin

8 Phenothiazine

9 Barbiturate

II Assay ofdrugs

1 Chlorpromazine

2 Phenobarbitone

3 Atropine

4 Ibuprofen

5 Aspirin

6 Furosemide

III Determination of Partition coefficient for any twodrugs

Recommended Books (Latest Editions)

1. Wilson and Giswold's Organic medicinal and PharmaceuticalChemistry.
2. Foye's Principles of MedicinalChemistry.
3. Burger's Medicinal Chemistry, Vol I toIV.
4. Introduction to principles of drug design- Smith andWilliams.
5. Remington's Pharmaceutical Sciences.
6. Martindale's extrapharmacopoeia.
7. Organic Chemistry by I.L. Finar, Vol.II.
8. The Organic Chemistry of Drug Synthesis by Lednicer, Vol.1-5.
9. IndianPharmacopoeia.
10. Text book of practical organic chemistry-A.I.Vogel.

UBP4T03. PHYSICAL PHARMACEUTICS-II (Theory)

45Hours

Scope: The course deals with the various physica and physicochemical properties, and principles involved in dosage forms/formulations. Theory and practical components of the subject help the student to get a better insight into various areas of formulation research and development, and stability studies of pharmaceutical dosage forms.

Objectives: Upon the completion of the course student shall be able to

1. Understand various physicochemical properties of drug molecules in the designing the dosageforms
2. Know the principles of chemical kinetics & to use them for stability testing nad determination of expiry date offormulations
3. Demonstrate use of physicochemical properties in the formulation development and evaluation of dosageforms.

Course Content:

UNIT-I **07Hours**

Colloidal dispersions: Classification of dispersed systems & their general characteristics, size & shapes of colloidal particles, classification of colloids & comparative account of their general properties. Optical, kinetic & electrical properties. Effect of electrolytes, coacervation, peptization & protective action.

UNIT-II **10Hours**

Rheology: Newtonian systems, law of flow, kinematic viscosity, effect of temperature, non-Newtonian systems, pseudoplastic, dilatant, plastic, thixotropy, thixotropy in formulation, determination of viscosity, capillary, falling Sphere, rotational viscometers

Deformation of solids: Plastic and elastic deformation, Heckel equation, Stress, Strain, Elastic Modulus

UNIT-III **10Hours**

Coarse dispersion: Suspension, interfacial properties of suspended particles, settling in suspensions, formulation of flocculated and deflocculated suspensions. Emulsions and theories of emulsification, microemulsion and multiple emulsions; Stability of emulsions, preservation of emulsions, rheological properties of emulsions and emulsion formulation by HLBmethod.

UNIT-IV **10Hours**

Micromeretics: Particle size and distribution, mean particle size, number and weight distribution, particle number, methods for determining particle size by different methods, counting and separation method, particle shape, specific surface, methods for determining surface area, permeability, adsorption, derived properties of powders, porosity, packing arrangement, densities, bulkiness & flowproperties.

UNIT-V **10Hours**

Drug stability: Reaction kinetics: zero, pseudo-zero, first & second order, units of basic rate constants, determination of reaction order. Physical and chemical factors influencing the chemical degradation of pharmaceutical product: temperature, solvent, ionic strength, dielectric constant, specific & general acid base catalysis, Simple numerical problems. Stabilization of medicinal agents against common reactions like hydrolysis & oxidation.Accelerated stability testing in expiration dating of pharmaceutical dosage forms. Photolytic degradation and its prevention

UBP4P02. PHYSICAL PHARMACEUTICS- II (Practical)

3 Hrs/week

1. Determination of particle size, particle size distribution using sievingmethod
2. Determination of particle size, particle size distribution using Microscopicmethod
3. Determination of bulk density, true density andporosity
4. Determine the angle of repose and influence of lubricant on angle ofrepose
5. Determination of viscosity of liquid using Ostwald'sviscometer
6. Determination sedimentation volume with effect of different suspendingagent
7. Determination sedimentation volume with effect of different concentration of single suspendingagent
8. Determination of viscosity of semisolid by using Brookfieldviscometer
9. Determination of reaction rate constant firstorder.
10. Determination of reaction rate constant secondorder
11. Accelerated stabilitystudies

Recommended Books: (LatestEditions)

1. Physical Pharmacy by Alfred Martin, Sixthedition
2. Experimental pharmaceutics by Eugene,Parott.
3. Tutorial pharmacy by Cooper andGunn.
4. Stocklosam J. Pharmaceutical calculations, Lea & Febiger,Philadelphia.
5. Liberman H.A, Lachman C., Pharmaceutical Dosage forms, Tablets, Volume-1 to 3, Marcel DekkarInc.
6. Liberman H.A, Lachman C, Pharmaceutical dosage forms. Disperse systems, volume1, 2, 3. Marcel DekkarInc.
7. Physical Pharmaceutics by Ramasamy C, and ManavalanR.

UBP4T04. PHARMACOLOGY-I (Theory)

45 Hrs

Scope: The main purpose of the subject is to understand what drugs do to the living organisms and how their effects can be applied to therapeutics. The subject covers the information about the drugs like, mechanism of action, physiological and biochemical effects (pharmacodynamics) as well as absorption, distribution, metabolism and excretion (pharmacokinetics) along with the adverse effects, clinical uses, interactions, doses, contraindications and routes of administration of different classes of drugs.

Objectives: Upon completion of this course the student should be able to

1. Understand the pharmacological actions of different categories ofdrugs
2. Explain the mechanism of drug action at organ system/subcellular/ macromolecularlevels.
3. Apply the basic pharmacological knowledge in the prevention and treatmentof variousdiseases.
4. Observe the effect of drugs on animals by simulatedexperiments
5. Appreciate correlation of pharmacology with other bio medicalsciences

Course Content:

UNIT-I **08hours**

1. GeneralPharmacology

a. Introduction to Pharmacology- Definition, historical landmarks and scope of pharmacology, nature and source of drugs, essential drugs concept and routes of drug administration, Agonists, antagonists(competitive and non competitive), spare receptors, addiction, tolerance, dependence, tachyphylaxis, idiosyncrasy,allergy.

b. Pharmacokinetics- Membrane transport, absorption, distribution, metabolism and excretion of drugs .Enzyme induction, enzyme inhibition, kinetics ofelimination

UNIT-II **12Hours**

General Pharmacology

a. Pharmacodynamics- Principles and mechanisms of drug action. Receptor theories and classification of receptors, regulation of receptors. drug receptors interactions signal transduction mechanisms, G-protein–coupled receptors, ion channelreceptor, transmembrane enzyme linked receptors, transmembrane JAK-STAT binding receptor and receptors that regulate transcription factors, dose response relationship, therapeutic index, combined effects of drugs and factors modifying drugaction.

b. Adverse drugreactions.

c. Drug interactions (pharmacokinetic andpharmacodynamic)

d. Drug discovery and clinical evaluation of new drugs -Drug discoveryphase, preclinical evaluation phase, clinical trial phase, phases of clinical trials and pharmacovigilance.

UNIT-III **10Hours**

2. Pharmacology of drugs acting on peripheral nervoussystem

a. Organization and function ofANS.

b.Neurohumoral transmission,co-transmission and classification of neurotransmitters.

c. Parasympathomimetics, Parasympatholytics, Sympathomimetics,sympatholytics.

d. Neuromuscular blocking agents and skeletal muscle relaxants(peripheral).

e. Local anestheticagents.

f. Drugs used in myasthenia gravis andglaucoma

UNIT-IV **08Hours**

3. Pharmacology of drugs acting on central nervoussystem

a. Neurohumoral transmission in the C.N.S.special emphasis on importance ofvarious neurotransmitters like with GABA, Glutamate, Glycine, serotonin,dopamine.

b. General anesthetics and pre-anesthetics**.**

c. Sedatives, hypnotics and centrally acting musclerelaxants.

d. Anti-epileptics

e. Alcohols anddisulfiram

UNIT-V **07Hours**

3. Pharmacology of drugs acting on central nervous system

a. Psychopharmacological agents: Antipsychotics, antidepressants, anti-anxietyagents, anti-manics andhallucinogens.

b. Drugs used in Parkinsons disease and Alzheimer'sdisease.

c. CNS stimulants andnootropics.

d. Opioid analgesics andantagonists

e. Drug addiction, drug abuse, tolerance anddependence.

UBP4P03. PHARMACOLOGY-I (Practical) 4Hrs/Week

1. Introduction to experimentalpharmacology.
2. Commonly used instruments in experimentalpharmacology.
3. Study of common laboratoryanimals.
4. Maintenance of laboratory animals as per CPCSEAguidelines.
5. Common laboratory techniques. Blood withdrawal, serum and plasma separation, anesthetics and euthanasia used for animalstudies.
6. Study of different routes of drugs administration inmice/rats.
7. Study of effect of hepatic microsomal enzyme inducers on the phenobarbitone sleeping time inmice.
8. Effect of drugs on ciliary motility of frogoesophagus
9. Effect of drugs on rabbiteye.
10. Effects of skeletal muscle relaxants using rota-rodapparatus.
11. Effect of drugs on locomotor activity usingactophotometer.
12. Anticonvulsant effect of drugs by MES and PTZmethod.
13. Study of stereotype and anti-catatonic activity of drugs onrats/mice.
14. Study of anxiolytic activity of drugs usingrats/mice.
15. Study of local anesthetics by differentmethods

Note: All laboratory techniques and animal experiments are demonstrated by simulated experiments by softwares andvideos

Recommended Books (LatestEditions)

1. Rang H. P., Dale M. M., Ritter J. M., Flower R. J., Rang andDale's Pharmacology,.Churchil LivingstoneElsevier
2. Katzung B. G., Masters S. B., Trevor A. J., Basic and clinical pharmacology, TataMc Graw-Hill
3. Goodman and Gilman's, The Pharmacological Basis ofTherapeutics
4. Marry Anne K. K., Lloyd Yee Y., Brian K. A., Robbin L.C., Joseph G. B., Wayne A. K., Bradley R.W., Applied Therapeutics, The Clinical use of Drugs, The PointLippincott Williams &Wilkins
5. Mycek M.J, Gelnet S.B and Perper M.M. Lippincott's IllustratedReviews-Pharmacology.
6. K.D.Tripathi. Essentials of Medical Pharmacology, JAYPEE Brothers Medical Publishers (P) Ltd, NewDelhi.
7. Sharma H. L., Sharma K. K., Principles of Pharmacology, Paras medicalpublisher
8. Modern Pharmacology with clinical Applications, by Charles R.Craig&Robert,
9. Ghosh MN. Fundamentals of Experimental Pharmacology. Hilton & Company, Kolkata.
10. Kulkarni SK. Handbook of experimental pharmacology.VallabhPrakashan,

UBP4T05. PHARMACOGNOSY AND PHYTOCHEMISTRY I (Theory)

45 Hours

Scope: The subject involves the fundamentals of Pharmacognosy like scope, classification of crude drugs, their identification and evaluation, phytochemicals present in them and their medicinal properties.

Objectives: Upon completion of the course, the student shall be able

1. to know the techniques in the cultivation and production of crudedrugs
2. to know the crude drugs, their uses and chemicalnature
3. know the evaluation techniques for the herbaldrugs
4. to carry out the microscopic and morphological evaluation of crudedrugs

Course Content:

UNIT-I **10 Hours**

Introduction to Pharmacognosy:

(a) Definition, history, scope and development ofPharmacognosy

(b) Sources of Drugs – Plants, Animals, Marine & Tissueculture

(c) Organized drugs, unorganized drugs (dried latex, dried juices, dried extracts, gums and mucilages, oleoresins and oleo- gum-resins).

Classification of drugs:

Alphabetical, morphological, taxonomical, chemical, pharmacological, chemo and sero taxonomical classification of drugs

Quality control of Drugs of Natural Origin:

Adulteration of drugs of natural origin.Evaluation by organoleptic, microscopic, physical, chemical and biological methods and properties.

Quantitative microscopy of crude drugs including lycopodium spore method, leafconstants, camera lucida and diagrams of microscopic objects to scale with camera lucida.

UNIT-II **10 Hours**

Cultivation, Collection, Processing and storage of drugs of natural origin:

Cultivation and Collection of drugs of natural origin

Factors influencing cultivation of medicinal plants.

Plant hormones and their applications.

Polyploidy, mutation and hybridization with reference to medicinal plants

Conservation of medicinal plants

UNIT-III **07 Hours**

Plant tissue culture:

Historical development of plant tissue culture, types of cultures, Nutritional requirements, growth and their maintenance.

Applications of plant tissue culture in pharmacognosy.

Edible vaccines

UNITIV **10 Hours**

Pharmacognosy in various systems of medicine:

Role of Pharmacognosy in allopathy and traditional systems of medicine namely, Ayurveda, Unani, Siddha, Homeopathy and Chinese systems of medicine.

Introduction to secondary metabolites:

Definition, classification, properties and test for identification of Alkaloids, Glycosides, Flavonoids, Tannins, Volatile oil and Resins

UNITV **08 Hours**

Study of biological source, chemical nature and uses of drugs of natural origin containing following drugs

Plant Products:

Fibers - Cotton, Jute, Hemp

Hallucinogens, Teratogens, Natural allergens

Primary metabolites:

General introduction, detailed study with respect to chemistry, sources, preparation, evaluation, preservation, storage, therapeutic used and commercial utility as Pharmaceutical Aids and/or Medicines for the following Primary metabolites:

Carbohydrates: Acacia, Agar, Tragacanth,Honey

Proteins and Enzymes : Gelatin, casein, proteolytic enzymes (Papain, bromelain, serratiopeptidase, urokinase, streptokinase,pepsin).

Lipids(Waxes, fats, fixed oils) : Castor oil, Chaulmoogra oil, Wool Fat, Bees Wax

Marine Drugs:

Novel medicinal agents from marine sources

UBP4P04. PHARMACOGNOSY AND PHYTOCHEMISTRY I (Practical)

4 Hours/Week

1. Analysis of crude drugs by chemical tests: **(**i)Tragaccanth (ii) Acacia (iii)Agar (iv) Gelatin (v) starch (vi) Honey (vii) Castoroil
2. Determination of stomatal number andindex
3. Determination of vein islet number, vein islet termination and palisideratio.
4. Determination of size of starch grains, calcium oxalate crystals by eye piece micrometer
5. Determination of Fiber length andwidth
6. Determination of number of starch grains by Lycopodium sporemethod
7. Determination of Ashvalue
8. Determination of Extractive values of crudedrugs
9. Determination of moisture content of crudedrugs
10. Determination of swelling index andfoaming

Recommended Books: (Latest Editions)

1. W.C.Evans, Trease and Evans Pharmacognosy, 16th edition, W.B. Sounders &Co., London, 2009.
2. Tyler, V.E., Brady, L.R. and Robbers, J.E., Pharmacognosy, 9th Edn., Leaand Febiger, Philadelphia,1988.
3. Text Book of Pharmacognosy by T.E.Wallis
4. Mohammad Ali. Pharmacognosy and Phytochemistry, CBS Publishers& Distribution, NewDelhi.
5. Text book of Pharmacognosy by C.K. Kokate, Purohit, Gokhlae (2007), 37th Edition, Nirali Prakashan, NewDelhi.
6. Herbal drug industry by R.D.Choudhary (1996),Istedn, EasternPublisher,New Delhi.
7. EssentialsofPharmacognosy,Dr.SH.Ansari,IIndedition,Birlapublications,New Delhi, 2007
8. Practical Pharmacognosy: C.K. Kokate, Purohit,Gokhlae
9. Anatomy of Crude Drugs by M.A.Iyengar

SEMESTER V

UBP5T01. MEDICINAL CHEMISTRY – II (Theory)

45 Hours

Scope: This subject is designed to impart fundamental knowledge on the structure, chemistry and therapeutic value of drugs. The subject emphasizes on structure activity relationships of drugs, importance of physicochemical properties and metabolism of drugs. The syllabus also emphasizes on chemical synthesis of important drugs under each class.

Objectives: Upon completion of the course the student shall be able to

1. Understand the chemistry of drugs with respect to their pharmacologicalactivity
2. Understand the drug metabolic pathways, adverse effect and therapeutic value of drugs
3. Know the Structural Activity Relationship of different class ofdrugs
4. Study the chemical synthesis of selecteddrugs

Course Content:

Study of the development of the following classes of drugs, Classification, mechanism of action, uses of drugs mentioned in the course, Structure activity relationship of selective class of drugs as specified in the course and synthesis of drugs superscripted (*)

UNIT-I **10Hours**

Antihistaminic agents: Histamine, receptors and their distribution in the humanbody

H_1–antagonists: Diphenhydramine hydrochloride*, Dimenhydrinate, Doxylamines cuccinate, Clemastine fumarate, Diphenylphyraline hydrochloride, Tripelenamine hydrochloride, Chlorcyclizine hydrochloride, Meclizine hydrochloride, Buclizine hydrochloride, Chlorpheniramine maleate, Triprolidine hydrochloride*, Phenidamine tartarate, Promethazine hydrochloride*, Trimeprazine tartrate, Cyproheptadine hydrochloride, Azatidine maleate, Astemizole, Loratadine, Cetirizine, Levocetrazine Cromolynsodium

H_2-antagonists: Cimetidine*, Famotidine, Ranitidin.

Gastric Proton pump inhibitors: Omeprazole, Lansoprazole, Rabeprazole, Pantoprazole

Anti-neoplastic agents:

Alkylating agents: Meclorethamine*, Cyclophosphamide, Melphalan,

Chlorambucil, Busulfan, Thiotepa

Antimetabolites: Mercaptopurine*, Thioguanine, Fluorouracil, Floxuridine, Cytarabine, Methotrexate*, Azathioprine

Antibiotics: Dactinomycin, Daunorubicin, Doxorubicin, Bleomycin

Plant products: Etoposide, Vinblastin sulphate, Vincristin sulphate

Miscellaneous: Cisplatin, Mitotane.

UNIT– II **10Hours**

Anti-anginal:

Vasodilators: Amyl nitrite, Nitroglycerin*, Pentaerythritol tetranitrate, Isosorbide dinitrite*, Dipyridamole.

Calcium channel blockers: Verapamil, Bepridil hydrochloride, Diltiazem hydrochloride, Nifedipine, Amlodipine, Felodipine, Nicardipine,Nimodipine.

Diuretics:

Carbonic anhydrase inhibitors: Acetazolamide*, Methazolamide, Dichlorphenamide.

Thiazides: Chlorthiazide*, Hydrochlorothiazide, Hydroflumethiazide, Cyclothiazide,

Loop diuretics: Furosemide*, Bumetanide, Ethacrynic acid.

Potassium sparing Diuretics: Spironolactone, Triamterene,Amiloride.

Osmotic Diuretics:Mannitol

Anti-hypertensive Agents: Timolol, Captopril, Lisinopril, Enalapril, Benazepril hydrochloride, Quinapril hydrochloride, Methyldopate hydrochloride,* Clonidine hydrochloride, Guanethidine monosulphate, Guanabenz acetate, Sodium nitroprusside, Diazoxide, Minoxidil, Reserpine, Hydralazine hydrochloride.

UNIT-III **10Hours**

Anti-arrhythmic Drugs: Quinidine sulphate, Procainamide hydrochloride, Disopyramide phosphate*, Phenytoin sodium, Lidocaine hydrochloride, Tocainide hydrochloride, Mexiletine hydrochloride, Lorcainide hydrochloride, Amiodarone,Sotalol.

Anti-hyperlipidemic agents: Clofibrate, Lovastatin, Cholesteramine and Cholestipol

Coagulant & Anticoagulants: Menadione, Acetomenadione, Warfarin*, Anisindione, clopidogrel

Drugs used in Congestive Heart Failure: Digoxin, Digitoxin, Nesiritide,

Bosentan, Tezosentan.

UNIT-IV **08Hours**

Drugs acting on Endocrine system

Nomenclature, Stereochemistry and metabolism of steroids

Sex hormones: Testosterone, Nandralone, Progestrones, Oestriol, Oestradiol, Oestrione, Diethyl stilbestrol.
Drugs for erectile dysfunction: Sildenafil, Tadalafil.
Oral contraceptives: Mifepristone, Norgestril, Levonorgestrol
Corticosteroids: Cortisone, Hydrocortisone, Prednisolone, Betamethasone, Dexamethasone
Thyroid and antithyroid drugs: L-Thyroxine, L-Thyronine, Propylthiouracil, Methimazole.

UNIT– V **07Hours**

Antidiabetic agents:

Insulin and its preparations

Sulfonyl ureas: Tolbutamide*, Chlorpropamide, Glipizide, Glimepiride.

Biguanides: Metformin.

Thiazolidinediones: Pioglitazone, Rosiglitazone.

Meglitinides: Repaglinide, Nateglinide.

Glucosidase inhibitors: Acrabose, Voglibose.

Local Anesthetics: SAR of Local anesthetics

Benzoic Acid derivatives; Cocaine, Hexylcaine, Meprylcaine, Cyclomethycaine, Piperocaine.

Amino Benzoic acid derivatives: Benzocaine*, Butamben, Procaine*, Butacaine, Propoxycaine, Tetracaine, Benoxinate.

Lidocaine/Anilide derivatives: Lignocaine, Mepivacaine, Prilocaine, Etidocaine.

Miscellaneous: Phenacaine, Diperodon, Dibucaine.*

Recommended Books (Latest Editions)

1. Wilson and Giswold's Organic medicinal and PharmaceuticalChemistry.
2. Foye's Principles of MedicinalChemistry.
3. Burger's Medicinal Chemistry, Vol I toIV.
4. Introduction to principles of drug design- Smith andWilliams.
5. Remington's Pharmaceutical Sciences.
6. Martindale's extrapharmacopoeia.
7. Organic Chemistry by I.L. Finar, Vol.II.
8. The Organic Chemistry of Drug Synthesis by Lednicer, Vol. 1to5.
9. IndianPharmacopoeia.
10. Text book of practical organic chemistry-A.I.Vogel.

UBP5T02. Industrial PharmacyI (Theory)

45 Hours

Scope: Course enables the student to understand and appreciate the influence of pharmaceutical additives and various pharmaceutical dosage forms on the performance of the drug product.

Objectives: Upon completion of the course the student shall be able to

1. Know the various pharmaceutical dosage forms and their manufacturing techniques.
2. Know various considerations in development of pharmaceutical dosageforms
3. Formulate solid, liquid and semisolid dosage forms and evaluate them for their quality

Course content:

3 hours/ week

UNIT-I **07Hours**

Preformulation Studies: Introduction to preformulation, goals and objectives, study of physicochemical characteristics of drug substances.

a. Physical properties: Physical form (crystal & amorphous), particle size, shape, flow properties, solubility profile (pKa, pH, partition coefficient),polymorphism

b. Chemical Properties: Hydrolysis, oxidation, reduction, racemisation,polymerization

BCS classification of drugs & itssignificant

Application of preformulation considerations in the development of solid, liquid oral and parenteral dosage forms and its impact on stability of dosage forms.

UNIT-II **10Hours**

Tablets:

a. Introduction, ideal characteristics of tablets, classification of tablets. Excipients, Formulation of tablets, granulation methods, compression and processing problems. Equipments and tablettooling.

b. Tablet coating: Types of coating, coating materials, formulation of coating composition, methods of coating, equipment employed and defects incoating.

c. Quality control tests: In process and finished producttests

Liquid orals: Formulation and manufacturing consideration of syrups and elixirs suspensions and emulsions; Filling and packaging; evaluation of liquid orals official inpharmacopoeia

UNIT-III **08Hours**

Capsules:

a. ***Hard gelatin capsules:*** Introduction, Production of hard gelatin capsule shells. size of capsules, Filling, finishing and special techniques of formulation of hard gelatin capsules, manufacturing defects. In process and final product quality control tests forcapsules.

b. ***Soft gelatin capsules:*** Nature of shell and capsule content, size of capsules,importance of base adsorption and minim/gram factors, production, in process and final product quality control tests. Packing, storage and stability testing of soft gelatin capsules and theirapplications.

Pellets: Introduction, formulation requirements, pelletization process, equipments for manufacture of pellets

UNIT-IV **10Hours**

Parenteral Products:

a. Definition, types, advantages and limitations. Preformulation factors and essential requirements, vehicles, additives, importance ofisotonicity

b. Production procedure, production facilities and controls, asepticprocessing

c. Formulation of injections, sterile powders, large volume parenterals and lyophilizedproducts.

d. Containers and closures selection, filling and sealing of ampoules, vials and infusion fluids. Quality control tests of parenteralproducts.

Ophthalmic Preparations: Introduction, formulation considerations; formulation of eyedrops, eye ointments and eye lotions; methods of preparation; labeling, containers; evaluation of ophthalmic preparations

UNIT-V **10Hours**

Cosmetics: Formulation and preparation of the following cosmetic preparations: lipsticks, shampoos, cold cream and vanishing cream, tooth pastes, hair dyes and sunscreens.

Pharmaceutical Aerosols: Definition, propellants, containers, valves, types of aerosol systems; formulation and manufacture of aerosols; Evaluation of aerosols; Quality control and stabilitystudies.

Packaging Materials Science: Materials used for packaging of pharmaceutical products, factors influencing choice of containers, legal and official requirements for containers, stability aspects of packaging materials, quality control tests.

UBP5P01. Industrial PharmacyI (Practical)

4 Hours/week

1. Preformulation studies on paracetamol/asparin/or any otherdrug
2. Preparation and evaluation of Paracetamoltablets
3. Preparation and evaluation of Aspirintablets
4. Coating of tablets- film coating oftables/granules
5. Preparation and evaluation of Tetracyclinecapsules
6. Preparation of Calcium Gluconateinjection
7. Preparation of Ascorbic Acid injection
8. Qulaity control test of (as per IP) marketed tablets andcapsules
9. Preparation of Eye drops/ and Eyeointments
10. Preparation of Creams (cold / vanishingcream)
11. Evaluation of Glass containers (as perIP)

Recommended Books: (Latest Editions)

1. Pharmaceutical dosage forms - Tablets, volume 1 -3 by H.A. Liberman, LeonLachman &J.B.Schwartz
2. Pharmaceutical dosage form - Parenteral medication vol- 1&2 by Liberman & Lachman
3. Pharmaceutical dosage form disperse system VOL-1 by Liberman &Lachman
4. Modern Pharmaceutics by Gilbert S. Banker & C.T. Rhodes, 3rdEdition
5. Remington: The Science and Practice of Pharmacy, 20th edition Pharmaceutical Science(RPS)
6. Theory and Practice of Industrial Pharmacy by Liberman &Lachman
7. Pharmaceutics- The science of dosage form design by M.E.Aulton, Churchill livingstone, Latestedition
8. Introduction to Pharmaceutical Dosage Forms by H. C.Ansel, Lea &Febiger, Philadelphia, 5th edition,2005
9. Drug stability - Principles and practice by Cartensen & C.J. Rhodes, 3rd Edition, Marcel Dekker Series, Vol107.

UBP5T03. PHARMACOLOGY-II (Theory)

45 Hours

Scope: This subject is intended to impart the fundamental knowledge on various aspects (classification, mechanism of action, therapeutic effects, clinical uses, side effects and contraindications) of drugs acting on different systems of body and in addition,emphasis on the basic concepts of bioassay.

Objectives: Upon completion of this course the student should be able to

1. Understand the mechanism of drug action and its relevance in the treatmentof differentdiseases
2. Demonstrate isolation of different organs/tissues from the laboratory animals by simulatedexperiments
3. Demonstrate the various receptor actions using isolated tissuepreparation
4. Appreciate correlation of pharmacology with related medicalsciences

Course Content:

UNIT-I **10hours**

1. Pharmacology of drugs acting on cardio vascularsystem

a. Introduction to hemodynamic and electrophysiology ofheart.
b. Drugs used in congestive heartfailure
c. Anti-hypertensivedrugs.
d. Anti-anginaldrugs.
e. Anti-arrhythmicdrugs.
f. Anti-hyperlipidemicdrugs.

UNIT-II **10hours**

1. Pharmacology of drugs acting on cardio vascularsystem

a. Drug used in the therapy ofshock.
b. Hematinics, coagulants andanticoagulants.
c. Fibrinolytics and anti-plateletdrugs
d. Plasma volumeexpanders

2. Pharmacology of drugs acting on urinarysystem

a. Diuretics
b. Anti-diuretics.

UNIT-III **10hours**

3. Autocoids and relateddrugs

a. Introduction to autacoids andclassification
b. Histamine, 5-HT and theirantagonists.
c. Prostaglandins, Thromboxanes andLeukotrienes.
d. Angiotensin, Bradykinin and SubstanceP.
e. Non-steroidal anti-inflammatoryagents
f. Anti-gout drugs
g. Antirheumaticdrugs

UNIT-IV **08hours**

5. Pharmacology of drugs acting on endocrinesystem

a. Basic concepts in endocrinepharmacology.
b. Anterior Pituitary hormones- analogues and theirinhibitors.
c. Thyroid hormones- analogues and theirinhibitors.
d. Hormones regulating plasma calcium level- Parathormone, Calcitonin and Vitamin-D.
d. Insulin, Oral Hypoglycemic agents and glucagon.
e. ACTH and corticosteroids.

UNIT-V **07hours**

5. Pharmacology of drugs acting on endocrinesystem

a. Androgens and Anabolicsteroids.
b. Estrogens, progesterone and oralcontraceptives.
c. Drugs acting on theuterus.

6. Bioassay

a. Principles and applications of bioassay.
b.Types of bioassay
c. Bioassay of insulin, oxytocin, vasopressin, ACTH,d-tubocurarine,digitalis, histamine and 5-HT

UBP5P02. PHARMACOLOGY-II (Practical)

4Hrs/Week

1. Introduction to *in-vitro* pharmacology and physiological saltsolutions.
2. Effect of drugs on isolated frogheart.
3. Effect of drugs on blood pressure and heart rate ofdog.
4. Study of diuretic activity of drugs usingrats/mice.
5. DRC of acetylcholine using frog rectus abdominismuscle.
6. Effect of physostigmine and atropine on DRC of acetylcholine using frogrectus abdominis muscle and rat ileumrespectively.
7. Bioassay of histamine using guinea pig ileum by matchingmethod.
8. Bioassay of oxytocin using rat uterine horn by interpolationmethod.
9. Bioassay of serotonin using rat fundus strip by three pointbioassay.
10. Bioassay of acetylcholine using rat ileum/colon by four pointbioassay.
11. Determination of PA_2 value of prazosin using rat anococcygeus muscle(by Schilds plotmethod).
12. Determination of PD_2 value using guinea pigileum.
13. Effect of spasmogens and spasmolytics using rabbitjejunum.
14. Anti-inflammatory activity of drugs using carrageenan induced paw-edema model.
15. Analgesic activity of drug using central and peripheralmethods

Note: All laboratory techniques and animal experiments are demonstrated by simulated experiments by softwares and videos

Recommended Books (Latest Editions)

1. RangH.P.,DaleM.M.,RitterJ.M.,Flower R.J.,RangandDale'sPharmacology, Churchil LivingstoneElsevier
2. Katzung B. G., Masters S. B., Trevor A. J., Basic and clinical pharmacology, TataMc Graw-Hill.
3. Goodman and Gilman's, The Pharmacological Basis ofTherapeutics
4. Marry Anne K. K., Lloyd Yee Y., Brian K. A., Robbin L.C., Joseph G. B., Wayne A. K., Bradley R.W., Applied Therapeutics, The Clinical use of Drugs, The Point Lippincott Williams & Wilkins.
5. Mycek M.J, Gelnet S.B and Perper M.M. Lippincott's IllustratedReviews-Pharmacology.
6. K.D.Tripathi. Essentials of Medical Pharmacology, , JAYPEE BrothersMedical Publishers (P) Ltd, NewDelhi.
7. Sharma H. L., Sharma K. K., Principles of Pharmacology, Paras medicalpublisher
8. Modern Pharmacology with clinical Applications, by Charles R.Craig&Robert.
9. Ghosh MN. Fundamentals of Experimental Pharmacology. Hilton &Company, Kolkata.
10. Kulkarni SK. Handbook of experimental pharmacology. VallabhPrakashan.

UBP5T04. PHARMACOGNOSY AND PHYTOCHEMISTRY II (Theory) 45Hours

Scope: The main purpose of subject is to impart the students the knowledge of how the secondary metabolites are produced in the crude drugs, how to isolate and identify and produce them industrially. Also this subject involves the study of producing the plants and phytochemicals through plant tissue culture, drug interactions and basic principles of traditional system of medicine

Objectives: Upon completion of the course, the student shall be able

1. to know the modern extraction techniques, characterization and identification of the herbal drugs andphytoconstituents
2. to understand the preparation and development of herbalformulation.
3. to understand the herbal druginteractions
4. to carryout isolation and identification ofphytoconstituents

Course Content:

UNIT-I **7 Hours**

Metabolic pathways in higher plants and their determination

a) Brief study of basic metabolic pathways and formation of different secondary metabolites throughthesepathways-Shikimicacidpathway,AcetatepathwaysandAminoacidpathway.
b) Study of utilization of radioactive isotopes in the investigation ofBiogenetic studies.

UNIT-II **14 Hours**

General introduction, composition, chemistry & chemical classes, biosources, therapeutic uses and commercial applications of following

secondary metabolites:

Alkaloids: Vinca, Rauwolfia, Belladonna, Opium,
Phenylpropanoids and Flavonoids: Lignans, Tea, Ruta
Steroids, Cardiac Glycosides & Triterpenoids: Liquorice, Dioscorea, Digitalis
Volatile oils: Mentha, Clove, Cinnamon, Fennel, Coriander,
Tannins: Catechu, Pterocarpus
Resins: Benzoin, Guggul, Ginger, Asafoetida, Myrrh, Colophony
Glycosides: Senna, Aloes, Bitter Almond
Iridoids, Other terpenoids & Naphthaquinones: Gentian, Artemisia, taxus, carotenoids

UNIT-III **06 Hours**

Isolation, Identification and Analysis of Phytoconstituents

a) Terpenoids: Menthol, Citral,Artemisin
b) Glycosides: Glycyrhetinic acid &Rutin
c) Alkaloids: Atropine,Quinine,Reserpine,Caffeine
d) Resins: Podophyllotoxin,Curcumin

UNIT-IV **10 Hours**

Industrial production, estimation and utilization of the following phytoconstituents: Forskolin, Sennoside, Artemisinin, Diosgenin, Digoxin, Atropine, Podophyllotoxin, Caffeine, Taxol, Vincristine andVinblastine

UNITV **8Hours**

Basics of Phytochemistry

Modern methods of extraction, application of latest techniques like Spectroscopy, chromatography and electrophoresis in the isolation, purification and identification of crude drugs.

UBP5P03. PHARMACOGNOSY AND PHYTOCHEMISTRY II (Practical)

4 Hours/Week

1. Morphology,histologyandpowdercharacteristics&extraction&detectionof: Cinchona, Cinnamon, Senna, Clove, Ephedra, Fennel andCoriander
2. Exercise involving isolation & detection of activeprinciples
   a. Caffeine - from teadust.
   b. Diosgenin fromDioscorea
   c. Atropine fromBelladonna
   d. Sennosides fromSenna
3. Separation of sugars by Paperchromatography
4. TLC of herbalextract
5. Distillation of volatile oils and detection of phytoconstitutents byTLC
6. Analysis of crude drugs by chemical tests: **(**i) Asafoetida (ii) Benzoin (iii) Colophony (iv) Aloes (v) Myrrh

Recommended Books: (Latest Editions)

1. W.C.Evans, Trease and Evans Pharmacognosy, 16th edition, W.B. Sounders &Co., London, 2009.
2. Mohammad Ali. Pharmacognosy and Phytochemistry, CBS Publishers& Distribution, NewDelhi.
3. Text book of Pharmacognosy by C.K. Kokate, Purohit, Gokhlae (2007), 37th Edition, Nirali Prakashan, NewDelhi.
4. Herbal drug industry by R.D.Choudhary (1996), IstEdn, EasternPublisher, New Delhi.
5. EssentialsofPharmacognosy,Dr.SH.Ansari,IIndedition,Birlapublications,New Delhi, 2007
6. Herbal Cosmetics by H.Pande, Asia Pacific Business press, Inc, NewDelhi.
7. A.N.Kalia, Textbook of Industrial Pharmacognosy, CBSPublishers, NewDelhi, 2005.
8. R Endress, Plant cell Biotechnology, Springer-Verlag, Berlin, 1994.
9. Pharmacognosy & Pharmacobiotechnology. James Bobbers, Marilyn KS, VETylor.
10. The formulation and preparation of cosmetic, fragrances andflavours.
11. Remington's Pharmaceutical sciences.
12. Text Book of Biotechnology by Vyas andDixit.
13. Text Book of Biotechnology by R.C.Dubey.

UBP5T05. PHARMACEUTICAL JURISPRUDENCE (Theory)

45 Hours

Scope: This course is designed to impart basic knowledge on important legislations related to the profession of pharmacy in India.

Objectives: Upon completion of the course, the student shall be able to understand:

1. The Pharmaceutical legislations and their implications in the developmentand marketing ofpharmaceuticals.
2. Various Indian pharmaceutical Acts andLaws
3. The regulatory authorities and agencies governing the manufacture and saleof pharmaceuticals
4. The code of ethics during the pharmaceuticalpractice

Course Content:

UNIT-I **10Hours**

Drugs and Cosmetics Act, 1940 and its rules 1945:

Objectives, Definitions, Legal definitions of schedules to the Act and Rules

Import of drugs – Classes of drugs and cosmetics prohibited from import, Import under license or permit. Offences and penalties**.**

Manufacture of drugs – Prohibition of manufacture and sale of certain drugs,

Conditions for grant of license and conditions of license for manufacture of drugs, Manufacture of drugs for test, examination and analysis, manufacture of new drug, loan license and repacking license.

UNIT-II **10Hours**

Drugs and Cosmetics Act, 1940 and its rules 1945.

Detailed study of Schedule G, H, M, N, P,T,U, V, X, Y, Part XII B, Sch F & DMR (OA)

Sale of Drugs – Wholesale, Retail sale and Restricted license. Offences and penalties

Labeling & Packing of drugs- General labeling requirements and specimen labels for drugs and cosmetics, List of permitted colors. Offences and penalties.

Administration of the Act and Rules – Drugs Technical Advisory Board, Central drugs Laboratory, Drugs Consultative Committee, Government drug analysts, Licensing authorities, controlling authorities, Drugs Inspectors

UNIT-III **10Hours**

- **Pharmacy Act –1948**: Objectives, Definitions, Pharmacy Council of India; its constitution and functions, Education Regulations, State and Joint state pharmacy councils; constitution and functions, Registration of Pharmacists, Offencesand

Penalties

- **Medicinal and Toilet Preparation Act –1955**: Objectives, Definitions, Licensing, Manufacture In bond and Outside bond, Export of alcoholic preparations, Manufacture of Ayurvedic, Homeopathic, Patent & Proprietary Preparations. Offences andPenalties.
- **Narcotic Drugs and Psychotropic substances Act-1985 and Rules**: Objectives, Definitions, Authorities and Officers, Constitution and Functions of narcotic & Psychotropic Consultative Committee, National Fund for Controlling the Drug Abuse, Prohibition, Control and Regulation, opium poppy cultivation and production of poppy straw, manufacture, sale and export of opium, Offences andPenalties

UNIT-IV **08Hours**

- **Study of Salient Features of Drugs and Magic Remedies Act and its rules:** Objectives, Definitions, Prohibition of certain advertisements, Classes of Exempted advertisements, Offences andPenalties
- **Prevention of Cruelty to animals Act-1960:** Objectives, Definitions, Institutional Animal Ethics Committee, CPCSEA guidelines for Breeding and Stocking of Animals, Performance of Experiments, Transfer and acquisition of animals for experiment, Records, Power to suspend or revoke registration, Offences andPenalties
- **National Pharmaceutical Pricing Authority:** Drugs Price Control Order (DPCO)-2013. Objectives, Definitions, Sale prices of bulk drugs, Retail price of formulations, Retail price and ceiling price of scheduled formulations, National List of Essential Medicines(NLEM)

UNIT-V **07Hours**

- **Pharmaceutical Legislations –** A brief review, Introduction, Study of drugs enquiry committee, Health survey and development committee, Hathi committee and Mudaliarcommittee
- **Code of Pharmaceutical ethics** D efinition, Pharmacist in relation to his job, trade, medical profession and his profession, Pharmacist'soath
- **Medical Termination of PregnancyAct**
- **Right to InformationAct**
- **Introduction to Intellectual Property Rights(IPR)**

Recommended books: (Latest Edition)

1. Forensic Pharmacy by B.Suresh
2. Text book of Forensic Pharmacy by B.M.Mithal
3. Hand book of drug law-by M.L.Mehra
4. A text book of Forensic Pharmacy by N.K.Jain
5. Drugs and Cosmetics Act/Rules by Govt. of Indiapublications.
6. Medicinal and Toilet preparations act 1955 by Govt. of Indiapublications.
7. Narcotic drugs and psychotropic substances act by Govt. of Indiapublications
8. Drugs and Magic Remedies act by Govt. of Indiapublication
9.Bare Acts of the said laws published by Government. Reference books(Theory)

SEMESTER VI

UBP6T01. MEDICINAL CHEMISTRY – III (Theory)

45 Hours

Scope: This subject is designed to impart fundamental knowledge on the structure, chemistry and therapeutic value of drugs. The subject emphasis on modern techniques of rational drug design like quantitative structure activity relationship (QSAR), Prodrug concept, combinatorial chemistry and Computer aided drug design (CADD). The subject also emphasizes on the chemistry, mechanism of action, metabolism, adverse effects, Structure Activity Relationships (SAR), therapeutic uses and synthesis of important drugs.

Objectives: Upon completion of the course student shall be able to

1. Understand the importance of drug design and different techniques ofdrug design.
2. Understand the chemistry of drugs with respect to their biologicalactivity.
3. Know the metabolism, adverse effects and therapeutic value ofdrugs.
4. Know the importance of SAR ofdrugs.

Course Content:

Study of the development of the following classes of drugs, Classification, mechanism of action, uses of drugs mentioned in the course, Structure activity relationship of selective class of drugs as specified in the course and synthesis of drugs superscripted by (*)

UNIT– I **10Hours**

Antibiotics

Historical background, Nomenclature, Stereochemistry, Structure activity relationship, Chemical degradation classification and important products of the followingclasses.

β-Lactam antibiotics: Penicillin, Cepholosporins, β- Lactamase inhibitors, Monobactams

Aminoglycosides: Streptomycin, Neomycin, Kanamycin

Tetracyclines: Tetracycline,Oxytetracycline, Chlortetracycline, Minocycline,Doxycycline

UNIT– II **10Hours**

Antibiotics

Historical background, Nomenclature, Stereochemistry, Structure activity relationship, Chemical degradation classification and important products of the followingclasses.

Macrolide: Erythromycin Clarithromycin, Azithromycin.

Miscellaneous: Chloramphenicol*, Clindamycin.

Prodrugs: Basic concepts and application of prodrugs design.

Antimalarials: Etiology of malaria.

Quinolines: SAR, Quinine sulphate, Chloroquine*, Amodiaquine, Primaquine phosphate, Pamaquine*, Quinacrine hydrochloride,Mefloquine.

Biguanides and dihydro triazines: Cycloguanil pamoate, Proguanil.

Miscellaneous: Pyrimethamine, Artesunete, Artemether, Atovoquone.

UNIT– III **10Hours**

Anti-tubercular Agents

Synthetic anti tubercular agents: Isoniozid*, Ethionamide, Ethambutol, Pyrazinamide, Para amino salicylic acid.*

Anti tubercular antibiotics: Rifampicin, Rifabutin, Cycloserine Streptomycine, Capreomycinsulphate.

Urinary tract anti-infective agents

Quinolones: SAR of quinolones, Nalidixic Acid,Norfloxacin, Enoxacin, Ciprofloxacin*, Ofloxacin,Lomefloxacin,Sparfloxacin, Gatifloxacin, Moxifloxacin

Miscellaneous: Furazolidine, Nitrofurantoin*, Methanamine.

Antiviral agents:

Amantadine hydrochloride, Rimantadine hydrochloride, Idoxuridine trifluoride, Acyclovir*, Gancyclovir, Zidovudine, Didanosine, Zalcitabine, Lamivudine, Loviride, Delavirding, Ribavirin, Saquinavir, Indinavir, Ritonavir.

UNIT– IV **08Hours**

Antifungal agents:

Antifungal antibiotics: Amphotericin-B, Nystatin, Natamycin, Griseofulvin.

Synthetic Antifungal agents: Clotrimazole, Econazole, Butoconazole, Oxiconazole Tioconozole, Miconazole*, Ketoconazole, Terconazole, Itraconazole, Fluconazole, Naftifine hydrochloride,Tolnaftate*.

Anti-protozoal Agents: Metronidazole*, Tinidazole, Ornidazole, Diloxanide, Iodoquinol, Pentamidine Isethionate, Atovaquone,Eflornithine.

Anthelmintics: Diethylcarbamazine citrate*, Thiabendazole, Mebendazole*, Albendazole, Niclosamide, Oxamniquine, Praziquantal, Ivermectin.

Sulphonamides and Sulfones

Historical development, chemistry, classification and SAR of Sulfonamides: Sulphamethizole, Sulfisoxazole, Sulphamethizine, Sulfacetamide*, Sulphapyridine, Sulfamethoxaole*, Sulphadiazine, Mefenide acetate, Sulfasalazine.

Folate reductase inhibitors: Trimethoprim*, Cotrimoxazole.

Sulfones: Dapsone*.

UNIT– V **07Hours**

Introduction to Drug Design

Various approaches used in drug design.

Physicochemical parameters used in quantitative structure activity relationship (QSAR) such as partition coefficient, Hammet's electronic parameter, Tafts steric parameter and Hanschanalysis.

Pharmacophore modeling and docking techniques.

Combinatorial Chemistry: Concept and applications of combinatorial chemistry: solid phase and solution phase synthesis.

UBP6P01. MEDICINAL CHEMISTRY- III (Practical)

4 Hours / week

I Preparation of drugs andintermediates

1 Sulphanilamide

2 7-Hydroxy, 4-methylcoumarin

3 Chlorobutanol

4 Triphenylimidazole

5 Tolbutamide

6 Hexamine

II Assay ofdrugs

1 Isonicotinic acidhydrazide

2 Chloroquine

3 Metronidazole

4 Dapsone

5 Chlorpheniraminemaleate

6 Benzylpenicillin

III Preparation of medicinally important compounds or intermediates byMicrowave irradiationtechnique

IV Drawing structures and reactions using chemdraw®

V Determination of physicochemical properties such as logP, clogP, MR, Molecular weight, Hydrogen bond donors and acceptors for class of drugs course content using drug design software Drug likeliness screening (LipinskiesRO5)

Recommended Books (Latest Editions)

1. Wilson and Giswold's Organic medicinal and PharmaceuticalChemistry.
2. Foye's Principles of MedicinalChemistry.
3. Burger's Medicinal Chemistry, Vol I toIV.
4. Introduction to principles of drug design- Smith andWilliams.
5. Remington's Pharmaceutical Sciences.
6. Martindale's extrapharmacopoeia.

7. Organic Chemistry by I.L. Finar, Vol.II.
8. The Organic Chemistry of Drug Synthesis by Lednicer, Vol.1-5.
9. IndianPharmacopoeia.
10. Text book of practical organic chemistry-A.I.Vogel.

UBP6T02. PHARMACOLOGY-III (Theory) 45 Hours

Scope: This subject is intended to impart the fundamental knowledge on various aspects (classification, mechanism of action, therapeutic effects, clinical uses, side effects and contraindications) of drugs acting on respiratory and gastrointestinal system, infectious diseases, immuno-pharmacology and in addition,emphasis on the principles of toxicology andchronopharmacology.

Objectives: Upon completion of this course the student should be able to:

1. understand the mechanism of drug action and its relevance in the treatmentof different infectiousdiseases
2. comprehend the principles of toxicology and treatment of variouspoisoningsand
3. appreciate correlation of pharmacology with related medicalsciences.

Course Content:

UNIT-I **10hours**

1. Pharmacology of drugs acting on Respiratorysystem

a. Anti -asthmaticdrugs
b. Drugs used in the management ofCOPD
c. Expectorants and antitussives
d. Nasaldecongestants
e. Respiratorystimulants

2. Pharmacology of drugs acting on the GastrointestinalTract

a. Antiulceragents.
b. Drugs for constipation anddiarrhoea.
c. Appetite stimulants andsuppressants.
d. Digestants andcarminatives.
e. Emetics andanti-emetics.

UNIT-II **10hours**

3. Chemotherapy

a. General principles ofchemotherapy.
b. Sulfonamides andcotrimoxazole.
c.Antibiotics- Penicillins, cephalosporins, chloramphenicol,macrolides, quinolones and fluoroquinolins, tetracycline andaminoglycosides

UNIT-III **10hours**

3. Chemotherapy

a. Antitubercular agents
b. Antileproticagents

c. Antifungalagents

d. Antiviral drugs

e.Anthelmintics

f. Antimalarial drugs

g. Antiamoebic agents

UNIT-IV **08hours**

3. Chemotherapy

l. Urinary tract infections and sexually transmitted diseases.

m. Chemotherapy of malignancy.

4. Immunopharmacology

a. Immunostimulants

b. Immunosuppressant

Protein drugs, monoclonal antibodies, target drugs to antigen, biosimilars

UNIT-V **07hours**

5. Principles oftoxicology

a. Definition and basic knowledge of acute, subacute and chronictoxicity.

b. Definition and basic knowledge of genotoxicity, carcinogenicity, teratogenicity andmutagenicity

c. General principles of treatment of poisoning

d. Clinical symptoms and management of barbiturates, morphine, organophosphosphorus compound and lead, mercury and arsenicpoisoning.

6. Chronopharmacology

a. Definition of rhythm andcycles.

b. Biological clock and their significance leading tochronotherapy.

UBP6P02. PHARMACOLOGY-III (Practical)

4Hrs/Week

1. Dose calculation in pharmacologicalexperiments
2. Antiallergic activity by mast cell stabilizationassay
3. Study of anti-ulcer activity of a drug using pylorus ligand (SHAY) rat modeland NSAIDS induced ulcermodel.
4. Study of effect of drugs on gastrointestinalmotility
5. Effect of agonist and antagonists on guinea pigileum
6. Estimation of serum biochemical parameters by using semi-autoanalyser
7. Effect of saline purgative on frogintestine
8. Insulin hypoglycemic effect inrabbit
9. Test for pyrogens (rabbit method)
10. Determination of acute oral toxicity (LD50) of a drug from a givendata
11. Determination of acute skin irritation / corrosion of a testsubstance
12. Determination of acute eye irritation / corrosion of a testsubstance
13. Calculation of pharmacokinetic parameters from a givendata
14. Biostatistics methods in experimental pharmacology(student's t test,ANOVA)
15. Biostatistics methods in experimental pharmacology (Chi square test,Wilcoxon Signed Ranktest)

**Experiments are demonstrated by simulated experiments/videos*

Recommended Books (Latest Editions)

1. RangH.P.,DaleM.M.,RitterJ.M.,FlowerR.J.,RangandDale's Pharmacology, Churchil LivingstoneElsevier
2. Katzung B. G., Masters S. B., Trevor A. J., Basic and clinical pharmacology, Tata Mc Graw-Hill
3. Goodman and Gilman's, The Pharmacological Basis ofTherapeutics
4. Marry Anne K. K., Lloyd Yee Y., Brian K. A., Robbin L.C., Joseph G. B., Wayne A. K., Bradley R.W., Applied Therapeutics, The Clinical use of Drugs. The PointLippincott Williams &Wilkins
5. Mycek M.J, Gelnet S.B and Perper M.M. Lippincott's IllustratedReviews-Pharmacology
6. K.D.Tripathi. Essentials of Medical Pharmacology, , JAYPEE Brothers Medical Publishers (P) Ltd, NewDelhi.
7. Sharma H. L., Sharma K. K., Principles of Pharmacology, Paras medical publisher Modern Pharmacology with clinical Applications, by Charles R.Craig&Robert,
8. Ghosh MN. Fundamentals of Experimental Pharmacology. Hilton & Company, Kolkata,
9. Kulkarni SK. Handbook of experimental pharmacology.VallabhPrakashan,
10. N.Udupa and P.D. Gupta, Concepts inChronopharmacology.

UBP6T03. HERBAL DRUG TECHNOLOGY (Theory)

45 hours

Scope: This subject gives the student the knowledge of basic understanding of herbal drug industry, the quality of raw material, guidelines for quality of herbal drugs, herbal cosmetics, natural sweeteners, nutraceutical etc. The subject also emphasizes on Good Manufacturing Practices (GMP), patenting and regulatory issues of herbal drugs

Objectives: Upon completion of this course the student should be able to:

1. understand raw material as source of herbal drugs from cultivation to herbal drug product
2. know the WHO and ICH guidelines for evaluation of herbaldrugs
3. know the herbal cosmetics, natural sweeteners,nutraceuticals
4. appreciate patenting of herbal drugs, GMP.

Course content:

UNIT-I **11 Hours**

Herbs as raw materials

Definition of herb, herbal medicine, herbal medicinal product, herbal drug preparation
Source of Herbs
Selection, identification and authentication of herbal materials
Processing of herbal raw material

Biodynamic Agriculture

Good agricultural practices in cultivation of medicinal plants including Organic farming.
Pest and Pest management in medicinal plants: Biopesticides/Bioinsecticides.

Indian Systems of Medicine

a) Basic principles involved in Ayurveda, Siddha, Unani andHomeopathy
b) PreparationandstandardizationofAyurvedicformulationsvizAristasandAsawas, Ghutika, Churna, Lehya andBhasma.

UNIT-II **7 Hours**

Nutraceuticals

General aspects, Market, growth, scope and types of products available in the market.Health benefits and role of Nutraceuticals in ailments like Diabetes, CVS diseases, Cancer, Irritable bowel syndrome and various Gastro intestinal diseases.
Study of following herbs as health food: Alfaalfa, Chicory, Ginger, Fenugreek, Garlic, Honey, Amla, Ginseng, Ashwagandha, Spirulina

Herbal-Drug and Herb-Food Interactions: General introduction to interaction and classification. Study of following drugs and their possible side effects and interactions: Hypercium, kava-kava, Ginkobiloba, Ginseng, Garlic, Pepper & Ephedra.

UNIT-III **10Hours**

Herbal Cosmetics

Sources and description of raw materials of herbal origin used via, fixed oils, waxes, gums colours, perfumes, protective agents, bleaching agents, antioxidants in products such as skin care, hair care and oral hygiene products.

Herbal excipients:

Herbal Excipients – Significance of substances of natural origin as excipients – colorants, sweeteners, binders, diluents, viscosity builders, disintegrants, flavors & perfumes.

Herbal formulations :

Conventional herbal formulations like syrups, mixtures and tablets and Novel dosage forms like phytosomes

UNIT-IV **10 Hours**

Evaluation of Drugs WHO & ICH guidelines for the assessment of herbal drugs
Stability testing of herbal drugs.

Patenting and Regulatory requirements of natural products:

a) Definition of the terms: Patent, IPR, Farmers right, Breeder's right, Bioprospecting and Biopiracy

b) Patenting aspects of Traditional Knowledge and Natural Products. Case study of Curcuma &Neem.

Regulatory Issues - Regulations in India (ASU DTAB, ASU DCC), Regulation of manufacture of ASU drugs - Schedule Z of Drugs & Cosmetics Act for ASU drugs.

UNIT-V **07 Hours**

General Introduction to Herbal Industry

Herbal drugs industry: Present scope and future prospects.
A brief account of plant based industries and institutions involved in work on medicinal and aromatic plants in India.

Schedule T – Good Manufacturing Practice of Indian systems of medicine

Components of GMP (Schedule – T) and its objectives
Infrastructural requirements, working space, storage area, machinery and equipments, standard operating procedures, health and hygiene, documentation and records.

UBP6P03. HERBAL DRUG TECHNOLOGY (Practical)

4 hours/ week

1. To perform preliminary phytochemical screening of crudedrugs.
2. Determination of the alcohol content of Asava and Arista
3. Evaluation of excipients of naturalorigin
4. Incorporationofpreparedandstandardized extract in cosmetic formulations like creams, lotions and shampoos and theirevaluation.
5. Incorporation of prepared and standardized extract in formulations like syrups, mixtures and tablets and their evaluation as per Pharmacopoeial requirements.
6. Monograph analysis of herbal drugs from recent Pharmacopoeias
7. Determination of Aldehyde content
8. Determination of Phenol content
9. Determination of total alkaloids

Recommended Books: (Latest Editions)

1. Textbook of Pharmacognosy by Trease &Evans.
2. Textbook of Pharmacognosy byTyler, Brady & Robber.
3. Pharmacognosy by Kokate, Purohit andGokhale
4. Essential of Pharmacognosy byDr.S.H.Ansari
5. Pharmacognosy & Phytochemistry byV.D.Rangari
6. Pharmacopoeal standards for Ayurvedic Formulation (Council of Research in Indian Medicine &Homeopathy)
7. Mukherjee, P.W. Quality Control of Herbal Drugs: An Approach to Evaluation of Botanicals. Business Horizons Publishers, New Delhi, India, 2002.

UBP6T04. BIOPHARMACEUTICS AND PHARMACOKINETICS (Theory)

45 Hours

Scope: This subject is designed to impart knowledge and skills of Biopharmaceutics and pharmacokinetics and their applications in pharmaceutical development, design of dose and dosage regimen and in solving the problems arisedtherein.

Objectives: Upon completion of the course student shall be able to:

1. Understand the basic concepts in biopharmaceutics and pharmacokineticsand theirsignificance.
2. Use of plasma drug concentration-time data to calculate the pharmacokinetic parameters to describe the kinetics of drug absorption, distribution, metabolism, excretion, elimination.
3. To understand the concepts of bioavailability and bioequivalence ofdrug products and theirsignificance.
4. Understand various pharmacokinetic parameters, their significance & applications.

Course Content:

UNIT-I **10 Hours**

Introduction to Biopharmaceutics

Absorption; Mechanisms of drug absorption through GIT, factors influencing drug absorption though GIT, absorption of drug from Non per oral extra-vascular routes, **Distribution** Tissue permeability of drugs, binding of drugs, apparent, volume of drug distribution, plasma and tissue protein binding of drugs, factors affecting protein-drug binding. Kinetics of protein binding, Clinical significance of protein binding ofdrugs

UNIT-II **10 Hours**

Elimination: Drug metabolism and basic understanding metabolic pathways renal excretion of drugs, factors affecting renal excretion of drugs, renal clearance, Non renal routes of drug excretion of drugs

Bioavailability and Bioequivalence: Definition and Objectives of bioavailability, absolute and relative bioavailability, measurement of bioavailability, *in-vitro* drug dissolution models, *in-vitro-in-vivo* correlations, bioequivalence studies, methods to enhance the dissolution rates and bioavailability of poorly soluble drugs.

UNIT-III **10Hours**

Pharmacokinetics: Definition and introduction to Pharmacokinetics, Compartment models, Non compartment models, physiological models, One compartment open model. (a). Intravenous Injection (Bolus) (b). Intravenous infusion and (c) Extra vascular administrations. Pharmacokinetics parameters - K_E ,t1/2,Vd,AUC,Ka, Clt and CL_R- definitions methods of eliminations, understanding of their significance and application

UNIT-IV **08Hours**

Multicompartment models: Two compartment open model. IV bolus

Kinetics of multiple dosing, steady state drug levels, calculation of loading and mainetnance doses and their significance in clinical settins.

UNIT-V **07Hours**

Nonlinear Pharmacokinetics: a. Introduction, b. Factors causing Non-linearity.

c. Michaelis-mentonmethodofestimatingparameters, Explanation with example of drugs.

Recommended Books: (Latest Editions)

1. Biopharmaceutics and Clinical Pharmacokinetics by, MiloGibaldi.
2. Biopharmaceutics and Pharmacokinetics; By Robert FNotari
3. Applied biopharmaceutics and pharmacokinetics, Leon Shargel and Andrew B.C.YU 4th edition,Prentice-Hall Inernationaledition.USA
4. Bio pharmaceutics and Pharmacokinetics-A Treatise, By D. M. Brahmankarand Sunil B.Jaiswal,Vallabh Prakashan Pitampura,Delhi
5. Pharmacokinetics: By Milo Glbaldi Donald, R. Mercel DekkerInc.
6. Hand Book of Clinical Pharmacokinetics, By Milo Gibaldi and Laurie Prescott by ADIS Health SciencePress.
7. Biopharmaceutics; BySwarbrick
8. Clinical Pharmacokinetics, Concepts and Applications: By Malcolm Rowlandand
9. Thomas, N. Tozen, Lea and Febrger, Philadelphia, 1995.
10. Dissolution, Bioavailability and Bioequivalence, By Abdou H.M, Mack, Publishing Company,Pennsylvania1989.
11. Biopharmaceutics and Clinical Pharmacokinetics-An introduction 4thedition Revised and expanded by Rebort F Notari Marcel Dekker Inn, New York and Basel, 1987.
12. Remington's Pharmaceutical Sciences, By Mack PublishingCompany, Pennsylvnia

UBP6T05. PHARMACEUTICAL BIOTECHNOLOGY (Theory)

45 Hours

Scope:

- Biotechnology has a long promise to revolutionize the biological sciences and technology.
- Scientific application of biotechnology in the field of genetic engineering, medicine and fermentation technology makes the subjectinteresting.
- Biotechnology is leading to new biological revolutions in diagnosis, prevention and cure of diseases, new and cheaper pharmaceuticaldrugs.
- Biotechnology has already produced transgenic crops and animals and the future promises lot more.
- It is basically a research-basedsubject.

Objectives: Upon completion of the subject student shall be able to;

1. Understanding the importance of Immobilized enzymes inPharmaceutical Industries
2. Genetic engineering applications in relation to production ofpharmaceuticals
3. Importance of Monoclonal antibodies inIndustries
4. Appreciate the use of microorganisms in fermentationtechnology

Unit I **10Hours**

a) Brief introduction to Biotechnology with reference to PharmaceuticalSciences.

b) Enzyme Biotechnology- Methods of enzyme immobilization andapplications.

c) Biosensors- Working and applications of biosensors in PharmaceuticalIndustries.

d) Brief introduction to ProteinEngineering.

e) Use of microbes in industry. Production of Enzymes- General consideration - Amylase, Catalase, Peroxidase, Lipase, Protease, Penicillinase.

f) Basic principles of geneticengineering.

Unit II **10Hours**

a) Study of cloning vectors, restriction endonucleases and DNAligase.

b) Recombinant DNA technology. Application of genetic engineering inmedicine.

c) Application of r DNA technology and genetic engineering in the productionof:

i) Interferon ii) Vaccines- hepatitis- B iii) Hormones-Insulin.

d) Brief introduction toPCR

Unit III **10Hours**

Types of immunity- humoral immunity, cellular immunity

a) Structure ofImmunoglobulins

b) Structure and Function ofMHC

c) Hypersensitivity reactions, Immune stimulation and Immune suppressions.

d) General method of the preparation of bacterial vaccines, toxoids, viral vaccine, antitoxins, serum-immune blood derivatives and other products relative toimmunity.

e) Storage conditions and stability of officialvaccines

f) Hybridoma technology- Production, Purification andApplications

g) Blood products and PlasmaSubstituties.

UnitIV **08Hours**

a) Immuno blotting techniques- ELISA, Western blotting, Southernblotting.

b) Genetic organization of Eukaryotes andProkaryotes

c) Microbial genetics including transformation, transduction, conjugation, plasmids and transposons.

d) Introduction to Microbial biotransformation andapplications.

e) Mutation: Types ofmutation/mutants.

UnitV **07Hours**

a) Fermentation methods and general requirements, study of media, equipments, sterilization methods, aeration process,stirring.

b) Large scale production fermenter design and its variouscontrols.

c) Study of the production of - penicillins, citric acid, Vitamin B12, Glutamic acid, Griseofulvin,

d) Blood Products: Collection, Processing and Storage of whole human blood, dried human plasma, plasma Substituties.

Recommended Books (Latest edition):

1. B.R. Glick and J.J. Pasternak: Molecular Biotechnology: Principles and Applications of RecombinantDNA: ASM Press WashingtonD.C.
2. RA Goldshy et. al.,: KubyImmunology.
3. J.W. Goding: MonoclonalAntibodies.
4. J.M. Walker and E.B. Gingold: Molecular Biology and Biotechnology byRoyal Society of Chemistry.
5. Zaborsky: Immobilized Enzymes, CRC Press, Degraland,Ohio.
6. S.B. Primrose: Molecular Biotechnology (Second Edition) Blackwell Scientific Publication.
7. Stanbury F., P., Whitakar A., and Hall J., S., Principles of fermentation technology, 2nd edition, Aditya books Ltd., NewDelhi.

UBP6T06. PHARMACEUTICAL QUALITY ASSURANCE (Theory)

45 Hours

Scope: This course deals with the various aspects of quality control and quality assurance aspects of pharmaceutical industries. It deals with the important aspects like cGMP, QC tests, documentation, quality certifications and regulatoryaffairs.

Objectives: Upon completion of the course student shall be able to:

- understand the cGMP aspects in a pharmaceuticalindustry
- appreciate the importance ofdocumentation
- understand the scope of quality certifications applicable topharmaceutical industries
- understand the responsibilities of QA & QCdepartments

Course content:

UNIT– I **10Hours**

Quality Assurance and Quality Management concepts: Definition and concept of Quality control, Quality assurance and GMP

Total Quality Management (TQM): Definition, elements, philosophies

ICH Guidelines: purpose, participants, process of harmonization, Brief overview of QSEM, with special emphasis on Q-series guidelines, ICH stability testing guidelines

Quality by design (QbD): Definition, overview, elements of QbD program, tools

ISO 9000 & ISO14000: Overview, Benefits, Elements, steps for registration

NABL accreditation : Principles and procedures

UNIT-II **10 Hours**

Organization and personnel: Personnel responsibilities, training, hygiene and personalrecords.

Premises: Design, construction and plant layout, maintenance, sanitation, environmental control, utilities and maintenance of sterile areas, control ofcontamination.

Equipments and raw materials: Equipment selection, purchase specifications, maintenance, purchase specifications and maintenance of stores for raw materials.

UNIT– III **10 Hours**

Quality Control: Quality control test for containers, rubber closures and secondary packing materials.

Good Laboratory Practices: General Provisions, Organization and Personnel, Facilities, Equipment, Testing Facilities Operation, Test and Control Articles, Protocol for Conduct of a Nonclinical Laboratory Study, Records and Reports, Disqualification of Testing Facilities

UNIT– IV **08 Hours**

Complaints: Complaints and evaluation of complaints, Handling of return good, recalling and waste disposal.

Document maintenance in pharmaceutical industry: Batch Formula Record, Master Formula Record, SOP, Quality audit, Quality Review and Quality documentation, Reports and documents, distribution records.

UNIT– V **07Hours**

Calibration and Validation: Introduction, definition and general principles of calibration, qualification and validation, importance and scope of validation, types of validation, validation master plan. Calibration of pH meter, Qualification of UV-Visible spectrophotometer, General principles of Analytical method Validation.

Warehousing: Good warehousing practice, materials management

Recommended Books: (Latest Edition)

1. Quality Assurance Guide by organization of Pharmaceutical Products ofIndia.
2. Good Laboratory Practice Regulations, 2nd Edition, Sandy Weinberg Vol.69.
3. Quality Assurance of Pharmaceuticals- A compendium of Guide lines and Related materials Vol I WHOPublications.
4. A guide to Total Quality Management- Kushik Maitra and Sedhan KGhosh
5. How to Practice GMP's – P P Sharma.
6. ISO 9000 and Total Quality Management – Sadhank GGhosh
7. The International Pharmacopoeia – Vol I, II, III, IV- General Methods of Analysis and Quality specification for Pharmaceutical Substances, Excipients and Dosage forms
8. Good laboratory Practices – Marcel DeckkerSeries
9. ICH guidelines, ISO 9000 and 14000guidelines

SEMESTER VII

UBP7T01. INSTRUMENTAL METHODS OF ANALYSIS (Theory)

45 Hours

Scope: This subject deals with the application of instrumental methods in qualitative and quantitative analysis of drugs. This subject is designed to impart a fundamental knowledge on the principles and instrumentation of spectroscopic and chromatographic technique. This also emphasizes on theoretical and practical knowledge on modern analytical instruments that are used for drugtesting.

Objectives: Upon completion of the course the student shall be able to

1. Understand the interaction of matter with electromagnetic radiations and its applications in druganalysis
2. Understand the chromatographic separation and analysis of drugs.
3. Perform quantitative & qualitative analysis of drugs using various analytical instruments.

Course Content:

UNIT–I **10Hours**

UV Visible spectroscopy

Electronic transitions, chromophores, auxochromes, spectral shifts, solvent effect on absorption spectra, Beer and Lambert's law, Derivation and deviations.

Instrumentation - Sources of radiation, wavelength selectors, sample cells, detectors- Photo tube, Photomultiplier tube, Photo voltaic cell, Silicon Photodiode.

Applications - Spectrophotometric titrations, Single component and multi component analysis

Fluorimetry

Theory, Concepts of singlet, doublet and triplet electronic states, internal and external conversions, factors affecting fluorescence, quenching, instrumentation and applications

UNIT–II **10Hours**

IR spectroscopy

Introduction, fundamental modes of vibrations in poly atomic molecules, sample handling, factors affecting vibrations

Instrumentation - Sources of radiation, wavelength selectors, detectors - Golay cell, Bolometer, Thermocouple, Thermister, Pyroelectric detector andapplications

Flame Photometry-Principle, interferences, instrumentation andapplications

Atomic absorption spectroscopy- Principle, interferences, instrumentation and applications

Nepheloturbidometry- Principle, instrumentation and applications

UNIT–III **10Hours**

Introduction to chromatography

Adsorption and partition column chromatography-Methodology, advantages, disadvantages and applications.

Thin layer chromatography- Introduction, Principle, Methodology, Rf values, advantages, disadvantages and applications.

Paper chromatography-Introduction, methodology, development techniques, advantages, disadvantages andapplications

Electrophoresis– Introduction, factors affecting electrophoretic mobility, Techniques of paper, gel, capillary electrophoresis, applications

UNIT–IV **08Hours**

Gas chromatography - Introduction, theory, instrumentation, derivatization, temperature programming, advantages, disadvantages andapplications

High performance liquid chromatography (HPLC)-Introduction, theory, instrumentation, advantages and applications.

UNIT–V **07Hours**

Ion exchange chromatography- Introduction, classification, ion exchange resins, properties, mechanism of ion exchange process, factors affecting ion exchange, methodology and applications

Gel chromatography- Introduction, theory, instrumentation and applications

Affinity chromatography- Introduction, theory, instrumentation and applications

UBP7P01. INSTRUMENTAL METHODS OF ANALYSIS (Practical)

4 Hours/Week

1. Determination of absorption maxima and effect of solvents on absorption maxima of organiccompounds
2. Estimation of dextrose bycolorimetry
3. Estimation of sulfanilamide bycolorimetry
4. Simultaneous estimation of ibuprofen and paracetamol by UVspectroscopy
5. Assay of paracetamol by UV-Spectrophotometry
6. Estimation of quinine sulfate byfluorimetry
7. Study of quenching offluorescence
8. Determination of sodium by flamephotometry
9. Determination of potassium by flamephotometry
10. Determination of chlorides and sulphates by nepheloturbidometry
11. Separation of amino acids by paperchromatography
12. Separation of sugars by thin layerchromatography
13. Separation of plant pigments by columnchromatography
14. Demonstration experiment onHPLC
15. Demonstration experiment on GasChromatography

Recommended Books (Latest Editions)

1. Instrumental Methods of Chemical Analysis by B.KSharma
2. Organic spectroscopy by Y.RSharma
3. Text book of Pharmaceutical Analysis by Kenneth A.Connors
4. Vogel's Text book of Quantitative Chemical Analysis by A.I.Vogel
5. Practical Pharmaceutical Chemistry by A.H. Beckett and J.B.Stenlake
6. Organic Chemistry by I. L.Finar
7. Organic spectroscopy by WilliamKemp
8. Quantitative Analysis of Drugs by D. C.Garrett
9. Quantitative Analysis of Drugs in Pharmaceutical Formulations by P. D.Sethi
10. Spectrophotometric identification of Organic Compounds bySilverstein

UBP7T02. INDUSTRIAL PHARMACY II (Theory)

45 Hours

Scope: This course is designed to impart fundamental knowledge on pharmaceutical product development and translation from laboratory to market

Objectives: Upon completion of the course, the student shall be able to:

1. Know the process of pilot plant and scale up of pharmaceutical dosageforms
2. Understand the process of technology transfer from lab scale to commercialbatch
3. Know different Laws and Acts that regulate pharmaceuticalindustry
4. Understand the approval process and regulatory requirements for drugproducts

Course Content:

UNIT-I **10Hours**

Pilot plant scale up techniques: General considerations - including significance of personnel requirements, space requirements, raw materials, Pilot plant scale up considerations for solids, liquid orals, semi solids and relevant documentation, SUPAC guidelines, Introduction to platform technology

UNIT-II **10Hours**

Technology development and transfer: WHO guidelines for Technology Transfer(TT): Terminology, Technology transfer protocol, Quality risk management, Transfer from R & D to production (Process, packaging and cleaning), Granularity of TT Process (API, excipients, finished products, packaging materials) Documentation, Premises and equipments, qualification and validation, quality control, analytical method transfer, Approved regulatory bodies and agencies, Commercialization - practical aspects and problems (case studies), TT agencies in India - APCTD, NRDC, TIFAC, BCIL, TBSE / SIDBI; TT related documentation - confidentiality agreement, licensing, MoUs, legalissues

UNIT-III **10Hours**

Regulatory affairs: Introduction, Historical overview of Regulatory Affairs, Regulatory authorities, Role of Regulatory affairs department, Responsibility of Regulatory Affairs Professionals

Regulatory requirements for drug approval: Drug Development Teams, Non-Clinical Drug Development, Pharmacology, Drug Metabolism and Toxicology, General considerations of Investigational New Drug (IND) Application, Investigator's Brochure (IB) and New Drug Application (NDA), Clinical research / BE studies, Clinical Research Protocols, Biostatistics in Pharmaceutical Product Development, Data Presentation for FDA Submissions, Management of Clinical Studies.

UNIT-IV **08Hours**

Quality management systems: Quality management & Certifications: Concept of Quality, Total Quality Management, Quality by Design (QbD), Six Sigma concept, Out of Specifications (OOS), Change control, Introduction to ISO 9000 series of quality systems standards, ISO 14000, NABL,GLP

UNIT-V **07Hours**

Indian Regulatory Requirements: Central Drug Standard Control Organization (CDSCO) and State Licensing Authority: Organization, Responsibilities, Certificate of Pharmaceutical Product (COPP), Regulatory requirements and approval procedures for New Drugs.

Recommended Books: (Latest Editions)

1. Regulatory Affairs from Wikipedia, the free encyclopedia modified on 7th April available at http,//en.wikipedia.org/wiki/Regulatory_Affairs.
2. International Regulatory Affairs Updates, 2005. available at http://www.iraup.com/about.php
3. Douglas J Pisano and David S. Mantus. Text book of FDA Regulatory Affairs A Guide for Prescription Drugs, Medical Devices, and Biologics' SecondEdition.
4. Regulatory Affairs brought bylearning plus, inc. available at http.//www.cgmp.com/ra.htm.

UBP7T03. PHARMACY PRACTICE (Theory)

45 Hours

Scope: In the changing scenario of pharmacy practice in India, for successful practice of Hospital Pharmacy, the students are required to learn various skills like drug distribution, drug information, and therapeutic drug monitoring for improved patient care. In community pharmacy, students will be learning various skills such as dispensing of drugs, responding to minor ailments by providing suitable safe medication, patient counselling for improved patient care in the community setup.

Objectives: Upon completion of the course, the student shall be able to

1. know various drug distribution methods in ahospital
2. appreciate the pharmacy stores management and inventorycontrol
3. monitor drug therapy of patient through medication chart review and clinical review
4. obtain medication history interview and counsel thepatients
5. identify drug relatedproblems
6. detect and assess adverse drugreactions
7. interpret selected laboratory results (as monitoring parameters in therapeutics) of specific diseasestates
8. know pharmaceutical careservices
9. do patient counseling in communitypharmacy;
10. appreciate the concept of Rational drugtherapy.

UnitI: 10Hours

a) Hospital and it's organization

Definition, Classification of hospital- Primary, Secondary and Tertiary hospitals, Classification based on clinical and non- clinical basis, Organization Structure of a Hospital, and Medical staffs involved in the hospital and their functions.

b) Hospital pharmacy and its organization

Definition, functions of hospital pharmacy, Organization structure, Location, Layout and staff requirements, and Responsibilities and functions of hospital pharmacists.

c) Adverse drugreaction

Classifications - Excessive pharmacological effects, secondary pharmacological effects, idiosyncrasy, allergic drug reactions, genetically determined toxicity, toxicity following sudden withdrawal of drugs, Drug interaction- beneficial interactions, adverse interactions, and pharmacokinetic drug interactions, Methods fordetecting

drug interactions, spontaneous case reports and record linkage studies, and Adverse drug reaction reporting and management.

d) CommunityPharmacy

Organization and structure of retail and wholesale drug store, types and design, Legal requirements for establishment and maintenance of a drug store, Dispensing of proprietary products, maintenance of records of retail and wholesale drug store.

UnitII: 10Hours

a) Drug distribution system in ahospital

Dispensing of drugs to inpatients, types of drug distribution systems, charging policy and labelling, Dispensing of drugs to ambulatory patients, and Dispensing of controlled drugs.

b) Hospitalformulary

Definition, contents of hospital formulary, Differentiation of hospital formulary and Drug list, preparation and revision, and addition and deletion of drug from hospital formulary.

c) Therapeutic drugmonitoring

Need for Therapeutic Drug Monitoring, Factors to be considered during the Therapeutic Drug Monitoring, and Indian scenario for Therapeutic Drug Monitoring.

d) Medicationadherence

Causes of medication non-adherence, pharmacist role in the medication adherence, and monitoring of patient medicationadherence.

e) Patient medication historyinterview

Need for the patient medication history interview, medication interview forms.

f) Community pharmacymanagement

Financial, materials, staff, and infrastructure requirements.

UnitIII: 10Hours

a) Pharmacy and therapeuticcommittee

Organization, functions, Policies of the pharmacy and therapeutic committee in including drugs into formulary, inpatient and outpatient prescription, automatic stop order, and emergency drug list preparation.

b) Drug information services

Drug and Poison information centre, Sources of drug information, Computerised services, and storage and retrieval of information.

c) Patient counseling

Definition of patient counseling; steps involved in patient counseling, and Special cases that require thepharmacist

d) Education and training program in thehospital

Role of pharmacist in the education and training program, Internal and external training program, Services to the nursing homes/clinics, Code of ethics for community pharmacy, and Role of pharmacist in the interdepartmental communication and community healtheducation.

e) Prescribed medication order and communicationskills

Prescribed medication order- interpretation and legal requirements, and Communication skills- communication with prescribers and patients.

Unit IV **8 Hours**

a) Budget preparation and implementation

Budget preparation and implementation

a) Clinical Pharmacy

Introduction to Clinical Pharmacy, Concept of clinical pharmacy, functions and responsibilities of clinical pharmacist, Drug therapy monitoring - medication chart review, clinical review, pharmacist intervention, Ward round participation, Medication history and Pharmaceutical care.

Dosing pattern and drug therapy based on Pharmacokinetic & disease pattern.

b) Over the counter (OTC) sales

Introduction and sale of over the counter, and Rational use of common over the countermedications.

UnitV **7Hours**

a) Drug store management and inventorycontrol

Organisation of drug store, types of materials stocked and storage conditions, Purchase and inventory control: principles, purchase procedure, purchase order, procurement and stocking, Economic order quantity, Reorder quantity level, and Methods used for the analysis of the drugexpenditure

b) Investigational use ofdrugs

Description, principles involved, classification, control, identification, role of hospital pharmacist, advisory committee.

c) Interpretation of Clinical LaboratoryTests

Blood chemistry, hematology, and urinalysis

Recommended Books (Latest Edition):

1. Merchant S.H. and Dr. J.S.Quadry. *A textbook of hospital pharmacy*, 4thed. Ahmadabad: B.S. Shah Prakakshan;2001.
2. Parthasarathi G, Karin Nyfort-Hansen, Milap C Nahata. *A textbook ofClinical Pharmacy Practice- essential concepts and skills*, 1st ed. Chennai: Orient Longman Private Limited;2004.
3. William E. Hassan. *Hospital pharmacy*, 5th ed. Philadelphia: Lea & Febiger; 1986.
4. Tipnis Bajaj. *Hospital Pharmacy*, 1st ed. Maharashtra: Career Publications;2008.
5. Scott LT. *Basic skills in interpreting laboratory data*, 4thed. American Society of Health System Pharmacists Inc;2009.
6. Parmar N.S. *Health Education and Community Pharmacy*, 18th ed. India:CBS Publishers & Distributers;2008.

Journals:

1. Therapeutic drug monitoring. ISSN:0163-4356
2. Journal of pharmacy practice. ISSN :0974-8326
3. American journal of health system pharmacy. ISSN: 1535-2900(online)
4. Pharmacy times (Monthlymagazine)

UBP7T04. NOVEL DRUG DELIVERY SYSTEMS (Theory)

45 Hours

Scope: This subject is designed to impart basic knowledge on the area of novel drug delivery systems.

Objectives: Upon completion of the course student shall be able

1. To understand various approaches for development of novel drug deliverysystems.
2. To understand the criteria for selection of drugs and polymers for the development of Novel drug delivery systems, their formulation andevaluation

Course content:

Unit-I **10Hours**

Controlled drug delivery systems: Introduction, terminology/definitions and rationale, advantages, disadvantages, selection of drug candidates.Approaches to design controlled release formulations based on diffusion, dissolution and ion exchange principles. Physicochemical and biological properties of drugs relevant to controlled release formulations

Polymers: Introduction, classification, properties, advantages and application of polymers in formulation of controlled release drug deliverysystems.

Unit-II **10Hours**

Microencapsulation: Definition, advantages and disadvantages, microspheres /microcapsules, microparticles, methods of microencapsulation, applications

Mucosal Drug Delivery system: Introduction, Principles of bioadhesion / mucoadhesion, concepts, advantages and disadvantages, transmucosal permeability and formulation considerations of buccal deliverysystems

Implantable Drug Delivery Systems: Introduction, advantages and disadvantages, concept of implantsand osmotic pump

Unit-III **10Hours**

Transdermal Drug Delivery Systems: Introduction, Permeation through skin, factors affecting permeation, permeation enhancers, basic components of TDDS, formulation approaches

Gastroretentive drug delivery systems: Introduction, advantages, disadvantages, approaches for GRDDS – Floating, high density systems, inflatable and gastroadhesive systems and their applications

Nasopulmonary drug delivery system: Introduction to Nasal and Pulmonary routes of drug delivery, Formulation of Inhalers (dry powder and metered dose), nasal sprays, nebulizers

Unit-IV **08Hours**

Targeted drug Delivery: Concepts and approaches advantages and disadvantages, introduction to liposomes, niosomes, nanoparticles, monoclonal antibodies and their applications

Unit-V **07Hours**

Ocular Drug Delivery Systems: Introduction, intra ocular barriers and methods to overcome –Preliminary study, ocular formulations and ocuserts

Intrauterine Drug Delivery Systems: Introduction, advantages and disadvantages, development of intra uterine devices (IUDs) and applications

Recommended Books: (Latest Editions)

1. Y W. Chien, Novel Drug Delivery Systems, 2nd edition, revised and expanded, Marcel Dekker, Inc., New York,1992.
2. Robinson, J. R., Lee V. H. L, Controlled Drug Delivery Systems, Marcel Dekker, Inc., New York,1992.
3. Encyclopedia of Controlled Delivery. Edith Mathiowitz, Published by Wiley Interscience Publication, John Wiley and Sons, Inc, New York.Chichester/Weinheim
4. N.K. Jain, Controlled and Novel Drug Delivery, CBS Publishers & Distributors, New Delhi, First edition 1997 (reprint in2001).
5. S.P. Vyas and R.K. Khar, Controlled Drug Delivery -concepts and advances, Vallabh Prakashan, New Delhi, First edition 2002.

Journals

1. Indian Journal of Pharmaceutical Sciences(IPA)
2. Indian Drugs(IDMA)
3. Journal of Controlled Release (ElsevierSciences)
4. Drug Development and Industrial Pharmacy (Marcel &Decker)
5. International Journal of Pharmaceutics (ElsevierSciences)

SEMESTER VIII

UBP8T01. BIOSTATISITCS AND RESEARCH METHODOLOGY (Theory)

45 Hours

Scope: To understand the applications of Biostatics in Pharmacy. This subject deals with descriptive statistics, Graphics, Correlation, Regression, logistic regression Probability theory, Sampling technique, Parametric tests, Non Parametric tests, ANOVA, Introduction to Design of Experiments, Phases of Clinical trials and Observational and Experimental studies, SPSS, R and MINITAB statistical software's, analyzing the statistical data usingExcel**.**

Objectives: Upon completion of the course the student shall be able to

- Know the operation of M.S. Excel, SPSS, R and MINITAB®, DoE (Designof Experiment)
- Know the various statistical techniques to solve statisticalproblems
- Appreciate statistical techniques in solving theproblems**.**

Course content:

Unit-I **10Hours**

Introduction: Statistics, Biostatistics, Frequency distribution

Measures of central tendency: Mean, Median, Mode- Pharmaceutical examples

Measures of dispersion: Dispersion, Range, standard deviation, Pharmaceutical problems

Correlation: Definition, Karl Pearson's coefficient of correlation, Multiple correlation - Pharmaceuticals examples

Unit-II **10Hours**

Regression: Curve fitting by the method of least squares, fitting the lines y= a + bx and x = a + by, Multiple regression, standard error of regression– Pharmaceutical Examples

Probability: Definition of probability, Binomial distribution, Normal distribution, Poisson's distribution, properties - problems

Sample, Population, large sample, small sample, Null hypothesis, alternative hypothesis, sampling, essence of sampling, types of sampling, Error-I type, Error-II type, Standard error of mean (SEM) - Pharmaceutical examples

Parametric test: t-test (Sample, Pooled or Unpaired and Paired) , ANOVA, (One way and Two way), Least Significance difference

Unit-III **10Hours**

Non Parametric tests: Wilcoxon Rank Sum Test, Mann-Whitney U test, Kruskal-Wallis test, Friedman Test

Introduction to Research: Need for research, Need for design of Experiments, Experiential Design Technique, plagiarism

Graphs: Histogram, Pie Chart, Cubic Graph, response surface plot, Counter Plot graph

Designing the methodology: Sample size determination and Power of a study, Report writing and presentation of data,Protocol,Cohorts studies, Observational studies, Experimental studies, Designing clinical trial, variousphases.

Unit-IV **8Hours**

Blocking and confounding system for Two-level factorials

Regression modeling: Hypothesis testing in Simple and Multiple regressionmodels

Introduction to Practical components of Industrial and Clinical Trials Problems: Statistical Analysis Using Excel, SPSS, MINITAB®, DESIGN OF EXPERIMENTS, R - Online Statistical Software's to Industrial and Clinical trial approach

Unit-V **7Hours**

Design and Analysis of experiments:

Factorial Design: Definition, 2^2, 2^3design. Advantage of factorial design

Response Surface methodology: Central composite design, Historical design, Optimization Techniques

Recommended Books (Latest edition):

1. Pharmaceutical statistics- Practical and clinical applications, Sanford Bolton, publisher Marcel Dekker Inc.NewYork.
2. Fundamental of Statistics – Himalaya Publishing House-S.C.Guptha
3. Design and Analysis of Experiments –PHI Learning Private Limited, R. Pannerselvam,
4. Design and Analysis of Experiments –Wiley Students Edition, Douglas and C.Montgomery

UBP8T02. SOCIAL AND PREVENTIVE PHARMACY

Hours: 45

Scope:
The purpose of this course is to introduce to students a number of health issues and their challenges. This course also introduced a number of national health programmes. The roles of the pharmacist in these contexts are also discussed.

Objectives:
After the successful completion of this course, the student shall be able to:

- Acquire high consciousness/realization of current issuesrelated to health and pharmaceutical problems within the country andworldwide.
- Have a critical way of thinking based on current healthcaredevelopment.
- Evaluate alternative ways of solving problems related tohealth and pharmaceuticalissues

Course content:

UnitI: 10Hours

Concept of health and disease: Definition, concepts and evaluation of public health. Understanding the concept of prevention and control of disease, social causes of diseases and social problems of the sick.

Social and health education: Food in relation to nutrition and health, Balanced diet, Nutritional deficiencies, Vitamin deficiencies, Malnutrition and its prevention.

Sociology and health: Socio cultural factors related to health and disease, Impact of urbanization on health and disease, Poverty and health

Hygiene and health: personal hygiene and health care; avoidable habits

UnitII: 10Hours

Preventive medicine: General principles of prevention and control of diseases such as cholera, SARS, Ebola virus, influenza, acute respiratory infections, malaria, chicken guinea, dengue, lymphatic filariasis, pneumonia, hypertension, diabetes mellitus, cancer, drug addiction-drug substance abuse

UnitIII: 10Hours

National health programs, its objectives, functioning and outcome of the following: HIV AND AIDS control programme, TB, Integrated disease surveillance program (IDSP),Nationalleprosycontrolprogramme,Nationalmentalhealthprogram,National

programme for prevention and control of deafness, Universal immunization programme, National programme for control of blindness, Pulse polio programme.

UnitIV: 08Hours

National health intervention programme for mother and child, National family welfare programme, National tobacco control programme, National Malaria Prevention Program, National programme for the health care for the elderly, Social health programme; role of WHO in Indian national program

UnitV: 07Hours

Community services in rural, urban and school health: Functions of PHC, Improvement in rural sanitation, national urban health mission, Health promotion and education in school.

Recommended Books (Latest edition)*:*

1. Short Textbook of Preventive and Social Medicine, Prabhakara GN, 2nd Edition, 2010, ISBN: 9789380704104, JAYPEEPublications
2. Textbook of Preventive and Social Medicine (Mahajan and Gupta), Edited by Roy Rabindra Nath, Saha Indranil, 4th Edition, 2013, ISBN: 9789350901878, JAYPEE Publications
3. Review of Preventive and Social Medicine (Including Biostatistics), Jain Vivek, 6thEdition, 2014, ISBN: 9789351522331, JAYPEEPublications
4. Essentials of Community Medicine—A Practical Approach, Hiremath Lalita D, Hiremath Dhananjaya A, 2nd Edition, 2012, ISBN: 9789350250440, JAYPEE Publications
5. Park Textbook of Preventive and Social Medicine, K Park, 21st Edition, 2011, ISBN-14: 9788190128285, BANARSIDAS BHANOTPUBLISHERS.
6. Community Pharmacy Practice, Ramesh Adepu, BSP publishers,Hyderabad

Recommended Journals:

1. Research in Social and Administrative Pharmacy, Elsevier, Ireland

UBP8ET03A. PHARMA MARKETING MANAGEMENT (Theory)

45 Hours

Scope:

The pharmaceutical industry not only needs highly qualified researchers, chemists and, technical people, but also requires skilled managers who can take the industry forward by managing and taking the complex decisions which are imperative for the growth of the industry. The Knowledge and Know-how of marketing management groom the people for taking a challenging role in Sales and Productmanagement.

Course Objective: The course aims to provide an understanding of marketing concepts and techniques and their applications in the pharmaceutical industry.

UnitI **10Hours**

Marketing:

Definition, general concepts and scope of marketing; Distinction between marketing & selling; Marketing environment; Industry and competitive analysis; Analyzing consumer buying behavior; industrial buying behavior.

Pharmaceutical market:

Quantitative and qualitative aspects; size and composition of the market; demographic descriptions and socio-psychological characteristics of the consumer; market segmentation& targeting.Consumer profile; Motivation and prescribing habits of the physician; patients' choice of physician and retail pharmacist.Analyzing the Market;Role of marketresearch.

UnitII **10Hours**

Product decision:

Classification, product line and product mix decisions, product life cycle,product portfolio analysis; product positioning; New product decisions; Product branding, packaging and labeling decisions, Product management in pharmaceutical industry.

UnitIII **10Hours**

Promotion:

Methods, determinants of promotional mix, promotional budget; An overview of personal selling, advertising, direct mail, journals, sampling, retailing, medical exhibition, public relations, online promotional techniques for OTCProducts.

UnitIV **10Hours**

Pharmaceutical marketing channels:

Designing channel, channel members, selecting the appropriate channel, conflict in channels, physical distribution management: Strategic importance, tasks in physical distribution management.

Professional sales representative (PSR):

Duties of PSR, purpose of detailing, selection and training, supervising, norms for customer calls, motivating, evaluating, compensation and future prospects of the PSR.

UnitV **10Hours**

Pricing:

Meaning, importance, objectives, determinants of price; pricing methods and strategies, issues in price management in pharmaceutical industry. An overview of DPCO (Drug Price Control Order)and NPPA (National Pharmaceutical PricingAuthority).

Emerging concepts in marketing:

Vertical & Horizontal Marketing; RuralMarketing; Consumerism; Industrial Marketing; Global Marketing.

Recommended Books: (Latest Editions)

1. Philip Kotler and Kevin Lane Keller: Marketing Management, Prentice Hall of India,NewDelhi
2. Walker, Boyd and Larreche : Marketing Strategy- Planning and Implementation, Tata MC GrawHill, NewDelhi.
3. Dhruv Grewal and Michael Levy: Marketing, Tata MC GrawHill
4. Arun Kumar and N Menakshi: Marketing Management, Vikas Publishing,India
5. Rajan Saxena: Marketing Management; Tata MC Graw-Hill (IndiaEdition)
6. Ramaswamy, U.S & Nanakamari, S: Marketing Managemnt:Global Perspective, IndianContext,Macmilan India, NewDelhi.
7. Shanker, Ravi: Service Marketing, Excell Books, NewDelhi
8. Subba Rao Changanti, Pharmaceutical Marketing in India (GIFT – Excel series) Excel Publications.

UBP8ET03B. PHARMACEUTICAL REGULATORY SCIENCE (Theory)

45Hours

Scope: This course is designed to impart the fundamental knowledge on the regulatory requirements for approval of new drugs, and drug products in regulated markets of India & other countries like US, EU, Japan, Australia,UK etc. Itprepares the students to learn in detail on the regulatory requirements, documentation requirements, and registration procedures for marketing the drugproducts.

Objectives: Upon completion of the subject student shall be able to;

1. Know about the process of drug discovery anddevelopment
2. Know the regulatory authorities and agencies governing the manufacture andsale ofpharmaceuticals
3. Know the regulatory approval process and their registration in Indian and internationalmarkets

Course content:

Unit I **10Hours**

New Drug Discovery and development

Stages of drug discovery, Drug development process, pre-clinical studies, non-clinical activities, clinical studies, Innovator and generics, Concept of generics, Generic drug product development.

Unit II **10Hours**

Regulatory Approval Process

Approval processes and timelines involved in Investigational New Drug (IND), New Drug Application (NDA), Abbreviated New Drug Application (ANDA). Changes to an approved NDA / ANDA.

Regulatory authorities and agencies

Overview of regulatory authorities of India, United States, European Union, Australia, Japan, Canada (Organization structure and types of applications)

Unit III **10Hours**

Registration of Indian drug product in overseas market

Procedure for export of pharmaceutical products, Technical documentation, Drug Master Files (DMF), Common Technical Document (CTD), electronic Common Technical

Document (eCTD), ASEAN Common Technical Document (ACTD)research.

Unit IV **08Hours**

Clinical trials

Developing clinical trial protocols, Institutional Review Board / Independent Ethics committee - formation and working procedures, Informed consent process and procedures, GCP obligations of Investigators, sponsors & Monitors, Managing and Monitoring clinical trials, Pharmacovigilance - safety monitoring in clinicaltrials

Unit V **07Hours**

Regulatory Concepts

Basic terminology, guidance, guidelines, regulations, Laws and Acts, Orange book, Federal Register, Code of Federal Regulatory, Purple book

Recommended books (Latest edition):

1. Drug Regulatory Affairs by Sachin Itkar, Dr. N.S. Vyawahare, NiraliPrakashan.
2. The Pharmaceutical Regulatory Process, Second Edition Edited by Ira R. Berry and Robert P. Martin, Drugs and the Pharmaceutical Sciences,Vol.185. Informa Health carePublishers.
3. New Drug Approval Process: Accelerating Global Registrations ByRichard A Guarino, MD, 5th edition, Drugs and the PharmaceuticalSciences,Vol.190.
4. Guidebook for drug regulatory submissions / Sandy Weinberg. ByJohn Wiley & Sons.Inc.
5. FDA Regulatory Affairs: a guide for prescription drugs, medical devices,and biologics /edited by Douglas J. Pisano, DavidMantus.
6. Generic Drug Product Development, Solid Oral Dosage forms, Leon Shargel and Isader Kaufer, Marcel Dekker series,Vol.143
7. Clinical Trials and Human Research: A Practical Guide to Regulatory Compliance ByFayA.RozovskyandRodneyK.Adams
8. Principles and Practices of Clinical Research, Second Edition Edited by John I. Gallin and Frederick P.Ognibene
9. Drugs: From Discovery to Approval, Second Edition By RickNg

UBP8ET03C. PHARMACOVIGILANCE (Theory) 45 hours

Scope: This paper will provide an opportunity for the student to learn about development of pharmacovigilance as a science, basic terminologies used in pharmacovigilance, global scenario of Pharmacovigilance, train students on establishing pharmacovigilance programme in an organization, various methods that can be used to generate safety data and signal detection. This paper also develops the skills of classifyingdrugs, diseases and adverse drug reactions.

Objectives:

At completion of this paper it is expected that students will be able to (know, do, and appreciate):

1. Why drug safety monitoring isimportant?
2. History and development ofpharmacovigilance
3. National and international scenario ofpharmacovigilance
4. Dictionaries, coding and terminologies used inpharmacovigilance
5. Detection of new adverse drug reactions and theirassessment
6. International standards for classification of diseases anddrugs
7. Adverse drug reaction reporting systems and communication inpharmacovigilance
8. Methods to generate safety data during pre clinical, clinical and post approval phases of drugs' life cycle
9. Drug safety evaluation in paediatrics, geriatrics, pregnancy andlactation
10. Pharmacovigilance Program of India (PvPI) requirement for ADR reporting inIndia
11. ICH guidelines for ICSR, PSUR, expedited reporting, pharmacovigilanceplanning
12. CIOMS requirements for ADR reporting
13. Writing case narratives of adverse events and theirquality.

Course Content

Unit I **10Hours**

Introduction to Pharmacovigilance

- History and development ofPharmacovigilance
- Importance of safety monitoring ofMedicine
- WHO international drug monitoringprogramme
- Pharmacovigilance Program of India(PvPI)

Introduction to adverse drug reactions

- Definitions and classification ofADRs
- Detection andreporting
- Methods in Causalityassessment
- Severity and seriousnessassessment
- Predictability and preventabilityassessment
- Management of adverse drugreactions

Basic terminologies used in pharmacovigilance

- Terminologies of adverse medication relatedevents
- Regulatoryterminologies

Unit II **10 hours**

Drug and disease classification

- Anatomical, therapeutic and chemical classification ofdrugs
- International classification ofdiseases
- Daily defineddoses

- International Non proprietary Names fordrugs

Drug dictionaries and coding in pharmacovigilance

- WHO adverse reactionterminologies
- MedDRA and Standardised MedDRAqueries
- WHO drugdictionary
- Eudravigilance medicinal productdictionary

Information resources in pharmacovigilance

- Basic drug informationresources
- Specialised resources forADRs

Establishing pharmacovigilance programme

- Establishing in ahospital
- Establishment & operation of drug safety department inindustry
- Contract Research Organisations(CROs)
- Establishing a nationalprogramme

Unit III **10Hours**

Vaccine safety surveillance

- VaccinePharmacovigilance
- Vaccinationfailure
- Adverse events followingimmunization

Pharmacovigilance methods

- Passive surveillance – Spontaneous reports and caseseries
- Stimulatedreporting
- Active surveillance – Sentinel sites, drug event monitoring andregistries
- Comparative observational studies–Crosssectionalstudy,casecontrolstudyand cohort study
- Targeted clinical investigations

Communication in pharmacovigilance

- Effective communication inPharmacovigilance
- Communication in Drug Safety Crisismanagement
- Communicating with Regulatory Agencies,Business Partners, Healthcare facilities& Media

Unit IV **8 Hours**

Safety data generation

- Pre clinicalphase
- Clinical phase
- Post approval phase(PMS)

ICH Guidelines for Pharmacovigilance

- Organization and objectives ofICH
- Expeditedreporting
- Individual case safetyreports
- Periodic safety updatereports
- Post approval expeditedreporting
- Pharmacovigilanceplanning
- Good clinical practice in pharmacovigilancestudies

UnitV **7hours**

Pharmacogenomics of adverse drug reactions

- Genetics related ADR with example focusing PKparameters.

Drug safety evaluation in special population

- Paediatrics
- Pregnancy andlactation
- Geriatrics

CIOMS

- CIOMS WorkingGroups
- CIOMS Form

CDSCO (India) and Pharmacovigilance

- D&C Act and ScheduleY
- Differences in Indian and global pharmacovigilancerequirements

Recommended Books (Latest edition):

1. Textbook of Pharmacovigilance: S K Gupta, Jaypee Brothers, MedicalPublishers.
2. Practical Drug Safety from A to Z ByBarton Cobert, Pierre Biron, Jones and BartlettPublishers.
3. Mann's Pharmacovigilance: Elizabeth B. Andrews, Nicholas, WileyPublishers.
4. Stephens' Detection of New Adverse Drug Reactions: John Talbot, Patrick Walle, WileyPublishers.
5. An Introduction to Pharmacovigilance: Patrick Waller, WileyPublishers.
6. Cobert's Manual of Drug Safety and Pharmacovigilance: Barton Cobert, Jones& BartlettPublishers.
7. Textbook of Pharmacoepidemiolog edited by Brian L. Strom, Stephen E Kimmel, Sean Hennessy, Wiley Publishers.
8. A Textbook of Clinical Pharmacy Practice -Essential Concepts and Skills:G. Parthasarathi, Karin NyfortHansen,Milap C.Nahata
9. National Formulary ofIndia
10. Text Book of Medicine by YashpalMunjal
11. Text book of Pharmacovigilance: concept and practice by GP Mohanta and PK Manna
12. http://www.whoumc.org/DynPage.aspx?id=105825&mn1=7347&mn2=7259&mn3=7297
13. http://www.ich.org/
14. http://www.cioms.ch/
15. http://cdsco.nic.in/
16. http://www.who.int/vaccine_safety/en/
17. http://www.ipc.gov.in/PvPI/pv_home.html

UBP8ET03D. QUALITY CONTROL AND STANDARDIZATION OF HERBALS (Theory)

Scope: In this subject the student learns about the various methods and guidelines for evaluation and standardization of herbs and herbal drugs. The subject also provides an opportunity for the student to learn cGMP, GAP and GLPin traditional system of medicines.

Objectives: Upon completion of the subject student shall be able to;

1. know WHO guidelines for quality control of herbaldrugs
2. know Quality assurance in herbal drugindustry
3. know the regulatory approval process and their registration in Indianand internationalmarkets
4. appreciate EU and ICH guidelines for quality control of herbaldrugs

Unit I **10 hours**

Basic tests for drugs – Pharmaceutical substances, Medicinal plants materials and dosage forms

WHO guidelines for quality control of herbal drugs.

Evaluation of commercial crude drugs intended for use

Unit II **10 hours**

Quality assurance in herbal drug industry of cGMP, GAP, GMP and GLP in traditional system of medicine.

WHO Guidelines on current good manufacturing Practices (cGMP) for Herbal Medicines

WHO Guidelines on GACP for Medicinal Plants.

Unit III **10 hours**

EU and ICH guidelines for quality control of herbal drugs.

Research Guidelines for Evaluating the Safety and Efficacy of Herbal Medicines

Unit IV **08 hours**

Stability testing of herbal medicines.Application of various chromatographic techniques in standardization of herbal products.

Preparation of documents for new drug application and export registration

GMP requirements and Drugs & Cosmetics Act provisions.

Unit V **07 hours**

Regulatory requirements for herbal medicines.

WHO guidelines on safety monitoring of herbal medicines in pharmacovigilance systems

Comparison of various Herbal Pharmacopoeias.

Role of chemical and biological markers in standardization of herbal products

Recommended Books: (Latest Editions

1. Pharmacognosy by Trease andEvans
2. Pharmacognosy by Kokate, Purohit andGokhale
3. Rangari, V.D., Text book of Pharmacognosy and Phytochemistry Vol. I ,Carrier Pub.,2006.
4. Aggrawal, S.S., Herbal Drug Technology. Universities Press,2002.
5. EMEA. Guidelines on Quality of Herbal Medicinal Products/TraditionalMedicinal Products,
6. Mukherjee, P.W. Quality Control of Herbal Drugs: An Approach to Evaluationof Botanicals. Business Horizons Publishers, New Delhi, India,2002.
7. Shinde M.V., Dhalwal K., Potdar K., Mahadik K. Application of quality control principles to herbal drugs. International Journal of Phytomedicine 1(2009); p.4-8.
8. WHO. Quality Control Methods for Medicinal Plant Materials, World Health Organization, Geneva, 1998. WHO. Guidelines for the Appropriate Use ofHerbal Medicines. WHO Regional Publications, Western Pacific Series No 3, WHO Regional office for the Western Pacific, Manila,1998.
9. WHO. The International Pharmacopeia, Vol. 2: Quality Specifications, 3rdedn. World Health Organization, Geneva,1981.
10. WHO. Quality Control Methods for Medicinal Plant Materials. WorldHealth Organization, Geneva,1999.
11. WHO. WHO Global Atlas of Traditional, Complementary andAlternative Medicine. 2 vol. set. Vol. 1 contains text and Vol. 2, maps. World Health Organization, Geneva,2005.
12. WHO. Guidelines on Good Agricultural and Collection Practices (GACP)for Medicinal Plants. World Health Organization, Geneva,2004.

UBP8ET03E. COMPUTER AIDED DRUG DESIGN (Theory)

45 Hours

Scope: This subject is designed to provide detailed knowledge of rational drug design process and various techniques used in rational drug design process.

Objectives: Upon completion of the course, the student shall be able to understand

- Design and discovery of leadmolecules
- The role of drug design in drug discoveryprocess
- The concept of QSAR anddocking
- Various strategies to develop new drug likemolecules.
- The design of new drug molecules using molecular modelingsoftware

Course Content:

UNIT-I **10Hours**

Introduction to Drug Discovery and Development

Stages of drug discovery and development

Lead discovery and Analog Based Drug Design

Rational approaches to lead discovery based on traditional medicine, Random screening, Non-random screening, serendipitous drug discovery, lead discovery based on drug metabolism, lead discovery based on clinical observation.

Analog Based Drug Design: Bioisosterism, Classification, Bioisosteric replacement. Any three case studies

UNIT-II **10Hours**

Quantitative Structure Activity Relationship (QSAR)

SAR versus QSAR, History and development of QSAR, Types of physicochemical parameters, experimental and theoretical approaches for the determination of physicochemical parameters such as Partition coefficient, Hammet's substituent constant and Tafts steric constant. Hansch analysis, Free Wilson analysis, 3D-QSAR approaches like COMFA and COMSIA.

UNIT-III **10Hours**

Molecular Modeling and virtual screening techniques

Virtual Screening techniques: Drug likeness screening, Concept of pharmacophore mapping and pharmacophore based Screening,

Molecular docking: Rigid docking, flexible docking, manual docking, Docking based screening. *De novo* drug design.

UNIT-IV **08Hours**

Informatics & Methods in drug design

Introduction to Bioinformatics, chemoinformatics. ADME databases, chemical, biochemical and pharmaceutical databases.

UNIT-V **07Hours**

Molecular Modeling: Introduction to molecular mechanics and quantum mechanics.Energy Minimization methods and Conformational Analysis, global conformational minima determination.

Recommended Books (Latest Editions)

1. Robert GCK, ed., "Drug Action at the Molecular Level" University Prak PressBaltimore.
2. Martin YC. "Quantitative Drug Design" Dekker, NewYork.
3. Delgado JN, Remers WA eds "Wilson & Gisvolds's Text Book of Organic Medicinal & Pharmaceutical Chemistry" Lippincott, NewYork.
4. Foye WO "Principles of Medicinal chemistry 'Lea &Febiger.
5. Koro lkovas A, Burckhalter JH. "Essentials of Medicinal Chemistry" Wiley Interscience.
6. Wolf ME, ed "The Basis of Medicinal Chemistry, Burger's Medicinal Chemistry" John Wiley & Sons, NewYork.
7. Patrick Graham, L., An Introduction to Medicinal Chemistry, Oxford University Press.
8. Smith HJ, Williams H, eds, "Introduction to the principles of Drug Design" WrightBoston.
9. Silverman R.B. "The organic Chemistry of Drug Design and Drug Action" Academic Press New York.

UBP8ET03F. CELL AND MOLECULAR BIOLOGY (Elective subject)

45 Hours

Scope:

- Cell biology is a branch of biology that studies cells – their physiological properties, their structure, the organelles they contain, interactions with their environment, their life cycle, division, death and cellfunction.
- This is done both on a microscopic and molecularlevel.
- Cell biology research encompasses both the great diversity of single-celled organisms like bacteria and protozoa, as well as the many specialized cells in multi-cellular organismssuch as humans, plants, andsponges.

Objectives: Upon completion of the subject student shall be ableto;

- Summarize cell and molecular biologyhistory.
- Summarize cellular functioning andcomposition.
- Describe the chemical foundations of cellbiology.
- Summarize the DNA properties of cellbiology.
- Describe protein structure andfunction.
- Describe cellular membrane structure andfunction.
- Describe basic molecular geneticmechanisms.
- Summarize the CellCycle

Course content:

UnitI **10Hours**

a) Cell and Molecular Biology: Definitions theory and basics andApplications.
b) Cell and Molecular Biology: History andSummation.
c) Properties of cells and cellmembrane.
d) Prokaryotic versusEukaryotic
e) CellularReproduction
f) Chemical Foundations – an Introduction and Reactions(Types)

UnitII **10Hours**

a) DNA and the Flow of MolecularInformation
b) DNAFunctioning
c) DNA andRNA
d) Types ofRNA
e) Transcription andTranslation

UnitIII **10Hours**

a) Proteins: Defined **and** AminoAcids
b) ProteinStructure

c) Regularities in Protein Pathways
d) CellularProcesses
e) Positive Control and significance of ProteinSynthesis

UnitIV **08Hours**

a) Science ofGenetics
b) Transgenics and Genomic Analysis
c) Cell Cycleanalysis
d) Mitosis andMeiosis
e) Cellular Activities andCheckpoints

UnitV **07Hours**

a) Cell Signals:Introduction
b) Receptors for CellSignals
c) Signaling Pathways:Overview
d) Misregulation of SignalingPathways
e) Protein-Kinases:Functioning

Recommended Books (latest edition):

1. W.B. Hugo and A.D. Russel: Pharmaceutical Microbiology, BlackwellScientific publications, Oxford London.
2. Prescott and Dunn., Industrial Microbiology, 4th edition, CBS Publishers& Distributors,Delhi.
3. Pelczar, Chan Kreig, Microbiology, Tata McGraw Hilledn.
4. Malcolm Harris, Balliere Tindall and Cox: PharmaceuticalMicrobiology.
5. Rose: IndustrialMicrobiology.
6. Probisher, Hinsdill et al: Fundamentals of Microbiology, 9th ed.Japan
7. Cooper and Gunn's: Tutorial Pharmacy, CBS Publisher andDistribution.
8. Peppler: MicrobialTechnology.
9. Edward: Fundamentals ofMicrobiology.
10. N.K.Jain: Pharmaceutical Microbiology, Vallabh Prakashan, Delhi
11. Bergeys manual of systematic bacteriology, Williams and Wilkins- A Waverly company
12. B.R. Glick and J.J. Pasternak: Molecular Biotechnology: Principles and Applications of RecombinantDNA: ASM Press WashingtonD.C.
13. RA Goldshy et. al., : KubyImmunology.

UBP8ET03G. COSMETIC SCIENCE (Theory)

45Hours

UNITI **10Hours**

Classification of cosmetic and cosmeceutical products

Definition of cosmetics as per Indian and EU regulations, Evolution of cosmeceuticals from cosmetics, cosmetics as quasi and OTC drugs

Cosmetic excipients: Surfactants, rheology modifiers, humectants, emollients, preservatives. Classification and application

Skin: Basic structure and function of skin.

Hair: Basic structure of hair. Hair growth cycle.

Oral Cavity: Common problem associated with teeth and gums**.**

UNITII **10Hours**

Principles of formulation and building blocks of skin care products:

Face wash,

Moisturizing cream, Cold Cream, Vanishing cream and their advantages and disadvantages.Application of these products in formulation of cosmecuticals.**Antiperspants & deodorants**- Actives & mechanism of action.

Principles of formulation and building blocks of Hair care products:

Conditioning shampoo, Hair conditioner,anti-dandruff shampoo.

Hair oils.

Chemistry and formulation of Para-phylene diamine based hair dye.

Principles of formulation and building blocks of oral care products:

Toothpaste for bleeding gums, sensitive teeth. Teeth whitening, Mouthwash.

UNITIII **10Hours**

Sun protection, Classification of Sunscreens and SPF.

Role of herbs in cosmetics:

Skin Care: Aloe and turmeric

Hair care: Henna and amla.

Oral care: Neem and clove

Analytical cosmetics: BIS specification and analytical methods for shampoo, skin-cream and toothpaste**.**

UNITIV **08Hours**.

Principles of Cosmetic Evaluation:Principles of sebumeter, corneometer. Measurement of TEWL, Skin Color, Hair tensile strength, Hair combingproperties

Soaps,and syndet bars. Evolution and skin benfits.

UNITV **07Hours**

Oily and dry skin, causes leading to dry skin, skin moisturisation. Basic understanding of the terms Comedogenic, dermatitis.

Cosmetic problems associated with Hair and scalp: Dandruff, Hair fall causes

Cosmetic problems associated with skin: blemishes, wrinkles, acne, prickly heat and body odor.

Antiperspirants and Deodorants- Actives and mechanism of action

References

1) Harry's Cosmeticology, Wilkinson, Moore, Seventh Edition, GeorgeGodwin.
2) Cosmetics – Formulations, Manufacturing and Quality Control, P.P. Sharma, 4th Edition, Vandana Publications Pvt. Ltd., Delhi.
3) Text book of cosmelicology by Sanju Nanda & Roop K. Khar, TataPublishers.

UBP8ET03H. PHARMACOLOGICAL SCREENING METHODS

45 Hours

Scope: This subject is designed to impart the basic knowledge of preclinical studies in experimental animals including design, conduct and interpretations of results.

Objectives

Upon completion of the course the student shall be able to,

- Appreciate the applications of various commonly used laboratoryanimals.
- Appreciate and demonstrate the various screening methods used in preclinical research
- Appreciate and demonstrate the importance of biostatistics andresearchmethodology
- Design and execute a research hypothesisindependently

Unit –I	**08 Hours**
Laboratory Animals: Study of CPCSEA and OECD guidelines for maintenance, breeding and conduct of experiments on laboratory animals, Common lab animals: Description and applications of different species and strains of animals. Popular transgenic and mutantanimals. Techniques for collection of blood and common routes of drug administration in laboratory animals, Techniques of blood collection andeuthanasia.	
Unit –II	**10 Hours**
Preclinical screening models a. Introduction: Dose selection, calculation and conversions, preparation of drug solution/suspensions, grouping of animals and importance of sham negative and positive control groups. Rationale for selection of animal species and sex for thestudy. **b. Study of screening animal modelsfor** Diuretics, nootropics, anti-Parkinson's,antiasthmatics, **Preclinical screening models:** for CNS activity- analgesic, antipyretic,anti-inflammatory, general anaesthetics, sedative and hypnotics, antipsychotic, antidepressant, antiepileptic, antiparkinsonism, alzheimer's disease	

Unit –III **Preclinical screening models:** for ANS activity, sympathomimetics, sympatholytics, parasympathomimetics, parasympatholytics, skeletal muscle relaxants, drugs acting on eye, local anaethetics	
Unit –IV **Preclinical screening models:** for CVS activity- antihypertensives, diuretics, antiarrhythmic, antidyslepidemic, anti aggregatory, coagulants, and anticoagulants Preclinical screening models for other important drugs like antiulcer, antidiabetic, anticancer and antiasthmatics.	
Research methodology and Bio-statistics Selection of research topic, review of literature, research hypothesis and study design Pre-clinical data analysis and interpretation using Students 't' test and One-way ANOVA. Graphical representation of data	**05 Hours**

Recommended Books (latest edition):

1. Fundamentals of experimental Pharmacology-byM.N.Ghosh
2. Hand book of ExperimentalPharmacology-S.K.Kulakarni
3. CPCSEA guidelines for laboratory animalfacility.
4. Drug discovery and Evaluation by VogelH.G.
5. Drug Screening Methods by Suresh Kumar Gupta and S. K.Gupta
6. Introduction to biostatistics and research methods by PSS Sundar Rao and J Richard

UBP8ET03I. ADVANCED INSTRUMENTATION TECHNIQUES

45 Hours

Scope: This subject deals with the application of instrumental methods in qualitative and quantitative analysis of drugs. This subject is designed to impart advanced knowledge on the principles and instrumentation of spectroscopic and chromatographic hyphenated techniques. This also emphasizes on theoretical and practical knowledge on modern analytical instruments that are used for drug testing.

Objectives: Upon completion of the course the student shall be able to

- understand the advanced instruments used and its applications in druganalysis
- understand the chromatographic separation and analysis ofdrugs.
- understand the calibration of various analyticalinstruments
- know analysis of drugs using various analyticalinstruments.

Course Content:

UNIT-I **10Hours**

Nuclear Magnetic Resonance spectroscopy

Principles of H-NMR and C-NMR, chemical shift, factors affecting chemical shift, coupling constant, Spin - spin coupling, relaxation, instrumentation and applications

Mass Spectrometry- Principles, Fragmentation, Ionization techniques – Electron impact, chemical ionization, MALDI, FAB, Analyzers-Timeof flight and Quadrupole, instrumentation, applications

UNIT-II **10Hours**

Thermal Methods of Analysis: Principles, instrumentation and applications of ThermogravimetricAnalysis (TGA), Differential Thermal Analysis (DTA), Differential Scanning Calorimetry(DSC)

X-Ray Diffraction Methods: Origin of X-rays, basic aspects of crystals, X ray Crystallography, rotating crystal technique, single crystal diffraction, powder diffraction, structural elucidation and applications.

UNIT-III **10Hours**

Calibration and validation-as per ICH and USFDA guidelines

Calibration of following Instruments

Electronic balance, UV-Visible spectrophotometer, IR spectrophotometer, Fluorimeter, Flame Photometer, HPLC and GC

UNIT-IV **08Hours**

Radio immune assay: Importance, various components, Principle, different methods, Limitation and Applications of Radio immuno assay

Extraction techniques:General principle and procedure involved in the solid phase extraction and liquid-liquid extraction

UNIT-V **07Hours**

Hyphenated techniques-LC-MS/MS, GC-MS/MS, HPTLC-MS.

Recommended Books (Latest Editions)

1. Instrumental Methods of Chemical Analysis by B.KSharma
2. Organic spectroscopy by Y.RSharma
3. Text book of Pharmaceutical Analysis by Kenneth A.Connors
4. Vogel's Text book of Quantitative Chemical Analysis by A.I.Vogel
5. Practical Pharmaceutical Chemistry by A.H. Beckett and J.B.Stenlake
6. Organic Chemistry by I. L.Finar
7. Organic spectroscopy by WilliamKemp
8. Quantitative Analysis of Drugs by D. C.Garrett
9. Quantitative Analysis of Drugs in Pharmaceutical Formulations by P. D.Sethi
10. Spectrophotometric identification of Organic Compounds bySilverstein

UBP8ET03J. DIETARY SUPPLEMENTS AND NUTRACEUTICALS

No. of hours: 3 Tutorial:1 Credit point:4

Scope:

This subject covers foundational topic that are important for understanding the need and requirements of dietary supplements among different groups in the population.

Objective:

This module aims to provide an understanding of the concepts behind the theoretical applications of dietary supplements. By the end of the course, students should be able to :

1. Understand the need of supplements by the different group of people tomaintain healthylife.
2. Understand the outcome of deficiencies in dietarysupplements.
3. Appreciate the components in dietary supplements and theapplication.
4. Appreciate the regulatory and commercial aspects of dietary supplementsincluding healthclaims.

UNIT I **07 hours**

a. Definitions of Functional foods, Nutraceuticals and Dietary supplements. Classification of Nutraceuticals, Health problems and diseases that can be prevented or cured by Nutraceuticals i.e. weight control, diabetes, cancer, heart disease, stress, osteoarthritis, hypertensionetc.
b. Public health nutrition, maternal and child nutrition, nutrition and ageing, nutrition education incommunity.
c. Source, Name of marker compounds and their chemical nature, Medicinal uses and health benefits of following used as nutraceuticals/functional foods: Spirulina, Soyabean, Ginseng, Garlic, Broccoli, Gingko,Flaxseeds

UNIT II **15 hours**

Phytochemicals as nutraceuticals: Occurrence and characteristic features(chemical nature medicinal benefits) of following

a) Carotenoids- α and β-Carotene, Lycopene, Xanthophylls,leutin
b) Sulfides: Diallyl sulfides, Allyltrisulfide.
c) Polyphenolics:Reservetrol
d) Flavonoids- Rutin , Naringin, Quercitin, Anthocyanidins, catechins,Flavones
e) Prebiotics / Probiotics.: Fructo oligosaccharides, Lactobacillum
f) Phyto estrogens : Isoflavones, daidzein, Geebustin,lignans
g) Tocopherols
h) Proteins, vitamins, minerals, cereal, vegetables and beverages as functional foods: oats, wheat bran, rice bran, sea foods, coffee, tea and thelike.

UNIT III **07 hours**

a) Introduction to free radicals: Free radicals, reactive oxygen species, production of free radicals in cells, damaging reactions of free radicals on lipids, proteins, Carbohydrates, nucleic acids.

b) Dietary fibres and complex carbohydrates as functional foodingredients..

UNIT IV **10 hours**

a) Free radicals in Diabetes mellitus, Inflammation, Ischemic reperfusion injury,Cancer, Atherosclerosis, Free radicals in brain metabolism and pathology, kidney damage, muscle damage. Free radicals involvement in other disorders. Free radicals theory of ageing.

b) Antioxidants: Endogenous antioxidants – enzymatic and nonenzymatic antioxidant defence, Superoxide dismutase, catalase, Glutathione peroxidase, Glutathione Vitamin C, Vitamin E, α- Lipoic acid,melatonin
Synthetic antioxidants: Butylated hydroxy Toluene, Butylated hydroxy Anisole.

c) Functional foods for chronic diseaseprevention

UNITV **06 hours**

a) Effect of processing, storage and interactions of various environmental factors on the potential of nutraceuticals.

b) Regulatory Aspects; FSSAI, FDA, FPO, MPO, AGMARK. HACCP and GMPs on Food Safety. Adulteration offoods.

c) Pharmacopoeial Specifications for dietary supplements andnutraceuticals.

References:

1. Dietetics by SriLakshmi
2. Role of dietary fibres and neutraceuticals in preventing diseases by K.T Agusti and P.Faizal: BSPunblication.
3. Advanced Nutritional Therapies by Cooper. K.A., (1996).
4. The Food Pharmacy by Jean Carper, Simon & Schuster, UK Ltd.,(1988).
5. Prescription for Nutritional Healing by James F.Balch and Phyllis A.Balch 2nd Edn., Avery Publishing Group, NY(1997).
6. G. Gibson and C.williams Editors *2000 Functional foods* WoodheadPubl.Co.London.
7. Goldberg, I. *Functional Foods*. 1994. Chapman and Hall, NewYork.
8. Labuza, T.P. 2000 Functional Foods and Dietary Supplements: Safety, Good Manufacturing Practice (GMPs) and Shelf Life Testing in *Essentials of Functional Foods* M.K. Sachmidl and T.P. Labuza eds. AspenPress.
9. Handbook of Nutraceuticals and Functional Foods, Third Edition (ModernNutrition)
10. Shils, ME, Olson, JA, Shike, M. 1994 *Modern Nutrition in Health and Disease*. Eighth edition. Lea and Febiger

UBP8ET03K – Elective course on Pharmaceutical Product Development

No of Hours:3 Tutorial:1 Creditpoints:4

Unit-I **10Hours**

Introduction to pharmaceutical product development, objectives, regulations related to preformulation, formulation development, stability assessment, manufacturing and quality control testing of different types of dosageforms

Unit-II **10Hours**

An advanced study of Pharmaceutical Excipients in pharmaceutical product development with a special reference to the following categories

i. Solvents andsolubilizers
ii. Cyclodextrins and theirapplications
iii. Non - ionic surfactants and theirapplications
iv. Polyethylene glycols andsorbitols
v. Suspending and emulsifyingagents
vi. Semi solidexcipients

Unit-III **10Hours**

An advanced study of Pharmaceutical Excipients in pharmaceutical product development with a special reference to the following categories

i. Tablet and capsuleexcipients
ii. Directly compressiblevehicles
iii. Coatmaterials
iv. Excipients in parenteral and aerosolsproducts
v. Excipients for formulation ofNDDS

Selection and application of excipients in pharmaceutical formulations with specific industrial applications

Unit-IV **08Hours**

Optimization techniques in pharmaceutical product development.A study of various optimization techniques for pharmaceutical product development with specific examples.Optimization by factorial designs and their applications.A study of QbD and its application in pharmaceutical product development.

Unit-V **07Hours**

Selection and quality control testing of packaging materials for pharmaceutical product development - regulatory considerations.

Recommended Books (Latest editions)

1. Pharmaceutical Statistics Practical and Clinical Applications byStanford Bolton, CharlesBon; Marcel DekkerInc.
2. Encyclopedia of Pharmaceutical Technology, edited by James swarbrick,Third Edition,Informa Healthcarepublishers.
3. Pharmaceutical Dosage Forms, Tablets, Volume II, edited by Herbert A.Lieberman andLeon Lachman; Marcel Dekker,Inc.
4. The Theory and Practice of Industrial Pharmacy, Fourth Edition, edited by Roop kKhar, S P Vyas, Farhan J Ahmad, Gaurav K Jain; CBS Publishers andDistributors Pvt.Ltd.2013.
5. Martin's Physical Pharmacy and Pharmaceutical Sciences, Fifth Edition, editedby Patrick J. Sinko, BI Publications Pvt.Ltd.
6. Targeted and Controlled Drug Delivery, Novel Carrier Systems by S. P. Vyasand R. K.Khar, CBS Publishers and Distributors Pvt. Ltd, First Edition 2012.
7. Pharmaceutical Dosage Forms and Drug Delivery Systems, Loyd V. Allen Jr., Nicholas B.Popovich, Howard C. Ansel, 9th Ed.40
8. Aulton's Pharmaceutics – The Design and Manufacture of Medicines, MichaelE. Aulton,3rdEd.
9. Remington – The Science and Practice of Pharmacy, 20thEd.
10. Pharmaceutical Dosage Forms – Tablets Vol 1 to 3, A. Liberman, Leon Lachman andJoseph B. Schwartz
11. Pharmaceutical Dosage Forms – Disperse Systems Vol 1 to 3, H.A. Liberman, Martin, M.R and Gilbert S. Banker.
12. Pharmaceutical Dosage Forms – Parenteral Medication Vol 1 & 2, Kenneth E. Avis andH.A.Libermann.
13. Advanced Review Articles related to thetopics.

Syllabus-B.Com

I SEMESTER

S.No.	CATEGORY	SUB. CODE	SUBJECT	Total Contact Hrs	L	T	P	C
1	HS	U18HSTA101	Part -I :Tamil -I	**5**	3	0	0	3
		U18HSHI101	Part -I :Hindi-I					
		U18HSFR101	Part -I : French-I					
2	HS	U18HSEN102	Part II : English-I	5	3	0	0	3
3	MC	U18MCBC101	Financial Accounting I	5	**3**	**1**	**0**	**4**
4	MC	U18MCBC102	Principles of Management	5	**2**	**1**	**0**	**3**
5	NC	U18NCBC103	Business Economics	5	**2**	**1**	**0**	**3**
6	MC	U18MCBC104	Business Communication	5	**3**	**1**	**0**	**4**
TOTAL				**30**	**16**	**4**	**0**	**20**

II SEMESTER

S.No.	CATEGORY	SUB. CODE	SUBJECT	Total Contact Hrs	L	T	P	C
1	HS	U18HSTA201	Part -I :Tamil -II	**4**	3	0	0	3
		U18HSHI201	Part -I :Hindi-II					
		U18HSFR201	Part -I : French-II					
2	HS	U18HSEN202	Part-II: English-II	4	3	0	0	3
3	MC	U18MCBC201	Financial Accounting - II	5	**3**	**1**	**0**	**4**
4	MC	U18MCBC202	Banking Theory, Law & Practice	4	**2**	**1**	**0**	**3**
5	NC	U18NCBC203	Business Statistics	5	**2**	**1**	**0**	**3**
6	MC	U18MCBC204	Business Law	4	**2**	**1**	**0**	**3**
7	HS	U18HSCH201	Environmental Studies	2	**2**	**0**	**0**	**2**
8	HS	U18HSBC202	Value Education	2	**2**	**0**	**0**	**2**
TOTAL				**30**	**19**	**4**	**0**	**23**

III SEMESTER

S.No.	CATEGORY	SUB. CODE	SUBJECT	Total Contact Hrs	L	T	P	C
1	NC	U18NCBC301	Personality Development	4	**2**	**1**	**0**	**3**
2	NC	U18NCBC302	Event Management	4	**2**	**1**	**0**	**3**
3	MC	U18MCBC303	Corporate Accounting – I	5	**3**	**1**	**0**	**4**
4	MC	U18MCBC304	Company Law	5	**2**	**1**	**0**	**3**
5	MC	U18MCBC305	Business Mathematics	5	**2**	**1**	**0**	**3**
6	MC	U18MCBC306	Human Resources Management	5	**3**	**1**	**0**	**4**
7	NME	U18NETA301	Non Major Elective I – Basic Tamil -I	2	**2**	**0**	**0**	**2**
		U18NETA302	Special Tamil- I					
TOTAL				**30**	**16**	**6**	**0**	**22**

IV SEMESTER

S.No.	CATEGORY	SUB. CODE	SUBJECT	Total Contact Hrs	L	T	P	C
1	MC	U18MCBC401	Tally for Accounting	4	**2**	**1**	**0**	**3**
2	NC	U18NCBC402	Soft skills for employability	4	**2**	**1**	**0**	**3**
3	MC	U18MCBC403	Corporate Accounting – II	5	**3**	**1**	**0**	**4**
4	MC	U18MCBC404	Financial Management	5	**2**	**1**	**0**	**3**
5	MC	U18MCBC405	Practical Auditing	4	**2**	**1**	**0**	**3**
6	MC	U18MCBC406	Commerce practical	4	**2**	**1**	**0**	**3**
7	NME	U18NETA401	Non Major Elective II – Basic Tamil – II	2	**2**	**0**	**0**	**2**
		U18NETA402	Special Tamil – II					
	SE	U18SESC001	Skill Based Elective-I Computer Application	2	1	0	2	2
TOTAL				**30**	**16**	**6**	**2**	**23**

V SEMESTER

S.No.	CATEGORY	SUB. CODE	SUBJECT	Total Contact Hrs	L	T	P	C
1	MC	U18MCBC501	Principles of Insurance	4	**2**	**1**	**0**	**3**
2	NC	U18MCBC502	Cost Accounting - I	4	**3**	**1**	**0**	**4**
3	MC	U18MCBC503	Marketing Management	4	**2**	**1**	**0**	**3**
4	MC	U18MCBC504	Income tax law and Practices - I	5	**3**	**1**	**0**	**4**
5	MC	U18MCBC505	Management Accounting -I	5	**3**	**1**	**0**	**4**
6	ME	**U18MEBC011**	Major Elective – I **Research Methodology**	4	**3**	**1**	**0**	**4**
7	SE	**U18SESC008**	**Skill Based Elective-II** **Computer Programming**	2	1	0	2	2
8	SE	**U18SESC004**	**Skill Based Elective-III** **Web Designing**	2	1	0	2	2
TOTAL				**30**	**18**	**6**	**4**	**26**

VI SEMESTER

S.No.	CATEGORY	SUB. CODE	SUBJECT	Total Contact Hrs	L	T	P	C
1	MC	U18MCBC601	Management Accounting -II	5	**3**	**1**	**0**	**4**
2	NC	U18MCBC602	Cost Accounting - II	4	**3**	**1**	**0**	**4**
3	MC	**U18MEBC022**	**Major Elective – II** **Financial Services**	4	**3**	**1**	**0**	**4**
4	MC	U18MCBC603	Income tax law and Practices - II	5	**3**	**1**	**0**	**4**
PRACTICAL								
5.	EEC	U18EEBC6P1	Project	10	0	0	20	10
6.	HS	U18HSBC6L1	Extension Activities	2	0	0	2	1
TOTAL				**30**	**12**	**4**	**22**	**27**

LIST OF SKILL BASED ELECTIVES

Choose any three courses – one in semester IV & two in semester V

S.No.	Sub Code	Subjects	Total Contact Hrs	L	T	P	C
1	U18SEBC001	Business Process Outsourcing – Management	2	2	0	0	2
2	U18SEBC002	Customer Relationship Management	2	2	0	0	2
3	U18SEBC003	Entrepreneurial Development	2	2	0	0	2
4	U18SEBC004	Human Resource Management	2	2	0	0	2
5	U18SEBC005	Marketing Management	2	2	0	0	2
6	U18SEBC006	Office Management	2	2	0	0	2
7	U18SEBC007	Retail Marketing	2	2	0	0	2
8	U18SEBC008	Salesmanship and Advertising	2	2	0	0	2
9	U18SEEN001	Soft Skills	2	2	0	0	2
10	U18SESC001	Computer Application	2	2	0	0	2
11	U18SESC002	Multimedia	2	2	0	0	2

12	U18SESC003	Advanced Excel	2	2	0	0	2
13	U18SESC004	Web Designing	2	2	0	0	2
14	U18SESC005	Photoshop	2	2	0	0	2
15	U18SESC006	Flash	2	2	0	0	2
16	U18SESC007	Computer Hardware and Networking	2	2	0	0	2
17	U18SESC008	Computer Programming	2	2	0	0	2
18	U18SESC009	Office Automation Tools	2	2	0	0	2
19	U18SEMA001	Quantitative and Aptitude Reasoning –I	2	2	0	0	2
20	U18SEMA002	Quantitative and Aptitude Reasoning-II	2	2	0	0	2
21	U18SEMA003	Regression Analysis with SPSS	2	2	0	0	2

LIST OF MAJOR ELECTIVE – I

Choose any one in Semester V

S.No.	Sub Code	Subjects	Total Contact Hrs	L	T	P	C
1	U18MEBC011	Research Methodology	4	3	1	0	4
2	U18MEBC012	Capital Markets					
3	U18MEBC013	Investment Management					
Total			4	3	1	0	4

LIST OF MAJOR ELECTIVE – II

Choose any one in Semester VI

S.No.	Sub Code	Subjects	Total Contact Hrs	L	T	P	C
1	U18MEBC021	Indirect Taxes	4	3	1	0	4
2	U18MEBC022	Financial Services					
3	U18MEBC023	Industrial Organisation management					
Total			4	3	1	0	4

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□□□□□□□□□□□□□□□□□□□(□□.□□.) [**COURSE OUTCOMES (COs)]**

CO1	பாரதியார், பாரதிதாசன், கவிமணிஆகியோரின்மரபுக்கவிதைகளைஅறிவர்
CO2	கண்ணதாசன், அப்துல்ரகுமான், நா.முத்துக்குமார் ஆகியோரின் புதுக்கவிதைகளை அறிவர்
CO3	□□□□□□□□□ □□□□□□□□□□□ □□□□□□□ □□□□□□□□□□□ □□□□□□□
CO4	இருபதாம் நூற்றாண்டு சிறுகதைக்கலையின் நுட்பத்தை அறிவர்
CO5	□□□□□□□ □□□□□□□□ □□□□□□□□□□□ □□□□□□ □□□□□□□
CO6	□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□ □□□□□□ □□□□□□□

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(1/2//3 □□□□□□□□□□□□□□ □□□□□□□□□□ □□□□□□□□□□□□□□)

3- □□□□□□□□□□□□, 2- □□□□□□□□□□□, 1- □□□□□□□□□□□□□□□□

1	COs/Pos	PO 1	2	3	4	5	6	7		PS O	PS O
2	CO1	3	3	3	1	3	1	3			
	CO2	3	3	3	2	3	1	3			
	CO3	3	2	2	2	3	1	2			
	CO4	3	3	3	1	3	1	3			
	CO5	3	2	2	2	3	1	2			
	CO6	3	2	3	2	3	1	3			
3	Category	Humanities & Social Studies (HS)		Basic Sciences (BS)	Engg Sciences (ES)	Professional Core (PC)	Core Elective (CE)	Non-Major Elective (NE)	Open Elective (OE)	Any other	Project/Term Paper/ Seminar/
		✓									
4	**Approval**	Academic Council Meeting									

□□□□**1** **9**

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□□□□**2** **9**

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U18HSHI101	HINDI-I	L	T	P	C
	Total Contact Hours – 45	3	0	0	3
	Prerequisite course – Grade 12				
	Course Coordinator Name & Department:- Mrs Rani Selvan / Hindi				

COURSE OBJECTIVES:-

To understand , read, write and speak Hindi language with grammatical.

COURSE OUTCOMES (COs)

CO1	Remember the behavior
CO2	Understand the importance of money by story
CO3	Apply the concept of Hindi grammar
CO4	Analyze the usage of translation from English to Hindi
CO5	Evaluate the unseen passage to answer the questions
CO6	Create the knowledge in Hindi Language

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
2	CO1	1	3	3	1	1	1	3		
	CO2	3	3	2	2	2	2	3		
	CO3	3	3	2	1	2	1	3		
	CO4	3	3	2	1	1	2	3		
	CO5	3	2	2	1	1	1	3		
	CO6	2	3	3	2	3	3	3		

3	Category	Humanities & Social Studies (HS)	Basic Sciences (BS)	Engg Sciences (ES)	Professional Core (PC)	Core Elective (CE)	Non-Major Elective (NE)	Open Elective (OE)	Any other	Project/Term Paper/ Seminar/ Internship(PR)
		✓								
4	Approval	Academic Council Meeting								

UNIT I **09**

NAVEEN GADYA CHAYANIKA – 2 - Bholaram ka jeev - Mehamaan se Bhagavaan bachaaye - Numberovali Thijori – Kaffan - Gunda

UNIT II **09**

NON DETAILED TEXT: KAHANI KUNJ - Stories: 6 – 10 only

UNIT III **09**

GRAMMAR: SHABDA VICHAR ONLY - NOUN, PRONOUN, ADJECTIVE, VERB, TENSE, CASE ENDINGS - Theoretical & Applied

UNIT IV **09**

TRANSLATION - English – Hindi only - ANUVADH ABHYAS – III - 1 – 15 Lessons Only

UNIT V **09**

COMPREHENSION - 1 Passage from ANUVADH ABHYAS – III (16 – 30)

TEXT BOOKS:

UNIT 1 - Dakshina Bharat Hindi Prachar Sabha, Chennai – 600017
UNIT II - Govind Prakashan, Sadhar Bagaar, Mathura, Uttar Pradesh – 281001 - Editor: Dr V.P. Amithab
UNIT III - Vyakaran Pradeep by Ramdev - Hindi Bhavan, 36, Tagor Town, Allahabad – 211002.
UNIT IV - Dakshina Bharat Hindi Prachar Sabha, Chennai – 600017.
UNIT V - Dakshina Bharat Hindi Prachar Sabha, Chennai – 600017

CourseCoordinator **HOD**

	FRENCH-I	**L**	**T**	**P**	**C**

U18HSFR101	Total Contact Hours – 45	3	0	0	3
	Prerequisite course – Grade 12				
	Course Coordinator Name & Department:- Ms. Tushita Naidu K / Département De Française				

COURSE OBJECTIVES:-

To introduce students to basic principles and practice of oral and written communication.

COURSE OUTCOMES (COs)

CO1	To understand the basics of the language.
CO2	To analyze the sentence patterns and form the grammar.
CO3	To learn the basics of grammar along with its principles.
CO4	To remember the anatomy of conjugations.
CO5	To create dialogs and conversation on their own within the language & to practice oral and written skills.
CO6	To remember the necessary rules of the language

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
2	CO1	1	3	2	1	1	1	3		
	CO2	3	3	3	1	2	1	3		
	CO3	3	3	3	1	3	1	3		
	CO4	3	3	3	1	1	1	3		
	CO5	3	3	3	3	1	1	3		
	CO6	3	3	3	2	1	1	3		

3	Category	Humanities & Social Studies (HS)	Basic Sciences (BS)	Engg Sciences (ES)	Professional Core (PC)	Core Elective (CE)	Non-Major Elective (NE)	Open Elective (OE)	Any other	Project/Term Paper/ Seminar/ Internship(PR)
		✓								
4	Approval	Academic Council Meeting								

UNIT I - Vous comprenez **9**

Alphabets - French Accents - Les Nombres – Pronunciations.

UNIT II Au travail! 9

Masculine Singular and Feminine singular - Conjugaison des verbes (present tense) - Les articles définis.

UNIT III En se detend? 9

Conjugaison (faire-aller-venir-Vouloir-Pouvoir-Devoir)

UNIT IV Racontez-moi 9

La date et l'heure – les saisons – les couleurs

UNIT V Bon voyage! 9

Adjectifs demonstratives - Adjectifs possessives - Les Voyages / les transport-Bon appétit!-Article partitif - Emploi des articles - Interrogation (Forme avec inversion) - Les repas - La fête

TEXT BOOKS:

A1 ECHO- J. GIRARDET, J. PECHEURB CLE PUBLICATION.

CourseCoordinator HOD

	Subject Name :ENGLISH-I	**L**	**T**	**P**	**C**

U18HSEN102	Total Contact Hours – 45	3	0	0	3
	Prerequisite course – + 2 level English				
	Course Coordinator : Mrs.M.SHEEBA & Department of English				

COURSE OBJECTIVES:- To understand the power of knowledge about LRSW(i.e.) listening, reading speaking and writing, and various forms of literature.

COURSE OUTCOMES (COs)

CO1	Remember the authors of the prescribed literature
CO2	Understand the necessity of grammar in Communication
CO3	Apply the plots and themes discussed
CO4	Analyze the various characters involved
CO5	Evaluate the characters and summarizes the prescribed literature
CO6	Create critical essays by evaluating the literary techniques and devices used
Category	HS

Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	COs/Pos	PO 1	2	3	4	5	6	7	PS O	PS O
2	CO1	2	3	3	3	3	2	2		
	CO2	2	2	3	3	3	3	2		
	CO3	3	2	2	2	2	2	2		
	CO4	3	3	3	3	3	3	3		
	CO5	2	2	2	2	2	2	2		
	CO6	2	2	3	2	2	3	2		

3	Category	Humanities & Social Studies (HS)	Basic Sciences (BS)	Engg Sciences (ES)	Professional Core (PC)	Core Elective (CE)	Non-Major Elective (NE)	Open Elective (OE)	Any other	Project/Term Paper/ Seminar/
		✓								
4	**Approval**	Academic Council Meeting								

UNIT-I POETRY **9**

Lucy Gray -William Wordsworth – Author Biography -Theme – Poetic devices – Annotations - Summary – Critical analysis; **Ulysses -Alfred Lord Tennyson** - Author Biography -Theme – Poetic devices – Annotations - Summary – Critical analysis; **The Road Not Taken** – **Robert Frost** - Author Biography -Theme – Poetic devices – Annotations - Summary – Critical analysis

UNIT-II – ONE ACT PLAYS **9**

The Boy Comes Home - A.A.Milne – Author Biography - Plot – Theme - Character sketch – Summary – Critical analysis; **The Referee - W.H.Andrews and Geoffrey Dearmer** - Author Biography - Plot – Theme - Character sketch – Summary – Critical analysis

UNIT -III SHORT STORIES **9**

The Unicorn in the Garden – **James Thurber** - Author Biography - Plot – Theme - Character sketch – Summary – Critical analysis; **The Avenger** – **Anton Chekov** - Author Biography - Plot – Theme - Character sketch – Summary – Critical analysis

UNIT IV PROSE **9**

Six Thinking Hats - Edward de Bono – Author Biography - Self analysis technique, Summary; **My Early Days - Abdul Kalam** - Author Biography - Plot – Theme - Character sketch – Summary – Critical analysis; **I Have a Dream (Speech) - Martin Luther King** - Author Biography - Plot – Theme - Character sketch – Summary – Critical analysis

UNIT V **9**

Introduction to Basics of Communication – Definitions – Types – Listening, Speaking, Reading & Writing

TEXT BOOKS:

1. Six Thinking Hats by Edward de Bono, Little Brown and Company, 1985
2. My Early Days by Abdul Kalam, October 7, 2013

REFERENCE BOOKS:

1. Strings of Gold (Part- II) Edited by Prof. Jasbir Jain (MacMillan), 2007
2. Basic Communication Skills for Technology by Rutherfoord (Dorlig Kindersly), 2007
3. English for Professionals A Practice Book of Communication Skills in English by Dr.Miglani (Vayu Education of India), 2010.

CourseCoordinator **HOD**

U18MCBC101	FINANCIAL ACCOUNTING – I	L	T	P	C
	Total Contact Hours – 60	3	1	0	4
	Prerequisite course –Commerce / Mathematics Studied in Higher Secondary studies				
	Course Coordinator Name & Department:- Ms. G.Vinothini–Commerce				

COURSE OBJECTIVES:-

- To familiarize the students with the basic fundamentals of accounting.
- To impart knowledge on final accounts of sole trading concern.
- To enable the students on the concept of income & expenditure and receipts and payments.
- To peep into the concept of depreciation accounting.

COURSE OUTCOMES (COs)

CO1	Identify the fundamentals of Basic Accounting Concepts and Conventions
CO2	Translate the concept of Accounting Equations ,Journal- Ledger- Trial Balance and rectification of errors
CO3	Practice theAverage Due Date, Account Current and Bank Reconciliation Statement
CO4	Calculate the Accounts of Non- Trading organization
CO5	Estimate the Methods of Depreciation
CO6	Design Single Entry System and Double Entry System

Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
2	CO1	3	3	2	1	3	3	3		
	CO2	2	3	1	3	2	2	3		
	CO3	3	3	3	2	3	3	2		
	CO4	3	3	2	2	1	2	2		
	CO5	3	1	3	1	2	1	3		
	CO6	2	2	3	3	3	3	3		

+	Category	Humanities & Social Studies (HS)	Basic Sciences (BS)	Engg Sciences (ES)	Professional Core (PC)	Core Elective (CE)	Non-Major Elective (NE)	Open Elective (OE)	Any other	Project/Term Paper/ Seminar/ Internship(PR)
					✓					
4	Approval	Academic Council Meeting								

UNIT – I **12**

Meaning and scope of Accounting, Basic Accounting Concepts and Conventions -Objectives of Accounting - Accounting Equations - Double Entry Book keeping – Journal- Ledger- Trial Balance- rectification of errors.

UNIT – II **12**

Preparation of Final Accounts of a Sole Trading Concern – Simple Adjustments- Average Due Date- Account Current- Bank Reconciliation Statement

UNIT III **12**

Accounts of Non-Trading Organization-Receipts and Payment Account- Income and Expenditure Account

UNIT – IV **12**

Depreciation - Meaning, Causes, Types - Straight Line Method - Written Down Value Method- Annuity Method

UNIT – V **12**

Single Entry - Meaning, Features, Defects, Differences between Single Entry and Double Entry System – Statement of Affairs Method.

TEXT BOOKS

1. R. L Gupta & V.K Gupta - Financial Accounting, S. Chand & Sons. 2016.
2. Mohamed Hanif and Amitabha Mukherjee – Financial Accounting 3rd edition, McGraw Hill. 2016
3. T.S. Reddy & Murthy - Financial Accounting, Margham Publications, Chennai. 2012

REFERENCE BOOKS

1. S.P Jain & K.L Narang- Financial Accounting, Kalayani Publications. 2014
2. R.S.N Pillai & Bagavathy- Financial Accounting, Margham Publicaions.2012

CourseCoordinator **HOD**

U18MCBC102	PRINCIPLES OF MANAGEMENT	L	T	P	C
	Total Contact Hours – 45	2	1	0	3
	Prerequisite course – Commerce / Mathematics Studied in Higher Secondary studies				
	Course Coordinator Name & Department:- Mr. S. Robin – Commerce				

COURSE OBJECTIVES:-

- To enable the students to understand the concept of management.
- To provide knowledge on the planning in the organization.
- To acquire the knowledge on organizing functions in the management.
- To peep into the concept of staffing functions in the organization.
- To impart the knowledge on the direction and controlling in the organizing.

COURSE OUTCOMES (COs)

CO1	Define the Functions of Management
CO2	Express the process of the Planning in the organization
CO3	Utilize theknowledge on organizing functions in the management
CO4	Conclude the performance appraisal
CO5	Solve the concept of staffing functions in the organization
CO6	Formulate the knowledge on the direction and controlling in the organizing

Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
2	CO1	3	3	2	1	3	3	3		
	CO2	1	3	1	3	3	1	2		
	CO3	2	2	2	2	3	3	2		
	CO4	3	3	2	3	1	2	1		
	CO5	3	1	3	1	2	1	3		
	CO6	3	2	3	3	3	3	1		

3	Category	Humanities & Social Studies (HS)	Basic Sciences (BS)	Engg Sciences (ES)	Professional Core (PC)	Core Elective (CE)	Non-Major Elective (NE)	Open Elective (OE)	Any other	Project/Term Paper/ Seminar/ Internship(PR)
					✓					

4	Approval	Academic Council Meeting

UNIT- I **9**

Management- Definition-nature –Functions of Management- Difference between administration and management – Henry fayol's principles of management.

UNIT- II **9**

Planning – Definition – Characteristics – Elements of a good planning – Planning Process – Benefits and Limitations of planning-Decision Making- Characteristics- Process

UNIT- III **9**

Organizing – Definition – Authority and Responsibility – Delegation – Centralisation and Decentralisation

UNIT- IV **9**

Staffing – Definition – Recruitment – Selection – Training – Performance appraisal-Co-ordination-Importance – Requisites for excellent coordination – Types of Coordination

UNIT- V **9**

Direction and Controlling – Characteristics of Direction – Importance of Direction – Characteristics of Control – Importance of Control – Control Process

TEXT BOOKS

1. Neeru Vasishth and Vibhuti Vasishth, Principles of Management, Taxmann Publications, 2019
2. L.M. Prasad - Principles of Management, Sultan & Sons 2015.
3. J. Jayasankar - Principles of Management, Margham Publications 2011.

REFERENCE BOOKS

1. Dinkar Pagare- Principles of Mannagement, Sultan & Sons. 2018
2. C. D Balaji – Principles of Management, Margham Publications. 2015

CourseCoordinator **HOD**

	BUSINESS ECONOMICS	L	T	P	C

U18NCBC103	Total Contact Hours – 45	2	1	0	3
	Prerequisite course – Commerce / Mathematics Studied in Higher Secondary studies				
	Course Coordinator Name & Department:- Ms. S.Robin - Commerce				

COURSE OBJECTIVES:-

- To learn the basic economic theories and concepts to business decisions.
- To gain knowledge on the demand analysis for the market.
- To understand the break even analysis and market competition of the firm.
- To provide knowledge on the economic fluctuations of the firm.
- To provide knowledge on national income and per capita income of the county.

COURSE OUTCOMES (COs)

CO1	List Out the basic economic theories and concepts to business decisions.
CO2	Discuss the Law of Demand
CO3	Utilize theLaw of Diminishing Marginal utility
CO4	Compare thecost-Economies of scale and Break Even Analysis
CO5	Revise the Monopolistic Competition and Oligopoly
CO6	Develop the national income and per capita income of the county

Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
2	CO1	3	3	2	1	3	3	3		
	CO2	1	3	1	3	3	1	2		
	CO3	2	2	2	2	3	3	2		
	CO4	3	3	2	3	1	2	1		
	CO5	3	1	3	1	2	1	3		
	CO6	3	2	3	3	3	3	1		

3	Category	Humanities & Social Studies (HS)	Basic Sciences (BS)	Engg Sciences (ES)	Professional Core (PC)	Core Elective (CE)	Non-Major Elective (NE)	Open Elective (OE)	Any other	Project/Term Paper/ Seminar/ Internship(PR)
						✓				
4	Approval	Academic Council Meeting								

UNIT- I **9**

Introduction– Definition – Scope and Importance of Economics – Basic concepts of wealth- Welfare and

scarcity views on economics

UNIT- II **9**

Meaning of demand – Law of Demand- Determinants and distinctions of Demand – Elasticity of Demand – Demand Forecasting- Meaning of Supply- Law of Supply- Determinants of supply

UNIT- III **9**

Law of Diminishing Marginal utility- Equi-Marginal utility- Indifference curve- Definition-Properties and Consumer Equilibrium

UNIT- IV **9**

Meaning of Production- Factors of production – Cost of production-Classification of cost-Economies of scale-Break Even Analysis

UNIT- V **9**

Market Competition- Monopoly-Monopolistic Competition -Oligopoly-Pricing Objectives and methods - National Income – National product and National Income – Per capita Income

TEXT BOOKS

1. P. N Reddy & M R Appanniah – Business Economics, Himalaya Publications. 2019
2. P. M. Salwan- Business Economics Taxmann Publications – 2018
3. S. Sankar – Business Economics, Margham Publications. 2012.

REFERENCE BOOKS

1. V. R. Palanivel & A. Kannan – Business Economis, Himalaya Publication 2017
2. R. K. Lekhi - Managerial Economics – Kalyani Publications 2013.

CourseCoordinator **HOD**

U18MCBC104	BUSINESS COMMUNICATION	L	T	P	C
	Total Contact Hours – 60	3	1	0	4
	Prerequisite course – Commerce / Mathematics Studied in Higher Secondary studies				
	Course Coordinator Name & Department:- Ms. S.Robin- Commerce				

COURSE OBJECTIVES:-

- To understand the concept, process and importance of communication.
- To develop skills of effective communication - both written and oral.
- To help students to acquaint the communication skills in the business.
- To peep students on preparing the business letters.
- To gain knowledge of media of communication.

COURSE OUTCOMES (COs)

CO1	Recognise the process and importance of communication.
CO2	Discuss the Dimensions of communication
CO3	Practice the communication skills in the business
CO4	Correlate the Report Writing.
CO5	Select the Essentials of a Good Business Letter
CO6	Prepare the Modern forms of communication

Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
2	CO1	2	3	2	1	3	3	3		
	CO2	2	3	2	3	3	3	1		
	CO3	3	2	3	1	3	2	2		
	CO4	2	2	3	2	1	2	3		
	CO5	1	3	1	3	2	1	3		
	CO6	3	1	3	3	3	3	1		

3	Category	Humanities & Social Studies (HS)	Basic Sciences (BS)	Engg Sciences (ES)	Professional Core (PC)	Core Elective (CE)	Non-Major Elective (NE)	Open Elective (OE)	Any other	Project/Term Paper/ Seminar/ Internship(PR)
					✓					
4	Approval	Academic Council Meeting								

UNIT - I **12**

Definition – Nature – Purpose – Importance – Types – Process of Communication – Principles for

effective Communication – Barriers to Communication.

UNIT - II **12**

Introduction – classification – verbal communication – written- oral – Non verbal communication – Body language - Directions – Dimensions of communication.

UNIT - III **12**

Meaning – Essentials of a Good Business Letter – Layout – Types – Enquiry – Order Complaint – Sales – Circular – Agency – Cover – Goodwill

UNIT- IV **12**

Bank Correspondence – Insurance Correspondence – Agency Correspondence – Report Writing – Mailing – Agenda – Minutes – Memorandum – Curriculum Vitae.

UNIT- V **12**

Modern forms of communication: Fax – E mail – video Conferencing – Internet – Websites and their use in business.

TEXT BOOKS

1. Mallika Nawal – business communication, Cengage Learning Publication- 2019
2. N.S Raghunathan & B. Santhanam – Business Communication, Margham Publications. 2018
3. Rajendra Pal, J. S. Korahilli – Essentials of Business Communication, Sultal & Sons.2013.

REFERENCE BOOKS

1. V. R Palanivel & N. Subburaj– Business communication, Himalaya Publication.2015.
2. R.C. Bhatia – Business Communication – Ane Books pvt ltd- edition 2010

CourseCoordinator **HOD**

U18HSHI201	HINDI-II	**L**	**T**	**P**	**C**

	Total Contact Hours – 45	3	0	0	3
	Prerequisite course – Grade 12				
	Course Coordinator Name & Department:- Mrs Rani Selvan / Hindi				

COURSE OBJECTIVES:-

To understand and improve the skills in the Language of Hindi

COURSE OUTCOMES (COs)

CO1	Remember of Ramayana In Sabari part
CO2	Understand the historical stories
CO3	Apply the concept of translation
CO4	Analyze and develop the letter writing skills
CO5	Evaluate and develop the speaking skills
CO6	Create knowledge in letter writing and speaking skills

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
2	CO1	3	3	2	1	1	1	3		
	CO2	3	3	1	2	2	2	3		
	CO3	3	2	3	2	2	1	3		
	CO4	3	3	2	1	1	2	3		
	CO5	2	3	2	1	1	1	3		
	CO6	3	3	3	2	3	1	3		

3	Category	Humanities & Social Studies (HS)	Basic Sciences (BS)	Engg Sciences (ES)	Professional Core (PC)	Core Elective (CE)	Non-Major Elective (NE)	Open Elective (OE)	Any other	Project/Term Paper/ Seminar/ Internship(PR)
		✓								
4	Approval	Academic Council Meeting								

UNIT I **09**

MODERN POETRY - SHABARI

UNIT II **09**

ONE ACT PLAY - EKANKI SANKALAM

UNIT III **09**

TRANSLATION - HINDI – ENGLISH ONLY

UNIT IV **09**

LETTER WRITING - Leave letter - Job Application - Ordering books - Letter to Publisher - Personal letter

UNIT V **09**

CONVERSATION - Doctor & Patient - Teacher & Student - Storekeeper & Buyer - Two Friends - Booking clerk & Passenger at Railway station – Auto rickshaw driver and passenger.

Text Books:

By Naresh Mehtha,Veerendra Kumar Mishra

Reference Books:

UNIT 1 – Publisheres - Lokbharathi Prakashan ,1 Floor, Duebari Building,Mahathma Gandhi Marg, Allahabad – 1.
UNIT II – Publishers – Vani Prakasam, New Delhi-110002
UNIT III – Publishers – Dakshin Bharath Hindi Prachar Sabha, Chennai- 17

CourseCoordinator **HOD**

	FRENCH-II	**L**	**T**	**P**	**C**

U18HSFR201	Total Contact Hours – 45	3	0	0	3
	Prerequisite course – Grade 12				
	Course Coordinator Name & Department: - Ms. Tushita Naidu K / Département De Française				

COURSE OBJECTIVES: -

To introduce students to the complexity of the grammar and how to overcome it with simple rules.

COURSE OUTCOMES (COs)

CO1	To being able to interpret the language.
CO2	To familiarize with methodological approaches in the study of literary and cultural texts, such as close reading, socio-historical contextualization, and literary and cultural theory.
CO3	To obtain advanced proficiency in spoken and written French.
CO4	To encourage the development of skills in linguistics, translation, and comparative studies.
CO5	To remember the anatomy of conjugations in past tense.
CO6	To evaluate the given text critically and enhance communication skills.

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
2	CO1	1	3	2	1	1	1	3		
	CO2	3	3	3	1	2	1	3		
	CO3	3	3	3	1	2	1	3		
	CO4	3	3	3	1	1	2	3		
	CO5	3	3	3	3	1	1	3		
	CO6	3	3	2	3	1	1	3		

3	Category	Humanities & Social Studies (HS)	Basic Sciences (BS)	Engg Sciences (ES)	Professional Core (PC)	Core Elective (CE)	Non-Major Elective (NE)	Open Elective (OE)	Any other	Project/Term Paper/ Seminar/ Internship(PR)
		✓								
4	Approval	Academic Council Meeting								

UNIT I -Quelle journee! **9**

La Conjugaison pronominale -L'imperatif -L'expression de la quantite (peu-in peu de- quelque – etc.)

UNIT II - Qu'on est bien ici ! **9**

Prepositions et adverbs de lieu - Verbs experimant un deplacement (employ des prepositions)
Le lodgement/la localisation/ l'orientation/l'etat physique/le temps qu'il fait

UNIT III -En se detend? **9**

L'imparfait-Emplois du passé compose et de l'imparfait-Expression de la duree-L'enchainement des idees (alors, donc, mais) /Le sens reciproque

UNIT IV- On s'appelle? **9**

Les pronoms complements direct -Les pronoms compliments indirects de personne -c'est/ il est-Imperatif des verbs avec pronoms-La fornation des mots

UNIT V Un bon conseil ! **9**

Expression du deroulement de l'action--passe recent--Present progressif-future proche-Les phrases rappotrees-La place de l'adjectif- La proposition relative finale avec -qui

TEXT BOOKS:

A1 ECHO- J. GIRARDET, J. PECHEURB CLE PUBLICATION.

CourseCoordinator **HOD**

U18HSEN202	**Subject Name : ENGLISH II**	**L**	**T**	**P**	**C**
	Total Contact Hours – 45	3	0	0	3
	Prerequisite course – + 2 level English				
	Course Coordinator: Mr.S.KUMARESAN& Department of English				

COURSE OBJECTIVES:- To know the themes of literary texts and understand the language skills and how to implement it in day to day life activity

COURSE OUTCOMES (COs)

CO1	Remember the authors of the prescribed literature
CO2	Understand the necessity of grammar in Communication
CO3	Apply the plots and themes discussed
CO4	Analyze the various characters involved
CO5	Evaluate the characters and summarizes the prescribed literature
CO6	Create essays by evaluating the literary techniques and devices used.
Category	HS

Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	COs/Pos	PO 1	2	3	4	5	6	7	PS O	PS O
2	CO1	2	3	2	3	2		3		
	CO2	3	3	3	3	3	3	3		
	CO3	2	2	2	2	3	3	3		
	CO4	2	2	2	2	3	3	3		
	CO5	2	2	2	2	2	2	2		
	CO6	3	3	3	2	2	2	3		

3	Category	Humanities & Social Studies (HS)	Basic Sciences (BS)	Engg Sciences (ES)	Professional Core (PC)	Core Elective (CE)	Non-Major Elective (NE)	Open Elective (OE)	Any other	Project/Term Paper/ Seminar/ Internship(PR)
		✓								
4	**Approval**	Academic Council Meeting								

UNIT 1: PROSE **9**

The Refugee – **K.A. Abbas** – Author Biography – Plot – Theme - Summary - Critical analysis; **The Lion and the Lamb** – **Leonard Clark** – Author Biography – Plot – Theme - Summary - Critical analysis.

UNIT 2: POETRY **9**

The Solitary Reaper – **William Wordsworth** – Author Biography -Theme – Poetic devices – Annotations - Summary – Critical analysis; **Gift** – **Alice Walker**- Author Biography -Theme – Poetic devices – Annotations - Summary – Critical analysis

UNIT 3: SHORT STORIES **9**

The Fortune -Teller – **Karel Capek** – Author Biography – Plot – Theme - Summary - Character analysis - Critical analysis; **The Postmaster** – **Rabindranath Tagore** – Author Biography – Plot – Theme - Summary - Character analysis - Critical analysis

UNIT 4: ONE-ACT PLAYS **9**

The Death Trap – **Saki (H.H. Munro)** – Author Biography – Plot – Theme - Summary - Character analysis - Critical analysis; **The Dear Departed**: **A Comedy in One-Act – Stanley Houghton**- Author Biography – Plot – Theme - Summary - Character analysis - Critical analysis

UNIT 5: GRAMMAR **9**

Communicative Grammar - Seeking and giving information – statements and questions
Being informal – phrasal verbs, Expressing ability, possibility, etc – Modals and other devices

TEXT BOOKS:

1. The Death Trap by Saki, The Novels and Plays of Saki, 2001
2. Pooja Khanna, “English Communication”, S.CHAND Publishing, 2016
3. Rabindranath Tagore, “The Postmaster”, Penguin India, 2000

REFERENCE BOOKS:

1. K.A.Abbas Suresh Kohli, “An Evening in Calcutta”, HarperCollins, 2015
2. Stanley Houghton, “Five one act plays”, Alpha Edition, 2019
3. Edited Prof. Jasbir Jain, “Strings of Gold (Part- II)”, MacMillan, 2016

U18MCBC201	FINANCIAL ACCOUNTING – II	L	T	P	C
	Total Contact Hours – 60	3	1	0	4
	Prerequisite course – Commerce / Mathematics Studied in Higher Secondary studies				
	Course Coordinator Name & Department:- Ms. G.Vinothini - Commerce				

COURSE OBJECTIVES:-

- To enable the students to gain knowledge on branch accounts.
- To train the students on departmental accounts.
- To gain the knowledge on hire purchase and installment system.
- To enrich the knowledge of students about the partnership admission.
- To learn about the partnership dissolution.

COURSE OUTCOMES (COs)

CO1	List Out the students to gain knowledge on branch accounts.
CO2	Report the Inter departmental transfer at cost or selling price
CO3	Illustrate the Hire purchase and installment.
CO4	Categorize the partnership admission, Retirement and death
CO5	Measure the Dissolution of a partnership
CO6	Prepare Insolvency of a partner(Garner vs. Murray) - Insolvency of all partners- Piece meal distribution

Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
2	CO1	3	3	3	1	2	3	2		
	CO2	2	2	3	3	3	2	1		
	CO3	2	1	2	2	2	3	3		
	CO4	3	3	2	1	2	2	3		
	CO5	2	3	3	1	2	3	2		
	CO6	3	1	3	3	3	2	1		

3	Category	Humanities & Social Studies (HS)	Basic Sciences (BS)	Engg Sciences (ES)	Professional Core (PC)	Core Elective (CE)	Non-Major Elective (NE)	Open Elective (OE)	Any other	Project/Term Paper/ Seminar/ Internship(PR)
					✓					
4	Approval	Academic Council Meeting								

UNIT – I **12**

Branch Accounts: - Dependent branches - Stock and debtors system - Distinction between wholesale profit and retail profit

UNIT – II **12**

Departmental Accounts: - Basis for allocation of expenses - Inter departmental transfer at cost or selling price-Treatment of expenses which cannot be allocated.

UNIT – III **12**

Hire purchase and installment - Default and repossession - Hire purchase trading account. Installment purchase system

UNIT – IV **12**

Partnership Accounts – I- Admission of a partner - Retirement of a partner - Death of a partner

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UNIT – V **12**

Partnership Accounts – II- Dissolution of a partnership - Insolvency of a partner (Garner vs. Murray) - Insolvency of all partners- Piece meal distribution (Simple Problems only)

TEXT BOOKS

1. R. L Gupta & V.K Gupta - Financial Accounting, S. Chand & Sons. 2016.
2. Mohamed Hanif and Amitabha Mukherjee – Financial Accounting 3rd edition, McGraw Hill. 2016.
3. T.S. Reddy & Murthy - Financial Accounting, Margham Publications, Chennai. 2012

REFERENCE BOOKS

1. S.P Jain & K.L Narang- Financial Accounting, Kalayani Publications. 2014
2. R.S.N Pillai & Bagavathy- Financial Accounting, Margham Publicaions.2012

CourseCoordinator **HOD**

U18MCBC202	**BANKING THEORY LAW AND PRACTICE**	**L**	**T**	**P**	**C**
	Total Contact Hours – 45	2	1	0	3
	Prerequisite course – Commerce / Mathematics Studied in Higher Secondary studies				

	Course Coordinator Name & Department:- Ms.R.Velanganni - Commerce

COURSE OBJECTIVES:-

- To understand some basic introduction and role of banks and central banks
- To understand about the Classification, functions , accepting deposits, lending of funds
- To understand about the Opening of an account in banks
- To analyse the Principles of lending and types of borrowing and negotiable instruments.

COURSE OUTCOMES (COs)

CO1	Recall the Role of banks and Economic development
CO2	Report the students to Commercial banks, E_ Banking and ATM cards and electronic fund transfer.
CO3	Demonstrate thecustomer relations and consumer grievances and redressal
CO4	Categorizethe precautions to be taken by a banker
CO5	Compare the Central Banking vs Commercial Banks
CO6	Design the Negotiable instruments

Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
2	CO1	2	3	2	1	3	3	3		
	CO2	3	3	3	3	2	2	1		
	CO3	3	1	3	2	3	3	2		
	CO4	1	3	2	2	1	2	2		
	CO5	3	2	3	1	2	1	3		
	CO6	2	2	3	3	3	3	3		

3	Category	Humanities & Social Studies (HS)	Basic Sciences (BS)	Engg Sciences (ES)	Professional Core (PC)	Core Elective (CE)	Non-Major Elective (NE)	Open Elective (OE)	Any other	Project/Term Paper/ Seminar/ Internship(PR)
					✓					
4	Approval	Academic Council Meeting								

UNIT I: **9**

Banking – Definition- Importance -Role of banks and Economic development- Central Banking- Definitions- Principles- Role of RBI and their functions

UNIT II: **9**

Commercial banks –Classification- functions – accepting deposits – lending of funds- Central Banking vs Commercial Banks- E_ Banking – ATM cards, debit cards, personal Identification Number – online enquiry and update facility – electronic fund transfer – electronic clearing system.

UNIT III: **9**

Opening of an account- types of deposit account – types of customers (individuals, firms, trusts and companies) – importance of customer relations- consumer grievances and redressal – Ombudsman

UNIT IV: **9**

Principles of lending – types of borrowings – precautions to be taken by a banker

UNIT V: **9**

Negotiable instruments – promissory note – bills of exchange, cheque, draft – definitions, features – crossing- endorsement – material alteration – paying banker – rights and duties –statutory protection – dishonour of cheques – role of collecting banker.

TEXT BOOKS

1. E. Gordon, K. Natarjan, Banking Theory Law & Practices, Himalalya Publishing Houses.2018.
2. B.Santhanam,Banking and Financial Systems , Margham Publishers, Chennai,2012
3. N. V Srinvasan, Banking Theory Law & Practices, Himalalya Publisher.2012.

REFERENCE BOOKS

1. Sundharam& P.N Varshney- Banking Theory Law & Practices Sultan & Sons. 2015
2 . K.C. Shekhar Lekshmy Shekhar- Banking Theory Law & Practices, Vikas Publication. 2013.

CourseCoordinator **HOD**

	BUSINESS STATISTICS	L	T	P	C

U18NCBC203	Total Contact Hours – 45	2	1	0	3
	Prerequisite course – Commerce / Mathematics Studied in Higher Secondary studies				
	Course Coordinator Name & Department:- Ms. S. Jayanthy - Commerce				

COURSE OBJECTIVES:-

- To provide theoretical appreciation and use of science of statistics to make better business decisions.
- To expertise with statistical tools and techniques for social science research
- To understand statistical tools for quantitative analysis
- To educate the students on quantitative analysis and to use statistical techniques for analysis of business data.
- To understand the statistical tools for research and business decision making.

COURSE OUTCOMES (COs)

CO1	Define the Diagrammatic and graphical representation of data.
CO2	Express the theoretical appreciation and use of science of statistics to make better business decisions
CO3	Generalize theenriched their knowledge on statistical tools for quantitative analysis
CO4	Correlate they got experience with statistical tools and techniques for social researchperformance appraisal
CO5	Estimate the educated on use of statistical techniques for analysis of business data
CO6	Formulate an Time Series Analysis

Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7		PSO2
2	CO1	3	1	2	3	3	3	3		
	CO2	1	3	1	3	2	2	2		
	CO3	2	2	2	2	3	3	2		
	CO4	3	3	2	1	1	2	1		
	CO5	3	1	3	2	2	1	3		
	CO6	3	3	3	3	3	3	1		

3	Category	Humanities & Social Studies (HS)	Basic Sciences (BS)	Engg Sciences (ES)	Professional Core (PC)	Core Elective (CE)	Non-Major Elective (NE)	Open Elective (OE)	Any other	Project/Term Paper/ Seminar/ Internship(PR)
						✓				
4	Approval	Academic Council Meeting								

UNIT – I **9**

Introduction - Classification and Tabulation of statistical data - Diagrammatic and graphical representation of data

UNIT – II **9**

Measures of Central tendency - Mean, median and mode - Dispersion, Range, QuartileDeviation, Mean Deviation, Standard Deviation - Measures of Skewness

UNIT – III **9**

Correlation - Karl Pearson's Coefficient of Correlation-Spearman's Rank Correlation-Regression Lines and Coefficients.

UNIT – IV **9**

Theoretical Distribution – Binomial, Normal and Poisson distribution

UNIT – V **9**

Time Series Analysis - Trend - Seasonal Variation- Index Numbers- Introduction- Construction of Index numbers- Laspeyres Method, Paasches method.

TEXT BOOKS

1. S. B. Gupta & M. P. Gupta, Business Statistics, Sultan &Sons. 2014.
2. J. K Sharma, Business Statistics, Vikas Publisher. 2014.
3. Beri - Business statistics, McGraw Hill Publisher- 2009

REFERENCE BOOKS

1.. Dr. S.M. Shukla, Dr.S.P. Sahai, Business Statistics, Sahitya Bhawan Publication. 2018

2.B.M Agarwal – Business Statistics, Himalaya Publisher. 2010.

CourseCoordinator **HOD**

U18MCBC204	BUSINESS LAW	L	T	P	C
	Total Contact Hours – 45	2	1	0	3
	Prerequisite course – Commerce / Mathematics Studied in Higher Secondary studies				
	Course Coordinator Name & Department:- Mr. G. Santhoshkumar- Commerce				

COURSE OBJECTIVES:-

- To expose the students' knowledge on agreements
- To sensitize students on the law of contract.
- To gain a comprehensive knowledge on all aspects of legal rules as to contracts and sale of goods.
- To impart knowledge on legal aspects relating to business. .

COURSE OUTCOMES (COs)

CO1	Recall the Formation and Essential Elements of Contract.
CO2	Respond the fundamental principles of business laws.
CO3	Operate theBreach of Contract and Remedies – Quasi Contracts
CO4	Calculate thecost-Economies of scale and Break Even Analysis
CO5	Measure the Duties And Rights of An Agent - Termination of An Agency
CO6	Collect an knowledge on all aspects of legal rules as to contracts and sale of goods Act

Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
2	CO1	1	3	2	2	3	3	2		
	CO2	3	3	3	3	3	1	3		
	CO3	3	2	3	3	2	3	2		
	CO4	2	3	1	3	1	2	3		
	CO5	2	1	3	1	3	1	3		
	CO6	1	3	3	3	3	3	1		

3	Category	Humanities & Social Studies (HS)	Basic Sciences (BS)	Engg Sciences (ES)	Professional Core (PC)	Core Elective (CE)	Non-Major Elective (NE)	Open Elective (OE)	Any other	Project/Term Paper/ Seminar/ Internship(PR)
					✓					

4	Approval	Academic Council Meeting

UNIT I: 9

Indian contract act - Formation and Essential Elements of Contract - Types of Contract and Agreements - offer and acceptance – considerations- Lawful Object and Free Consent

UNIT II: **9**

Capacity - flaw in consent, void agreements –Essential Elements –wagering agreements- illegal agreements

UNIT III: **9**

Performance – tender –Essentials of a Valid Tender- Types of Tenders Discharge of Contract – Breach of Contract and Remedies – Quasi Contracts

UNIT IV: **9**

Contract of Agency – Essentials fora Valid Agency- Types of Agency- Duties And Rights of An Agent - Termination of An Agency.

UNIT V: **9**

Sale of goods act –Sale and agreement to sell - formation - caveat emptor - Implied conditions and warranty - rights of unpaid seller- Buyer- Rights and duties of buyer.

TEXT BOOKS

1. S.S Gulshan, G. K. Kapoor – Business Law, New Age International Publisher. 2019.
2. Dr. B.K Jain, CA. Shashank.S. Sharma – Business Law, Central Law Publication. 2019
3. VK Jain and Shashank S. Sharma – Business laws , Taxmann publications, 2nd Edition, 2019

REFERENCE BOOKS

1. P. C Tulsian Bharat Tulsian- Business Law, Mc Graw Hill Education. 2018.
2. M. C Kuchhal Vivrk Kuchhal – Business Law, Vikas Publisher. 2017

CourseCoordinator **HOD**

U18HSCH201	ENVIRONMENTA STUDIES	L	T	P	C
	Total Contact Hours – 30	2	0	0	2
	Prerequisite course –Higher Secondary studies				
	Course Coordinator Name & Department:- – Mrs. S. Vinitha / Chemistry				

COURSE OBJECTIVES:-

To make the students learn about the science from the basic and understood all theoretical background with all concepts thoroughly to protect the habitat of biotic and abiotic ecosystem.

COURSE OUTCOMES (COs)

CO1	Gain the knowledge about the environmental impact and importance of natural Resources
CO2	Understand about the Ecosystem, Biodiversity and its conservation
CO3	Apply its properties and uses of Hydrocarbons and Alkynes
CO4	Analyze the impact of population and Urbanization to affect the system of habitat loss
CO5	Evaluate the Social issues by our conservation act
CO6	Create the organic environmental approach to protect our habitat for the next generation.

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
2	CO1	2	3	3	3	1	1	3		
	CO2	3	3	1	2	2	3	3		
	CO3	3	2	2	2	3	2	3		
	CO4	3	2	3	1	1	3	3		
	CO5	2	3	3	2	3	1	3		
	CO6	3	3	2	2	3	3	3		

3	Category	Humanities & Social Studies (HS)	Basic Sciences (BS)	Engg Sciences (ES)	Professional Core (PC)	Core Elective (CE)	Non-Major Elective (NE)	Open Elective (OE)	Any other	Project/Term Paper/ Seminar/ Internship(PR)
		✓								
4	Approval	47th Academic Council Meeting								

Unit – I: Introduction to Environmental Sciences: Natural Resources: 6

Environmental sciences – relevance – significance – public awareness – forest resources – water resources – mineral resources – food resources – conflicts over resource sharing – exploitation – land use pattern – environmental impact – fertilizer – pesticide Problems - case studies.

Unit – II: Exosystem, Biodiversity and its conservation: 6

Ecosystem – concept – structure and function – producers, consumers and decomposers –food chain – food web – ecological pyramids – energy flow – forest, grassland, desert and aquatic ecosystem – definition – genetic, species and ecosystem diversity – biodiversity – definition – genetic, species and ecosystem diversity – values and uses of biodiversity – biodiversity at global, national (india) and local levels – hotspots, threats to biodiversity –conservation of biodiversity – insitu and ex-situ.

Unit – III: Environmental Pollution and Management 6

Environmental pollution – causes – effects and control measures of air, water , marine, soil, solid waste. Thermal, nuclear pollution and disaster management – floods, earth quake, cyclone and land slides, role of individuals in prevention of pollution – pollution case studies.

Unit – IV: Social issues – Human population: 6

Urban issues – energy – water conservation – environmental ethics – global warming – resettlement and rehabilitation issues – environmental legislations – environmental production act. 1986 – air, water, wildlife and forest B.C.A.: syllabus (CBCS) conservation act - population growth and explosion – human rights and value education – environmental health – HIV/AIDS – role of it in environment and human health – women and child welfare – public awareness – case studies.

Unit – V: Field Work: 6

Visit to a local area / local polluted site / local simple ecosystem – report submission.

Text Book:

1. K. Kumarasamy, A. Alagappa Moses and M. Vesanthy, 2004, Environmental Studies, Bharathidasan University Pub, 1, Trichy.

Reference book:

1. Rajamannar, 2004, Environmental Studies, EVR College Pub, Trichy.
2. S. Kalavathy, (ED.) 2004, Environmental Studies, Bishop Heber College Pub., Trichy.

Course Coordinator **HOD**

U18HSBC202	VALUE EDUCATION	L	T	P	C
	Total Contact Hours – 30	2	0	0	2
	Prerequisite course – Higher Secondary level				
	Course Coordinator Name & Department:- Ms. G. Vinothini, Commerce				

COURSE OBJECTIVES:-

- To enable the students to understand the Social values.
- To provide knowledge on the features for life.
- To acquire the knowledge on Human rights.
- To impart the knowledge on Environment and Ecological balance.
- To educate the knowledge on Social evils.

COURSE OUTCOMES (COs)

CO1	List out the Formation and Essential Elements of Contract.
CO2	Determine the Self esteem, duties and responsibilities of individuals, Social values
CO3	Apply to create peace and non violence and Dr. APJ Abdul Kalam's ten points for Enlightened citizenship
CO4	Determine the Environment and Ecological balance
CO5	Measure the Knowledge on Environmental conservations and enrichment
CO6	Formulate the awareness on Corruption, crime, terrorism, Alcoholism, Drug addiction, Dowry

Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
2	CO1	3	3	3	1	2	3	2		
	CO2	3	2	3	2	1	3	3		
	CO3	3	1	2	2	3	3	1		
	CO4	2	3	3	3	3	1	3		
	CO5	3	2	3	2	2	1	3		
	CO6	2	2	3	3	3	3	1		

3	Category	Humanities & Social Studies (HS)	Basic Sciences (BS)	Engg Sciences (ES)	Professional Core (PC)	Core Elective (CE)	Non-Major Elective (NE)	Open Elective (OE)	Any other	Project/Term Paper/ Seminar/ Internship(PR)
		✓								
4	Approval	Academic Council Meeting								

UNIT I **6**

Value education: Definition- relevance to present day – concept of human values – self introspection – Self esteem- duties and responsibilities of individuals- Social values- role of media in value building.

UNIT II **6**

Salient features for life: Truth, commitment,, honesty and integrity, forgiveness and love, empathy and ability to sacrifice, care, unity and inclusiveness, Team work- positive creative thinking.

UNIT III **6**

Human rights: Universal declaration of Human rights- human rights violation – National integration – peace and non violence – Dr. APJ Abdul Kalam's ten points for enlightened citizenship

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UNIT IV **6**

Environment and Ecological balance: Interdependent of all being – living and non living – the binding of man and nature – Environmental conservations and enrichment.

UNIT V **6**

Social evils : Corruption – cyber crime, terrorism, Alcoholism, Drug addiction, Dowry – Domestic violence – untouchability – female infanticide – atrocities against women – How to tackle them.

TEXT BOOK

1. N. Arumugam, S. Mohana, Lr. Palkani- value based education- Saras Publication, 2009
2. DN Ghose, Value Education- dominant publishers, 2005
3. M.G. Chitakra, Education and Human values, A.P.H Publishing Corporation. New Delhi

REFERENCE BOOKS

1) For Life, for the future: Reserves and Remains – UNESCO Publications.
2) Values, A Vedanta kesari presentations, Sri Ramakrishna Math, Chennai

Course Coordinator **HOD**

U18NCBC301	PERSONALITY DEVELOPMENT	L	T	P	C
	Total Contact Hours – 45	2	1	0	3
	Prerequisite course – Commerce / Mathematics Studied in Higher Secondary studies				
	Course Coordinator Name & Department: Ms V.Saillaja– Commerce				

COURSE OBJECTIVES:-

- Provide the student about the types and determinants of personality.
- Introduce the students about the self analysis and self confidence.
- Provide knowledge about attitude and career development and goal setting.

COURSE OUTCOMES (COs)

CO1	Related tothe concept of personality and its types, determinants and theories.
CO2	Determine the self through SWOT analysis , Self Confidence, Self Esteem, SMART Goals - Blue print for success
CO3	Utilize the Value of time, Diagnosing Time Management and lessons from attitude and provide knowledge about etiquette
CO4	Apparise the career development through its planning, processes, programmes and models.
CO5	Choose the life time goal setting and its importance and impacts and to prioritisation of work.
CO6	Manage Time Management, Prioritizing work. Theories of personality

Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
2	CO1	3	2	3	3	2	1	3		
	CO2	3	2	2	3	3	2	2		
	CO3	2	3	2	3	2	2	3		
	CO4	2	3	3	2	2	1	2		
	CO5	2	3	1	2	1	1	3		
	CO6	2	2	3	3	3	3	3		

3	Category	Humanities & Social Studies (HS)	Basic Sciences (BS)	Engg Sciences (ES)	Professional Core (PC)	Core Elective (CE)	Non-Major Elective (NE)	Open Elective (OE)	Any other	Project/Term Paper/ Seminar/ Internship(PR)
						✓				
4	Approval	Academic Council Meeting								

UNIT I **9**

Introduction to Personality: Types of personality – Determinants of personality – Theories of personality.

UNIT II **9**

Self Analysis: SWOT Analysis, Who am I, Attributes, Importance of Self Confidence, Self Esteem - Creativity: - Out of box thinking- Lateral Thinking.

UNIT III **9**

Attitude: Factors influencing Attitude, Challenges and lessons from Attitude, Etiquette.

UNIT IV **9**

Career Development: Stages – Planning – process – programme – Model for planned self development.

UNIT V **9**

Goal Setting: Wish List - SMART Goals - Blue print for success- Short Term - Long Term - Life Time Goals. Time Management: Value of time, Diagnosing Time Management, Weekly Planner- To do list - Prioritizing work.

TEXT BOOKS

1. Shikha Kapoor- Personality Development ,Kindle Edition,I January 2020
2. Dhanashree – Personality Development, Nirali prakashan. 2016.
3. Barun K. Mitra – Personality Development, Margham Publications. 2015.

REFERENCES BOOKS

1. Rajesh Kumar – Personality Enrichment, Oxford University. 2014.
2. K.R. Dhanalakshmi – Personality Development & Group Discussion, Margham Publications. 2013.
3. Hurlock, E.B (2006). **Personality Development**, 28th Reprint. New Delhi: Tata

CourseCoordinator **HOD**

U18NCBC302	**EVENT MANAGEMENT**	**L**	**T**	**P**	**C**
	Total Contact Hours –45	2	1	0	3
	Prerequisite course – Commerce / Mathematics Studied in Higher Secondary studies				
	Course Coordinator Name & Department:- Ms. V.Saillaja - Commerce				

COURSE OBJECTIVES:-

- To provide the student about principles and activities of event management and roles of event manager.
- To Impart the knowledge about preparation of proposal and implementation and to understand crisis management.
- To provide idea about sponsorship and strategic development.
- To provide knowledge on variety of preparation for an event.
- To understand the student about the publicity methods of event and getting feedback

COURSE OUTCOMES (COs)

CO1	Underline the Principles of Event Management and activities of event management and roles of event manager.
CO2	Report the strategic development, Media invitations, - return on investment - media coverage
CO3	Use the equipment - guest honor, Conducting market research
CO4	Develop the knowledge on variety of preparation for an event.
CO5	Revise the impart the methods about the publicity of event and getting feedback
CO6	Formulate an website, newsletter, e zone blog

Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
2	CO1	2	3	1	2	2	3	3		
	CO2	3	2	1	2	3	2	1		
	CO3	3	2	1	3	2	2	3		
	CO4	2	3	2	1	2	3	2		
	CO5	1	3	1	3	1	2	3		
	CO6	2	3	2	3	3	3	2		

3	Category	Humanities & Social Studies (HS)	Basic Sciences (BS)	Engg Sciences (ES)	Professional Core (PC)	Core Elective (CE)	Non-Major Elective (NE)	Open Elective (OE)	Any other	Project/Term Paper/ Seminar/ Internship(PR)
						✓				
4	Approval	Academic Council Meeting								

UNIT I **9**

Principles of Event Management: From concept to reality Understanding project management - resources - activities - risk management - delegation - project selection - role of the Event Manager.

UNIT II **9**

Preparing a proposal -Conducting market research - establishing viability - capacities - costs and facilities - plans - timescales - contracts.

Crisis Management: Crisis planning - prevention - preparation - provision - action phase - handling negative publicity - structuring the plan.

UNIT III **9**

Seeking sponsors: Different types of sponsorship - definition - objectives - target market - budget - strategic development - implementation - evaluation.

UNIT IV **9**

Organizing the event Purpose - venue - timing - guest list - invitations - food & drink - room dressing - equipment - guest honor - speakers - media - photographers - podium - of exhibition. Lecture

UNIT V **9**

Media tools - Media invitations - photo-calls - press releases - TV opportunities - radio interviews. Promotional tools- Flyers - posters - invitations - website - newsletters – e-zone - blogs - tweets. Evaluation Budget - cost of event - return on investment - media coverage - attendance – feedback

TEXT BOOKS

1. Anukrati, Sharma, Shruti Arora – Event Management & Marketing, Bharathi Publication.2018.
2. Nick Morpus – Event Management April 11 2017
3. Anton shone & Bryn parry, - Event Management. Pearson. 2010.

REFERENCES

1.Judy Allen - Event Planning ,Himalayas Publishers -2013

2.Dr. Deepak Swaminathan – Experimental Events, Himalaya Publisher. 2012

3. Dessler – Human Resource in Event Management, Pearson. 2010.

CourseCoordinator **HOD**

U18MCBC303	CORPORATE ACCOUNTING – I	L	T	P	C
	Total Contact Hours – 60	3	1	0	4
	Prerequisite course – Commerce / Mathematics Studied in Higher Secondary studies				
	Course Coordinator Name & Department:- Ms G.Anandhi -Commerce				

COURSE OBJECTIVES:-

- To gain comprehensive understanding of all aspects relating to corporate accounting.
- To lay down a theoretical foundation for the preparation of financial statements.
- To gain accounting knowledge in banking and insurance companies.
- To gain knowledge about managerial remuneration accounting.
- To understand about issues and redemption of shares and debentures

COURSE OUTCOMES (COs)

CO1	Record the basic concept of issue of shares, types, forfeiture of shares
CO2	Determine the Issue,Redemption of Preference share,
CO3	Practice the Issue of debenture ,Reissue of shares
CO4	Estimate the final accounts of banking companies
CO5	Appraise the statement of Insurance companies
CO6	Arrange the balance sheet of banking companies, profit prior incorporation

Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
2	CO1	2	3	3	3	1	3	3		
	CO2	3	1	3	1	2	3	1		
	CO3	3	2	3	1	2	3	2		
	CO4	2	3	3	1	2	1	2		
	CO5	1	3	1	1	3	2	1		
	CO6	2	3	1	2	1	2	3		

3	Category	Humanities & Social Studies (HS)	Basic Sciences (BS)	Engg Sciences (ES)	Professional Core (PC)	Core Elective (CE)	Non-Major Elective (NE)	Open Elective (OE)	Any other	Project/Term Paper/ Seminar/ Internship(PR)
					✓					
4	Approval	Academic Council Meeting								

UNIT –I **12**

Shares – Types of shares - Difference between Equity shares & Preference shares - Issue of Equity shares - par, premium and discount – Forfeiture and Re- issue **UNIT –II**

12

Issue of Preference shares- Types of Preference shares- – Redemption of Preference Shares. Various methods of Redemption. - Rights of Redemption of preference shares**.**

UNIT – III

12

Issue of Debentures and Types of Debentures -Redemption of Debentures – Profits prior to incorporation.

UNIT –IV **12**

Final Accounts of Banking Companies (New format)

UNIT-V **12**

Final accounts of Insurance Companies (New format)

NOTE: Theory 40%, Problems 60%

TEXT BOOKS

1. C.A. Dr. P.C Tulsian, CA. Bahart tulsian – Advanced Corporate Accounting, Sultan & Sons. 2015
2. S.N Maheswari, Sunil K Maheswari – Corporate Accounting , Sultan & Sons.2013
3. Rajasekaran &Lalitha Pearson Education India,2010

REFERENCE BOOKS

1. S.N.Maheswari-Corporate Accounting, Vikas Publishing-2018
2. R. Radhika- Corporate Accounting, MC Graw Hill Education. 2015
3. T.S. Reddy and A. Murthy - Corporate Accounting, Margham Publications.2013.

CourseCoordinator **HOD**

U18MCBC304	COMPANY LAW	L	T	P	C
	Total Contact Hours –45	2	1	0	3
	Prerequisite course – Commerce / Mathematics Studied in Higher Secondary studies				
	Course Coordinator Name & Department:-Ms.G.Santhosh Kumar-Commerce				

COURSE OBJECTIVES:-

- To provide an overview of legal environment of joint stock companies.
- To expose the students knowledge on incorporation and commencement of companies.
- To enable the students to gain deep knowledge on prospectus of the company.
- To provide knowledge on understanding about appointment, duties and responsibilities of managerial personnel.
- To offer exposure about winding up of a company.

COURSE OUTCOMES (COs)

CO1	Relate the Introduction – Meaning and Definition of a Company,
CO2	Describe the Formation of a company, Rights of the Members – Liabilities of the Members – Termination of Membership
CO3	Initiate the Women's directors -Meetings-Resolutions, Winding up of Company
CO4	Examine the liquidator powers, duties and liabilities
CO5	Estimate the Memorandum of Association and its contents-Articles of Association
CO6	Manage an Consequences of Misstatements in a prospectus, Certificate of incorporation and commencement of business

Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
2	CO1	1	3	2	2	2	3	3		
	CO2	3	3	2	2	3	1	1		
	CO3	2	1	2	3	2	3	2		
	CO4	1	3	2	1	3	2	1		
	CO5	2	1	3	2	3	1	2		
	CO6	3	1	2	1	2	1	3		

3	Category	Humanities & SocialStudies (HS)	Basic Sciences (BS)	Engg Sciences (ES)	Professional Core (PC)	Core Elective (CE)	Non-Major Elective (NE)	Open Elective (OE)	Any other	Project/Term Paper/ Seminar/ Internship(PR)
					✓					
4	Approval	Academic Council Meeting								

UNIT:I **9**

Introduction – Meaning and Definition of a Company – Characteristics of a Company – Advantages – Limitations – Types of Companies – Distinction between a Private Ltd. Company and a Public Ltd. Company

UNIT:II **9**

Formation of a company-Promotion-Memorandum of Association and its contents-Articles of Association and its contents-Certificate of incorporation and commencement of business

UNIT:III 9

Prospectus-its contents-Statement in lieu of prospectus- variation in terms of contract or objects in prospectus - Consequences of Misstatements in a prospectus-Kinds of share and Debentures

UNIT: IV 9

Members of a Company – Meaning and Definition – Who can become a Member? – Rights of the Members – Liabilities of the Members – Termination of Membership -Company management-Appointment, rights and duties of Managerial Personnel – Women's directors -Meetings-Resolutions

UNIT:V 9

Winding up of Company - Types of Winding up- Consequences of Winding up - liquidator powers, duties and liabilities

TEXT BOOKS

1. N.D. Kapoor, Company Law, Sultan chand & Sons. 2016
2. P.P.S.Gogna, Company Law-S.Chand Publishing-2016
3. P. Saravanavel Elements of Company Law

REFERENCE BOOKS:

1. M.L Shukal – Principles of Company Law, S. Chand. 2017.
2. N.M.Wechlekar – Mercantile Law-N.D.Kapoor,2017
3. M. Sreenivasan – Company Law & Secretion Practices. Sultan Chand Sons. 2015

CourseCoordinator **HOD**

U18MCBC305	BUSINESS MATHEMATICS	L	T	P	C
	Total Contact Hours – 45	2	1	0	3
	Prerequisite course – Commerce / Mathematics Studied in Higher Secondary studies				
	Course Coordinator Name & Department:- Ms.S.Jayanthi-Commerce				

COURSE OBJECTIVES:-

- To provide basic knowledge of mathematics and its application.
- To introduce mathematics so that they can be used in the field of commerce and industry.
- To acquaint the students with wide raging applications of mathematical techniques to commerce economics and practical situation.
- To train the students to calculate payroll wages and commissions.
- To enrich the students knowledge regarding interest and annuity.

COURSE OUTCOMES (COs)

CO1	Name of the Introduction set theory, Algebra , Interest and Annuity
CO2	Determine the Proportion and Variations, Exponential and Logarithmic Series
CO3	Operate the Integral calculus, Solutions to Linear Equations
CO4	Solve the Binominal Theorem, Payroll, Wages and Commission
CO5	Assess the Interest and Annuity - Banker's Discount, Arithmetic, Geometric Progressions
CO6	Prepare an Maxima and Minima of Univariate Functions,

Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
2	CO1	2	1	3	1	3	2	3		
	CO2	1	2	3	1	1	3	1		
	CO3	1	2	3	2	2	3	2		
	CO4	2	2	3	2	1	2	3		
	CO5	1	2	2	3	1	2	1		
	CO6	1	3	2	1	3	1	2		

3	Category	Humanities & SocialStudies (HS)	Basic Sciences (BS)	Engg Sciences (ES)	Professional Core (PC)	Core Elective (CE)	Non-Major Elective (NE)	Open Elective (OE)	Any other	Project/Term Paper/ Seminar/ Internship(PR)
					✓					
4	Approval	Academic Council Meeting								

UNIT – I **9**

Theory of Sets - Set Theory - Definition, Elements and Types of Sets, Operations on Sets, Relations and Functions of Sets

UNIT – II **9**

Algebra - Ration, Proportion and Variations

UNIT – III **9**

Permutation and Combination, Binominal Theorem, Exponential and Logarithmic Series - Arithmetic, Geometric Progressions

UNIT- IV **9**

Differential Calculus - Differentiation - Meaning-, Rules; Maxima and Minima of Univariate Functions; Application of Maxima and Minima in business - Integral calculus-fundamental rules of integration, integration by substitution

UNIT-V **9**

Interest and Annuity - Banker's Discount - Binary Number System - Matrices - Meaning and Operations- Matrix inversion - Solutions to Linear Equations - Payroll, Wages and Commission

Note: Theory - 40% and Problems - 60%

TEXT BOOKS

1. P. R. Vittal, Business Mathematics, Margham Publications. 2018.
2. .Dr Padmalochan Hazarika -Business Mathematics, S. Chand Publishing- 2016

3.Mr. M. Wilson – Business Mathematics, Himalaya Publisher. 2015.

REFERENCE BOOKS

1. Kailash Thakur – Business Mathematics Logical Reasoning & Statistics. S. Chand. 2018.
2. V. K. Kapoor. Business Mathematics, Publishing House Pvt. Ltd. 2016.
3. **Gary Clendenen, Stanley A. Salzman** -*Business Mathematics(13th Edition),10 February 2014*

CourseCoordinator **HOD**

U18MCBC306	HUMAN RESOURCES MANAGEMENT	L	T	P	C
	Total Contact Hours – 60	3	1	0	4
	Prerequisite course – Commerce / Mathematics Studied in Higher Secondary studies				
	Course Coordinator Name & Department:- Ms.R.Velanganni- Commerce				

COURSE OBJECTIVES:-

- To provide the students to understand the functions, process and task of human resource management.
- To gain knowledge in the present day human resources development practice.
- It intends to make the students understand the linkage between human resource strategies and corporate strategies.
- To give exposure to students to understand the basic concept for organizational effectiveness through the technique of applying human resource management.
- It intends to make students understand the applicability of the principles and techniques in an organization.

COURSE OUTCOMES (COs)

CO1	Define the Human Resource Management, Functions, job analysis, principles of training
CO2	Identify the Changing roles of a HR Manager, Training & Development – principles of training
CO3	Practice the Performance Appraisal – process – methods, managing grievances and discipline**12**
CO4	Develop the Knowledge Management- introduction, meaning, objectives, – job specification.
CO5	Estimate the sources – internal and external recruitment
CO6	Formulate an tools and technologies – knowledge management matrix.

Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
2	CO1	2	1	2	3	2	3	2		
	CO2	1	2	3	1	2	3	1		
	CO3	1	3	2	1	3	2	3		
	CO4	1	3	2	2	3	3	1		
	CO5	3	1	2	1	2	2	2		
	CO6	1	2	3	1	2	2	1		

3	Category	Humanities & SocialStudies (HS)	Basic Sciences (BS)	Engg Sciences (ES)	Professional Core (PC)	Core Elective (CE)	Non-Major Elective (NE)	Open Elective (OE)	Any other	Project/Term Paper/ Seminar/ Internship(PR)
					✓					
4	Approval	Academic Council Meeting								

UNIT-I 12

Human Resource Management - Definition – Objectives – Functions - evolution and growth of HRM– qualities of a good HR manager – Changing roles of a HR Manager - problems and challenges of a HR manager – Differences between Personnel Management and HRM.

UNIT-II **12**

Planning the Human Resources: Definitions of human resource planning – objectives – steps in human resources planning – job analysis – job description – job specification.

UNIT-III **12**

Recruitment & Selection: Recruitment and selection – objectives of recruitment – sources – internal and external recruitment – application blank – testing – interviews.

Training & Development – principles of training – assessment of training needs – on the job training methods - off the job training methods – evaluation of effectiveness of training programmes.

UNIT IV **12**

Performance Appraisal – process – methods of performance appraisal – appraisal counselling – Motivation process – theories of motivation – managing grievances and discipline.

UNIT V **12**

Knowledge Management- introduction, meaning, objectives – distinguish between management information system(MIS) and knowledge management (KM) – tools and technologies – knowledge management matrix.

TEXT BOOKS

1. L.M. Prasad – Human Resource Management – S. Chand & Sons – 2013.
2. C.B. Mamoria, S.V. Gankar – Personnel Management – Himalaya Pub. – 2012.
3. Edward E.Lawler Iii; John W.Boudreau-Achieving Excellence in Human Resources Management-Standard Business Books,2009

REFERENCE BOOKS

4. Gary Dessler – Human Resource Management – Prentice Hall – 8th Edition – 2010.
5. S.S. Khanka – Human Resource Management – S. Chand Ltd. – 2010.
6. A. M. Sharma "Personnel & HRM", Himalaya Publishing House 2005

CourseCoordinator **HOD**

U18MCBC401	TALLY FOR ACCOUNTING	L	T	P	C
	Total Contact Hours – 45	2	0	1	3
	Prerequisite course – Commerce / Mathematics Studied in Higher Secondary studies				
	Course Coordinator Name & Department:-Ms.S.Binapani -Commerce				

COURSE OBJECTIVES:-

- To impart knowledge about introduction to tally, predefined groups in tally, application of tally, budget and taxes.

COURSE OUTCOMES (COs)

CO1	Recall the fundamentals of Basic Accounting Concepts
CO2	Describe the process of accounting and to get basic knowledge about tally.
CO3	Operate the theoretical idea about the primary and subgroups in tally.
CO4	Examine the practical skills to prepare accounting statements.
CO5	Evaluate the practical calculations for income tax and GST.
CO6	Design the Budget and Budgetary Control systems.

Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
2	CO1	3	2	2	3	3	1	3		
	CO2	2	3	1	3	2	2	3		
	CO3	2	3	3	3	3	3	2		
	CO4	3	3	2	2	1	2	2		
	CO5	3	1	3	1	2	1	3		
	CO6	2	2	2	3	3	3	3		

3	Category	Humanities & Social Studies (HS)	Basic Sciences (BS)	Engg Sciences (ES)	Professional Core (PC)	Core Elective (CE)	Non-Major Elective (NE)	Open Elective (OE)	Any other	Project/Term Paper/ Seminar/ Internship(PR)
					✓					
4	Approval	Academic Council Meeting								

UNIT I **9**

Process of Accounting - Introduction to tally: Tally origin-Accounting features-starting tally- start up screen component- processing icon- multilingual features of tally- quit tally.

UNIT II **9**

Predefined Groups in Tally - Primary Group – Sub Group- Creation of User Defined Group- Creations of Ledger- Alterations-Deletions.

UNIT III **9**

Application of Tally Preparation of Trial balance - Profit and Loss Account - Balance Sheet - Cash Book - Passbook- BRS Statement

Simple Interest- Compound Interest Calculations- Interest Report - Voucher Classes – Ledger for Interest Entry – Bill wise Interest Calculations.

UNIT IV **9**

Budget – Budgetary Control – Meaning- Creation of Budgets – Group Budget – Budget Ledgers- Alteration of Budget – Deletion of Budgets.

UNIT V **9**

Tax Calculations - Income Tax- GST

TEXT BOOKS

1. R. L Gupta & V.K Gupta - Financial Accounting, S. Chand & Sons. 2016.
2. E-Accounting using Tally ERP – Harsimran Kaaur & Aeimanpreet Singh S.S Bhatia. 2015
3. T.S. Reddy & Murthy - Financial Accounting, Margham Publications, Chennai. 2012

REFERENCE

1. Financial Accounting, T.S. Reddy and Moorthy, Margham Publications-2015,
2. Mastering in Tally ERP 9-2 nd Edition Book – Asok K. Nadhani
3. Tally Software – Manual.

CourseCoordinator **HOD**

	SOFT SKILLS FOR EMPLOYABILITY	L	T	P	C
U18NCBC402	Total Contact Hours – 45	2	1	0	3
	Prerequisite course – Commerce / Mathematics Studied in Higher Secondary studies				
	Course Coordinator Name & Department:- Ms.Dr.J.AnuDevi-Commerce				

OBJECTIVES

To impart knowledge about communication skills, interview skills, problem solving skills, critical thinking skills and how to manage the stress.

COURSE OUTCOMES (COs)

CO1	Recognized the Relationships of Management
CO2	Explain the process of Communication Skills
CO3	Practice the Strategies required for critical thinking
CO4	Categorize the Problem and Problem solving
CO5	Test the Positive and negative type of stress
CO6	Arrange the Effective Team Building Techniques.

Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
2	CO1	3	3	3	2	1	3	3		
	CO2	1	3	2	1	3	1	3		
	CO3	2	3	1	3	3	3	2		
	CO4	3	3	2	3	1	2	1		
	CO5	3	1	3	1	2	1	3		
	CO6	3	2	3	3	3	3	1		

3	Category	Humanities & Social Studies (HS)	Basic Sciences (BS)	Engg Sciences (ES)	Professional Core (PC)	Core Elective (CE)	Non-Major Elective (NE)	Open Elective (OE)	Any other	Project/Term Paper/ Seminar/ Internship(PR)
						✓				
4	Approval	Academic Council Meeting								

UNIT I **9**

Body language and Etiquette - Group Discussion Skills - Presentation Skills - Emotional Intelligence, Time Management Skills

UNIT II **9**

Interview Skills - HR interview - Preparation of CV and Life skills - Team Building – Effective Team Building Techniques

UNIT III **9**

Meaning of Problem and Problem solving – Steps in problem solving- Five W's (Why) and (How)

UNIT IV **9**

Concept of critical thinking – Characteristics and steps involved in critical thinking – Strategies required for critical thinking –Models of critical thinking

UNIT V **9**

Meaning of Stress – Factors causing stress – Positive and negative type of stress – Effects of stress on body and mind – Stress removal techniques

TEXT BOOKS

1. **1.** Sangeeta Sharman Gajendra Singh Chauhan, Soft Skill: An Integrated Approach to Maximise Personality, Wiley. 2015.
2. **2.** Dr. K Alex, Soft Skill: Know Yourself And Know Your World, S.Chand 2014.
3. **3.** Soft skills Training: A Workbook to develop Skills for Employment –Frederick H. Wentz. 2012.

REFERENCES BOOKS

1. Barun Mitra, Personality development and Soft Skills, Oxford University.2016.
2. Gopalaswamy Ramesh, Mahadevan Ramesh, The ace of Soft Skills: Attitude, Communication and Etiquette for Success, Pearson Education. 2013.
3. Teamwork is an Individual Skill – Christopher M. Avery, Meri Aaron Walker, Erin O'Toole -2001

CourseCoordinator **HOD**

U18MCBC403	CORPORATE ACCOUNTING – II	L	T	P	C
	Total Contact Hours – 60	3	1	0	4
	Prerequisite course – Commerce / Mathematics Studied in Higher Secondary studies				
	Course Coordinator Name & Department:- Ms. G.Anandhi -Commerce				

COURSE OBJECTIVES:-

- To enable the students to understand the theoretical framework of accounting treatments on various corporate firms in the modern day context. To enable the students to develop awareness about Corporate Accounting procedures in conformity with the Provision of Companies‟ Act and latest amendments thereto with adoption of Accounting Standards.
- To help the students to acquire the conceptual knowledge of the amalgamation of companies and to understand the various techniques of preparing the final statements of holding and subsidiary companies.
- To peep into the concept of Human Resource Accounting and financial reporting practices.
- To impart the training knowledge of students in the practical aspects of Statement of affairs and deficiency accounts.

COURSE OUTCOMES (COs)

CO1	List Out the Valuation of goodwill and shares.
CO2	Determine the Absorption and external reconstruction of a company.
CO3	Use the accounting standards and social responsibilities of accounting
CO4	Calculate the Statement of affairs and deficiency accounts.
CO5	Estimate the Human Resource Accounting.
CO6	Prepare the Liquidator's final statement of receipts and payments.

Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
2	CO1	3	2	3	3	1	3	3		
	CO2	1	3	2	3	2	1	3		
	CO3	2	2	3	1	3	3	2		
	CO4	3	3	2	3	1	2	1		
	CO5	3	1	3	1	2	1	3		
	CO6	3	3	3	2	3	3	1		

3	Category	Humanities & Social Studies (HS)	Basic Sciences (BS)	Engg Sciences (ES)	Professional Core (PC)	Core Elective (CE)	Non-Major Elective (NE)	Open Elective (OE)	Any other	Project/Term Paper/ Seminar/ Internship(PR)
					✓					
4	Approval	Academic Council Meeting								

UNIT – I **12**

Valuation of goodwill and shares

UNIT – II **12**

Amalgamation – Absorption and external reconstruction of a company - (Inter Company investments excluded)

UNIT – III **12**

Holding companies- Consolidated final statement of Holding companies and subsidiary companies – intercompany holdings and owing.

UNIT – IV` **12**

Human Resource Accounting – Objectives of Accounting standards & significance of accounting standards - social responsibility accounting – Meaning & objective: approaches & methods to social responsibility accounting & reporting.

UNIT – V **12**

Liquidation - Statement of affairs and deficiency accounts - Liquidator's final statement of receipts and payments.

Note: Theory 40%, Problems 60%

TEXT BOOK

1. C.A. Dr. P.C Tulsian, CA. Bahart tulsian – Advanced Corporate Accounting, Sultan & Sons. 2015
2. S.N Maheswari, Sunil K Maheswari – Corporate Accounting , Sultan & Sons.2013
3. B.S. Raman – Financial Accounting, Kindle Edition.

REFERENCE BOOKS

1. R. Radhika- Corporate Accounting, MC Graw Hill Education. 2015
2. T.S. Reddy and A. Murthy - Corporate Accounting, Margham Publications.2013.
3. Lakshmi- Financial Accounts, Kindle Edition.

CourseCoordinator **HOD**

U18MCBC404	FINANCIAL MANAGEMENT	L	T	P	C
	Total Contact Hours – 45	2	1	0	3
	Prerequisite course – Commerce / Mathematics Studied in Higher Secondary studies				
	Course Coordinator Name & Department:-Ms.R.Priya-Commerce				

COURSE OBJECTIVES:-

- To impart the fundamental knowledge of accounting and introduce the accounting procedure applicable to various forms of organizations.To explain how finance constitutes the core of any company and emphasize on management of funds such as raising funds, allocating them and the risk involved it.
- To give him a deep insight into financial decision making and composition of different securities in the total capital structure and to familiarize the students with various factors considered while managing the Finance of a Company. To Impart a profound knowledge on dividend theory and cost of capital.
- To familiarize the students with the principles and practices of working capital and its forecasting requirements.
-

COURSE OUTCOMES (COs)

CO1	Define the Functions of financial management.
CO2	Discuss the Capital structures planning.
CO3	Schedule the Cost of capital and Cost of retained earnings
CO4	Determine the Hypothesis .
CO5	Select the components of working capital.
CO6	Assemble the working capital requirements.

Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
2	CO1	3	3	2	1	3	3	3		
	CO2	3	3	2	3	2	3	1		
	CO3	3	2	3	1	3	3	2		
	CO4	2	2	1	2	1	2	3		
	CO5	1	3	2	3	2	1	3		
	CO6	3	1	3	3	2	3	2		

3	Category	Humanities & SocialStudies (HS)	Basic Sciences (BS)	Engg Sciences (ES)	Professional Core (PC)	Core Elective (CE)	Non-Major Elective (NE)	Open Elective (OE)	Any other	Project/Term Paper/ Seminar/ Internship(PR)
					✓					

4	Approval	Academic Council Meeting

UNIT I **9**

Meaning, objectives and Importance of Finance – Sources of finance – Functions of financial management – Role of financial manager in Financial Management.

UNIT II **9**

Capital structures planning - Factors affecting capital structures – Determining Debt and equity proportion – Theories of capital structures – Leverage – Meaning – Types of Leverages – Financial – Operating – Combined leverage.

UNIT III **9**

Cost of capital – Cost of equity – Cost of debt – Cost of retained earnings – weighted Average (or) composite cost of capital (WACC)

UNIT IV **9**

Dividend policies – Meaning – Types of Dividends – Objectives of Dividend Policy -Factors affecting dividend policy - Company Law provision on dividend payment – dividend theories - Walter's Gordon's – M.M. Hypothesis

UNIT V **9**

Working capital – estimation of components of working capital – working capital operating cycle – Factors influencing working capital – Forecasting of working capital requirements.

NOTE: Theory 40%, Problems 60%

TEXT BOOKS

1. P. C Tulsian, Bharat Tulsian - Financial Management, S. Chand Publishing. 2017
2. T.S. Reddy , Dr. A. Murthy - Financial Management, Margham Publications. 2012.
3. C,Paramasivam,T.Subramaniyam-Financial Management,New International Publisher,

REFERENCE BOOKS

1. R.P.Rustagi – Financial Management, Taxmann Publication,2015
2. I.M.Pandey – Financial Management, Vikas Publishing , 2014
3. S.N.Mageshwari – Financial Management, Sultan Chand & Sons, 2012

CourseCoordinator **HOD**

U18MCBC405	PRACTICAL AUDITING	L	T	P	C
	Total Contact Hours – 45	2	1	0	3
	Prerequisite course – Commerce / Mathematics Studied in Higher Secondary studies				
	Course Coordinator Name & Department:- Ms.R.Catherine-Commerce				

COURSE OBJECTIVES:-

- To develop conceptual understanding of the fundamentals of Auditing.
- To Enlight the students on the various aspects of audit planning and programs.
- To impart knowledge pertaining to basic concepts of vouching.
- To peep into the concept of Verification and Valuation of assets and liabilities
- To impart a thorough knowledge with auditing procedure & Auditors.

COURSE OUTCOMES (COs)

CO1	Identify the Nature and Scope of Auditing.
CO2	Explain the Audit Programs.
CO3	Use the Vouching of Cash Receipts and Vouching of Cash Payments
CO4	Identify the Audit of Limited Companies and Necessity of Company Audit
CO5	Estimate the Duties and Liability of Auditors and Auditor's Report.
CO6	Organize the EDP Audit

Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
2	CO1	3	3	2	1	3	3	3		
	CO2	3	3	2	3	2	3	1		
	CO3	3	2	3	1	3	3	2		
	CO4	2	2	1	2	1	2	3		
	CO5	1	3	2	3	2	1	3		
	CO6	3	1	3	3	2	3	2		

3	Category	Humanities & SocialStudies (HS)	Basic Sciences (BS)	Engg Sciences (ES)	Professional Core (PC)	Core Elective (CE)	Non-Major Elective (NE)	Open Elective (OE)	Any other	Project/Term Paper/ Seminar/ Internship(PR)
					✓					
4	Approval	Academic Council Meeting								

UNIT-I **9**

Meaning and Definition of Auditing – Nature and Scope of Auditing – Accountancy and Auditing, Auditing and Investigation – Objectives of Auditing – Limitations of Audit – Advantages of Audit – Classification of Audit

UNIT-II **9**

Meaning and Definition of Audit Programme – Advantages and Disadvantages – Audit File, Audit Note Book, Audit Working Papers – Purposes and Importance of Working Papers – Internal Check – Meaning, Object of Internal Check – Features of Good Internal Check System – Auditors duty with regards to Internal Check System – Internal Check and Internal Audit.

UNIT-III **9**

Vouching – Meaning – Objects – Importance of Vouching – Meaning of Voucher – Vouching of Cash Receipts and Vouching of Cash Payments – Vouching of Trading Transactions Meaning and objects of verification – Vouching and verification – Verification and Valuation of different kinds of Assets and Liabilities.

UNIT-IV **9**

The Audit of Limited Companies – Necessity of Company Audit – Qualification and Disqualification of Auditors – Appointment – Removal – Remuneration – Status of Auditors – Rights – Powers – Duties and Liability of Auditors – Auditor's Report – Importance and Contents.

UNIT-V **9**

EDP Audit – impact of computerization on Audit Approach- Principles of EDP Audit – Advantages and limitation o f EDP Audit – Different Approaches of EDP Audit - Audit procedures in an EDP.

TEXT BOOKS

1. Bank Audit A Practical Guide for Bank Auditors 5 th Edition – Anil Saxena, Taxmann Publications.2020
2. B.N. Tandon, Sudharsanam, Sundharabahu, Practical Auditing, S Chand. 2013.
3. S. Vengadamani, Practical Auditing, Margham Publications,2012.

REFERENCE BOOKS

1. S.K Basu, Auditing Principles and Techniques, Pearson Education. 2015.
2. Dr. L. Natarajan, Practical Auditing, Margham Publications,2014.
3. Company Accounts and Auditing Practices, Reliance publications.

CourseCoordinator **HOD**

U18MCBC406	COMMERCE PRACTICAL	L	T	P	C
	Total Contact Hours – 45	2	1	0	3
	Prerequisite course – Commerce / Mathematics Studied in Higher Secondary studies				
	Course Coordinator Name & Department:-Ms.V.Saillaja -Commerce				

COURSE OBJECTIVES:-

OBJECTIVES

- To connect the academic side of the student of the commerce with the practical methodology
- To give exposure to students for commerce practical knowledge like bank application forms, bank loans, eipts and vouchers and etc.
- To help the student to understand the work mechanism in the society institutions and give him practical experience and appropriate training.

COURSE OUTCOMES (COs)

CO1	List Out the invoice, receipts, voucher, delivery challan, etc
CO2	Discuss the Bills of exchange and promissory notes.
CO3	Practice the NEFT Transfer and Debit and Credit cards
CO4	Examine the Statement of cost sheets
CO5	Validate the Preparation of audit programs and audit report.
CO6	Design the Income Tax Returns and Applications for Permanent Account Number.

Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
2	CO1	2	3	2	1	3	3	3		
	CO2	3	3	2	3	2	2	1		
	CO3	3	2	3	1	3	3	2		
	CO4	2	2	1	2	1	2	3		
	CO5	1	3	2	2	2	1	3		
	CO6	3	1	3	3	2	3	2		

3	Category	Humanities & SocialStudies (HS)	Basic Sciences (BS)	Engg Sciences (ES)	Professional Core (PC)	Core Elective (CE)	Non-Major Elective (NE)	Open Elective (OE)	Any other	Project/Term Paper/ Seminar/ Internship(PR)
					✓					
4	Approval	Academic Council Meeting								

UNIT-I **9**

Preparation of invoice, receipts, voucher, delivery challan, entry pass and gate pass - Debit and credit notes - Transaction from the receipts – vouchers - Share Application Form - Letter of Allotment and Regret - Share Transfer Forms.

UNIT-II **9**

Drawings, Endorsing and Crossing of Cheques - Bills of exchange and promissory notes – Filling up of pay in slips - Application and preparation of demand drafts - Account opening form for SB account and Current account – Fixed Deposit account, FD Receipts - Entries in the pass book

UNIT-III **9**

Filling up of application forms for admission to co-operative societies - Loan application forms and deposit Challan - Jewel loan application form, procedure for releasing of jewellary from jewel loans. Online Applications - Railway Reservation – NEFT Transfer – Debit and Credit cards

UNIT-IV **9**

Preparation of agenda and minutes of general body and board of directors meetings - Using bin cards and inventories. – Statement of cost sheets. Filling up of an application form of LIC policy - premium form - premium notice and Challan for remittance receipts - Procedure for lapsed policy and procedure for settling account while the insured is alive or dead.

UNIT-V **9**

Preparation of audit programs and audit report - Preparation of an advertisement copy, collection of advertisement in dailies and journal for Durable and Non- Durable goods – Advertising for service and automobile industries - Filling up Income Tax Returns and Applications for Permanent Account Number – E-filing.

Note: Distribution of marks – Practical 75% and Record note book 25%

Content beyond the Syllabus

1. Application for investment in mutual funds
2. Online application for Passport
3. Online application for Voters ID

TEXT BOOKS

1. J.C.Agarwal-Commerce Practical,1st Jan 2018
2. John Barry King, Practical Commerce, Elsevier Science Ltd. 2017.
3. Prof. K. Venkatramanan, Basic Double Entry Book Keeping and Accountancy, Margham Publications, 2010

REFERENCE BOOKS

1. Abinash Kumar Mandilwar, Accounting and Finance for Bankers, Ramesh Publishing House. 2019.
2. C.D. Balaji & G. Prasad, Principles of Commerce, Margham Publications. 2015.
3. Neeraj Kumar,Vinty Monga -Commerce Practical ,Ist Jan 2014

CourseCoordinator **HOD**

U18MCBC501	PRINCIPLES OF INSURANCE	L	T	P	C
	Total Contact Hours – 45	2	1	0	3
	Prerequisite course – Commerce / Mathematics Studied in Higher Secondary studies				
	Course Coordinator Name & Department:-Ms.J.Saranya -Commerce				

COURSE OBJECTIVES:-

- To acquaint the student with the basic knowledge of theprinciples and of insurance.
- Introduce the students to fundamentals of insurance.
- Give the students a useful skill base that would allow them to carry out further study
- Should they be interested and to work in the field.

COURSE OUTCOMES (COs)

CO1	Name of the concept, process and importance of insurance.
CO2	Explain the purpose and importance of Insurance.
CO3	Employ to understand about the life insurance and its principles.
CO4	Categorize the conditions and losses about the marine and health insurance.
CO5	Choose the basic principles of fire insurance and its renewals.
CO6	Arrange the students will be able to understand Micro insurance and Insurance for Weaker sections of the Society

Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
2	CO1	3	3	2	1	3	3	3		
	CO2	2	3	1	3	2	2	3		
	CO3	3	3	3	2	3	3	2		
	CO4	3	3	2	2	1	2	2		
	CO5	3	1	3	1	2	1	3		
	CO6	2	2	3	3	3	3	3		

3	Category	Humanities & Social Studies (HS)	Basic Sciences (BS)	Engg Sciences (ES)	Professional Core (PC)	Core Elective (CE)	Non-Major Elective (NE)	Open Elective (OE)	Any other	Project/Term Paper/ Seminar/ Internship(PR)
					✓					
4	Approval	Academic Council Meeting								

UNIT-I

The basics and nature of insurance – evolution and nature of insurance – different classes of insurance – importance of insurance – Purpose and need of insurance**9**

UNIT-II

Life Insurance – Principles and Practice of life assurance. Life assurance contracts, their nature and characteristics, Parties to the contract and their rights and duties Objects – Types of Life policies – Surrender Value – Procedure for claims – Settlement**. 9**

UNIT-III

Marine Insurance – Types of Marine Policies – Conditions – Re-Insurance – Types of Losses - Marine Insurance Act – LPG- IRDA – Health Insurance.**9**

UNIT-IV

Fire Insurance – The basic principles of Fire Insurance Contracts. Fire Policy, Conditions, Assignment of Policy, Claims. Characteristics- Types of Policies – Re-Insurance and Renewals**9**

UNIT-V

Micro Insurance – Vehicle, Burglary, Personal Accident – Insurance for Weaker sections of the Society – Insurance for Household articles – Insurance of Articles.**9**

TEXT BOOKS

1. A. Moorty - Insurance Principles & Practice, Margham Publications, 2018.
2. Hargovind Dayal – The Fundamentals of Insurance - 2017
3. Dr. Periyasawmy – Principles of Insurance, Margham Publications, 2016.

REFERENCE BOOKS

1. V. Balu – Fundamental of Insurance, sultan Chand, 2016.
2. Premilan – Insurance Principles, Himalaya Publishing. 2016.
3. Neelam C. Gulati -Principles Of Insurance Management: A Special Focus On Developments In Indian Insurance Sector Pre And Post Liberalisation, 2009

CourseCoordinator **HOD**

UI8MCBC502	**COST ACCOUNTING - I**	**L**	**T**	**P**	**C**
	Total Contact Hours – 60	3	1	0	4
	Prerequisite course – Commerce / Mathematics Studied in Higher Secondary studies				
	Course Coordinator Name & Department:-Ms.G.Anandhi-Commerce				

COURSE OBJECTIVES:-

- To provide in depth knowledge on cost ascertainment
- To identify the areas of application of costing techniques Competencies
- To analyze the various methods of material control and stores control.
- The student should be able to have an effective control over inventory
- The student should be able to exercise effective control over labour
-

COURSE OUTCOMES (COs)

CO1	Remember the basic concept labor, process and importance of competence.
CO2	Describe the place and role of cost accounting in the modern economic environment
CO3	Schedule the costs according to their impact on business.
CO4	Calculate cost sheet, able to prepare a tender or quotation
CO5	Estimate the stock consumption, and Interpret the impact of the selected costs method.
CO6	Arrange the various methods of labour cost and wage payment.

Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
2	CO1	3	3	2	1	3	3	3		
	CO2	1	3	1	3	3	1	2		
	CO3	2	2	2	2	3	3	2		
	CO4	3	3	2	3	1	2	1		
	CO5	3	1	3	1	2	1	3		
	CO6	3	2	3	3	3	3	1		

3	Category	Humanities & Social Studies (HS)	Basic Sciences (BS)	Engg Sciences (ES)	Professional Core (PC)	Core Elective (CE)	Non-Major Elective (NE)	Open Elective (OE)	Any other	Project/Term Paper/ Seminar/ Internship(PR)
					✓					

4	Approval	Academic Council Meeting

UNIT – I **12**

Definition of Cost, Costing, Cost Accounting & Cost Accountancy - Nature and scope of Cost Accounting: Cost analysis, Concepts and Classifications - Installation of Costing Systems, Cost Centers and Profit Centers

UNIT – II **12**

Cost sheets, Tenders and Quotations - Reconciliation of Cost and Financial Accounts.

UNIT – III **12**

Material Purchase Control, Level, Aspects, Need and Essentials of Material Control. Stores Control - Stores Department, EOQ, Stores Records, ABC Analysis, VED Analysis

UNIT – IV **12**

Material costing –Issue of Materials- FIFO , LIFO , HIFO, Simple Average & Weighted Average Method, Market price, Base Stock Method and Standard Price Method.

UNIT – V **12**

Labour cost - Computation and control. Time keeping - Methods of wage payment – Time rate and Piece Rate System - Payroll procedures - Idle time and over time - Labour turnover.

Note: Theory 40%, Problems 60%

TEXT BOOKS

1. T.S Reddy & Dr. Y. Hari Prasad – Cost Accounting, Margham Publication. 2014
2. P.C Tulsian & Tulsian – Cost Accounting, S. Chand. 2010.

REFERENCE BOOKS

1. 1. S. P. Iyengar - Cost Accounting S. Chand. 2018
2. M.L. Agrawal, Dr. K. L.Gupta Cost Accounting -2018
3. S. P. Jain & Narang- Cost Accounting, Kalyani. 2010.

CourseCoordinator **HOD**

U18MCBC503	MARKETING MANAGEMENT	L	T	P	C
	Total Contact Hours – 45	2	1	0	3
	Prerequisite course – Commerce / Mathematics Studied in Higher Secondary studies				
	Course Coordinator Name & Department:-Ms.R.Priya -Commerce				

COURSE OBJECTIVES:-

- To familiarize the students with the marketing concepts and practices.
- To identify the factors influencing buyer behavior
- To develop an understanding of concept of segmentation and target market.
- To analyze the concept of 4p's - product, place, price, and promotion.
- To familiarize the students on the concept of sales management

COURSE OUTCOMES (COs)

CO1	Remember the functions, role and importance of marketing.
CO2	Recognize the Students would be able to analyze the concept of marketing concepts and practices.
CO3	Operate the Students would be able to understand the buyer behavior and segmenting the Market
CO4	Determine the various methods of sales forecasting.
CO5	Validate the Students would be able to understand the Concept of 4 p's
CO6	Set up Can able to investigate the techniques of sales management

Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
2	CO1	3	3	2	1	3	3	3		
	CO2	1	3	1	3	3	1	2		
	CO3	2	2	2	2	3	3	2		
	CO4	3	3	2	3	1	2	1		
	CO5	3	1	3	1	2	1	3		
	CO6	3	2	3	3	3	3	1		

3	Category	Humanities & Social Studies (HS)	Basic Sciences (BS)	Engg Sciences (ES)	Professional Core (PC)	Core Elective (CE)	Non-Major Elective (NE)	Open Elective (OE)	Any other	Project/Term Paper/ Seminar/ Internship(PR)
					✓					
4	Approval	Academic Council Meeting								

UNIT – I **9**

Introduction to Marketing- Meaning – Definition & Functions of Marketing - Marketing Orientation- Role & Importance of Marketing – Classification of Marketing - Factors affecting the marketing functions

UNIT – II **9**

Buyer Behavior - Consumer goods and Industrial goods - Buying motives - Factors influencing buyer Behavior - Market segmentation - Need and basis of Segmentation - Targeting - positioning

UNIT – III **9**

Sales Forecasting – Various methods of sales Forecasting The Product - Characteristics - benefits – classifications - consumer goods - industrial goods – New Product Development process - Product Life Cycle - Branding - Packaging.

UNIT – IV **9**

Pricing – Significance of Price in Marketing - Factors influencing Price of the Product - Pricing Objectives and Policies - Kinds of Pricing Decision – Pricing of New Product – Important Problems in Pricing – Sales Management Motivation, Compensation and Control of Salesman

UNIT – V **9**

Sales Promotion-Meaning – Function and Importance – Reasons for Increased use of Sales Promotion – Advertising – Publicity – Public Relation - Personal Selling - Direct selling and Sales promotion.

TEXT BOOKS

1. Pearson – Principle of marketing -2018
2. L. Natarajan - Marketing Management, Margham Publications.2013
3. R.B. Rudani – Basics of Marketing Mangement, S. Chand Publications. 2014.

REFERENCE BOOKS

1. Dr. R.L. Varshney & Dr. S.L Gupta- Marketing Management, S. Chand. 2010.
2. Dr. C.B. Gupta and Rajan Nair – Marketing Management, S. Chand. 2016.
3. Philip Kotler - Publisher Prentice Hall, Inc -2000

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CourseCoordinator **HOD**

U18MCBC504	INCOME TAX LAW & PRACTICE- I	L	T	P	C
	Total Contact Hours – 60	3	1	0	4
	Prerequisite course – Commerce / Mathematics Studied in Higher Secondary studies				
	Course Coordinator Name & Department:-Dr.J.Kannan – Commerce				

COURSE OBJECTIVES:-

- To know about the Income Tax Act
- To analyze the residential status of individuals.
- To understand about the various heads of income
- To know about the various deductions under income tax act.
- To analyze the techniques and to compute relating to profits and gains of business and profession..

COURSE OUTCOMES (COs)

CO1	List out the Assessment year,Previous year ,perquisitesAnd Capital and Revenue Receipts and expenditure
CO2	Determine the residential status, deduction u/s 16
CO3	IIustrate the allowances,exempted income
CO4	Solve the gratuity,Pension Leave encashment
CO5	Measure the salary incomeand House property Income
CO6	Prepare the Exempted income from house property

Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
2	CO1	2	3	2	1	3	3	3		
	CO2	2	3	2	3	3	3	1		
	CO3	3	2	3	1	3	2	2		
	CO4	2	2	3	2	1	2	3		
	CO5	1	3	1	3	2	1	3		
	CO6	3	1	3	3	3	3	1		

3	Category	Humanities & SocialStudies (HS)	Basic Sciences (BS)	Engg Sciences (ES)	Professional Core (PC)	Core Elective (CE)	Non-Major Elective (NE)	Open Elective (OE)	Any other	Project/Term Paper/ Seminar/ Internship(PR)
					✓					
4	Approval	Academic Council Meeting								

UNIT –I **12**

Income Tax Law- previous year- Assessment year-Assesses-Capital and Revenue Receipts and Expenditure

UNIT -II **12**

Residential status – Residential status of individuals- Incidence of tax- exempted Income

UNIT-III **12**

Income from salaries: I - Computation of salary income - Treatment of PF - Gratuity –Pension - Leave encashment – Allowances

UNIT-IV **12**

Income from salaries: II: Perquisites – Meaning – Types of Perquisites - Deduction u/s 16 (i) (ii)

UNIT-V **12**

Income from House property – Definition - Exempted Income from House Property -Types of Rental Values - Computation of income from HP -Let Out house Property - Self occupied House - Deduction U/S 24.

Note: **Theory 40%, Problems 60%**

TEXT BOOK

1. T.S. Reddy & Dr. Hari Prasad – Income Tax Law & Practice, Margham Publications, 2016.
2. Dinakar Pa Gare – Income Tax Law & Practice, S. Chand. 2017.
3. Dr. Vinod Singhania and Dr.Kapil Singhania Direct law and Practice - 2016

REFERENCE BOOKS

1. V.P. Guru, D. B. Narang Puja Guru & Rajeevpuri - Income Tax Law & Practice, Kalyani Publications, 2018.
2. Dr. Vinod Sign Hania – Income Tax Law & Practice, Taxmann. 2019.

Course Coordinator **HOD**

U18MCBC505	MANAGEMENT ACCOUNTING – I	L	T	P	C
	Total Contact Hours – 60	3	1	0	4
	Prerequisite course – Commerce / Mathematics Studied in Higher Secondary studies				
	Course Coordinator Name & Department:-Ms.R.Priya -Commerce				

COURSE OBJECTIVES:-

- To provide in depth knowledge on management accounting.
- To analyze and to interpret the financial statements by adopting various methods.
- To study about the ratio analysis and the capital structure.
- The student should be able to analyze the fund flow statement and working capital.
- The student should be able to prepare cash flow statement..

COURSE OUTCOMES (COs)

CO1	Identify the state that place and role of management accounting in the modern economic environment
CO2	Describe the Students can able to analyze and interpret the financial statements.
CO3	Practice to study on interpreting the various methods of ratios and capital structure
CO4	Criticize the Students can able to prepare the funds flow statement and to examine the changes in working capital.
CO5	Validate the distinction between cash and fund flow statement and can prepare cash flow statement.
CO6	Formulate the preparation of schedule of changes in working capital in business firm

Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
2	CO1	2	3	2	1	3	3	3		
	CO2	2	3	2	3	3	3	1		
	CO3	3	2	3	1	3	2	2		
	CO4	2	2	3	2	1	2	3		
	CO5	1	3	1	3	2	1	3		
	CO6	3	1	3	3	3	3	1		

3	Category	Humanities & SocialStudies (HS)	Basic Sciences (BS)	Engg Sciences (ES)	Professional Core (PC)	Core Elective (CE)	Non-Major Elective (NE)	Open Elective (OE)	Any other	Project/Term Paper/ Seminar/ Internship(PR)
					✓					
4	Approval	Academic Council Meeting								

UNIT-I **12**

Management Accounting – Meaning, Scope, Importance and limitations Management Accounting vs. Cost Accounting. Management Accounting vs. Financial Accounting

UNIT-II **12**

Financial Statement – Meaning – Nature – Objectives - Analysis and Interpretation of Financial Statements – Nature, Objectives, Tools – Methods – Comparative Statements, Common Size Statement and Trend Analysis

UNIT-III **12**

Ratio Analysis – Interpretation, Benefits and Limitations - Classification of ratios – Liquidity, Profitability, Turnover

UNIT-IV **12**

Fund flow analysis – Preparation of Schedule of Changes in Working Capital and Fund Flow Statement

UNIT-V **12**

Cash Flow Analysis – Preparation of Cash flow Statement – Distinctions between Cash and Fund Flow Statement

NOTE: Theory 40%and Problems 60%.

TEXT BOOKS

1. Maheswari S.N. Principles of Management Accounting – Sultan Chand. 2014.
2. T. S. Reddy & Dr. Y. Hari Prasad, Management Accounting, Margham Publications. 2012
3. R.J.Reddy Management Accounting - 2004

REFERENCE BOOKS

1. S. P Gupta – Management Accounting, S. Chand. 2019
2. Surender singh – Management Accounting - 2016
3. Hingorani & Ramanantan – Management Accounting, Sultan Chand sons. 2014.

Course Coordinator **HOD**

U18MEBC011	RESEARCH METHODOLOGY	L	T	P	C
	Total Contact Hours – 60	3	1	0	4
	Prerequisite course – Commerce / Mathematics Studied in Higher Secondary studies				
	Course Coordinator Name & Department: - Dr.D.VenkataramaRaju -Commerce				

COURSE OBJECTIVES:-

- To understand some basic concepts of research and its methodologies
- To identify the sources of data relating to research.
- To analyse the various sampling procedures and methods.
- To analyse and to organize the data in a more appropriate manner.
- To prepare a research report.

COURSE OUTCOMES (COs)

CO1	Recall the basic fundamentals of research, qualities of researcher, research design, and steps in scientific research.
CO2	Interpret the concept and purpose of research, types of research and research reports, components of research problem and good research report.
CO3	Utilize the concept of primary and secondary data, questionnaire, survey and case study research, control observation.
CO4	Appraise the data editing, coding, tabulation, sampling errors.
CO5	Estimate the methods of sampling techniques, experiments ,hypothesis testing research
CO6	Compose how to prepare research report structure and components.

Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
2	CO1	2	2	3	1	3	3	2		
	CO2	2	3	1	3	2	2	3		
	CO3	3	3	3	2	3	3	2		
	CO4	3	3	3	3	1	2	2		
	CO5	3	1	3	1	2	1	3		
	CO6	2	2	3	3	3	2	3		

3	Category	Humanities & Social Studies (HS)	Engg Sciences (ES)	Professional Core (PC)	Core Elective (CE)	Non-Major Elective (NE)	Open Elective (OE)	Any other	Project/Term Paper/ Seminar/ Internship(PR)
						✓			
4	Approval	Academic Council Meeting							

UNIT-I: 12

Definition of Research, Qualities of Researcher, Components of Research Problem, Various steps in Scientific Research, Types of Research; Hypothesis Testing Research -Purpose-Research Design – Survey Research – Case Study Research.

UNIT-II: 12

Sources of Data: Primary Data - Secondary Data - Procedure Questionnaire

UNIT-III: 12

Sampling Merits and Demerits – Experiments – Kinds – Procedure; Control Observation – Merits – Demerits – Kinds – Procedure – Sampling Errors – Type – I Error – Type – II Error.

UNIT-IV: 12

Editing- types of editing - guidelines for editing – coding – classification – tabulation - graphs

UNIT-V: 12

Structure and Components of Research Report - Types of Report - Good Research Report

TEXT BOOKS

1. C. R. Kothari, Research Methodology, Margham Publications, 2016.
2. Senthil Kumar & Sasi Kumar – Project Methodology, International Publishing, 2016.
3. Robert K. Yin Case study research: Design and Methods ,SAGE Publications 4th edition ,2014, volume 5 .

REFERENCE BOOKS

1. C.R. Kothari Research Methodology: Methods & Techniques – ND: Wiley Eastern Ltd. – 2011
2. R. Panneerselvam - Research Methodology - Prentice Hall of India, New Delhi, - 2010.

Course Coordinator **HOD**

U18MEBC012	CAPITAL MARKETS	L	T	P	C
	Total Contact Hours – 60	3	1	0	4
	Prerequisite course – Commerce / Mathematics Studied in Higher Secondary studies				
	Course Coordinator Name & Department:-Ms.J.Saranya -Commerce				

COURSE OBJECTIVES:-

To inculcate Knowledge on Capital Markets.

- To make the students know the importance of capital markets to the Business.

COURSE OUTCOMES (COs)

CO1	Name of the Practice of various industrial Performance in the capital market
CO2	Discriminate the Select and the costs according to their impact on business.
CO3	Illustrate to Equity Shares - Preference Shares, Role of Securities and Stock Exchange Board of India (SEBI)
CO4	Appraise to Growth of Capital Markets, LIC - UTI - IDBI - ICIO , Promotion of Mutual Funds
CO5	Measure the value of Debentures and Bonds - Global Depository Receipts
CO6	Collect Economic liberalisation- Promotion More Private Sectors Banks, Structure of Capital Market

Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
2	CO1	2	3	2	1	3	3	3		
	CO2	2	3	2	3	3	3	1		
	CO3	3	2	3	1	3	2	2		
	CO4	2	2	3	2	1	2	3		
	CO5	1	3	1	3	2	1	3		
	CO6	3	1	3	3	3	3	1		

3	Category	Humanities & SocialStudies (HS)	Basic Sciences (BS)	Engg Sciences (ES)	Professional Core (PC)	Core Elective (CE)	Non-Major Elective (NE)	Open Elective (OE)	Any other	Project/Term Paper/ Seminar/ Internship(PR)
							✓			
4	Approval	Academic Council Meeting								

UNIT – I **12**

Capital Market - Definition - Growth of Capital Markets -Functions - Structure of Capital Market

UNIT – II **12**

Long Term finance - sources - Financial Institutions – LIC - UTI - IDBI - ICIO - Mutual Funds

UNIT III **12**

Corporate Securities - Equity Shares - Preference Shares - Debentures and Bonds - Global Depository Receipts

UNIT – IV **12**

Public Issue of Shares - Primary market – Secondary Market - Issue of shares at par and at premium -Functions of Stock Exchanges - Role of Securities and Stock Exchange Board of India (SEBI)

UNIT – V **12**

Recent Trends in Capital Market Operations: Introduction – Recent Change in Indian Capital Market – Economic liberalisation- Promotion More Private Sectors Banks – Promotion of Mutual Funds

TEXT BOOKS:

1. Asheesh Pandey, Capital Market & Financial System in India, New Century Publications, 2014
2. Rejesh Charabarti – Capital Markets in India - 2010

REFERENCE BOOKS

1. N.S.Zad, Capital Market and Security laws, 5th Edition, 2019.
2. Phull Kulwant singh , Capital Market in India, New Century Publications,2017
3. Alan R. Kanuk – Capital Market - 2010

Course Coordinator **HOD**

U18MEBC013	INVESTMENT MANAGEMENT	L	T	P	C
	Total Contact Hours – 60	3	1	0	4
	Prerequisite course – Commerce / Mathematics Studied in Higher Secondary studies				
	Course Coordinator Name & Department:-Ms.J.Saranya -Commerce				

COURSE OBJECTIVES:-

- **To make the student to understand the investment opportunities and portfolio management**

COURSE OUTCOMES (COs)

CO1	List of the concept, process and importance of investment management
CO2	Choose the depth knowledge about concept of Investment Management
CO3	Practice to Stock Exchange, NSE, Efficient Market Hypothesis,
CO4	Develop Portfolio analysis,Technical analysis,Types of Mutual fund.
CO5	Estimate UTI – SEBI and RBI Guidelines for Mutual Funds
CO6	Compose Trading mechanism – online trading – SEBI and Investors production.

Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
2	CO1	2	3	2	1	3	3	3		
	CO2	2	3	2	3	3	3	1		
	CO3	3	2	3	1	3	2	2		
	CO4	2	2	3	2	1	2	3		
	CO5	1	3	1	3	2	1	3		
	CO6	3	1	3	3	3	3	1		

3	Category	Humanities & SocialStudies (HS)	Basic Sciences (BS)	Engg Sciences (ES)	Professional Core (PC)	Core Elective (CE)	Non-Major Elective (NE)	Open Elective (OE)	Any other	Project/Term Paper/ Seminar/ Internship(PR)
							✓			
4	Approval	Academic Council Meeting								

UNIT I **12**

Investment Management - Nature and scope - Objectives – Process – Investment Media Security and Non-security forms of Investment - gilt edged securities – Sources of Investment information.

UNIT II **12**

New Issues Market – Methods of Issuing – Parties involved in the new issue market – Secondary market – Stock Exchanges – NSE and BSE – Trading mechanism – online trading – SEBI and Investors production.

UNIT III **12**

Security Analysis – Approaches – Fundamental Analysis – Technical Analysis – Dow Theory – Random Walk Theory – Efficient Market Hypothesis

UNIT IV **12**

Portfolio Analysis – Traditional and Modern approach – Rationale of Diversification of Investments – Markovitz theory – Sharpe Index Model - Capital Asset Pricing Model

UNIT V **12**

Investment companies in India – Types Mutual Fund Operations in India – UTI – SEBI and RBI Guidelines for Mutual Funds

TEXT BOOKS:

1. Prasanna Chandra, "Investment analysis and Portfolio Management", McGraw Hill, 1st July 2017, 5th Edition.
2. V.K. Bhalla," Fundatmentals of Investment Management", S.Chand & Company, 1st December 2010.
3. Dr. L. Natarajan, "InvestmentManagement (Securityanalysis & Portfolio Management", Margham Publications, 1st January 2012

Reference Books:

1. Zvi Bodie, Alexkane, Alan J. Marcus PitabasMohanty, "Investements", Mc Graw Hill Education. 10th Edition, 1st July 2017.
2. V.K.Bhalla – Investment Management S. Chand Publishing -2014

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Course Coordinator **HOD**

U18MCBC601	MANAGEMENT ACCOUNTING-II	L	T	P	C
	Total Contact Hours – 60	3	1	0	4
	Prerequisite course – Commerce / Mathematics Studied in Higher Secondary studies				
	Course Coordinator Name & Department: -Ms.R.Priya -Commerce				

COURSE OBJECTIVES:-

- To indicate and explain the importance of budgetary control in management accounting.
- To familiarize students with Capital Budgeting from the point of view of managers and outsiders.
- To ascertain the costs under different situations using different techniques and systems of costing
- To ascertain the decision making under different situations using different techniques.
- To ascertain the costs under different situations using different techniques and systems of standard costing

COURSE OUTCOMES (COs)

CO1	Record the basic concept of budget and budgetary control, preparation of material purchase, production, sales, cash and flexible budget.
CO2	Differentiate between capital budget and , zero base budget
CO3	Generalize Foreign market offer, methods of capital budgeting.
CO4	Correlate the BEP, Margin of safety, P/V ratio, and charges in selling price.
CO5	Compare the different techniques in marginal costing and standard costing, analysis of variance.
CO6	Formulate Make or Buy decision, selection of product mix.

Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
2	CO1	3	3	2	3	3	2	2		
	CO2	2	3	2	3	3	1	2		
	CO3	2	2	1	2	3	3	2		
	CO4	3	3	2	3	1	2	1		
	CO5	3	1	3	1	2	1	3		
	CO6	3	2	3	2	3	2	1		

3	Category	Humanities & Social Studies (HS)	Basic Sciences (BS)	Engg Sciences (ES)	Professional Core (PC)	Core Elective (CE)	Non-Major Elective (NE)	Open Elective (OE)	Any other	Project/Term Paper/ Seminar/ Internship(PR)
					✓					
4	Approval	Academic Council Meeting								

UNIT-I 12

Budget and Budgetary Control - Definition – Objectives – Uses and Limitations – Preparation of materials Purchase, Production, Sales, Cash and Flexible Budget – Zero Base Budgeting

UNIT-II 12

Capital Budgeting - Concepts – Nature – Advantages and Limitations – Methods of Capital Budgeting – Payback Period, ARR, NVP, Profitability Index Method

UNIT-III 12

Marginal costing - Definition – Advantages and Limitation – BEP – Margin of Safety – P/V Ratio – Key factor

UNIT-IV 12

Marginal Costing - Make or Buy decision – Selection of Product mix – charges in Selling price – Foreign market offer – desired level of profit

UNIT-V 12

Standard Costing - Definition – Features – Advantages – Limitation – Analysis of Variances – Materials – Labour - Overhead

Note: Theory 40%, Problems 60%

TEXT BOOKS

1. Maheswari S.N. Principles of Management Accounting – Sultan Chand. 2014.
2. T. S. Reddy & Dr. Y. Hari Prasad, Management Accounting, Margham Publications. 2012
3. R C Sekhar and A V Rajagopalan , Management Accounting , oxford university press, 2012

REFERENCE BOOKS

1. R.S.N. Pillai & Bhagavathi – Management Accounting – S. Chand & Co. Ltd., New Delhi.2016
2. T.S. Reddy & Hari Prasad Reddy – Management Accounting – Margham Publications, Chennai.2014
3. S.P. Gupta – Management Accounting – Sultan Chand & Sons, New Delhi. 2010

Course Coordinator **HOD**

	COST ACCOUNTING - II	L	T	P	C
	Total Contact Hours – 60	3	1	0	4
U18MCBC602	Prerequisite course – Commerce / Mathematics Studied in Higher Secondary studies				
	Course Coordinator Name & Department: -Ms. Ms.S.Bina Pani -Commerce				

COURSE OBJECTIVES:-

- To ascertain the cost accounting under different situations using different techniques.
- To familiarize students with job costing from the point of view of managers and outsiders.
- An indication and explanation of the importance of process costing in cost accounting.
- To ascertain the contract costing under different situations using different techniques.
- To familiarize students with joint product from the point of view of managers and outsiders.

COURSE OUTCOMES (COs)

CO1	List of the fundamental concepts of Overheads, Classification , Allocation - Apportionment and Absorption , Difference between Process Costing & Job Costing
CO2	Discuss the Accounting and control of overheads ,Manufacturing, Administration, Selling and Distribution, Machine Hour Rate, Features of Job Costing and Objectives
CO3	Practice the Job costing, Batch costing and Process costing
CO4	Identify the Economic batch Quantity , Determination of EBQ or Economic Lot Size
CO5	Estimate the techniques in Contract Costing, Work in Progress, Profit and Loss and Contract Account, Joint product, By product, Accounting for Joint Product Cost, Accounting for By products.
CO6	Compose an Job ledger

Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
2	CO1	3	3	2	1	3	2	2		
	CO2	3	3	3	3	3	1	2		
	CO3	2	2	2	2	3	3	2		
	CO4	3	3	2	3	2	2	1		
	CO5	3	1	3	1	2	1	3		
	CO6	1	2	3	3	3	3	2		

3	Category	Humanities & Social Studies (HS)	Basic Sciences (BS)	Engg Sciences (ES)	Professional Core (PC)	Core Elective (CE)	Non-Major Elective (NE)	Open Elective (OE)	Any other	Project/Term Paper/ Seminar/ Internship(PR)
					✓					
4	Approval	Academic Council Meeting								

UNIT- I 12

Overheads – Classification – Allocation - Apportionment and Absorption - Accounting and control of overheads - Manufacturing, Administration, Selling and Distribution (Primary and Secondary Distribution) - Machine Hour Rate

UNIT- II 12

Job costing- Features of Job Costing – Objectives - Batch costing- Job ledger- Economic batch Quantity – Determination of EBQ or Economic Lot Size

UNIT- III 12

Process costing – Meaning – Difference between Process Costing & Job Costing – Preparation of process Accounts – Normal loss – Abnormal loss.

UNIT- IV 12

Contract Costing – Work in Progress- Profit and Loss – Contract Account.

UNIT- V 12

Joint product – By product – Accounting for Joint Product Cost – Accounting for By products.

NOTE: Theory 40%, Problems 60%

TEXT BOOKS

1. Horngrens Cost Accounting A Managerial Emphasis, Srikant M Datar et all, Pearson India, 2017.
2. T.S Reddy & Dr. Y. Hari Prasad – Cost Accounting, Margham Publication. 2014
3. P.C Tulsian & Tulsian – Cost Accounting, S. Chand. 2010.

REFERENCE BOOKS

1. S. P. Iyengar - Cost Accounting S. Chand. 2018.
2. S. P. Jain & Narang- Cost Accounting, Kalyani. 2010

CourseCoordinator **HOD**

U18MEBC021	INDIRECT TAXES	L	T	P	C
	Total Contact Hours – 60	3	1	0	4
	Prerequisite course – Commerce / Mathematics Studied in Higher Secondary studies				
	Course Coordinator Name & Department: -Dr.J.Kannan -Commerce				

COURSE OBJECTIVES:-

- To provide distinction between Direct Tax and Indirect Tax and also related incidence of tax rules for indirect tax and to provide understanding on the concept central excise and Service under the emerging increase importance of service sector

COURSE OUTCOMES (COs)

CO1	Repeat the basic concepts Direct and Indirect Tax , Need for Tax reforms , GST Principles Single GST, Dual GST , Transactions covered under GST, and gained knowledge about Service Tax
CO2	Explain thevarieties of Indirect Taxes, central excise, factors for levy of excise duty and custom duty, types of Excise Duty and custom , Philosophy of Cenvat, Registration and Constitutional Amendments
CO3	Interpret theFirst principles of valuation of goods, Procedure for assessment and payment of Excise Duty.
CO4	Appraise theFirst Principles of Taxable Service, Negative list, Exemption list, Taxable area, non-taxable area, point of taxation and valuation.
CO5	Measure the First principles of valuation, Procedure for assessment and payment of Customs Duty, Warehousing and Drawback.
CO6	Prepare the Assessment and Administration of GST.

Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
2	CO1	3	3	2	1	3	2	3		
	CO2	3	3	2	3	3	3	1		
	CO3	3	2	3	1	3	2	2		
	CO4	2	3	2	2	1	2	3		
	CO5	1	3	2	3	2	2	3		
	CO6	3	1	3	3	3	3	1		

3	Category	Humanities & Social Studies (HS)	Basic Sciences (BS)	Engg Sciences (ES)	Professional Core (PC)	Core Elective (CE)	Non-Major Elective (NE)	Open Elective (OE)	Any other	Project/Term Paper/ Seminar/ Internship(PR)
							✓			
4	Approval	Academic Council Meeting								

UNIT I 12

Basics: Tax Vs Duty; Direct Tax Vs Indirect Tax – Powers of Union/States – Varieties of Indirect Taxes – Movement towards GST.

UNIT II 12

Central Excise: Factors for Levy of Excise Duty – Goods, Excisable Goods, Manufacture, India – First principles of valuation of goods – Types of Excise Duty – Procedure for assessment and payment of Excise Duty – Philosophy of Cenvat – Registration.

UNIT III 12

Service Tax: Genesis – First Principles of Taxable Service, Negative list, Exemption list, Taxable area, non-taxable area, point of taxation and valuation - Procedure for assessment and payment of Service Tax – Philosophy of Cenvat – Registration.

UNIT IV 12

Factors for levy of Customs Duty – First principles of valuation – Procedure for assessment and payment of Customs Duty – Types of Customs Duty – Warehousing – Drawback.

UNIT V 12

Need for Tax reforms – GST Principles – Single GST, Dual GST – Transactions covered under GST – Assessment and Administration of GST – Constitutional Amendments.

Note: Theory Only

TEXT BOOKS:

1. Indirect Taxes, "T.S. Reddy & Y. Hari Prasad Reddy", Margham Publication, 2018.
2. Indirect Taxes Law and Practice, " V. S. Datey", Taxmann, 2019.

REFERENCE BOOKS:

1. Taxation Law & practice, "V. Balanchandran", Prentice Hall India, 2012.

Indirect Taxes Law and Practice, "Dr. H. C. Mehrotra, Sahitya Bhavan, 2019.

Course Coordinator **HOD**

U18MEBC022	FINANCIAL SERVICES	L	T	P	C
	Total Contact Hours – 60	3	1	0	4
	Prerequisite – Commerce / Mathematics Studied in Higher Secondary studies				
	Course Coordinator Name & Department: -Ms. R.Velanganni -Commerce				

COURSE OBJECTIVES:-

- To an indication and explanation of the importance of financial service
- To ascertain the concept of merchant banking in financial services.
- To familiarize with the concept of Leasing and Hire Purchase.
- To develop an understanding of factoring in financial service.
- To impart the knowledge on Insurance.

COURSE OUTCOMES (COs)

CO1	Name of the importance, types, and players of financial services in economic environment, managing of new issues, Concepts, features and types of lease Accounts.
CO2	Discuss the functions of merchant banking, issue management,Insurance and its types, Insurance laws and regulations, IRDA Act 1938.
CO3	Practice the types of underwriting and factoring, functions of factor, Consumer finance.
CO4	Develop the capital market, Stock Exchange, Role of SEBI.
CO5	Estimate the techniques of Hire purchase, Leasing, Credit Rating.
CO6	Assemble the methods of venture capital and Mutual Funds.

Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
2	CO1	3	3	2	1	3	3	3		
	CO2	2	3	2	3	3	3	1		
	CO3	3	2	2	1	2	2	2		
	CO4	2	3	2	2	1	2	3		
	CO5	2	3	1	3	2	1	3		
	CO6	3	1	3	3	3	3	1		

3	Category	Humanities & Social Studies (HS)	Basic Sciences (BS)	Engg Sciences (ES)	Professional Core (PC)	Core Elective (CE)	Non-Major Elective (NE)	Open Elective (OE)	Any other	Project/Term Paper/ Seminar/ Internship(PR)
							✓			
4	Approval	Academic Council Meeting								

UNIT – I **12**

Meaning and importance of financial services - Types of financial services – Financial Services and economic environment - Players in Financial Services Sector.

UNIT – II **12**

Merchant Banking - Functions - Issue Management - Managing of new issues – Underwriting - Capital market - Stock Exchange - Role of SEBI.

UNIT – III **12**

Leasing and Hire purchase - Concepts and features - Types of lease Accounts.

UNIT – IV **12**

Factoring - Functions of Factor - Consumer finance - Venture capital - Mutual Funds – Credit Rating

UNIT – V **12**

Insurance - Different types - Life, marine, fire, motor, health, pension plan, annuity, rural Insurance - Insurance laws and regulations (A brief introduction to IRDA Act and Insurance Act, 1938)

TEXT BOOKS.

1. H.R.Machiraju - Indian Financial System, Vikas Publishers. 2018
2. B. Santhanam - Financial Services - Margham Publishers. 2015
3. Rajesh Kothari – Financial services in India, SAGE Publications India Pvt Ltd, 2010

REFERERNCE BOOKS

1. S. Parameswaran - Indian Banking - Chand and Sons. 2013
2.PK Jain, MY Khan - Financial Services,Tata McGraw-Hill. 2012

Course Coordinator **HOD**

U18MEBC023	**INDUSTRIAL ORGANISATION AND MANAGEMENT**	**L**	**T**	**P**	**C**
	Total Contact Hours – 60	3	1	0	4
	Prerequisite – Commerce / Mathematics Studied in Higher Secondary studies				
	Course Coordinator Name & Department: -Ms.J.Saranya -Commerce				

COURSE OBJECTIVES:-

- To familiarize the students with the business concepts.
- To impart knowledge on forms of business organization.

COURSE OUTCOMES (COs)

CO1	Recall the fundamentals of business, essential characteristics of business, Types of business, nature and scope of business, objectives of modern business, meaning of business organization, Span of control and its types.
CO2	Demonstrate use of essentials of successful business,Need of organization, organizational hierarchy in large concerns, top management organization, staff units and committee, centralization and decentralization of authority.
CO3	Demonstrate Authority relationship, line and staff function , basics of delegation of responsibility and authority ,
CO4	Categorize the Factors to be considered in the establishment of an organization
CO5	Judge the joint stock companies, co-operative undertakings, public utilities, public enterprises
CO6	Collect the models for sole trader, partnership firm, Joint Hindu Family Firm.

Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
2	CO1	3	3	3	3	3	2	3		
	CO2	2	3	2	3	3	3	1		
	CO3	3	2	2	1	2	2	2		
	CO4	2	2	2	2	2	2	3		
	CO5	2	3	1	3	2	2	3		
	CO6	3	1	3	3	3	3	1		

3	Category	Humanities & Social Studies (HS)	Basic Sciences (BS)	Engg Sciences (ES)	Professional Core (PC)	Core Elective (CE)	Non-Major Elective (NE)	Open Elective (OE)	Any other	Project/Term Paper/ Seminar/ Internship(PR)
							✓			
4	Approval	Academic Council Meeting								

UNIT – I 12

Meaning and definition of business - essential characteristics of business - Types of business - nature and scope of business - objectives of modern business – essentials of successful business - meaning of business organization.

UNIT – II 12

Need of organization - organizational hierarchy in large concerns - top management organization - staff units and committee - Factors to be considered in the establishment of an organization.

UNIT – III 12

Forms of business organizations - sole trader, partnership firm, Joint Hindu Family Firm, joint stock companies, co-operative undertakings, public utilities, public enterprises

UNIT – IV 12

Authority relationship -line function and staff - basics of delegation of responsibility and authority – centralization and decentralisation of authority and pros and cons of each

UNIT – V 12

Span of control - pros and cons of narrow and wide spans of control - optimum spans

TEXT BOOKS:

1.Hugo Diemer, Industrial Organization and Management, Forgotten books, August 5, 2018.
2. M.S. Mahajan, Industrial organization and Management, Nirali Prakashan, June 1, 2014
3. S. K basu, K. C. Sahu & B. Rajiv, Industrial Organization and Management, PHI Learning Publication, 2012.

REFERENCE BOOKS:

1. Jean Tirole, The Theory of Industrial Organization, PHI publication, 2010
2. Stephen Martin, Industrial Organization - A European Perspective, Oxford University press, 2001

Course Coordinator **HOD**

	INCOME TAX LAW & PRACTICE II	L	T	P	C
U18MCBC603	Total Contact Hours – 60	3	1	0	4
	Prerequisite course – Commerce / Mathematics Studied in Higher Secondary studies				
	Course Coordinator Name & Department: -Dr.J.Kannan -Commerce				

COURSE OBJECTIVES:-

- To provide basic knowledge on capital gains and equip students with application of principles and provisions in Income-tax Act, 1961.
- To know about various basic concepts used in Income tax Act
- To familiarize with the computation of Income Tax.
- To provide basic knowledge on provision of loss.
- To understand tax compliance and related accounting for tax issues, compute tax liabilities and tax reliefs, and prepare tax returns

COURSE OUTCOMES (COs)

CO1	Identify the Profits and gains of business and profession , Income from other sources and General incomes
CO2	Describe the concepts of Capital gains, short term and Long term capital gains, Computation of income from capital gains, Exemptions, Income Tax authorities, Powers and duties.
CO3	Apply the concept of deductions to be made in computing total income ,
CO4	Calculate the Income from Business and Profession, computation of income from other sources
CO5	Select the deductions from total Income, Set off and carry forward of losses
CO6	Design the Types of assessment and Appeals and Revisions.

Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
2	CO1	3	3	3	2	3	3	2		
	CO2	2	3	1	3	2	2	3		
	CO3	3	3	3	1	3	3	2		
	CO4	1	3	3	3	1	2	2		
	CO5	3	1	3	2	2	1	3		
	CO6	2	2	2	3	3	2	2		

3	Category	Humanities & Social Studies (HS)	Engg Sciences (ES)	Professional Core (PC)	Core Elective (CE)	Non-Major Elective (NE)	Open Elective (OE)	Any other	Project/Term Paper/ Seminar/ Internship(PR)
				✓					
4	Approval	Academic Council Meeting							

UNIT-I 12

Profits and gains of business and profession – computation of Income from Business and Profession

UNIT-II 12

Capital gains – short term capital gains – Long term capital gains – Computation of income from capital gains - Exemptions

UNIT-III 12

Income from other sources – General incomes – computation of income from other sources.

UNIT-IV 12

Deductions to be made in computing total income – Deductions from total Income. Set off and carry forward of losses

UNIT-V 12

Income Tax authorities – Powers and duties – Types of assessment – Appeals and Revisions

Note: Theory 40%, Problems 60%

TEXT BOOK

1. Naveen Mittal, Income Tax Law and Practice, Cengage learning, 1st Edition, 2019.
2. Dinakar Pa Gare – Income Tax Law & Practice, S. Chand. 2017.
3. T.S. Reddy & Dr. Hari Prasad – Income Tax Law & Practice, Margham Publications, 2016.

REFERENCE BOOKS

1. Dr. Vinod Sign Hania – Income Tax Law & Practice, Taxmann. 2019
2. V.P. Guru, D. B. Narang Puja Guru & Rajeevpuri - Income Tax Law & Practice, Kalyani Publications, 2018.

Course Coordinator **HOD**

U18EEBC6P1	PROJECT (DISSERTATION AND VIVA-VOCE)	L	T	P	C
	Total Contact Hours – 45	0	0	20	10
	Prerequisite course – Commerce / Mathematics Studied in Higher Secondary studies				
	Course Coordinator Name & Department: -Dr.D.VenkataramaRaju – Commerce				

COURSE OBJECTIVES:-

To facilitate the students to understand the Business enterprises systematically and present the research report as per the acceptable format.

COURSE OUTCOMES (COs)

CO1	List out the concept and objectives, nature, types and methods of project.
CO2	Choose the process and steps involved in preparation of project work, research gap
CO3	Practice the research design, and methodology , sampling techniques & sampling design
CO4	Calculate the statistical tools in the project for data analysis
CO5	Measure the major findings, suggestions and conclusion
CO6	Design the model for project report.

Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
2	CO1	3	3	3	2	3	3	2		
	CO2	2	3	1	3	2	2	3		
	CO3	3	3	3	2	3	3	1		
	CO4	3	2	3	3	1	2	2		
	CO5	3	1	3	1	2	1	2		
	CO6	2	1	3	3	3	2	3		

3	Category	Humanities & Social Studies (HS)	Engg Sciences (ES)	Professional Core (PC)	Core Elective (CE)	Non-Major Elective (NE)	Open Elective (OE)	Any other	Project/Term Paper/ Seminar/ Internship(PR)
									✓
4	Approval	Academic Council Meeting							

PROJECT (DISSERTATION AND VIVA-VOCE) 10

The project topics are to be finalized to the students at the end of the second semester with a time schedule to carryout various stages of work. During the semester vocation, the data Collection may be commenced. The theme selected by each student for the Dissertation should be related to various problems and issues pertaining to Commerce. Each candidate should submit three copies of dissertation as per the guidelines to the department concerned.

	Marks
Dissertation	**150**
Viva- Voce Examination	**50**

Course Coordinator **HOD**

U18SEBC001	BUSINESS PROCESS OURTSOURCING - MANAGEMENT	L	T	P	C
	Total Contact Hours – 30	2	0	0	2
	Prerequisite course – Higher Secondary Level				
	Course Coordinator Name & Department:- Ms. J. Saranya, Commerce				

COURSE OBJECTIVES:-

- To familiarize the students with the basic fundamentals of BPO.
- To impart knowledge on types of BPO and call centers .
- To enable the students on the concept Health care BPO & Transaction BPO.
- To peep into the concept of Human Resource BPO and the career opportunities in BPO

COURSE OUTCOMES (COs)

CO1	Underline the with the basic fundamentals of BPO.
CO2	Discuss the Can develop awareness about Types of BPOs and Call centres
CO3	Initiate to be aware of the concept of Health care BPOs
CO4	Identify the aware of the concept of Transaction BPOs
CO5	Evaluate Develop confidence in Human Resource BPO and career opportunities in BPOs
CO6	Formulate the Types of Transaction Processing BPO in India

Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
2	CO1	3	3	3	1	2	3	1		
	CO2	2	1	3	2	3	3	3		
	CO3	1	3	1	3	3	3	1		
	CO4	3	3	3	1	3	1	3		
	CO5	3	3	3	2	2	1	2		
	CO6	2	1	3	3	3	3	2		

3	Category	Humanities & Social Studies (HS)	Basic Sciences (BS)	Engg Sciences (ES)	Professional Core (PC)	Core Elective (CE)	Non-Major Elective (NE)	Open Elective (OE)	Any other	Project/Term Paper/ Seminar/ Internship(PR)
									✓	
4	Approval	Academic Council Meeting								

UNIT-I: **6**

Business Process Outsourcing – Basics – Benefits of BPO – BPO companies in India.

UNIT-II: **6**

BPO Industry – Employment Opportunities – types of BPO – Call centers – Types of Call Centers – Issues and Problems.

UNIT-III: **6**

Health Care - BPO - Structure of foreign Health Care sector – Future Trends and Threats.

UNIT-IV: **6**

Transaction Processing BPO – Elements of Back Office services – Types of Transaction Processing BPO in India.

UNIT-V: **6**

Human Resource BPO - Reasons for outsourcing HR – Activities involved in HR BPO – HR outsourcing Trends – Carrier in HR BPO.

Text Books:

- John K. Holvey, Borboro Murphy Melby, Business Process Outsourcing – Wiley Publisher- 2007
- Sarika Kulkarni – Business Process Outsourcing – Jaico Publishing house – 2005
- .Rick L. Click, Thomas N. Duening, Business Process Outsourcing – John Willey & sons, Publisher , 2004

Reference Books:

1. Deepak Shikapur – BPO DIGEST – Ameya (Inspiring books) – 2004.
2. Clifton – System analysis for business data processing – Prentice hall Publications.

Course Coordinator **HOD**

U18SEBC002	CUSTOMER RELATIONSHIP MANAGEMENT	L	T	P	C
	Total Contact Hours – 30	2	0	0	2
	Prerequisite course – Higher Secondary Level				
	Course Coordinator Name & Department:- Ms. R. Priya, Commerce				

COURSE OBJECTIVES:-

- To familiarize the students with the basic fundamentals of CRM.
- To impart knowledge about process and importance of CRM.
- To enable the students on the concept of technological solutions to CRM.
- To expose the student on Trends and challenges in CRM.

COURSE OUTCOMES (COs)

CO1	Recognise the Familiarize with the basic fundamentals of CRM.
CO2	Demonstrate the Can develop awareness about process and importance of customer retention
CO3	Practice to be aware of the concept of technological applications in CRM.
CO4	Correlate to respond to the concept of CRM software solutions for B2C and B2B markets
CO5	Validate the Develop confidence on trends and challenges
CO6	Design the Customer Databases and Information Systems

Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
2	CO1	2	2	3	3	2	2	2		
	CO2	1	3	3	2	2	2	3		
	CO3	3	2	2	3	3	3	1		
	CO4	3	2	3	2	1	2	3		
	CO5	3	2	2	1	2	1	3		
	CO6	3	3	3	3	3	3	2		

3	Category	Humanities & Social Studies (HS)	Basic Sciences (BS)	Engg Sciences (ES)	Professional Core (PC)	Core Elective (CE)	Non-Major Elective (NE)	Open Elective (OE)	Any other	Project/Term Paper/ Seminar/ Internship(PR)
									✓	
4	Approval	Academic Council Meeting								

UNIT -I **6**

Customer Relationship Management Introduction - Meaning and Definition - Importance - Benefits and difficulties of CRM.

UNIT –II **6**

CRM Process and Implementation Introduction - customer Retention - Customer satisfaction - Importance of customer retention - CRM process for B2B markets

UNIT –III **6**

Technological Support in CRM Introduction - Types of Technological Applications in CRM.

UNIT –IV **6**

Customer Databases and Information Systems - CRM Software Solutions for B2C and B2B Markets

UNIT –V **6**

E-CRM – Emerging Trend in CRM Introduction - Challenges involved in formulating and implementing e-CRM strategies.

TEXT BOOKS:

1.Balasubramaniyan.K ,Essence of customers relationship management, learn tech press
2. Jagdish N Sheth, Atul Parvatiyar, G Shainesh - customers relationship management- McGraw Hill Publisher, 2000
3. Roger. J Baran and Robert J. Galka- customers relationship management, Routledge publisher 2013

REFERENCE BOOKS:

1.M.Peeru mohamed, customer relationship management, Vikas publications
2.Kaushik mukerjee, customer relationship management PHI

Course Coordinator **HOD**

U18SEBC003	ENTREPRENEURIAL DEVELOPMENT	L	T	P	C
	Total Contact Hours – 30	2	0	0	2
	Prerequisite course – Higher Secondary Level				
	Course Coordinator Name & Department:- Ms. S. Jayanthy , Commerce				

COURSE OBJECTIVES:-

- To familiarize the students with the basic fundamentals of Entrepreneurship.
- To impart knowledge on Project identification, selection and formulation.
- To enable the students on the concept of types of organization.
- To peep into the concept of commercial banks.
- To enable the students on the concept of women entrepreneurs

COURSE OUTCOMES (COs)

CO1	Underline the Meaning Of Entrepreneur – Entrepreneur and Intrapreneur
CO2	Explain the Identification – Selection of the Project
CO3	Apply Selection of Types of Organization – Sole Proprietorship- Partnership Joint Stock Company
CO4	Appraise to Institutional finance to entrepreneurs
CO5	Estimate the Factors Influencing The Choice Of Organization
CO6	Develop the Role and Problems of Women Entrepreneurs

Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
2	CO1	3	3	3	1	2	3	1		
	CO2	2	1	3	2	3	3	3		
	CO3	1	3	1	3	3	3	1		
	CO4	3	3	3	1	3	1	3		
	CO5	3	3	3	2	2	1	2		
	CO6	2	1	3	3	3	3	2		

3	Category	Humanities & Social Studies (HS)	Basic Sciences (BS)	Engg Sciences (ES)	Professional Core (PC)	Core Elective (CE)	Non-Major Elective (NE)	Open Elective (OE)	Any other	Project/Term Paper/ Seminar/ Internship(PR)
									✓	
4	Approval	Academic Council Meeting								

UNIT-I **6**

Meaning Of Entrepreneur – Entrepreneur and Intrapreneur – Qualities Of Entrepreneur – Characteristics Of Entrepreneur – Types Of Entrepreneur – Function Of An Entrepreneur

UNIT-II **6** Project

Identification – Selection of the Project – Project Formulation –Preparation Of Project Report

UNIT-III **6**

Selection of Types Of Organization – Sole Proprietorship- Partnership Joint Stock Company – Factors Influencing The Choice Of Organization.

UNIT – IV **6**

Institutional finance to entrepreneurs - commercial banks –IDBI, IFCI, ICICI, IRBI, SFC, DICs, SIDC, SIDBI And EXIM Bank

UNIT – V **6**

Women Entrepreneurs – Role – Problems of Women Entrepreneurs – Suggestions For Development Of Women Entrepreneurs

TEXT BOOKS:

1. C.B. Gupta, Entrepreneurship Development in India – Sultan Chand
2. S.S. Khanka, Entrepreneurship Development, S. Chand & Co., New Delhi.
3. Gupta C. B and Srinivasan N. P Entrepreneurship Development, Sultan Chand & Sons, New Delhi

REFERENCE BOOKS:

1. P. Sarvanavel, E Entrepreneurship Development, Ess Pee Kay Publishing House
2. Jaswer Singh Saini, Entrepreneurship Development, Deep and Deep Publication, New Delhi
3. Jayashree Suresh, Entrepreneurship Development- Margham Publication, Chennai

Course Coordinator **HOD**

U18SEBC004	HUMAN RESOURCE MANAGEMENT	L	T	P	C
	Total Contact Hours – 30	2	0	0	2
	Prerequisite course – Higher Secondary Level				
	Course Coordinator Name & Department:- Ms. R. Velankanni, Commerce				

COURSE OBJECTIVES:-

- To learn the importance of HR.
- To impart knowledge and important factors in HR.
- To enable the students on the needs and methods of training.

COURSE OUTCOMES (COs)

CO1	Identify theImportance of Human Resource and objectives.
CO2	Describe the Human Resource Planning
CO3	Practice to Sources of Recruitment - Selection – Steps in Selection
CO4	Analyze Needs of training – Methods of Training
CO5	Evaluate the Process and Methods of Performance Appraisal
CO6	Formulate the Qualities of Personnel Manager

Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
2	CO1	3	3	2	3	1	3	1		
	CO2	2	2	1	3	3	1	3		
	CO3	2	2	3	2	3	3	2		
	CO4	3	1	3	1	1	2	3		
	CO5	1	3	2	2	2	3	3		
	CO6	3	2	2	3	3	3	2		

3	Category	Humanities & Social Studies (HS)	Basic Sciences (BS)	Engg Sciences (ES)	Professional Core (PC)	Core Elective (CE)	Non-Major Elective (NE)	Open Elective (OE)	Any other	Project/Term Paper/ Seminar/ Internship(PR)
									✓	
4	Approval	Academic Council Meeting								

UNIT- I: **6**

Definition – Importance of Human Resource – Objectives – Qualities of Personnel Manager.

UNIT- II: **6**

Human Resource Planning – Importance factors – Steps in HR Planning.

UNIT- III: **6**

Recruitment – Objectives – Sources of Recruitment - Selection – Steps in Selection.

UNIT- IV: **6**

Training – Definition – Needs of training – Methods of Training – On the job training – Off the job Training.

UNIT- V: **6**

Performance Appraisal - Objectives – Process – Methods of Performance Appraisal.

TEXT BOOKS:

1. L.M. Prasad – Human Resource Management – S. Chand & Sons – 2013.
2. C.B. Mamoria, S.V. Gankar – Personnel Management – Himalaya Pub. – 2012.
3. A.M. Sharma, Human Resource Management, Himalaya Publishing House, 2005

REFERENCE BOOKS

a. S.S. Khanka – Human Resource Management – S. Chand Ltd. – 2007
b. Gary Dessler – Human Resource Management – Prentice Hall – 8th Edition – 2000.

Course Coordinator **HOD**

U18SEBC005	MARKETING MANAGEMENT	L	T	P	C
	Total Contact Hours – 30	2	0	0	2
	Prerequisite course – Higher Secondary Level				
	Course Coordinator Name & Department:- Dr. J. Anudevi, Commerce				

COURSE OBJECTIVES:-

- To understand the fundamentals of marketing and its role.
- To examine the factors influencing buying behavior.
- To enable the students to promote advertising and its sales scope

COURSE OUTCOMES (COs)

CO1	Underline the Fundamentals of Marketing – Role of Marketing .
CO2	Describe the Factors influencing buying behavior
CO3	Interpret the Marketing segmentation – Needs - Types of segmentation
CO4	Analyze to New product development process – Product life cycle
CO5	Revise the Awareness of consumer rights in the market place
CO6	Collect the Advertising – Scope of Advertising

Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
2	CO1	3	3	2	3	2	3	1		
	CO2	2	3	3	2	3	3	3		
	CO3	1	3	1	3	2	3	3		
	CO4	3	2	3	1	3	1	2		
	CO5	3	3	2	3	2	1	2		
	CO6	2	1	3	2	3	3	3		

3	Category	Humanities & Social Studies (HS)	Basic Sciences (BS)	Engg Sciences (ES)	Professional Core (PC)	Core Elective (CE)	Non-Major Elective (NE)	Open Elective (OE)	Any other	Project/Term Paper/ Seminar/ Internship(PR)
									✓	
4	Approval	Academic Council Meeting								

UNIT-I: **6**

Marketing- Definition – Fundamentals of Marketing – Role of Marketing – Relationship of marketing with other functional areas – Marketing Mix

Unit – II **6**

Buyer Behaviour – Buying motives – Factors influencing buying behavior - Marketing segmentation – Needs - Types of segmentation

UNIT-III: **6**

The Product – Characteristics – Benefits – Classifications – New product development process – Product life cycle – Branding – Packaging

UNIT-IV: **6**

Physical Distribution - Importance - Various kinds of Marketing Channels – Distribution Problems- Awareness of consumer rights in the market place.

UNIT- V: **6**

Advertising – Scope of Advertising – Personal selling – Direct selling and Sales Promotions.

TEXT BOOKS:

1. Berkoviz Kerin Hontley Rudelivs, MARKETING, New York, Mcgraw Hill Publications.
2. Gony Armstrong, Philip Kotler, Marketing an Introduction, Pearson Education Asia.
3. Philip Kotler, Marketing Management (Millennium ed.,) New Delhi, Prentice Hall of India (P) Ltd.

Reference Books:

1. Rajan Saxena, Marketing Management, 2nd edition, New Delhi, Tata Mcgraw Hill Publishing Co.Ltd.

2. V.S. Ramasamy and S. Namakumari, Marketing Management, Planning, Implementation & control, New Delhi, Macmillan

Course Coordinator **HOD**

U18SEBC006	OFFICE MANAGEMENT	L	T	P	C
	Total Contact Hours – 30	2	0	0	2
	Prerequisite course – Higher Secondary Level				
	Course Coordinator Name & Department:- Dr. M. Sankar,Commerce				

COURSE OBJECTIVES:-

- To peep into the concept, importance of office management.
- To impart knowledge on features and classification of Communication.
- To expose handling correspondence and market registers

COURSE OUTCOMES (COs)

CO1	Record theConcept and Importance of Office and Office Management.
CO2	Report the Arrangement and adjustment : Furniture, allotment of seats
CO3	Apply to Handling of correspondence and market registers
CO4	Experiment the preparation and play of manuals and charts
CO5	Select the Office staff – Selection- training - Supervision
CO6	Creates Office Accommodation and Environment

Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
2	CO1	2	3	3	3	1	2	2		
	CO2	1	2	3	2	2	3	3		
	CO3	3	2	2	3	3	1	3		
	CO4	3	1	3	3	1	3	2		
	CO5	3	2	2	1	2	2	1		
	CO6	3	3	1	3	3	2	3		

3	Category	Humanities & Social Studies (HS)	Basic Sciences (BS)	Engg Sciences (ES)	Professional Core (PC)	Core Elective (CE)	Non-Major Elective (NE)	Open Elective (OE)	Any other	Project/Term Paper/ Seminar/ Internship(PR)
									✓	
4	Approval	Academic Council Meeting								

Unit I **6**

Introduction – Concept and Importance of Office and Office Management - Office Accommodation and Environment -Reception : Importance, shape and size, control

Unit II **6**

Communication: Feature, classification, barriers - Arrangement and adjustment : Furniture, allotment of seats, chambers, cabins rooms etc .

Unit III **6**

Handling of correspondence and market registers, filling forms and stationery.
Office Machines - Kind of office machines.

Unit IV **6**

Use of machines, installing, handling, maintenance –Manuals and charts- Advantages of office manuals charts - preparation and play of manuals and charts.

Unit V **6**

Office staff – Selection- training - Supervision - span of supervision

TEXT BOOK:

1. Ghosh & Agarwal, Office Management, S.Chand & Company – New Delhi
2. R.S.N. Pillai, Bagavathi, Office Management, S.Chand & Company – New Delhi,2013
3. Dr.R.K. Chopra, Priyanka Gauri Office Management, Himalaya Publishing House, 2017

REFERENCE BOOKS:

1. G.S. Sudha, General Management, Pustak Prakashan, New Delhi
2. Rajendra paul, Modern Communication & Techniques , S.Chand & Company – New Delhi

Course Coordinator **HOD**

U18SEBC007	RETAIL MARKETING	L	T	P	C
	Total Contact Hours – 30	2	0	0	2
	Prerequisite course – Higher Secondary Level				
	Course Coordinator Name & Department:- Ms. J. Saranya, Commerce				

COURSE OBJECTIVES:-

- To familiarize the functions and types of Retailing.
- To impart knowledge on Retail consumer behavior and its types.
- To expose the student on promoting sales, public relation and advertising.

COURSE OUTCOMES (COs)

CO1	Underline the Characteristics - Functions of retailing - Types of Retailing
CO2	Express the - Retail Consumer buying behavior and types
CO3	Schedule the Retail Organization Structure
CO4	Categorize to Factors affecting store lay out
CO5	Assess the Sales promotion - Advertising
CO6	Creates the Retail Marketing Mix

Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
2	CO1	1	2	3	3	2	3	2		
	CO2	2	1	3	2	3	3	3		
	CO3	3	3	1	3	3	3	2		
	CO4	3	3	3	3	1	2	2		
	CO5	2	3	2	3	2	2	1		
	CO6	3	2	3	1	3	2	3		

3	Category	Humanities & Social Studies (HS)	Basic Sciences (BS)	Engg Sciences (ES)	Professional Core (PC)	Core Elective (CE)	Non-Major Elective (NE)	Open Elective (OE)	Any other	Project/Term Paper/ Seminar/ Internship(PR)
									✓	
4	Approval	Academic Council Meeting								

UNIT-I **6**

Retailing – Definition – Importance – Characteristics - Functions of retailing - Types of Retailing

UNIT-II **6**

Retail Marketing Mix - Retail Consumer buying behavior and types – Segmentation - Types of segmentation

UNIT-III **6**

Retail Organization Structure-Major Functional Areas-Careers in Retailing

UNIT-IV **6**

Store layout-Types of lay out-Factors affecting store lay out

UNIT-V **6**

Sales promotion - Advertising - Public Relation - Personal selling

TEXT BOOKS:

1) George E.Belch and Michael A.Belch, Advertsing and Promotion, McGraw Hill Company
2) Ronald, Karen Whitehill king,and J.Thomas Russell, Kleppner's Advertising Procedure, Pearson Education International, Prentice Hall
3) Prashant Chaudhary ,Retail Marketing in the Modern Age ,First Edition Saga Publication 2019

REFERENCE BOOKS:

1) Gupta, Advertising and Sales Promotion, EPH Publisher
2) Sarangi, Advertising and Sales Promotion, Asian Books

Course Coordinator **HOD**

U18SEBC008	SALESMANSHIP AND ADVERTISING	L	T	P	C
	Total Contact Hours – 30	2	0	0	2
	Prerequisite course – Higher Secondary Level				
	Course Coordinator Name & Department:- Ms. G. Anandhi Commerce				

COURSE OBJECTIVES:-

- To understand the importance, role, objective of advertising.
- To impart knowledge on importance of salesmanship
  To analyze the types of advertising and its benefits

COURSE OUTCOMES (COs)

CO1	Repeat theNature-Objectives and Scope of Advertising.
CO2	Explain the Types of Advertising-Commercial and Non-Commercial Advertising
CO3	Interpret to Media selection-measuring advertising effectiveness
CO4	Correlate the training and compensating sales men
CO5	Judge the Qualities and Responsibilities of sales managers
CO6	Design the types of sales organization - Sales management job

Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
2	CO1	3	3	2	3	1	3	1		
	CO2	2	2	1	3	3	1	3		
	CO3	2	2	3	2	3	3	2		
	CO4	3	1	3	1	1	2	3		
	CO5	1	3	2	2	2	3	3		
	CO6	3	2	2	3	3	3	2		

3	Category	Humanities & Social Studies (HS)	Basic Sciences (BS)	Engg Sciences (ES)	Professional Core (PC)	Core Elective (CE)	Non-Major Elective (NE)	Open Elective (OE)	Any other	Project/Term Paper/ Seminar/ Internship(PR)
									✓	
4	Approval	Academic Council Meeting								

UNIT-I **6**

Definition-Importance-Role of Advertising-Nature-Objectives and Scope of Advertising

UNIT-II **6**

Types of Advertising-Commercial and Non-Commercial Advertising-Primary demand and selective demand advertising

UNIT-III **6**

Advertising-benefits and criticism-Media selection-measuring advertising effectiveness

UNIT-IV **6**

Introduction to the salesmanship-Importance of salesmanship-training and compensating sales men

UNIT-V **6**

Qualities and Responsibilities of sales managers -Types of sales organization - Sales management job

TEXT BOOKS:

1. George E.Belch and Michael A.Belch, Advertsing and Promotion, McGraw Hill Company
2. Ronald, Karen Whitehill king,and J.Thomas Russell, Kleppner's Advertising Procedure, Pearson Education International, Prentice Hall.
3. P. Saravanavel & S. Sumathi, advertising and salesmanship Margham publications,

REFERENCE BOOKS

1) Sarangi, Advertising and Sales Promotion, Asian Books
2. Gupta, Advertising and Sales Promotion, EPH Publisher

Course Coordinator **HOD**

Sub. code : U18SEEN001	Subject name : SOFT SKILLS	L	T	P	C
	Total Contact Hours – 30	2	0	0	2
	Prerequisite – Higher Secondary Level				
	Course coordinator name : Mrs.B.CAROLINE– Dept of English				

COURSE OBJECTIVES:- To impart students with the efficient knowledge of important events in through soft skills

COURSE OUTCOMES (COs)

CO1	Remember the personal as well as professionals goals of the students
CO2	Understand the manners during professional meetings
CO3	Apply the right reasons of stress
CO4	Analyze the importance of communication skills
CO5	Evaluate the excellence in both personal and professional life
CO6	Create the Growth & development of soft skills
Category	OE

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
2	CO1	3	3	3	3	3	3	3		
	CO2	3	3	3	3	3	3	3		
	CO3	2	3	3	2	3	2	3		
	CO4	2	2	2	2	2	2	2		
	CO5	2	2	2	2	2	2	2		
	CO6	2	3	3	2	2	2	2		

3	Category	Humanities & Social Studies (HS)	Basic Sciences (BS)	Engg Sciences (ES)	Professional Core (PC)	Core Elective (CE)	Non-Major Elective (NE)	Open Elective (OE)	Any other	Project/Term Paper/ Seminar/ Internship(PR)
									✓	

4	Approval	47th Academic Council Meeting

UNIT I Soft Skills **6**

Introduction to soft skills
Types of soft skills
Developing positive attitude, forming values and self confidence

UNIT II Interpersonal skills **6**

Developing interpersonal relationship, team building, table manners, organizing meetings, stress and time management

UNIT- III Communication Skills **6**

Types of communication
Art of listening
Art of reading
Art of writing
Art of speaking

UNIT IV Corporate Skills **6**

Presentation skills, developing body language, practicing etiquette, and mannerism, dress for success

UNIT V Placement Skills **6**

Personal interviews, writing resume/ CV- interviews skills career planning, public speak in motivation skills and personality

Text books

1. S.P.Danavel, English and Communication for Students of Science and Engineering.
2. Murali Krishna Moishra, Communication Skills for Engineers.

Reference

1. Developing the leader within you john C. Maxwell.
2. Meena. K and V. Ayothi (2013) A Book on development of soft skills (soft skills: A road map to success), P.R. publishers & Distributors, no. B-20&21,v.m.m. complex, Chatiram bus stand, tiruchirappalli.-620002

CourseCoordinator **HOD**

U18SESC001	COMPUTER APPLICATION	L	T	P	C
	Total Contact Hours – 30	2	0	0	2
	Prerequisite course – Higher Secondary Level				
	Course Coordinator Name & Department :- N.Mathimagal & BCA				

COURSE OBJECTIVES:-

Learners will be familiar with basic of computer application. Learners will understand the applications of computer & able to know about the operating systems.

COURSE OUTCOMES (COs)

CO1	Gain knowledge in fundamental computer applications
CO2	Understand the concept of input device functions
CO3	Indentify the suitable input devices for application
CO4	Analyze the input and output devices and its processes
CO5	Evaluate data and storage devices for application
CO6	Create an real time application using a system software and application software

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
2	CO1	3	3	1	1	1	1	3		
	CO2	3	3	1	2	2	2	3		
	CO3	3	2	3	1	3	3	3		
	CO4	3	2	2	1	1	2	3		
	CO5	2	2	2	1	1	1	3		
	CO6	3	3	3	2	3	3	3		

3	Category	Humanities & Social Studies (HS)	Basic Sciences (BS)	Engg Sciences (ES)	Professional Core (PC)	Core Elective (CE)	Non-Major Elective (NE)	Open Elective (OE)	Any other	Project/Term Paper/ Seminar/ Internship(PR)
									✓	
4	Approval	Academic Council Meeting								

UNIT I **6**

Brief History of Development of Computers, Computer System Concept, Computer System Characteristics, Capabilities and Limitations, Types of Computers-Personal Computer (PCs) - IBM PCs, Types of PCs- Desktop, Laptop, Notebook, Palmtop, etc. Basic Components of a Computer System - Control Unit, ALU, Input/ Output Unit- Memory, Storage Fundamentals - Primary Vs Secondary memory.

UNIT II **6**

Input Devices: Keyboard, Mouse, Joystick, Scanners, Digital Camera, MICR,OCR, OMR, , Light pen, Touch Screen.

UNIT III **6**

Output Devices: Monitors - Characteristics and types of monitor, Size, Resolution, Refresh Rate, Dot Pitch, Video Standard - VGA, SVGA, XGA etc. Printers - Daisy wheel, Dot Matrix, Inkjet, Laser. Plotter, Sound Card and Speakers.

UNIT IV **6**

Various Storage Devices - Magnetic Disks, Hard Disk Drives, Floppy, Disks, Optical Disks

UNIT V **6**

Computer Software, Need, Types of Software - System software, Application software System Software - Operating System, Compiler, Assemblers, Interpreter.

TEXT BOOKS:

1. S.K. Basandra, “Computers Today”, Galgotia Publications.
2. Alexis Leon & Mathews Leon, “Fundamentals of Information Technology”, Vikas Publishing House, New Delhi.

REFERENCE BOOKS:

1. Rajeev Mathur, “Dos Quick Reference”, Galgotia Publications.

CourseCoordinator **HOD**

U18SESC002	MULTIMEDIA	L	T	P	C
	Total Contact Hours – 30	2	0	0	2
	Prerequisite course – Higher Secondary Level				
	Course Coordinator Name & Department :- N.Mathimagal & BCA				

COURSE OBJECTIVES:-

To understans the basic multimedia concepts and designing concepts

COURSE OUTCOMES (COs)

CO1	Gain knowledge in basic concepts of multimedia
CO2	Analyze the multimedia application problems.
CO3	Understand the Video capturing, Sound capturing, editing concepts.
CO4	Identify the basic multimedia design principles.
CO5	Evaluate the multimedia system and Design Process.
CO6	Create a real time application using a multimedia concept.

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
2	CO1	3	3	1	1	1	1	3		
	CO2	3	3	1	2	2	2	3		
	CO3	3	2	3	1	3	3	3		
	CO4	3	2	2	1	1	2	3		
	CO5	2	2	2	1	1	1	3		
	CO6	3	3	3	2	3	3	3		

3	Category	Humanities & Social Studies (HS)	Basic Sciences (BS)	Engg Sciences (ES)	Professional Core (PC)	Core Elective (CE)	Non-Major Elective (NE)	Open Elective (OE)	Any other	Project/Term Paper/ Seminar/ Internship(PR)
									✓	
4	Approval	Academic Council Meeting								

UNIT I **6**

Multimedia Fundamentals: Concept of multimedia, Fundamental criteria for the design of a multimedia presentation, Multimedia Application Goals & Objectives, opportunities in multimedia production.

UNIT II **6**

Role of multimedia-development of team members, avoiding problems in planning a multimedia application.

UNIT III **6**

Multimedia Building Blocks: Text, Graphics, Video capturing, Sound capturing, editing.

UNIT IV **6**

Basic design principle: proximity, visual hierarchy, Symmetry, Asymmetry, Repetition, unity, Contrast, dynamics, Emphasis, Multimedia Authoring tools.

UNIT V **6**

Design, Development and evaluation of multimedia a system, Development of user interface design, Design Process.

TEXT BOOKS:

1. John Villamil, Casanova, Louis Molina, "An introduction tomultimedia".
2. Mohammad Dastbaz, "Designing Interactive MultimediaSystems"

REFERENCE BOOKS:

1. Bohdan O. Szuprowicz, "MultimediaNetworking".
2. Stephen McGloughlin, "Multimedia on theweb".

CourseCoordinator **HOD**

U18SESC003	ADVANCED EXCEL	L	T	P	C
	Total Contact Hours – 30	2	0	0	2
	Prerequisite course – Higher Secondary Level				
	Course Coordinator Name & Department:- V.Ramya & BCA				

COURSE OBJECTIVES: -

To identify the various functions in Excel Sheet

COURSE OUTCOMES (COs)

CO1	Understand the advanced Excel formulas.
CO2	Evaluate IF conditions, AND, OR functions.
CO3	Analyze the advanced filter options.
CO4	Execute the multiple windows, splitting windows management.
CO5	Understand the pivot table methods.
CO6	Create a real time application by creating, modifying Excel sheet.

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
2	CO1	3	3	1	1	1	1	3		
	CO2	3	3	1	2	2	2	3		
	CO3	3	2	3	1	3	3	3		
	CO4	3	2	2	1	1	2	3		
	CO5	2	2	2	1	1	1	3		
	CO6	3	3	3	2	3	3	3		

3	Category	Humanities & Social Studies (HS)	Basic Sciences (BS)	Engg Sciences (ES)	Professional Core (PC)	Core Elective (CE)	Non-Major Elective (NE)	Open Elective (OE)	Any other	Project/Term Paper/ Seminar/ Internship(PR)
									✓	
4	Approval	Academic Council Meeting								

UNIT I **6**

Uses of Advance Excel Formulas -VLOOKUP, HLOOKUP, SUMIF, SUMIFS, SUMPRODUCT, DSUM, COUNTIF, COUNTIFS, IF, IFERROR, ISERROR, ISNA, ISNUMBER, ISNONTEXT, OR, AND, SEARCH, INDEX, MATCH etc

UNIT II **6**

Various Methods and Uses of IF Conditions , Usage of "IF" Conditions? , Creation of Multiple IF Conditions in One Cell , Use the IF Conditions with the Other Advance Functions, How to use nested IF statements in Excel with AND, OR Functions Sorting, Data Forms, Adding Data Using the Data Form, Finding Records Using Criteria

UNIT III **6**

Filtering Data, AutoFilter, Totals and Subtotals, Row, Various Methods of Filter and Advance Filter options , Creating and Updating Sub totals , Various Method of Sorting Data ,Creating, Formatting and Modifying Chart.

UNIT IV **6**

Customizing the Quick Access Tool Bar , Managing Windows ,Multiple Windows , Splitting Windows.

UNIT V **6**

Various Methods and Options of Pivot Table, Using the Pivot Table Wizard, Changing the Pivot Table Layout, Subtotal and Grand total Options, Formatting, and Grouping items

TEXT BOOKS:

1. Jordan Goldmeler, “Advanced Excel Essentials” ,APress, 2015 edition.

REFERENCE BOOKS:

1. John Walkenbach, “Microsoft Excel 2013 Bible”,Wiley Publications,2013.
2.

CourseCoordinator **HOD**

U18SESC004	WEB DESIGNING	L	T	P	C
	Total Contact Hours – 30	2	0	0	2
	Prerequisite course – Higher Secondary Level				
	Course Coordinator Name & Department:- V.Ramya & BCA				

COURSE OBJECTIVES: -

To gain knowledge in basic web designing concepts.

COURSE OUTCOMES (COs)

CO1	Understand the web basics and server side scripting.
CO2	Execute the HTML coding and linking process.
CO3	Analyze the hyper links and special characters.
CO4	Evaluate the Embedded Style Sheets & Linking External Style Sheets.
CO5	Create the backgrounds and user style sheets.
CO6	Create a real time application using web designing concept.

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
2	CO1	3	3	1	1	1	1	3		
	CO2	3	3	1	2	2	2	3		
	CO3	3	2	3	1	3	3	3		
	CO4	3	2	2	1	1	2	3		
	CO5	2	2	2	1	1	1	3		
	CO6	3	3	3	2	3	3	3		

3	Category	Humanities & Social Studies (HS)	Basic Sciences (BS)	Engg Sciences (ES)	Professional Core (PC)	Core Elective (CE)	Non-Major Elective (NE)	Open Elective (OE)	Any other	Project/Term Paper/ Seminar/ Internship(PR)
									✓	
4	Approval	Academic Council Meeting								

UNIT I **6**

Introduction - The Internet in Industry and Research - Evolution of the Internet and World Wide Web - Web Basics – Client Side Scripting versus Server Side Scripting.

UNIT II **6**

Introduction – First HTML example – Headings – Linking - Images, alt Attribute, Void Elements.

UNIT III **6**

Using Images as Hyperlinks-Special Characters and Horizontal Rules – Lists – Tables.

UNIT IV **6**

Introduction - Inline Styles - Embedded Style Sheets - Linking External Style Sheets

UNIT V **6**

Backgrounds - Element Dimensions - Box Model and Text Flow - Drop-Down Menus - User Style Sheets.

TEXT BOOKS:

1. Paul Deitel, Harvey Deitel, Abbey Deitel, "Internet & World Wide Web: How To Program", 5th Edition, Pearson Publication, 2012.

REFERENCE BOOKS:

1. Jennifer Niederst Robbins, "Learning Web Design", Fourth Edition, O'Reilly Media, 2012.
2. Thomas Michaud, "Foundations of Web Design, Introduction to HTML & CSS", Pearson Publication, 2014.
3. Bayross, "Web Enable Commercial Application Development Using HTML, DHTML, JavaScript, Perl CGI", BPB Publications.
4. T. A Powell, "Complete Reference HTML (Third Edition)", TMH, 2002.

CourseCoordinator **HOD**

U18SESC005	PHOTOSHOP	L	T	P	C
	Total Contact Hours – 30	2	0	0	2
	Prerequisite course – Higher Secondary Level				
	Course Coordinator Name & Department:- V.Brindha& BCA				

COURSE OBJECTIVES: -

Learners can Apply methods to specific 3D Images and to identify various designs appropriate for Animation.

COURSE OUTCOMES (COs)

CO1	Gain knowledge to Create and save Images in fundamental computer applications
CO2	Understand the title bar, menu bar, option bar, image title bar in photo shop program.
CO3	Execute Zooming & Panning an Image while Working with Images.
CO4	Analyze Color manipulations & Working with Toolbox
CO5	Evaluate the Working with layers.
CO6	Create a real time application using 3D image and Animation.

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
2	CO1	3	3	1	1	1	1	3		
	CO2	3	3	1	2	2	2	3		
	CO3	3	2	3	1	3	3	3		
	CO4	3	2	2	1	1	2	3		
	CO5	2	2	2	1	1	1	3		
	CO6	3	3	3	2	3	3	3		

3	Category	Humanities & Social Studies (HS)	Basic Sciences (BS)	Engg Sciences (ES)	Professional Core (PC)	Core Elective (CE)	Non-Major Elective (NE)	Open Elective (OE)	Any other	Project/Term Paper/ Seminar/ Internship(PR)
									✓	
4	Approval	Academic Council Meeting								

UNIT I **6**

Introduction to Adobe photoshop, Getting started with photoshop, creating and saving a document in photoshop, page layout and background.

UNIT II **6**

Photoshop program window-title bar, menu bar, option bar, image window, image title bar, status bar, ruler, palettes, toolbox, screen modes, saving files, reverting files, closing files.

UNIT III **6**

Images: working with images, image size and resolution, image editing, color modes and adjustments, Zooming & Panning an Image, Rulers, Guides & Grids-Cropping & Straightening an Image, image backgrounds, making selections.

UNIT IV **6**

Working with toolbox: working with pen tool, save and load selection-working with erasers- working with text and brushes-Color manipulations: color modes- Levels – Curves - Seeing Color accurately - Patch tool

UNIT V **6**

Layers: Working with layers- layer styles- opacity-adjustment layers.

TEXTBOOKS:

1. Reema Thareja , “Fundamentals of Computers”, Oxford University Press.

REFERENCE BOOKS:

1. Photoshop: Beginner's Guide for Photoshop - Digital Photography, Photo Editing, Color
2. Adobe Creative Team, “Adobe Photoshop Classroom in a Book”.

CourseCoordinator **HOD**

U18SESC006	FLASH	L	T	P	C
	Total Contact Hours – 30	2	0	0	2
	Prerequisite course – Higher Secondary Level				
	Course Coordinator Name & Department:- V.Brindha & BCA				

COURSE OBJECTIVES: -

Learners can identify methods appropriate for Basic Animation. Apply methods to design with flash.

COURSE OUTCOMES (COs)

CO1	Understand Working with flash, drawing with flash using Animation tools and Mixer.
CO2	Execute working with multiple objects, importing color palettes
CO3	Analyze Basic animation and working in the timeline,
CO4	Create Frames, key frames, deleting, copying and reversing frames
CO5	Evaluate the Shape tweening and shape hinting in motion
CO6	Apply methods to design with flash

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
2	CO1	3	3	1	1	1	1	3		
	CO2	3	3	1	2	2	2	3		
	CO3	3	2	3	1	3	3	3		
	CO4	3	2	2	1	1	2	3		
	CO5	2	2	2	1	1	1	3		
	CO6	3	3	3	2	3	3	3		

3	Category	Humanities & Social Studies (HS)	Basic Sciences (BS)	Engg Sciences (ES)	Professional Core (PC)	Core Elective (CE)	Non-Major Elective (NE)	Open Elective (OE)	Any other	Project/Term Paper/ Seminar/ Internship(PR)
									✓	
4	Approval	Academic Council Meeting								

UNIT I **6**

Working with flash, drawing with flash, drawing with the pencil, modifying lines, drawing with the pen, the oval and rectangle tools, free transform tool, envelope modifier, the brush tool, using the mixer.

UNIT II **6**

Adding custom colors to color palette, importing color palettes, working with multiple objects, grouping objects.

UNIT III **6**

Basic animation and working in the timeline, the timeline, movie properties.

UNIT IV

6

Frames vs. key frames, deleting, copying, and reversing frames, frame-by-frame vector animation, Animation on an image.

UNIT V **6**

Shape tweening , shape hinting , Shape tweening text , edit multiple frames , animating gradients, basic motion tweening.

TEXT BOOKS:

1. Nick Vandome ,"FLASH 5 in easy steps", ,Dreamtech press,2001

REFERENCE BOOKS:

1. E A Vander Veer &Chris Graver, "Flash CS3",Orelly Publications,2009.

CourseCoordinator **HOD**

U18SESC007	COMPUTER HARDWARE AND NETWORKING	L	T	P	C
	Total Contact Hours – 30	2	0	0	2
	Prerequisite course – Higher Secondary Level				
	Course Coordinator Name & Department :- Ms.K.HemaLakshmi / CS				

COURSE OBJECTIVES :-

Learners familiar with the basic concepts of Microprosser,Controller, Server and to demonstrate the traditional imperative design of CPUs,cards,PCsand BIOS.

COURSE OUTCOMES (COs)

CO1	Design the structure of Micro Processor and PCs and CPUs
CO2	Understand the structure of PC architecture and the study of various PCs
CO3	Understand the Basics of Processor
CO4	Study the CPU,Chips,Processor and Controllers
CO5	Working with Internal Components cards and Higher Level Processor
CO6	Used to develop the Backups,Switches Routers,BIOS,Floppy Disk and zip Driver

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
2	CO1	3	3	1	1	1	1	3		
	CO2	3	3	1	2	2	2	3		
	CO3	3	2	3	1	3	3	3		
	CO4	3	2	2	1	1	2	3		
	CO5	2	2	2	1	1	1	3		
	CO6	3	3	3	2	3	3	3		

3	Category	Humanities & Social Studies (HS)	Basic Sciences (BS)	Engg Sciences (ES)	Professional Core (PC)	Core Elective (CE)	Non-Major Elective (NE)	Open Elective (OE)	Any other	Project/Term Paper/ Seminar/ Internship (PR)
									✓	
4	Approval	Academic Council Meeting								

UNIT I **6**

Microprocessor System - Introduction of System overview, Introduction to Processors, Memory Interfacing, Interfacing I/O Devices, Interfacing Data Converters, Display Interface, Serial I/O and Data Communication, Higher level Processors.

UNIT II **6**

Introduction to PC Architecture Study of PC-AT/ATX System, Pentium, Core, Core 2 Cord, Core 2 Duo, I3, I5, I7.

UNIT III **6**

Processor Basics of Processor and CPU Block Diagram of Computer and Computer Generation Motherboards, Chipset and Controllers, BIOS and the Boot Process, Computer Memory.

UNIT IV **6**

Internal Components IDE and SATA Devices: Hard Disk Drive and CD/DVDs Drives, SCSI Devices, Floppy Disk, Zip Drive, Backup Drive, Expansion Cards- LAN Card, IDE Card , VGA and SVGA Cards, Sound Card, Interface Cards, I/O cards, Video Cards, USB Card, Fire-Wire Cards, Internal Ports, Cables and Connector Types.

UNIT V **6**

Introduction of Network Cable like UTP, STP, Fiber Optics, Hub, Unmanageable Switch, Manageable Switch, Router, Modem, Wi-Fi, Access Point, PCI Wireless Card, USB Wireless Device, Print Server, USB Network Sharer, Backup Device, Server Hardware etc.

Text Books

1. Ramesh Gaonkar, “Microprocessor Architecture Programming and Application with the 8085”, Penram International Publication.

Reference Books

1. M.L. Gupta, “Electronics and Radio Engineering”, Dhanpat rai & Sons, New Delhi.
2. B. Govinda rajalu, “PC AND CLONES Hardware, Troubleshooting and Maintenance”, Tata Mc-graw-Hill Publication.
3. Stephen J. Bigelow, “PC Troubleshooting and Repair”, Dream tech Press, New Delhi.

Course Coordinator **HOD**

U18SESC008	COMPUTER PROGRAMMING	L	T	P	C
	Total Contact Hours – 30	2	0	0	2
	Prerequisite course – Higher Secondary Level				
	Course Coordinator Name & Department :- Ms.K.HemaLakshmi/ CS				

COURSE OBJECTIVES :-

Learners will be familiar with the Programming language C, identify the steps,Write the Algorithm,Design the flowchart and Implement the Programs for various Operations Functions,Pointers and Strings.

COURSE OUTCOMES (COs)

CO1	Apply and Write the clear, structure and Looping of elementary C programs.
CO2	Understand algorithmic thinking and apply it to programming.
CO3	Understand problem-solving techniques.
CO4	Ability to use C with Various operators Expressions and Decision making control.
CO5	Write Code using Arrays with single dimensions, Two dimensions and Multidimensional and Various Strings operations
CO6	create and develop programs using Functions, Pointers, Structures and Union

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
2	CO1	3	3	1	1	1	1	3		
	CO2	3	3	1	2	2	2	3		
	CO3	3	2	3	1	3	3	3		
	CO4	3	2	2	1	1	2	3		
	CO5	2	2	2	1	1	1	3		
	CO6	3	3	3	2	3	3	3		

3	Category	Humanities & Social Studies (HS)	Basic Sciences (BS)	Engg Sciences (ES)	Professional Core (PC)	Core Elective (CE)	Non-Major Elective (NE)	Open Elective (OE)	Any other	Project/Term Paper/ Seminar/ Internship (PR)
									✓	
4	Approval	Academic Council Meeting								

UNIT I **6**

Generation and Classification of Computers, Basic organization of a Computer, Number System, Binary, Decimal, Conversion, Problems.

UNIT II **6**

Algorithm, Pseudo code, Flow Chart, Problem formulation, Problem solving , Introduction to "C" programming, Fundamentals, Structure of C Program , compilation and linking processes, Constants, Variables, Data Types.

UNIT III **6**

Expressions using operators in C, Managing input and output operations, Decision making and Branching, Looping Statements.

UNIT IV **6**

Arrays, Initialization, Declaration, One Dimensional and Two Dimensional Arrays, String, String Operations, String Arrays.

UNIT V **6**

Function, Definition of Function, Declaration of Function, Recursion, pointers, pointer and arrays, Structure data type, Structure definition, Structure declaration, Structure within a structure, Union, Storage classes, Pre-processor directives.

Text Books

1. Anita Goel and Ajay Mittal, "Computer Fundamentals and programming in C", Dorling Kindersley (India) Pvt Ltd., Pearson Education in South Asia 2011.
2. PradipDey, ManasGhosh, "fundamentals of computing and programming in c", First edition, Oxford University Press, 2009.
3. Yashavant P. Kanethar, "Let Us C", BPB Publications, 2011.

Reference Books

1.Byron S Gottfried," Programming with C",Schaum'sOutlines,2nd Edition,Tata McGraw-Hill 2006.
2.Dromey R.G., "How to Solve it by Computer", Pearson Education, Fourth Reprint, 2007.
3.Kernighan., B.W and Ritchie, D.M, " The C Programming Language", Second Edition, Pearson Education, 2006.

Course Coordinator **HOD**

U18SESC009	**Office Automation Tools**	**L**	**T**	**P**	**C**
	Total Contact Hours – 30	2	0	0	2
	Prerequisite – Higher Secondary Level				
	Course Coordinator Name & Department :- Ms.K.HemaLakshmi / CS				

COURSE OBJECTIVES :-

Learners will be familiar with the basic Office tools design that Work with Word,Excel,Power Point

COURSE OUTCOMES (COs)

CO1	Learn the text manipulations for word documents.
CO2	Understandthe thetemplates and mail merge concepts.
CO3	Understandcellediting, formulae, built in functionsused in the Excel Sheet.
CO4	Usedthe power point slidedesigns and backgrounds.
CO5	Used to Createthe graphics and animations usingwizards.
CO6	Used to Create the Inserting Clipartsframes,Working with the Graphs and Charts

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
2	CO1	3	3	1	1	1	1	3		
	CO2	3	3	1	2	2	2	3		
	CO3	3	2	3	1	3	3	3		
	CO4	3	2	2	1	1	2	3		
	CO5	2	2	2	1	1	1	3		
	CO6	3	3	3	2	3	3	3		

3	Category	Humanities & Social Studies (HS)	Basic Sciences (BS)	Engg Sciences (ES)	Professional Core (PC)	Core Elective (CE)	Non-Major Elective (NE)	Open Elective (OE)	Any other	Project/Term Paper/ Seminar/ Internship (PR)
									✓	
4	Approval	Academic Council Meeting								

UNIT I **6**

Text Manipulations- font size, style, color. Alignment- left, right and justify, paragraph alignment, Usage of Numbering, Bullets, Footer and Headers, Usage of Spell check, and Find & Replace, Text Formatting, Picture insertion and alignment.

UNIT II **6**

Insertion – Table, chart, clip art, shapes, borders. Creation of documents, saving of documents, using templates, Creation templates, Mail Merge Concepts, Copying Text & Pictures from Excel.

UNIT III **6**

Creating of Excel sheet, Cell Editing, Usage of Formulae and Built-in Functions, File Manipulations, Data Sorting, Worksheet Preparation, Drawing Graphs, Usage of Auto Formatting.

UNIT IV **6**

Start power point, Create blank presentation, Selecting slide layout , Insert new slide, Editing presentation , Designing and formatting presentation , Change font, font color, size, style of text, Bullet and numbering, Slide design, layout, change background , preparing slide show presentation.

UNIT V **6**

Inserting Clip arts and Pictures, Frame movements, Insertion of new slides.Preparation of Organization Charts, Presentation using Wizards, Usage of design templates, working with tables, graphics and animation, working with graphs and organization charts.

Text Books

1. Joyce Cox, Joan Lambert and Curtis Fryc, “Step by Step Microsoft Office Professional 2010”, Microsoft press edition.

Reference Books

1. Ralph T.Reilly, “The Handbook of Office Automation”, iUniverse Publications,2012.

Course Coordinator **HOD**

U18SEMA001	QUANTITATIVE APTITUDE – 1	L	T	P	C
	Total Contact Hours – 30	2	0	0	2
	Prerequisite course – Higher Secondary Level				
	Course Coordinator Name & Department:- Mr.V.Nandakumar/Mathematics				

COURSE OBJECTIVES:-

To equip students with adequate knowledge of Mathematics to formulate problems and solve them analytically or numerically.

COURSE OUTCOMES (COs)

CO1	Gain knowledge in Number Series with its applications.
CO2	Understand the concept of Data Interpretation
CO3	Apply suitable algorithms in Loss & Discount
CO4	Analyze the Rates,Time and Distance
CO5	Evaluate problemsSimple Interest
CO6	Create an real time application compounds and mixtures

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
2	CO1	3	2	1	1	1	1	2		
	CO2	2	3	1	2	2	1	2		
	CO3	3	2	2	3	2	2	3		
	CO4	3	3	3	2	2	2	3		
	CO5	2	3	2	1	3	2	2		
	CO6	3	3	3	1	3	2	3		

3	Category	Humanities & Social Studies (HS)	Basic Sciences (BS)	Engg Sciences (ES)	Professional Core (PC)	Core Elective (CE)	Non-Major Elective (NE)	Open Elective (OE)	Any other	Project/Term Paper/ Seminar/ Internship(PR)
									✓	
4	Approval	Academic Council Meeting								

UNIT I NUMBER SYSTEM **6**

Numbers, Number Series, Number Theory, Arithmetic & Geometric Ratio

UNIT II STATISTICS **6**

Average, Ages, Data Interpretation.

UNIT III PERCENTAGE AND APPLICATIONS **6**

Percentage, Profit, Loss & Discount, Simple Interest, Compound Interest

UNIT IV TIME **6**

Rates,Time and Distance ,Train Problems, Boats and Streams, Time and Work.

UNIT V RATIO AND PROPORTION **6**

Allegations of compounds and mixtures.

Text Books

1. Aggarwal.R.S(2018) “Quantitative Aptitude” by, S.Chand Publications.

2. Aggarwal.R.S(2018) “A modern approach to Logical approach” by, S.Chand Publications.

Reference Books

1.Abhijit Guha, “Quantitative Aptitude”- Mc Graw Hills Publishers

2. Aggarwal.R.S(2018) “A modern approach to Logical approach” by, S.Chand Publications.

CourseCoordinator **HOD**

U18SEMA002	QUANTITATIVE APTITUDE-II	L	T	P	C
	Total Contact Hours – 30	2	0	0	2
	Prerequisite course – Higher Secondary Level				
	Course Coordinator Name & Department:- Mr.V.Nandakumar/Mathematics				

COURSE OBJECTIVES:-

To equip students with adequate knowledge of Mathematics to formulate problems and solve them analytically or numerically.

COURSE OUTCOMES (COs)

CO1	Gain knowledge in Inverse, Compound equation.
CO2	Understand the circular arrangement.
CO3	Apply suitable direction of Permutations and combinations test.
CO4	Analyze the Heights and Distance
CO5	Evaluate problems on Simple Interest
CO6	Create an real time applicationof Date and time.

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
2	CO1	3	3	1	1	1	1	3		
	CO2	3	3	1	2	2	2	3		
	CO3	3	2	3	1	3	3	3		
	CO4	3	2	2	1	1	2	3		
	CO5	2	2	2	1	1	1	3		
	CO6	3	3	3	2	3	3	3		

3	Category	Humanities & Social Studies (HS)	Basic Sciences (BS)	Engg Sciences (ES)	Professional Core (PC)	Core Elective (CE)	Non-Major Elective (NE)	Open Elective (OE)	Any other	Project/Term Paper/ Seminar/ Internship(PR)
									✓	
4	Approval	Academic Council Meeting								

UNIT I SOLVING ABILITY **6**
Simple equations –Variation-Direct, Inverse, Compound

UNIT II PROBABILITY **6**
Problems on Linear and circular arrangement.

UNIT III REASONING ABILITY **6**
Coding and decoding – Direction Permutations and combinations test- Lateral reasoning-Blood relations-Paragraph based
puzzles.

UNIT IV TRIGONOMETRY **6**
Heights and Distance.

UNIT V CLOCKS AND CALENDERS **6**
Interpretation of Date and time.

Text Books
1. Aggarwal.R.S(2018) "Quantitative Aptitude" by, S.Chand Publications.

2. Aggarwal.R.S(2018) "A modern approach to Logical approach" by, S.Chand

Publications.

Reference Books
1.Abhijit Guha, "Quantitative Aptitude"- Mc Graw Hills Publishers

2. Aggarwal.R.S(2018) "A modern approach to Logical approach" by, S.Chand Publications.

CourseCoordinator **HOD**

U18SEMA003	REGRESSION ANALYSIS WITH SPSS	L	T	P	C
	Total Contact Hours – 30	2	0	0	2
	Prerequisite course – Higher Secondary Level				
	Course Coordinator Name & Department:- Ms.S.Kavitha /Mathematics				

COURSE OBJECTIVES:-

To equip students with adequate knowledge of Mathematics to formulate problems and solve them analytically or numerically.

COURSE OUTCOMES (COs)

CO1	Gain knowledge Qualitative Variable on Nominal Scale, Ranked.
CO2	Understand the Deleting and Rearranging Items from the Viewer
CO3	Apply suitable direction Permutations and combinations test.
CO4	Analyze the Pie Chart, Scatter Plot and Dot plots
CO5	Evaluate data questionnaire Analysis
CO6	Create an real time application and test of hypotheses

Mapping of Course Outcomes with Program outcomes (POs)
(1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low

1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
2	CO1	3	3	1	1	1	1	3		
	CO2	3	3	1	2	2	2	3		
	CO3	3	2	3	1	3	3	3		
	CO4	3	2	2	1	1	2	3		
	CO5	2	2	2	1	1	1	3		
	CO6	3	3	3	2	3	3	3		

3	Category	Humanities & Social Studies (HS)	Basic Sciences (BS)	Engg Sciences (ES)	Professional Core (PC)	Core Elective (CE)	Non-Major Elective (NE)	Open Elective (OE)	Any other	Project/Term Paper/ Seminar/ Internship(PR)
									☐	
4	Approval	Academic Council Meeting								

Unit 1 : Introduction **6**

Observations and Variables, Quantitative or Measurement Variable on Interval Scale, Qualitative Variable on Nominal Scale, Ranked Variable on Ordinal Scale.

Unit 2 : SPSS Data File **6**

Opening a Data File in SPSS – Variable View, Data View, Entering Data into the Data Editor, Saving the Data File. Editing and Manipulating Data : Inserting a New Variable, Rearranging the Order of Variable in the Variable View, Deleting and Rearranging Items from the Viewer. Usage of Data, Transform, Analyse and Graphs menus – Editing and copying and printing SPSS output – Importing Data from Excel File.

Unit 3:Descriptive Statistics with SPSS **6**

Charts and Graphs: Simple Bar charts, Pie Chart, Scatter Plot and Dot plots, Line graphs, Histogram .

Unit 4: Correlation and Regression Analysis with SPSS **6**

Simple correlation (Karl Pearson's Method) - Rank correlation (Spearman's method) – Simple linear regression equation, Scatter plot and line of best fit – Questionnaire Analysis (Uni-variate and Bi- variate tables) – Chi square test with SPSS for independence of Attributes.

Unit 5: correlation and Testing of Hypothesis **6**

Partial and multiple correlation coefficients . Simple linear regression model : Description of data model - Estimation and test of hypotheses.

Books for Study :

1. Ananthi Sheshasayee and Sheshasayee, G, (2003), **Computer Applications in Business and Management**, Margham Publications, Chennai.

2. Rajathi, A. and Chandran, P. (2010), SPSS for you, MJP Publishers, Chennai.

3. Chatterjee, S and Price, B (1977), **Regression Analysis by Example**, John Wiley and Sons, New York (Chapter 1,2,3 and relevant portions in chapters 4,5,6,7,8,9).

4. Kapoor, V. K and Gupta, S. C (2002), **Fundamentals of Mathematical Statistics**, Sultan Chand and Sons, New Delhi. (Chapter 10 only)

Books for Reference :

1. Singh, V. P. and Singh, M. (1998), **MS-Excel**, Megabyte Series, Asian Publishers, New Delhi.

2. Andy Field (2006), **Discovering Statistics Using SPSS**, SAGE Publications , London.
3. Johnston, J (1972), **Econometric Methods**, McGraw-Hill Pvt. Ltd, New York.

4. Draper, N. R and Smith, H (1998), **Applied Regression Analysis,** 3rd edition, John Wiley and Sons, USA.

CourseCoordinator **HOD**

BHARATH INSTITUTE OF HIGHER EDUCATION AND RESEARCH (BIHER)

Accredited 'A' Grade by NAAC

(Declared as Deemed -to -be University under section 3 of UGC Act, 1956)

SREE BALAJI COLLEGE OF PHYSIOTHERAPY

Constituent College of BIHER

BACHELOR FOR PHYSIOTHERAPY

Undergraduate Degree Course

BPT CBCS Syllabus 2019

1 Semester = 20 Weeks Teaching/ 1 Week= 36 Hours

MC Main Core, AR Allied Required, GE General Elective, FC Foundation Core, CT Clinical Training, IT Internship

Sem.	Code No.	Courses	Theory		Practical		Total Hours	Total Credits
			H	C	H	C		
I	19BPT1FC01	Human Anatomy I	60	4	75	2	135	6
	19BPT1FC02	Human Physiology I	60	4	60	2	120	6
	19BPT1AR01	Sociology	60	4			60	4
	19BPT1AR02	Basic, Applied Physics for Physiotherapy	30	2	30	1	60	3
	19BPT1AR03	English and Communication Skills	30	2			30	2
	19BPT1GE01	Basic Nursing and First Aid	30	2	30	1	60	3
	19BPT1GE02	Environmental Science						
	19BPT1CT01	Clinical Training					255	3
							720	27
II	19BPT2FC01	Human Anatomy II	60	4	90	3	190	7
	19BPT2FC02	Human Physiology II	60	4	75	2	135	6
	19BPT2AR01	Clinical Psychology	30	2	30	1	60	3
	19BPT2AR02	Biochemistry	30	2	30	1	60	3
	19BPT2GE01	Basic Computer Science	30	2	30	1	60	3
	19BPT2GE02	Artificial Intelligence						
	19BPT2CT02	Clinical Training					255	3
							720	25
III	19BPT3MC01	General Medicine and Pediatrics	60	4	60	2	120	6
	19BPT3MC02	Exercise Therapy I	60	4	45	1	105	5
	19BPT3FC01	Biomechanics	45	3	45	1	90	4
	19BPT3AR01	Pathology	45	3	45	1	90	4
	19BPT3GE01	Sports Physiotherapy	30	2	30	1	60	3
	19BPT3GE02	Yoga Therapy						
	19BPT3CT03	Clinical Training					255	3

							720	25
IV	19BPT4MC01	General Surgery, Geriatric and Pharmacology	60	4	45	1	105	5
	19BPT4MC02	Exercise Therapy II	60	4	60	2	120	6
	19BPT4MC03	Massage Therapy	45	3	60	2	105	5
	19BPT4AR01	Microbiology	45	3	30	1	75	4
	19BPT4GE01	Bioengineering	30	2	30	1	60	3
	19BPT4GE02	Obstetrics and Gynecology						
	19BPT4CT04	Clinical Training					255	3
							720	26
V	19BPT5MC01	Electrotherapy I	60	4	60	2	120	6
	19BPT5MC02	Clinical Orthopedics	60	4	45	1	105	5
	19BPT5MC03	Clinical Neurology and Neurosurgery	45	3	45	1	90	4
	19BPT5FC01	Kinesiology	45	3	45	1	90	4
	19BPT5GE01	Medical Terminology & Record Keeping	30	2	30	1	60	3
	19BPT5GE02	Data Science						
	19BPT5CT05	Clinical Training					255	3
							720	25
VI	19BPT6MC01	Electrotherapy II	60	4	60	2	120	6
	19BPT6MC02	Clinical Cardiovascular conditions for Physiotherapist	60	4	45	1	105	5
	19BPT6MC03	Clinical Reasoning and Evidence Based Physiotherapy	45	3	45	1	90	4
	19BPT6AR01	Community Medicine	45	3	45	1	90	4
	19BPT6GE01	Professionalism and values	30	2	30	1	60	3
	19BPT6GE02	Healthcare Management						
	19BPT6CT06	Clinical Training					255	3
							720	25
VII	19BPT7MC01	Physiotherapy in Orthopedic Conditions	60	4	75	2	135	6
	19BPT7MC02	Physiotherapy in Neurological Conditions	60	4	75	2	135	6
	19BPT7MC03	Clinical Respiratory conditions for Physiotherapist	45	3	19	1	60	4
	19BPT7AR01	Research Methodology & Biostatistics	30	2	45	1	75	3
	19BPT7GE01	Diagnostic Imaging for Physiotherapist	30	2	30	1	60	3

	19BPT7GE02	Dietetics and Nutrition						
	19BPT7AR02	Ethics in Physiotherapy						
	19BPT7GE03	Medico Legal Aspects						
	19BPT7CT07	Clinical Training					255	3
							720	25
VIII	19BPT8MC01	Physiotherapy in Cardiorespiratory Condition	60	4	75	2	135	6
	19BPT8MC02	Rehabilitation Medicine including Geriatric Rehabilitation	60	4	75	2	135	6
	19BPT8MC03	Physiotherapy Law	60	4			60	4
	19BPT8GE01	Administration and Teaching Skill	30	2	30	1	60	3
	19BPT8GE02	Quality and Patient Safety						
	19BPT8PJ01	Research Project and Dissertation	30	2	45	1	75	3
	19BPT8CT08	Clinical Training					255	3
							720	25
IX	19BPTIT01	Internship Training					960	19
		Minimum 960 hours based on 8 hours per day, 120 working days in six month duration						

SEMESTER I - COURSE OUTCOME, CO PO MAPPING

Course Code 19BPT1FC01	Course Name: Human Anatomy I	Theory	Practical	Total Credit
	Total Contact Hours -135	4	2	6
	Prerequisite Course - HSSC			
	Course Coordinator:			
Course Outcomes (CO)				
CO1	Understand the organization of the human body.			
CO2	Understand the topographical anatomy of the brain, thorax, abdomen, pelvis and limbs.			
CO3	Describe the functional anatomy of the brain, thorax, abdomen, pelvis and limbs.			
CO4	Ability to identify and describe anatomical aspects of muscles, bones and joints of the various regions.			
CO5	Demonstrate the application of anatomy in practice of physiotherapy.			

Mapping of Course Outcomes with Program Outcomes
(1/2/3 indicates strength of correlation 3-High, 2 Medium, 1 Low)

CO/ PO/ PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	3	3	3	3	3	3	3	3	3	2	3	3	3	3	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3	3	2	2	3	3	2	3
CO3	3	3	3	3	3	2	3	2	3	3	2	3	3	3	2	3	3
CO4	3	3	3	3	2	3	3	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	2	3	3	3	3	3	2	3	3	2

HUMAN ANATOMY I

Syllabus

Unit I: Anatomy and mention its Course divisions - anatomical positions and anatomical terms- introduction to bones: Joints, muscles, Cell, Nerve, Blood vessel.

Unit II: Classification of tissues - classify and mention the microscopic structure, types of tissues such as epithelial, connective, muscular and nervous tissue -. General embryology theories of development – gestation – gametogenesis – fertilization – implantation – development of skeletal system.

Unit III: Upper extremity

Oesteology- myology –arthrology – Nerves – Blood vessels –- lymphatic drainage-miscellaneous

Unit IV: Lower extremity

Oestology –myology –arthrology – Nerves – blood vessels –- lymphatic drainagemiscellaneous –

Unit V: The pelvis

Muscles of the pelvic wall - sacral plexus - pelvic fascia - urinary bladder - ureters - urethra - uterus – vagina – ovary - rectum - anal canal - vas deference - seminal vesicles - sacro iliac joint - pubic symphysis - sacrum.

Reference

1. Clinical anatomy by regions – RICHARD S SNELL'S 9 th edition 2012 wolter kluwer pubisher

2. Human anatomy – BD CHAURASIA'S VOL 1, 2 , 3, .6 th edition 2013 CBS

3. Human anatomy – T S RANGANATHAN 2000 S Chand and co

4. Clinical neuroanatomy – RICHARD S. SNELL – 7 th edition 2010 wolter kluwer pubisher

Websites

1. AMERICAN ASSOCIATION OF ANATOMISTS
2. HUMAN ANATOMY ONLINE
3. KHAN ACADEMY

Journal

1. INTERNATIONAL JOURNAL OF ANATOMY & RESEARCH.
2. NATIONAL JOURNAL OF CLINICAL ANATOMY SCOPE MED.ORG.

Course Code 19BPT1FC02	Course Name: Human Physiology I	Theory	Practical	Total Credit
	Total Contact Hours -120	4	2	6
	Prerequisite Course - HSSC			
	Course Coordinator:			

Course Outcomes (CO)	
CO1	Understand the general physiology of the body.
CO2	Explain the normal functioning and interaction of all the organ systems.
CO3	Identify the applied physiology of various body systems.
CO4	Analyse the response of various body systems to physiological and pathological stress.
CO5	Explain and correlate the applied physiology of diseases and disorders related to organ systems of the body which are commonly treated by the physiotherapist.

Mapping of Course Outcomes with Program Outcomes
(1/2/3 indicates strength of correlation 3-High, 2 Medium, 1 Low)

CO/ PO/ PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	3	3	3	3	3	3	3	3	3	2	3	3	3	3	3	3	3
CO2	3	3	3	3	2	3	3	3	3	3	3	2	2	3	3	2	3
CO3	3	3	3	3	3	3	3	2	3	3	2	3	3	3	2	3	3
CO4	3	3	3	3	2	3	3	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	2	3	3	3	2	3	2	3	3	3

HUMAN PHYSIOLOGY I

Syllabus

Unit I : Cell introduction outline of basic concept of cell structure - function of components - transport across membranes.- cell biology –membrane biology – molecular biology-skin structure – functions - blood flow - temperature regulation. Blood and cardio vascular system.

Unit II : Outline of components; and their functions; rbc, wbc, platelets, plasma proteins - significance of rbc and wbc counts, esr and other related tests - hemostasis, clotting mechanisms - blood volume and its regulation - .structure and properties of cardiac muscle - cardiac cycle - ecg; heart sounds - cardiac

output and venous return - heart rate and factors regulating the action of the heart - blood pressure; its maintenance and regulation, cardiovascular reflexes.

Unit III : Respiration defense mechanism in the respiratory tree; mucociliary transport and mechanics of respiration - transport of blood gases, acid-base balance - lung function tests (including lung volumes). Artificial ventilation - nervous and chemical regulation of respiration - effects of exercise on respiration - breath sounds.

Unit IV : Digestion &excretion

Digestion in the mouth, stomach and intestine - bile; pancreatic secretion - mechanism of control of secretions and motility - movements of the alimentary tract - gastrointestinal hormones - apud cells - diet and nutrition.

Unit V : Excretory system;structure of the nephron - formation of urine – micturation - renin angiotensin system - renal function test - acid base balance

Reference

1. Textbook of medical physiology - GUYTON .ARTHUR -13th edition 2013 elsevier

2. Concise medical physiology - CHAUDHARI S.K 7th edition 2016 NCBA

3. Human physiology - CHATTERJEE CC – 11th edition 2016 CBS

Websites

1. PHYSIOLOGY WEB

2. AMERICAN PHYSIOLOGY SOCIETY

Journals

1. NATIONAL JOURNAL OF PHYSIOLOGY, PHARMACY & PHARMACOLOGY.

2. THE JOURNAL OF PHYSIOLOGY WILEY ONLINE LIBRARY.

Course Code 19BPT1AR01	Course Name: Sociology	Theory	Practical	Total Credit
	Total Contact Hours -60	4	0	4
	Prerequisite Course - HSSC			
	Course Coordinator:			
Course Outcomes (CO)				
CO1	Understand the role of family and community in the development of behaviours.			
CO2	Develop a holistic outlook towards the structure of society and community resources.			
CO3	Understand the social and economic aspects of community that influence the health of the people.			
CO4	Understand the significance of social interactions in the process of rehabilitation.			
CO5	Demonstrate an understanding of the role of socio cultural factors as determinants of health and behaviours in health and sickness.			

Mapping of Course Outcomes with Program Outcomes
(1/2/3 indicates strength of correlation 3-High, 2 Medium, 1 Low)

CO/ PO/ PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	3	3	3	2	3	3	3	3	3	2	3	3	3	3	3	3	3
CO2	3	3	3	3	2	3	3	3	3	3	3	2	2	3	3	2	3
CO3	3	3	3	3	3	3	3	2	3	3	2	3	3	3	2	3	3
CO4	3	3	3	3	2	3	3	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	2	3	3	3	3	2	2	3	3	2

SOCIOLOGY

Syllabus

Unit I: Introduction Definition of Sociology. Sociology as a science, uses of the study of Sociology, application of knowledge of sociology in Physiotherapy. Sociology and health Social factors affecting the health status, social consciousness and perception of illness, social consciousness and meaning of illness, decision making in taking treatment. Institutions of health, their role in the improvement of

health and the people. Socialization Meaning of socialization, influence of social factors on personality, socialization in hospital and socialization in rehabilitation of patients.

Social control Meaning of social control, role of norms, folkways, customs, morals, religions, laws and other means of social control in the regulation of human behaviour, social deviance and disease.

UNIT II . Social groups Concepts of social groups, influence of formal and informal groups on health and sickness, the role of primary groups and secondary groups in the hospital and rehabilitation settings. Family Influence of family on human personality, discussion of changes in the functions of a family, influence of family on the individual's health, family and nutrition. The effects of sickness on family and psychosomatic disease. Community Concepts of community, role of rural and urban communities public health, role of community in determining beliefs, practices and home remedies in treatment. Culture Components of culture, impact of culture on human behaviours cultural meaning of sickness, response to sickness and choice of treatment (role of culture as social consciousness in moulding the perception of reality). Culture induced symptoms and diseases, Course-culture of medical workers. Caste system Features of the modern caste system and its trends.

UNIT III : Social change Meaning of social changes, factors of social change, human adaptation and social change, social change and stress, social change and deviance, social change and health programmes, the role of social planning in the improvement of health in rehabilitation.

UNIT IV : Social problems of the disabled Consequences of the following social problems in relation to sickness and disability, remedies to prevent these problems.

UNIT V : Population explosion Poverty and unemployment Beggary Juvenile delinquency Prostitution Alcoholism Problems of women in employment Social security Social security and social legislation in relation to the disabled. Social worker The role of a medical social worker.

References

1. Sachdeva. D.R.and Bhshan. V.: An Introduction to Sociology, Allahabad, Kitab Mahal Limited - 1974.

2. Madan, G.R.: Indian Social Problems, Vol-I, Madras. Allied Publications - 1973

Course Code 19BPT1AR02	Course Name: Basic, Applied Physics for Physiotherapy	Theory	Practical	Total Credit
	Total Contact Hours -60	2	1	3
	Prerequisite Course - HSSC			
	Course Coordinator:			
Course Outcomes (CO)				
CO1	Understand the fundamentals of general physics and able to relate its application in physiotherapy.			
CO2	Describe the basic physical principles of mechanics, sound, light and heat with their application in physiotherapy.			
CO3	Understand basic aspects of electricity and electronics as related to its application in electrotherapy instruments.			
CO4	Describe in brief common electrical components and identify such components.			
CO5	Design experiments and acquire data in order to explore physical principles, effectively communicate results, and critically evaluate related scientific studies.			

Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation 3-High, 2 Medium, 1 Low)																	
CO/ PO/ PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	3	3	3	3	3	3	3	3	3	2	3	3	3	3	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3	3	2	2	3	3	2	3
CO3	3	3	3	3	3	3	3	2	3	3	2	3	3	3	2	3	3
CO4	3	3	3	3	2	3	3	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	2	3	3	3	3	3	2	3	3	2

BASIC, APPLIED PHYSICS FOR PHYSIOTHERAPY

Syllabus

Unit I : Mechanics: Definition of mechanics and Biomechanics - Force - Definition, diagrammatic representation, classification of forces, concurrent, coplanar and co-linear forces, composition and resolution of forces, angle of pulls of muscle - Speed, Velocity, Work, Energy, Power, Acceleration, Momentum - principles, and practical application - Newton's Laws – Friction - Elasticity - Definition, stress, strain, HOOKE'S LawGravity - Definition, line of gravity, Centre of gravity - Equilibrium

Unit II : Pulleys - - Levers - Definition, function, classification and application of levers in physiotherapy& order of levers with example of lever in human body - Currents: DC AND A.C Currents -Modern concept of electricity: fundamental electric charges

Unit III : Capacitors: Electric field around a capacitor, charging and discharging a capacitor, types of capacitor with–Rheostat: series and shunt Rheostat with application of each in the Physiotherapy department - Effects of electric Current: Thermal effect, chemical effect (ionization) and magnetic effect, Electric shock, Earth shock, causes and its prevention - Magnetism: Magnetic - non-magnetic substances and their properties, molecular theory, poles of magnet and its properties, magnetic lines of force and their properties, Electromagnetism AND LAWS

Unit IV : Condenser – Potential & capacity, Principles, factors determining capacity, construction. Electric field, charging & discharging and use of condenser in electrotherapy - Cosine law and its implications - Physical effects of heat and radiation. Laws governing radiation -. Units of electricity: farad, volt, ampere, coulomb, watt - resonance: in series & in parallel - potentiometer: - fuse: - transmission of electrical energy through solids, liquids, gases and vacuum - shock, safety precautions and management - burns: electrical & chemical: prevention & management

Unit V : Thermionic valves: thermionic emission, diode and triode valves and their characteristics, construction and application of cathode ray oscilloscope - semiconductor devices: intrinsic and extrinsic semiconductors, light emitting diodes, integrated circuits moving coil millimetre: construction, working and uses. Transformer: definition-types-principle-construction-eddy current-working uses chokes: principle-construction and working-uses. Metal oxide rectifier

Reference

1. R K Gaur – 2011 dhanpat- rai publications (p) ltd new delhi

2. Electrotherapy explained principles and practice – LOW and REED 4 th edition – 2006 – elseiver health – uk

3. Therapeutic exercise – CAROLYN KISNER 6 th edition -2012 – jaypee brothers medical publishers

4. Clayton’s electrotherapy theory and practice – FORSTER & PALASTANGA 8 th edition – 2007 CBS

5. Textbook of medical physiology - GUYTON .ARTHUR -13 th edition 2013 elsevier

Course Code 19BPT1AR03	Course Name: English and Communication Skills	Theory	Practical	Total Credit
	Total Contact Hours -30	2	0	2
	Prerequisite Course - HSSC			
	Course Coordinator:			
Course Outcomes (CO)				
CO1	Demonstrate efficiency to Speak and write grammatically correct sentences in English.			
CO2	Develop effective writing skills.			
CO3	Build fluency in English.			
CO4	Polishing manners to behave appropriately in social and professional circles.			
CO5	Handling difficult situations with grace, style and professionalism.			

Mapping of Course Outcomes with Program Outcomes (1/2/3 indicates strength of correlation 3-High, 2 Medium, 1 Low)																	
CO/ PO/ PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	3	3	3	3	3	3	3	3	3	2	3	3	3	3	3	3	3
CO2	3	3	3	3	2	3	3	3	3	3	3	2	2	3	3	2	3
CO3	3	3	3	3	3	3	3	2	3	3	2	3	3	3	2	3	3
CO4	3	3	3	3	2	3	3	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	2	3	3	3	2	3	2	3	3	2

ENGLISH AND COMMUNICATION SKILLS

Syllabus

UNIT I: Introduction Study Techniques Organisation of effective note taking and logical processes of analysis and synthesis - The use of the dictionary Enlargement of vocabulary Effective diction

UNIT II: Applied Grammar: Correct usage - the structure of sentences - The structure of paragraphs - Enlargements of Vocabulary

UNIT III: Written Composition - Precise writing and summarising - Writing of bibliography - Enlargement of Vocabulary

UNIT IV: Reading and comprehension - Review of selected materials and express oneself in one's words - Enlargement of Vocabulary.

UNIT V: The Study of Various Forms of Composition Paragraph, Essay, Letter, Summary, Practice in writing, Verbal Communication - Discussions and Summarization, Debates, Oral reports, use in teaching.

Reference

1. Wren and Martin - Grammar and Composition, regular edition revised by N.D.V PRASDA RAO Chand .& Co, Delhi

Course Code 19BPT1GE01	Course Name: Basic Nursing and First Aid	Theory	Practical	Total Credit
	Total Contact Hours -60	2	1	3
	Prerequisite Course -HSSC			
	Course Coordinator:			
Course Outcomes (CO)				
CO1	Demonstrate and understand the principles of first aid.			
CO2	Demonstrates skill in giving first aid treatment in emergencies that may be met in the community.			
CO3	Demonstrate and understand the nursing principles.			
CO4	Familiarise various nursing positions and methods of giving nourishment.			
CO5	Demonstrate surgical dressing and transportation of patients.			

Mapping of Course Outcomes with Program Outcomes (1/2/3 indicates strength of correlation 3-High, 2 Medium, 1 Low)																	
CO/ PO/ PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	3	3	3	3	3	3	3	3	3	2	3	3	3	3	3	3	3
CO2	3	3	3	3	2	3	3	3	3	3	3	2	2	3	3	2	3
CO3	3	3	3	3	3	3	3	2	3	3	2	3	3	3	2	3	3
CO4	3	3	3	3	2	3	3	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	2	3	3	3	3	3	2	3	3	2

BASIC NURSING & FIRST AID

Syllabus

UNIT I : Basic Nursing Introduction- Nursing Principles-Inter personal relationship-Bandaging, Basic Turns, Bandaging extremities, Triangular Bandages and their application - Nursing position: Environment safety, Bed making, prone, lateral, dorsal, dorsal recumbent, fowler's positions, comfort measures, aids to rest and sleep - Lifting and Transporting Patients: Lifting patients up in the bed, transferring from bed to wheel chair, transferring from bed to stretcher- Providing For Patients Elevation: Giving and taking Bed Pan, Urinal, Observation of stools, urine observation of sputum, understand use and care of catheters, enema giving

UNIT II: Methods of Giving Nourishment: Feeding, Tube feeding, Drips, Transfusion - Care of Rubber Goods: Observation, Reporting and Recording Temperature, Respiration and Pulse, Simple Aseptic Technique, Sterilization and Disinfection. - Surgical Dressing: Parental Administration of Medicine.

UNIT III : First Aid. General Principles of First Aid – Wounds, Control of Hemorrhage, Epistaxis.

UNIT IV : Shock – Bites – Burns & Scalds – Heat Exhaustion, Heat Stroke and Fainting, Frost Bite – Fractures, Dislocations, Sprains and Strains – Poisoning – Epileptic Fits, Convulsions in children – Aspiration of foreign body.

UNIT V : Artificial Respiration (CPR) – Bandages and Different Types – Unconsciousness and General Principles of Treatment.

Reference

1.First Aid – Red Cross Society

2.First Aid – St. Johns Ambulance Association

3.Basic Nursing by Dr, Mona Megahed

Course Code 19BPT1GE02	Course Name: Environmental Science	Theory	Practical	Total Credit
	Total Contact Hours -60	2	1	3
	Prerequisite Course -HSSC			
	Course Coordinator:			
Course Outcomes (CO)				
CO1	Demonstrate and understand the principles of environmental science.			
CO2	Understand the problems and issues related to the environment.			
CO3	Ability to identify the influence of biohazards in the ecosystem.			
CO4	Demonstrate an integrative approach to environmental issues with a focus on sustainability.			
CO5	Understand the interdependence of individuals, society and environment.			

Mapping of Course Outcomes with Program Outcomes (1/2/3 indicates strength of correlation 3-High, 2 Medium, 1 Low)																	
CO/ PO/ PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	3	3	3	3	3	3	3	3	3	2	3	3	3	3	3	3	3
CO2	3	3	3	3	2	3	3	3	3	3	3	2	2	3	3	2	3
CO3	3	3	3	3	3	3	3	2	3	3	2	3	3	3	2	3	3
CO4	3	3	3	3	2	3	3	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	2	3	3	3	3	3	2	3	3	2

ENVIRONMENTAL SCIENCE

Syllabus

UNIT I: Origin of Earth and System processes Solar system formation and planetary differentiation; formation of the Earth: formation and composition of core, mantle, crust; chemical composition of Earth; geological time scale and major changes on the Earth's surface; Holocene and the emergence of humans.

UNIT II : Concept of plate tectonics and continental drift theory, continental collision and formation of the Himalaya; ocean floor spreading; mantle convection and, major plates;

earthquakes; volcanic activities; orogeny; isostasy; gravitational and magnetic fields of the earth; paleontological evidences of plate tectonics. NJ

UNIT III : Minerals and rocks Minerals and important rock forming minerals; rock cycle: lithification and metamorphism; Three rock laws; rock structure, igneous, sedimentary and metamorphic rocks; weathering: physical, biogeochemical processes; erosion: physical processes of erosion, factors affecting erosion; agents of erosion: rivers and streams, glacial and aeolian transportation and deposition of sediments by running water, wind and glaciers.

UNIT IV : Earth surface processes Atmosphere: evolution of earth's atmosphere, composition of atmosphere, physical and optical properties, circulation; interfaces: atmosphere–ocean interface, atmosphere–land interface, ocean–land interface; land surface processes: fluvial and glacial processes, rivers and geomorphology; types of glaciers, glacier dynamics, erosional and depositional processes and glaciated landscapes; coastal processes.

UNIT V : Importance of being a mountain Formation of Peninsular Indian mountain systems - Western and Eastern Ghats, Vindhyas, Aravallis, etc. Formation of the Himalaya; development of glaciers, perennial river systems and evolution of monsoon in Indian Coursecontinent; formation of Indo-Gangetic Plains, arrival of humans; evolution of Indus Valley civilization; progression of agriculture in the Indian Coursecontinent in Holocene; withdrawing monsoon and lessons to draw.

Reference

1. Keller, E.A. 2011. Introduction to Environmental Geology (5th edition). Pearson Prentice Hall. Krishnan, M. S. 1982. Geology of India and Burma. CBS Publishers & Distributors. Reference Books: Bridge, J. & Demicco, R. 2008.
2. Earth Surface Processes, Landforms and Sediment deposits. Cambridge University Press. Duff, P. M. D. and Duff, D. (Eds.). 1993.
3. Holmes' Principles of Physical Geology. Taylor & Francis. Gupta, A. K., Anderson, D. M., & Overpeck, J. T. 2003.
4. Abrupt changes in the Asian southwest monsoon during the Holocene and their links to the North Atlantic Ocean. Nature 419: 354-357. Gupta, A. K., Anderson, D. M., Pandey, D. N., & Singhvi, A. K. 2006.
5. Adaptation and human migration, and evidence of agriculture coincident with changes in the Indian summer monsoon during the Holocene. Current Science 90: 1082-1090

Course Code 19BPT1CT01	Course Name: Clinical Training	Total Credit
	Total Contact Hours -255	3
	Prerequisite Course - HSSC	
	Course Coordinator:	
Course Outcomes (CO)		
CO1	Explain the components of basic assessment for a patient.	
CO2	List the impairments resulting in functional limitation and participation restriction.	
CO3	Demonstrate clinical observation skills and bedside manners.	
CO4	Understanding of policy of the inpatient service and outpatient services.	
CO5	Understand the role of physiotherapy in various clinical conditions and the documentation of patient service.	

Mapping of Course Outcomes with Program Outcomes
(1/2/3 indicates strength of correlation 3-High, 2 Medium, 1 Low)

CO/ PO/ PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	3	3	3	3	3	3	3	3	3	2	3	3	3	3	3	3	3
CO2	3	3	3	3	2	3	3	3	3	3	3	2	2	3	3	2	3
CO3	3	3	3	3	3	3	3	2	3	3	2	3	3	3	2	3	3
CO4	3	3	3	3	2	3	3	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	2	3	3	3	2	3	2	3	3	2

CLINICAL TRAINING

Syllabus

Unit I : Cadaver Study and Laboratory Study for Anatomy and Physiology.

Unit II : Community Field Visit for Sociology

Unit III : Field visit to SCARF for Psychology

Unit IV : Clinical Observation

Unit V : Co curricular Activities

SEMESTER II - COURSE OUTCOME, CO PO MAPPING

Course Code 19BPT2FC01	Course Name: Human Anatomy II	Theory	Practical	Total Credit
	Total Contact Hours -190	4	3	7
	Prerequisite Course - HSSC			
	Course Coordinator:			
Course Outcomes (CO)				
CO1	Understand the organization of the human body.			
CO2	Understand the topographical anatomy of the brain, thorax, abdomen, pelvis and limbs.			
CO3	Describe the functional anatomy of the brain, thorax, abdomen, pelvis and limbs.			
CO4	Ability to identify and describe anatomical aspects of muscles, bones and joints of the various regions.			
CO5	Demonstrate the application of anatomy in practice of physiotherapy.			

Mapping of Course Outcomes with Program Outcomes
(1/2/3 indicates strength of correlation 3-High, 2 Medium, 1 Low)

CO/ PO/ PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	3	3	3	3	3	3	3	3	3	2	3	3	3	3	3	3	3
CO2	3	3	3	3	2	3	3	3	3	3	3	2	2	3	3	2	3
CO3	3	3	3	3	3	3	3	2	3	3	2	3	3	3	2	3	3
CO4	3	3	3	3	2	3	3	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	2	3	3	3	2	3	2	3	3	2

HUMAN ANATOMY- II

Syllabus

Unit I : THORAX Osteology – thoracic vertebrae - ribs - sternum -Myology – extensors in the thoracic region - abdominals Arthrology – type, articular surface, muscle, ligments, blood supply, nerve supply and movements with applied of - joints of thorax -Thoraxic wall – pericardium – heart, aorta – lungs - pleura – oesophagus – veins as thoracic sysmpathetic chain - thoracic duct - azygos vein - thymus - mechanics of respiration - trachea

Unit II : ABDOMEN Anterior abdominal wall, diaphragm - lumbar region - rectus sheath - inguinal canal - peritoneum - Coursephernic spaces - peritoneal recesses - spleen – stomach – duodenum - liver - pancreas - portal vein - jejunum and ilieum – appendix - colon - kidneys - lumbar vertebral column - perineum - urogenital triangle - anal triangle – scrotum – testes – penis - bilary system.-Arteries – celiac artery - mesenteric artery - renal circulation abdominal aorta

Unit III : HEAD AND NECK -Scalp – fascial muscles – muscles of mastication - lacrimal apparatus – parotid gland- thyroid gland – parathyroid gland – triangles of neck – digastrics triangle - carotid triangle – posterior triangle – muscular triangle – Coursemandibular gland – Courselingual gland – tongue – olfactory system – nasal cavity – sinuses – fascia – carotid artery – Courseclavian artery – Courseclavian vein

Unit IV : BRAIN -Development of brain and spinal cord – spinal – tracts – meninges – arteries of brain and spinal cord – circle of wilis – blood brain barrier – cerebral cortex – fornix – internal capsule – cerebellum – pons – medulla – midbrain – ventricles and CSF – thalamus – hypothalamus- basal ganglia

Unit V : AUTONOMIC NERVOUS SYSTEM- Sympathetic & Parasympathetic control

Reference

1. Clinical anatomy by regions – RICHARD S SNELL'S 9 th edition 2012 wolter kluwer pubisher
2. Human anatomy – BD CHAURASIA'S VOL 1, 2 , 3, .6 th edition 2013 CBS
3. Human anatomy – T S RANGANATHAN 2000 S Chand and co
4. Clinical neuroanatomy – RICHARD S. SNELL – 7 th edition 2010 wolter kluwer pubisher

Websites

1. AMERICAN ASSOCIATION OF ANATOMISTS
2. HUMAN ANATOMY ONLINE
3. KHAN ACADEMY

Journal

1. INTERNATIONAL JOURNAL OF ANATOMY & RESEARCH.
2. NATIONAL JOURNAL OF CLINICAL ANATOMY SCOPE MED.ORG.

Course Code 19BPT2FC02	Course Name: Human Physiology II	Theory	Practical	Total Credit
	Total Contact Hours -135	4	2	6
	Prerequisite Course - HSSC			
	Course Coordinator:			
Course Outcomes (CO)				
CO1	Understand the general physiology of the body.			
CO2	Explain the normal functioning and interaction of all the organ systems.			
CO3	Identify the applied physiology of various body systems.			
CO4	Analyse the response of various body systems to physiological and pathological stress.			
CO5	Explain and correlate the applied physiology of diseases and disorders related to organ systems of the body which are commonly treated by the physiotherapist.			

Mapping of Course Outcomes with Program Outcomes (1/2/3 indicates strength of correlation 3-High, 2 Medium, 1 Low)																	
CO/ PO/ PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	3	3	3	3	3	3	3	3	3	2	3	3	3	3	3	3	3
CO2	3	3	3	3	2	3	3	3	3	3	3	2	2	3	3	2	3
CO3	3	3	3	3	3	3	3	2	3	3	2	3	3	3	2	3	3
CO4	3	3	3	3	2	3	3	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	2	3	3	3	2	3	2	3	3	2

HUMAN PHYSIOLOGY II

Syllabus

Unit I : Endocrine-General metabolism, carbohydrates, protein and fat metabolism - outline of the various hormones and their actions with special emphasis on thyroid gland , parathyroid gland , adrenal cortex, pancreas , pituitary gland and applied

Unit II : Reproduction-Male reproductory system - female reproductory system -Outline of pregnancy; functions of placenta; parturition; lactation, contraceptive measures, menstrual cycle - physiology of fetus; factors that affect fetal growth.

Unit III : Nervous system- CNS, PNS, ANS and connections

Unit IV : Special senses. Vision – audition - olfaction – gustation - vestibular apparatus - test for vision and hearing

Unit V : Muscle-Structure of muscle tissue; gross structure and microscopic structure. Arrangement of myofibrils. Myoneural junction - chemical processes involved in muscle contraction - physiology of muscle contraction, single muscle twitch, effect of exercises

Reference

1. Textbook of medical physiology - GUYTON .ARTHUR -13th edition 2013 elsevier

2. Concise medical physiology - CHAUDHARI S.K 7th edition 2016 NCBA

3. Human physiology - CHATTERJEE CC – 11th edition 2016 CBS

Websites

1. PHYSIOLOGY WEB

2. AMERICAN PHYSIOLOGY SOCIETY

Journals

1. NATIONAL JOURNAL OF PHYSIOLOGY, PHARMACY & PHARMACOLOGY.

2. THE JOURNAL OF PHYSIOLOGY WILEY ONLINE LIBRARY.

Course Code 19BPT2AR01	Course Name: Clinical Psychology	Theory	Practical	Total Credit
	Total Contact Hours -60	2	1	3
	Prerequisite Course - HSSC			
	Course Coordinator:			
Course Outcomes (CO)				
CO1	Evaluate psychiatric history a mental status examination of schizophrenia, anxiety, personality somatoform, childhood & adolescence, organic brain disorder, mood and eating disorders with geriatric psychology.			
CO2	Knowledge about management of various psychiatric disorders with the help of ECT, pharmacotherapy group therapy, psychotherapy, cognitive behavioural therapy & rational emotive therapy.			
CO3	Demonstrate an understanding of the role of socio-cultural factors as determinants of health and behaviour in health and sickness.			
CO4	Understand the role of family and community in the development of behaviours.			
CO5	Develop a holistic outlook toward the structure of society and community resources.			

Mapping of Course Outcomes with Program Outcomes
(1/2/3 indicates strength of correlation 3-High, 2 Medium, 1 Low)

CO/ PO/ PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	3	3	3	2	3	3	3	3	3	2	3	3	3	3	3	3	3
CO2	3	3	3	3	2	3	3	3	3	3	3	2	2	3	3	2	3
CO3	3	3	3	3	3	3	3	2	3	3	2	3	3	3	2	3	3
CO4	3	3	3	3	2	3	3	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	2	3	3	3	3	2	2	3	3	2

CLINICAL PSYCHOLOGY

Syllabus

Unit I : Foundations of Human Behavior- Experiments in Psychology- Child Psychology- Schools of Psychology

Unit II : Cognitive Processes- Physiological Psychology- Measurement in Psychology -Adolescent Psychology

Unit III : Research Methods- Abnormal Psychology- Health Psychology- Basics of Personality

Unit IV : Social Psychology - Statistics in Psychology- Psychology of Intelligence- Industrial Psychology- Gender Studies

Unit V : Psychology of Adulthood and Ageing Psychotherapeutic Interventions Guidance & Counselling- Neuropsychology

Reference

1. Textbook of Clinical Psychology" by M S Bhatia

2. "Clinical Psychology: Topics in Applied Psychology (TAP)" by Professor Graham Davey

3. Dream Psychology: Psychoanalysis for Beginners" by Sigmund Freud

Course Code 19BPT2AR02	Course Name: Biochemistry	Theory	Practical	Total Credit
	Total Contact Hours -60	2	1	3
	Prerequisite Course - HSSC			
	Course Coordinator:			
Course Outcomes (CO)				
CO1	Describe carbohydrate, fat and protein metabolism , classification, digestion, absorption , regulation and clinical application.			
CO2	Understand bio-enzymes, classify, factors affecting enzyme action and therapeutic uses, describe vitamins, minerals , hormones - classify, discuss manifestations of nutritional deficiency.			
CO3	Discuss normal levels in body fluids required for functioning and their abnormal levels to understand the disease process.			
CO4	Demonstrate biochemical mechanisms of muscle contraction and biochemistry of connective tissue.			
CO5	Describe functions of nucleic acids.			

Mapping of Course Outcomes with Program Outcomes
(1/2/3 indicates strength of correlation 3-High, 2 Medium, 1 Low)

CO/ PO/ PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	3	3	3	3	3	3	3	3	3	2	3	3	3	3	3	3	3
CO2	3	3	3	3	2	3	3	3	3	3	3	2	2	3	3	2	3
CO3	3	3	3	3	3	3	3	2	3	3	2	3	3	3	2	3	3
CO4	3	3	3	3	2	3	3	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	2	3	3	3	2	3	2	3	3	2

BIOCHEMISTRY

Syllabus

Unit I : Introduction to Biochemistry as on allied science to medicine, Blood and urine investigations of normal & abnormal urine samples- Carbohydrates – structure and general nature – Biological importance – classifications, polysaccharides & their physiological importance.

Unit II : Lipids – structure and general nature – classification, biological membranes and membrane transport.-Proteins – structure and functional aspect of hemoglobin, myoglobin collagen and cellular proteins (their names only).

Unit III : Enzymes – specificity and factors affecting enzyme activity intra cellular and extra cellular enzymes, isoenzymes – clinical significance of alkaline phosphates, acid phosphates and cholinesterase, creative phosphokinase- Metabolic pathways related to carbohydrate and lipid metabolism, their names and significance only. Disorders of carbohydrate metabolism, hyper and hypoglycemia – glycosuria diabetes mellitus – types – biochemical changes.

Unit IV : Metabolic pathways – related to protein metabolism – their names and significance only – amino aciduria, alkalpatonuria, nuclear acid metabolism gout- Vitamins – fat soluble and water soluble – their source, requirement, special requirements, - biochemical functions & deficiency state

Unit V : Minerals and trace elements & their role in growth and development disorders of calcium. Phosphorus metabolism muscular dystrophies.- Fundamentals of nutrition & dietetics.

Reference:

1. Illustrated biochemistry - MURRAY HARPER – 30th edition 2019 Mc –Graw Hill education
2. Textbook of biochemistry for medical students -VASUDEVAN – 7th edition 2013 jaypee

WEBSITE:

1. WWW.BIOCHEMISTRY .ORG
2. WWW.BIOCH.OX.AC.UK

JOURNALS

1. THE JOURNAL OF BIOCHEMISTRY, OXFORD JOURNALS.
2. THE INTERNATIONAL OF BIOCHEMISTRY AND CELL BIOLOGY – ELSEVIER.Unit I :

Course Code 19BPT2GE01	Course Name: Basic Computer Science	Theory	Practical	Total Credit
	Total Contact Hours -60	2	1	3
	Prerequisite Course - HSSC			
	Course Coordinator:			
Course Outcomes (CO)				
CO1	Familiarise various types of computers and operating systems.			
CO2	Understand the basic knowledge about computer & its language, components, functions and networks.			
CO3	Know and explain about various aspects of looping.			

CO4	Understand the basic operation of the computer and creating the documents, power point presentation and making spreadsheets in excel along with the formulas.
CO5	Able to effectively use computer graphics and other computer applications for better understanding in the field of physiotherapy and clinical studies.

Mapping of Course Outcomes with Program Outcomes (1/2/3 indicates strength of correlation 3-High, 2 Medium, 1 Low)																	
CO/ PO/ PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	3	3	3	3	3	3	3	3	3	2	3	3	3	3	3	3	3
CO2	3	3	3	3	2	3	3	3	3	3	3	2	2	3	3	2	3
CO3	3	3	3	3	3	3	3	2	3	3	2	3	3	3	2	3	3
CO4	3	3	3	3	2	3	3	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	2	3	3	3	2	3	2	3	3	2

BASIC COMPUTER SCIENCE

Syllabus

UNIT I : Basics of computer Introduction to computer- Characteristics of computer, History of Computer, Generation of Computer, Classification of Computers, IT Application- Hardware and software - Input Devices , Output Devices, Central Processing Unit, Components of CPU, Memory Unit, CISC and RISC, Peripheral Devices, Input and output devices , Operating system – DOS, WINDOWS ETC

UNIT II : Internet- Email, social networking, application in medicine, browsing journals and article using internet

UNIT III : BASIC MS OFFICE – MS WORD, EXCEL POWER POINT - Importance of computer in physiotherapy

UNIT IV : Internet and its application- Packet switched networks, what is Internet? ,Types of Information Available on internet ,Internet Address, Organizational Domains, Internet Protocol Address, Getting Connected to Internet, Types of Internet Access, Direct Connections, Internet Services, ISDN (Integrated Services Digital Network), NICNCT, Archie Wide Area Information Server (WAIS), World Wide Web (WWW) , Tele Conferencing, Video Conferencing, UPLOADING AND DOWNLOADING DOCUMENTS.

UNIT V : PROFILE PREPARATION AND APPLIED INTERNSHIP.

Reference

1. Course on Computer Concepts (CCC) – Professor. Sathish Jain- BPB Publications.

Course Code 19BPT2GE02	Course Name: Artificial Intelligence	Theory	Practical	Total Credit
	Total Contact Hours -60	2	1	3
	Prerequisite Course - HSSC			
	Course Coordinator:			
Course Outcomes (CO)				
CO1	Understand the basic concepts of Artificial Intelligence and explore the applications of AI in various fields.			
CO2	Develop competence on understanding of data filtering and explore various data visualization tools.			
CO3	Associate the basics concepts of NLP, working mechanism behind NLP and its importance in education.			
CO4	Understand the basics of robotics and its applications in various fields			
CO5	Use Chatbots as a pedagogical assistance to teach languages.			

Mapping of Course Outcomes with Program Outcomes (1/2/3 indicates strength of correlation 3-High, 2 Medium, 1 Low)																	
CO/ PO/ PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	3	3	3	2	3	3	3	3	3	2	3	3	3	3	3	3	3
CO2	3	3	3	3	2	3	3	3	3	3	3	2	2	3	3	2	3
CO3	3	3	3	3	3	3	3	2	3	3	2	3	3	3	2	3	3
CO4	3	3	3	3	2	3	3	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	2	3	3	3	3	2	2	3	3	2

ARTIFICIAL INTELLIGENCE

Syllabus

UNIT I : Artificial Intelligence- Introduction- Scope- Concepts

UNIT II : Neural networks- Pattern recognition- Speech recognition-Algorithm-_Simulation- Automation-Robotics

UNIT III : Problem solving-Planning and Decision making- Machine learning

UNIT IV :AI based devices- Technologies - Applications

UNIT V : Artificial intelligence in clinical practice- Implications- Evidences

Reference

1. Artificial Intelligence – A Modern Approach (3rd Edition)– By Stuart Russell & Peter Norvig

2. Machine Learning for Dummies– By John Paul Mueller and Luca Massaron

Course. Code 19BPT2CT02	Course Name: Clinical Training	Total Credit
	Total Contact Hours -255	3
	Prerequisite Course - HSSC	
	Course Coordinator:	
Course Outcomes (CO)		
CO1	Explain the components of basic assessment for a patient.	
CO2	List the impairments resulting in functional limitation and participation restriction.	
CO3	Demonstrate clinical observation skill and the bedside manners.	
CO4	Understanding of policy of the inpatient service and outpatient services.	
CO5	Understand the role of physiotherapy in various clinical conditions and the documentation of patient service.	

Mapping of Course Outcomes with Program Outcomes
(1/2/3 indicates strength of correlation 3-High, 2 Medium, 1 Low)

CO/ PO/ PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	3	3	3	3	3	3	3	3	3	2	3	3	3	3	3	3	3
CO2	3	3	3	3	2	3	3	3	3	3	3	2	2	3	3	2	3
CO3	3	3	3	3	3	3	3	2	3	3	2	3	3	3	2	3	3
CO4	3	3	3	3	2	3	3	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	2	3	3	3	2	3	2	3	3	2

CLINICAL TRAINING

Syllabus

Unit I : Cadaver Study and Laboratory Study for Anatomy and Physiology.

Unit II : Community Field Visit for Sociology

Unit III : Field visit to SCARF for Psychology

Unit IV : Clinical Observation

Unit V : Co curricular Activities

SEMESTER III - COURSE OUTCOME, CO PO MAPPING

Course Code 19BPT3MC01	Course Name: General Medicine and Pediatrics	Theory	Practical	Total Credit
	Total Contact Hours -120	4	2	6
	Prerequisite Course - HSSC			
	Course Coordinator:			
Course Outcomes (CO)				
CO1	Demonstrate a general understanding of the diseases that therapists would encounter in their practice.			
CO2	Understand the etiology and pathology.			
CO3	Understand the patient's symptoms and the resultant functional disability.			
CO4	Understand the limitations imposed by the diseases on any therapy.			
CO5	Elaborate broad outline of goals of pharmacological and surgical therapy imparted in those diseases in which physical therapy will be an important component of overall management.			

Mapping of Course Outcomes with Program Outcomes
(1/2/3 indicates strength of correlation 3-High, 2 Medium, 1 Low)

CO/ PO/ PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	3	3	3	3	3	3	3	3	3	2	3	3	3	3	3	3	3
CO2	3	3	3	3	2	3	3	3	3	3	3	2	2	3	3	2	3
CO3	3	3	3	3	3	3	3	2	3	3	2	3	3	3	2	3	3
CO4	3	3	3	3	2	3	3	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	2	3	3	3	3	3	2	3	3	2

GENERAL MEDICINE & PAEDIATRICS

Syllabus

Unit I: Infections - bacterial, viral, filarial, protozoal, communicable diseases. Hematological conditions and bleeding disorders & genetic disorders

Unit II: a) Respiratory system disorders b)cardiovascular disorders c) renal diseases. Bone and connective tissue disorders, renal and metabolic disorders, neurological diseases affecting CNS, PNS and ANS.

Unit III : Geriatric disorders age related changes in musculoskeletal system neurological dysfunctions

Unit IV : Growth and development of a child from birth to 12 years- high risk pregnancies and its complications. Immunization schedule - community programmes.

Unit V: Cerebral palsy Clinical aspects, CP with MR, muscular dystrophy, spina bifida, hydrocephalus. Malnutrition and its deficiencies. Lung infections in childhood.

Reference

Textbook

1. DAVIDSON – principles of practice of medicine 22nd edition 2014
2. Kumar & Clerks – Clinical Medicine 7th edition 2009
3. Geriatric Medicine – Evidence Based Approach – Christine K. Cassel, 4th edition 2003

Website

1. www.medscafe.com
2. www.medicinenet.com
3. www.generalpediatrics.com
4. www.healthychildren.org

Journal

1. Journal of internal medicine
2. European journal of general medicine
3. GHAI Essential paediatrics– Vinod K Paul 8TH edition 2013
4. International journals of paediatrics

Course Code 19BPT3MC02	Course Name: Exercise Therapy I	Theory	Practical	Total Credit
	Total Contact Hours -105	4	1	5
	Prerequisite Course - HSSC			
	Course Coordinator:			

Course Outcomes (CO)	
CO1	Understand the basics of mechanics involved in exercise therapy.
CO2	Describe and demonstrate fundamental and derived positions.
CO3	Describe ribs and demonstrate active, passive, resisted movements. Describe the skills involved in benefits of various equipment used in therapeutic gymnasium.
CO4	Describe relaxation techniques and positions and perform various assessment techniques.
CO5	Patient assessment and examination like goniometry and Manual muscle testing.

Mapping of Course Outcomes with Program Outcomes
(1/2/3 indicates strength of correlation 3-High, 2 Medium, 1 Low)

CO/ PO/ PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	3	3	3	3	3	3	3	3	3	2	3	3	3	3	3	3	3
CO2	3	3	3	3	2	3	3	3	3	3	3	2	2	3	3	2	3
CO3	3	3	3	3	3	3	3	2	3	3	2	3	3	3	2	3	3
CO4	3	3	3	3	2	3	3	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	2	3	3	3	2	3	2	3	3	2

EXERCISE THERAPY -I

Syllabus

Unit I: Introduction to exercise therapy -types of muscle fibres- types of skeletal muscle contraction- range of muscle work

Unit II : Mechanical principles of exercise therapy - Axes and Planes, Kinetic chains, acceleration, friction, pelvic tilt - types of motion

Unit III : Starting position - derived Positions. Active and passive movements principles- passive stretching, passive joint mobilization and its principles

Unit IV : Coordination exercises its indications principles and application. Breathing exercises and relaxation exercises. Gait - phases of gait-Mobility Aids its types recent advancement in wheelchairs and frames

Unit V : Muscle re education -MRC grading - principles of motor re-education PNF Proprioceptive Neuromuscular Facilitation -key points principles and basics. Hydrotherapy - basics, physics of water, hydrostatic pressure, indications, biological effects in in various systems of human body and contraindications for Hydrotherapy. Progressive Resisted Exercises - principles, RM and types of PRE.

Reference

1. Principles of Exercise Therapy - DENA GARDINER 4th edition2007
2. Therapeutic Exercises - CAROLYN KISHNER 6th edition2012
3. Margaret Hollis - Practical Exercise Therapy 4th edition 1999
4. Facilitated stretching – Robert E.McAtee, Jeff charland 4th edition 2013
5. PNF in practice - susan s. adler, dominiekbeckers math buck 3rd edition 2008

Website

1. www.apta.org
2. ptjournal.apta.org

Journals

1. Journal of orthopaedic and sports physical therapy
2. Journal of exercise therapy and rehabilitation

Course Code 19BPT3FC01	Course Name: Biomechanics	Theory	Practical	Total Credit
	Total Contact Hours -90	3	1	4
	Prerequisite Course - HSSC			
	Course Coordinator:			
Course Outcomes (CO)				
CO1	Able to describe the understanding of basics of mechanics, muscle structure and contraction, factors effecting muscle contraction and recruitment			
CO2	Experience quantitative methods of movement analysis using various methods.			
CO3	Apply the analytic methods to specific example of normal human motor performance.			
CO4	Evaluation and treatment of disorders of the musculoskeletal system.			
CO5	Analyze normal mechanics of posture and gait in various planes and axis and path mechanics associated with abnormal posture and gait.			

Mapping of Course Outcomes with Program Outcomes (1/2/3 indicates strength of correlation 3-High, 2 Medium, 1 Low)																	
CO/ PO/ PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	3	3	3	3	3	3	3	3	3	2	3	3	3	3	3	3	3
CO2	3	3	3	3	2	3	3	3	3	3	3	2	2	3	3	2	3
CO3	3	3	3	3	3	3	3	2	3	3	2	3	3	3	2	3	3
CO4	3	3	3	3	2	3	3	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	2	3	3	3	2	3	2	3	3	2

BIOMECHANICS

Syllabus

Unit I: Mechanics - types of motion and its planes forces gravity Newton's laws of motion concurrent and parallel force system moment arm. Anatomical Pulleys - equilibrium of a lever

Unit II : Joint structure and function -classification of joints -kinematic chain - general effects of injury and diseases

Unit III : Muscle structure and its function - mobility and stability functions of the muscle - types of muscle contraction - speed and angular velocity -torque - isokinetic exercise - Tonic & phasic muscles - factors affecting muscle function - active and passive insufficiency

Unit IV: Biomechanics of the joints in appendicular skeleton - Shoulder complex, Elbow complex, Wrist joint and Joints of hand complex in detail. Biomechanics of joints in the axial skeleton - kinetics and kinematics of joints in the vertebral column, sacroiliac joint and costovertebral joints.

Unit V : Posture -Effects of gravity, line of gravity and analyse the posture with respect to alignm*ent of joints in in AP view and lateral view.

Reference

Joint Structure And Function - Pamela K Levange , Cynthia C. Norkin 5th edition 2011

2. Basic biomechanics – susan J.hall 7th edition 2014

3. Gait analysis normal and pathological function – Jacqualin perry Judith M.buenfield 2nd edition 2010

Websites

1. www.biomech.ethz.ch
2. www.asbweb.org

Journals

1. Journal of Biomechanics (Elsevier)
2. American Kinesiology Association.

Course Code 19BPT3AR01	Course Name: Pathology	Theory	Practical	Total Credit
	Total Contact Hours -90	3	1	4
	Prerequisite Course - HSSC			
	Course Coordinator:			

Course Outcomes (CO)	
CO1	Acquire the knowledge of concepts of cell injury and changes produced thereby in different tissues and organs; capacity of the body in healing process.
CO2	Recall the etiopathological effects and the clinical pathological correlation of common infection and noninfectious diseases.
CO3	Acquire the knowledge of concepts of Neoplasia with reference to the etiology, gross and microscopic features diagnosis and prognosis in different tissues and organs of the body.
CO4	Correlate normal and altered morphology of different organ systems in different diseases needed for understanding disease process and their clinical significance.
CO5	Acquire knowledge of common immunological disorders and their resultant effects on the human body and brief the hematological diseases and their resultant effects on the human body

Mapping of Course Outcomes with Program Outcomes
(1/2/3 indicates strength of correlation 3-High, 2 Medium, 1 Low)

CO/ PO/ PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	3	3	3	3	3	3	3	3	3	2	3	3	3	3	3	3	3
CO2	3	3	3	3	2	3	3	3	3	3	3	2	2	3	3	2	3
CO3	3	3	3	3	3	3	3	2	3	3	2	3	3	3	2	3	3
CO4	3	3	3	3	2	3	3	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	2	3	3	3	2	3	2	3	3	2

PATHOLOGY

Syllabus

Unit I : Introduction- General pathology – cell injury, causes , Reversible injury – Types, morphology, swelling, hyaline, fatty change , Irreversible injury – Types of necrosis, apoptosis, calcification, dystrophic,Metastasis - Concepts of disease

Unit II : Inflammation and repair- Acute inflammation – causes, features, examples, Inflammatory cell and mediators, Chronic inflammation – causes, features, examples , wound healing , Regeneration and repair.

Unit III : Circulatory disturbance -Edema - Chronic venous congestion – Thrombosis-. Embolism - Infarction –Gangrene - Shock

Unit IV : Growth disturbance- Atrophy - Neoplasia(benign& malignant)

Unit V : Specific pathology CVS – atherosclerosis, IHD, MI, HT, CCF, RHD, peripheral vascular diseases- RS – COPD, pneumonia – lobar, broncho, viral, acquired, TB – prim & sec,Atelectasis, asthma- Skin – leprosy -NS – CVA, coma, polio, Parkinsonism, myasthenia gravis- Bone and joint – arthritis, osteomyelitis, autoimmune disease, spondylosis,Osteomalacia, GOUT,-Tenosynovitis, AS Muscle – MD, polio, myopathies

Reference

1. Text Book of Pathology -HARSHMOHAN 6th edition2010.

2. Basic Pathology –ROBBINS 9th edition2013.

3. Textbook of pathology for BPT students-Ramadassnayak 1st edition 2016.

Website

1. ajp.amjpathol.org

2. www.ijpmonline.org

Journals

1.American journal of pathology

2. Journal of clinical pathology –BMJ Journals

Course Code 19BPT3GE01	Course Name: Sports Physiotherapy	Theory	Practical	Total Credit
	Total Contact Hours -60	2	1	3
	Prerequisite Course - HSSC			
	Course Coordinator:			

Course Outcomes (CO)	
CO1	Assessment of physical fitness of the population in the society.
CO2	Implement an awareness program regarding the importance of fitness and physical activities in prevention of various diseases.
CO3	Identify critical elements of motor skill performance and combine motor skills into appropriate sequences for the purpose of improving skill learning and competent motor skill performance in a variety of physical activities.
CO4	Describe performance concepts and strategies related to skillful movement and physical activity.
CO5	Describe and apply bioscience concepts and psychological concepts to skillful movement, physical activity, and fitness and debate current physical activity issues and laws based on historical, philosophical, and sociological perspectives.

Mapping of Course Outcomes with Program Outcomes
(1/2/3 indicates strength of correlation 3-High, 2 Medium, 1 Low)

CO/ PO/ PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	3	3	3	3	3	3	3	3	3	2	3	3	3	3	3	3	3
CO2	3	3	3	3	2	3	3	3	3	3	3	2	2	3	3	2	3
CO3	3	3	3	3	3	3	3	2	3	3	2	3	3	3	2	3	3
CO4	3	3	3	3	2	3	3	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	2	3	3	3	2	3	2	3	3	2

SPORTS PHYSIOTHERAPY

Syllabus

Unit I : Motor control: cortical to peripheral control of human movement; motor units; neuromuscular basis of human movement; sensory feedback and proprioception; theories of motor learning and performance.

Unit II : Physiological adaptation: cellular, endocrine, connective tissue, neural and cardiovascular adaptations to: (1) endurance training; (2) strength and power training; (3) inactivity / detraining and (4) environmental conditions (heat, humidity, hypoxia).

Unit III : Concepts of motion: describing motion, movement forces, forces within the body, running jumping and throwing.

Unit IV : Adaptability of the motor system: warm up effects, flexibility, muscle damage, motor recovery from injury, adaptations with age and reduced use.

Unit V :Measurement and analysis of human muscle, vascular and cardiopulmonary physiology.Measurement and analysis of the kinetics and kinematics of human movement in sport, exercise and rehabilitation.

Reference

1. Sports medicine. Rouzier (2010)
2. Sports Medicine Patient Advisor, Rosenbloom (2012)
3. Sports Nutrition Brukner (2011)
4. Brukner & Khan's Clinical Sports Medicine, Madden (2009) Netter's Sports Medicine

Course Code 19BPT3GE02	Course Name: Yoga Therapy	Theory	Practical	Total Credit
	Total Contact Hours -60	2	1	3
	Prerequisite Course - HSSC			
	Course Coordinator:			

Course Outcomes (CO)	
CO1	Demonstrate the introduction and principles of yoga.
CO2	Knowledge of history of yoga and yoga in modern India.
CO3	Outline of yoga background and importance of yoga in modern world.
CO4	Learning the types and forms of asanas and description of physiological effect of yoga.
CO5	Understanding the role of yoga in physiotherapy.

Mapping of Course Outcomes with Program Outcomes
(1/2/3 indicates strength of correlation 3-High, 2 Medium, 1 Low)

CO/ PO/ PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	3	3	3	3	3	3	3	3	3	2	3	3	3	3	3	3	3
CO2	3	3	3	3	2	3	3	3	3	3	3	2	2	3	3	2	3
CO3	3	3	3	3	3	3	3	2	3	3	2	3	3	3	2	3	3
CO4	3	3	3	3	2	3	3	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	2	3	3	3	3	3	2	3	3	2

YOGA THERAPY

Syllabus

Unit I : Yoga postures and its types - pranayama its effects limitations care points and indications integration of yoga with physiotherapy for self and patient care

Unit II: History of yoga philosophy and fundamentals of yoga

Unit III : Application of yoga its therapeutic effects Surya namaskar breathing practices four paths of yoga-Hatha yoga Patanjali yoga pastures and body alignment supine sitting prone lying understanding

Unit IV : Evaluation prognosis care points - limitations -clinical indication-Therapeutic effects contraindications of of various yogasanas

Unit V: Bandha - Mudras -Kriyas -pranayama- meditation

Reference

Text Books

1. Sing S.P and Yogi Mukesh: Foundation of Yoga, Standard Publication, New Delhi, 2010.

2. Dr. Nagendra H.R: Asana, Pranayama, Mudra, Bandha, Swami Vivekananda yoga Prakashan; Bangalore, 2002.

Websites

1. www. Sivananda.org.in/Chennai

2. Essential Yoga Therapy. Com

3. www. AndiappanYoga.Com

Journals

1. Journal of Yoga & Physical Therapy.

2. International Journal of Yoga Therapy.

Course Code 19BPT3CT03	Course Name: Clinical Training	Total Credit
	Total Contact Hours -255	3
	Prerequisite Course - HSSC	
	Course Coordinator:	
Course Outcomes (CO)		
CO1	Explain the components of basic assessment for a patient.	
CO2	List the impairments resulting in functional limitation and participation restriction.	
CO3	Demonstrate clinical observatory skill and the bedside manners.	
CO4	Understanding of policy of the inpatient service and outpatient services.	
CO5	Understand the role of physiotherapy in various clinical conditions and the documentation of patient service.	

Mapping of Course Outcomes with Program Outcomes
(1/2/3 indicates strength of correlation 3-High, 2 Medium, 1 Low)

CO/ PO/ PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	3	3	3	3	3	3	3	3	3	2	3	3	3	3	3	3	3
CO2	3	3	3	3	2	3	3	3	3	3	3	2	2	3	3	2	3
CO3	3	3	3	3	3	3	3	2	3	3	2	3	3	3	2	3	3
CO4	3	3	3	3	2	3	3	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	2	3	3	3	3	3	2	3	3	2

CLINICAL TRAINING

Syllabus

Unit I : Clinical Observation for General Medicine, General Surgery Department

Unit II : Labaratory posting for Pathology and Microbiology

Unit III : Field visit for Fitness, Exercise therapy,Masssage

Unit IV : Community Health Camp

Unit V : Co Curricular Activities

SEMESTER IV - COURSE OUTCOME, CO PO MAPPING

Course Code 19BPT4MC01	Course Name: General Surgery, Geriatric and Pharmacology	Theory	Practical	Total Credit
	Total Contact Hours -105	4	1	5
	Prerequisite Course - HSSC			
	Course Coordinator:			
Course Outcomes (CO)				
CO1	List the indications for surgery, etiology, clinical features and surgical methods for various conditions.			
CO2	Plan a better rehabilitation care for the patients pre and post surgically			
CO3	Understand the common conditions affecting the geriatric population and strategies to correct them.			
CO4	Implement the Physiotherapy rehabilitation program in Geriatric population according to the needs of the patients.			
CO5	Demonstrate the types of drug and their mechanisms of actions, basic concepts, theories of pharmacology and the knowledge of pharmacology as an adjunct, limitation, contraindication for physiotherapy.			

Mapping of Course Outcomes with Program Outcomes
(1/2/3 indicates strength of correlation 3-High, 2 Medium, 1 Low)

CO/ PO/ PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	3	3	3	3	3	3	3	3	3	2	3	3	3	3	3	3	3
CO2	3	3	3	3	2	3	3	3	3	3	3	2	2	3	3	2	3
CO3	3	3	3	3	3	3	3	2	3	3	2	3	3	3	2	3	3
CO4	3	3	3	3	2	3	3	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	2	3	3	3	2	3	2	3	3	2

GENERAL SURGERY, GERIATRICS, PHARMACOLOGY

Syllabus

Unit I :Outline the incisions of abdomen- mastectomy - herniorrhaphy - thyroidectomy - Cholecystectomy -chest wall incisions- Thoracotomy-

Unit II : Burns - classification rule of nine types of burn injuries based on depth - deformities due to burns- wound care. Plastic surgery - skin grafting- Partial & Full thickness burns

Unit III : Inflammatory diseases -Endocrine disorders - diabetes mellitus and insulin therapy - arthritic conditions -Chemotherapy bacterial infections -drugs- microorganism- sulfonamides antibiotics floxacins - parasitic infestation malaria,amoeba, filariasis - flagellates

Unit IV : Respiratory pharmacology e use of bronchodilator - Air way clearance - cancers - antimitotics - antimetabolites - irradiation radioactive materials -Cancers

Unit V: Aging-Theories of aging physiological and environmental factors influencing aging-cardiorespiratory system, nervous system autonomic functions metabolic changes and mental functions- Diet -lifestyle modification and fitness exercises- complications.

References

Text Book

1. S.DAS – A concise text book of surgery 8th edition 2014
2. Bailey & Love's – Short Practice of Surgery 26th edition 2013
3. PADMAJA UDHAYAKUMAR – pharmacology for physiotherapy
4. Brocklehurst's textbook of geriatric medicine and gerontology 8th ed. by Fillit, Howard M., editor
5. Ethnogeriatrics : Healthcare Needs of Diverse Populations by Cummings-Vaughn, Lenise, editor.2017

Website

1. www.medscape .com
2. www.absurgery.org
3. www.pharmacology.com
4. www.clinicalpharmaology.com

Journals

1. Journal of surgical research
2. International Research Journal of Pharmacy

Course Code 19BPT4MC02	Course Name: Exercise therapy II	Theory	Practical	Total Credit
	Total Contact Hours -120	4	2	6
	Prerequisite Course - HSSC			
	Course Coordinator:			

Course Outcomes (CO)	
CO1	Learn the principles, technique and effects of exercise as a therapeutic modality in the restoration of physical function and the various types of therapeutic exercises, movements and demonstrate different techniques and their effects.
CO2	Practice different exercise therapy techniques and gain confidence in performing these skills before implementing the same on the patients so that high quality patient care is ensured.
CO3	Provide high quality, ethical, effective, and cost efficient practices by students and gain expertise in the exercise prescription to patients and practice various assessment strategies like Goniometer, tone assessment, muscle power assessment.
CO4	Understand principles and procedures, indications, contraindications and precautions, appropriate methods of application of each of the assessment strategy and treatment techniques hands on and on models.
CO5	Communicate with the patient in a professional and ethical manner.

Mapping of Course Outcomes with Program Outcomes
(1/2/3 indicates strength of correlation 3-High, 2 Medium, 1 Low)

CO/ PO/ PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	3	3	3	3	3	3	3	3	3	2	3	3	3	3	3	3	3
CO2	3	3	3	3	2	3	3	3	3	3	3	2	2	3	3	2	3
CO3	3	3	3	3	3	3	3	2	3	3	2	3	3	3	2	3	3
CO4	3	3	3	3	2	3	3	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	2	3	3	3	3	3	2	3	3	2

EXERCISE THERAPY II

Syllabus

Unit I: Proprioceptive neuromuscular facilitation - principles methods indications and its effects in musculoskeletal and nervous system. Hold relax, rhythmic stabilization and repeated contraction

Unit II: Aerobic exercises its principle,types ,effects in cardiovascular system and musculoskeletal system. Methods to fix the protocol based on heart rate maximum- karvonen's formula

Unit III : Principles of Resisted exercises types and advantages in increasing muscle strength and power in all age groups.- calculation of RM its progression and types namely Delorme's, Zinovieff and watkin's method of PRE

Unit IV : Isometric exercises and its types its advantages and application for knee extensors and flexors cervical extensors and spinal extensors- Principles of isokinetic exercise Cybex device and it's advantages in improving muscle strength- Hydrotherapy- Principles, Practice, Indication, Contra-Indication

Unit V : Recent advancement in rehabilitation following joint replacement and arthroscopic surgeries of weight-bearing joints. Role of exercise therapy in regaining normal muscle function and ROM.

Reference

1. Principles of Exercise Therapy - DENA GARDINER 4th edition2007
2. Therapeutic Exercises - CAROLYN KISHNER 6th edition2012
3. Margaret Hollis - Practical Exercise Therapy 4th edition 1999
4. Facilitated stretching – Robert E.McAtee, Jeff charland 4th edition 2013
5. PNF in practice - susan s. adler, dominiekbeckers math buck 3rd edition 2008

Website

1. www.apta.org
2. ptjournal.apta.org

Journals

1. Journal of orthopaedic and sports physical therapy
2. Journal of exercise therapy and rehabilitation

Course Code 19BPT4MC03	Course Name: Massage Therapy	Theory	Practical	Total Credit
	Total Contact Hours -105	3	2	5
	Prerequisite Course - HSSC			
	Course Coordinator:			
Course Outcomes (CO)				
CO1	Provide high quality, cost effective soft tissue mobilization in order to promote health.			
CO2	Manage patients with proper ethical codes and respect when treating with soft tissue mobilization.			
CO3	Expertise in proper positioning and contact and continuity principles.			
CO4	Explore advanced methods in massage to improve health outcomes.			
CO5	Maintain professional manners and communication with the patient throughout the treatment session.			

Mapping of Course Outcomes with Program Outcomes (1/2/3 indicates strength of correlation 3-High, 2 Medium, 1 Low)																	
CO/ PO/ PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	3	3	3	3	3	3	3	3	3	2	3	3	3	3	3	3	3
CO2	3	3	3	3	2	3	3	3	3	3	3	2	2	3	3	2	3
CO3	3	3	3	3	3	3	3	2	3	3	2	3	3	3	2	3	3
CO4	3	3	3	3	2	3	3	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	2	3	3	3	2	3	2	3	3	2

MASSAGE

Syllabus

Unit I : History of massage- Definition of massage - Mechanical points to be considered (Manipulation, time of day for treatment, comfort and support of patient-positioning, draping, bolstering, position of operator, using body weight, contact and continuity)- Technique –indication and contraindication- Classification of massage- Based on character of Technique- Stroking manipulation-Pressure manipulation- Vibratory manipulation -Tapotment or Percussion manipulation -Based on depth of tissue reached- (Light massage -Deep massage)- Based on parts of body massaged- (General massage-

local massage)-- Based on means of application of pressure-(Manual massage- Mechanical massage)- Physiological effects of massage- various body systems (Effect on-circulatory system, excretory system, muscular system, nervous system, metabolic system, respiratory system, skin, foot massage)

Unit II : MASSAGE TECHNIQUE - Stroking manipulation- Superficial stroking, deep stroking or Effleurage -Pressure manipulation- Kneading-palmar & digital kneading, ironing -Petrissage-picking up,Wringing, skin rolling -Friction-circular & transverse friction- Percussion manipulation-Clapping, hacking, beating, pounding, tenting- Contact heel percussion- Vibratory manipulation-vibratory& shaking

Unit III : TECHNIQUES USED FOR VARIOUS PARTS OF BODY - Massage for upper limb-scapular region, shoulder joint, upper arm, elbow joint,Forearm, wrist joint, hand- Massage for lower limb-thigh, knee joint, leg, foot (ankle & toes)- Massage for back-neck and upper back, middle and lower back, gluteal region- Massage for face - Massage for abdomen

Unit IV : SPORTS MASSAGE -Introduction-role of massage in sports -Massage manipulations stroking, effleurage, petrissage, acupressure,tapotement,Vibration, shaking - Ice massage- Categories of sports massage-pre event massage, intermediate massage, post Event massage

Unit V : THERAPEUTIC APPLICATION OF MASSAGE -Relaxation -Oedema -Radical mastectomy-Venous ulcer - Painful neuroma - Bells palsy -Sprain and Strain –Fibrositis- TECHNIQUE – EFFECTS ON ORGANS- SWEDISH MASSAGE – AYURVEDIC MASSAGE –AROMA THERAPY

Reference

1. Principles and practice of therapeutic massage –akhourggourangsinha 2nd edition 2010
2. Evidence based therapeutic massage - elizabeth holey, eileen cook 3rd edition 2011
3. Beards massage. -wood &becker 5th edition 2007
4. Massage for therapist- margaretthollis 3rd edition2099
5. Massage for the Beauty Therapist.- audreygitagoldber 3rd edition 1977

Website

www. Massagetherapyworld.com

www.ijtmb.org

Journals

International journal of therapeutic massage and body work research education and practice

Course Code 19BPT4AR01	Course Name: Microbiology	Theory	Practical	Total Credit
	Total Contact Hours -75	3	1	4
	Prerequisite Course - HSSC			
	Course Coordinator:			
Course Outcomes (CO)				
CO1	Learn the basics of microbiology and their classification.			
CO2	Learn about the Principles and construction of microscopy and its importance in microbial world.			
CO3	Explore the microbial nutrition and growth and understanding of different techniques to get pure culture.			
CO4	Understanding about host pathogen interaction, normal microflora in human body, different sample collection & diagnosis.			
CO5	Learn about the different aseptic techniques used to control the microorganisms.			

Mapping of Course Outcomes with Program Outcomes (1/2/3 indicates strength of correlation 3-High, 2 Medium, 1 Low)																	
CO/ PO/ PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	3	3	3	3	3	3	3	3	3	2	3	3	3	3	3	3	3
CO2	3	3	3	3	2	3	3	3	3	3	3	2	2	3	3	2	3
CO3	3	3	3	3	3	3	3	2	3	3	2	3	3	3	2	3	3
CO4	3	3	3	3	2	3	3	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	2	3	3	3	2	3	2	3	3	2

MICROBIOLOGY

Syllabus

Unit I : Introduction-Classification- shape and arrangement-Disinfection and antiseptic - Sterilization and asepsis.- Allergy and hypersensitivity.

Unit II : Immunology – Definition, antigen, antibody reaction, autoimmunity, natural andAcquired immunity.

Unit III : Infection – Definition, source of infection, portal of entry, spread of infection, type.

Unit IV : Bacteriology – Infection caused byGram positive bacteria – clostridium tetani&coryne bacterium diphtheria - Gram negative bacteria – klebsiella, pseudomonas, salmonella, v.cholera-

Mycobacterium – M.tuberculosis, M.leprae, atypical mycobacteria - RTI - Meningitis - Enteric infection - Anaerobic infection - UTI - Leprosy, TB-STD - Wound infection- Hospital acquired infection

Unit V : .Viruses – Definition, size, shape, structure, classification, cultivation, diagnosis of viral infection- HIV – Hepatitis-. Polio -Measles -Rubella -Herpes

Reference

Text book

1. Text book of microbiology -paniker , ananthanarayanan9th edition 2005
2. Medical microbiology -parrickR.murraykens.Rosenthal Michael A.pfaller 5th edition 2012.
3. Textbook of microbiology - Surinderkumar 1st edition 2019

Website

www.microbiologyonline.org.uk

Journals

American society for microbiology

Course Code 19BPT4GE01	Course Name: Bioengineering	Theory	Practical	Total Credit
	Total Contact Hours -60	2	1	3
	Prerequisite Course - HSSC			
	Course Coordinator:			
Course Outcomes (CO)				
CO1	Understand the Psychological aspects of orthotic and prosthetic application.			
CO2	Acquire in brief knowledge about various materials used for splints/Orthosis & Prostheses.			
CO3	Acquire in brief knowledge about various selection criteria for splints/Orthosis & Prostheses.			
CO4	Acquire knowledge about biomechanical principles of application of variety of aids & appliances used for ambulation, protection & prevention.			
CO5	Acquire the skill of fabrication of simple splints made out of low cost material.			

Mapping of Course Outcomes with Program Outcomes (1/2/3 indicates strength of correlation 3-High, 2 Medium, 1 Low)																	
CO/ PO/ PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	3	3	3	3	3	3	3	3	3	2	3	3	3	3	3	3	3
CO2	3	3	3	3	2	3	3	3	3	3	3	2	2	3	3	2	3
CO3	3	3	3	3	3	3	3	2	3	3	2	3	3	3	2	3	3
CO4	3	3	3	3	2	3	3	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	2	3	3	3	2	3	2	3	3	2

BIOENGINEERING

Syllabus

UNIT I : Introduction & Concepts in Bioengineering- Classification of bio engineering

UNIT II : Bio Engineering Concepts- Principles-Aids & Application in Bio Engineering

UNIT III: Biosensors -Bioreactor - Processing Units- Machine Design & Handling

UNIT IV : Computation- Laboratory- Instrumentation- Bioinformatics -Interpretation of biological data

UNIT V: Role of Bioengineering in rehabilitation and clinical practice- Evidences.

Reference

1.Biomedical Engineering Handbook by Robert C. Weast; Joseph D. Bronzino
2.Encyclopedia of Biomaterials and Biomedical Engineering by Gary L. Bowlin (Editor); Gary E. Wnek

Course Code 19BPT4GE02	Course Name: Obstetrics and Gynecology	Theory	Practical	Total Credit
	Total Contact Hours -60	2	1	3
	Prerequisite Course - HSSC			
	Course Coordinator:			

Course Outcomes (CO)	
CO1	Identify the Legal and safety issues associated with antenatal exercise classes.
CO2	Assess and handle mothers with specific physical needs and appreciation of a team approach to learning.
CO3	Analyse, interpret and evaluate appropriate exercise programs for women with specific needs.
CO4	Rationalize the treatment approaches according to the management needed and handle patients effectively.
CO5	Create awareness and carry out research in Obstetrics and Gynecology.

Mapping of Course Outcomes with Program Outcomes
(1/2/3 indicates strength of correlation 3-High, 2 Medium, 1 Low)

CO/ PO/ PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	3	3	3	3	3	3	3	3	3	2	3	3	3	3	3	3	3
CO2	3	3	3	3	2	3	3	3	3	3	3	2	2	3	3	2	3
CO3	3	3	3	3	3	3	3	2	3	3	2	3	3	3	2	3	3
CO4	3	3	3	3	2	3	3	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	2	3	3	3	2	3	2	3	3	2

OBSTETRICS AND GYNECOLOGY

Syllabus

Unit I : Review the anatomy of the female pelvis and embryonic and foetal development.

Unit II : Hormones involved in female reproductive system and applied

Unit III : Outline the physiological skeletal changes during pregnancy, delivery and post-partum period.

Unit IV : High risk pregnancy and delayed labour

Unit V : Post partum complication and fitness

Reference

1. PHILIP BENNET CATHERINE WILLIAMSON – basic science in obstetrics and gynecology 4th edition 2010

Website:

1. www.ajog.org

Journals

1.International journal of OBG

2.American journal of OBG

Course Code 19BPT4CT04	Course Name: Clinical Training	Total Credit
	Total Contact Hours -255	3
	Prerequisite Course - HSSC	
	Course Coordinator:	
Course Outcomes (CO)		
CO1	Explain the components of basic assessment for a patient.	
CO2	List the impairments resulting in functional limitation and participation restriction.	
CO3	Demonstrate clinical observatory skill and the bedside manners.	
CO4	Understanding of policy of the inpatient service and outpatient services.	
CO5	Understand the role of physiotherapy in various clinical conditions and the documentation of patient service.	

Mapping of Course Outcomes with Program Outcomes
(1/2/3 indicates strength of correlation 3-High, 2 Medium, 1 Low)

CO/ PO/ PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	3	3	3	3	3	3	3	3	3	2	3	3	3	3	3	3	3
CO2	3	3	3	3	2	3	3	3	3	3	3	2	2	3	3	2	3
CO3	3	3	3	3	3	3	3	2	3	3	2	3	3	3	2	3	3
CO4	3	3	3	3	2	3	3	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	2	3	3	3	2	3	2	3	3	2

CLINICAL TRAINING

Syllabus

Unit I : Clinical Observation for General Medicine, General Surgery Department

Unit II : Laboratory posting for Pathology and Microbiology

Unit III : Field visit for Fitness, Exercise therapy,Massage

Unit IV : Community Health Camp

Unit V : Co Curricular Activities

SEMESTER V - COURSE OUTCOME, CO PO MAPPING

Course Code 19BPT5MC01	Course Name: Electrotherapy I	Theory	Practical	Total Credit
	Total Contact Hours -120	4	2	6
	Prerequisite Course - HSSC			
	Course Coordinator:			
Course Outcomes (CO)				
CO1	Understand the physics related to electrotherapy application and operation of instruments related to electrotherapy application.			
CO2	Understand the physiology of Pain modulation and pain relief by Low and Medium frequency currents.			
CO3	Comprehend the different types of nerve lesions and plan electrotherapy.			
CO4	Demonstrate application of low and medium frequency application to stimulate muscles, pain modulation, electrodiagnosis using SD curve and FG testing			
CO5	Demonstrate the application of direct current for therapeutic indication.			

Mapping of Course Outcomes with Program Outcomes
(1/2/3 indicates strength of correlation 3-High, 2 Medium, 1 Low)

CO/ PO/ PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	3	3	3	3	3	3	3	3	3	2	3	3	3	3	3	3	3
CO2	3	3	3	3	2	3	3	3	3	3	3	2	2	3	3	2	3
CO3	3	3	3	3	3	3	3	2	3	3	2	3	3	3	2	3	3
CO4	3	3	3	3	2	3	3	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	2	3	3	3	1	3	2	3	3	2

ELECTROTHERAPY I

Syllabus

Unit I : LF currents -IG, SF Currents, Parameters, Clinical indications- Therapeutic effects.

UNit II : SD curve- Selection of current- Intensity- Care of equipment- Patients

Unit III : Pain Gate theories

Unit IV : IFT , TENS- Dangers- Techniques- Therapeutic -Physiological uses.

Unit V : Russian currents, Sinusoidal currents.

Reference :

1. Clayton's Principles And Practice Of Electrotherapy - Forster And Palastanga - 8th Ed, 2005
2. Textbook Of Electrotherapy - Jagmohan Singh - 2nd Edition 2012
3. Electrotherapy Evidence Based Practices - Sheila Kitchen – 11th edition 2002.
4. Electrotherapy Explained Principles & Practices – Low & Reed – 4th Edition 2006.

Website

www.electrtherapy .org

https://books.google .co.in

www.physiostuff.com

Journals

1. AMERICAN PHYSICAL THERAPY ASSOCIATION
2. JOURNAL OF ORTHOPAEDIC & SPORTS PHYSICAL THERAPY

Course Code 19BPT5MC02	Course Name: Clinical Orthopedics	Theory	Practical	Total Credit
	Total Contact Hours -105	4	1	5
	Prerequisite Course - HSSC			
	Course Coordinator:			
Course Outcomes (CO)				
CO1	Knowledge about fractures of various bones, types, mechanism, clinical features, complications and management of fractures gained.			
CO2	Dislocation of major joints and prevention are understood and major surgical procedures in orthopaedics including amputations gained.			
CO3	Knowledge about bone and joint infectious diseases gained and tumors in bones and joints gained.			
CO4	Knowledge about arthritis and other degenerative disorders of bones and joints gained and various musculo-skeletal problems its clinical diagnosis and management gained.			
CO5	Knowledge about congenital and postural deformities, Sports injury mechanism, treatment and prevention, peripheral nerve injuries and deformities are gained.			

Mapping of Course Outcomes with Program Outcomes
(1/2/3 indicates strength of correlation 3-High, 2 Medium, 1 Low)

CO/ PO/ PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	3	3	3	3	3	3	3	3	3	2	3	3	3	3	3	3	3
CO2	3	3	3	3	2	3	3	3	3	3	3	2	2	3	3	2	3
CO3	3	3	3	3	3	3	3	2	3	3	2	3	3	3	2	3	3
CO4	3	3	3	3	2	3	3	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	2	3	3	3	1	3	2	3	3	2

CLINICAL ORTHOPEDICS

Syllabus

1. Indication- Contraindications- Arthroplasty- Arthrodesis- Tendon transfer- Soft tissue lesion
2. Fracture and Dislocation of spine -Extremities- Skull -Conservative care -Surgery -Investigations
3. Arthritis -Infections of bone- Joint Tumours -Poliomyelitis- Spinal deformities -Congenital deformities
4. Amputations- Pre and post operative care- Leprosy -Peripheral nerve injuries.

5. Keyhole Surgeries- Stem cell therapy- Spinal surgeries - Low back ache.

Reference

1. Textbook Of Orthpaedics And Traumatology- Prof. Mayailavahanan Natarajan – 7th Ed, 2011
2. Essential Orthopaedics -J. Maheswari –4th Edition2011
3. Text Book Of Orthopaedics – John Ebenazer – 2nd Edition 2010

Websites

1. Orthoinfo.aaos.org
2. www.orthogate.org

Journals

1. JOURNAL OF CLINICAL ORTHOPAEDICS & TRAUMA
2. JOURNAL OF CLINICAL & EXPERIMENTAL ORTHOPAEDICS

Course Code 19BPT5MC03	Course Name: Clinical Neurology and Neurosurgery	Theory	Practical	Total Credit
	Total Contact Hours -90	3	1	4
	Prerequisite Course - HSSC			
	Course Coordinator:			

Course Outcomes (CO)	
CO1	Acquisition of the clinical application of basic knowledge of the nervous system.
CO2	Development of communication skills that will facilitate the clinical interaction with patients with neurologic disorders and their families and thus ensure that complete, accurate data are obtained.
CO3	Development of competency in the single system neurological examination and acquisition of the knowledge necessary for the diagnosis and initial management of common acute and chronic neurological conditions.
CO4	Development of clinical problem-solving skills and strategies for health promotion and prevention of neurological damage.
CO5	Development of the attitudes and professional behaviours appropriate for clinical practice.

Mapping of Course Outcomes with Program Outcomes
(1/2/3 indicates strength of correlation 3-High, 2 Medium, 1 Low)

CO/ PO/ PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	3	3	3	3	3	3	3	3	3	2	3	3	3	3	3	3	3
CO2	3	3	3	3	2	3	3	3	3	3	3	2	2	3	3	2	3
CO3	3	3	3	3	3	3	3	2	3	3	2	3	3	3	2	3	3
CO4	3	3	3	3	2	3	3	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	2	3	3	3	2	3	2	3	3	2

CLINICAL NEUROLOGY AND NEUROSURGERY

Syllabus

Unit I : Neuroanatomy -Brain and Spinal cord- Neurophysiology -Tone- Posture -Balance -Movement - Pain.

Unit II : Clinical features and Management of Cerebral palsy, Spina Bifida, Hydrocephalus- Trauma of Head and Spine, Cerebrovascular Accident.

Unit III : Demyelinating diseases of spinal cord -clinical features- Investigation Management -Cerebellar lesions- Tumours.

Unit IV: Infection of Brain and Spinal cord- Diseases of muscle -Peripheral nerve disorders- Degenerative disorders- Epilepsy- Motor neurone disease.

Unit V : Cranial Nerve Assessment- Higher mental function- Surgeries of Head and Spine.

Reference

Text Book

1. Neurology And Neurosurgery Illustrated- Kenneth W. Lindsay. Ian Bone - 5th Edition-2011
2. Clinical Neuro Anatomy - Richard .S.Snell`S – 7th Edition 2009
3. Brain & Bannister Clinical Neurology- Sir Roger Bannister – 7th Edition 1992
4. Principles & Practices Of Medicine - Davidson`S – 22nd Edition 2014

Website

1. www.brainfacts .org
2. www.neurology.org

Journals

1. JOURNAL OF CLINICAL NEUROSCIENCE
2. JOURNAL OF CLINICAL NEUROPHYSIOLOGY

Course Code 19BPT5FC01	Course Name: Kinesiology	Theory	Practical	Total Credit
	Total Contact Hours -90	3	1	4
	Prerequisite Course - HSSC			
	Course Coordinator:			
Course Outcomes (CO)				
CO1	Describe the terminology and describe the normal biomechanics and pathomechanics of joints of the human body.			
CO2	Demonstrate the mechanical analysis of human motion.			
CO3	Describe the anatomical and physiological aspects of human motion.			
CO4	Experience quantitative methods of movement analysis in the laboratory sessions.			
CO5	Apply analytic methods to specific example of normal human motor performance.			

Mapping of Course Outcomes with Program Outcomes (1/2/3 indicates strength of correlation 3-High, 2 Medium, 1 Low)																	
CO/ PO/ PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	3	3	3	3	3	3	3	3	3	2	3	3	3	3	3	3	3
CO2	3	3	3	3	2	3	3	3	3	3	3	2	2	3	3	2	3
CO3	3	3	3	3	3	3	3	2	3	3	2	3	3	3	2	3	3
CO4	3	3	3	3	2	3	3	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	2	3	3	3	2	3	2	3	3	2

KINESIOLOGY

Syllabus

UNIT I : Fundamentals of Structure and Motion of the Human Body - Basics

UNIT II : Kinesiology of the Upper Extremity: Shoulder Unit - The shoulder complex - Structure and function of the bone and joints of the shoulder joint - Mechanics and Pathomechanics of Muscle activity at the shoulder complex - Analysis of forces on the shoulder elbow, wrist, hand during activity - Mechanics and Pathomechanics of the special connective tissues in the hand - Mechanics and Pathomechanics of intrinsic of the muscles of the hand

UNIT III : Structure and function of the articular structure of the TMJ - Analysis of the forces on the TMJ during activity. Spine unit: Structure & function of the bone and joints of Cervical spine, Thoracic spine & Lumbar spine and Pelvis.

UNIT IV : Structure and function of Bones and Non Contractile Elements of hip, Knee, Ankle & Foot complex and its analysis of forces.

UNIT V :Posture & Gait: Characteristics of Normal posture and common postural abnormalities - Characteristics of Normal Gait and factors influencing it - Characteristics of Normal Running/jogging, Normal sprinting and factors influencing it.

Reference

1.Robert Frost Ph.D. Applied Kinesiology, Revised Edition: A Training Manual and Reference Book of Basic Principles and Practices

2..Harvard (18th ed.) FROST, R. (2013). Applied kinesiology: a training manual

Course Code 19BPT5GE01	Course Name: Medical Terminology and Record Keeping	Theory	Practical	Total Credit
	Total Contact Hours -60	2	1	3
	Prerequisite Course - HSSC			
	Course Coordinator:			
Course Outcomes (CO)				
CO1	Demonstrate ability to apply new knowledge to understanding medical terms in their proper contexts.			
CO2	Differentiate among the various classes of drugs and learn their actions and side effects.			
CO3	Differentiate among various laboratory tests, clinical procedures, and clinical healthcare professionals.			
CO4	Apply logical, critical and analytical processes in identifying problems and alternate solutions related to records management in the healthcare environment.			
CO5	Recognize and use different types of EMR and EHR management systems for medical office management.			

Mapping of Course Outcomes with Program Outcomes
(1/2/3 indicates strength of correlation 3-High, 2 Medium, 1 Low)

CO/ PO/ PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	3	3	3	3	3	3	3	3	3	2	3	3	3	3	3	3	3
CO2	3	3	3	3	2	3	3	3	3	3	3	2	2	3	3	2	3
CO3	3	3	3	3	3	3	3	2	3	3	2	3	3	3	2	3	3
CO4	3	3	3	3	2	3	3	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	2	3	3	3	2	3	2	3	3	2

MEDICAL TERMINOLOGY AND RECORD KEEPING

Syllabus

Unit I : Anatomy and Physiology- How body system relates- Application of anatomical knowledge to coding records and information- Diseases & Coding

Unit II : Medical Terminology- Medium of communication- Knowledge- Various terms- Shorthand- Prefixes and Suffixes used in medicine.

Unit III : Medical Coding- diagnostic coding- Classification of disease- Awareness about Medicare centre- medical service guidelines- Application read procedural statement

Unit IV : Healthcare Delivery- Collect and collate data training

Unit V : Use coding manuals- Interpret records- Medical billing- Review patients record. Compiling patient health information records/files- Complete and updated records of patients with every minute details- Communicating with other health professionals or researchers when requested as per the facility's laid down protocols- Maintaining digital records

Reference

1.Buck's Step-by-Step Medical Coding, 2019 Edition

2.Betsy J. Shiland MS RHIA CCS CPC CPHQ CTR CHDA CPB

3. Medical Terminology & Anatomy for Coding

Course Code 19BPT5GE02	Course Name: Data Science	Theory	Practical	Total Credit
	Total Contact Hours -60	2	1	3
	Prerequisite Course - HSSC			
	Course Coordinator:			

Course Outcomes (CO)	
CO1	Demonstrate proficiency with statistical analysis of Data.
CO2	Execute statistical analyses with professional statistical software.
CO3	Demonstrate skill in Data management.
CO4	Develop the ability to build and assess Databased models.
CO5	Apply data science concepts and methods to solve problems in real-world contexts and will communicate these solutions effectively.

Mapping of Course Outcomes with Program Outcomes
(1/2/3 indicates strength of correlation 3-High, 2 Medium, 1 Low)

CO/ PO/ PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	3	3	3	3	3	3	3	3	3	2	3	3	3	3	3	3	3
CO2	3	3	3	3	2	3	3	3	3	3	3	2	2	3	3	2	3
CO3	3	3	3	3	3	3	3	2	3	3	2	3	3	3	2	3	3
CO4	3	3	3	3	2	3	3	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	2	3	3	3	2	3	2	3	3	2

DATA SCIENCE

Syllabus

Unit I: Introduction to Data Science,Understanding Exploratory Data Analysis

Unit II : Machine Learn going, Model selection and evaluation

Unit III : Data Warehousing, DataMining,DataVisualization

Unit IV : Cloud Computing, Business Intelligence, Storytelling with Data

Unit V : Communication and Presentation

Reference

1. Introduction to Data Science by Canvas WPI Hub
2. Introduction to Data Science in Python by Coursera

3. Introduction to Data Science by Paul G. Allen School of Computer Science & Engineering, University of Washington
4. Introduction to Data Science by High School of Economics, National Research University

Course Code 19BPT5CT05	Course Name: Clinical Training	Total Credit
	Total Contact Hours -255	3
	Prerequisite Course - HSSC	
	Course Coordinator:	
Course Outcomes (CO)		
CO1	Explain the components of basic assessment for a patient.	
CO2	List the impairments resulting in functional limitation and participation restriction.	
CO3	Demonstrate clinical observatory skill and the bed side manners.	
CO4	Understanding of policy of the inpatient service and outpatient services.	
CO5	Understand the role of physiotherapy in various clinical conditions and the documentation of patient service.	

Mapping of Course Outcomes with Program Outcomes (1/2/3 indicates strength of correlation 3-High, 2 Medium, 1 Low)																	
CO/ PO/ PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	3	3	3	3	3	3	3	3	3	2	3	3	3	3	3	3	3
CO2	3	3	3	3	2	3	3	3	3	3	3	2	2	3	3	2	3
CO3	3	3	3	3	3	3	3	2	3	3	2	3	3	3	2	3	3
CO4	3	3	3	3	2	3	3	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	2	3	3	3	1	3	2	3	3	2

CLINICAL TRAINING

Syllabus

Unit I : Field visit to Ortho, Neuro, Cardio, Respiratory Department

Unit II : Visit to Technomed for Electrotherapy

Unit III : Clinical Training Physiotherapy Department

Unit IV : Community Health Camps for Community Medicine

Unit V : Co Curricular Activities

SEMESTER VI - COURSE OUTCOME, CO PO MAPPING

Course Code 19BPT6MC01	Course Name: Electrotherapy II	Theory	Practical	Total Credit
	Total Contact Hours -120	4	3	6
	Prerequisite Course - HSSC			
	Course Coordinator:			

Course Outcomes (CO)	
CO1	Understands the physics background for the use of heat, sound and soft LASER as therapeutic modality.
CO2	Explain the parameters, indications, contraindications, methods of application for high frequency current applications.
CO3	Explain the parameters, indications, contraindications, methods of application for wax therapy, ultrasound and LASER.
CO4	Explain the parameters, indications, contraindications, methods of application for ultraviolet and infrared radiations.
CO5	Select and apply the highfrequency and actinotherapy modalities, LASER. Waxbath and cryotherapy under supervision.

Mapping of Course Outcomes with Program Outcomes
(1/2/3 indicates strength of correlation 3-High, 2 Medium, 1 Low)

CO/ PO/ PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	3	3	3	3	3	3	3	3	3	2	3	3	3	3	3	3	3
CO2	3	3	3	3	2	3	3	3	3	3	3	2	2	3	3	2	3
CO3	3	3	3	3	3	3	3	2	3	3	2	3	3	3	2	3	3
CO4	3	3	3	3	2	3	3	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	2	3	3	3	1	3	2	3	3	2

ELECTROTHERAPY II

Syllabus

Unit I : High frequency modalities- Treatment- Care- Dangers- Precautions- Technique

Unit II : Physiologic and Therapeutic effects, Practice of SWD- MWD, LASER-Ultrasound.

Unit III : Superficial Heat modalities -Care- Technique -Physiological, Therpeutic effects of IRR, UVR, Paraffin Wax, Moist heat

Unit IV : Cryotherapy, Traction, Shockwave Therapy

Unit V : EMG- NCV- Biofeedback- Principles -Uses -Applications

Reference

1. Clayton's Principles And Practice Of Electrotherapy - Forster And Palastanga - 8th Edition 2005

2. Textbook Of Electrotherapy - Jagmohan Singh - 2nd Edition 2012

3. Electrotherapy Evidence Based Practices - Sheila Kitchen – 11th edition 2002.

4. Electrotherapy Explained Principles & Practices – Low & Reed – 4th Edition 2006.

Website

www.electrtherapy .org

https://books.google .co.in

www.physiostuff.com

Journals

1. AMERICAN PHYSICAL THERAPY ASSOCIATION
2. JOURNAL OF ORTHOPAEDIC & SPORTS PHYSICAL THERAPY

Course Code 19BPT6MC02	Course Name: Clinical Cardiovascular Conditions for Physiotherapist	Theory	Practical	Total Credit
	Total Contact Hours -105	4	1	5
	Prerequisite Course - HSSC			
	Course Coordinator:			
Course Outcomes (CO)				
CO1	Interpretation of different invasive and non invasive diagnostic investigation to make proper assessment in various cardiorespiratory dysfunction.			
CO2	Develops the skills to execute different Physiotherapy techniques used in treatment of Cardio-respiratory dysfunctions.			
CO3	Select strategies for cure, care & prevention; adopt restorative & rehabilitative measures for maximum possible functional independence of a patient at home, workplace & in community			
CO4	Able to execute the effective Physiotherapeutic measures with appropriate clinical reasoning to improve pulmonary function.			
CO5	Design & execute an effective tailored cardiopulmonary rehabilitation program and learn and execute the principle of care of patients at the Intensive care area.			

Mapping of Course Outcomes with Program Outcomes
(1/2/3 indicates strength of correlation 3-High, 2 Medium, 1 Low)

CO/ PO/ PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	3	3	3	3	3	3	3	3	3	2	3	3	3	3	3	3	3
CO2	3	3	3	3	2	3	3	3	3	3	3	2	2	3	3	2	3
CO3	3	3	3	3	3	3	3	2	3	3	2	3	3	3	2	3	3
CO4	3	3	3	3	2	3	3	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	2	3	3	3	1	3	2	3	3	2

CLINICAL CARDIO VACULAR CONDITIONS FOR PHYSIOTHERAPIST

Syllabus

Unit I : Anatomy -Physiology of Cardiovascular -Blood pressure.

Unit II : ECG, EchoCardigraphy, Angiogram - Energy expenditure of daily activities- Cardiovascular stress testing.

Unit III : Clinical features and Management of Carcinoma, Myocardial ischemia, Cyanotic and Acyanotic heart conditions.congenital and acquired heart diseases.

Unit IV : Thoracic surgery -Cardiac surgery -Open -closed Preoperative evaluation -care.

Unit V : ICU management care in Ventilator -Suctioning Oxygen therapy.

Reference

1. Cash's Textbook Of Chest , Heart And Vascular Disorders For Physiotherapist - Patricia A. Downie – 4th Edition 1987

2. Tidy's Physiotherapy – Stuart Porter – 19th Edition 2013

3. Text Book Of Physiotherapy For Cardio Respiration , Cardiac Surgery & Thoracic Surgery Condition –G.S. Madhuri 2008

Website

www.ajcoline.org

www.cardiologyonline.com

Journals

1. INTERNATIONAL JOURNAL OF CLINICAL CARDIOLOGY

Course Code 19BPT6MC03	Course Name: Clinical Reasoning and Evidence Based Physiotherapy	Theory	Practical	Total Credit
	Total Contact Hours -90	3	1	4
	Prerequisite Course - HSSC			
	Course Coordinator:			

Course Outcomes (CO)	
CO1	Define evidence based practice & make decisions based on prescriptive, descriptive and artificially added approach & categorize the Courses and objects of knowledge
CO2	Differentiate between screening and diagnosis & understand the importance of history taking and physical examination.
CO3	Differentiate types of research methods, modification and justification of physiotherapy treatment approaches & identify and manage ambiguity and ambiguous patient problem.
CO4	Identify and appreciate ethical principles in physiotherapy, emphasize the importance of patient consent, & Identify situations beyond the scope of physiotherapists.
CO5	Apply the evidence in to clinical decision making.

Mapping of Course Outcomes with Program Outcomes
(1/2/3 indicates strength of correlation 3-High, 2 Medium, 1 Low)

CO/ PO/ PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	3	3	3	3	3	3	3	3	3	2	3	3	3	3	3	3	3
CO2	3	3	3	3	2	3	3	3	3	3	3	2	2	3	3	2	3
CO3	3	3	3	3	3	3	3	2	3	3	2	3	3	3	2	3	3
CO4	3	3	3	3	2	3	3	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	2	3	3	3	1	3	2	3	3	2

CLINICAL REASONING AND EVIDENCE BASED PHYSIOTHERAPY

Syllabus

Unit I : The physiotherapy process and ICF concerning disability, functioning and contextual factors including behavioural medical aspects in rehabilitation in different rehabilitation contexts

Unit II : The role of the physiotherapist as caregiver, educationalist, consultant and team member

Unit III : Evidence-based working method -published knowledge, best practice, the patient's wishes and available resources -Contraindications for different examination and treatment methods

Unit IV : Gender, culture, diversity, laws and regulations and ethical rules

Unit V : Physical activity in rehabilitation

Reference

1.Clinical Reasoning in the Health Professions 3rd Edition

Authors: Joy Higgs Mark Jones Stephen Loftus Nicole Christensen

2.Clinical reasoning and evidence-based practice Merrill Turpin, Joy Higgs

Course Code 19BPT6AR01	Course Name: Community Medicine	Theory	Practical	Total Credit
	Total Contact Hours -90	3	1	4
	Prerequisite Course - HSSC			
	Course Coordinator:			
Course Outcomes (CO)				
CO1	Epidemiological implications of impairment and handicap and disability, health statistics. National health schemes and its benefits.			
CO2	Immunization programmes – malnutrition and early detection of disabling conditions and Intervention.			
CO3	Categorizes various rehabilitations and describes its advantages and disadvantages.			
CO4	Explains about communicable and non-communicable diseases and its implications.			
CO5	Influence of nutritional factors on disability and role of community leaders and health professionals in health education.			

Mapping of Course Outcomes with Program Outcomes (1/2/3 indicates strength of correlation 3-High, 2 Medium, 1 Low)																	
CO/ PO/ PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	3	3	3	3	3	3	3	3	3	2	3	3	3	3	3	3	3
CO2	3	3	3	3	2	3	3	3	3	3	3	2	2	3	3	2	3
CO3	3	3	3	3	3	3	3	2	3	3	2	3	3	3	2	3	3
CO4	3	3	3	3	2	3	3	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	2	3	3	3	1	3	2	3	3	2

COMMUNITY MEDICINE

Syllabus

Unit I : Health and disease- Factors influencing - Prevention- Diseases with disability.

Unit II : National Health Scheme- Health Care delivery- ESI- Social Security measures- Occupational Hazards- Prevention -Treatment -Workmen Compensation Act.

Unit III : Community based-Institution based Rehabilitation- Communicable diseases- Mode of Transmission -Prevention -Non communicable diseases -Epidemiology.

Unit IV : Health education -Leaders- Methods -Role in rehabilitation

Unit V : Health agency National International Environmental Health

Reference

1.Park's Textbook Pf Preventive Medicine And Social Medicine - K.Park – 23rd 2014

2.Textbook Of Community Medicine Preventive And Social Medicine -Sunder Lal Adarsh Pankaj – 2nd Edition 2013

3.TEXT BOOK OF ENVIRONMENTAL STUDIES BY ERACH BHARUCHA 2nd edition

4.TEXTBOOK ON ENVIRONMENTAL STUDIES BY S. KANAGASABAHI

Website

http://www.world .org/weo/environment

http://www.cengage.com/biology /discipline_content/es_weblinks.htm

Journal

1. INDIAN JOURNAL OF COMMUNITY MEDICINE
2. INTERNATIONAL JOURNAL OF COMMUNITY MEDICINE & PUBLIC HEALTH

Course Code 190BPT6GE01	Course Name: Professionalism and Values	Theory	Practical	Total Credit
	Total Contact Hours -60	2	1	3
	Prerequisite Course - HSSC			
	Course Coordinator:			
Course Outcomes (CO)				
CO1	Demonstrate respect and compassionate use of medical skills for cardiac patients. This includes the treatment of patients and families dealing with life-threatening illnesses.			
CO2	Demonstrate respect and compassionate use of medical skills severely-ill patients.			
CO3	Develop and demonstrate an increasing commitment to carrying out professional responsibilities and adherence to ethical principles.			
CO4	Effective therapeutic relationship with patients and families will be demonstrated through listening, narrative and nonverbal skills; education.			
CO5	Counselling of the patients and families.			

Mapping of Course Outcomes with Program Outcomes (1/2/3 indicates strength of correlation 3-High, 2 Medium, 1 Low)																	
CO/ PO/ PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	3	3	3	3	3	3	3	3	3	2	3	3	3	3	3	3	3
CO2	3	3	3	3	2	3	3	3	3	3	3	2	2	3	3	2	3
CO3	3	3	3	3	3	3	3	2	3	3	2	3	3	3	2	3	3
CO4	3	3	3	3	2	3	3	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	2	3	3	3	1	3	2	3	3	2

PROFESSIONALISM AND VALUES

Syllabus

Unit I : Universal human value.love,truth, right conduct,peace and non violence

Unit II : Scholl circle,home circle, social circle, occupational circle,-Adaptation of behavior,values of good life

Unit III : Professionalism in medical field

Unit IV : Professionalism as physiotherapist- Integration,honesty, transparency etc

Unit V : Code of professionalism

Reference

1.Professional Ethics and Human Values by Govindarajan M

2.A Foundation Course in Human Values and Professional Ethics by R.R. Gaur,R. Sangal,G.P. Bagaria

3.A Textbook on Professional Ethics and Human Values by R.S.

Course Code 19BPT6GE02	Course Name: Healthcare Management	Theory	Practical	Total Credit
	Total Contact Hours -60	2	1	3
	Prerequisite Course - HSSC			
	Course Coordinator:			
Course Outcomes (CO)				
CO1	Demonstrate knowledge of healthcare system including delivery, finances, quality, regulatory policies and practices and compliance, organization effectiveness and clinical and support services.			
CO2	Demonstrate competencies in communication, interpersonal relations, management and leadership.			
CO3	Demonstrate knowledge of resources, advocacy and cultural competence with individuals, groups, communities, and populations across the lifespan.			
CO4	Apply and evaluate the efficacy of information technology in improving patient care, patient outcomes and a creating a safe patient care environment.			
CO5	Analyze the impact of social policy, finance, regulations, and legislation on healthcare for individuals, groups, communities, and populations across the lifespan, and for the professional practice of healthcare management, through an ethical-legal framework.			

Mapping of Course Outcomes with Program Outcomes
(1/2/3 indicates strength of correlation 3-High, 2 Medium, 1 Low)

CO/ PO/ PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	3	3	3	3	3	3	3	3	3	2	3	3	3	3	3	3	3
CO2	3	3	3	3	2	3	3	3	3	3	3	2	2	3	3	2	3
CO3	3	3	3	3	3	3	3	2	3	3	2	3	3	3	2	3	3
CO4	3	3	3	3	2	3	3	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	2	3	3	3	1	3	2	3	3	2

HEALTH CARE MANAGEMENT

Syllabus

Unit I : Structuring of Health Care sector as per the service provider(Government hospitals, Private hospitals, hospitals run by NGOs). -- as per the services being provided (Primary,

Secondary, Tertiary & Preventive). as per the size of Hospitals (Course Centre, Primary health care centre, community health care, district hospitals and teaching institutions)

Unit II : Health Care Scenario-- statistics of industry Present opportunities and Challenges in Health Care Management; worldwide scenario.

Unit III : Overview of HR in Health Care, Manpower in Health Care Management

Unit IV : Quality and regulations in Health Care: Quality in Health Care Management, Regulation in Health Care Management

Unit V : Financing in Health Care: Accounts, Stores, Purchases, Fund raising and Analysis

References

1.Sharon B. Buchbinde, Healthcare Management –with access, 3rs ed, Jones & Bartlett Publishers, 2017.

2.Sandra Buttigieg , International Best Practices in Health Care Management , Emerald Group Publishing Ltd, 2019

Course Code 19BPT6CT06	Course Name: Clinical Training	Total Credit
	Total Contact Hours : 255	3
	Prerequisite Course - HSSC	
	Course Coordinator:	
Course Outcomes (CO)		
CO1	Explain the components of basic assessment for a patient.	
CO2	List the impairments resulting in functional limitation and participation restriction.	
CO3	Demonstrate clinical observatory skill and the bed side manners.	
CO4	Understanding of policy of the inpatient service and outpatient services.	
CO5	Understand the role of physiotherapy in various clinical conditions and the documentation of patient service.	

Mapping of Course Outcomes with Program Outcomes
(1/2/3 indicates strength of correlation 3-High, 2 Medium, 1 Low)

CO/ PO/ PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	3	3	3	3	3	3	3	3	3	2	3	3	3	3	3	3	3
CO2	3	3	3	3	2	3	3	3	3	3	3	2	2	3	3	2	3
CO3	3	3	3	3	3	3	3	2	3	3	2	3	3	3	2	3	3
CO4	3	3	3	3	2	3	3	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	2	3	3	3	1	3	2	3	3	2

CLINICAL TRAINING

Syllabus

Unit I : Field visit to Ortho, Neuro, Cardio, Respiratory Department

Unit II : Visit to Technomed for Electrotherapy

Unit III : Clinical Training Physiotherapy Department

Unit IV : Community Health Camps for Community Medicine

Unit V : Co Curricular Activities

SEMESTER VII - COURSE OUTCOME, CO PO MAPPING

Course Code 19BPT7MC01	Course Name: Physiotherapy in Orthopedic Conditions	Theory	Practical	Total Credit
	Total Contact Hours -135	4	2	6
	Prerequisite Course - HSSC			
	Course Coordinator:			
Course Outcomes (CO)				
CO1	Understand relevant investigation techniques to diagnose various orthopaedic conditions.			
CO2	Able to discuss etiology, clinical symptoms and management of various musculoskeletal conditions.			
CO3	Illustrate the clinical examination, special test and interpretation of pre & post operative cases.			
CO4	Able to read and interpret features of X-ray and correlate with the clinical findings.			
CO5	Understand the treatment started according with upgradation need to be match with patient condition.			

Mapping of Course Outcomes with Program Outcomes
(1/2/3 indicates strength of correlation 3-High, 2 Medium, 1 Low)

CO/ PO/ PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	3	3	3	3	3	3	3	3	3	2	3	3	3	3	3	3	3
CO2	3	3	3	3	2	3	3	3	3	3	3	2	2	3	3	2	3
CO3	3	3	3	3	3	3	3	2	3	3	2	3	3	3	2	3	3
CO4	3	3	3	3	2	3	3	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	2	3	3	3	1	3	2	3	3	2

PHYSIOTHERAPY IN ORTHOPAEDIC CONDITIONS

Syllabus

Unit I : Physiotherapy Assessment, Evaluation, Treatment, Orthoses and prostheses in upper Limb fractures dislocations soft tissue injuries soft tissue lesion deformities and amputation.

Unit II : Physiotherapy Assessment, Evaluation, Treatment, Orthoses, Prostheses & Assistive devices in lower Limb fractures and Dislocations, Soft tissue injuries, Soft tissue lesions, Deformities and Amputation.

Unit III : Physiotherapy Assessment, Evaluation, Treatment, Orthoses, Prostheses & Assistive devices in Vertebral Column fractures and Dislocations, Soft tissue injuries, Soft tissue lesions, Deformities and Amputation, Spondylosis, Spondylisthesis, IVDP.

Unit IV: Physiotherapy Assessment, Evaluation, Treatment, Orthoses, Prostheses & Assistive devices in Congenital and Acquired Infectious diseases, Congenital and Acquired Deformities, Autoimmune diseases.

Unit V : Physiotherapy Assessment, Evaluation, Treatment, Orthoses, Prostheses & Assistive devices in Neuro Musculo Skeletal disorders.

Reference

1. Essentials of orthopaedics and applied physiotherapy - Jayant Joshi, Prakash Kotwal, 2nd edition, Elsevier, 2011.
2. Essentials of orthopeadics for physiotherapist, John Ebnezer, 2nd edition, 2011.
3. Principles and Their Applications - Turek's Orthopaedics, 6th revised edition, Lippincott Williams and Wilkins, 2005.
4. Orthopaedic Physical Therapy - Robert A. Donatelli, Churchill livingstone Elsevier, 4 edition 2009.
5. Tidy's physiotherapy – Stuart Porter, 19th edition, Churchill Livingstone Elsevier, 2013.

Journals

1. JOURNAL OF ORTHOPAEDIC & SPORTS PHYSICAL THERAPY (JOSPT)
2. JOURNAL OF THE AMERICAN PHYSICAL THERAPY ASSOCIATION (APTA)
3. JOURNAL OF PHYSIOTHERAPY AUSTRALIAN PHYSIOTHERAPY ASSOCIATION.
4. JOURNAL OF PHYSIOTHERAPY & PHYSICAL REHABILITATION
5. ELSEVIER

Website

1. https://www.orthopt.org
2. www.orthophysio.com
3. Sportsandortho.net

Course Code 19BPT7MC02	Course Name: Physiotherapy in Neurological Conditions	Theory	Practical	Total Credit
	Total Contact Hours -135	4	2	6
	Prerequisite Course - HSSC			
	Course Coordinator:			
Course Outcomes (CO)				
CO1	Learn the physical assessment in neurological conditions of the central nervous system and peripheral nervous system.			
CO2	Identify the disability due to neurological dysfunction.			
CO3	Understand the various Physiotherapy techniques used in management of Neurological conditions of the central nervous system and peripheral nervous system.			
CO4	Understand the basic principles of Physiotherapy assessment and functional assessment.			
CO5	Application of Physiotherapy in various Cranial & Spinal surgeries.			

Mapping of Course Outcomes with Program Outcomes
(1/2/3 indicates strength of correlation 3-High, 2 Medium, 1 Low)

CO/ PO/ PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	3	3	3	3	3	3	3	3	3	2	3	3	3	3	3	3	3
CO2	3	3	3	3	2	3	3	3	3	3	3	2	2	3	3	2	3
CO3	3	3	3	3	3	3	3	2	3	3	2	3	3	3	2	3	3
CO4	3	3	3	3	2	3	3	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	2	3	3	3	1	3	2	3	3	2

PHYSIOTHERAPY IN NEUROLOGICAL CONDITIONS

Syllabus

Unit I : Physiotherapy Assessment, Evaluation, Treatment, Orthoses, Prostheses & Assistive devices in Central nervous system diseases.

Unit II : Physiotherapy Assessment, Evaluation, Treatment, Orthoses, Prostheses & Assistive devices in Peripheral Nervous System diseases.

Unit III : Physiotherapy Assessment, Evaluation, Treatment, Orthoses, Prostheses & Assistive devices in congenital and acquired neurological diseases.

Unit IV : Physiotherapy Assessment, Evaluation, Treatment, Orthoses, Prostheses & Assistive devices in Auto Immune diseases, Neuropathies, Myopathies

Unit V : Physiotherapy Assessment, Evaluation, Treatment, Orthoses, Prostheses & Assistive devices in Congenital, Genetic, Paediatric, Geriatric Neurological conditions.

Reference

1. Cash's Textbook of Neurology for Physiotherapists - Patricia Downie, 4th edition, Jaypee Brothers Publishers, 1993.
2. Adult Hemiplegia: Evaluation & Treatment- Bobath, 3rd edition, Oxford: Butterworth Heinemann, 1990.
3. Neurological Rehabilitation - Carr and Shepherd, 2nd edition, Oxford: Butterworth Heinemann Elsevier, 2010.
4. Tetraplegia and Paraplegia: A guide for Physiotherapist – Ida Bromley, 6th edition, Churchill Livingstone,2006.
5. Neurological Physiotherapy: A Problem Solving Approach - Susan Edwards, 2nd edition, Elsevier Churchill Livingstone, 2001.
6. Umphreds Neurological Rehabilitation – Darcy A. Umphred, 6th edition, Elsevier Mosby, 2012.
7. Geriatric Physical Therapy – Andrew A. Guccione, 3rd edition, Elsevier Mosby, 2012.
8. Paediatric Physical Therapy – Jan S. Tecklin, 5th edition, Lippincott Williams & Wilkins, 2014.
9. Treatment of Cerebral Palsy and Motor Delay – Sophie Levitt, 5th edition, Wiley – Blackwell, 2010.
10. Textbook of Physical Rehabilitation - Susan ‘B’. O Sulivan, 6th edition, F.A.Davis Company, 2013.
11. Tidy’s Physiotherapy, Stuart Porter, Churchill Livingstone, 2013.

Course Code 19BPT7MC03	Course Name: Clinical Respiratory Conditions for Physiotherapists	Theory	Practical	Total Credit
	Total Contact Hours -60	3	1	4
	Prerequisite Course - HSSC			
	Course Coordinator:			
Course Outcomes (CO)				
CO1	Describe surgical treatment, ECMO therapy, clinical indications and physiotherapy interventions to promote optimal outcomes.			
CO2	Describe the significance of palliative care team involvement in patients with respiratory disease and the role of the physiotherapist.			
CO3	Describe the current strategies to treat copd,infectious and restrictive lung diseases, interventions, barriers to treatment, and application to physiotherapy practice.			
CO4	Describe the risk factors for DVT and pulmonary embolism, diagnostics, standard and innovative treatments for pulmonary embolism.			
CO5	Describe the current electrophysiology updates, application to Physiotherapy practice, and Physiotherapy interventions to promote optimal outcomes.			

Mapping of Course Outcomes with Program Outcomes
(1/2/3 indicates strength of correlation 3-High, 2 Medium, 1 Low)

CO/ PO/ PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	3	3	3	3	3	3	3	3	3	2	3	3	3	3	3	3	3
CO2	3	3	3	3	2	3	3	3	3	3	3	2	2	3	3	2	3
CO3	3	3	3	3	3	3	3	2	3	3	2	3	3	3	2	3	3
CO4	3	3	3	3	2	3	3	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	2	3	3	3	1	3	2	3	3	2

CLINICAL RESPIRATORY CONDITIONS FOR PHYSIOTHERAPIST

Syllabus

Unit I : Anatomy -Physiology of respiratory -Bronchopulmonary segments -Conditions of Bony cage- Respiration

Unit II : Pulmonary function test- Energy expenditure of daily activities- Pulmonary endurance

Unit III : Clinical features and Management of COPD, Empyema, Asthma, Carcinoma, Infections

Unit IV : Thoracic surgery- Pneumothorax- Hemothorax- Hydrothorax-Injury of chest wall - Preoperative evaluation -care.

Unit V : ICU management care in Ventilator -Suctioning Oxygen therapy.

Reference

Text book

1. Cash's Textbook Of Chest , Heart And Vascular Disorders For Physiotherapist - Patricia A. Downie – 4th Edition 1987

2. Tidy's Physiotherapy – Stuart Porter – 19th Edition 2013

3. Text Book Of Physiotherapy For Cardio Respiration , Cardiac Surgery & Thoracic Surgery Condition –G.S. Madhuri 2008

Website

www.ajcoline.org

www.cardiologyonline.com

Journals

1. INTERNATIONAL JOURNAL OF CLINICAL CARDIOLOGY

Course Code 19BPT7AR01	Course Name: Research Methodology & Biostatistics	Theory	Practical	Total Credit
	Total Contact Hours -75	2	1	3
	Prerequisite Course - HSSC			
	Course Coordinator:			
Course Outcomes (CO)				
CO1	Understand the basic knowledge on research methodology and biostatistics.			
CO2	Differentiate and establish a relationship between various research methods and sampling techniques.			
CO3	Develop the appropriate research design, research hypothesis, tools and techniques of gathering data.			
CO4	Apply the theoretical knowledge into research works and clinical trials.			
CO5	Apply bio-statistical analysis for qualitative and quantitative data, using computers and software and prepare reports.			

Mapping of Course Outcomes with Program Outcomes
(1/2/3 indicates strength of correlation 3-High, 2 Medium, 1 Low)

CO/ PO/ PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	3	3	3	3	3	3	3	3	3	2	3	3	3	3	3	3	3
CO2	3	3	3	3	2	3	3	3	3	3	3	2	2	3	3	2	3
CO3	3	3	3	3	3	3	3	2	3	3	2	3	3	3	2	3	3
CO4	3	3	3	3	2	3	3	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	2	3	3	3	3	3	2	3	3	2

RESEARCH METHODOLOGY & BIOSTATISTICS

Syllabus

Unit I : Ethics in physiotherapy research – phases of research – conceptual phase – concepts – variables – hypothesis – literature review

Unit II : Emperical phase – design – survey – validity – data collection – observationsl method- data collection –

Unit III : Observational method- biophysiologic measures – data analysis – descriptive statistics – inferential statistics

Unit IV: Interpretative phase – critiquing research – guidelines Guidelines for research publication – APA style – plagarism –

UNIT V : Physiotherapy Research

Reference

1. Research Methodology and Techniques- C.R. Kothari
2. Research Methods for Clinical Therapist- Carolyn M Hicks

Course Code 19BPT7GE01	Course Name: Diagnostic Imaging for Physiotherapist	Theory	Practical	Total Credit
	Total Contact Hours -60	2	1	3
	Prerequisite Course - HSSC			
	Course Coordinator:			
Course Outcomes (CO)				
CO1	Understand the clinical impact of common imaging technologies and image-guided interventional procedures used in musculoskeletal, neurological, cardiovascular & pulmonary imaging			
CO2	Compare and contrast the clinical capabilities, and limitations of radiographs, computerized tomography (CT), magnetic resonance imaging (MRI), diagnostic ultrasound (echocardiogram or ultrasonaugraphy) and various forms of radioisotope imaging (V/Q scan, MUGA).			
CO3	Discuss the critical role of PT's in the diagnostic imaging system through their correlation of clinical findings with imaging information. Analyze the impact that components of the radiological written report have on physical therapy.			
CO4	Discuss the radiological evaluation, including pertinent radiologic observations, indications of trauma, common injury patterns, degenerative disease processes, and anomalies, of the various regions of the body, fractures and the unique patterns of fracture and fracture healing, especially in children.			
CO5	Integrate radiographic information with clinical presentation and therapeutic intervention. Apply medical imaging information to physical therapy intervention planning.			

Mapping of Course Outcomes with Program Outcomes (1/2/3 indicates strength of correlation 3-High, 2 Medium, 1 Low)																	
CO/ PO/ PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	3	3	3	3	3	3	3	3	3	2	3	3	3	3	3	3	3
CO2	3	3	3	3	2	3	3	3	3	3	3	2	2	3	3	2	3
CO3	3	3	3	3	3	3	3	2	3	3	2	3	3	3	2	3	3
CO4	3	3	3	3	2	3	3	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	2	3	3	3	1	3	2	3	3	2

DIAGNOSTIC IMAGING FOR PHYSIOTHERAPIST

Syllabus

Unit I : Radiographic Technique of Bone & Joints

Unit II : Special Radiographic Techniques

Unit III: Recent Advances in Imaging & Contrast Media

Unit IV: Radiation Hazards, Protection & Planning of the Department

Unit V : MRI,CT, Functional MRI, Ultrasonic scan

Reference

1. Books (latest edition) Basic books of anatomy, applied anatomy, physiology and basic pathology
2. Medical Physics by Selman Medical Physics by FM Khan
3. Radiation Pathology by Rubin & Cassaret
4. Radiobiology by Eric J Hall

Course Code 19BPT7GE02	Course Name: Dietetics and Nutrition	Theory	Practical	Total Credit
	Total Contact Hours -60	2	1	3
	Prerequisite Course - HSSC			
	Course Coordinator:			
Course Outcomes (CO)				
CO1	Understand the importance of interdisciplinary approaches to the management of nutritional problems and the promotion of nutritional health and well -being.			
CO2	Assess the nutritional status of critically ill patients.			
CO3	Determine the dietary essentials for recovery and maintenance of various systems.			
CO4	Describe the etiology, symptoms and dietary management of deficiency diseases and febrile conditions.			
CO5	Explain, analyze and diagnose the causes of allergy.			

Mapping of Course Outcomes with Program Outcomes (1/2/3 indicates strength of correlation 3-High, 2 Medium, 1 Low)																	
CO/ PO/ PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	3	3	3	3	3	3	3	3	3	2	3	3	3	3	3	3	3
CO2	3	3	3	3	2	3	3	3	3	3	3	2	2	3	3	2	3
CO3	3	3	3	3	3	3	3	2	3	3	2	3	3	3	2	3	3
CO4	3	3	3	3	2	3	3	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	2	3	3	3	1	3	2	3	3	2

DIETETICS AND NUTRITION

Syllabus

Unit I : Principles of Nutrition and Nutritional Biochemistry. ...

Unit II : Medical Nutrition Therapy/Clinical Nutrition/Dietetics/Nutrition in Health and Disease.

Unit III : Food Science and Food Microbiology. ...

Unit IV : Nutritional Epidemiology. ...

Unit V : Public Health Nutrition.

Reference

1. The Atlas of Food by Erik Millstone; Tim Lang; Marion Nestle
2. Dietary Reference Intakes by Jennifer J. ...
3. Handbook of Nutrition and Food, Third Edition by Carolyn D. ...
4. Manual of Nutritional Therapeutics by David H

Course Code 19BPT7AR02	Course Name: Ethics in Physiotherapy	Theory	Practical	Total Credit
	Total Contact Hours - 50	2	1	3
	Prerequisite Course - HSSC			
	Course Coordinator:			
Course Outcomes (CO)				
CO1	Define ethics in Physiotherapy & make decisions based on prescriptive, descriptive and artificially added approach & categorize the subjects and objects of knowledge			
CO2	Minimize the effect of personal, religious, political, philosophical or other convictions.			
CO3	Respect for patients rights to dignity, autonomy, privacy and information.			
CO4	Identify and appreciate ethical principles in physiotherapy, emphasize the importance of patient consent, & Identify situations beyond the scope of physiotherapists.			
CO5	Adopt ethical behaviour, appropriate record keeping and data handling.			

Mapping of Course Outcomes with Program Outcomes (1/2/3 indicates strength of correlation 3-High, 2 Medium, 1 Low)																	
CO/ PO/ PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	3	3	3	3	3	3	3	3	3	2	3	3	3	3	3	3	3
CO2	3	3	3	3	2	3	3	3	3	3	3	2	2	3	3	2	3
CO3	3	3	3	3	3	3	3	2	3	3	2	3	3	3	2	3	3
CO4	3	3	3	3	2	3	3	3	3	3	3	3	3	3	3	3	3

CO5	3	3	3	3	3	3	3	2	3	3	3	1	3	2	3	3	2

ETHICS IN PHYSIOTHERAPY

Syllabus

Unit I : History of physiotherapy, ethical principles in health care , ethical principles related to physiotherapy , scope of practice , enforcing standards in health profession – promoting quality care

Unit II : Professional ethics in research , education and patient care delivery , informed consent issues , medical ethics and economics in clinical decision – making .Rules of profession conduct-

Unit III : Physiotherapy as profession-Relationship with patients -Relationship with health care institutions- Relationship with colleagues and peers- Relationship with medical and other professional

Unit IV : Confidentiality and responsibility , malpractice and negligence , provision of service and advertising

Unit V: Legal aspects , consumer protection act, legal responsibility of physiotherapist for their action in professional context and understanding liability and obligations in case of medico- legal action

References :

Medical education principles and practice – Ananthakrishnan- 2nd edition

Legal ethical Issues for Health Professions - III Edition- Wiley Blackwell

Course Code 19BPT7GE03	Course Name: Medico Legal Aspects	Theory	Practical	Total Credit
	Total Contact Hours - 40	2	0	2
	Prerequisite Course - HSSC			
	Course Coordinator:			
Course Outcomes (CO)				
CO1	Understand the importance of Medico legal Aspects in physiotherapy and the basic concepts.			
CO2	Examine the concept of Medico legal issues, Clinical Practice and importance of Complaints from patients in the Clinical settings.			
CO3	Examine various forms of medico legal issues and precautionary measures.			
CO4	Understand the medico legal law related to physiotherapy and law of			

	negligence in the context of the provision of healthcare.
CO5	Legal issues surrounding and maintenance of professional standards in the healthcare profession and role of policy in the formation of law as it relates to health care system.

Mapping of Course Outcomes with Program Outcomes (1/2/3 indicates strength of correlation 3-High, 2 Medium, 1 Low)																	
CO/ PO/ PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	3	3	3	3	3	3	3	3	3	2	3	3	3	3	3	3	3
CO2	3	3	3	3	2	3	3	3	3	3	3	2	2	3	3	2	3
CO3	3	3	3	3	3	3	3	2	3	3	2	3	3	3	2	3	3
CO4	3	3	3	3	2	3	3	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	2	3	3	3	1	3	2	3	3	2

MEDICO LEGAL ASPECTS

Syllabus :

Unit I : Medico-legal application in the standard operating procedures - Ensuring confidentiality in the practice -Patient consent and medical records -Factors to consider in order to ensure patient confidentiality.

Unit II : Consent to Medical Treatment. Refusal of Medical Treatment

Unit III : Withholding and Withdrawing Care

Unit IV : Medical Negligence- Patient Confidentiality-

Unit V : Human Rights and Medical Practice- Research and Ethical Approval-Necessary documents in a practice.

References :

1. LEGAL& ETHICAL ISSUES FOR HEALTH PROFRSSIONS - 3rd Edition 2014

2. ABC OF MEDICAL LAW – WILEY BLACKWELL 2009

WEBSITES:

www.portalspesnet.co.za

Course Code 19BPT7CT07	Course Name: Clinical Training	Total Credit
	Total Contact Hours -255	3
	Prerequisite Course - HSSC	
	Course Coordinator:	
Course Outcomes (CO)		
CO1	Explain the components of basic assessment for a patient.	
CO2	List the impairments resulting in functional limitation and participation restriction.	
CO3	Demonstrate clinical observatory skill and the bed side manners.	
CO4	Understanding of policy of the inpatient service and outpatient services.	
CO5	Understand the role of physiotherapy in various clinical conditions and the documentation of patient service.	

Mapping of Course Outcomes with Program Outcomes
(1/2/3 indicates strength of correlation 3-High, 2 Medium, 1 Low)

CO/ PO/ PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	3	3	3	3	3	3	3	3	3	2	3	3	3	3	3	3	3
CO2	3	3	3	3	2	3	3	3	3	3	3	2	2	3	3	2	3
CO3	3	3	3	3	3	3	3	2	3	3	2	3	3	3	2	3	3
CO4	3	3	3	3	2	3	3	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	2	3	3	3	2	3	2	3	3	2

CLINICAL TRAINING

Syllabus

Unit I : Assessment, Writing SOAP notes in Physiotherapy

Unit II : Clinical training g in Physiotherapy Department

Unit III : Post -operative Physiotherapy training

Unit IV : ICU posting & Training

Unit V : Postings for Dissertation Work

SEMESTER VIII - COURSE OUTCOME, CO PO MAPPING

Course Code 19BPT8MC01	Course Name: Physiotherapy in Cardiorespiratory Conditions	Theory	Practical	Total Credit
	Total Contact Hours -135	4	2	6
	Prerequisite Course - HSSC			
	Course Coordinator:			
Course Outcomes (CO)				
CO1	Understand the clinical aspects of respiratory conditions and chest physiotherapy techniques.			
CO2	Enlist the impairments and plan therapy accordingly.			
CO3	Explain physiotherapeutic techniques in the management of respiratory conditions and critical care			
CO4	Demonstrate the chest physiotherapy techniques in various clinical conditions .			
CO5	Demonstrate the skills of evaluation and management in various respiratory conditions and critical care unit.			

Mapping of Course Outcomes with Program Outcomes
(1/2/3 indicates strength of correlation 3-High, 2 Medium, 1 Low)

CO/ PO/ PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	3	3	3	3	3	3	3	3	3	2	3	3	3	3	3	3	3
CO2	3	3	3	3	2	3	3	3	3	3	3	2	2	3	3	2	3
CO3	3	3	3	3	3	3	3	2	3	3	2	3	3	3	2	3	3
CO4	3	3	3	3	2	3	3	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	2	3	3	3	3	3	2	3	3	2

PHYSIOTHERAPY IN CARDIO RESPIRATORY CONDITIONS

Syllabus

1. Conservative and Post-operative Physiotherapy Assessment, Evaluation, Treatment in Respiratory conditions- Obstructive, Restrictive and Infectious diseases.

2. Conservative and Post-operative Physiotherapy Assessment, Evaluation, Treatment in Cyanotic and Acyanotic Heart diseases.

3. Conservative and Post-operative Physiotherapy Assessment, Evaluation, Treatment in Intensive Care Units- ICU, CCU, NICU, PICU. Physiotherapy Assessment, Evaluation, Treatment in Respiratory Muscle Paralysis in Neuro & Myopathies/ Spinal Cord lesions.

4. Ventilator-Basics, Types, Criteria, Weaning, Physiotherapy Assessment, Evaluation, Treatment for Ventilator assisted patients.

5. Physiotherapy in special conditions like heart lung transplantation Surgery, etc.

Reference

1. Principles and practice of medicine - Davidson's, 22nd edition, Elsevier, 2014.
2. Cash's textbook of Chest, Heart & Vascular Disorders for Physiotherapist, Patricia A. Downie , 4th edition, Jaypee Brothers Publishers, 1987.
3. Cardiovascular and Pulmonary Physical Therapy- Donna Frownfelter and Elizabeth Dean, 5th edition, Elsevier, 2012.
4. Tidy's Physiotherapy, Stuart Porter, churchill livingstone, 2013.

Journals:

1. JOURNAL OF PHYSIOTHERAPY & PHYSICAL REHABILITATION.
2. CARDIOPULMONARY PHYSICAL THERAPY JOURNAL (APTA)

Website:

1. www.escardio.org
2. Wiley online library

Course Code 19BPT8SE02	Course Name: Rehabilitation Medicine including Geriatric Rehabilitation	Theory	Practical	Total Credit
	Total Contact Hours -135	4	2	6
	Prerequisite Course - HSSC			
	Course Coordinator:			
Course Outcomes (CO)				
CO1	Understand the team approach in rehabilitation of disability and role of community and other institutions for rehabilitation.			
CO2	Identification of residual potentials in patients with partial or total disability (temporary or permanent).			
CO3	Formulation of long term and short term goals in rehabilitation treatment.			
CO4	Application of various orthosis, prosthesis, wheelchairs and other assistive devices for different medical and physical conditions.			
CO5	Understand the importance of administration and organizational structure of a department or an organization and concepts of ethics.			

Mapping of Course Outcomes with Program Outcomes
(1/2/3 indicates strength of correlation 3-High, 2 Medium, 1 Low)

CO/ PO/ PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	3	3	3	3	3	3	3	3	3	2	3	3	3	3	3	3	3
CO2	3	3	3	3	2	3	3	3	3	3	3	2	2	3	3	2	3
CO3	3	3	3	3	3	3	3	2	3	3	2	3	3	3	2	3	3
CO4	3	3	3	3	2	3	3	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	2	3	3	3	1	3	2	3	3	2

REHABILITATION MEDICINE INCLUDING GERIATRIC REHABILITATION

Syllabus

Unit I :Therapeutic techniques, Communication problems, Behavioral problems, Treatment of Pain.

Unit II :Disability evaluation, Evaluation of Physical dysfunction, Pre vocational Evaluation and Placement, Vocational training.

Unit III : Orthosis, Prosthesis, Mobility AIDS

Unit IV :Post surgical rehabilitation, Paediatric and Geriatric rehabilitation, Community based Rehabilitation.

Unit V : Architectural Barrier, Social implication, Legal aspects. Alternative therapy, Audiology, Reiki, Environmental control system.

Reference:

1. Textbook Of Rehabilitation - S.Sunder, 2nd edition, Jaypee Brothers Publishers, 2004.
2. Physical Rehabilitation - Susan 'B'. O Sulivan, 6th edition, F.A.Davis Company, 2013.

Journals:

1. JOURNAL OF REHABILITATION MEDICINE.
2. AMERICAN JOURNAL OF PHYSICAL MEDICINE AND REHABILITATION.

Website:

1. www.naric.com
2. www.royalrehab.com.au

Course Code 19BPT8MC03	Course Name: Physiotherapy Law	Theory	Practical	Total Credit
	Total Contact Hours -60	4	0	4
	Prerequisite Course - HSSC			
	Course Coordinator:			
Course Outcomes (CO)				
CO1	Ethical underpinnings of the law as it relates to physiotherapy.			
CO2	Application of various law of negligence in the context of the provision of healthcare.			
CO3	Understand the legal and ethical issues surrounding end and beginning of life decisions.			
CO4	Understand the maintenance of professional standards in the healthcare profession.			
CO5	Understand the role of policy in the formation of law as it relates to physiotherapy.			

Mapping of Course Outcomes with Program Outcomes
(1/2/3 indicates strength of correlation 3-High, 2 Medium, 1 Low)

CO/ PO/ PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	3	3	3	3	3	3	3	3	3	2	3	3	3	3	3	3	3
CO2	3	3	3	3	2	3	3	3	3	3	3	2	2	3	3	2	3
CO3	3	3	3	3	3	3	3	2	3	3	2	3	3	3	2	3	3
CO4	3	3	3	3	2	3	3	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	2	3	3	3	1	3	2	3	3	2

PHYSIOTHERAPY LAW

Syllabus

Unit I : Introduction to Laws- General issues

Unit II : Providing Good care- Decision Making- Working with Clients & Other Practitioner- Minimising risk- Maintaining Professional performance

Unit III : Clinical Establishment Act Standard for Physiotherapy Centre.-The Physiotherapy Central Council Bill, 2017- POSCO Act- Good Samaritan Law

Unit IV : The Consumer Protection Act, 1986.- Bio-Medical Waste (Management & Handling) Rules, 1998.- Labor Law Pertaining to Physiotherapist Practitioner- Sexual harassment policy.

Unit V : Quality of patient service -Patient centric care-Consumer Protection Act

Reference :

1. ABC OF MEDICAL LAW – WILEY BLACKWELL 2009

WEBSITES:

www.portalspesnet.co.za

www.law.edu.ac.uk

Course Code 19BPT8GE01	Course Name: Administration and Teaching Skill	Theory	Practical	Total Credit
	Total Contact Hours -60	2	1	3
	Prerequisite Course - HSSC			
	Course Coordinator:			
Course Outcomes (CO)				
CO1	Develop an understanding of technicality of teaching roles.			
CO2	Describe institutional design and familiarize with the content organization and various activities.			
CO3	Explain the models of instructional design and develop Pedagogical and Productive competencies			
CO4	Critically examine the contributory role of teachers.			
CO5	Understand the importance of administration in setting of department and enrich administrative ability and entrepreneurship.			

Mapping of Course Outcomes with Program Outcomes
(1/2/3 indicates strength of correlation 3-High, 2 Medium, 1 Low)

CO/ PO/ PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	3	3	3	3	3	3	3	3	3	2	3	3	3	3	3	3	3
CO2	3	3	3	3	2	3	3	3	3	3	3	2	2	3	3	2	3
CO3	3	3	3	3	3	3	3	2	3	3	2	3	3	3	2	3	3
CO4	3	3	3	3	2	3	3	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	2	3	3	3	1	3	2	3	3	2

ADMINISTRATION AND TEACHING SKILL

Syllabus

Unit I : Introduction to Educational Administration Introduction to Educational Administration: Meaning, types, principles, functions and scope of Educational Administration - Educational Management– Meaning, Principles, Functions and importance, Institutional building, POSDCORB, CPM, PERT, Management as a system, SWOT analysis, Taylorism, Administration as a process, Administration as a bureaucracy, Human relations approach to Administration, Organizational compliance, Organizational development, Organizational climate.

Unit II : Comparative issues in Educational Administration Comparative issues in Educational Administration: International Comparison of Educational Administration of India with US, UK, USSR, Japan and South Asian countries (China, Singapore etc):Interstate Comparison of Educational Administration in India, Comparison at School and Higher educational level. Unit,3

Unit III : Model ideal behavior. Make a habit of demonstrating behavior you want to see, as many studies show that modeling effectively teaches students how to act in different situations.

Unit IV :Different programmes of teacher education through autonomous body like NUEPA, NCTE, NCERT, RIEs. Secretary is the highest powering officer under whom Additional secretary, Director, under secretary and section officers works.

Unit V : Developing teaching skills and professionalism The effective organisation of the classroom Classroom presence and control Teacher and learner language The use of teaching materials and resources Practical skills for teaching at a range of levels The monitoring and evaluation of learning Evaluation of the teaching/learning process Professional development: responsibilities Professional development: support systems

References

1. Bhat, B.D and Sharma S.R., (1992). Education Administration: Emerging Trends. New Delhi: Kaniskha Publishing House.

2. Halpin, A.W (Ed) (1985). Administrative Theory in Education. New York: Mac Millan Company. 3. Hanson, E. Mark (1991). Educational Administration and Organisational Behaviour. Boston: Allyn and Bacon.

3. V.Rajasekaran (2010), Life Skills, Personality and leadership, Rajiv Gandhi National Institute of Youth Development, Sri Perumbudur, Tamil Nadu.

4. UNESCO (2005), Quality Education and Life Skills, Darkar Goals, UNESCO, Paris. WHO (1999), Partners in Life Skills Education: Conclusions from a United Nations Inter-Agency Meeting, WHO, Geneva.

Course Code 19BPT8GE02	Course Name: Quality and Patient Safety	Theory	Practical	Total Credit
	Total Contact Hours -60	2	1	3
	Prerequisite Course - HSSC			
	Course Coordinator:			
Course Outcomes (CO)				
CO1	Apply quality management principles to develop policies related to measurement and improvement of healthcare quality and patient safety.			
CO2	Formulation of appropriate tools and approaches required for systematic evaluation, measurement and quality system improvements.			
CO3	Design and implement continuous quality improvement strategies at the healthcare system level.			
CO4	Use healthcare data and analytics to measure healthcare quality and patient safety and plan improvement measures.			
CO5	Participate in research projects that can lead to quality improvement, risk reduction and enhanced patient safety within the healthcare system.			

Mapping of Course Outcomes with Program Outcomes (1/2/3 indicates strength of correlation 3-High, 2 Medium, 1 Low)																	
CO/ PO/ PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	3	3	3	3	3	3	3	3	3	2	3	3	3	3	3	3	3
CO2	3	3	3	3	2	3	3	3	3	3	3	2	2	3	3	2	3
CO3	3	3	3	3	3	3	3	2	3	3	2	3	3	3	2	3	3
CO4	3	3	3	3	2	3	3	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	2	3	3	3	1	3	2	3	3	2

QUALITY AND PATIENT SAFETY

Syllabus

Unit I : PATIENT SAFETY Medical Harm: A Brief History Causes of Medical Errors and Harm The Emergence of Patient Safety Integrating Safety and Quality

Unit II : MEASURING PATIENT SAFETY Measuring Patient Safety ,Reporting Patient Safety

Unit III : MANAGING SAFETY INCIDENTS Managing Patients Affected by Medical Harm ,Supporting Staff after Serious Incidents

Unit IV : PREVENTING SAFETY INCIDENTS Clinical Interventions and Process Improvements Designing for Patient Safety Using IT to Improve Patient Safety Creating a Culture of Safety Patient Involvement in Safety

Unit V : BUILDING A SAFE ORGANIZATION Building Safety Skills Team Approach . Leadership for Safety safe Healthcare Organizations Patient-friendly Hospitals .High Performing Healthcare System

Reference

1. Berwick, DM. Escape Fire: Lessons for the future of health care. The Commonwealth Fund, 2003.

2. Kohn LT, Corrigan JM, Donaldson MS, eds. To err is human. Building a safer health system. Washington DC: National Academis Press 1999, Executive Summary.

3. Leape L. Error In Medicine. JAMA 1994 272(23), 1851-1857Reason J. The contribution of latent human failures to the breakdown of complex systems. Phil Trans R Soc Lond 1990;327:475-484

Course Code 19BPT8PJ01	Course Name: Research Project and Dissertation	Theory	Practical	Total Credit
	Total Contact Hours -135	2	1	3
	Prerequisite Course - HSSC			
	Course Coordinator:			

Course Outcomes (CO)	
CO1	Develop the skills of doing research.
CO2	Develop the skills of reviewing the literature.
CO3	Develop critical thinking and research attitude.
CO4	Formulate the collection and analysis of the research data.
CO5	Develop an insight to solve patients problems in scientific manner.

Mapping of Course Outcomes with Program Outcomes
(1/2/3 indicates strength of correlation 3-High, 2 Medium, 1 Low)

CO/ PO/ PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	3	3	3	3	3	3	3	3	3	2	3	3	3	3	3	3	3
CO2	3	3	3	3	2	3	3	3	3	3	3	2	2	3	3	2	3
CO3	3	3	3	3	3	3	3	2	3	3	2	3	3	3	2	3	3
CO4	3	3	3	3	2	3	3	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	2	3	3	3	1	3	2	3	3	2

Course Code 19BPT8CT08	Course Name: Clinical Training	Total Credit
	Total Contact Hours -255	3
	Prerequisite Course - HSSC	
	Course Coordinator:	
Course Outcomes (CO)		
CO1	Explain the components of basic assessment for a patient.	
CO2	List the impairments resulting in functional limitation and participation restriction.	
CO3	Demonstrate clinical observatory skill and the bed side manners.	
CO4	Understanding of policy of the inpatient service and outpatient services.	
CO5	Understand the role of physiotherapy in various clinical conditions and the documentation of patient service.	

Mapping of Course Outcomes with Program Outcomes
(1/2/3 indicates strength of correlation 3-High, 2 Medium, 1 Low)

CO/ PO/ PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	3	3	3	3	3	3	3	3	3	2	3	3	3	3	3	3	3
CO2	3	3	3	3	2	3	3	3	3	3	3	2	2	3	3	2	3
CO3	3	3	3	3	3	3	3	2	3	3	2	3	3	3	2	3	3
CO4	3	3	3	3	2	3	3	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	2	3	3	3	1	3	2	3	3	2

CLINICAL TRAINING

Syllabus

Unit I : Assessment, Writing SOAP notes in Physiotherapy

Unit II : Clinical training g in Physiotherapy Department

Unit III : Post -operative Physiotherapy training

Unit IV : ICU posting & Training

Unit V : Postings for Dissertation Work

Syllabus and Regulations

Revised Basic B.Sc. Nursing

2019

Bharath Institute of Higher Education and Research

(Deemed to beUniversity)

Chennai

BHARATH INSTITUTE OF HIGHER EDUCATIONAND RESEARCH

TAMILNADU, CHENNAI

The motto of the BIHER is win the world by innovation. To the stars by hard work. The emblem of the Bharath Institute of Higher Education and Research is a symbolic expression of equality, knowledge, enlightenment, expression of peace and love and all this based as a source of all medicines

The main aim of establishing the institute was to provide high quality education to students from across the world in several relevant fields. The institute was developed to become a premier university for Teaching, Learning, Research, and Innovation. Students here are trained to create a better society with ethics and morals.

Bharath Institute of Higher Education & Research (Tamil Nadu) earlier known as **Bharath University**, commonly referred to as BIHER, commenced its establishment in the academic year of 1984. Bharath University has been given the status of 'Deemed to be University'. The institute is approved and recognized by the All-India Council for Technical Education (AICTE) and the University Grants Commission (UGC) respectively. It has also been accredited with grade 'A' by the National Assessment and Accreditation Council (NAAC).

PHILOSOPHY:

Bharath University of Higher Education and Research believes that:
Graduate programme is essential to prepare nurses to improve the quality of nursing education and practice in India. Post graduate programme in nursing builds upon and extends competence acquired at the graduate levels, emphasizes application of relevant theories into nursing practice, education, administration and development of research skills.
The programme prepares nurses for leadership position in nursing and health fields who can function as nurse specialists, consultants, educators, administrators and researchers in a wide variety of professional settings in meeting the National priorities and the changing needs of the society. This programme provides the basis for the post masteral programme in nursing. Further the programme encourages accountability and commitment to lifel ong learning which fosters improvement of quality care.

VISION

Bharath Institute of Higher Education & Research (BIHER) envisions and constantly strives to provide an excellent academic and research ambience for students and members of the faculties to acquire professional competence along with human dignity, and spearhead the transformation of community through continuous discovery in science and technology.

MISSION

To develop as a Premier University for Teaching, Learning, Research and Innovation on par with leading global universities.

To impart education and training to students for creating a better society with ethics and morals.

To foster an interdisciplinary approach in education, research and innovation by supporting lifelong professional development, enriching knowledge banks

through scientific research, promoting best practices and innovation, industry-driven and institute-oriented cooperation, globalization and international initiatives.

To develop as a multi-dimensional institution contributing immensely to the cause of societal advancement through spread of literacy, an ambience that provides the best of international exposures, provide health care, enrich rural development and most importantly impart value-based education.

To establish benchmark standards in professional practice in the fields of innovative and emerging areas in medicine, dentistry, nursing, physiotherapy, allied sciences, engineering, and management.

To launch new programmes with innovative curriculum design by provide multi-faceted exposure in various subjects.

Programme Educational Objectives (PEOs)

To become a competent nurse qualified to practice in a variety of settings in either public/ government or private healthcare
To prepare nurses for generalist nursing practice. Knowledge acquisition related to wellness, health promotion, illness, disease management and care of the dying is core to nursing practice
To ordinate/manage care by being active participant of inter-professional team and member of a profession demonstrating self-responsibility and accountability for practice as well as to support theprofession.
To participate national health problems, national health programs and national health policy directives to achieve universal health care for all citizens ofIndia.
To become exemplary citizens by adhering to code of ethics and professional conduct at all times in fulfilling personal, social and professional obligations so as to respond to national aspirations

Programme Objectives

PO1	Provide holistic care recognizing individual patient's preferences, values and needs, that is compassionate, coordinated, age and culturally appropriate safe and effective care.
PO2	Demonstrate accountability for the delivery of standard-based nursing care that is consistent with moral, altruistic, legal, ethical, regulatory and humanistic principles.
PO3	Influence the behaviour of individuals and groups within their environment and facilitate establishment of shared goals
PO4	Demonstrate awareness and responsiveness to the context of healthcare system and ability to manage resources essential to provide optimal quality of care
PO5	Use technology and synthesize information and collaborate to make critical decisions that optimize patient outcomes
PO6	Interact effectively with patients, families and colleagues fostering mutual respect and shared decision making to enhance patient satisfaction and health outcomes
PO7	Function effectively within nursing and interdisciplinary teams, fostering open communication, mutual respect, shared decision making, team learning and development.
PO8	Minimize risk of harm to patients and providers through both system effectiveness and individual performance
PO9	Use data to monitor the outcomes of care processes and utilize improvement methods to design and test changes to continuously improve the quality and safety of healthcare system
PO10	Identify, evaluate and use the best current evidence coupled with clinical expertise and consideration of patient's preferences, experience and values to make practical decisions.
PO11	To become Nurse Researcher and demonstrate skill in conducting research and integrate Evidence based practice in health care.
PO12	To become Nurse Educator to understand the process to understand the process of curriculum development and the methodology of curriculum change, innovation and integration.

Programme Specific Outcome

PSO1	To become qualified nurse and midwife to work in various health care settings.
PSO2	To prepare the nursing students to collaborate with health team members to provide preventive, curative and rehabilitative services.
PSO3	To develop leadership qualities and managerial skills to meet challenges/goals of an Institution or an health care organization.

(PSO- 2 or 3)**

Mapping / Alignment of PEO Vs PO & PSO

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
PEO1		✓										✓	✓		✓
PEO2											✓				
PEO3		✓					✓	✓	✓	✓			✓	✓	
PEO4	✓		✓	✓											
PEO5		✓			✓	✓	✓		✓					✓	

MAPPING BETWEEN COURSE OUTCOMES (COS) AND PROGRAMME OUTCOMES (POS)

Sem	Courses/ SOs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
I	**THEORY**												
	General Science												
	Communicative English							✓					
	Applied Anatomy & Physiology												
	Applied Sociology & Psychology						✓	✓					
	Nursing Foundations				✓								
	PRACTICAL												
	Nursing FoundationI				✓								
	THEORY												
II	Applied Biochemistry												
	Applied Nutrition & Dietetics (T&Lab-1)	✓											
	Nursing Foundations II			✓	✓								
	Introduction to Community Health Nursing (Including Health care Policy & Regulation and Environmental science)-(T&Lab)	✓						✓					
	PRACTICAL												
	Nursing Foundation II			✓	✓			✓					
	Introduction to community health Nursing	✓		✓				✓					
III	**THEORY**												
	Applied Microbiology, and Infection control including Safety (T& Lab-2)			✓									
	Pharmacology I	✓											
	Pathology I												
	Adult Health (Medical Surgical) Nursing I with integrated pathophysiology (T&Lab-1)	✓								✓			
	Professionalism, Professional values & Ethics including bioethics	✓		✓									
	PRACTICAL												
	Nursing Foundation II		✓										
	Introduction to community health Nursing			✓							✓		

IV	**THEORY**												
	Pharmacology II	✓											
	Pathology II & Genetics												
	Adult Health (Medical Surgical) Nursing II including Geriatrics with integrated pathophysiology		✓								✓		
	Educational Technology/Nursing Education(T& practicum-1)					✓							
	PRACTICAL												
	Adult health Nursing II		✓								✓		
V	**THEORY**												
	Child Health Nursing I(T&Lab-1)	✓											
	Mental Health Nursing I			✓									
	Nursing Management & Leadership(T &Clinical-1)							✓					
	Nursing Research and Statistics(T& Clinical-1)											✓	
	Health/Nursing Informatics & Technology (T&Practicum-0.5)					✓							
	Introduction to Forensic Nursing and Indian Laws		✓										
	PRACTICAL												
	Child Health Nursing-I	✓											
	Mental Health Nursing -I			✓									
VI	**THEORY**												
	Child Health Nursing II	✓											
	Mental Health Nursing II			✓									
	Community Health Nursing I including Epidemiology			✓					✓		✓		
	Midwifery /Obstetrics & Gynaecology I(T&Lab -1)	✓						✓					
	PRACTICAL												
	Community Health Nursing I			✓									
	Child health Nursing II	✓											
	Mental health Nursing II			✓									
	Midwifery / Obstetrics & Gynaecology	✓						✓					

VII	**THEORY**												
	Community Health Nursing II			✓									
	Midwifery and /Obstetrics &Gynaecology II (T&Lab-1)	✓						✓					
	PRACTICAL												
	Community Health Nursing II			✓									
	Midwifery / Obstetrics & Gynaecology II	✓						✓					
VIII	Internship (Intensive practicum/Residency posting)				✓				✓				
	Competency Assessment (Internship)				✓				✓				

MAPPING BETWEEN PROGRAMME ELECTIVES (PEs) AND PROGRAMME OUTCOMES (POs)

Sem	Elective Courses/ SOs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
I&II	Human Values	✓		✓									
	Diabetes Care												
	Palliative Care												
	Diaaster Management								✓				
III& IV	Personality Development				✓								
	CBT						✓						
	Addiction Psychiatry												
	Adolesent Health												
	Sports Health												
	Accreditation and Practice Standrads		✓										
	Developmental Psychology				✓								
	Menopausal Health												
	Health Economics									✓			
VII & VIII	Scientific Writing Skills											✓	
	Lactation Management												
	Sexuality and Health												
	Stess Management			✓			✓						
	Job Readiness and Employability in Health Care Settings							✓					
	Soft Skills									✓			

Course categories with Courses

B.Sc. Nursing Ist Semester						
Course Code	**Course Category**	**Course Title**	**L**	**T**	**P**	**C**
THEORY						
19GS01	FC	General Science	3	0	0	4
19CE02	FC	Communicative English	3	0	0	2
19AP03	FC	Applied Anatomy & Physiology	3	0	0	5
19SP04	FC	Applied Sociology & Psychology	3	0	0	5
19NF05	CC	Nursing Foundations	3	0	3	6
PRACTICAL						
19NF05	CC	Nursing FoundationI	0	0	3	2

B.Sc. Nursing IInd Semester						
Course Code	**Course Category**	**Course Title**	**L**	**T**	**P**	**C**
THEORY						
19BC06	FC	Applied Biochemistry	3	0	0	1
19ND07	FC	Applied Nutrition & Dietetics (T&Lab-1)	3	0	2	2
19NF08	CC	Nursing Foundations II	3	0	3	6
19CHNE09	CC	Introduction to Community Health Nursing (Including Health care Policy & Regulation and Environmental science)- (T&Lab)	3	0	3	3
PRACTICAL						
19NF08	CC	Nursing Foundation II	0	0	3	3
19CHNE09	CC	Introduction to community health Nursing	0	0	3	4

B.Sc Nursing IIIrd Semester						
Course Code	**Course Category**	**Course Title**	**L**	**T**	**P**	**C**
THEORY						
19MICS10	FC	Applied Microbiology, and Infection control including Safety (T& Lab-2)	3	0	1	6
19PH11	FC	Pharmacology I	3	0	0	1
19PA12	FC	Pathology I	3	0	0	0
19AHN13	CC	Adult Health (Medical Surgical) Nursing I with integrated pathophysiology (T&Lab-1)	3	0	3	7
19PPE14	FC	Professionalism, Professional values & Ethics including bioethics	3	0	0	0
PRACTICAL						
19AHN13	CC	Adult health Nursing I	0	0	3	8

B.Sc Nursing IVth Semester						
Course Code	**Course Category**	**Course Title**	**L**	**T**	**P**	**C**
THEORY						
19PH15	FC	Pharmacology II	3	0	0	2
19PG16	FC	Pathology II & Genetics	3	0	0	3
19AHN17	CC	Adult Health (Medical Surgical) Nursing II including Geriatrics with integrated pathophysiology	3	0	3	6
19ET18	FC	Educational Technology/Nursing Education(T& practicum-1)	3	0	0	3
PRACTICAL						
19AHN17	CC	Adult health Nursing II	0	0	3	8

B.Sc Nursing Vth Semester						
Course Code	**Course Category**	**Course Title**	**L**	**T**	**P**	**C**
THEORY						
19CHN19	CC	Child Health Nursing I(T&Lab-1)	3	0	3	3
19MHN20	CC	Mental Health Nursing I	3	0	3	4
19NML21	CC	Nursing Management & Leadership (T& Clinical- 1)	3	0	1	2
19NRS22	CC	Nursing Research and Statistics (T&Clinial-1)	3	0	2	3
19HIT23	FC	Health/Nursing Informatics & technology (T& Practicum- 0.5)	3	0	1	2
19FNIL24	FC	Introduction to Forensic Nursing and Indian Laws	3	0	0	1
PRACTICAL						
19CHN19	CC	Child health Nursing I	0	0	3	2
19MHN20	CC	Mental health Nursing I	0	0	3	1

B.Sc Nursing VIth Semester						
Course Code	**Course Category**	**Course Title**	**L**	**T**	**P**	**C**
THEORY						
19CHN25	CC	Child Health Nursing II	3	0	3	5
19MHN26	CC	Mental Health Nursing II	3	0	3	1
19CHNE27	CC	Community Health Nursing I including Epidemiology	3	0	3	6
19MOG28	CC	Midwifery /Obstetrics &Gynaecology I(T&Lab -1)	3	0	3	3
PRACTICAL						
19CHNE27	CC	Community Health Nursing I	0	0	3	3
19CHN25	CC	Child health Nursing II	0	0	3	2
19MHN26	CC	Mental health Nursing II	0	0	3	2
19MOG28	CC	Midwifery / Obstetrics &Gynaecology	0	0	3	4

B.Sc Nursing VII Semester						
Course Code	**Course Category**	**Course Title**	**L**	**T**	**P**	**C**
THEORY						
19CHN29	CC	Community Health Nursing II	3	0	3	2
19MOG30	CC	Midwifery and /Obstetrics &Gynaecology II (T&Lab-1)	3	0	3	5
PRACTICAL						
19CHN29	CC	Community Health Nursing II	0	0	3	1
19MOG30	CC	Midwifery / Obstetrics &Gynaecology II	0	0	3	7
		Internship (Intensive practicum/Residency posting)	0	0	5	5
		Competency Assessment (Internship)	0	0	3	3

Course Code	**Elective courses**	**L**	**T**	**P**	**C**
I &II					
19ECHV01	Human Values	3	0	0	2
19ECDC02	Diabetes Care	3	0	2	2
19ECPC03	Palliative Care	3	0	2	2
19ECDM04	Diaaster Management	3	0	3	2
III & IV					
19ECPD05	Personality Development	3	0	1	2
19ECCBT06	CBT	3	0	1	2
19ECAP07	Addiction Psychiatry	3	0	1	2
19ECAH08	Adolesent Health	3	0	1	2
19ECSH09	Sports Health	3	0	2	2
19ECAPS10	Accreditation and Practice Standrads	3	0	0	2
19ECDP11	Developmental Psychology	3	0	0	2
19ECMH12	Menopausal Health	3	0	0	2
19ECHC13	Health Economics	3	0	0	2
VII& VIII					
19ECSWS14	Scientific Writing Skills	3	0	1	2
19ECLM15	Lactation Management	3	0	1	2
19ECSH16	Sexuality and Health	3	0	0	2
19ECSM17	Stess Management	3	0	1	2
19ECJEH18	Job Readiness and Employability in Health Care Settings	3	0	0	2
19ECSS19	Soft Skills	3	0	3	2
	(5 Courses Mandatory) – 2 Credits = 40 Hours				

SUMMARY OF CURRICULUM STRUCTURE AND CREDIT & CONTACT HOUR DISTRIBUTION

S. No.	Sub Area	Credit As per Semester								No. of Credit
		I	II	III	IV	V	VI	VII	VIII	
1	Foundational Courses	16	3	7	8	3	-	-	-	37
2	Core Courses	8	16	15	14	15	26	15	8	117
3	Elective Courses	2	2	2	2	-	2	-	-	10
	TOTAL CREDITS									164

B.Sc NURSINGPROGRAM

OVERVIEW OF THEPROGRAM

The B.Sc. nursing degree program is a four-year fulltime program comprising eight semesters, which prepares a student to become a registered nurse qualified to practice in a variety of settings in either public/ government or private healthcare settings. It adopts credit system and semester system as per UGC guidelines. The program encompasses foundational, core and elective courses. The c h o i c e -based system is applicable to electives only and is offered in the form of modules. Modular learning is also integrated in the foundational as well as core courses that is mandatory. The program prepares nurses for generalist nursing practice. Knowledge acquisition related to wellness, health promotion, illness, disease management and care of the dying is core to nursing practice. Mastery of competencies is the main focus. Students are provided with opportunities to learn a whole range of nursing skills in addition to acquiring knowledge related to nursing practice. This is achieved through learning in skill lab/simulated labs and clinical environment. Simulation will be integrated throughout the curriculum wherever feasible to enable them to develop competencies before entry into real field of nursing practice. The revised curriculum embraces competency-based approach throughout the program integrating mastery learning and self-directed learning. Through the educational process the students assimilate and synthesize knowledge, cultivate critical thinking skills and develop care strategies. Competencies that reflect practice standards of our universities address the areas of cultural diversity, communication technology, teamwork and collaboration, safety, quality, therapeutic interventions and evidence- based practice. They are prepared to provide safe and competent care to patients

across life span and influence patient outcomes.

PHILOSOPHY

Health and wellness are two fundamental concepts that are integrated throughout the program. Health is a state of well-being that encompasses physical, psychological, social, economic and spiritual dimensions. Wellness is the individual's perception of wellness and is influenced by the presence of disease and individual's ability to adapt. Health is a right of all people. Individuals have a right to be active participants in achieving health as they perceive it. Society consists of dynamic and interactive systems involving individuals, families, groups and communities. Cultural diversity, race, caste, creed, socio economic levels, religion, lifestyles, changes in environment and political factors influence it. Nurses recognize and respect human differences and diversity of population within society and provide ethical care with respect and dignity and protect their rights.

Nursing as a profession and a discipline utilizes knowledge derived from arts, sciences (physical, biological and behavioral), humanities and human experience. Nursing science incorporates clinical competence, critical thinking, communication, teaching learning, professionalism, and caring and cultural competency. Nurses collaborate with other health disciplines to solve individual and community health problems. Nursing facilitates evidence-based practice, compassionate caring among its practitioners in response to emerging issues in healthcare and new discoveries and technologies in profession. Nursing practice requires personal commitment to professional development and life-long learning. Scope of nursing practice encompasses provision of promotive, preventive, curative and rehabilitative aspects of care to people across the life span in a wide variety of healthcare settings. Nursing practice is based on acquisition of knowledge, understanding, attitude, competencies and skills through curricular and practice standards and proposed Indian Nursing and Midwifery Council Act (Includes Nurse Practice Act). The competencies in which the students are trained will guide them in performing their scope of practice. Nursing offers qualified nurses a wealth of opportunities in the field of practice, education, management and research in India and overseas.

The undergraduate nursing program is broad based education within an academic curricular framework specifically directed to the development of critical thinking skills, competencies appropriate to human and professional values. The teaching learning process is focused on mastery learning, modular, self-directed and self-accountable in choice making in terms of elective courses. The program prepares its graduates to become exemplary citizens by adhering to code of ethics and professional conduct at all times in fulfilling personal, social and professional obligations so as to respond to national aspirations. Health and community orientation are provided with special emphasis on national health problems, national health programs and national health policy directives to achieve universal health care for all citizens of India. The main roles of graduates would be provider of care with beginning proficiency in delivering safe care, coordinator/manager of care by

being active participant of inter-professional team and member of a profession demonstrating self-responsibility and accountability for practice as well as to support the profession.

The faculty has the responsibility to be role models and create learning environment that facilitates cultivation of critical thinking, curiosity, creativity and inquiry driven self- directed learning and attitude of life-long learning in students. Learners and educators interact in a process whereby students gain competencies required to function within their scope of practice.

I. AIMS

The aims of the undergraduate program are to

- Produce knowledgeable competent nurses with clear critical thinking skills who are caring, motivated, assertive and well-disciplined responding tothe changingneeds of profession, healthcare delivery system and society.
- Prepare graduates to assume responsibilities as professional, competent nurses and midwives in providing promotive, preventive, curative andrehabilitativehealthcare services in hospital or public health settings.
- Prepare nurses who can make independent decisions in nursing situations within the scope of practice, protect the rights of individuals and groups andconductresearch in the areas of nursing practice and apply evidence-based practice.
- Prepare nurses to assume role of practitioner, teacher, supervisor and manager in clinical or public healthsettings.

II. CORE COMPETENCIES FOR NURSING PRACTICEBY BSC GRADUATE (Figure 1)

The B.Sc. Graduate nurse will be able to:

1. **Patient centeredcare**
   Provide holistic care recognizing individual patient's preferences, values and needs, that is compassionate, coordinated, age and culturally appropriate safe and effectivecare.
2. **Professionalism**
   Demonstrate accountability for the delivery of standard-based nursing care as per INC standards that is consistent with moral, altruistic, legal, ethical, regulatory and humanisticprinciples.
3. **Leadership**
   Influence the behavior of individuals and groups within their environment and facilitate establishment of shared goals.
4. **System-basedpractice**
   Demonstrate awareness and responsiveness to the context of healthcare system and ability to manage resources essential to provide optimal quality of care.
5. **Health informatics andTechnology**
   Use technology and synthesize information and collaborate to make critical decisions that optimize patient outcomes.
6. **Communication**
   Interact effectively with patients, families and colleagues fostering mutual respect and shared decision making to enhance patient satisfaction and healthoutcomes.
7. **Teamwork andCollaboration**
   Function effectively within nursing and interdisciplinary teams, fostering open communication, mutual respect, shared decision making, team learning anddevelopment.
8. **Safety**
   Minimize risk of harm to patients and providers through both system effectiveness and individual performance.
9. **Qualityimprovement**
   Use data to monitor the outcomes of care processes and utilize improvement methods to design and test changes to continuously improve the quality and safety of healthcare system.
10. **Evidence basedpractice**
    Identify, evaluate and use the best current evidence coupled with clinical expertise and consideration of patient's preferences, experience and values to make practicaldecisions.

Guidelines for Establishment of B.Sc (Nursing) College of Nursing:-

1. The following Establishments / Organizations are eligible to establish / Open aB.Sc. (Nursing) College ofNursing.

a) Registered Private or PublicTrust;
b) Organizations Registered under Societies Registration Act including Missionary Organizations;
c) Companies incorporated under section 8 of Company'sAct;

2. The eligible Organizations / Establishments should have their own 100 beddedParent Hospital.
3. In respect of Tribal and Hilly Area the requirement of own Parent Hospital isexempted.

a) Tribal area – Scheduled notified area; [A*reas as the President of India may byorder declare to be ScheduledAreas;]*
b) Hilly area – North East States, UTs of Jammu & Kashmir and Ladakh, HimachalPradesh &Uttrakhand.

4. The eligible Organizations / Establishments should obtain Essentiality Certificate / No objection Certificate from the concerned State Government where the B.Sc. (Nursing) College of Nursing is sought to be established. The particulars of the name of the College / Nursing Institution along with the name of the Trust /Society [as mentioned in Trust Deedor Memorandum of Association] as also full address shall be mentioned in No Objection Certificate/EssentialityCertificate.
5. After receipt of the Essentiality Certificate/ No objection Certificate, the eligibleinstitution shall get recognition from the concerned State Nursing Council for the B.Sc.(Nursing) programme for the particular academic year, which is a mandatoryrequirement.
6. The Indian Nursing Council shall after receipt of the above documents / proposal online would then conduct Statutory Inspection of the recognized training nursing institutionunder Section 13 of Indian Nursing Council Act 1947 in order to assess the suitability with regard to availability of Teaching faculty, Clinical and Infrastructural facilities in conformity with Regulations framed under the provisions of Indian Nursing Council Act,1947.

Parent Hospital (Unitary/ Single Hospital)

Parent Hospital for a nursing institution having the same trust which has established nursing institutions and has also established the hospital.
OR
For a nursing institution (managed by trust) a "Parent Hospital" would be a hospital either owned and controlled by the trust or managed and controlled by a member of the trust. In case the owner of the hospital is a member of the Trust that the hospital would continue to function as a "Parent Hospital" till the life of the nursing institution. The undertaking would also be to the effect that the Member of the Trust would not allow the hospital to be treated" Parent/Affiliated Hospital" to any other nursing institution and will be for minimum 30 years [i.e., signed by all members of trust] to the undertaking to be submitted from the Members of the Trust.

Note:

I. **Change of Trust/Society**:- The trust/ Society cannot be purchased as per Indian Trust Act, but there can be change of members/trustees. Therefore the purchase of institution or change of membership will not be considered as continuation of the programme. The institution which is purchased/ taken over will be considered as closed. And a fresh Govt. Order is required mentioning the trust/ society name along with programmes.

The change of membership in society/ change of trust and trustees to be submitted immediately after incorporating through registrar cooperative societies/Indian trust act.

I. Trust/society can open number of institutions, but it will be considered as one institution under the ambit of one Trust. Further a trust can open only one nursing institution in one city/town.

II. Changeof Address:-State Nursing Council shall issuea certificatecertifying the fact that the nursing institution is being shifted to the new building/premises at the address indicated. The certificate issued should indicate clearly total covered area of the nursing institution, number of rooms along with area specification, provision of adequate washroom facilities, lighting and ventilation etc of the newbuilding.

Change of location (district/town/city/village) shall be considered under new proposal.

IV. No two institutions will have same name in same city/town.

V. No Institutions / University will modify the syllabi; however they can add units/subjects if need be.

VI. If, no admission are made for two consecutive academic years then it shall be considered that the institution is closed. If the institution wants to restart the programme they have to submit the fees along with a valid justification, SNRC/University approval for the same to be submitted to Indian Nursing Council within 5 years i.e, from the year they did not have admissions or else it will be be come under new Nursing institution definition.

VI. **Change of Name of the Institution**:- If the Trust/society proposes to change the name of the institute, a valid reason has to be submitted. In such cases SNRC/University shall accept the proposal for change of name of the Institute, before submission of the proposal to INC.

MINIMUM REQUIREMENTS FOR B.SC(N) PROGRAMME

PHYSICAL FACILITIES

Teaching Block:

- The college of Nursing should be within 30 Km Distance from its parent hospital having space for expansion in an institutional area. For a College with an annual admission capacity of **60** students, the constructed area of the college should be **22800** square feet.
- Adequate hostel/residential accommodation for students and staff should be available in addition to the above mentioned built up area of the Nursing College respectively. The details of the constructed area are given below for admission capacity of **60** students:

S.No.	Teaching Block	Area (Figures in Sq feet)
1.	Lecture Hall	4 @ 900 = 3600
2.	Skill/ Simulation Laboratory	
	(i) Nursing foundation lab	1500
	(ii) CHN	900
	(iii) Nutrition	900
	(iv) OBG and Pediatrics lab	900
	(v) Pre-clinical science lab	900
3	Computer Lab*	1500
4	A.V. Aids Room	600
5.	Multipurpose Hall	3000
6.	Common Room (Male and Female)	1000
7.	Staff Room	800
8.	Principal Room	300
9.	Vice Principal Room	200
10.	Library	2300
11.	One room for each Head of Departments	5 @ 200 = 1000
10.	Faculty Room	2400
11.	Provisions for Toilets	1000
	Total Constructed Area	**22800 Sqr. Ft.**

Note:-*1:5 computer student ratio as per student intake.*

Note:

1. *Nursing Educational institution should be in Institutional area only and notin residentialarea.*
2. *If the institute has non-nursing programme in the same building, Nursingprogramme should have separate teachingblock.*
3. *Shift-wise management with other educational institutions will not beaccepted.*

4. *Separate teaching block shall be available if it is in hospitalpremises.*
5. *Proportionately the size of the built-up area will increase/decrease according tothe number of seats approved.*

Hostel Block (60 Students):

S. No.	Hostel Block	Area (Figures in Sq feet)
1.	Single Room	12000 (50 sq. ft. for each students)
	Double Room	
2.	Sanitary	One latrine & One Bath room (for 5 students) – 600× 4 = 2400
3.	Visitor Room	500
4.	Reading Room	250
5.	Store	500
6.	Recreation Room	500
7.	Dining Hall	3000
8.	Kitchen & Store	1500
9.	Warden's room	450
Total		**21100 Sqr. Ft.**

Grand Total Constructed Area-

TeachingBlock	22800 Sqr.Ft
HostelBlock	21100 Sqr.Ft
GrandTotal	**43900 Sqr.Ft.**

{*Note: Day Scholars are allowed, however 30% provision of hostel is mandatory*} CLINICAL FACILITIES for 60 students (for new institution)

College of Nursing should have a 100 bedded Parent/OwnHospital.

Note:-*TheinstitutionofferingGeneralNursingMidwiferyprogrammeandfoundsuitableby INC before 2013-14 are eligible for up-gradation (phasing out GNM programme) will be exempted from the requirement of parenthospital.*

100 beds is not sufficient to offer clinical experience/ specialities to students aslaid down in the B.Sc (Nursing)syllabus.

II. Additional affiliation ofhospital

In addition to Parent Hospital of 100 beds, institution shall take affiliation of the hospital, if all the required learning experience are not available in the parent hospital. The students should be sent to affiliated hospital/agencies/Institutions where it is available.

a. Criteria for Affiliation:-

The types of experience for which a nursing college can affiliate are:

- Community HealthNursing

- CommunicableDisease
- Mental Health (Psychiatric)Nursing
- Specialty like Cardiology, Neurology, Oncology Nephrologyetc.
- Obst, Gynaecology, Paediatrics, Orthoetc.

b. The size of the hospital for affiliation:-

- Should not be less than 50 beds apart from having ownhospital
- Bed occupancy of the hospital should be minimum75%

III. Clinical requirements for Nursing program are as givenbelow:

S. No	Areas of Clinical Experience	Number of Beds
1	Medical	45
2	Surgical	45
3	Obst. &Gynaecology	45
4	Pediatrics	30
5	Orthopaedics	15
6	Psychiatric	50

IV. Other Specialties/Facilities for clinical experience required are asfollows:

- MajorOT
- MinorOT
- DentalEye/ENT
- Burns andPlastic
- Neonatology careunit
- Communicabledisease
- Community HealthNursing
- Cardiology
- OncologyNeurology/Neuro-surgery
- Nephrologyetc.
- ICU/ICCU
- Geriatric

Educational Visits will also be conducted as per the B.Sc(N) syllabus (for example: Milk Treatment plant, Water and Sewage plant, Rehabilitation Centres, Orphanage, Geriatric Care, Home for Destitute, Professional Organisation etc.)

V. TheNursingStaffingnormsintheParentandaffiliatedHospitalshouldbeasperthe INCnorms.

VI. The Parent/affiliated Hospital should give student status to the candidates ofthe nursingprogramme.

VII. MaximumDistancebetweenaffiliatedhospitals&institutionsshouldnotbemorethan 30kms.

VIII. For Hilly & Tribal the maximum distance can be 50kms.

IX. 1:3 student patient ratio to bemaintained.

STAFFING PATTERN

Table –I

Qualifications & experience of teachers of college of Nursing

S.No.	POST, QUALIFICATION & EXPERIENCE
1.	**Principal cum Professor**- Essential Qualification:-M.Sc. (N) Experience:- M.Sc (N), Ph.D. (N) having total 15 years experience with M.Sc. (N) out of which 10 years after M.Sc. (N) in collegiate progarmme. Ph.D.(N) is desirable
2.	**Vice- Principal cum Professor**- Essential Qualification:-M.Sc (N) Experience:-M.Sc (N) Total 12 years experience with M.Sc. (N) out of which 10 years teaching experience after M.Sc (N) Ph.D.(N) is desirable
3.	**Professor-** Essential Qualification:- M.Sc (N) Experience:- M.Sc (N)Total 12 years experience with M.Sc.(N) out of which 10 years teaching experience after M.Sc (N). Ph.D.(N) is desirable
4.	**Associate Professor**- Essential Qualification:- M.Sc (N) Experience:-Total 8 years experience with M.Sc. (N) including 5 years teaching experience Ph.D.(N) desirable
5.	**Assistant Professor**- Essential Qualification:- M.Sc (N) Experience:- M.Sc. (N) with total 3 years teaching experience Ph.D.(N) desirable
6.	**Tutor**- M.Sc.(N) preferable Experience:- B.Sc.(N)/P.B.B.Sc.(N) with 1 year experience.

Table –II

S.No.	Designation	B.Sc.(N) 40-60	B.Sc.(N) 61-100
1	Principal	1	1
2	Vice- Principal	1	1
3	Professor	1	1-2
4	Associate Professor	2	2-4
5	Assistant Professor	3	3-8
6	Tutor/Clinical Instructor/Demonstrator	5-10	10-12
	Total	**13-18**	**18-28**

(For example for 40 students intake minimum number of teacher required is 13 including Principal, 1- Principal, 1- Vice Principal, 1-Professor, 2- Associate Professor & 3- Assistant Professor, tutors will be 5)

- **Number of Nursing departments = 6(Six)**

  i. Nursing Foundation (Professor or Associate shall head of thedepartment)
  ii. Medical-surgicalNursing
  iii. PsychiatricNursing
  iv. PaediatricNursing
  v. Midwifery, Obst. &Gynaecology
  vi. Community HealthNursing

Minimum one professor from each specialty area shall be appointed as head of the department except nursing foundation.

- 1:15 teacher student ratio excluding Principal and VicePrincipal
- All teacher shall take classes, perform clinical teaching and supervisionacademic activities including Principal & VicePrincipal
- If the number of students are more than 60 there shall be two sections with minimum30 students each. Maximum number of students in each section shall be 60only.

Admission Terms andConditions

- The minimum age for admission shall be 17 years on 31st December of the year in which admission is sought. The maximum age limit for admission shall be 35years.
- Minimum EducationalQualification

  i. Candidate with Science/Arts/Humanities/Commerce who have passed the 12thStandard examination (10+2) and must have obtained a minimum of 45% marks in the core/elective/academic subjects taken together and passed English individually. The above candidates should have passed from recognise board under AISSCE/CBSE/ICSE/SSCE/HSCE or other equivalentBoard.

  i. Candidate with Science/Arts/Humanities/Commerce who have passed the 12th Standard examination (10+2) and must have obtained a minimum of 45% marks in the core/elective/academic subjects taken together and passed English individually. The candidates should have passed from State Open School recognized by State Government and National Institute of Open School (NIOS) recognized by Central Government.

  i. Vocational ANM's/ RANMs are alsoeligible.

  iv. Admission shall bethrough Entrance examination. Entrance test**shall comprise of:

a)	Aptitude forNursing	10 marks
b)	GeneralScience	50 marks
c)	Generalknowledge	20 marks
d)	English	10 marks
e)	Generalability	10 marks

-Minimum qualifying marks for entrance test shall be 50% marks.
**Entrance test shall be conduct by University/State Government

- Candidate shall be medicallyfit.
- Candidate shall be admitted once in ayear

Reservation policy:

- For disabled candidates: 3% Disability reservation to be considered with a disability of loco-motor to the tune of 40% to 50% of the lower extremity and other eligibility criteria with regard to age and qualification will be same as prescribed for each nursing programme.
- Colour Blind candidates are eligible provided that colour corrective contact lens and spectacles are worn by such candidates.

Note: *A committee to be formed consisting of medical officer authorized by medical board of State government and a nursing expert in the panel which may decide whether the candidates have the disability of loco-motor to the tune of 40% to 50% and also forthe color blindcandidates.*

In respect of candidates belonging to SC/ST/OBC and candidates with benchmarked disabilities under the Rights of Persons with Disabilities Act, 2016 (PH) the marks obtained in core subject stated above shall be 40% instead of 45 % marks for General category Candidates.

Note:

ForeignNationals:

- The entry qualification equivalency i.e., 12th standard will be obtained by Association of Indian Universities, New Delhi. Institution, State Nursing Council &Universitywillberesponsibletoensurethatthequalificationandeligibility will be equivalent to what has been prescribed by Indian NursingCouncil

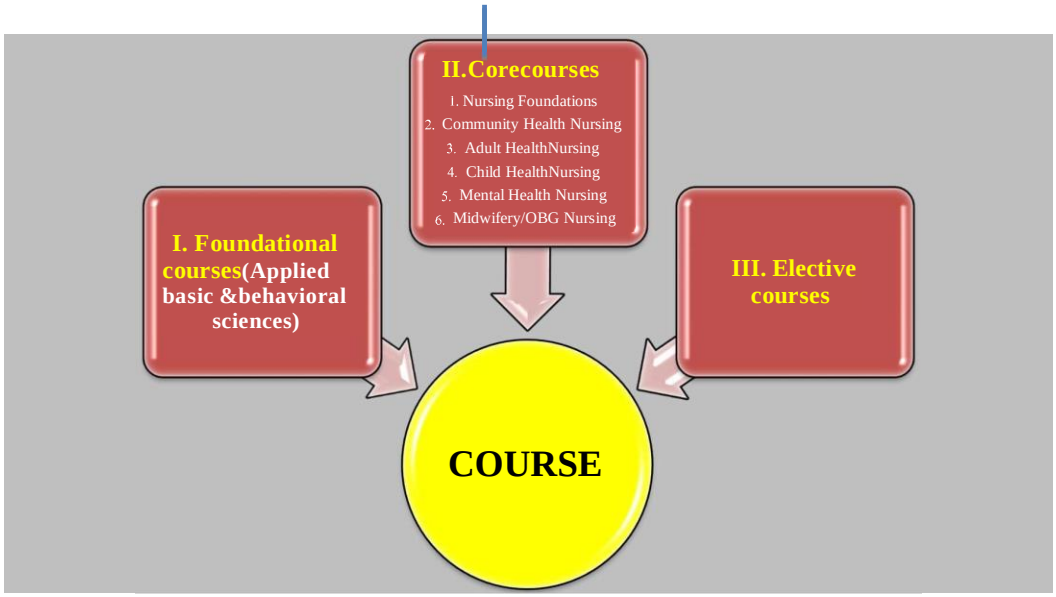
- **Reservation of seats in Nursing Colleges forSC/ST/OBC/PH/EWSs**

Admission under the reserved quota shall be subject to reservation policy and eligibility criteria for SC/ST/OBC/PH/EWSs prescribed by the Central Govt./ State Govt./ Union Territory as applicable to the College concerned.

- *Reservations shall be applicable within the sanctioned number of theseats.*
- *The start of the semester shall be 1st August everyyear.*
- *No admission after the cut-off date i.e. 30th September will be undertaken. Further Hall tickets/admit card shall not be issued to the candidates who are admitted after 30th September.*
- *The responsibility of obtaining and verifying the requisite documents for admission lies with the Institution andUniversity.*

BSC NURSING PROGRAM-Four years (8 semesters)
CHOICE BASED CREDIT SYSTEM (CBCS) & SEMESTER SYSTEM
COMPETENCY BASED CURRICULUM

TEN CORE COMPETENCIES (Figure1)



I & II

I Semester

1. General Science
2. Communicative English
3. Applied Anatomy &Physiology
4. Applied Sociology &Psychology
5. Nursing Foundations I

II Semester

Appliied

Applied Nutrition & Dietetics

8. Nursing Foundations II
9. Introduction to Community Health Nursing (Including Health care Policy & Regulation and Environmental science)

III & IV

III Semester

10. Applied Microbiology, and Infection control including Safety
11. Pharmacology I
12. Pathology I
13. Adult Health (Medical Surgical) Nursing I with integrated pathophysiology
14. Professionalism,

Professional values & Ethics including bioeth cs

IV Semester

15. Pharmacology II
16. Pathology II & Genetics
17. Adult Health (Medical Surgical) Nursing II including Geriatrics with integrated pathophysiology
18. Educational Technology/Nursing Education

V & VI Sem

V Semester

19. Child Health NursingI
20. Mental Health NursingI
21. Nursing Management & Leadership
22. Nursing Research and Statistics

Informatics & technology

24. Introduction to Forensic Nursing and Indian Laws

VI Semester

25. Child Health NursingII
26. Mental Health NursingII
27. Community Health Nursing I including Epidemiology
28. Midwifery /Obstetrics &GynaecologyI

VII &VIII

VII Semester

29. Community Health NursingII
30. Midwifery and /Obstetrics &GynaecologyII

VII I Semester

31. Internship (Intensive practicum/ Residency

1. PROGRAMSTRUCTURE

BSc Nursing Program Structure			
ISemester • General Science (RefresherCourse) • CommunicativeEnglish • Applied Anatomy &appliedPhysiology • Applied Sociology &appliedPsychology • Nursing FoundationsI	**II Semester** • Applied Biochemistry • Applied Nutrition anddietetics • *Nursing Foundations II including FirstAid module • Introduction to Community Health Nursingincluding Health care Policy & Regulation and Environmental Science ***Mandatory Module*** *First Aid	**III Semester** • Applied Microbiology and InfectionControl including Safety • PharmacologyI • PathologyI • *Adult Health (Medical Surgical) Nursing Iwith integrated pathophysiology • Professionalism, Professional values& ethics including bioethics ***Mandatory Module*** *BCLS	**IV Semester** • PharmacologyII • Pathology II &Genetics • *Adult Health Nursing II including GeriatricNursing with integrated pathophysiology • Educational Technology/Nursing education ***MandatoryModule*** *HealthAssessment
V Semester • *Child Health NursingI • Mental Health NursingI • Nursing Management &Leadership • Nursing Research and Statistics • Health/Nursing Informatics &technology • Introduction to Forensic Nursing & IndianLaws ***Mandatory Modules*** *PLS/PALS, IMNCI, Essential Newborn Care & Facility Based Newborn Care (FBNBC)	**VI Semester** • Child Health Nursing II • Mental Health NursingII • *Community Health Nursing I (Including epidemiology) • Midwifery/ Obstetricsand Gynecology (OBG) Nursing I ***Mandatory Module*** * Standard treatment protocols used in national health programmes (Part I from NPPHC syllabus-draft)	**VII Semester** • *Community Health NursingII • **Midwifery/Obstetrics and Gynecology (OBG) NursingII ***Mandatory Module*** * Standard treatment protocols used in national health programmes (Part II from NPPHC syllabus - draft) ** SBA module (VI / VII Sem)	**VIII Semester**Internship (Intensive practicum/ Residencyposting) ***Mandatory Module*** ACLS

MANDATORY MODULES:

The prepared modules (Health Assessment) and available modules as National guidelines (First Aid-NDMA, IMNCI, ENBC, FBNBC, SBA module, and National program treatment protocols will be provided in separate learning resource package) For BCLS, ACLS, PLS/PALS- Standard national/international modules can be used

ELECTIVE MODULES

Number of electives to be completed: 4 (Every module=2 credits=40Hours)

I & II	Human Values
	Diabetes Care
	Palliative Care
	Diaaster Management
III & IV	Personality Development
	CBT
	Addiction Psychiatry
	Adolesent Health
	Sports Health
	Accreditation and Practice Standrads
	Developmental Psychology
	Menopausal Health
	Health Economics
VII & VIII	Scientific Writing Skills
	Lactation Management
	Sexuality and Health
	Stess Management
	Job Readiness and Employability in Health Care Settings
	Soft Skills

2. CURRICULUM IMPLEMENTATION: OVERALLPLAN

Duration of the program: 8 semesters

1-7 Semesters

One Semester Plan for the first 7 semesters

Total Weeks per Semester: 26wks/semester

Number of Weeks per Semester for instruction: 20 weeks (40hrs/week x 20 weeks=800hours)

Number of Working Days: Minimum of 100 working days (5 days/weekx20 weeks)

Vacation, Holidays, Examination and Preparatory Holidays-6 Weeks

Vacation: 3
weeks
Holidays-1
week
Examination & preparatory holidays-2 weeks

8th Semester

One semester-22 weeks
Vacation-1 week, holidays- 1 week, Exam & preparatory holidays-2wks

4. COURSES OFINSTRUCTION

S.No.	SEMESTER	COURSE NO.	COURSES/ SUBJECTS	Theory (hrs.)	Lab (hrs.)	Clinical(hrs.)	Total (hrs.)
1	**First**	1	General Science * (Refresher Course)	80			80
		2	Communicative English*	40			40
		3	Applied Anatomy and Applied Physiology	100			100
		4	Applied Sociology & Applied Psychology	100		100	
		5	Nursing Foundations I	120	80	160	360
			TOTAL	**440**	**80**	**160**	**760**
2	**Second**	1	Applied Biochemistry	20			20
		2	Applied Nutrition and dietetics	40			40
		3	Nursing Foundations II including First Aid Module	120	120	320	560
		4	Introduction to community Health Nursing* (Including Health care Policy & regulation and Environmental Science)	40		80	120
		5	Self study and co curricular	20+20=40			40
			TOTAL	**220**	**120**	**400**	**780**
3	**Third**	1	Applied Microbiology and Infection Control including	40	40		80
		2	Pharmacology I	20			20
		3	Pathology I	20			20
		4	Medical Surgical Nursing I/ Adult Health Nursing I with integrated pathophysiology including BCLS module	120	40	480	640
		5	Professionalism, Professional Values and Ethics including Bioethics	20			20
		6	Self study/Co curricular	20			20
			TOTAL	**220**	**80**	**480**	**800**

4	**Fourth**	1	Pharmacology II	40			40
		2	Pathology II and Genetics	20			20
		3	Adult Health Nursing II including Geriatric Nursing with Health Assessment Module	120	40	480	640
		4	Educational Technology/ Nursing education	40	40		80
		5	Self study/Cocurricular	20			20
			TOTAL	**220**	**80**	**480**	**800**
5	**Fifth**	1	Child Health Nursing I including FBNC, Essential Newborn Care(ENBC), IMNCI and PLS/PALS, modules	80	40	160	280
		2	Mental Health Nursing I	80		80	160
		3	Nursing Management and Leadership	60		80	140
		4	Nursing Research and Statistics	40		80(Project)	120
		5	Health/ Nursing Informatics and technology	30	20		50
		6	Introduction to Forensic Nursing and Indian laws	20			20
		7	Self study/Cocurricular	20			20
			TOTAL	**310**	**60**	**400**	**790**
6	**Sixth**	1	Child Health Nursing II	20		80	100
		2	Mental Health Nursing II	20		160	180
		3	Community Health Nursing I including Epidemiology and standard treatment protocols	100		160	260
		4	Midwifery /Obstetrics and Gynecology (OBG) Nursing I including SBA module	40	40	160	240
		5	Self study/Cocurricular	20			20
			TOTAL	**180**	**40**	**560**	**800**

7	**Seventh**	1	Community Health Nursing II	40		80	120
		2	Midwifery/ Obstetrics and Gynecology (OBG) Nursing II	80	40	560	680
		3	Self study/Cocurricular	20			20
			TOTAL	**120**	**40**	**640**	**820**
8	**Eight (Internship) -22 weeks**	1	Community Health Nursing- 4 weeks				
		2	Adult Health Nursing- 6 weeks				
		3	Child Health Nursing- 4 weeks				
		4	Mental Health Nursing- 4 weeks				
		5	Midwifery- 4 weeks				
			TOTAL	**22× 88 hrs/week**			**1056**

1 credit theory- 1hour/week/semester
1credit practical/lab-
2hrs/week/semester 1credit clinical –
4hrs/week/semester

Total Semesters=8

Total number of credits-160 (Excludes electives)
Total number of hours- 6606 hours

Theory-
1690
Lab-520
Clinical-4176

Self study/cocurricular-220

Electives: 5 {One elective course -1credit (20Hrs)} Total credits=156 (Includes Electives)

5. SCHEME OF EXAMINATION

The distribution of marks in internal assessment, End semester College exam, and End semester University exam for each course is shown below.

I SEMESTER

S.No	Course	Assessment (Marks)				
		Internal	End semester **College exam**	End semester **University Exam**	**Hours**	**Total marks**
	Theory					
1	General Science	25	25		1	50
2	Communicative English	25	25		1	50
3	Applied Anatomy & Physiology	25		75	3	100
4	Applied Sociology & Psychology	25		75	3	100
5	Nursing Foundations I	*25				
	Practical					
6	Nursing Foundations I	*25				

*** Will be added to the internal marks of Nursing Foundations I& II Theory and Practical respectively in the next semester (Total weightage remains the same)**

Example:

Nursing Foundations Theory

Nursing Foundations I theory in I semester Internal marks will be added to Nursing Foundations I & II Theory Internal in the second semester and average of the two semester will be taken.

II SEMESTER

S.No	Course	Assessment (Marks)				
		Internal	**College exam***	**University Exam***	**Hours**	**Total marks**
	Theory					
1	Applied Biochemistry and applied Nutrition & Dietetics	25		75	3	100
2	Nursing Foundations (I & II)	25 I Sem-25 & II Sem-25 (with average ofboth)		75	3	100
3	Introduction to Community Health Nursing (Including Health Care Policy and Regulation and Environmental Science)	25	25		1	50
	Practical					
4	Nursing Foundations (I & II)	50 I Sem-25 & II Sem-25		50		100

***** End Semester

III SEMESTER

S.No	Course	Assessment (Marks)				
		Internal	End Semester **College exam**	End semester **University Exam**	**Hours**	**Total marks**
	Theory					
1	Applied Microbiology and Infection Control including Safety	25		75	3	100
2	Pharmacology I and Pathology I	*25				
2	Adult Health Nursing (Medical Surgical Nursing) I	25		75	3	100
3	Professionalism, Ethics & Professional values	25	25		1	50
	Practical					
4	Adult Health Nursing I	50		50		100

*** Will be added to the internal marks of Pharmacology II and Pathology II & Genetics in the next semester (Total weightage remains the same).**

IV SEMESTER

S.No	Course	Assessment (Marks)				
		Internal	End Semester **College exam**	End Semester **University Exam**	**Hours**	**Total marks**
	Theory					
1	Adult Health Nursing II	25		75	3	100
2	Pharmacology & Pathology (I & II) & Genetics	25 III Sem-25 & IV Sem-25 with average of both)		75	3	100
3	Educational Technology/Nursing education	25		75	3	100
	Practical					
4	Adult Health Nursing II	50		50		100

V SEMESTER

S.No	Course	Assessment (Marks)				
		Internal	End Semester **College exam**	End Semester **University Exam**	**Hours**	**Total marks**
	Theory					
1	Child Health Nursing I	*25				
2	Mental Health Nursing I	*25				
3	Nursing Management and Leadership	25		75	3	100
4	Nursing Research and Statistics	25		75	3	100
5	Health/Nursing Informatics & technology	25	25		1	50
6	Introduction to Forensic Nursing and Indian Laws	25	25		1	50
	Practical					
7	Child Health Nursing I	*25				
8	Mental Health Nursing I	*25				

*** Will be added to the internal marks of Child Health Nursing I & II and Mental Health Nursing I & II in both theory and practical respectively in the next semester (Total weightage remains same).**

VI SEMESTER

S.No	Course	Assessment (Marks)				
		Internal	End Semester **College exam**	End Semester **University Exam**	**Hours**	**Total marks**
	Theory					
1	Child Health Nursing (I&II)	25 Sem V-25 &Sem VI-25 (with average of both)		75	3	100
2	Mental Health Nursing (I&II)	25 SemV-25 &Sem VI-25(with averageof both)		75	3	100
3	Community Health Nursing I	*25				
4	Midwifery/Obstetrics and Gynecology I	*25				
	Practical					
4	Child Health Nursing (I&II)	50 (Sem V-25 &Sem VI-25)		50		100
5	Mental Health Nursing (I&II)	50 (SemV-25 &SemVI-25)		50		100
	Practical					
	Community Health Nursing I	*25				
	Midwifery/Obstetrics and Gynecology I	*25				

*** Will be added to Community Health Nursing I&II and Midwifery I&II theory and practical respectively in the nextsemester.**

VII SEMESTER

S.No	Course	Assessment (Marks)				
		Internal	End Semester **college exam**	End Semester **University Exam**	**Hours**	**Total marks**
	Theory					
1	Community Health Nursing (I&II)	25 Sem VI-25 & Sem VII-25 (with avg. of both)		75	3	100
2	Midwifery /Obstetrics and Gynecology (OBG) Nursing (I&II)	25 Sem VI-25 & Sem VII-25(with avg. of both)		75	3	100
	Practical					
3	Community Health Nursing (I&II)	50 (Sem VI-25 & Sem VII-25)		50		100
4	Midwifery/Obstetrics and Gynecology (OBG) Nursing (I&II)	50 (Sem VI-25 & Sem VII-25)		50		100

VIII SEMESTER

S.No	Course	Assessment (Marks)				
		Internal	End Semester **College exam**	End Semester **University Exam**	**Hours**	**Total marks**
	Practical					
1	Competency assessment	100		100		200

EXAMINATION REGULATIONS

The student has to pass in all mandatory modules and allotted percentage of marks will be included in the internal assessment of college /university exam. Pass mark for the module is C -50% minimum.

Note:

1. Applied Anatomy and Applied Physiology-Question paper will consist of Section A Applied Anatomy of 37 marks and B applied Pysiology should be of 38marks.
2. Applied Nutrition and Dietetics and Biochemistry and- Question paper will consist of Section AAppliedNutritionandDieteticsof50marksandSectionBofBiochemistryof25marks.
3. Pharmacology, genetics, pathology: Section A of Pharmacology with 38 marks, Section B of Pathology of 25 and Genetics with 12marks.
4. Nursing Research and Statistics-Nursing Research should be of 55 marks and Statistics of 20 marks
5. Following exams shall be conducted as College exam and minimum pass is C grade (5 point) and to be sent to the University for inclusion in the marks sheet and shall not be considered for calculatingaggregate.

    i. Health and NursingInformatics
    ii. Introduction of Forensicnursing
    iii. CommunicativeEnglish
    iv. Introduction to Community HealthNursing

6. Minimum pass marks shall be 40% (P grade/4 point) for Englishonly
7. Minimum pass marks shall be 50 % in each of the Theory and practicalpapers separately.
8. A candidate has to pass in theory and practical exam separately in each of thepaper.
9. If a candidate fails in either theory or practical he/ she has to re-appear for both the papers (Theory andpractical).
10. Candidate shall appear for exams in eachsemester:-
    a) The candidate shall have cleared all the previous examination before appearing for fifth semester examination. However the candidates shall be permitted to attend the consecutivesemesters.
    b) The candidate shall have cleared all the previous examination before appearing seventh semester examination. The candidates shall permitted to attend the consecutive semesters.
    c) Themaximumperiodtocompletethecoursesuccessfullyshouldnotexceed8years.
11. Candidate has to pass separately in internal and external examination. No institution shall submit average internal marks of the test students more than 75% is if 40 students are admitted in a course the average score of the 40 students shall notexceed

75% of total internal marks

12. At least 50% of the Non-nursing subjects like Anatomy & Physiology, Biochemistry, Biophysics, Psychology, Microbiology, Pharmacology Genetics, Nutrition, Sociology, English and Computer Science should be taught by the Nursing teachers. Teachers who are involved in teaching non-nursing subjects can be the examiners forthe programme.
13. Teaching shall be done by the Nursing faculty and will be supplemented by the guest faculty who are doctors/ PG qualification in the requisitesubject.
14. Maximum number of candidates for practical examination should not exceed 25 per day. Particularyearandofsameinstitutionbatchshallbeexaminedbythesamesetofexaminers.
15. All practical examinations must be held in the respective clinicalareas.
16. One internal and One external examiners should jointly conduct practical examination for each student
17. An examiner should be a Lecturer/ Assistant Professor or above in a college of Nursing with M.Sc(N) in concerned subject and minimum 3 years of teaching experience. To be an examiner fornursingfoundationcoursefacultyhavingM.Sc.(N)withanyspecialtyshallbeconsidered.

VI. ASSESSMENTGUIDELINES

1. GRADING OFPERFORMANCE

Based on the performance, each student shall be awarded a final grade at the end of the semester for each course. Absolute grading is used by converting the marks to grade, based on predetermined classintervals.
UGC 10point grading system is used with pass grade modified.

Letter grade	Grade point	Percentage of marks
O (outstanding)	10	100%
A+ (Excellent)	9	90-99.99%
A (Very Good)	8	80-89.99%
B+ (Good)	7	70-79.99%
B (Above average)	6	60-69.99%
C (Average)	5	50-59.99%
P (Pass)	4	40-49.99%
F (Fail)	0	

For Nursing Courses and all other courses - Pass is at C Grade (5 grade point) 50 % and above For English and electives- Pass at P Grade (4 Grade point) 40 % andabove

Computation of Semester Grade Point Average (SGPA) and Cumulative Grade Point average (CGPA)

SPGA- Is the weighted average of the grade points obtained in all courses by the student during the semester (All courses excluding English and electives)

Ex. SGPA computation

Course Number	Credit/s	Letter grade	Grade point	Credit point (Credit Xgrade)
1	3 (C1)	A	8 (G1)	3x8=24
2	4 (C2)	B+	7 (G2)	4x7=28
3	3 (C3)	B	6 (G3)	3x6=18

SGPA= $\frac{C1G1+C2G2+C3G3}{C1+C2+C3}$

$= \frac{70}{10} = 7$ (rounded off to two decimal points)

Computation of CGPA

CGPA is calculated with SGPA of all semesters to two decimal points and is indicated in final grade in mark card/transcript showing grades of all 8 semesters and their courses/subjects.

CGPA reflects the failed status in case of fail till the course/s are passed

Semester I	Semester 2	Semester 3	Semester 4
Credit-Cr Cr: 20 SGPA: 6.5 CrxSGPA=20x6.5	 Cr: 22 SGPA: 7.0	 Cr: 25 SGPA: 5.5	 Cr: 26 SGPA: 6.0

$$CGPA=\frac{20x6.5+22x7+25x5.5+26x6}{93}$$

$$=\frac{577.5}{93}=6.2$$

Transcript Format:

Based on the above recommendation on letter grades, grade points, SPGA and CGPA, the transcript shall be issued for each semester with a consolidated transcript indicating the performance in allsemesters.

Declaration of Pass

First Class with Distinction- CGPA of 7.5 and above
First Class- CGPA of 6.00-7.49
Second Class-CGPA of 5.00-5.99

2. INTERNAL ASSESSMENT ANDGUIDELINES

The marks distribution of internal assessment is shown in Appendix 2 and the specific guidelines in Appendix3

3. UNIVERSITY THEORY AND PRACTICAL EXAMINATIONPATTERN

The theory question paper pattern and practical exam pattern are shown in Appendix 4

SYLLABUS

GENERAL SCIENCE (19GS01)

PLACEMENT:ISEMESTER THEORY: 4Credits (80hours)

DESCRIPTION: The course is designed to enable students to refresh their knowledge and understanding gained during the previous education that will enhance their ability to apply the same in nursingpractice.

COMPETENCIES

On completion of the course, the students will be able to

1. Recal and refresh their knowledge and understanding of concepts, principles and application of Physics and identify its relevance tonursing.
2. Recall and refresh their knowledge and understanding of concepts, principles and application of Chemistry and identify its relevance tonursing.
3. Recall and refresh their knowledge and understanding of concepts, principles and application of Chemistry and identify its relevance tonursing.

COURSE OUTLINE

UNIT	TIME	LEARNING OUTCOMES	CONTENT	TEACHING/ LEARNING ACTIVITIES	ASSESSMENT METHODS
I-X	20 hours	Review and recall the knowledge and application of concepts and principles of Physics	**PHYSICS** I. Physical World and Measurement ¡ Physicalworld ¡ Units andMeasurements II. Kinematics ¡ Motion in a straightline ¡ Motion in aplane ¡ Uniform circularmotion III. Laws of motion ¡ Laws of conservation of linear momentum andits applications ¡ Laws offriction IV. Work, energy and power ¡ kinetic energy, work-energy,power. ¡ conservation of mechanical energy (kinetic and potential energies) V. Motion of system of	¡ Lecture cum discussion ¡ Self-directed learning ¡ Assignments	¡ MCQ ¡ Shortanswer ¡ Evaluation of assignments

			particles and rigid body- System of particles and rotationalmotion VI. Gravitation VII. Properties of bulk matter- ▪ Mechanical propertiesof solids,fluids ▪ Thermal properties of matter VIII. Thermodynamics IX. Behaviour of perfect gases and kinetic theory ofgases X. Oscillation ofwaves ▪ Oscillations ▪ Waves		
I-XIV	20 hours	Review and recall the knowledge and application of concepts and principles of Chemistry	**CHEMISTRY** I. Some basic concepts of chemistry II. Structure ofatom III. Classification of elements and periodicity in properties IV. Chemical bonding and molecular structure V. States of matter: gases andliquids VI. Chemical thermodynamics VII. Equilibrium VIII. Redoxreactions IX. Hydrogen X. S-Blockelements XI. P-Blockelements XII. Organic chemistry-some basic principles andtechniques XIII. Hydrocarbons XIV. Environmental chemistry	▪ Lecture cum discussion ▪ Self-directed learning ▪ Assignments	▪ MCQ ▪ Shortanswer ▪ Evaluation of assignments

I-X	40 hours	Review and recall the knowledge and application of concepts and principles of Biology	**BIOLOGY** I. Diversity in Living World - Biodiversity - Salient features and classification ofplants and animals II. Structural Organization in Animals andPlants: - Planttissues- Morphology, anatomy and functions of different parts of flowering plants - Animaltissues; Morphology, anatomy and functions of different systems III. Cell Structure and Function - Plant cell andanimal cell-structure and functions - Cell division: Cellcycle, mitosis, meiosis and their significance IV. PlantPhysiology - Transport inplants - Transport offood: Mineral nutrition- Essential minerals, macro and micronutrients and their role - Nitrogenmetabolism - Photosynthesis- Factors affectingphotosynthesis - Respiration: Exchange of gases;Cellular respiration, Energy V. HumanPhysiology - Digestion andabsorption - Breathingand Respiration: Respiratory	- Lecture cum discussion - Self-directed learning - Assignments	- MCQ - Shortanswer - Evaluation of assignments

			system in humans; Mechanism of breathing and its regulation in humans, ¡ Body fluidsand circulation ¡ Human circulatory system ¡ Human excretory system–structureand functions ¡ Locomotion and Movement ¡ Skeletal system and its function ¡ Nervous system in humans ¡ Sense organs -eye and ear. ¡ Human endocrinesystem VI. Reproduction ¡ Sexual reproduction in floweringplants ¡ Human Reproduction: Male andfemale reproductive systems, Reproductive health VII. Genetics and Evolution ¡ Chromosomes andgenes ¡ Sex determination in humans ¡ Structure of DNA and RNA, Geneexpression and regulation VIII. Biology andHuman Welfare ¡ Health andDisease: Pathogens; parasites causing human diseases ¡ Basic conceptsof immunology, Microbes in human welfare		

			¡ Sewagetreatment, energy generation and biofertilizers IX. Biotechnology and ItsApplications ¡ Biotechnology inhealth and agriculture X. Ecology and environment ¡ Populationand ecological adaptations ¡ Air pollution andits control; Water pollution and its control ¡ Solid wastemanagement, Radioactive waste management, Greenhouse effect and global warming, Ozone depletion, Deforestation		

COMMUNICATIVE ENGLISH (19CEO02)

PLACEMENT:ISEMESTER **THEORY:** 2 Credits (40hours)

DESCRIPTION:

The course is designed to enable students to enhance ability to speak and write the language (and use English) required for effective communication in their professional work. Students will practice their skills in verbal and written English during clinical and classroom experience.

COMPETENCIES

On completion of the course, the students will be able to

1. Identify the significance of Communicative English for healthcareprofessionals
2. Apply the concepts and principles of English Language use in professional development such as pronunciation, vocabulary, grammar, paraphrasing, voice modulation, Spelling, pause and silence
3. Demonstrate attentive listening in different hypotheticalsituations
4. Converse effectively, appropriately and timely within the given context as an individual or to the team they are communicating with either face to face or by othermeans
5. Read, interpret and comprehend content in text, flow sheet, framework, figures, tables, reports, anecdotes etc…
6. Analyse the situation and apply critical thinkingstrategies
7. Enhance expressions through writingskills
8. Apply LSRW (Listening, Speaking, Reading and Writing) Skill in combination to learn, teach, educate and share information, ideas andresults.

COURSE OUTLINE

UNIT	TIME	LEARNING OUTCOMES	CONTENT	TEACHING/ LEARNING ACTIVITIES	ASSESSMENT METHODS
I	3 hours	Identify the significance of communicative English	**Communication** • What is communication? • What are communication roles of listeners, speakers, readers and writers as healthcare professionals?	• Definitions with examples, illustrations and explanations • Identifying competencies/ communicative strategies in LSRW • Reading excerpts on the above and interpreting them through tasks	Checking for understanding through tasks
II	5 hours	Describe concepts and principles of Language (English) use in professional development such as pronunciation, vocabulary, grammar, paraphrasing, voice modulation, spelling, pause andsilence	**Introduction to LSRGW** • L- Listening: Different types of listening • S-Speaking: Understanding Consonants, Vowels, Word and Sentence Stress, Intonation • R- Reading: Medicalvocabulary, • Gr-Grammar: Understanding tenses,linkers • W- writing simple sentences and short paragraphs - emphasis on correct grammar	• Exercises on listening to news, announcements, telephone conversations and instructions from others • Information on fundamentals of Speech- C, V, Stress and Intonation with tasks based on these through audio/ video and texts • Reading a medical dictionary/ glossary of medical terms with matching exercises • Information on tenses and basic concepts of correct grammar through fill inthe blanks, true/false questions	Through 'check your understanding'exercises'

III	5 hours	Demonstrate attentive listening in different hypothetical situations	**Attentive Listening** • Focusing on listening in different situations- announcements, descriptions, narratives, instructions, discussions, demonstrations • Reproducing Verbatim • Listening to academic talks/ lectures • Listening to presentation	• Listening to announcements, news, documentaries with tasks based onlistening • With multi choice,Yes/No and fill in the blankactivities	Checking individually against correct answers i Listening for specific information i Listening for overall meaning andinstructions i Listening to attitudes and opinions i Listening to audio, video and identify keypoints
IV	9 hours	Converse effectively, appropriately and timely within the given context and the individual or team they are communicating with either face to face or other means	**Speaking-Effective Conversation** • Conversation situations- informal, formal andneutral • Factors influencing way of speaking- setting, topic, social relationship, attitude and language • Greetings, Introductions, requesting, asking for and giving permission, speaking personally and casual conversations • Asking for Information, Giving instructionsand directions	• Different types of speaking activities related to thecontent • Guided with prompts and free discussions • Presentation techniques i Talking to peers and other adults. • Talking to patients and Patientattenders • Talking to other healthcare professionals • Class room conversation scenario based learningtasks	Individual and group/ peer assessment through live speaking tests i Presentation of Situation in emergency androutine i Handoff i Reporting in doctors/nurses'rounds i Casepresentation i Face to face oral communication i Speaking individually (Nurse to nurse/patient/doctor) and to others in thegroup i Telephonictalking

			• Agreeing and disagreeing, givingopinions • Describing people, places, events and things, narrating, reporting &reaching conclusions • Evaluating and comparing • Complaints and suggestions • Telephone conversations • Delivering presentations		
V	5 hours	Read, interpret and comprehend content in text, flow sheet, framework, figures, tables, reports, anecdotes	**Reading** • Reading strategies, reading notes andmessages • Reading relevant articles and news items • Vocabulary for everyday activities, abbreviations and medical vocabulary • Understanding visuals, graphs, figures and notes onInstructions • Reading reports and interpreting them • Using idioms and phrases, spotting errors, vocabulary for	• Detailed tasks and exercises on reading for information, inference and evaluation • Vocabulary games and puzzles for medicallexis • Grammar activities	Reading/summarizing/Justifying answers orally ï Patientdocument ï Doctor's Prescription of care ï Journal/news reading and interpretation ï Notes/Reports

			presentations • Remedial Grammar		
VI	5 hours	Enhance expressions through writing skills	**Writing Skills** • Writing patient tory • Note taking • Summarising • Anecdotalrecords • Letter writing • Diary/ Journal iting • Reportwriting • Paper writingskills • Abstractwriting	Writingtaskswith focus on task fulfilment, coherence and cohesion, appropriate vocabulary and correctgrammar Guidedandfreetasks Differentkindsof letter writing tasks	Paper based assessment by the teacher/trainer against set band descriptors i Presentation ofsituation i Documentation i Reportwriting i Paper writingskills i Verbatimreproducing i Letter writing i Resume/CV
VII	8 hours	Apply LSRW Skill in combination to learn, teach, educate and share information, ideas and results	**LSRW Skills** • Critical thinking strategies for listening andreading • Oral reports, presentations • Writing instructions, letters and reports • Error analysis regardingLSRW	• Valuating different options/ multiple answers and interpreting decisions through situational activities • Demonstration -individually and in groups • Group Discussion • Presentation • RolePlay • Writing reports	• Consolidated assessment orally and through written tasks/exercises

APPLIED ANATOMY& APPLIED PHYSIOLOGY (19AP03)

PLACEMENT:ISEMESTER **THEORY:** 5 Credits (100hours)

Anatomy -50 hours & Physiology -50 hours

APPLIEDANATOMY **THEORY**: 2.5 Credits (50hours)

DESCRIPTION: The course is designed to assists student to acquire the knowledge of the normal structure of human body, identify alteration in anatomical structure with emphasis on clinical application to practicenursing.

COMPETENCIES:

On completion of the course, the students will be able to

1. Describe anatomicalterms
2. Explain the general and microscopic structure of each system of thebody
3. Identify relative positions of the major body organs as well as their general anatomiclocations
4. Explore the effect of alterations instructure
5. Apply knowledge of anatomic structures to analyze clinical situations and therapeuticapplications

COURSE OUTLINE

UNIT	TIME (HRS)	LEARNING OUTCOMES	CONTENT	TEACHING LEARNING ACTIVITIES	ASSESSMENT METHODS
I	6	Define the terms relative to the anatomical position Describe the anatomicalplanes Define and describe the terms used to describe movements	**Introduction to anatomical terms and organization of the human body** ▪ Introduction to anatomical terms relative toposition-anterior, ventral, Posterior dorsal, superior, inferior, median, lateral, proximal, distal, superficial, deep, prone, supine, palmar and plantar ▪ Anatomical planes (axial/transverse/horizontal, sagittal/vertical plane and coronal/frontal/oblique plane) ▪ Movements (flexion, extension, abduction, adduction, medial rotation, lateral rotation, inversion, eversion, supination,	▪ Lecture cum Discussion ▪ Use ofmodels ▪ Video demonstration ▪ Use of microscopic slides	▪ Quiz ▪ MCQ ▪ Short Answer questions

		Organization of human body and structure of cell, tissues membranes and glands Describe the types ofcartilage Compare and contrast the features of skeletal, smooth and cardiac muscle	pronation, plantar flexion, dorsal flexion and circumduction. • Cell structure, Celldivision • Tissue-definition, types, characteristics,classification, location • Membrane, glands-classification andstructure • Identify major surface and bony landmarks in each body region, Organizationof human body • Hyaline, fibro cartilage, elastic cartilage • Features of skeletal, smooth and cardiacmuscle • Application and implication innursing	• Lecture cum discussion • Videoslides • Anatomical Torso	
II	5	Describe the structure of respiratory system Identify the muscles of respiration and examine their contribution to the mechanism of breathing	**The Respiratory system** • Structure of the organs of respiration • Muscles ofrespiration • Application and implication innursing	• Lecture cum discussion • Models • Videoslides	• Short answer questions Objectivetype
III	5	Describe the structure of digestivesystem	**The Digestive system** • Structure of alimentary canal and accessory organs of digestion • Application and implications innursing	• Lecture cum discussion • Videoslides • Anatomical Torso	• Shortanswer • Objectivetype

IV	5	Describe the structure of circulatory and lymphaticsystem.	**The Circulatory and lymphatic system** • Structure of blood components, bloodvessels- Arterial and Venous system • Position of heart relative to the associatedstructures • Chambers of heart, layers of heart • Heart valves, coronary arteries • Nerve and blood supply to heart • Lymphatic tissue • Veins used for IVinjections • Application and implication innursing	• Lecture • Models Video/slides	• Shortanswer • MCQ
V	4	Identify the major endocrine glands and describe the structure of endocrineGlands	**The Endocrine system** Structure of Hypothalamus, Pineal Gland, Pituitary gland, Thyroid, Parathyroid,Thymus, Pancreas and Adrenal glands	• Lecture	• Short answer questions • Objectivetype
VI	3	Describe the structure of various sensory organs	**The Sensory organs** • Structure of skin, eye, ear, nose andtongue • Application and implications innursing	• Lecture • Explain with Video/models/ charts	• Shortanswer • MCQ
VII	8	Describe anatomical position and structure of bones andjoints Identify major bones that make up the axial and appendicular skeleton Classify the joints Identify the application and implications in nursing Describe the structure of muscle	**The Musculoskeletal system: The skeletal system** • Anatomicalpositions • Bones- Types, structure, growth andossification • Axial and Appendicular skeleton • Joints- classification, major joints andstructure • Application and implications innursing **The Muscular System** • Types and structure of Muscles • Muscle groups-muscles of the head, neck, thorax,abdomen, pelvis, upper limb and lower limbs • Principal muscles-deltoid,	• Review – discussion • Lecture • Discussions • Explain using charts, skeleton and loose bones andtorso	• Short answer questions • Objectivetype

		Apply the knowledge in performing nursing procedures/skills	biceps, triceps, respiratory, abdominal, pelvic floor, pelvic floor muscles, gluteal muscles and vastuslateralis Major muscles involved in nursing procedures		
VIII	4	Describe the structure of renal system	**The Renal System** Structure of kidney, ureters, bladder,urethra Application and implication innursing	Lecture	MCQ Shortanswer
IX	4	Describe the structure of reproductive system	**The Reproductive System** Structure of male reproductiveorgans Structure of female reproductiveorgans Structure ofbreast	Lecture	MCQ Shortanswer
X	6	Describe the structure of nervous system including the distribution of the nerves, nerve plexuses Describe the ventricular system	**The Nervous system** Review Structure ofneurons CNS, ANS and PNS (Central, autonomic andperipheral) Structure of brain, spinal cord, cranial nerves, spinal nerves, peripheralnerves, functional areas of cerebral cortex Ventricular system, formation, circulation, and drainage Application and implication in nursing	Lecture Explain with models Videoslides	MCQ Shortanswer

APPLIED PHYSIOLOGY **THEORY:** 2.5 Credits (50hours)

DESCRIPTION: The course is designed to assists student to acquire comprehensive knowledge of the normal functions of the organ systems of the human body to facilitate understanding of physiological basis of health, identify alteration in functions and provide the student with the necessary physiological knowledge to practice nursing.

COMPETENCIES

On completion of the course, the students will be able to

1. Develop understanding of the normal functioning of various organ systems of the body
2. Identify the relative contribution of each organ system towards maintenance of homeostasis
3. Describe the effect of alterations infunctions
4. Apply knowledge of physiological basis to analyze clinical situations and therapeuticapplications

COURSE OUTLINE

UNIT	TIME (HRS)	LEARNING OUTCOMES	CONTENT	TEACHING LEARNING ACTIVITIES	ASSESSMENT METHODS
I	3 hrs	Describe the physiology of cell, tissues, membranes and glands	**General Physiology-Basic concepts** ▪ Cell physiology including transportation acrosscell membrane ▪ Body fluid compartments, Distribution of totalbody fluid, intracellular and extracellular compartments, major electrolytes and maintenance of homeostasis ▪ Cellcycle ▪ Tissue- formation,repair ▪ Membranes and glands-functions ▪ Application and implication innursing	▪ Review –discussion ▪ Lecture cumdiscussion ▪ Videodemonstrations	▪ Quiz ▪ MCQ ▪ OSPE ▪ Short Answer questions

II	5hrs	Describe the physiology and mechanism of respiration Identify the muscles of respiration and examine their contribution to the mechanism of breathing	**Respiratory system** - Functions of respiratory organs - Physiology ofrespiration - Pulmonary circulation-functionalfeatures - Pulmonary ventilation, Exchange ofgases - Carriage of oxygen and Carbon- dioxide, Exchange of gases intissue - Regulation ofrespiration - Hypoxia, cyanosis, dyspnoea,periodic breathing - PFT - Respiratory changes during exercise - Agingchanges - Application and implication innursing	- Lecture - Video slides	- Essay - Short answer - MCQ

III	6hrs	Describe the functions of digestive system	**Digestive system** - Functions of the organs of digestivetract - Saliva-composition, regulation of secretion and functions ofsaliva - Composition and function of gastric juice, mechanism and regulation ofgastric secretion Composition of pancreatic juice, function, regulation of pancreaticsecretion - Functions of liver, gall bladder andpancreas - Composition of bile and function - Secretion and Function of small and largeintestine - Movements of alimentary tract - Digestion in mouth, stomach, smallintestine, large intestine, Absorption of food - Metabolism of CHO, fat and proteins	- Lecture cumdiscussion - Video slides	- Essay - Short answer - MCQ

			implications in nursing		
IV	5hrs	Explain the functions of the heart, and physiology of circulation	**Circulatory and lymphatic system** ▪ Functions of heart, conduction system,cardiac cycle, Stroke volume and cardiac output ▪ Blood pressure andPulse ▪ Circulation- principles, factors influencing blood pressure, pulse ▪ Coronary circulation, Pulmonary and systemic circulation ▪ Heart rate-regulation of heartrate, Normal value and variations ▪ Cardiovascular homeostasis inexercise and posture ▪ Agingchanges ▪ Application and implication innursing	▪ Lecture ▪ Discussion ▪ Video/slides	▪ Short answer ▪ MCQ
V	4hrs	Describe the composition and functions of blood	**Blood** ▪ Blood-Functions, Physical characteristics, Components ▪ Formation of bloodcells ▪ Erythropoiesis, Functions of RBC, RBC lifecycle ▪ WBC- types,functions ▪ Platelets-Function and production ofplatelets ▪ Clotting mechanism of blood, clotting time, bleeding time,PTT ▪ Hemostasis –role of vasoconstriction,platelet plug formation in hemostasis, coagulation factors, intrinsic and extrinsic pathways of coagulation ▪ Blood groups andtypes ▪ Functions of reticulo-endothelialsystem, Immunity ▪ Application innursing	▪ Lecture ▪ Discussion ▪ Videos	▪ Essay ▪ Short answer ▪ MCQ

VI	4hrs	Identify the major endocrine glands and describe their functions	**The endocrine system** - Functions and hormones of Pineal Gland, Pituitary gland,Thyroid, Parathyroid, Thymus, Pancreas and Adrenal glands. - Otherhormones - Alterations indisease - Application and implication innursing	- Lecture - Explain using charts	- Short answer - MCQ
VII	4hrs	Describe the structure of various sensory organs	**The sensory Organs** - Functions ofskin - Vision, hearing, taste and smell - Errors of refraction, aging changes - Application and implications innursing	- Lecture - Video	- Short answer - MCQ
VIII	4hrs	Describe the functions of bones, joints, various types of muscles, its special properties and nerves supplying them	**Musculo-skeletal system** - Bones- Functions, movements of bone s of axial andappendicular skeleton, Bonehealing - Joints and jointmovements - Alteration of jointdisease - Properties and Functions of skeletal muscles– mechanism of muscle contraction - Structure and properties of cardiac musclesand smooth muscles - Application and implication innursing	- Lecture - Discussion - Videopresentation	- Structured essay - Short answer - MCQ
IX	4hrs	Describe the physiology of renal system	**Renal system** - Functions of kidney in maintaininghomeostasis - GFR - Functions of ureters, bladder andurethra - Micturition - Regulation of renal function - Application and implication innursing	- Lecture - Charts andmodels	- Short answer - MCQ

X	4hrs	Describe the structure of reproductive system	**The Reproductive System** • Female reproductive system- Menstrualcycle, function and hormones of ovary, oogenesis, fertilization, implantation, Functions of breast • Male reproductive system- Spermatogenesis, hormones and its functions, semen • Application and implication inproviding nursing care	• Lecture • Explain using charts, models,specimens	• Short answer • MCQ
XI	7hrs	Describe the functions of brain, physiology of nerve stimulus, reflexes, cranial and spinal nerves	**Nervous system** • Overview of nervous system • Review of types, structure and functions ofneurons • Nerveimpulse • Review functions of Brain- Medulla, Pons,Cerebrum, Cerebellum • Sensory and Motor Nervoussystem • Peripheral Nervoussystem • Autonomic Nervous system • Limbic system and higher mentalFunctions- Hippocampus, Thalamus, Hypothalamus • Vestibular apparatus • Functions of cranialnerves • Autonomicfunctions • Physiology of Pain- somatic, visceraland referred • Reflexes • CSF formation, composition, circulation of CSF, blood brain barrier and blood CSFbarrier • Application and implication innursing	• Lecture cum Discussion • Video slides	• Brief structured essays • Short answer • MCQ • Critical reflection

APPLIED SOCIOLOGY AND PSYCHOLOGY (19SP04)

PLACEMENT: I SEMESTER

THEORY: 5 Credits (100 Hours)

Sociology-2 credits (40hrs) **& Psychology** -3 credits (60hrs)

DESCRIPTION: This course is designed to enable the students to develop understanding about basic concepts of sociology and psychology and its application in personal and community life, health, illness and nursing. It further provides students opportunity to recognize the significance and application of soft skills and self- empowerment in the practice of nursing.

COMPETENCIES

On completion of the course, the students will be able to

1. Identify the scope and significance of sociology innursing
2. Apply the knowledge of social structure and different culture in a society in identifying social needs of sickclients
3. Identify the impact of culture on health andillness
4. Develop understanding about types of family, marriage and itslegislation
5. Identify different types of caste, class, social change and its influence on health and healthpractices
6. Develop understanding about social organization and disorganization and social problems inIndia
7. Integrate the knowledge of clinical sociology and its uses in crisisintervention
8. Identify the importance of psychology in individual and professionallife
9. Develop understanding of the biological and psychological basis of human behaviour
10. Identify the role of nurse in promoting mental health and dealing with altered personality
11. Perform the role of nurses applicable to the psychology of different agegroups
12. Identify the cognitive and affective needs ofclients
13. Integrate the principles of motivation and emotion in performing the role of nurse in caring for emotionally sickclient.
14. Demonstrate basic understanding of psychological assessment and nurse'srole
15. Apply the knowledge of soft skills in workplace andsociety
16. Apply the knowledge of self-empowerment in workplace, society and personal life

COURSE OUTLINE

UNIT	TIME (HRS)	LEARNING OUTCOMES	CONTENT	TEACHING LEARNING ACTIVITIES	ASSESSMENT METHODS
I	1hr	Describe the scope and significance of sociology in nursing	**Introduction** Definition, nature and scope ofsociology Significance of sociology Innursing	Lecture Discussion	Essay Short answers
II	10hrs	Describe the individualization, Groups, processes of Socialization, social change and its importance	**Social structure** Basic concept of society, community, association andinstitution Individal and society Personaldisorganization Social group- meaning, characteristics,and classification. Social processes- definition and forms,Co-operation, competition, conflict, accommodation, assimilation, isolation Socialization- characteristics,process, agencies of socialization Social change- nature, process, and role ofnurse Structure and characteristics ofurban, rural and tribal community. Major health problems in urban, rural and tribal communities Importance of social structure in nursing profession	Lecture cum Discussion	Essay type Short answers objective type

III	5hrs	Describe culture and its impact on health and disease	**Culture** - Nature, characteristic and evolution ofculture - Diversity and uniformity of culture - Difference between culture andcivilization - Culture andsocialization - Transculturalsociety - Culture, Modernization and its impact on healthand disease	- Lecture - Panel discussion	- Essay - Short answer
IV	5hrs	Explain family, marriage and legislation related to marriage	**Family andMarriage** - Family- characteristics, basic need, types and functions offamily - Marriage- forms of marriage, socialcustom relating to marriage and importance of marriage - Legislation on Indian marriage andfamily. Influence of marriage and family on health and healthpractices	- Lecture - Family case study	- Essay, - Short answer - Case study report
V	5hrs	Explain different types of caste and classes in society and its influence on health	**Social stratification-** - Introduction- Characteristics & forms of stratification - Function ofstratification - Indian caste system- origin andcharacteristics - Positive and negative impact of caste insociety. - Class system andstatus - Social mobility-meaning andtypes - Race- concept, criteria of racialclassification Influence of class, caste and race system onhealth**.**	- Lecture - Panel discussion	- Essay type Short answer Objective type

VI	12hrs	Explain social organization, disorganization, social problems and role of nurse in reducing social problems	**social organization and disorganization-** - Social organization- meaning, elements and types - Voluntaryassociations - Social system- definition, types, role and statusas structural element of social system. - Interrelationship of institutions - Social control- meaning, aims and process of social control - Social norms, moral and values - Social disorganization- definition, causes, Control and planning - Major social problems- poverty, housing,food supplies, illiteracy, prostitution, dowry, Child labour, child abuse, delinquency, crime, substance abuse, HIV/AIDS - Vulnerable group- elderly,handicapped, minority and other marginal group. - Fundamental rights of individual, womenand children - Role of nurse in reducing social problem and enhancecoping - Social welfare programmes in India	- Lecture - group Discussion - Observational visit	- Essay type Short answer, - Objective type question Visit report

VII	2hrs	Explain clinical sociology and its application in the hospital and community	**Clinical sociology** ¡ Introduction to clinical sociology ¡ Sociological strategies for developing services for theabused ¡ Use of clinical sociology in crisisintervention	¡ Lecture, ¡ Groupdiscussion ¡ Roleplay	¡ Essay ¡ Shortanswer
			APPLIED PSYCHOLOGY		
VIII	2hrs	Describe scope, branches and significance of psychology in nursing.	**Introduction** ¡ Meaning ofPsychology ¡ Development of psychology - Scope, branches and methods ofpsychology ¡ Relationship with othersubjects ¡ Significance of psychology innursing ¡ Applied psychology to solve everyday issues	¡ Lecture cum Discussion	¡ Essay ¡ Short answer
IX	3hrs	Describe biology of human behaviour	**Biological basis of behaviour- Introduction** ¡ Body mindrelationship ¡ Genetics andbehaviour ¡ Inheritance ofbehaviour ¡ Brain andbehaviour. ¡ Psychology and sensation- sensory process -normal andabnormal	¡ Lecture ¡ Discussion ¡	¡ Essay and short answer type
X	5hrs	Explain mentally healthy person and defence mechanisms	**Mental health and mental hygiene** ¡ Concept of mental health and mental hygiene ¡ Characteristic of mentally healthy person ¡ Warning signs of poor mentalhealth ¡ Promotive and preventive mental health strategies andservices ¡ Defense mechanism and itsimplication ¡ Frustration and conflict- types of conflicts and measurementsto overcome Role of nurse in reducing frustration and conflict and enhancingcoping.	¡ Lecture ¡ Case Discussion ¡ Role play	¡ Essay type Short answer Objective type

XI	5hrs	Describe psychology of people in different age groups and role of nurse	**Developmental psychology** - Psychological needs of various groups in health and sickness- Infancy, childhood, adolescence, adulthoodand old age - Introduction to child psychology and role of nurse in meeting the psychological needs ofchildren - Psychology of vulnerable individuals- challanged, women, sicketc. - Role of nurse with vulnerablegroup	- Lecture - Group discussio - n	- Essay Short - answe r
XII	4hrs	Explain personality and role of nurse in identification and improvement in altered personality	**Personality** - Meaning, definition ofpersonality - Classification ofpersonality - Measurement and evaluation of personality-Introduction - Alteration inpersonality - Role of nurse in Identification of individual personalityand improvement in altered personality.	Lecture Discussion Demonstratio n	Essay and short answer type Objective type
XIII	14hrs	Explain cognitive process and their applications	**Cognitive process** - **Attention**- definition, types, determinants, duration, degree and alteration inattention - **Perception** - Meaning of Perception, principles, factor affectingperception, - **Intelligence** - Meaning ofintelligence - Effect of heredity and environmentin intelligence, classification, Introduction to measurement of intelligence tests - Mentaldeficiencies - **Learning** -Definition of learning, types of learning, Factorsinfluencing learning - Learning process, Habit formation - **Memory**-meaning and nature of memory, factors influencingmemory, methods to improve memory, forgetting	- Lecture Discussio - n	- Essay and short answer type - Objective type

			¡ **Thinking**- types, level, reasoning and problemsolving. ¡ **Aptitude**- concept, types, individual differences andvariability ¡ Psychometric assessment of cognitive processes-Introduction ¡ Alteration in cognitiveprocesses		
XIV	6hrs	Describe motivation, emotion, attitude and role of nurse in emotionally sick client.	**Motivation and emotional processes** ¡ **Motivation**- meaning, concept, types, theories of motivation, motivation cycle, biological and specialmotives ¡ **Emotions** - Meaning of emotions, development of emotions, alteration of emotion, emotions in sickness- handling emotions in self and other ¡ Stress and adaptation- stress, stressor, cycle, effect, adaptation andcoping ¡ **Attitudes** - Meaning of attitudes, nature, factor affectingattitude, attitudinal change, Role of attitude in health and sickness ¡ Psychometric assessment of emotions andattitude-Introduction ¡ Role of nurse in caring for emotionally sickclient	¡ Lecture Group Discussio n	¡ Essay and shortanswer type ¡ Objective type
XV	4hrs	Explain psychological assessment and tests and role of nurse	**Psychological assessment and tests - introduction** ¡ Types, development, characteristics, principles, uses,interpretation ¡ Role of nurse in Psychological assessment	¡ Lecture ¡ Discussion ¡ Demonstrati on	¡ Short answertype ¡ Assessment ofpractice
XVI	12hrs	Explain concept of soft skill and its application in work place and society	**Application of soft skill** ¡ Concept of softskill ¡ Types of soft skill – visual, aural and communicationskill ¡ The way ofcommunication ¡ Building relationship with client and society ¡ *Interpersonal Relationships(IPR):* Definition, Types, and Purposes, Interpersonal skills, Barriers, Strategies to overcome barriers ¡ Survival strategies- managing time, coping stress, resilience, work-life balance	¡ Lecture Group Discussio n ¡ Role play	¡ Essay and short answers

			▪ Applying soft skill to workplace and society ▪ Use of soft skill innursing		
XVII	5hrs	Explain self-empowerment	**Self-empowerment** ▪ Dimensions ofself-empowerment ▪ Self-empowermentdevelopment ▪ Importance of women's empowerment insociety ▪ Professional etiquette and personal grooming ▪ Role of nurse in empoweringothers	▪ Lecture ▪ Discussio n	▪ Short answers ▪ Objective type

NURSING FOUNDATIONS I (19NF05)

PLACEMENT:1st SEMESTER THEORY: 6 Credits (120Hours)

(Skill Lab): 2 Credits (80 hours)

DESCRIPTION: This course is designed to help novice nursing students develop knowledge and competencies required to provide evidence-based, comprehensive basic nursing care for adult patients, using nursing process approach.

COMPETENCIES

On completion of the course, the students will be able to

1. Develop understanding about the concept of health, illness and scope of nursing within health careservices
2. Apply values, code of ethics and professional conduct in professionallife
3. Apply the principles and methods of effective communication in establishing communication links with patients, families and other health teammembers
4. Develop skill in recording andreporting
5. Demonstrate competency in monitoring and documenting vitalsigns
6. Develop understanding about fundamentals of health assessment and perform health assessment in supervised clinicalsettings
7. Describe the principles and techniques of infection control and biomedical wastemanagement
8. Identify and meet the comfort needs of thepatients
9. Perform admission, transfer, and discharge of a patient under supervision applying theknowledge
10. Demonstrate understanding and application of knowledge in caring for patients with restrictedmobility
11. Identify the educational needs of patients and demonstrate basic skills of patient education.

COURSE OUTLINE

UNIT	TIME (HRS) T & L/SL	LEARNING OUTCOMES	CONTENT	TEACHING LEARNING ACTIVITIES	ASSESSMENT METHODS
I	5 T	Describe the concept of health and illness	**Introduction to health and illness** • Concept of Health: Definitions (WHO), Dimensions • Maslow's hierarchy of needs • Health - Illnesscontinuum • Factors influencinghealth • Causes and risk factors for developingillnesses • Illness: Types, Illness behavior • Impact of illness on patient and family	• Lecture • Discussion	• Essay • Short answers • Objective type

II	5T 2L	Describe the levels of Illness prevention and care, healthcare services	**Health Care delivery Systems: Introduction of basic concepts & meanings** • Levels of Illness Prevention- primary (health promotion), secondary and tertiary • Levels of care-Primary, Secondary andTertiary • Types of health care agencies/ Services- Hospitals, clinics, Hospice, rehabilitation centres, extendedcare facilities • Hospitals: Types, Organization and Functions • Health care teams in hospitals-members andtheir Role	• Lecture • Discussion • Experiential learning –Visi to Primary Health Centre (observation of real settings)t	• Essay • Short Answers • Objective type • Visit report
III	12 T	Trace the history ofNursing Explain the concept, nature and scope ofnursing Describe values, code of ethics and professional conduct for nurses inIndia	**History of Nursing and Nursing as a profession** • History of Nursing, History of Nursing inIndia • Contributions of Florence Nightingale • Nursing: Definition- Nurse, Nursing, Concepts, philosophy, objectives, Characteristics, nature and Scope of Nursing/ Nursing practice, Functions of nurse, Qualities of a nurse, Categories of nursing personnel • Nursing as aprofession- Definition and Characteristics/ criteria of profession • Values: Introduction-meaning and importance Code of ethics and professional conduct fornurses-Introduction	• Lecture • Discussion • Casediscussion • Roleplays	• Essay • Short answers • Objective type

IV	8T 3L	Describe the process, Principles, and types of Communication Explain therapeutic, non therapeutic and professional communication Communicate effectively with patients, their families and team members	**Communication and Nurse patient relationship** • Communication: Levels, Elements and Process, Types, Modes, Factors influencing communication • Methods of effective communication/ Therapeutic CommunicationTechniques • Barriers to effectivecommunication / Nontherapeutic Communication techniques • Professionalcommunication • Helping Relationships (NursePatientRelationship): Purposes and Phases • Communicating effectively with patient, families and teammembers Maintaining effective humanrelations and communication with vulnerable • groups (children, women, physically and mentally challenged and elderly)	• Lecture • Discussion • Role play andvideo filmon • Therapeutic Communication	• Essay • Short Answers • Objective type
V	4T 2L	Describe the purposes, types and techniques of recording and reporting Maintain records and reports accurately	**Documentation and Reporting** • Documentation: Purposes of Reports andRecords • Confidentiality • Types of Client records/ Common Record-keepingforms • Methods/ Systems of documentation/Recording • Guidelines fordocumentation • Do's and Don'ts of documentation/ Legal guidelines for Documentation/ Recording Reporting: Change-of shift reports, Transfer reports, Incident reports	• Lecture • Discussion • Demonstration	• Essay • Short Answers • Objective type

VI	15T 20L	Describe principles and techniques of monitoring and maintaining vital signs Assess and record vital signs accurately	**Vital signs** Guidelines for taking vitalsigns □ *Body temperature*: o Definition, Physiology,Regulation, Factors affecting body temperature oAssessment of body temperature: sites, equipment andtechnique oTemperature alterations: Hyperthermia, Heat Cramps, Heat Exhaustion, Heatstroke,Hypothermia oFever/ Pyrexia- Definition, Causes, Stages,Types, • Nursing Management o Hot and Coldapplications □ *Pulse*: oDefinition, Physiology and Regulation, Characteristics, Factors affectingpulse oAssessment of pulse: sites, equipment andtechnique o Alterations inpulse □ *Respiration:* oDefinition, Physiology and Regulation, Mechanics of breathing, Characteristics, Factors affecting respiration oAssessment of respirations: technique o Arterial Oxygensaturation o Alterations inrespiration □ *Bloodpressure*: Definition, Physiology and Regulation, Characteristics,Factors affecting BP oAssessment of BP: sites, equipment and technique, Common Errors in BPAssessment o Alterations in BloodPressure Documenting VitalSigns	Lecture Discussion Demonstration andRe- demonstration	Essay Short answers Objective type Document the given values of temperature, pulse, and respiration in the graphic sheet

VII	25T 10L	Describe the purpose and process of health assessment	**Health assessment** Interview techniques Observation techniques Purposes of healthassessment Process of Healthassessment o Healthhistory o Physicalexamination: Methods- Inspection, Palpation, Percussion, Auscultation,Olfaction Preparation for examination: patient andunit Generalassessment Assessment of each body system Documenting health assessment findings	Modularlearning **Health assessment module** Lecture cum Discussion Demonstration	Essay Short Answers Objective type
VIII	3 T	Maintain equipment and linen	**Equipment and Linen** Types: Disposables andreusable o Linen, rubber goods, glassware, metal, plastics, furniture Introduction: Indent, maintenance, Inventory		
IX	10 T 4 L	Describe the basic principles and techniques of infection control and biomedical waste management	**Introduction to Infection control in Clinical settingInfection** • Nature ofinfection, • Chain ofinfection • Types ofinfection • Stages ofinfection • Factors increasing susceptibility to infection • Body defenses against infection: Inflammatory response &Immune response • Health care associated infection (Nosocomialinfection) **Introductory concept of Asepsis: Medical & Surgical asepsis Precautions** HandHygiene (Hand washing and use of handRub) Use of Personal Protective Equipment(PPE) Standardprecautions **Biomedical Waste management**- Types of hospital waste, waste segregation and hazards	Lecture Discussion Demonstration Observationof autoclaving and other sterilization techniques Visitto Infection Control Department	Essay Short answers Objective type

X	12T 20L	Identify and meet the comfort needs of the patients	**Comfort, Rest & Sleep and Pain** ▪ Comfort– o FactorsInfluencing Comfort o Types of beds &bed making o Therapeutic positions o Comfortdevices ▪ Sleep and Rest- o Physiology ofsleep o Factors affectingsleep o Promoting Rest andsleep o SleepDisorders ▪ Pain(Discomfort) o Physiology o Common cause ofpain o Types o Assessment o Pharmacological and Non-pharmacological pain relieving measures o Invasive techniques of pain management o CAM (Complementary & Alternative healingModalities)	▪ Lecture ▪ Discussion ▪ Demonstration andre demonstration	▪ Essay ▪ Short answers ▪ Objective type
XI	3T 5L	Describe the concept of patient environment	**Promoting Safety in Health Care Environment** ▪ Physical environment: Temperature, Humidity, Noise, Ventilation, Light, Odor, Pest control	▪ Lecture ▪ Discussion ▪ Demonstration	▪ Essay ▪ Short answers ▪ Objective type
			▪ Reduction of Physical hazards: fire, accidents ▪ Fall RiskAssessment ▪ Role of nurse in providing safe and cleanenvironment ▪ Safetydevices: o Restraints- Types, Purposes, Indications, Legal Implications and Consent, Application of Restraints- Skill and Practice guidelines Other Safety Devices: Side rails, Grab bars, Ambu alarms, non-skid slippers etc.		

XII	6T 2L	Explain and perform admission, transfer, and discharge of a patient	**Hospital Admission and discharge** • Admission to the hospital Unitand preparation ofunit o Admissionbed o Admissionprocedure o Medico-legalissues o Roles and Responsibilities of thenurse • Discharge from thehospital o Types: Planned discharge, LAMA andAbscond, Referrals and transfers o DischargePlanning o Dischargeprocedure o Medico-legalissues o Roles and Responsibilities of thenurse oCare of the unit after discharge	• Lecture • Discussion • Demonstration	• Essay • Short answers • Objective type
XIII	8 T 10 L	Demonstrate skill in caring for patients with restrictedmobility	**Mobility and Immobility** • Elements of Normal Movement, Alignment & Posture, Joint Mobility, Balance, CoordinatedMovement • Principles of bodymechanics • Factors affecting Body Alignment and activity • Exercise- Types andbenefits • Effects ofImmobility • Maintenance of normal Body Alignment andActivity • Alteration in Body Alignment and mobility • Nursing interventions for impaired Body Alignment and Mobility: assessment, types, devices used,method o Range of motionexercises o Muscle strengtheningexercises o Maintaining body alignment: positions o Moving o Lifting o Transferring o Walking • Assisting clients withambulation • Care of patients with Immobility using Nursing processapproach • Care of patients with casts andsplints	• Lecture • Discussion • Demonstration &Re-demonstration	• Essay • Short answers • Objectivetype

XIV	4T 2L	Describe the principles and practice of patient education	**Patient education** Patient Teaching: Importance, Purposes,Process Integrating nursing process in patient teaching	Discussion Role plays	Essay Short answers Objective type

APPLIED BIOCHEMISTRY (19BC06)

PLACEMENT:IISEMESTER THEORY: 1credit (20hours)

DESCRIPTION: The course is designed to assist the students to acquire knowledge of the normal biochemical composition and functioning of human body, its alterations in disease conditions and to apply this knowledge in the practice of nursing.

COMPETENCIES

On completion of the course, the students will be able to

1. Describe the metabolism of carbohydrates and itsalterations
2. Explain the metabolism of lipids and itsalterations
3. Explain the metabolism of proteins and amino acids and itsalterations
4. Explain clinical enzymology in various diseaseconditions
5. Explain acid base balance, imbalance and its clinicalsignificance
6. Describe the metabolism of hemoglobin and its clinicalsignificance
7. Explain different function tests and interpret thefindings
8. Illustrate theimmunochemistry

COURSE OUTLINE

UNIT	TIME	LEARNING OUTCOMES	CONTENT	TEACHING/ LEARNING ACTIVITIES	ASSESSMENT METHODS
I.	5 hours	Describe the metabolism of carbohydrates and its alterations	**Carbohydrates** ▪ Digestion, absorption and metabolism of carbohydrates and related disorders ▪ Regulation of bloodglucose ▪ Diabetes Mellitus - type 1 & type 2, symptoms,complications & management in brief ▪ Investigations of Diabetes Mellitus o OGTT: Indications, Procedure, Interpretation and types of GTTcurve o Mini GTT, extended GTT, GCT, IVGTT o HbA1c (Onlydefinition) ▪ Hypoglycemia-definition &causes	▪ Lecture cum discussion using charts and slides ▪ Demonstration of laboratory tests	▪ Essay ▪ Short answers ▪ Very short answers

		Explain the metabolism of lipids and its	**Lipids** ▪ Fatty acids: Definition, classification		

II.	4 hours	alterations	**Lipids** - Fatty acids: Definition, classification - Definition & Clinical significance of MUFA &PUFA, Essential fatty acids, Trans fatty acids - Digestion, absorption & metabolism of lipids &related disorders - Compounds formed from cholesterol - Ketone bodies (name, types &significanceonly) - Lipoproteins – types & functions (metabolism not required) - Lipidprofile - Atherosclerosis (inbrief)	- Lecture, Discussion - Explain using Charts/ Slides - Demonstration of laboratory tests	- Essay - Short answers - Very short answers
III.	5hours	Explain the metabolism of amino acids and proteins Identify alterations in disease conditions	**Proteins** - Classification of amino acids based onnutrition, metabolic rate with examples - Digestion, absorption & metabolism of protein &related disorders - Biologically important compounds synthesizedfrom various amino acids (only names) - In born errors of amino acid metabolism – onlyaromatic amino acids (in brief) - Plasma protein – types, function & normalvalues - Causes of proteinuria, hypoproteinemia, hyper-gamma globinemia - Principle of electrophoresis, normal & abnormal electrophoretic patterns (inbrief)	- Lecture cum Discussion - Explain using charts, models Slides	- Essay - Short answers - Very short answers
IV	1 hour	Explain clinical enzymology in various disease conditions	**Clinical Enzymology** - Isoenzymes – Definition &properties - Enzymes of diagnostic	- Lecture cum Discussion - Explain using Charts & slides	- Essay - Short answers

			importancein o Liver Diseases-ALT, AST, ALP, GGT o Myocardial infarction-CK, cardiac troponins, AST,LDH o Muscle diseases-CK,Aldolase o Bone diseases-ALP o Prostate cancer-PSA,ACP		Very short answers

V	2 hours	Explain acid base balance, imbalance and its clinical significance	**Acid base maintenance** ¡ pH - definition, normalvalue ¡ Regulation of blood pH – blood buffer, respiratory &renal ¡ ABG – normalvalues ¡ Acid base disorders –types, definition &causes	¡ Lecture cum Discussion ¡ Explain using Charts/ slides	¡ Short answers ¡ Very short answers
VI	1 hours	Describe the metabolism of hemoglobin and its clinical significance	**Heme catabolism** ¡ Heme degradationpathway ¡ Jaundice – type, causes, urine &blood investigations (vanden berg test)	¡ Lecture cum Discussion ¡ Charts/ slides	¡ Short answers ¡ Very short answers
VII	1hour	Explain different function tests and interpret the findings	**Organ function tests (biochemical parameters & normal values only)** ¡ Renal ¡ Liver ¡ Thyroid	¡ Lecture cum Discussion ¡ Visit toLab ¡ Explain using Charts/slides	¡ Short answers ¡ Very short answers
VIII	1 hour	Illustrate the immunochemistry	**Immunochemistry** ¡ Structure & functions of immunoglobulin ¡ Investigations & interpretation-ELISA	¡ Lecture cum Discussion ¡ Explain using Charts/slides ¡ Demonstration of Lab tests	¡ Short answers ¡ Very short answers

APPLIED NUTRITION AND DIETETICS (19ND07)

PLACEMENT	**:**	II SEMESTER	
THEORY&LAB	**:**	2 credits (40 hours)	Theory: 34 hours Lab : 6hours

DESCRIPTION: The course is designed to assist the students to acquire basic knowledge and understanding of the principles of Nutrition and Dietetics and apply this knowledge in the practice of Nursing.

COMPETENCIES

On completion of the course, the students will be able to

1. Identifytheimportanceofnutritioninhealthandwellness.
2. Apply nutrient and dietary modifications in caringpatients.
3. Explain the principles and practices of Nutrition andDietetics.
4. Identify nutritional needs of different age groups and plan a balanced diet for them.
5. Identify the dietary principles for differentdiseases.
6. Plan therapeutic diet for patients suffering from various diseaseconditions.
7. Prepare meals using different methods and cookeryrules.

COURSE OUTLINE

UNIT	TIME in hours	LEARNING OUTCOMES	CONTENT	TEACHING/ LEARNING ACTIVITIES	ASSESSMENT METHODS
I	T-2	Define nutrition and its relationship to Health	**Introduction to Nutrition** *Concepts:* Definition of Nutrition &Health ¡ Malnutrition- Under Nutrition &Over Nutrition ¡ Role of Nutrition in maintaininghealth ¡ Factors affecting food andnutrition *Nutrients* Classification ¡ Macro &Micronutrients ¡ Organic &Inorganic ¡ Energy Yielding & Non-Energy Yielding **Food** ¡ Classification-Foodgroups ¡ Origin	¡ Lecturecum Discussion ¡ Charts/ Slides	¡ Essay ¡ Shortanswers ¡ Very short answers
II	T-2	Describe the classification, functions, sources and recommended daily allowances	**Carbohydrates** ¡ Composition -starches, sugar and cellulose ¡ Recommended Daily Allowance(RDA) ¡ Dietarysources ¡ Functions	¡ Lecture cum Discussion ¡ Charts/ Slides ¡ Models	¡ Essay ¡ Shortanswers ¡ Very short answers

		(RDA) of carbohydrates Explain BMR and factors affecting BMR	**Energy** • Unit ofenergy-Kcal • Basal Metabolic Rate(BMR) • Factors affectingBMR	• Display of fooditems	
III	T-3	Describe the classification, Functions, sources and RDA of proteins.	**Proteins** • Composition • Eight essential aminoacids • Functions • Dietarysources • Proteinrequirements-RDA	• Lecture cum Discussion • Charts/ Slides • Models • Display of fooditems	• Essay • Shortanswers • Very short answers
IV	T-2	Describe the classification, Functions, sources and RDA of fats	**Fats** • Classification-saturated &unsaturated • Calorievalue • Functions • Dietary sources of fats and fattyacids • Fatrequirements-RDA	• Lecture cum Discussion • Charts/ slides • Models • Display of fooditems	• Essay • ShortAnswers • Very Short answers
V	T-3	Describe the classification, functions, sources and RDA of vitamins	**Vitamins** • Classification-fat soluble & water soluble • Fat soluble-Vitamins A, D, E, andK • Water soluble-Thiamine (vitamin B1), Riboflavin (vitamin B2), Nicotinicacid, Pyridoxine (vitamin B6), Pantothenic acid, Folic acid, Vitamin B12, Ascorbic acid (vitamin C) • Functions, Dietary Sources & Requirements-RDA of everyvitamin	• Lecture cum Discussion • Charts/ slides • Models • Display of fooditems	• Essay • ShortAnswers • Very Short Answers
VI	T-3	Describe the classification, functions , sources and RDA of minerals	**Minerals** • Classification- Major minerals (Calcium, phosphorus, sodium, potassium, and magnesium) andTrace elements • Functions • DietarySources • Requirements-RDA	• Lecture cum Discussion • Charts/ slides • Models • Display of fooditems	• ShortAnswers • Very Short Answers

VII	T-4 L-3	Describe and plan balanced diet for different age groups, pregnancy, and lactation	**Balanced diet** ¡ Definition, principles,steps ¡ Food guides – Basic Four FoodGroups ¡ RDA – Definition, limitations,uses ¡ Food ExchangeSystem ¡ Calculation of nutritive value offoods ¡ Dietaryfibre **Nutrition across life cycle** ¡ Meal planning/Menu planning – Definition, principles,steps ¡ Infant and Young Child Feeding (IYCF) guidelines- breast feeding, infantfoods ¡ Diet plan for different age groups- Children, adolescents andelderly ¡ Diet in pregnancy- nutritional requirements and balanced dietplan ¡ Anemia in pregnancy-diagnosis, diet for anemic pregnant women, iron & folic acid supplementation andcounseling ¡ Nutrition in lactation-nutritional requirements, diet for lactating mothers, complementaryfeeding/weaning	Lecture cum Discussion Meal planning Lab session on Preparation of balanced diet for different categories and low cost nutritiousdishes	Short Answers Very Short Answers
VIII	T-4	Classify and describe the common nutritional deficiency disorders and identify nurses' role in assessment, management and prevention	**Nutritional deficiency disorders** ¡ Protein energy malnutrition- magnitude of the problem, causes, classification, signs & symptoms, Severeacute malnutrition (SAM), management & prevention, nurses' role ¡ Childhood obesity-Signs & symptoms, assessment, management &prevention and nurses' role ¡ Vitamin deficiency disorders- vitamin A, B, C & D deficiency disorders:causes, signs & symptoms, management & prevention and nurses' role ¡ Mineral deficiency diseases-iron, iodine and calcium deficiencies: causes, signs& symptoms, management & prevention and nurses' role	¡ Lecture cum discussion ¡ Charts/slides/models	¡ Essay ¡ Short Answer ¡ Very Short ¡ Answer
IX	T-4 L-3	Principles of diets in various diseases	**Therapeutic diets** ¡ Definition, Objectives,Principles ¡ Modifications – Consistency,Nutrients, ¡ Feedingtechniques. ¡ Diet in Diseases – Obesity, Diabetes Mellitus, CVD, Underweight,Renal diseases, Hepatic disorders Constipation, Diarrhea, Pre and Post operativeperiod	¡ Lecture cum Discussion ¡ Meal planning ¡ Lab session on preparation of therapeutic diets	¡ Essay ¡ Short Answer ¡ Very Short ¡ Answer

X	T-3	Describe the rules and preservation of nutrients	**Cookery rules and preservation of nutrients** ▪ **Cooking –** Methods, Advantages and Disadvantages ▪ Preservation ofnutrients ▪ Measures to prevent loss of nutrients duringpreparation ▪ Safe food handling and Storage offoods ▪ Foodpreservation ▪ Food additives and foodadulteration ▪ Prevention of Food Adulteration Act (PFA) ▪ Foodstandards	▪ Lecture cum Discussion ▪ Charts/ slides	▪ Essay ▪ Short Answer ▪ Very Short
XI	T-2	Explain the methods nutritional assessment and nutrition education	**Nutrition assessment and nutrition education** ▪ Objectives of nutritionalassessment ▪ Methods of assessment-clinical examination, anthropometry,laboratory & biochemical assessment, assessment of dietary intake including Food frequency questionnaire (FFQ)method ▪ Nutrition education-purposes, principles andmethods	▪ Lecture cum discussion ▪ Demonstration ▪ Writing nutritional assessment report	▪ Essay ▪ Short Answer ▪ Evaluation of Nutritional assessment report
XII	T-2	Describe nutritional problems in India and nutritional programs	**National Nutritional Programmes and role of nurse** ▪ Nutritional problems inIndia ▪ National nutritionalpolicy ▪ *National nutritional programmes:*Vitamin Supplementation, Anemia MuktBharat Programme, Integrated Child Development Services (ICDS), Mid-day Meal Scheme (MDMS), National Iodine Deficiency Disorders Control Programme(NIDDCP), Weekly Iron Folic Acid Supplementation (WIFS) and others as introduced ▪ Role of nurse in every programme	▪ Lecture cum Discussion	▪ Essay ▪ Short Answer ▪ Very Short Answer

Food born diseases and food safety are dealt in Introduction to Community Health Nursing

NURSING FOUNDATIONS – II (19NF08)

NURSING FOUNDATIONS II (SEMESTER II)

THEORY: 6 Credits (120 Hours) (Lab-L/Skill Lab-SL): 3 Credits (120hours)

1. Identify and meet the hygienic needs ofpatients
2. Demonstrate fundamental skills of assessment, planning, implementation and evaluation of nursing care using Nursing process approach in supervised clinical settings
3. Assess the Nutritional needs of patients and provide relevant care undersupervision
4. Identify and meet the elimination needs ofpatient
5. Interpret findings of specimen testing applying the knowledge of normalvalues
6. Promote oxygenation based on identified oxygenation needs of patients under supervision
7. Review the concept of fluid, electrolyte balance integrating the knowledge of appliedphysiology
8. Apply the knowledge of the principles, routes, effects of administration of medications in administeringmedication
9. Calculate conversions of drugs and dosages within and between systems of measurements
10. Demonstrate knowledge and understanding in caring for patients with altered functioning of sense organs andunconsciousness
11. Explain loss, death andgrief
12. Describe sexual development andsexuality
13. Identify stressors and stress adaptation modes
14. Integrate the knowledge of culture and cultural differences in meeting the spiritual needs
15. Explain the introductory concepts relevant to models of health and illness in patient care
16. Perform first aid measures duringemergencies

***Module used in teaching/learning:**

II Semester: First Aid-40 Hours (including Basic CPR)

COURSE OUTLINE

UNIT	TIME (HRS) T & L/SL	LEARNING OUTCOMES	CONTENT	TEACHING LEARNING ACTIVITIES	ASSESSMENT METHODS

I	5 T
	15 L
		Identify and meet the hygienic needs of patients	**Hygiene**
			- Factors Influencing HygienicPractice
			- Hygienic care: Indications and purposes, effects of neglectedcare
			  o Care of the Skin- (Bath, feet and nail, HairCare)
			  o Care of pressure points
			  o Assessment of Pressure Ulcers using Braden Scale and NortonScale
			  o Pressure ulcers- causes, stages and manifestations, care andprevention
			  o Perineal care/Meatalcare
			  o Oral care, Care of Eyes, Ears and Nose including assistive devices (eye glasses, contact lens, dentures, hearingaid)
				- Lecture
				- Discussion
				- Demonstration
					- Essay
					- Short answers Objective type

II	14 T
	7 L
		Describe assessment, planning, implementation and evaluation of nursing care using Nursing process approach	**The NursingProcess**
			- Critical Thinking Competencies, Attitudes for Critical Thinking, Levels of critical thinkingin Nursing
			- Nursing ProcessOverview
			  o **Assessment**
			  - Collection of Data: Types, Sources, Methods
			  - OrganizingData
			  - ValidatingData
			  - DocumentingData
			  o **Nursing Diagnosis**
			  - Identification of client problems, risks andstrengths
			  - Nursing diagnosis statement- parts, Types, Formulating, Guidelines for formulating NursingDiagnosis
			  - NANDA approveddiagnoses
				- Lecture
				- Discussion
				- Demonstration Supervised Clinical practice
					- Essay
					- Short answers
					- Objective type Evaluation of care plan

			□ Difference between medical and nursingdiagnosis ○ **Planning** □ Types of planning □ EstablishingPriorities □ Establishing Goals and Expected Outcomes- Purposes, types, guidelines, Components of goals and outcomestatements □ Types of Nursing Interventions, Selecting interventions: Protocols and StandingOrders □ Introduction to Nursing Intervention Classification and Nursing OutcomeClassification □ Guidelines for writing careplan ○ **Implementation** □ Process of Implementing the plan of care □ Types of care - Direct and Indirect ○ **Evaluation** □ Evaluation Process, Documentation andReporting		
III	5T 5L	Identify and meet the Nutritional needs of patients	**Nutritionalneeds** | Importance | Factors affecting nutritionalneeds | Assessment of nutritionalstatus | Review: special diets- Solid, Liquid, Soft | Review on therapeuticdiets | Care of patient with Dysphagia, Anorexia, Nausea,Vomiting | Meeting Nutritional needs: Principles, equipment, procedure,indications ○ Oral ○ Enteral: Nasogastric/Orogastric, ○ Introduction to other enteral feeds- types, indications,Gastrostomy, Jejunostomy ○ Parenteral-TPN		
IV	10T 10L	Identify and meet the elimination needs of patient	**Elimination needs** | Urinary Elimination ○ Review of Physiology ofUrine Elimination, Composition and characteristics of urine ○ Factors Influencing Urination ○ Alteration in UrinaryElimination ○ Facilitating urineelimination:		

			assessment, types, equipment, procedures and special considerations o Providing urinal/bedpan o Care of patientswith ▯ Condomdrainage ▯ IntermittentCatheterization ▯ Indwelling Urinary catheter and urinarydrainage ▯ Urinarydiversions ▯ Bladderirrigation BowelElimination o Review of Physiology of Bowel Elimination, Composition and characteristics offeces o Factors affecting Bowel elimination o Alteration in BowelElimination o Facilitating bowel elimination: Assessment, equipment, procedures ▯ Enemas ▯ Suppository ▯ Bowelwash ▯ Digital Evacuation of impacted feces ▯ Care of patients with Ostomies (Bowel DiversionProcedures)		
V	4T 3L	Explain various types of specimens and identify normal values of tests Develop skill in specimen collection, handling and transport	**Diagnostic testing** Phases of diagnostic testing (pre-test, intra-test & post-test) in Common investigations and clinicalimplications o Complete BloodCount o SerumElectrolytes o LFT o Lipid/Lipoproteinprofile o Serum Glucose- AC, PC,HbA1c o Monitoring Capillary Blood Glucose (Glucometer Random Blood Sugar-GRBS) o Stool RoutineExamination o Urine Testing- Albumin, Acetone, pH, SpecificGravity o Urine Culture, Routine, Timed UrineSpecimen o Sputumculture o Overview of Radiologic &EndoscopicProcedures	Lecture Discussion Demonstration	Essay Short answers Objective type

VI	11T
	10L
		Assess patients for oxygenation needs, promote oxygenation and provide care during oxygen therapy	**Oxygenation needs**
			- Review of Cardiovascular and RespiratoryPhysiology
			- Factors affecting respiratoryfunctioning
			- Alterations in RespiratoryFunctioning
			  - Conditionsaffecting
			  o airway
			  o movement ofair
			  o diffusion
			  o Oxygentransport
			  - Alterations inoxygenation
			  - Nursing interventions to promote oxygenation: assessment,types, equipment used & procedure
			  o Maintenance of patentairway
			  o Oxygenadministration
			  o Suctioning- oral,tracheal
			  o Chest physiotherapy- Percussion, Vibration &Posturaldrainage
			  o Care of Chest drainage- principles &purposes
			  o Pulse Oximetry- Factors affecting measurement of oxygen saturation using pulse oximeter, Interpretation
			- Restorative & continuingcare
			  o Hydration
			  o Humidification
			  o Coughing techniques
			  o Breathingexercises
			  o Incentivespirometry
				- Lecture
				- Discussion
				- Demonstration &Re-demonstration
					- Essay
					- Short answers
					- Objective type

VII	7 T
	8 L
		Describe the concept of fluid, electrolyte balance	**Fluid, Electrolyte, and Acid – Base Balances**
			- Review of Physiological Regulation of Fluid, Electrolyte, and Acid –Base Balances
			- Factors Affecting Fluid, Electrolyte, and Acid – BaseBalances
			- Disturbances in fluidvolume:
			  o Deficit-
			  □ Hypovolemia
			  □ Dehydration
			  o Excess-
			  □ Fluidoverload
			  □ Edema
			- Electrolyte imbalances (hypo andhyper)
			  o Acid-baseimbalances
			□ Metabolic- acidosis &alkalosis
				- Lecture
				- Discussion
				- Demonstration
					- Essay
					- Short answers
					- Objective type
					- Problem solving-calculations

			Respiratory- acidosis &alkalosis o Intravenous therapy Peripheral venipuncturesites Types of IVfluids Calculation for making IV fluid plan Complications of IV fluid therapy Measuring fluid intake andoutput Administering Blood and Blood components Restricting fluidintake Enhancing Fluidintake		
VIII	22T 20L	Explain the principles, routes, effects of administration of medications Calculate conversions of drugs and dosages within and between systems of measurements Administer oral and topical medication and document accurately under supervision	**Administration of Medications** Introduction-Definition of Medication, Administration of Medication, Drug Nomenclature, Effects of Drugs,Forms of Medications, Purposes, Pharmacodynamics and Pharmacokinetics Factors influencing MedicationAction Medication orders andPrescriptions Systems ofmeasurement Medication dosecalculation Principles, 10 rights of Medication Administration Errors in Medicationadministration Routes ofadministration Storage and maintenance of drugs and Nursesresponsibility Terminologies and abbreviations used in prescriptions and medicationsorders Developmentalconsiderations Oral, Sublingual and Buccal routes: Equipment,procedure Introduction to Parenteral Administration of Drugs- Intramuscular, Intravenous, Subcutaneous,Intradermal: Location of site, Advantages and disadvantages of the specific sites, Indication and contraindications for the different routes and sites. Equipment- Syringes & needles, cannulas, Infusion sets - parts,types, sizes Types of vials and ampoules, Preparing Injectable medicines from vials and ampoules o Care of equipment: decontamination and disposal of syringes, needles, infusion sets o Prevention of Needle-StickInjuries	Lecture Discussion Demonstration &Redemonstration	Essay Short answers Objective type

			▪ Topical Administration: Types, purposes, site, equipment, procedure o Application to skin &mucous membrane o Direct application ofliquids, Gargle and swabbing the throat o Insertion of Drug into body cavity: Suppository/ medicated packing in rectum/vagina o Instillations: Ear, Eye,Nasal, Bladder, and Rectal o Irrigations: Eye, Ear,Bladder, Vaginal and Rectal o Spraying: Nose andthroat ▪ Inhalation: Nasal, oral, endotracheal/ tracheal (steam, oxygenand medications)- purposes, types, equipment, procedure, recording and reporting of medications administered ▪ Other Parenteral Routes: Meaning of epidural, intrathecal, intraosseous, intraperitoneal, intrapleural,intraarterial		
IX	7 T 4 L	Provide care to patients with altered functioning of sense organs and unconsciousne ss in supervised clinical practice	**Sensory needs** ▪ Introduction ▪ Components of sensory experience- Reception, Perception &Reaction ▪ ArousalMechanism ▪ Factors affecting sensoryfunction ▪ Assessment of Sensory alterations- sensory deficit, deprivation, overload & sensorypoverty ▪ Management o Promoting meaningful communication (patients with Aphasia, artificial airway & Visual and Hearing impairment) **Care of Unconscious Patients** ▪ Unconsciousness: Definition, causes & risk factors, pathophysiology, stagesof Unconsciousness, Clinical Manifestations ▪ Assessment and nursing management of patient withunconsciousness, complications	▪ Lecture ▪ Discussion ▪ Demonstration	▪ Essay ▪ Short answers ▪ Objective type
X	5T 5L	Explain loss, death and grief	**Care of Terminally ill, death anddying** ▪ Loss-Types ▪ Grief, Bereavement &Mourning ▪ Types of Griefresponses ▪ Manifestations ofGrief	▪ Lecture ▪ Discussion ▪ Casediscussions	▪ Essay ▪ Short answers

			• Factors influencing Loss &Grief Responses • Theories of Grief & Loss-Kubler Ross 5 Stages ofDying • The R Process model(Rando's) • Death- Definition, Meaning, Types (Brain & CirculatoryDeaths) • Signs of ImpendingDeath • Dying patient's Bill ofRights • Care of DyingPatient • Physiological changes occurring after Death • Death Declaration, Certification, Autopsy, Embalming • Last office/DeathCare • Counseling & supporting grieving relatives • Placing body in theMortuary • Releasing body fromMortuary • Overview- Medico-legal Cases, Advance directives, DNI/DNR, OrganDonation, Euthanasia **PSYCHOSOCIAL NEEDS (A-D)**	• Death care/lastoffice	• Objective type
XI	3 T	Develop basic understanding of self- concept	**A. Self-concept** • Introduction • Components (Personal Identity, Body Image, Role Performance,Self Esteem) • Factors affecting SelfConcept • Nursing Management	• Lecture • Discussion • Demonstration • Case Discussion/ Role play	• Essay • Short answers • Objective type
XII	2 T	Describe sexual development and sexuality	**B. Sexuality** • Sexual development throughoutlife • Sexualhealth • Sexualorientation • Factors affectingsexuality • Prevention of STIs, unwanted pregnancy, avoiding sexual harassment andabuse • Dealing with inappropriate sexual behavior	• Lecture • Discussion • Demonstration	• Essay • Short answers • Objective type

XIII	3 T 3 L	Describe stress and adaptation	**C. Stress and Adaptation-Introductory concepts** - Introduction - Sources, Effects, Indicators & Types of Stress - Types ofstressors - Stress Adaptation- General Adaptation Syndrome (GAS), Local Adaptation Syndrome (LAS) Manifestation of stress- Physical & psychological	- Lecture - Discussion - Demonstration	- Essay - Short answers - Objective type

			Coping strategies/Mechanisms StressManagement o Assist with coping and adaptation o Creating therapeutic environment Recreational and diversiontherapies		
XIV	6 T	Explain culture and cultural norms Integrate cultural differences and spiritual needs in providing care to patients under supervision	**D. Concepts of Cultural Diversity and Spirituality** Culturaldiversity o Cultural Concepts- Culture, Subculture, Multicultural,Diversity, Race, Acculturation, Assimilation o TransculturalNursing o CulturalCompetence o Providing Culturally ResponsiveCare Spirituality o Concepts- Faith, Hope,Religion, Spirituality, Spiritual Wellbeing o Factors affectingSpirituality o Spiritual Problems in Acute, Chronic, Terminal illnesses & Near-Death Experience o Dealing with Spiritual Distress/Problems	Lecture Discussion	Essay Short answers Objective type
XV	6 T	Explain the significance of nursing theories	**Nursing Theories: Introduction** Meaning &Definition, Purposes, Types of theories with examples, Overview of selected nursing theories-Nightingale, Orem, Roy Use of theories in nursingpractice	Lecture Discussion	Essay Short answers Objective type
XVI	20T 20L	Explain and apply principles of First Aid during emergencies	**First Aid & Emergencies *** Definition, Basic Principles, Scope & Rules First AidManagement o Wounds, Hemorrhage &Shock o Musculoskeletal Injuries:Fractures, Dislocation, Muscle injuries o Transportation of Injuredpersons o Respiratory Emergencies &Basic CPR o Unconsciousness o Foreign Bodies- Skin, Eye,Ear, Nose, Throat & Stomach o Burns &Scalds o Poisoning, Bites &stings o Frostbite & Effects ofHeat o CommunityEmergencies	Lecture Discussion Demonstration &Re-demonstration Module completion **National Disaster Management Authority (NDMA) First aid module**	Essay Short answers Objective type OSCE

NURSING FOUNDATIONS I & II – (SKILL LAB & CLINICAL)

PLACEMENT: Semester I & II

Skill Lab: 200 (80+120) hours

Clinical: 480 (160 + 320) hours

Semester I- Lab 80 Hours (2 Credits), Clinical- 160 Hours (2 Credits)

Semester II- Lab- 120 Hours (3 Credits), Clinical- 320 Hours (4 Credits)

COMPETENCIES

SEMESTER I

On completion of the course, the students will be able to

1. Maintain effective human relations (projecting professionalimage)
2. Communicate effectively with patient, families and team members
3. Demonstrate skills in techniques of recording andreporting
4. Demonstrate skill in monitoring vitalsigns
5. Care for patients with altered vitalsigns
6. Perform health assessment of each bodysystem
7. Demonstrate skill in implementing standard precautions and use ofPPE
8. Demonstrate skill in meeting the comfort needs of thepatients
9. Provide safe and cleanenvironment
10. Demonstrate skill in admission, transfer, and discharge of apatient
11. Demonstrate skill in caring for patients with restrictedmobility
12. Plan and provide appropriate health teaching following theprinciples.

SEMESTER II

13. Implement basic nursing techniques in meeting hygienic needs ofpatients
14. Develop skills in assessment, planning, implementation and evaluation of nursing care using Nursing processapproach
15. Identify and meet the Nutritional needs ofpatients
16. Plan and Implement care to meet the elimination needs ofpatient
17. Develop skills in instructing and collecting samples forinvestigation.
18. Perform simple lab tests and analyze & interpret common diagnosticvalues
19. Identify patients with impaired oxygenation and demonstrate skill in caring for patients with impairedoxygenation
20. Identify and demonstrate skill in caring for patients with fluid, electrolyte and acid – baseimbalances
21. Assess, plan, implement & evaluate the basic care needs of patients with altered functioning of sense organs andunconsciousness
22. Care for terminally ill and dyingpatients

23. Identify stress and assist patients to adopt various copingstrategies
24. Acquire skills in assessing and performing First Aid duringemergencies

Skill Lab

Use of mannequins and simulators

S. NO	COMPETENCIES	MODE OF DEMONSTRATION
Semester I		
1.	Therapeutic Communication and Documentation	Role Play
2.	Vital signs	Simulator/ Standardized patient
3.	Physical Examination	Simulator/ Mannequin / Standardized patient
4.	Medical and Surgical Asepsis	-
5.	Pain Assessment	Standardized patient
6.	Comfort Devices	Mannequin
7.	Therapeutic Positions	Mannequin
8.	Physical Restraints and Side rails	Mannequin
9.	ROM Exercises	Standardized patient
10.	Ambulation	Standardized patient
11.	Moving and Turning patients in bed	Mannequin
12.	Changing position of helpless patients	Mannequin/ Standardized patient
13.	Transferring patients bed to stretcher/ wheel chair	Mannequin/ Standardized patient
14.	Admission, Transfer, Discharge & Health Teaching	Role Play
Semester II		
15.	Sponge bath, oral hygiene, perinealcare	Mannequin
16.	Nutritional Assessment	Standardized Patient
17.	Nasogastric tube feeding	Trainer/ Simulator
18.	Providing bed pan & urinal	Mannequin
19.	Catheter care	Catheterization Trainer
20.	Bowel wash, enema, insertion of suppository	Simulator/ Mannequin
21.	Oxygen administration- face mask, venture mask, nasal prongs	Mannequin
22.	Administration of medication through Parenteral route- IM, SC, ID, IV	IM injection trainer, ID injection trainer, IV arm (Trainer)
23.	Last Office	Mannequin
24.	CPR	CPR Mannequin

SEMESTER I- 10 weeks- 16 hours/ week
CLINICAL POSTINGS- General Medical/Surgical Wards

Clinical Unit	Duration in Weeks	Learning Outcomes	Procedural Competencies/Clinical Skills (Supervised clinical practice)	Clinical Requirements	Assessment Methods
General Medical / Surgical wards	2	Maintain effective human relations (projecting professional image) Communicate effectively with patient, families and team members Demonstrate skills in techniques of recording and reporting	**Communication and Nurse patient relationship** ▪ Maintaining Communicationwith patient and family and interpersonal relationship ▪ Documentation and Reporting o Documenting patient care andprocedures o Verbalreport o Writtenreport		▪ OSCE
,, ,, ,,	2	Demonstrate skill in monitoring vital signs Care for patients with altered vital signs	*Vital signs* ▪ Monitor/measure and document vital signs in a graphic sheet o Temperature (oral, tympanic,axillary) o Pulse (Apical and peripheralpulses) o Respiration o Bloodpressure o Pulseoximetry ▪ Interpret and reportalteration ▪ Cold Applications- Cold Compress, Ice cap, Tepid Sponging ▪ Care of equipment – thermometer, BPapparatus, Stethoscope, Pulseoximeter	Care of patients with alterations in vital signs- 2	▪ Assessment of clinical skillsusing checklist ▪ OSCE
,, ,,	2	Perform health assessment of each body system	**Health assessment &Infection control in Clinical settings** *Health Assessment* ▪ Nursing/ Health history taking ▪ Perform physical examination: o General o Bodysystems	▪ History Taking-2 ▪ Physical examination-2	▪ Assessment ofclinical skills using checklist ▪ OSCE

		Demonstrate skill in implementing standard precautions and use of PPE	• Use various methods of physicalexamination- Inspection, Palpation, Percussion, Auscultation, Olfaction • Identification of system wise deviations • Documentation offindings *Infection control in Clinical settings* • Handhygiene • Use ofPPE		• Assessment of clinical skillsusing checklist • OSCE
	2	Demonstrate skill in meeting the comfort needs of the patients	**Comfort, Rest & Sleep, Pain and Promoting Safety in Health Care Environment** *Comfort, Rest & Sleep* • Bedmaking- o Open o Closed o Occupied o Post-operative o Cardiacbed o Fracturebed • Comfort devices o Pillows o Over bed table/cardiactable o Backrest o BedCradle • TherapeuticPositions o Supine o Fowlers (low, semi,high) o Lateral o Prone o Sim's o Trendelenburg o Dorsalrecumbent o Lithotomy o Kneechest *Pain* • Pain assessmentand provision for comfort		• Assessment of clinical skillsusing checklist • OSCE
		Provide safe and clean environment	*Promoting Safety in Health Care Environment* • Care of Patient'sUnit • Use of Safety devices: o Side Rails • Restraints(Physical) • Fall risk assessment and Post FallAssessment	• Presentation onPhysical restraints-1 • Fall risk assessment -2	• Assessment ofclinical skills using checklist • OSCE

	2	Demonstrate skill in admission, transfer, and discharge of a patient	**Hospital Admission and discharge, Mobility and Immobility and Patient education** *Hospital Admission and discharge* Perform & Document: - Admission - Transfer - PlannedDischarge		- Assessment ofclinical skills using checklist - OSCE
		Demonstrate skill in caring for patients with restricted mobility	*Mobility and Immobility* - Range of MotionExercises - Assist patientin: o Moving o Turning o Logrolling - Changing position of helpless patient - Transferring (Bed to and from chair/wheelchair/ stretcher)		- Assessment ofclinical skills using checklist - OSCE
		Plan and provide appropriate health teaching following the principles	*Patient education*	- Individual teaching - 1	- Assessment ofclinical skills using checklist - OSCE
	4	Implement basic nursing techniques in meeting hygienic needs of patients Develop skills in assessment, planning, implementation and evaluation of nursing care using Nursing process approach	**<u>SEMESTER II (16 weeks x 20 hours/week)</u>** **Hygiene & The Nursing Process** *Hygiene* - Care of Skin &Hair: -Sponge Bath/ Bed bath -Care of pressure points & back massage - Pressure sore risk assessment using Braden/ Norton scale -Hair wash -Pediculosis treatment - Oral Hygiene - PerinealHygiene - Cathetercare *The NursingProcess* - Prepare Nursing care plan for the patient based on the givencase	- Nursing care plan Patient with Pain-1 Patient with Fever-1	- Assessment of clinical skillsusing checklist - OSCE - Evaluationof Nursing process with criteria

	3	Identify and meet the Nutritional needs of patients Plan and Implement care to meet the elimination needs of patient Develop skills in instructing and collecting samples for investigation. Perform simple lab tests and analyze & interpret common diagnostic values	**Nutritional needs, Elimination needs& Diagnostic testing** *Nutritional needs* • NutritionalAssessment • Preparation of Nasogastric tubefeed • Nasogastric tubefeeding *Elimination needs* Providing -Urinal -Bedpan • Insertion ofSuppository • Enema • Urinary Cathetercare • Care of urinarydrainage *Diagnostic testing* • SpecimenCollection o Urine routine andculture o Stoolroutine o Sputum Culture • Perform simple Lab Tests using reagentstrips oUrine- Glucose, Albumin, Acetone, pH, Specific gravity • Blood-GRBSMonitoring	• Nutritional Assessment-1 • Clinical Presentation on Careof patient with Nasogastric tube feeding-1 • Clinical Presentation on Care of patient with Constipation-1 • Lab values-interpretation	• Assessment ofclinical skills using checklist • OSCE • Assessment of clinical skillsusing checklist • OSCE
	3	Identify patients with impaired oxygenation and demonstrate skill in caring for patients with impaired oxygenation Identify and demonstrate skill in caring for patients with fluid, electrolyte and	**Oxygenation needs, Fluid, Electrolyte, and Acid – Base Balances** *Oxygenation needs* • Oxygen administration Methods o NasalProngs o Face Mask/ Venturi Mask • Steaminhalation • ChestPhysiotherapy • Deep Breathing & Coughing Exercises • OralSuctioning *Fluid, Electrolyte, and Acid – Base Balances* • Maintaining intake output chart • Identify &report	• Presentation on methods of Oxygen administration • Presentation on Blood & Blood Component therapy	• Assessment ofclinical skills using checklist • OSCE • Assessmentof clinical skillsusing checklist • OSCE

		acid – base imbalances	complications of IV therapy • Observe Blood &Blood Componenttherapy • Identify & Report Complications of Blood &Blood Componenttherapy		
	3	• Explain the principles,routes, effects of administration of medications • Calculate conversions ofdrugs and dosages within and between systems of Measurements • Administer drugs by thefollowing routes-Oral, Intradermal, Subcutaneous, Intramuscular, Intra Venous Topical, inhalation	**Administration of Medications** • Calculate DrugDosages • Preparation of lotions &solutions • AdministerMedications o Oral o Topical o Inhalations o Parenteral ▯ Intradermal ▯ Subcutaneous ▯ -Intramuscular ▯ Instillations o Eye, Ear, Nose-instillation of medicated drops, nasal sprays,irrigations		• Assessment ofclinical skills using checklist • OSCE
	2	Assess, plan, implement & evaluate the basic care needs of patients with altered functioning of sense organs and unconsciousness Care for terminally ill and dyingpatients Identify stress and assist patients to adopt various coping strategies	**Sensory Needs and Care of Unconscious patients, Care of Terminally ill, death and dying& Stress and Adaptation** *Sensory Needs and Care of Unconscious patients* • Assessment of Level of Consciousness using Glasgow Coma Scale *Terminally ill, death and dying* • Death Care *Stress and Adaptation*	• Nursing roundson care of patient with altered sensorium Presentation on dying patient's bill ofrights Presentation on Relaxation techniques	• Assessment ofclinical skills using checklist • OSCE • Assessment of clinical skills using checklist

	1	Demonstrate skills in assessing and performing First Aid during emergencies	**First aid and Emergencies** Bandaging Techniques ○ BasicBandages: ▯ Circular ▯ Spiral ▯ Reverse-Spiral ▯ Recurrent ▯ Figure ofEight ○ Special Bandages: ▯ Caplin ▯ Eye / EarBandage ▯ JawBandage ▯ Shoulder Spica ▯ Thumbspica ▯ Triangular Bandage/ Sling (Head &limbs) ▯ Binders ▯ BasicCPR	Mockdrill-FireSafety Module completion National Disaster Management Authority (NDMA) First aid module	Assessment ofclinical skills using checklist OSCE (first aid competencies)

INTRODUCTION TO COMMUNITY HEALTH NURSING (19CHNE09)

PLACEMENT:IISEMESTER THEORY: 2 Credits (40 Hours)

PRACTICUM: Clinical-1 Credit (80Hrs)

DESCRIPTION: This course is designed to help students develop broad perspectives of health, its determinants, about community health nursing and understanding about the health care delivery services, health care policies and regulations in India. It helps the students to develop knowledge and understanding of environment, environmental health and sanitation, nutrition and food safety. It further helps them to apply the principles and concepts of BCC and health education for health promotion and maintenanceofhealthwithinthecommunityinwellnessandillnesscontinuum.

COMPETENCIES:

On completion of the course, the students will be able to

1. Explore the evolution of public health in India and community healthnursing
2. Explain the concepts and determinants ofhealth
3. Identify the levels of prevention and health problems ofIndia
4. Develop basic understanding about the health care planning and the present health care delivery system in India at variouslevels
5. Locate the significance of primary health care and comprehensive primary health care as part of current health care delivery systemfocus
6. Discuss health care policies and regulations inIndia
7. Demonstrate understanding about an overview of environmentalscience
8. Identify the role and significance of environmental protection andpreservation
9. Relate the influence of environmental factors and sanitation on health and disease
10. Demonstrate skill in nutritional assessment for different age groups in the community and provide appropriate nutritionalcounseling
11. Identify the importance of food safety in prevention of food bornediseases
12. Discuss basic issues and concepts of Behavior Change Communication (BCC) and Social Behavior Change Communication (SBCC) and identify the methods of BCC to target theaudience
13. Provide health education to individuals and families applying the principles and techniques of behavior change appropriate to communitysettings

COURSE OUTLINE

UNIT	TIME (Hours)	LEARNING OUTCOMES	CONTENT	TEACHING / LEARNING ACTIVITIES	ASSESSMENT METHODS
I	4 T	Define public health, community health and community health nursing Explain the evolution of	**Concepts of Community Health and Community Health Nursing** Definition ofpublic	Lecture, Discussion Explain using chart, graphs Community	Short answers Essay type and

		public health in India and scopeof community healthnursing Explain various concepts of health and disease, dimensions and determinants of health Explain the natural history of disease and levels of prevention Discuss the health problems of India	health, community health and community healthnursing Public health in Indiaand its evolutionand Scope of community healthnursing *Review:* Concepts of health & Illness/disease-Definition,dimensions and determinants of health and disease Natural history of disease Levels of prevention-Primary, Secondary& tertiary prevention-Review Health problems (Profile) ofIndia	needs assessment (Field survey on identification of demographic characteristics, health determinants and resources of a rural and an urban community) Explain using examples	objective type Survey report
II	8 T	Describe health planning and its steps, and various health plans, and committees Discuss health care delivery system in India at various levels Describe SDGs, primary health care and comprehensive primary health care (CPHC) Explain health care policies and regulations in India	**Health Care Planning and Organization of Health Care at various levels** Health planningsteps Health planning inIndia –various committees and commissions on health and family welfare and Five Yearplans Participation of communityand stakeholders in health planning Health care delivery system inIndia-Infrastructure and Health sectors, Delivery of health services at sub centre (SC)PHC, CHC, District level, state level and national level, Sustainable development goals (SDGs),Primary	Lecture Discussion Field visits to CHC, PHC,SC/ HealthWellness Centers (HWC) Directed	Short answers Essaytype Evaluation of Field visit reports& presentation

			Health Care and Comprehensive Primary Health Care (CPHC)- elements,principles ▪ CPHC through SC/HealthWellness Center (HWC) ▪ National Health Care Policies andRegulations o National Health Policy (1983, 2002,2017) o National Health Mission (NHM): National Rural Health Mission (NRHM), National Urban Health Mission (NUHM),NHM o National Health Protection Mission (NHPM) o AyushmanBharat o Universal Health Coverage	reading	
III	15 T	Identify the role of an individual in the conservation of natural resources Describe ecosystem, its structure, types and functions Explain the classification, value and threats to biodiversity Enumerate the causes, effects and control measures of environmental pollution Discuss about climate change, global warming,	**Environmental Science, Environmental Health, and Sanitation** ▪ *Natural resources:* **Renewable and non-renewableresources, natural resources and associated problems-** Forest resources, water resources, mineral resources, food resources, energy resources and land resources Role of individuals in conservation of natural resources, and equitable use of resources for sustainable lifestyles ▪ *Ecosystem:* Concept, structure andfunctions of ecosystems, Types & Characteristics- Forest ecosystem, Grassland	▪ Lecture ▪ Discussion ▪ Debates on ▪ environmental protection and preservation Explain using ▪ Charts, graphs, Models, films,slides	▪ Short answers ▪ Essay type ▪ Field visit reports

		acid rain, and ozone layer depletion Enumerate the role of an individual in creating awareness about the social issues related to environment List the acts relation to environmental protection and preservation Describe the concept of environmental health and sanitation Describe water conservation, rain water harvesting and water shed management Explain waste management	ecosystem, Desert ecosystem, Aquatic ecosystem, Energy flow in ecosystem ▪ *Biodiversity:* classification, value of bio-diversity, threats to biodiversity, conservation of biodiversity ▪ *Environmentalpollution:* Introduction, Causes, effects and control measures of: Air pollution, Water pollution, Soil pollution, Marine pollution, Noise pollution, Thermal pollution, nuclear hazards & their impact on health ▪ Climate change, global warming-eg. heatwave, acid rain, ozone layer depletion, waste land reclamation & its impact on health ▪ Social issues and environment:sustainable development, urban problems related to energy, water and environmental ethics ▪ Acts related to environmental protection andpreservation **Environmental health & Sanitation** ▪ Concept of environment health andsanitation ▪ Concept of safe water, sources of water, waterbornediseases, water purification processes, household	▪ Directed reading ▪ Visits to water supply & purification sites ▪ Observe rain water harvesting plants Visit to ▪ Sewage disposal and treatment sites, and waste disposal sites	

			purification of water - Physical and chemical standards ofdrinking water quality and tests for assessing bacteriological quality of water - Concepts of water conservation-rainwater harvesting and water shed management - Concept of Pollution prevention - Air & noisepollution - Role of nurse in prevention ofpollution - Solid waste management,human excreta disposal & management and sewage disposal and management - Commonly used insecticides and pesticides		

IV	4 T
	
	3 T
		Describe the various nutrition assessment methods at the community level
		
		Plan and provide diet plans for all age groups including therapeutic diet
		
		Describe the national nutrition programs and provide nutrition counseling and education to all agegroups
		
		Identify early the food borne diseases, and perform initial management and referralappropriately
			Nutrition Assessment and Nutrition Education
			- *Review ofNutrition*
			  o Concepts,types
			  o Meal planning -aims, steps & diet plan for different agegroups
			  o Nutrition assessment of individuals, families and community by using appropriatemethods
			- Planning suitable dietfor individuals and families according to local availability of foods, dietary habits and economic status
			- General nutritional
				- Lecture Discussion
				- Demonstration
				- Role play
				- Market visit
				- Nutritional assessment for different age groups
					- Performance assessment of nutrition assessment for different agegroups
					
					- Evaluation on nutritional assessment reports

		Discuss the importance of food hygiene and food safety Explain the Acts related to food safety	advice ▪ Nutrition education- purpose, principles & methods and Rehabilitation ▪ *Review*- Nutritional deficiency disorders ▪ National nutritionalpolicy & programs in India **Food Borne Diseases and Food Safety** **Food borne diseases** ▪ Definition, & burden, Causes andclassification ▪ Signs &Symptoms ▪ Transmission of food borne pathogens& toxins ▪ Early identification, initial management and referral **Food poisoning & food intoxication** ▪ Epidemiological features/clinical characteristics, Types of food poisoning ▪ Food intoxication- features, preventive& control measures ▪ Public health response to food bornediseases **Foodsafety** ▪ Definition, Food safety considerations & measures ▪ Food safety regulatory measures in India- RelevantActs ▪ Five keys to saferfood ▪ Food storage, food handling andcooking ▪ General principlesof	▪ Lecture Discussion ▪ Field visits to milk purification plants, slaughterhouse ▪ Refer Nutrition module- BPCCHN Block 2-unit I & UNIT5	▪ Short answers ▪ Essay type ▪ Field visit reports

			food storage of food items (ex. milk, meat) ▪ Role of food handlers in food bornediseases ▪ Essential steps in safe cookingpractices		
V	6 T	Describe behaviour change communication skills Counsel and provide health education to individuals, families and community for promotion of healthy life style practices using appropriate methods and media	**Communication management and Health Education** ▪ Behaviourchange communication skills o communication o Humanbehaviour o Health belief model-concepts& definition, ways to influence behaviour o Steps ofbehaviourchang e o Techniques of behaviourchange-Guiding principles in planning BCC activity o Steps ofBCC o Social and BehaviourChange Communication strategies (SBCC)-techniques to collect social history from clients o Barriersto effective communication, and methods to overcome them ▪ Healthpromotion andHealth education-methods/techniques, and audio-visual aids	▪ Lecture ▪ Discussion ▪ Roleplay ▪ Demonstration ▪ Supervised field practice ▪ Workshop/Refer-BCC/SBCC module (MoHFW& USAID)	▪ Short answers ▪ Essaytype ▪ Performance evaluation ofhealth education sessions to individuals and families

NOTE: To Environmental Studies Module by UGC is incorporated

INTRODUCTION TO COMMUNITY HEALTH NURSING I – PRACTICUM

CLINICAL: 2 Credits (80 Hours) = 2 weeks x 40hours/week

CLINICAL POSTINGS

CLINICAL AREA	DURATION IN WEEKS	LEARNING OUTCOMES	PROCEDURAL COMPETENCIES/ CLINICAL SKILLS	CLINICAL REQUIREMENTS	ASSESSMENT METHODS
Urban & Rural	1 week	Build and maintain rapport Identify the socio-demographic characteristics, health determinants and resources of a rural and an urban community Perform nutritional assessment and plan diet plan for adult Educate individuals/family on - Nutrition - Hygiene - Foodhygiene - Healthy lifestyle - Healthpromotion	▪ Interviewing skills (using communication and interpersonal relationship) ▪ Observationskills ▪ Conducting community needs assessment/surveyto identify health determinants of a community ▪ Nutrition assessment skills ▪ Skill in teaching individual/family on: o Nutrition, including food hygiene and safety o Healthy lifestyle o Healthpromotion	▪ Community needs assessment/Survey - Rural-1 Urban-1 ▪ Nutrition assessment ofan individual (adult)-1 ▪ Individual health teaching (Adult)-1 ▪ Use of audio-visualaids - Flash cards - Posters - Flannelgraph - Flipcharts	▪ Evaluation of survey report ▪ Assessment ofclinical performanc e ▪ Health talk evaluation

Field visits	1 week	Observe the setup, functions and services of CHC, PHC, and SCs/HWCs in urban/ruralareas Observe the national nutrition programs Learn the availability and cost of common food items Observe the various methods of water purification Learn the standards of water quality and the water qualitytests Observe the methods of purification of milk Observe the hygienic practices in slaughterhouse with regard to meat hygiene	▪ **Observational skills:** ○ Water resources and water purification sites ○ Water qualitytests ○ Milkdiary ○ Slaughterhouse	▪ Visit to SC/HWC, PHC, CHC ▪ Observation of nutrition programs ▪ Visit to market ▪ Observational visit to water purification site Observational visit to milk diary ▪ Observational visit to slaughterhouse	▪ Evaluation of field visit and observation reports

ELECTIVE COURSES
HUMAN VALUES (19ECHV01)

Introduction : Human values designed to develop the ability to distinguish between what is of value and what is superficial in life .To develop the ability to face difficult situations in life boldly and resolve them confidently.

Course Objective and Summary

1. To enable the students to create an awareness on Human values.
2. To understand the moral values
3. To resolve the moral issues in the profession
4. To justify the moral judgement
5. To intended to develop a set of beliefs ,attitudes and habits that individualshould display concerning morality

UNIT	TIME MANAGEMENT & STAMINA	Hrs
1	**INTRODUCTION** • Definition of Human values • Types of Human values • Explain about the needs • Basic Guidelines • Content and process for value education	(8)
2	**HARMONY IN THE HUMAN BEING** • Understanding human being as a co – existence • Approaches of Human values • The inter -curriculum and Extra curriculum method • Explain about the ethics • Basic Human Aspirations • Differences between human values vs moral values • Components of Human values	(8)
3	**FAMILT AND SOCIETY HARMONY IN HUMAN RELATIONSHIP** • Typical organizational values • Most crucial requirement for a good human relationship • Difficulties in living values • Value conflicts in daily & professional life • Resolving value conflicts • Knowing vs imbibing values • Essence of mental purification	(7)
4	**MANAGEMENT** • Examine values • Explain Stephen covey perspective • Myths of Human values • Efficiency of Management • Organization of interdependence , independence , dependence • Case study	(7)

5	**HUMAN VALUES LEADERSHIP** • Models of human being • Perspectives on Human values • OSHA Model • Perspectives on Human Evolution • Spiritual Humanism • Significance of values in Human existence • A holistic view of values • Values and Three of leaders	(10)

Teaching- Learning Strategies

(i) Lecture cum Discussion
(ii) Organize the models of human values
(iii) Plan for significance values
(iv) Preparation for relationship ethics
(v) Preparation of Models

Assessment Techniques of each topic of the course

S. No	Topic	Assessment techniques
1.	Introduction	Short answer and objective type
2.	Harmony in the human being	Short answer and objective type
3.	Family and society harmony in human relationship	Short answer and objective type Essay Type
4.	Management	Short answer and objective type
5.	Human values leadership	Short answer and objective type Role play

Diabetes care (19ECPC03)

Introduction: This course is designed to enable the students to develop understanding about basic concepts of diabetes care and its application to nursing. It further provides students to promote education and opportunity to recognize the practice of nursing.

Course Objective and Summary

1. To acquire knowledge of metabolic abnormalities related to diabetes
2. To provide comprehensive diabetes care and severity of the disease needs to be evaluated
3. To provide high quality care for diabetes patients
4. To conduct screening programmes for diabetes
5. To reduce complications by knowing the importance of self management.
6. To understand the underpinning principles in evidence based management of diabetes.

SL NO	Diabetes care	Hrs
1	**Introduction** • Definition, Classification ofdiabetes • Objectives of diabetes Significance of metabolic disorder	L(5)

2	**Concept of Diabetes** • Basic concept of metabolism • Pathophysiology of diabetes • Causes ,risk factors of diabetes • Oral and inject able pharmacologic agents	L(3) L(2)
3	**Diabetes care** • Blood glucose monitoring • Education about diabetes care • Education of foot care • Prevention of diabetes • Complication of diabetes • Management of diabetes	L(7) P(8)
4	**Therapy** • Medical nutritional therapy • Diet therapy • Exercise therapy	L(5)
5	**Education** • Psychological issues in the patient with diabetes • Complications and care in diabetes • Health education about diabetes • Counselling for diabetes	L(5) P(2)
6	**Management** • Management of diabetes • Knowledge of diabetic wound care • Care of prolonged elderly diabetic people	L(3)

Teaching- Learning Strategies

(i) Prepare on Lecture cum Discussion
(ii) Practice on Diabetes care
(iii) Prepare on Note taking
(iv) Preparation of Observational learning.
(v) Practice on learning.
(vi) Practice on Self-Explanation

Assessment Techniques of each topic of the course

S. No	Topic	Assessment techniques
1.	Introduction	Short answer and objective type
2.	Concepts of disease	Short answer and objective type
3.	Diabetes Care	Short answer and objective type Assessment of skill, Demonstration
4.	Nutrition therapy	Short answer and objective type Demonstration
5.	Education	Short answer and objective type, Developing questionnaire/ Checklist
6	Management	Short answer and objective type

Palliative care (19ECPC03)

Introduction: This course is designed to enable the students to understand palliative care and its application to nursing. It further provides students to promote education and opportunity to recognize the practice of nursing. It provides knowledge on medical care that focuses on providing patients relief from pain and other symptoms of a serious illness, no matter the diagnosis or stage of disease.

Course Objective and Summary

1. To acquire knowledge and improve the care of seriously ill patients.
2. To provide comprehensive nursing care to patients, severity of the disease which needs to be evaluated
3. To improve and build generalist palliative care knowledge and clinicalskills.
4. To provide importance of looking at symptoms as clues to the experience of suffering in illness.
5. To Develop a plan for pain/symptom management
6. To reduce complications by knowing the importance of care
7. To understand , recognize and respond to patient cues

SL NO	Palliative care	Hrs
1	**Introduction** • Definition, Classification ofcare • Objectives of palliative care Significance of essential care	L(5)
2	**Concept of Palliative care** • Basic concept of illness • Evolving nature of care • Importance of team work • Appreciation of skills	L(3) L(2)
3	**Essential** • Understanding the presentation • Education about palliative care • Importance of initial assessment • Differentiate about acute and chronic pain • Complication of prolonged treatment • Management of palliative care	L(7) P(8)
4	**Therapy** • Medical nutritional therapy • Curative therapy • Exercise therapy	L(5)
5	**Education** • Awareness in the patient with palliative care • Complications and care in palliative care • Health education about psychological care • Spiritual care	L(5) P(2)
6	**Management** • Management of palliative care • Knowledge of distressing symptoms • Care of prolonged elderly stay	L(3)

Teaching- Learning Strategies

(i) Prepare on Lecture cum Discussion
(ii) Practice on Palliative care
(iii) Prepare on Note taking
(iv) Preparation of Observational learning.
(v) Practice on learning.
(vi) Practice on Self-Explanation

Assessment Techniques of each topic of the course

S. No	Topic	Assessment techniques
1.	Introduction	Short answer and objective type
2.	Concepts of disease	Short answer and objective type
3.	Palliative Care	Short answer and objective type Assessment of skill, Demonstration
4.	Curative therapy	Short answer and objective type Demonstration
5.	Education	Short answer and objective type, Developing questionnaire/ Checklist
6	Management	Short answer and objective type

DISASTER MANAGEMENT (19ECDM04)

Introduction : This course is designed to enable the students to develop understanding about basic concepts of sociology and psychology and its application in personal and community life, health, illness and nursing. It further provides students opportunity to recognize the significance and application of soft skills and self- empowerment in the practice of nursing.

Course Objective and Summary

1. To acquire knowledge of relief and rehabilitation, mitigation and prevention
2. To develop medical care to the affected people.
3. To practice housing and temporary shelters.
4. To promote safety of naturalresources
5. To promote drinking water.
6. To develop communication to the public.

SL NO	DISASTER MANAGEMENT	Hrs
1	**Introduction** Definition, Principles of disaster management components of disaster management Natural disaster Host factors Environmental factors Characteristic of disaster Phases of disaster	L (6)
2	**Types of disaster management** • Geophysical • Hyrological • Climatological • Meteorological • Chemical accidents • Industries accidents • Deforestation • Socio political forces • Pre impact phase • impact phase • Post impact phase • Disaster management • Prepare disaster action plan • Triage • Disaster effects	L(6) P(7)
3	**Emergencies** • Complex emergencies • Pandemic emergencies • Epidemic situation • Aspects of disaster management • Disaster effects • Nodal agencies for disaster management • Dynamics of disasters	L(6)

4	**Disaster prevention** • Reduce the risk • Disaster preparedness • Disaster response. • Disaster recovery • Disaster mitigation • Disaster impact • Rehabilitation Role of nurse in disaster management	L(8) P(7)

Teaching- Learning Strategies

(i) prepare on Lecture cum Discussion
(ii) Practice on First aid
(iii)Preparation of disasterrecovery.
(iv) Practice on humanitarian aspects of emergencies

Assessment Techniques of each topic of the course

S. No	Topic	Assessment techniques
1.	Introduction	Short answer and objective type
2.	Types of disaster management	Short answer and objective type First aid practice, Demonstration
3.	Emergencies	Short answer and objective type Demonstration
4.	Disaster prevention	Short answer and objective type, Demonstratio

APPLIED MICROBIOLOGY AND INFECTION CONTROL INCLUDING SAFETY (19MICS10)

PLACEMENT:IIISEMESTER

SECTION A &SECTIONB THEORY: 2 Credits (40Hrs)
PRACTICAL: 1 Credit (40Hrs)

(Lab/Experiential learning- L/E)

SECTION A: APPLIED MICROBIOLOGY

THEORY: 1 Credit (20 hours) PRACTICAL: ½ Credit (20hours)
(Lab/Experiential learning- L/E)

SECTION B: INFECTION CONTROL & SAFETY
THEORY**:** 1Credit(20hours)
PRACTICAL**:** ½ credit (20 hours) (Lab/experiential learning -L/E)

SECTION A: APPLIED MICROBIOLOGY

DESCRIPTION: This course is designed to enable students to acquire understanding of fundamentals of Microbiology, compare and contrast different microbes and comprehend the means of transmission and control of spread by various microorganisms. It also provides opportunities for practicing infection control measures in hospital and communitysettings.

COMPETENCIES

On completion of the course, the students will be able to:

1. Identify the ubiquity and diversity of microorganisms in the human body and theenvironment
2. Classify and explain the morphology and growth ofmicrobes
3. Identify various types ofmicroorganisms
4. Explore mechanisms by which microorganisms causedisease
5. Develop understanding of how the human immune system counteracts infection by specific and non-specificmechanisms
6. Apply the principles of preparation and use of vaccines inimmunization
7. Identify the contribution of the microbiologist and the microbiology laboratory to the diagnosis ofinfection

SECTION B: INFECTION CONTROL & SAFETY

THEORY**:** 1Credit (20hrs) PRACTICAL**:** ½ credit (20 hrs) (Lab/experiential learning - L/E)

DESCRIPTION: This course is designed to help students to acquire knowledge and develop competencies required for fundamental patient safety and infection control in delivering patient care. It also focuses on identifying patient safety indicators, preventing and managing hospital acquired infections, and in following universal precautions.

COMPETENCIES

The students will be able to:

1. Develop knowledge and understanding of Hospital acquired Infections (HAI) and effective practices forprevention
2. Integrate the knowledge of isolation (Barrier and reverse barrier) techniques in implementing variousprecautions
3. Demonstrate and practice steps in Hand washing and appropriate use of different types ofPPE
4. Illustrate various disinfection and sterilization methods andtechniques
5. Demonstrate knowledge and skill in specimen collection, handling and transport to optimize the diagnosis fortreatment
6. Incorporate the principles and guidelines of Bio Medical wastemanagement
7. Apply the principles of Antibiotic stewardship in performing the nurses'role
8. Identify patient safety indicators and perform the role of nurse in the patient safety auditprocess
9. Apply the knowledge of International Patient Safety Goals (IPSG) in the patient caresettings
10. Identify employee safety indicators and risk of occupationalhazards
11. Develop understanding of the various safety protocols and adhere to those protocols

COURSE OUTLINE

(Theory-T, Lab/Experiential Learning-L/E)

UNIT	TIME (Hours)		LEARNING OUTCOMES	CONTENT	TEACHING/ LEARNING ACTIVITIES	ASSESSMENT METHODS
	T	P				
I	3		Explain concepts and principles of microbiology and its importance in nursing	**Introduction:** ▪ Importance and relevance tonursing ▪ Historicalperspective ▪ Concepts and terminology ▪ Principles of microbiology	▪ Lecture cum Discussion	▪ Short answer questions ▪ Objective type
II	10	10 (L/E)	Describe structure, classification morphology and growth of bacteria Identify Microorganisms	**General characteristics of Microbes:** ▪ Structure and classification of Microbes ▪ Morphologicaltypes ▪ Size and form of bacteria ▪ Motility ▪ Colonization ▪ Growth and nutritionof microbes ▪ Temperature ▪ Moisture ▪ Blood and bodyfluids ▪ Laboratory methodsfor Identification of Microorganisms ▪ Types of Staining- simple, differential (Gram's, AFB), special – capsular staining (negative), spore, LPCB, KOH mount. ▪ Culture and media preparation – solid and liquid. Types of media – semi synthetic, synthetic, enriched,	▪ Lecture cum Discussion ▪ Demonstration ▪ Experiential Learning through visual	▪ Short answer questions ▪ Objective type

				enrichment, selective and differential media. Pure culturetechniques – tube dilution, pour, spread, streak plate. Anaerobic cultivation of bacteria		
III	4	6 (L/E)	Describe the different disease producing organisms	**Pathogenic organisms** ▪ Micro-organisms - Cocci — grampositive and gram negative; Bacilli— gram positive and gram negative ▪ Viruses ▪ Fungi -Superficial and Deepmycoses ▪ Parasites ▪ Rodents &vectors o Characteristics, Source, portal of entry, transmission of infection, Identification of disease producing micro-organisms	▪ Lecture cum Discussion ▪ Demonstration ▪ Experiential learning through visual	▪ Short answer ▪ Objective type
IV	3	4(L/E)	Explain the concepts of immunity, hyper sensitivity and immunization	**Immunity** • Immunity-Types, classification • Antigen and antibody reaction • Hypersensitivityreactions • Serologicaltests • Immunoglobulins – structure, types &properties ▪ Vaccines -types& Classification, storage and handling, cold chain, Immunization for variousdiseases ▪ ImmunizationSchedule	▪ Lecture ▪ Discussion ▪ Demonstration ▪ Visit to observe vaccinestorage Clinical practice	▪ Short answers ▪ Objective type ▪ Visitreport

SECTION B: INFECTION CONTROL & SAFETY

COURSE OUTLINE

UNIT	TIME (Hours)		LEARNING OUTCOMES	CONTENT	TEACHING/ LEARNING ACTIVITIES	ASSESSMENT METHODS
	T	P				
I	2	2(E)	Summarize the evidence based and effective patient care practices for the prevention of common healthcare associated infections in the healthcare setting	**HAI (Hospital acquired Infection)** ▪ Hospital acquiredinfection ▪ Bundleapproach - Prevention of UrinaryTract Infection (UTI) - Prevention of Surgical Site Infection (SSI) - Prevention of Ventilator Associated events(VAE) - Prevention of Central Line Associated Blood Stream Infection(CLABSI) ▪ Surveillance of HAI – Infection control team & Infection controlcommittee	▪ Lecture & Discussion ▪ Experiential learning	▪ Knowledge assessment- MCQ, Short answertype
II	3	4(L)	Demonstrate appropriate use different types of PPEs and the critical use of risk assessment	**Isolation Precautions and use of Personal Protective Equipment (PPE)** ▪ Types of isolation system, standard precautionand transmission-based precautions (Direct Contact, Droplet, Indirect) ▪ Epidemiology & Infection prevention – CDCguidelines ▪ Effective use ofPPE	▪ Lecture ▪ Demonstration & Re-Demonstration	▪ Performance assessment
III	1	2(L)	Demonstrate the hand hygiene practice and its effectiveness on infection control	**Hand Hygiene** ▪ Types of Handhygiene. ▪ Hand washing and use of alcohol handrub ▪ Moments of HandHygiene ▪ WHO hand hygiene promotion	▪ Lecture ▪ Demonstration & Re-demonstration	▪ Performance assessment
IV	1	2 (E)	Illustrates disinfection and sterilization in the healthcare setting	**Disinfection and sterilization** ▪ Definitions ▪ Types of disinfectionand	▪ Lecture Discussion ▪ Experiential	▪ Short answers ▪ Objective

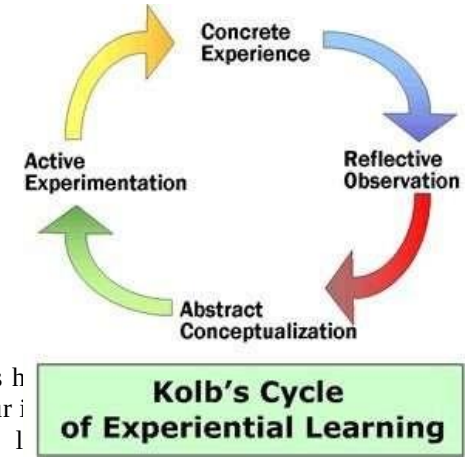
				sterilization - Environmentcleaning - EquipmentCleaning - Guides on use ofdisinfectants - Spaulding'sprinciple	learning through visit	type
V	1		Illustrate on what, when, how, why specimens are collected to optimize the diagnosis for treatment andmanagement.	**Specimen Collection (Review)** - Principle of specimen collection - Types ofspecimens - Collection techniques and specialconsiderations - Appropriatecontainers - Transportation of thesample - Staff precautions in handling specimens	- Discussion	- Knowledge evaluation- Quiz & Performance assessment - Checklist
VI	2	2 (E)	Explain on Bio Medical waste management & laundry management	**BMW (Bio Medical Waste Management)** *Laundry management process and infection control and prevention* - Waste management process and infection prevention - Staffprecautions - Laundrymanagement - Country ordinance and BMW Nationalguidelines 2017: Segration of wastes, Colour coded waste containers, waste collection & storage, Packaging & labeling, Transportation	- Discussion Demonstration - Experiential learning through visit	- Knowledge assessmentby short answers, objectivetype - Performance assessment
VII	2		Explain in detail about Antibiotic stewardship, AMR Describe MRSA/MDRO and its prevention	**Antibiotic stewardship** - Importance of Antibiotic Stewardship - Anti MicrobialResistance - Prevention of MRSA, MDRO in healthcaresetting	Lecture & Discussion - Written assignment- Recent AMR guidelines	Short answers, Objectivetype - Assessment of assignment

VIII	2	4 (L/E)	Enlist the patient safety indicators followed in a health care organization and the role of nurse in the patient safety audit process	**Patient Safety Indicators** ▪ Care of Vulnerablepatients ▪ Prevention of Iatrogenic injury ▪ Care of lines, drains and tubing's ▪ Restrain policy and care – Physical andChemical ▪ Blood & blood transfusion policy ▪ Prevention of IV Complication ▪ Prevention ofFall ▪ Prevention ofDVT ▪ Shifting and transporting of patients ▪ Surgicalsafety ▪ Care coordination event related tomedication reconciliation and administration ▪ Prevention of communication errors ▪ Prevention ofHAI ▪ Documentation	▪ Lecture ▪ Demonstration ▪ Experiential Learning	▪ Knowledge assessment ▪ Checklist
IX	1	1 (E)	Captures and analyzes incidents and events for quality improvement	**Incidents and adverse Events** ▪ Capturing of incidents ▪ RCA ▪ CAPA ▪ Reportwriting	▪ Lecture ▪ Role-play ▪ Inquiry-Based Learning	▪ Knowledge assessment - short answers, objective type
X	1		Enumerate IPSG and application of the goals in the patient care settings.	**IPSG (International Patient safety Goals)** • Identify patientcorrectly • Improve effective communication • Improve safety of High Alert medication • Ensure safesurgery • Reduce the risk of health care associatedinfection • Reduce the risk of patient harm resulting fromfalls • Reduce the harm associated with clinical alarmsystem	▪ Lecture ▪ Roleplay	▪ Objectivetype

XI	2	3 (L/E)	Enumerate the various safety protocols and its applications	**Safety protocol**
				- 5S
				- Radiationsafety
				- Lasersafety
				- Fire safety
				  - Types and classificationof fire
				  - Firealarms
				  - Firefightingequipment
				- HAZMAT safety
				  - Types ofspill
				  - Spillagemanagement
				  - MSDS
				- Environmental safety
				  - Riskassessment
				  - Aspect impactanalysis
				  - Maintenance of Temp and Humidity (Departmentwise)
				  - Audits
				- EmergencyCodes
				- Role of Nurse in times of disaster
					- Lecture
					- Demonstration/ Experiential learning
						- Mockdrills
						- Posttests
						- Checklist

XII	1		Explain importance of employee safety indicators	**Employee Safety Indicators** - Vaccination - NSIprevention - Fallprevention - Radiationsafety - Annual healthcheck	- Lecture - Discussion	- Knowledge assessmentby short answers, objectivetype
XIII	1		Identify risk of occupational hazards, prevention and post exposure prophylaxis.	**Healthcare Worker Immunization Program and management of occupational exposure** - Occupational healthordinance - Vaccination program for healthcarestaff - Needle stick injuries and prevention - Post exposureprophylaxis	- Lecture method - Journalreview	- Short answer

Experiential learning:



Experiential learning is the process by which knowledge is created through the process of experience in the clinical field. Knowledge results from the combination of grasping and transforming experience. (Kolb, 1984). The experiential learning cycle begins with an experience that the student has had, followed by an opportunity to reflect on that experience. Then students may conceptualize and draw conclusions about what they experienced and observed, leading to future actions in which the students experiment withdifferent behaviors. This begins the new cycle as the students h based on their experimentation. These steps may occur i the learning progresses. As per the need of the l components and conceptual components can be in different order as they may require a variety of cognitive and affective behaviors.

PHARMACOLOGY I (19PH11)

PLACEMENT : IIISemesters

THEORY: Pharmacology I (III Semester): 1 Credit (20 Hours) - UnitsI-VIII

DESCRIPTION: This course is designed to enable students to acquire understanding of Pharmaco-dynamics, Pharmaco-kinetics, principles of therapeutics & nursing implications.

COMPETENCIES

On completion of the course, the students will be able to

1. Describe pharmacokinetics andpharmacokinetics
2. Review the principles of drug calculation andadministration
3. Explain the commonly used antiseptics anddisinfectants
4. Describe the pharmacology of drugs acting on the GIsystem
5. Describe the pharmacology of drugs acting on the respiratorysystem
6. Describe drugs used in the treatment of cardiovascular and blooddisorders
7. Explain the drugs used in the treatment of endocrine systemdisorders
8. Describe the drugs acting on skin and drugs used to treat communicable diseases
9. Explain the drugs used in the treatment of ear, nose, throat and eyedisorders
10. Explain the drugs used in the treatment of urinary systemdisorders
11. Describe the drugs used in the treatment of nervous systemdisorders
12. Explain the drugs used for hormonal replacement and for the pregnant women during antenatal, intra natal and postnatalperiod
13. Explain the drugs used to treat emergency conditions and immunedisorders
14. Discuss the role and responsibilities of nurses towards safe administration of drugs used to treat disorders of various systems with basic understanding of pharmacology
15. Demonstrate understanding about the drugs used in alternative system of medicine

COURSE OUTLINE

UNIT NO.	TIME (HRS)	LEARNING OUTCOMES	CONTENT	TEACHING LEARNING ACTIVITIES	ASSESSMENT METHODS
I	3	Describe Pharmacodynamics, Pharmacokinetics, Classification, principles of administration ofdrugs.	**Introduction to pharmacology** ▪ Definitions &Branches ▪ Nature & Sources ofdrugs ▪ Dosage Forms and Routes of drugadministration ▪ Terminologyused ▪ Classification, Abbreviations, Prescription,Drug	▪ Lecture cum Discussion ▪ Guided reading and written assignment on schedule K drugs	▪ Shortanswer ▪ Objectivety

			Calculation, Weights and Measures - *Pharmacodynamics:* Actions, DrugAntagonism, Synergism, Tolerance, Receptors, Therapeutic, adverse, toxic effects, pharmacovigilance - *Pharmacokinetics:* Absorption, Bioavailability, Distribution, Metabolism, Interaction, Excretion - Review-Principles of drug administration andtreatment individualization - Factors affecting dose, route etc - Indian Pharmacopoeia: Legal Issues, Drug Laws, Schedule Drugs - Rational Use ofDrugs - Principles ofTherapeutics		- Assessment of assignments
II	1	Describe antiseptics, and disinfectant & nurse's responsibilities	**Pharmacology of commonly used antiseptics and disinfectants** - Antiseptics andDisinfectants - Composition, action, dosage, route,indications, contraindications, Drug interactions, side effects, adverse effects, toxicity and role of nurse	- Lecture cum Discussion - Drug study/ presentation	- Shortanswer - Objective type

III	2	Describe drugs acting on gastro-intestinal system & nurse's responsibilities	**Drugs acting on G.I system**
			- Pharmacology of commonly useddrugs
			  - Emetics andAntiemetics
			  - Laxatives andPurgatives
			  - Antacids and antipepticulcerdrugs
			  - Anti diarrhoeals – Fluid and electrolyte therapy, Furazolidone,dicyclomine
			- Composition, action, dosage, route, indications, contraindications,drug interactions, side effects, adverse effects, toxicity and role of nurse
				- Lecture cum Discussion
				- Drug study/ presentation
					- Shortanswer
					- Objective type

IV	**2**	Describe drugs acting on respiratory system & nurse's responsibilities	**Drugs acting on respiratory system** ▪ Pharmacology of commonly used o Antiasthmatics – Bronchodilators (Salbutamol inhalers) o Decongestants o Expectorants, Antitussives and Mucolytics o Broncho-constrictors and Antihistamines ▪ Composition, action, dosage, route, indications, contraindications,drug Interactions, side effects, adverse effects toxicity and role of nurse	▪ Lecture cum Discussion ▪ Drug study/ presentation	▪ Shortanswer ▪ Objective type
V	4	Describe drugs used on cardio-vascular system & nurse's responsibilities	**Drugs used in treatment of Cardiovascular system and blood disorders** ▪ Haematinics, & treatment ofanemia ▪ andantiadrenergics ▪ Cholinergic andanti-cholinergic ▪ Adrenergic Drugs for CHF &vasodilators ▪ Antianginals ▪ Antiarrhythmics ▪ Antihypertensives ▪ Coagulants &Anticoagulants ▪ Antiplatelets &thrombolytics ▪ Hypolipidemics ▪ Plasma expanders & treatment ofshock ▪ Drugs used to treat blooddisorders ▪ Composition, action, dosage, route, indications, contraindications,drug Interactions, side effects, adverse effects, toxicity and role of nurse	▪ Lecture cum Discussion ▪ Drug study/ presentation	▪ Shortanswer ▪ Objective type
VI	2	Describe the drugs used in treatment of endocrine system disorders	**Drugs used in treatment of endocrine system disorders** ▪ Insulin & oralhypoglycemics ▪ Thyroid and anti thyroiddrugs ▪ Steroids o Corticosteroids o Anabolicsteroids ▪ Calcitonin, parathormone, vit. D3, calcium metabolism o Calciumsalts	▪ Lecture cum Discussion ▪ Drug study/ presentation	▪ Shortanswer ▪ Objective type

VII	1	Describe drugs used in skin diseases & nurse's responsibilities	**Drugs used in treatment of integumentary system** ▪ Antihistaminics andantipruritics ▪ Topical applications for skin- Benzylbenzoate, Gamma BHC, Clotrimazole, Miconazole, Silver Sulphadiazine (burns) ▪ Composition, action, dosage, route,indications, contraindications, drug interactions, side effects,adverse effects toxicity and role of nurse	▪ Lecture cum Discussion ▪ Drug study/ presentation	▪ Shortanswer ▪ Objective type
I	5	Explain drug therapy/chemotherapy of specific infections & infestations & nurse's responsibilities	**Drugs used in treatment of communicable diseases (common infections, infestations)** ▪ General Principles for use of Antimicrobials ▪ Pharmacology of commonly useddrugs: o Penicillin, Cephalosporin's, Aminoglycosides, Macrolide & broad spectrum antibiotics, Sulfonamides, quinolones, Misc. antimicrobials ▪ Anaerobicinfections ▪ Antituberculardrugs, ▪ Anti leprosydrugs ▪ Antimalarials ▪ Antiretroviraldrugs ▪ Antiviralagents ▪ Antihelminthics, Anti scabies agents ▪ Antifungalagents ▪ Composition, action, dosage, route,indications, contraindications, Drug Interactions, side effects, adverse effects, toxicity and role of nurse	▪ Lecture cum Discussion ▪ Drug study/ presentation	▪ Shortanswer ▪ Objective type

19PA12- PATHOLOGY-I

Introduction of the Course

This course deals with the investigation of those pathological mechanisms common to all tissue-cell pathology. Attention is paid to the processes of cellular adaptation, inflammation, repair, immunology, cellular accumulation, and neoplasia. Prerequisitc

Course Objective

Oncompletionofthecourse, thestudents willbeableto:

- Describe the functions of skin, mucosa, tears, ceruminous glands and relate to mechanical or chemical defense
- Relate blood cells to their origin from stem cells in marrow and to their final, mature functions
- Examine vocabulary related to hematology and hematopieis
- Differentiate leukocytic properties and functions
- Link white blood cells to their tissue counterparts-e.g.-mast cells or macrophages
- Discuss chemotaxis, margination, pavemnting, diapedesis, phagocytosis, and pus formation
- Distinguish between innate and adaptive immunity
- Introduce antigen presentation and the significance of marker-receptors

UNIT	LEARNING OBJECTIVES	PATHOLOGY-1	HRS T
I	• explain the Importanc e of the study of pathology	**Introduction** • Importance of the study of pathology • Definitionofterms • Methodsandtechniques • CellularandTissuechanges • Infiltrationandregeneration • Inflammations and Infections • Wound healing • Vascular changes • Cellulargrowth,Neoplasms • NormalandCancercell • Benign and Malignant growths In situ carcinoma Disturbances of fluid andelectrolyteimbalance.	10
2	Describe The Special pathology	**Special pathology** • Pathological changes in disease conditions of various systems:	15

		• Respiratory tract - Tuberculosis, Bronchitis, Pleural effusion and pneumonia, Lungabscess,emphysema, bronchiectasis,Bronchial asthma, ChronicobstructivePulmonarydiseas e&tumoursCardiovascularsystemPer icardialeffusion - Rheumaticheartdisease - Infective endocarditis,atherosclerosis, - Ischemia, infarction &aneurysm Gastrointestinal Tract - Pepticulcer,typhoid - Carcinoma of GI tract -buccal, Esophageal, - Gastric &intestinalLiver,Gall bladder &pancreas - Hepatitis, Chronic liverabscess,cirrhosis - Tumoursofliver,gallbladderandpancreas, - Cholecystitis - Kidneys&Urinarytract - Glomerulonephritis,pyelonephritis - Calculi, renal failure, renalcarcinoma&cystitis - Male genital systemsCryptorchidismtesticularatroph y - Prostatic hyperplasia,Carcinoma Penis &prostate • Femalegenitalsystem.Fibroids Carcinoma cervix andEndometrium - Vesicular mole,choriocarcinoma - Ectopic gestation - OvariancyST&tumoursCancerBreast Central Nervous systemHydrocephalus,Meningitis	

Teaching- Learning Strategies

- Management. of
- Professional development.

Lecture cum Discussion

- Visualization. ...
- Cooperative learning. ...
- Inquiry-based instruction. ...
- Differentiation. ...
- Technology in the **classroom**. ...
- Behaviour
- High-Fidelity Simulation. ...
- Concept Mapping. ...
- Online Course. ... Games. ...
- Role Playing. ...
- Jigsaw **Classroom**. ...
- Case Study.

Assessment Techniques of each topic of the course

S. No	Topic	Assessment techniques
1.	Importance of the study of pathology	Short answer and objective type
2.	Special pathology	Short answer and objectivive type • Posttests Checklist
3.	Tumours,meningiomasgliomas	Short answer and objective type
4.	Arthritis	Short answer and objective type Performanceassessment

(19AHN13) -ADULT HEALTH NURSING I WITH INTEGRATED PATHOPHYSIOLOGY (including BCLS module)

PLACEMENT : IIISEMESTER

THEORY- 6 Credits (120 hrs) PRACTICAL- Lab/Skill lab- 1 Credit (40 hrs) Clinical- 6 Credits (480hrs)

DESCRIPTION: This course is designed to equip the students to review and apply their knowledge of Anatomy, Physiology, Biochemistry and Behavioral sciences in caring for adult patients with Medical / Surgical disorders using nursing process approach and critical thinking. It also intends to develop competencies required for assessment, diagnosis, treatment, nursing management, and supportive /palliative care to patients with various Medical Surgicaldisorders.

COMPETENCIES

On completion of Medical Surgical Nursing I course, students will be able to

1. Explain the etiology, pathophysiology, manifestations, diagnostic studies, treatments and complications of common medical andsurgical disorders
2. Perform complete health assessment to establish a data base for providing quality patient care and integrate the knowledge of anatomy, physiology and diagnostic tests in the process of datacollection
3. Identify diagnoses, list them according to priority and formulate nursing care plan
4. Perform nursing procedures skillfully and apply scientific principles while giving comprehensive nursing care topatients
5. Integrate knowledge of pathology, nutrition and pharmacology in caring for patients experiencing various medical and surgicaldisorders
6. Identify common diagnostic measures related to the health problems with emphasis on nursing assessment andresponsibilities
7. Demonstrate skill in assisting / performing diagnostic and therapeutic procedures
8. Demonstrate competencies/skills to patients undergoing treatment for medical surgicaldisorders
9. Identify the drugs used in treating patients withmedicalsurgicalconditions
10. Plan and give relevant individual and group education on significant medical surgicaltopics
11. Maintain safe environment for patients and the health care personnel in the hospital
12. Integrate evidence-based information while giving nursing care topatients

COURSE CONTENT

UNIT	HRS.	LEARNING OUTCOMES	CONTENT	TEACHING LEARNING ACTIVITIES	ASSESSMENT METHODS
I	6 (T) 4 (L/SL)	Narrate the evolution of medical surgical nursing Apply nursing process in caring for patients with medical surgical problems Execute the role of a nurse in various medical surgical setting Develop skills in assessment and care of wound Develop competency in providing pre and postoperative care	**Introduction** • Evolution and trends of medical and surgicalnursing • International classification ofdiseases • Roles and responsibility of a nurse in medical and surgical settings o Outpatientdepartment o In-patient unit o Intensive careunit • Introduction to medical and surgical asepsis o Inflammation,infection o Wound healing – stages, influencingfactors o Wound care and dressing technique • Care of surgicalpatient o pre-operative o post-operative • Alternative therapies used in caring for patients with Medical SurgicalDisorders	• Lecture cum discussion • Demonstration & Practice session • Role play • Visit to outpatient department, in patient and intensive care unit	• OSCE
II	11 (T) 4 (L/SL)	Explain organizational set up of the operating theatre Differentiate the role of scrub nurse and circulating nurse Describe the different positioning for various surgeries Apply principles of asepsis in handling the sterile equipment	**Intraoperative Care** • Organization and physical set up of the operation theatre o Classification o O.TDesign o Staffing o Members of the OTteam o Duties and responsibilities of the nurse inOT • Position and draping for common surgicalprocedures • Instruments, sutures and suture materials, equipment for commonsurgical procedures • Disinfection and sterilization ofequipment • Preparation of setsfor	• Lecture cum Discussion • Demonstration, Practice session, and Case Discussion • Visit to receiving bay	• Caring for patient intra operatively • Submit a list of disinfectants used for instruments with the action and precaution

		Demonstrate skill in scrubbing procedures Demonstrate skill in assessing the patient and document accurately the surgical safety checklist Develop skill in assisting with selected surgeries Explain the types, functions, and nursing considerations for different types of anaesthesia	common surgical procedures - Scrubbing procedures – Gowning, masking and gloving - Monitoring the patient during theprocedures - Maintenance of the therapeutic environment in OT - Assisting in major and minor operation, handling specimen - Prevention of accidents and hazards inOT - Anaesthesia- types, methods of administration,effects and stages, equipment & drugs - Legalaspects		
III	6 (T) 4 (L/S L)	Identify the signs and symptoms of shock and electrolyte imbalances Develop skills in managing fluid and electrolyte imbalances Perform pain assessment and plans for the nursing management	**Nursing care of patients with common signs and symptoms and management** - Fluid and electrolyte imbalance - Shock - Pain	- Lecture, discussion, demonstration Case discussion	- Short answer - MCQ - Case report
IV	16 (T) 4 (L)	Demonstrate skill in respiratory assessment Differentiates different breath sounds and lists the indications Explain the etiology, pathophysiology, clinical manifestations, diagnostic tests, and medical, surgical, nutritional, and nursing management of common respiratoryproblems Describe the health behaviour to be adopted in preventing respiratory illnesses	**Nursing Management of patients with respiratory problems** - Review of anatomy and physiology ofrespiratory system - Nursing Assessment – history taking, physical assessment anddiagnostic tests - Common respiratory problems: o Upper respiratory tract infections o Chronic obstructive pulmonarydiseases o Pleuraleffusion, Empyema o Bronchiectasis o Pneumonia o Lungabscess	- Lecture, discussion, - Demonstration - Practice session - Case presentation - Visit to PFT Lab	- Essay - Short Answer - OSCE

			○ Cyst andtumors ○ ChestInjuries ○ Acute respiratory distresssyndrome ○ Pulmonaryembolism ▪ Health behaviours to prevent respiratory illness		
V	15 (T) 5 (L)	Explain the etiology, pathophysiology, clinical manifestations, diagnostic tests, and medical, surgical, nutritional, and nursing management of gastrointestinaldisorders Demonstrate skill in gastrointestinal assessment Prepare patient for upper and lower gastrointestinal investigations Demonstrate skill in gastric decompression, gavage, and stoma care Demonstrate skill in different feeding techniques	**Nursing Management of patients with disorders of digestive system** ▪ Review of anatomy and physiology of GIsystem ▪ Nursing assessment – History and physical assessment ▪ GIinvestigations ▪ Common GIdisorders: ○ Oral cavity-lips, gums andteeth ○ GI - Bleeding, Infections, Inflammation, tumors, Obstruction, Perforation & Peritonitis ○ Peptic & duodenalulcer, ○ Mal-absorption, Appendicitis, Hernias ○ Hemorrhoids,fissures, Fistulas ○ Pancreas- inflammation, cysts, andtumors ○ Liver-inflammation, cysts, abscess, cirrhosis, portal hypertension, hepatic failure,tumors ○ Gall bladder-inflammation, Cholelithiasis,tumors ▪ Gastric decompression, gavage and stoma care, different feedingtechniques ▪ Alternative therapies, drugs used in treatment of disorders of digestivesystem	▪ Lecture, Discussion ▪ Demonstration, Role play ▪ Problem Based Learning ▪ Visit to stoma clinic	▪ Quiz ▪ OSCE
VI	15 (T) 5 (L)	Explain the etiology, pathophysiology, clinical manifestations, diagnostic tests,and medical, surgical, nutritional, and nursing	**Nursing Management of patients with cardiovascular problems** ▪ Review of anatomy and physiology ofcardio-	▪ Lecture, discussion ▪ Demonstration	▪ Care plan ▪ Drug record

VII	7(T) 3(L)	management of cardiovascular disorders Demonstrate skill in cardiovascular assessment Prepare patient for invasive and non-invasive cardiac procedures Demonstrate skill in monitoring and interpreting clinical signs related to cardiac disorders Explain the etiology, pathophysiology, clinical manifestations, diagnostic tests, and medical, surgical, nutritional, and nursing management of hematologicaldisorders Interpret blood reports Prepare and provides health education on blood donation	vascular system Nursing Assessment-History and Physicalassessment Disorders of vascular system-Hypertension, arteriosclerosis,Raynaud's disease, aneurysm and peripheral vascular disorders Coronary artery diseases--coronaryatherosclerosis, Angina pectoris, myocardial infarction Valvular disorders - congenital andacquired Rheumatic heart disease - pericarditis, myocarditis, endocarditis, cardiomyopathies Cardiac dysrrhythmias, heart block Congestive heart failure, cor-pulmonale,pulmonary edema, cardiogenic shock, cardiac tamponade Cardiopulmonaryarrest **Nursing Management of patients with disorders of blood** Review of Anatomy and Physiology of blood,nursing assessment- history, physical assessment & Diagnostic tests Anemia,Polycythemia Bleeding Disorders – clotting factor defectsand platelets defects, thalassemia, leukemias, leukopenias,agranulocytosis Lymphomas,myelomas	Practice session Case Discussion Health education Drug Book/ presentation **BCLS Module** Field visit to blood bank Counseling	BLS/BCLS evaluation Interpretati on of blood reports Visitreport
VIII	8(T) 2(L)	Explain the etiology, pathophysiology, clinical manifestations, diagnostic tests, and medical, surgical, nutritional, and nursing management of	**Nursing management of patients with disorders of endocrine system** Review of anatomy and physiology ofendocrine system Nursing Assessment–	Lecture, discussion, demonstration Practice session	Prepare health education on self-administrat

		endocrine disorders Demonstrate skill in assessment of endocrine organ dysfunction Prepare and provides health education on diabetic diet Demonstrate skill in insulin administration	History and Physical assessment Disorders of thyroid and Parathyroid, Adrenaland Pituitary (Hyper, Hypo, tumors) Diabetesmellitus	CaseDiscussion Healtheducation	ion of insulin Submits a diabetic diet plan
IX	8(T) 2(L)	Explain the etiology, pathophysiology, clinical manifestations, diagnostic tests, and medical, surgical, nutritional, and nursing management of disorders of integumentarysystem Demonstrate skill in integumentary assessment Demonstrate skill in medicated bath Prepare and provide health education on skin care	**Nursing management of patients with disorders of Integumentary system** Review of anatomy and physiology ofskin Nursing Assessment – History and Physical assessment Infection and infestations; Dermatitis Dermatoses; infectious and Noninfectious Acne, Allergies, Eczema &Pemphigus Psoriasis, Malignant melanoma,Alopecia Special therapies, alternativetherapies Drugs used in treatment of disorders of integumentary system	Lecture, discussion Demonstration Practicesession CaseDiscussion	Drug report Preparation of Home care plan
X	11 (T) 4 (L)	Explain the etiology, pathophysiology, clinical manifestations, diagnostic tests, and medical, surgical, nutritional, and nursing management of musculoskeletal disorders Demonstrate skill in musculoskeletal assessment Prepare patient for radiological and non-radiological	**Nursing management of patients with musculoskeletal problems** Review of Anatomy and physiology ofthe musculoskeletal system Nursing Assessment-History and physical assessment, diagnostictests Musculoskeletal trauma: Dislocation, fracture, sprain, strain, contusion,amputation Musculoskeletal infections and tumors:Osteomyelitis, benign and malignant tumour Orthopedic modalities:Cast,	Lecture / Discussion Demonstration CaseDiscussion Healtheducation	Nursing care plan Prepare health teaching on care of patient withcast

		investigations of musculoskeletal system Demonstrate skill in crutch walking and splinting Demonstrate skill in care of patient with replacement surgeries Prepare and provide health education on bone healing	splint, traction, crutch walking - Musculoskeletal inflammation:Bursitis, synovitis, arthritis - Special therapies, alternative therapies - Metabolic bone disorder: Osteoporosis, osteomalaciaand Paget'sdisease - Spinal column defects and deformities – tumor, prolapsed intervertebraldisc, Pott's spine - Rehabilitation,prosthesis - Replacementsurgeries		
XI	17 (T) 3 (L)	Explain the etiology, pathophysiology, clinical manifestations, diagnostic tests, and medical, surgical, nutritional, and nursing management of patients with communicable diseases Demonstrate skill in barrier and reverse barrier techniques Demonstrate skill in execution of different isolation protocols	**Nursing management of patients with Communicable diseases** - Overview of infectious diseases, theinfectious process - Nursing Assessment – History and Physical assessment, Diagnostictests - Tuberculosis - Diarrhoeal diseases, hepatitis A-E,Typhoid - Herpes, Chickenpox, Smallpox, Measles, Mumps, Influenza - Meningitis - Gasgangrene - Leprosy - Dengue, Plague, Malaria, Chikungunya, swineflu, Filariasis - Diphtheria, Pertussis, Tetanus,Poliomyelitis - Special infection control measures: Notification, Isolation,Quarantine, Immunization,	- Lecture, discussion, demonstration - Practicesession - Case Discussion / seminar - Healtheducation - Drug Book/ presentation - **Refer TB control & Management module**	- Prepares and submits protocol on various isolation techniques -

CLINICAL PRACTICUM

CLINICALPRACTICUM : 6 Credits (480 Hrs) - 18 weeks x 27 hrs

PRACTICECOMPETENCIES

On completion of the clinical practicum, the students will be able to apply nursing process and critical thinking in delivering holistic nursing care including rehabilitation to the adult patients undergoing surgery, with shock and fluid and electrolyte imbalance and with selected medical & surgical conditions i.e., Gastrointestinal, Respiratory, Endocrine, Orthopedic, Dermatology and Cardiovascular disorders.

The students will be competent to:

1. Utilize the nursing process in providing care to the sick adults in thehospital
    a. Perform complete health assessment to establish a data base for providing quality patientcare
    b. Integrate the knowledge of diagnostic tests in the process of data collection
    c. Identify nursing diagnoses and list them according topriority
    d. Formulate nursing care plan, using problem solvingapproach
    e. Apply scientific principles while giving nursing care topatients
    f. Perform nursing procedures skillfully onpatients
    g. Establish /develop interpersonal relationship with patients and family members
    h. Evaluate the expected outcomes and modify the plan according to the patientneeds
2. Provide comfort and safety to adult patients in thehospital
3. Maintain safe environment for patients duringhospitalization
4. Explain nursing actions appropriately to the patients and familymembers
5. Ensure patient safety while providing nursingprocedures
6. Assess the educational needs of the patient and their family related to medical and surgical disorders and provide appropriate health education topatients
7. Provide pre, intra and post-operative care to patients undergoingsurgery
8. Integrate knowledge of pathology, nutrition and pharmacology for patients experiencing various medical and surgicaldisorders
9. Integrate evidence-based information while giving nursing care topatients
10. Demonstratetheawarenessoflegalandethicalissuesinnursingpractice

I. NURSING MANAGEMENT OF PATIENTS WITH MEDICAL CONDITIONS

A. SkillLab

Use of manikins and simulators

- Intravenoustherapy
- Oxygen through mask
- Oxygen through nasalprongs
- Venturimask
- Nebulization
- Chestphysiotherapy

B. ClinicalPostings

Clinical area/unit	Duration in weeks	Learning Outcomes	Procedural competencies/Clinical skills	Clinical Requirements	Assessment methods

General medical	4	Develop skill in intravenous injection administration and IV therapy
		
		Assist with diagnostic procedures
		
		Develop skill in the Management of patients with Respiratory problems
		
		Develop skill in managing patients with metabolic abnormality
			- Intravenoustherapy
			  - IV cannulation
			  - IV maintenance and monitoring
			  - Administration of IV medication
			- Care of patient with Central line
			- Preparation andassisting andmonitoring of patients undergoing diagnostic procedures such as thoracentesis, Abdominal paracentesis
			Management patients with respiratory problems
			- Administration of oxygen through mask, nasalprongs, venturi mask
			- Pulseoximetry
			- Nebulization
			- Chestphysiotherapy
			- Posturaldrainage
			- Oropharyngealsuctioning
			- Care of patient with chest drainage
			- DietPlanning
			  - High Proteindiet
			  - Diabeticdiet
			- Insulinadministration
			- MonitoringGRBS
				- Care Study – 1
				- Health education
				- Clinical presentation / Care note) -1
					- Clinical evaluation
					- OSCE
					- Care Study evaluation
					- Care Note/ Clinical presentation

II. NURSING MANAGEMENT OF PATIENTS WITH SURGICAL CONDITIONS

A. SkillLab

Use of manikins and simulators

- Nasogastric aspiration
- Surgicaldressing
- Sutureremoval
- Colostomy care / ileostomycare
- Enteralfeeding

B. Clinicalpostings

Clinical area/unit	Duration in weeks	Learning Outcomes	Procedural competencies/Clinical skills	Clinical Requirements	Assessment methods
General surgical wards	4	Develop skill in caring for patients during pre and post- operative period Assist with diagnostic procedures Develop skill in managing patient with Gastro-intestinal Problems Develop skill in wound management	• Pre-Operativecare • Immediate Post-operativecare • Post-operative exercise • Painassessment • PainManagement • Assisting diagnostic procedure and after care of patients undergoing o Colonoscopy o ERCP o Endoscopy o LiverBiopsy • Nasogastric aspiration • Gastrostomy / Jejunostomyfeeds • Ileostomy / Colostomycare • Surgicaldressing • Sutureremoval • Surgicalsoak • Sitzbath • Care ofdrain	• Care study – 1, Care Note – 1 • Health teaching • Clinical Presentation / Care note) -1	• Clinical evaluation, OSCE • Carestudy • Care note/ Clinical presentation

III. NURSING MANAGEMENT OF PATIENTS WITH CARDIAC CONDITIONS

A. SkillLab

Use of manikins and simulators

- Cardiovascularassessment
- InterpretingECG
- CPR
- ABGanalysis
- Taking bloodsample
- Arterial blood gas analysis –interpretation

B. Clinicalpostings

Clinical area/unit	Duration in weeks	Learning Outcomes	Procedural competencies/Clinical skills	Clinical Requirements	Assessment methods
Cardiology wards	2	Develop skill in Management of patients with cardiac problems Develop skill in management of patients with disorders of Blood	Cardiac monitoring Recording and interpreting ECG Arterial blood gas analysis – interpretation Administer cardiac drugs Preparation and after care of patients for cardiac catheterization CPR Collection of blood sample for Blood grouping/cross matching Blood sugar Serumelectrolytes Assisting with blood transfusion Assisting for bone marrow aspiration Application of antiembolism stockings (TED hose) Application / maintenance of sequential Compression device	Cardiac assessment – 1 Drug presentation - 1	Clinical evaluation Drug presentation

IV. NURSING MANAGEMENT OF PATIENTS WITH DISORDERS OF INTEGUMENTARYSYSTEM

A. SkillLab

Use of manikins andsimulators

Application of topical medication

B. Clinicalpostings

Clinical area/unit	Duration in weeks	Learning Outcomes	Procedural competencies/Clinical skills	Clinical Requirements	Assessment methods
Dermatology wards	1	Develop skill in management of patients with disorders of Integumentary system	▪ Intradermal injection- Skin allergy testing ▪ Application of topical medication ▪ Medicated bath		▪ Clinical evaluation

V. NURSING MANAGEMENT OF PATIENTS WITH COMMUNICABLEDISEASES

A. SkillLab

- Barrier Nursing
- Reverse Barrier Nursing
- Standardprecautions

B. Clinicalpostings

Clinical area/unit	Duration in weeks	Learning Outcomes	Procedural competencies/Clinical skills	Clinical Requirements	Assessment methods
Isolation ward	1	Develop skill in the management of patients requiring isolation	▪ Barrier Nursing ▪ Reverse barriernursing ▪ Standard precautions (Universalprecaution) Use of PPE, needle stick and sharp injury prevention, Cleaning and disinfection, Respiratory hygiene, waste disposal and safe injection practices)	▪ Care Note –1	▪ Clinical evaluation ▪ Carenote

VI. NURSING MANAGEMENT OF PATIENTS WITHMUSCULOSKELETAL PROBLEMS

A. SkillLab

Use of manikins and simulators

- Range of motionexercises
- Muscle strengthening exercises
- Crutchwalking

B. Clinicalpostings

Clinical area/unit	Duration in weeks	Learning Outcomes	Procedural competencies/Clinical skills	Clinical Requirements	Assessment methods
Orthopedic wards	2	Develop skill in management of patients with musculoskeletal problems	• Preparation of patient with Myelogram / CT /MRI • Assisting with application &removal of POP /Cast • Preparation, assisting and after care of patient with Skin traction / skeletaltraction • Care oforthotics • Muscle strengthening exercises • Crutchwalking • Rehabilitation	• Care Note –1	• Clinical evaluation, • Carenote

VII. NURSING MANAGEMENT OF PATIENTS IN THE OPERATING ROOMS A. Skill Lab

Use of manikins and simulators

- Scrubbing, gowning andgloving
- Orient to instruments for commonsurgeries
- Orient to suturematerials
- Positioning

B. Clinical postings

Clinical area/unit	Duration in weeks	Learning Outcomes	Procedural competencies/Clinical skills	Clinical Requirements	Assessment methods
Operation theatre	4	Develop skill in caring for intraoperative patients	¡ Position anddraping ¡ Preparation of operationtable ¡ Set up of trolley withinstrument ¡ Assisting in major and minor operation ¡ Disinfection and sterilization of equipment ¡ Scrubbing procedures – Gowning, masking andgloving ¡ Intra operativemonitoring	¡ Assist as circulatory nurse - 5 ¡ Positioning &draping -5 ¡ Assist as scrub nurse in major surgeries -5 ¡ Assist as scrub nurse in minor surgeries –5	Clinical evaluation, OSCE

19PPE14 - PROFESSIONALISM,PROFESSIONAL VALUE&ETHICS INCLUDING BIOETHICS

Introduction of the Course

This course introduces students to the ethical dimensions of clinical medicine and the related sciences. It offers them basic language and methodology to critically examine these dimensions. The course format integrates lecture and active case discussion to provide both the necessary philosophical grounding and the real-world skills sought by students.

Course Objective

Oncompletionofthecourse, thestudents willbeableto:

- To introduce students to the ethical dimensions of clinical medicine and the related sciences. The course offers them the basic language and methodology to critically examine these 4 dimensions.
- The course format integrates lecture and active case discussion to provide both the necessary philosophical grounding and the real-world skills sought by students.
- Course Learning Outcomes Close Ali

SL NO	LEARNING OBJECTIVES	PROFESSIONALISM,PROFESSIONAL VALUE&ETHICS INCLUDING BIOETHICS	Hrs
I	explain the introduction to nursing ethics	**INTRODUCTION TO NURSING ETHICS** • Professional Codes of Ethics in Nursing • ANA Code of Ethics for Nurses • ICN Code of Ethics for Nurses • Common Threads Between the ANA and ICN Codes	4
II	Discuss the professional boundaries in nursing	**PROFESSIONAL BOUNDARIES IN NURSING** • Respecting patients' dignity • Right to self-determination	4

		• Delegating tasks appropriately • Practicing good judgment • Accepting accountability in practice • Alleviating suffering • Being attentive to patients' interests • Working within the nurse practice acts and nursing standards of practice	
III	State the Ideal nursing ethical competencies	**IDEAL NURSING ETHICAL COMPETENCIES** Legal Perspective: Categories of Negligence That Lead to Malpractice Lawsuits	**4**
IV	Identify theMoral integrity	**MORAL INTEGRITY** • Moral Distress • Honesty • Truthfulness and Truth telling • Therapeutic Privilege • Benevolence • Wisdom • Moral Courage	**5**
V	Explain empowerment for patients and nurses	**Empowerment for patients and nurses** • Review the traits of a professional and the professional development • Propose solutions to practice setting conflicts that are ethically and legally sensitive.	**5**
VI	describe theValues and moral development	**VALUES AND MORAL DEVELOPMENT** • Discuss why values clarification is important both personally and professionally. • Valuing process • Define essential professional values and behaviour.	**5**
VII	discuss the Ethical decision making	**ETHICAL decision making**	**3**

Teaching- Learning Strategies

- management. OfProfessional development.
  Lecture cum Discussion
- Visualization. ...
- Cooperative learning. ...
- Inquiry-based instruction. ...
- Differentiation. ...
- Technology in the **classroom**. ...
- Behaviour
- High-Fidelity Simulation. ...
- Concept Mapping. ...
- Online Course. ... Games. ...
- Role Playing. ...
- Jigsaw **Classroom**. ...
- Case Study.

Assessment Techniques of each topic of the course

S. No	Topic	Assessment techniques
1.	Introduction to nursing ethics	Short answer and objective type
2.	Professional boundaries in nursing	Short answer and objective type
3.	Ideal nursing ethical competencies	Short answer and objective type
4.	Moral integrity	Short answer and objective type Performanceassessment
5.	Empowerment for patients and nurses	Short answer and objective type, Knowledgeevaluation-Quiz &Performanceassessment -Checklist
6.	Values and moral development	Short answer, Objective type, Knowledgeassessment byshort answers,objectivetype Performanceassessment

PHARMACOLOGY II

PLACEMENT-IVSemester **Theory:** 2 Credits (40Hours)

IX	4	Describe drugs used in disorders of ear, nose, throat and eye and nurses' responsibilities	**Drugs used in disorders of ear, nose, throat & Eye** ▪ Antihistaminics ▪ Topical applications for eye (Chloromphenicol,Gentamycin eye drops), ear (Soda glycerine, boric spirit ear drops), nose and buccal cavity-chlorhexidine mouthwash ▪ Composition, action, dosage, route,indications, contraindications, drug Interactions, side effects, adverse effects, toxicity and role of nurse	▪ Lecture cum Discussion ▪ Drug study/ presentation	▪ Short answer Objective type
X	4	Describe drugs acting on urinary system & nurse's responsibilities	**Drugs used on urinary system** ▪ Pharmacology of commonly useddrugs o Renin angiotensinsystem o Diuretics andantidiuretics o Drugs toxic tokidney o Urinary antiseptics o Treatment of UTI – acidifiers andalkalinizers ▪ Composition, action, dosage, route, indications, contraindications,Drug Interactions, side effects, adverse effects toxicity and role of nurse	▪ Lecture cum Discussion ▪ Drug study/ presentation	▪ Short answer Objective type
XI	10	Describe drugs used on nervous system & nurse's responsibilities	**Drugs acting on nervous system** ▪ Basis & applied pharmacology of commonly useddrugs ▪ Analgesics andanaesthetics o Analgesics- Non steroidal anti-inflammatory(NSAID)drugs o Antipyretics o Opioids & other central analgesics □ General (techniques of GA, pre anesthetic medication) & local anesthetics □ Gases: oxygen, nitrous, oxide, carbon-dioxide &others ▪ Hypnotics andsedatives ▪ Skeletal musclerelaxants ▪ Antipsychotics	▪ Lecture cum Discussion ▪ Drug study/ presentation	▪ Short answer Objective type

			○ Mood stabilizers ▪ Antidepressants ▪ Anti AnxietyDrugs ▪ Anticonvulsants ▪ Drugs for neurodegenerative disorders &miscellaneous drugs ▪ Stimulants, ethyl alcohol and treatment of methyl alcohol poisoning ▪ Composition, action, dosage, route, indications, contraindications,drug Interactions, side effects, adverse effects toxicity and role of nurse		
XII	5	Describe drugs used for hormonal disorder & supplementation, contraception & medical termination of pregnancy & nurse's responsibilities	**Drugs used for hormonal, disorders and supplementation, contraception and medical termination of pregnancy** ▪ Estrogens andprogesterones ○ Oral contraceptives and hormone replacement therapy ▪ Vaginalcontraceptives ▪ Drugs for infertility and medical terminationof pregnancy ○ Uterine stimulants and relaxants ▪ Composition, actions dosage routeindications contraindications, drugs interactions, side effects, adverse, effects, adverse effects, toxicity and role of nurse	▪ Lecture cum Discussion ▪ Drug study/ presentation	▪ Short answer Objective ▪ type
XIII	3	Develop understanding about important drugs used for women before, during and after labour	**Drugs used for pregnant women during antenatal, labour and postnatal period** ▪ Tetanusprophyaxis ▪ Iron and Vit K_1 supplementation ▪ Oxytocin,Misoprostol ▪ Ergometrine ▪ Methyl prostaglandinF2-alpha ▪ Magnesiumsulphate ▪ Calciumgluconate	▪ Lecture cum Discussion ▪ Drug study/ presentation	▪ Short answer Objective ▪ type

XIV	10	Describe drugs used in deaddiction, emergency, poisoning, vitamins & minerals supplementation,drugs	**Miscellaneous** ▪ Drugs used fordeaddiction ▪ Drugs used in CPR and emergency-adrenaline, Chlorpheniramine,	▪ Lecture cum Discussion ▪ Drug study/ presentation	▪ Short answer ▪ Objective type

		used for immunization & immune-suppression & nurse's responsibilities	hydrocortisone, Dexamethasone
			- IV fluids &electrolytes replacement
			- Common poisons, drugs used for treatment ofpoisoning
			  o Activatedcharcoal
			  o Ipecac
			  o Antidotes,
			  o Anti-snake venom(ASV)
			- Vitamins and minerals supplementation
			- Vaccines & sera (Universalimmunization program schedules)
			- Anticancer drugs-Chemotherapeutic drugs commonlyused
			- Immuno-suppressants and Immunostimulants		

XV	4	Demonstrate awareness of common drugs used in alternative system of medicine.	**Introduction to drugs used in alternative systems of medicine:** - Ayurveda, homeopathy, unaniand siddhaetc. - Drugs used for common ailments	- Lecture cum Discussion - Observational visit	- Shortanswer - Objective type

(19AHN17) - ADULT HEALTH NURSING II WITH INTEGRATED PATHOPHYSIOLOGY INCLUDING GERIATRIC NURSING (with Health Assessment module)

PLACEMENT : IVSEMESTER

THEORY - 120 hours (6 Credits)
PRACTICUM - Lab/Skill lab- 40 hrs (1 Credit) Clinical - 480 hours (6Credits)

DESCRIPTION: This course is designed to equip the students to review and apply their knowledge of Anatomy, Physiology, Biochemistry and Behavioral sciences in caring for adult patients with Medical / Surgical disorders using nursing process approach. It also intends to develop competencies required for assessment, diagnosis, treatment, nursing management, and supportive /palliative and rehabilitativecaretoadultpatientswithvariousMedicalSurgicaldisorders.

COMPETENCIES

On completion of the course the students will apply nursing process and critical thinking in delivering holistic nursing care with selected Medical & Surgical conditions.

At the completion of Adult Health Nursing II course, students will

1. Explain the etiology, pathophysiology, manifestations, diagnostic studies, treatmentsandcomplicationsofcommonmedicalandsurgicaldisorders.
2. Perform complete health assessment to establish a data base for providing quality patient care and integrate the knowledge of diagnostic tests in the process of datacollection
3. Identify diagnoses, list them according to priority and formulate nursing careplan
4. Perform nursing procedures skillfully and apply scientific principles while giving comprehensive nursing care topatients
5. Integrate knowledge of anatomy, physiology, pathology, nutrition and pharmacology in caring for patients experiencing various medical and surgicaldisorders
6. Identify common diagnostic measures related to the health problems with emphasis on nursing assessment andresponsibilities
7. Demonstrate skill in assisting / performing diagnostic and therapeutic procedures
8. Demonstrate competencies/skills to patients undergoing treatment for medical surgicaldisorders
9. Identify the drugs used in treating patients with medicalsurgicalconditions
10. Plan and provide relevant individual and group education on significant medical surgicaltopics
11. Maintain safe environment for patients and the health care personnel in the hospital

COURSE OUTLINE

UNIT	TIME (HRS)	LEARNING OUTCOMES	CONTENT	TEACHING/ LEARNING ACTIVITIES	ASSESSMENT METHODS
I	10(T) 4(L)	Explain the etiology, pathophysiology, clinical manifestations, diagnostic measures and medical, surgical, nutritional and nursing management of patients with ENT disorders	**Nursing management of patient with disorders of Ear, Nose and Throat** (Includes etiology, pathophysiology, clinical manifestations, diagnostic measures and medical, surgical, nutritional and nursingmanagement) ▪ Review of anatomy and physiology of theear, nose andthroat ▪ History, physical assessment, and diagnostic tests ▪ **Ear** o External ear: deformities otalgia, foreignbodies and tumors o Middle year- impacted wax, tympanic, membrane perforation, otitis media, andtumors. o Inner ear- Meniere's disease, labyrinthitis, ototoxicitytumors ▪ Upper respiratory airway infections –Rhinitis, sinusitis, tonsillitis, laryngitis ▪ Epistaxis, Nasal obstruction, laryngeal obstruction ▪ Deafness and its management	▪ Lecture and discussion ▪ Demonstration of hearing aids, nasal packing, medication administration ▪ Visit to audiology and speech clinic	▪ MCQ ▪ Short answers ▪ Essay ▪ OSCE ▪ Assessment of skill (using checklist) ▪ Quiz ▪ Drug book
II	10(T) 4(L)	Explain the etiology, patho-physiology, clinical manifestations, diagnostic measures and	**Nursing management of patient with disorder of eye** ▪ Review of anatomy physiology of theeye ▪ History, physical assessment, diagnostic assessment **Eye Disorders**	▪ Lecture and discussion ▪ Demonstration of visual aids, lens, medication administration ▪ Visit to eyebank	▪ MCQ ▪ Short Essay ▪ OSCE ▪ Drug book

		management of patients with disorders of eye Describe eye donation, banking and transplantation	Refractive errors Eyelids – infection, deformities Conjunctiva – inflammation and infection bleeding Cornea- inflammation andinfection Lens- cataract Glaucoma Retinal detachment Blindness Eye banking, Eye donation		
III	9(T) 4 (L)	Explain the etiology, pathophysiology, clinical manifestations, diagnostic tests, and medical, surgical, nutritional, and nursing management of Kidney and urinary system disorders Demonstrate skill in genitourinary assessment Prepare patient for genitourinary investigations Prepare and providehealth education on prevention of renal calculi	**Nursing management of patient with Kidney and Urinary problems** Review of Anatomy and physiology ofthe genitourinary system History, physical assessment, diagnostic tests Urinary tract infections- acute, chronic, lower, upper - Nephritis, nephrotic syndrome, Renalcalculi Acute and chronic renal failure Disorders of ureter, urinary bladder and Urethra Disorders of prostate - inflammation,infection, stricture, obstruction, and Benign Prostate Hypertrophy	Lecture cum Discussion Demonstration Case Discussion Health education Drug book & Field visit- Visits hemodialysis unit	MCQ Short Note Long essay Case report Submits health teaching on prevention of urinary calculi
IV	5 (T)	Explain the etiology, pathophysiology, clinical manifestations, diagnostic tests, and medical, surgical,	**Nursing management of disorders of male reproductive system** Review of Anatomy and physiology of themale reproductive system History, Physical Assessment,Diagnostic	Lecture, Discussion Case Discussion Health education	Short essay

		nutritional, and nursing management of male reproductive disorders	tests - Infections of testis, penis andadjacent structures – Phimosis, Epididymitis, and Orchitis - Sexual dysfunction, infertility,contraception - Male Breast Disorders - gynecomastia, tumor, climactericchanges		
V	8(T) 4(L)	Explain the etiology, patho-physiology, clinical manifestations, types, diagnostic measures and management of patients with disorders of burns/cosmetic surgeries and its significance	**Nursing management of patient with burns, reconstructive and cosmeticsurgery** - Review of anatomy and physiology of the skinand connective tissues - History, physical assessment, assessment of burns and fluid& electrolyte loss - Burns - Reconstructive and cosmetic surgeryfor burns, congenital deformities, injuries and cosmetic purposes, genderreassignment - Legal and ethicalaspects - Special therapies: LAD, vacuumed dressing. Laser, liposuction, skin health rejuvenation, use of derma filters	- Lecture and discussion - Demonstration of burn wound assessment, vacuum dressing and fluid calculations - Visit to burn rehabilitation centers	- OSCE - Short notes
VI	16(T) 4(L)	Explain the etiology, pathophysiology, clinical manifestations, diagnostic measures and management of patients with neurological disorders	**Nursing management of patient with neurological disorders** - Review of anatomy and physiology of the neurological system - History, physical, neurologicalassessment, diagnostic tests - Headache, Headinjuries - Spinal injuries – Paraplegia,Hemiplegia, Quadriplegia - Spinal cord compression–	- Lecture and discussion - Demonstration of physiotherapy, neuro assessment, tracheostomy care - Visit to rehabilitation center, long term care clinics, EEG, NCVstudy	- OSCE, short notes, Essay - Drug book

			herniation of in vertebral disc Intra cranial and cerebral aneurysms Meningitis, encephalitis, brain, abscess, neuro-cysticercosis Movement disorders – Chorea, Seizures &Epilepsies Cerebro-vascular disorders-CVA Cranial, spinal neuropathies – Bell's palsy, trigeminalneuralgia PeripheralNeuropathies Degenerative diseases - Alzheimer's disease, Parkinson's disease *Guillain-Barré syndrome*, Myasthenia gravis &Multiple sclerosis Rehabilitation of patient with neurologicaldeficit	unit,	
VII	12 (T) 4 (P)	Explain the etiology, pathophysiology, clinical manifestations, diagnostic tests, and medical, surgical, nutritional, and nursing management of immunological disorders Prepare and provideshealth education on prevention of HIV infection Describe the nationalinfection control programmes Describe the drug therapy forAIDS	**Nursing management of patients with Immunological problems** Review of Immune system Nursing Assessment – History and Physical assessment HIV &AIDS: Epidemiology, Transmission, Prevention of Transmission Role of Nurse; Counseling,Health education and home care consideration National AIDS Control Program –NACO, various national and international agencies, Infection control programs Rehabilitation	Lecture, discussion CaseDiscussion / seminar Refer Module on HIV/AIDS	

VIII	10(T) 4(L)	Explain the etiology, pathophysiology, types, clinical manifestations, staging, diagnostic measures and management of patients with different cancer, treatment modalities including newer treatments	**Nursing management of patient with Oncological conditions** • Structure and characteristics of normal and cancercells • History, physically assessment, diagnostic tests. • Prevention screening early detections warning sign ofcancer • Epidemiology, etiology classification, Pathophysiology,staging clinical manifestations, diagnosis, treatment modalities and medical and surgical nursing management of Oncologicalcondition • Common malignancies of various body systemeye, ear, nose, larynx, breast, cervix, ovary, uterus, sarcoma, renal, bladder, kidney, prostate Brain, Spinal cord. • Oncologicalemergencies • Modalities of treatment - Chemotherapy, Radiotherapy - Radiation safety, AERB regulations, Surgical intervention, Stem cell and bone marrow transplant, Immunotherapy, Gene therapy • Psychological aspects of cancer-anxiety, depression, insomnia, anger • Palliative care • Supportive care • Hospicecare	• Lecture and discussion • Demonstration of chemotherapy preparationand administration, • Visit to BMT, radiotherapy units (linear accelerator, brachytherapy, etc.), nuclear medicine unit,	• OSCE • Essay • Quiz • Drugbook • Counseling, health teaching

IX	15(T) 4(L)	Explain the types, policies, guidelines, prevention and management of disaster the etiology, pathophysiology, clinical manifestations, diagnostic measures and management of patients with acute emergencies	**Nursing management of patient in Emergency and Disaster situations** **Disaster Nursing** ¡ Concept and principles of disaster nursing,Related Policies ¡ Types of disaster; Natural andmanmade ¡ Disaster preparedness - Team, guidelines, protocols,equipment, resources ¡ Etiology, classification, Pathophysiology, staging,clinical manifestation, staging, clinical manifestation, diagnosis, treatment modalities and medical and surgical nursing management of patient with medical and surgical emergencies – Poly trauma, Bites, Poisoning and Thermal emergencies ¡ Principles of emergency management ¡ Medico legalaspects	¡ Lecture and discussion ¡ Demonstration of disaster preparedness (Mock drill) and triaging ¡ Filed visit to localdisaster management centers or demo by fire extinguishers ¡ Group presentation (role play, skit, concept mapping) on different emergency care ¡ **Refer Trauma care management/ ATCN module** ¡ Guided reading onNational Disaster Management Authority (NDMA) Guidelines	¡ OSCE ¡ Case presentations and case study
X	8(T)	Explain the Concept, physiological changes, and psychosocial problems of ageing Describe the nursing management of the elderly	**Nursing care of the elderly** ¡ History and physical assessment ¡ Aging process and age-related body changes and psychosocialaspects ¡ Stress and coping in elder patient ¡ Psychosocial and sexualabuse ofelderly ¡ Role of family and formaland non-formalcaregivers ¡ Use of aids and prosthesis (hearing aids,dentures) ¡ Legal and ethicalissues ¡ National programmesfor elderly, privileges, community programs and	¡ Lecture and discussion ¡ Demonstration of communication with visual and hearing impaired ¡ Field visit to old agehomes	¡ OSCE ¡ Case presentations ¡ Assignment on family systems of India focusing on geriatric population

			health services ¡ Home and institutional care		
XI	12(T) 8(L)	Explain the etiology, pathophysiology, clinical manifestations, diagnostic measures and management of patients in critical care units	**Nursing management of patients in critical Care units** ¡ Principles of critical care nursing ¡ Organization: physical set-up, policies, staffingnorms ¡ Protocols, equipment, andsupplies, ¡ Special equipment: ventilators, cardiac monitors, defibrillators, infusion pump, Resuscitationequipment ¡ Advanced Cardiac Life support ¡ Nursing management of critically illpatient ¡ Transitionalcare ¡ Ethical and Legal Aspects ¡ Breaking Bad News to Patients and/or their families— Communication with patient andfamily ¡ End of lifecare	¡ Lecture and discussion ¡ Demonstration ofACLS, mechanical ventilators, cardiac monitors ¡ Clinical practice in differentICUs	Objective questions and short notes Case presentations Assessment of skill on BLS/ACLS, monitoring of patients in ICU. Written assignment on ethical and legal issues in critical care
XII	5(T)	Describe the etiology, pathophysiology, clinical manifestations, diagnostic measures and management of patients with occupational/industrial health disorders	**Nursing management of patients occupational and industrial disorders** ¡ History, physical examination, Diagnostictests ¡ Occupational diseases andmanagement	¡ Lecture and discussion ¡ Industrialvisit	¡ Assignmenton industrial health hazards

ADULT HEALTH NURSING II - CLINICAL PRACTICUM
CLINICAL PRACTICUM: 6 Credits (480 Hours)
PRACTICE COMPETENCIES

On completion of the clinical practicum, the students will develop proficiency in applying nursing process and critical thinking in rendering holistic nursing care including rehabilitation to the adult / geriatric patients admitted in Critical Care Units, undergoing cosmetic and reconstructive surgery and with selected medical & surgical disorders of ear, nose, throat, eye, Genitourinary, reproductive, immunologic, nervous systems and in emergency / disasterconditions.

The students will be competent to

1. Utilize the nursing process in providing care to the sick adults in thehospital
    a. Perform complete health assessment to establish a data base for providing quality patientcare
    b. Integrate the knowledge of diagnostic tests in patientassignment
    c. Identify nursing diagnoses and list them according topriority
    d. Formulate nursing care plan, using problem solvingapproach
    e. Apply scientific principles while giving nursing care topatients
    f. Develop skill in performing nursing procedures applying scientific principle
    g. Establish /develop interpersonal relationship with patients and family members
    h. Evaluate the expected outcomes and modify the plan according to the patientneeds
2. Provide comfort and safety to adult patients in thehospital
3. Maintain safe environment for patients duringhospitalization
4. Explain nursing actions appropriately to the patients and familymembers
5. Ensure patient safety while providing nursingprocedures
6. Assess the educational needs of the patient and their family related to medical and surgical disorders and provide appropriate health education topatients
7. Provide pre, intra and post-operative care to patients undergoingsurgery
8. Integrate knowledge of pathology, nutrition and pharmacology for patients experiencing selected medical and surgicaldisorders
9. Integrate evidence-based information while giving nursing care topatients
10. Demonstratetheawarenessoflegalandethicalissuesinnursingpractice

I. Nursing Management of Patients with ENT disorders <u>A. SkillLab</u>
<u>Use of manikins and simulators</u>

- Tracheostomycare
- Instilling Ear and Nasalmedications
- Bandageapplication

B. Clinical postings

Clinical area/unit	Duration in weeks	Learning Outcomes	Procedural competencies/Clinical skills	Clinical Requirements	Assessment methods
ENT Ward & OPD	2	Provide care to patients with ENT disorders Educate the patients and their families	▪ Examination of ear, nose, throat and Historytaking ▪ Applying bandages toEar, Nose ▪ Tracheostomycare ▪ Preparation of patient, assisting and monitoringof patients undergoing diagnosticprocedures o Auditory screeningtests o **Audiometric tests** ▪ Preparing the patient and assisting inspecial procedures like Anterior/ posterior nasal packing, Ear Packing and Syringing ▪ Preparation and after care of patients undergoingENT surgical procedures ▪ Instillation of drops/medication	▪ ENT assessment -1 ▪ Case study/Clinical presentation -1 ▪ Drug Book	▪ Clinical evaluation ▪ OSCE ▪ Case report study/ Clinical presentation ▪ DrugBook

II. Nursing Management of Patients with EyeConditions

A. SkillLab

Use of manikins and simulators

- Instilling Eyemedications
- Eyeirrigation
- Eyebandage

B. Clinicalpostings

Clinical area/unit	Duration in weeks	Learning Outcomes	Procedural competencies/Clinical skills	Clinical Requirements	Assessment methods
Ophthalmology unit	2	Develop skill in providing care to patients with Eye disorders	▪ Historytaking, Examination of eyes and interpretation ▪ Assisting	▪ Eye assessment –1 ▪ Health teaching ▪ Case study/Clinical Presentation–1	▪ Clinical evaluation ▪ OSCE ▪ Clinical presentation

		Educate the patients and their families	procedures o Visual acuity o Fundoscopy, retinoscopy, ophthalmoscopy, tonometry, o Refractiontests Pre and post-operativecare Instillation of drops/medication Eye irrigation Application of eye bandage Assisting with foreign body removal		

III. Nursing Management of Patients with kidney and urinary systemdisorders

A. <u>SkillLab</u>

<u>Use of manikins and simulators</u>

- Assessment-kidney & urinarysystem
- Preparation–dialysis
- Catheterization and care

B. <u>Clinicalpostings</u>

Clinical area/unit	Duration in weeks	Learning Outcomes	Procedural competencies/Clinical skills	Clinical Requirements	Assessment methods
Renal ward/ nephrology ward including Dialysis unit	2	Develop skill in Management of patients with urinary, male reproductive problems	Assessment of kidney and urinary system o Historytaking o Physicalexamination o Testicularself-examination o digital rectalexam Preparation and assisting with diagnostic and therapeutic procedures o Cystoscopy, Cystometrogram, o Contrast studies-IVPetc o Peritonealdialysis o Hemodialysis, o Lithotripsy o Specific tests-Semen analysis, gonorreoeatest, Renal/ Prostate Biopsyetc Catheterization-care	Assessment -1, Drug presentation -1 Care study/Clinical presentation -1 Preparing and assisting in hemodialysis	Clinical evaluation Careplan OSCE Quiz Drug presentatio n

			¡ Bladder irrigation ¡ I/O recording andmonitoring ¡ Ambulation andexercise		

IV. Nursing Management of Patients with Burns and ReconstructiveSurgery

A. SkillLab

Use of manikins and simulators

¡ Assessment of burnswound

¡ Wounddressing

B. ClinicalPostings

Clinical area/unit	Duration in weeks	Learning Outcomes	Procedural competencies/Clinical skills	Clinical Requirements	Assessment methods
Burns unit/reconstructive surgical unit	2	Develop skill in burns assessment and providingcare to patients with different types of burns Develop skill in providing care to patients with different types of cosmetic and reconstructive surgeries	¡ Assessment ofburns ¡ First aid ofburns ¡ Fluid & electrolyte replacementtherapy ¡ Skincare ¡ Care of Burnwounds ¡ Bathing ¡ Dressing ¡ Pre-operative and post-operative careof patients ¡ Caring of skin graft and post cosmeticsurgery ¡ Rehabilitation	¡ burn wound assessment – 1 ¡ care study/case presentation -1	¡ Clinical evaluation, ¡ Care study/case report

V. Nursing Management of Patients with neurologicaldisorders

A. SkillLab

Use of manikins and simulators

¡ Range of motionexercises

¡ Muscle strengthening exercises

¡ Crutchwalking

B. Clinicalpostings

Clinical area/unit	Duration in weeks	Learning Outcomes	Procedural competencies/Clinical skills	Clinical Requirements	Assessment methods
Neurology-medical/ Surgery wards	3	Develop skill in Management of patients with Neurological problems	¡ History taking; Neurological Examination ¡ Patientmonitoring ¡ Prepare and assist for various invasive andnon-invasive diagnostic procedures ¡ Range of motion exercises, muscle strengthening ¡ Care of medical, surgical and rehabilitativepatients	¡ Neuro-assessment –1 ¡ Case study/ case presentation- 1 ¡ Drug presentation-1	¡ Clinical evaluation ¡ Neuro assessment OSCE ¡ Case report/ presentations

VI. Nursing Management of Patients with ImmunologicalDisorders

A. SkillLab

- ¡ Barrier Nursing
- ¡ Reverse Barrier Nursing

B. Clinicalpostings

Clinical area/unit	Duration in weeks	Learning Outcomes	Procedural competencies/Clinical skills	Clinical Requirements	Assessment methods
Isolation ward/Medical ward	1	Develop skill in the Management of patients with immunological disorders	¡ Historytaking ¡ Immunological status assessment (e.g. HIV)and Interpretation of specific tests ¡ Caring of patients with low immunity ¡ Practicing of standard safety measures, precautions/ barrier nursing / reverse barrier/isolation skills	¡ Assessment of immunestatus ¡ Teaching of isolation to patientand family care givers ¡ Nutritional management ¡ Care Note –1	¡ Carenote ¡ Quiz ¡ HealthTeaching

VII. Nursing Management of Patients with disorders of Oncologicalconditions

A. SkillLab

Use of manikins and simulators

- ¡ Application of topical medication
- ¡ Administration of chemotherapy

B. Clinicalpostings

Clinical area/unit	Duration in weeks	Learning Outcomes	Procedural competencies/Clinical skills	Clinical Requirements	Assessment methods
Oncology wards (including day care radiotherapy unit)	3	Develop skill in providing care to patients with oncological disorders	▪ History taking &physical examination of cancer patients ▪ Screening for common cancers – TNM classification ▪ Preparation, assisting and after care patients undergoing diagnostic procedures ▪ Biopsies/FNAC ▪ Papsmear ▪ Bone-marrow aspiration Various modalities of treatment ▪ Chemotherapy ▪ Radiotherapy ▪ Painmanagement ▪ Stomatherapy ▪ Hormonaltherapy ▪ Immunotherapy ▪ Genetherapy ▪ Alternative therapy ▪ Stoma care and feeding ▪ Caring of patients treated with nuclearmedicine ▪ Rehabilitation	▪ Assessment –1 ▪ Care study/clinical presentation -1 ▪ Pre and post-operative care of patient with various modesof cancer treatment ▪ Teaching on BSE to familymembers	▪ Clinical evaluation ▪ Care study ▪ Quiz ▪ Drug book

VIII. Nursing Management of Patients in emergencyconditions

A. SkillLab

Use of manikins and simulators

- Assessment –primary and secondarysurvey
- Trauma care-bandaging, wound care, splinting,positions

B. Clinicalpostings

Clinical area/unit	Duration in weeks	Learning Outcomes	Procedural competencies/Clinical skills	Clinical Requirements	Assessment methods
Emergency room	2 week	Develop skill in providing care to patients with emergency healthproblems	¡ Practicing'triage' ¡ Primary and secondary survey in emergency ¡ Examination, investigations & their interpretations, in emergency & disastersituations ¡ Emergency care of medical and traumatic injurypatients ¡ Documentations, assisting in legal procedures in emergency unit ¡ Managingcrowd ¡ Counseling the patient and family in dealing withgrieving & bereavement	¡ Triage ¡ Immediate care ¡ Use of emergenc y trolley	¡ Clinical evaluation ¡ Quiz

IX. Nursing Management of Patients in critical careunits

A. SkillLab

Use of manikins and simulators

- Assessment criticallyill
- ET tube set up–suction
- TTsuction
- Ventilator set up
- Chestdrainage
- Bag mask ventilation
- Central & Peripheralline
- Pacemaker

B. Clinicalpostings

Clinical area/unit	Duration in weeks	Learning Outcomes	Procedural competencies/Clinical skills	Clinical Requirements	Assessment methods
Critical Care Unit	2 Weeks	Develop skill in assessment of critically ill and providing care to patients with critical health conditions	¡ Assessment of critically ill patients ¡ Assisting in arterial puncture, ET tube intubation &extubation ¡ ABG analysis & interpretation -respiratory acidosis, respiratory alkalosis, metabolic acidosis, metabolic	¡ Hemodynamic monitoring ¡ Different scales used inICU ¡ Communicating with criticallyill Patients	¡ Clinical evaluation ¡ OSCE ¡ RASSscale assessment ¡ Use of VAE bundle VAP, CAUTI, BSI

			alkalosis - Setting up of Ventilator modes and settingsand care of patient on a ventilator - Set up of trolley with instruments - Monitoring and maintenance of Chest drainagesystem - Bag and maskventilation - Assisting and maintenance of Central andperipheral lines invasive - Setting up of infusion pump,defibrillator, - Drug administration- infusion, intracardic, intrathecal,epidural, - Monitoringpacemaker - ICU carebundle - Management of the dying patient in theICU		- Case Presentation

X. Nursing Management of Patients with geriatricillness

A. SkillLab

Use of manikins and simulators

- **Use of assistive safetydevices**

B. Clinicalpostings

Clinical area/unit	Duration in weeks	Learning Outcomes	Procedural competencies/Clinical skills	Clinical Requirements	Assessment methods
Geriatric ward	1 week	Develops kill in geriatric assessment and providing careto patients with geriatric illness	- History taking and assessment of Geriatricpatient	- Geriatric assessment – 1 - Care of normal and geriatric patient with illness - Fall risk assessment 1 - Functional status assessment -1	- Clinical evaluation Care plan

EDUCATIONAL TECHNOLOGY IN NURSINGEDUCATION (19ET18)

PLACEMENT **:**IVSEMESTER

THEORY: 2 credits (40hrs)
PRACTICUM: 1credit (40hrs)

DESCRIPTION: Thiscourseisdesignedtohelpthestudentstodevelopknowledge, attitudeandbeginningcompetenciesessentialforapplyingbasicprinciplesofteaching andlearningamongindividualsandgroupsbothineducationalandclinicalsettings.It also introduces basics of curriculum planning and organization. It further enables studentstoparticipateactivelyinteamandcollaborativelearning.

COMPETENCIES

On completion of the course, the students will be competent to

1. Develop basic understanding of theoretical foundations and principles of teaching andlearning
2. Initiate self- assessment to identify one's own learningstyles
3. Demonstrate understanding of various teaching styles that can be used, based on the learners' readiness andneeds
4. Develop understanding of basics of curriculum planning, andorganizing
5. Analyze and use different teaching methods effectively that are relevant to student population andsettings
6. Make appropriate decisions in selection of teaching learning activities integrating basicprinciples
7. Utilize active learning strategies that enhance critical thinking, team learning andcollaboration
8. Engage in team learning and collaboration through inter professionaleducation
9. Integrate the principles of teaching and learning in selection and use of educationalmedia/technology
10. Apply the principles of assessment in selection and use of assessment and evaluationstrategies
11. Construct simple assessment tools/tests integrating cognitive, psychomotor and affective domains of learning that can measure knowledge and competence of students
12. Develop basic understanding of student guidance through mentoring and academicadvising
13. Identify difficult situations, crisis and disciplinary/grievance issues experienced by students and provide appropriatecounseling
14. Engage in ethical practice in educational as well as clinical settings based on values, principles and ethicalstandards
15. Develop basic understanding of evidence-based teachingpractices
16. Analyze the current health care trends that are applicable to nursingeducation

COURSE OUTLINE
THEORY & PRACTICAL (LAB)

UNIT	TIME (Hours)		LEARNING OUTCOMES	CONTENT	TEACHING LEARNING ACTIVITIES	ASSESSMENT METHODS
	T	P				
I	4	2	Explain the definition, aims, types, approaches and scope of educational technology Compare and contrast the various educational philosophies Explain the teaching learning process, nature, characteristics and principles	**Introduction and theoreticalfoundations:** *Education and educational technology* ¡ Definition,aims ¡ Approaches and scope of educationaltechnology *Educational philosophy:* ¡ Definition of philosophy, education andphilosophy ¡ Comparison of educational philosophies ¡ Philosophy of nursing education *Teaching learning process:* ¡ Definition of teaching &learning ¡ Teaching learning as a process ¡ Nature and characteristics of teaching ¡ Principles ofteaching ¡ Barriers toteaching ¡ Nature and characteristics of learning ¡ Characteristics of adult learners ¡ Principles oflearning ¡ Learningtheories ¡ Barriers tolearning	¡ Lecture cum discussion **Group exercise**: Preparation of comparison table for different educational philosophies	¡ Quiz **Assessment of Assignment:** ¡ Learning theories-analysis of any one

II	5	5	Identify essential qualities/attributes of a teacher Describe the teaching styles of faculty	**Assessment and Planning** *Assessment of teacher* ▪ Essential qualities of a teacher ▪ Teaching styles-Formal authority, demonstrator, facilitator,delegator *Assessment of learner*	▪ Lecture cum discussion	▪ Short Answer ▪ Objective type

			Explain the determinants of learning and initiates self-assessment to identify own learning style Identify the factors that motivate the learner Define curriculum and classifytypes Identify the factors influencing curriculum development Develop skill in writing learning outcomes, and lesson plan	▪ Types oflearners ▪ Determinants of learning-learningneeds, readiness to learn, learningstyles ▪ Emotional intelligenceof the learner ▪ Motivational factors-personal factors, environmental factors and supportsystem **CurriculumPlanning** ▪ Curriculum –definition, types ▪ Curriculum design-components,approaches ▪ Curriculum development- factors influencing curriculum development, facilitators and barriers ▪ Writing learning outcomes/ behavioral objectives ▪ Basic principlesof writing course plan, unit plan and lesson plan	**Self-assessment exercise:** ▪ Identify your learning style using any learning style inventory (ex. Kolb's learning style inventory) ▪ Lecture cum discussion **Individual/group exercise**: ▪ Writing learning outcomes ▪ Preparation of a lessonplan	**Assessment of Assignment:** ▪ Individual /Group
III	8	15	Explain the principles and strategies of classroom management Describe different methods/ strategies of teaching and develop beginning skill in using various teaching methods	**Implementation** *Teaching in Classroom and Skill lab: Teaching Methods* ▪ Classroom management-principles andstrategies ▪ Classroom communication o Facilitators and Barriers to classroom communication o Information communication technology (ICT)- ICT used ineducation *Teaching methods: Features, advantages and disadvantages*	▪ Lecture cum Discussion ▪ Practice teaching/ Micro teaching ▪ Exercise (Peer teaching) ▪ Patient	▪ Short Answer ▪ Objective type ▪ Assessment of microteaching

				Lecture, Group		

			Explain active learning strategies and participate actively in team and collaborative learning	discussion, microteaching - Skill lab-simulations, Demonstration & re demonstration - Symposium, panel discussion, seminar, scientific workshop, exhibitions - Role play,project - Fieldtrips - Self-directed learning (SDL) - Computer assisted learning - One- to- one instruction *Active learning strategies* - Team basedlearning - Problem basedlearning - Peersharing - Case studyanalysis - Journaling - Debate - Gaming - Inter professional education	teaching session - Construction of game-puzzle - Teaching in groups- interdisciplinary	
IV	3	3	Enumerate the factors influencing selection of clinical learning experiences Compare the advantages of different clinical education models Develop skill in using different clinical teaching strategies	**Teaching in the clinical setting: Teaching methods** - Clinical learning environment - Factors influencing selection of clinical learningexperiences - Models of clinical education-traditional mode,collaborative model, preceptor model, integration of education and practice model, - Characteristics of	- Lecture cum discussion - **Debate:** which clinical education model is the best? - Writing clinical outcomes- assignments in pairs	- Short answer

				effective clinical teacher - Writing clinical learning outcomes/practice competencies - Clinical teaching strategies- patient assignment-clinical conference, clinical presentation /bedside clinic, Case study/care	- Written assignment on preceptorship	- Assessment of written assignment

				study, nursing rounds, concept mapping, project, debate, game, role play, clinical simulation, PBL, questioning, written assignment, process recording		
V	5	5	Explain the purpose, principles and steps in the use of media Categorize the different types of media and describe its advantages and disadvantages Develop skill in preparing and using media	**Educational/Teaching media** ▪ Media use- Purpose, components, principles andsteps ▪ Types ofmedia- *Still visuals* o Non projected- drawings & diagrams, charts, graphs, posters, cartoons, board devices (chalk/white board, bulletin board, flannel board, flip charts, flash cards, still pictures/photographs, printed materials-handout, leaflet, brochure,flyer o Projected –film stripes, microscope, power point slides, overhead projector *Moving visuals* o Video learning resources-videotapes &DVD, blu-ray, USB flash drive o Motionpictures/films *Realia and models* o Real objects &Models *Audio aids/audio media* o Audiotapes/Compact discs o Radio & Taperecorder o Public addresssystem o Digital audio *Electronic media/computer learningresources* o Computers o Web-based videoconferencing o E-learning, Smart classroom *Telecommunication (Distance education)*	▪ Lecture cum discussion ▪ Preparationof different teaching aids- (Integrate with practice teaching sessions)	▪ Short Answer ▪ Objective type ▪ Assessment of the teaching media prepared

				○ Cable TV, satellite broadcasting,		

				videoconferencing Telephones- Telehealth/telenursing *Mobile technology*		
VI	5	3	Describe the purpose, scope, principles in selection of evaluation methods and barriers to evaluation Explain the guidelines to develop assessment tests Develop skill in construction of different tests Identify various clinical evaluation tools and demonstrate skill in selected tests	**Assessment/Evaluation Methods/strategies** • Purposes, scope and principles in selection of assessment methodsand types • Barriers toevaluation • Guidelines to develop assessmenttests *Assessment of knowledge*: • Essay typequestions, • Short answer questions(SAQ), • Multiple choice questions (MCQ-single response &multipleres ponse) *Assessment ofskills:* Clinicalevaluation- • Observation (checklist, rating scales, videotapes) • Written communication-progress notes, nursing care plans, process recording, written assignments • Verbal communication (oralexamination) • Simulation • Objective Structured Clinical Examination (OSCE) • Self-evaluation • Clinical portfolio, clinicallogs *Assessment of Attitude:* • Attitude scales *Assessment tests for higher learning-*	• Lecture cum Discussion • Exercise on constructing assessment tool/s	• Short Answer • Objective type • Assessment of tool/s prepared

				Interpretive questions, hot spot questions, drag and drop andordered response questions		

VII	3	3	Explain the scope, purpose and principles of guidance Differentiate between guidance andcounseling Describe the principles, types, and counselingprocess Develop basic skill of counseling and guidance Recognize the importance of preventive counseling and develop skill to respond to disciplinary problems and grievance among students	**Guidance/academic advising, counseling and discipline** *Guidance* • Definition, objectives, scope, purpose and principles • Roles of academic advisor/faculty in guidance *Counseling* • Difference between guidance andcounseling • Definition, objectives, scope, principles, types, process and steps of counseling • Counseling skills/ techniques-basics • Roles of counselor • Organization of counselingservices • Issues for counseling in nursing students *Discipline and grievance in students* Managing disciplinary/grievance problems-preventive guidance & counseling • Role of students' grievance redressal cell/ committee	• Lecture cum discussion • Role play on student counseling in different situations • Assignment on identifying situations requiring counseling	• Assessment of performance in role play scenario • Evaluation of assignment
VIII	5	2	Recognize the importance of value- based education Develop skill in ethical decision making and maintain ethical standards for students	**Ethics and Evidence Based Teaching (EBT) in nursingeducation** *Ethics-Review* • Definition ofterms • Value based education innursing • Value development strategies • Ethical decisionmaking • Ethical standards for	• Value clarificatio n exercise • Case study analysis (student encountere d scenarios)	• Shortanswer • Evaluation of case study analysis

				students Student-faculty Relationship		

			Introduce knowledge of EBT and its application in nursing education	*Evidence based teaching- Introduction* ▪ Evidence based education processand its application to nursing education	and suggest ethical decision-making steps ▪ Lecture cum discussion	▪ Quiz-MCQ
IX	2	2	Orient towards recent trends in nursing education	**Emerging trends in healthcare and nursing education** ▪ Emerging trends in healthcare inIndia ▪ Trends in nursing education	Analysis of NHP 2017-to identify policy influencing nursing educationand write term paper	▪ Evaluation of term paper

ELECTIVE COURSES

PERSONALITY DEVELOPMENT (19ECPD05)

Introduction

This course is designed for developing an understanding of the good personality, identification, and prevention and nursing management of common personality disorders with special emphasis on therapeutic intervention

COURSE OBJECTIVE AND SUMMARY

- Define personality.
- Describe personality traits using an informal assessment.
- Summarize John Holland's six basic personality types.
- Match potential occupations to personality traits.
- Explain the difference between character traits and personality traits.
- Identify character traits.

Unit	Learning Objective	Content	**Hrs**
I	Explain the personality development	**PERSONALITYDEVELOPMENT** • Behaviour management, • Body Language, Creating • confidence, Assertive • training, Positive attitude, • Dress ethics, Managing • time	T (10) P (3)

		• Self help, • Memory • John Holland's six basic personality types	
II	Describe self analysis	**SELF ANALYSIS:** • Meaning , • Components • Goal Setting • importance's of goal setting, • short team and long team goal	T (10) P (3)
III	Explain stress management	**STRESS MANAGEMENT :** • Meaning , • Factors causing stress, • Effects of stress in body and mind motivation: meaning, types, factors of motivation	T (10) P (4)

Teaching- Learning Strategies

(i) Lecture cum Discussion
(ii) Seminar
(iii) Lab
(iv) Demonstration
(v) Assignments

Assessment Techniques of each topic of the course

S.No	Topic	Assessment Techniques
1.	**PERSONALITYDEVELOPMENT**	**Short answer**
2.	**SELF ANALYSIS**	**Short answers, Descriptive type, Antenatal Assessment and demonstration of breathing exercises.**
3.	**STRESS MANAGEMENT**	**Descriptive type, Health Education Return demonstration**

(19ECAH06)- COGNITIVE BEHAVIOUR THERAPHY

Introduction

The course is designed into create an in-depth exploration of the theoretical assumptions underlying cognitive-behavioral therapy and its application in treating depression, anxiety, anger, relationship problems, and personality disorders

COURSE OBJECTIVE AND SUMMARY

- Describe the concept of cognitive behavioural theraphy
- Articulate theories and theoretical assumptions associated with cognitive-behavioral therapy (CBT).
- Apply a CBT model to conceptualize sample therapy cases, form hypotheses for treatment based on available initial data, and understand and describe CBT adaptations to a variety of psychological problems.
- Develop initial skills in applying CBT strategies.
- Synthesize research and theory to develop recommendations to prevent health-related problems using cognitive behavioural theraphy

Unit	Learning Objective	Content	**Hrs**
I	Explain the theories and concepts behind the cognitive behavioural theraphy	**Concepts of cognitive behavioural theraphy** • The theory behind Cognitive Behaviour Therapy • Combining Science, Philosophy, and Behaviour • Progressing from Problems to Goals • The Basic Principles of Cognitive Behavior Therapy • ACognitive Conceptualization	T (10) P (3)
II	Describe components of cognitive behabioural theraphy	**components of cognitive behabioural theraphy** • Guided discovery. • Cognitive restructuring or reframing. • Exposure therapy. • Journaling and thought records. • Activity scheduling and behavior activation.	T (10) P (3)

		• Behavioral experiments. • Relaxation and stress reduction techniques. • Role playing.	
Iii	Enumerate the Role of CBT in treating mental illness	**Role Of CBT in treating illness** • Depression • Anxiety disorders • Bipolar disorder • Eating disorders	T (10) P (4)

1. Teaching- Learning Strategies

(vi) Lecture cum Discussion
(vii) Seminar
(viii) Lab
(ix) Demonstration
(x) Assignments

Assessment Techniques of each topic of the course

S.No	Topic	Assessment Techniques
1.	**Concepts Of Cognitive Behavioural Theraphy**	**Short answer**
2.	**Components Of Cognitive Behabioural Theraphy**	**Short answers, Descriptive type, Antenatal Assessment and demonstration of breathing exercises.**
3.	**Role Of CBT In Treating Illness**	**Descriptive type, Health Education Return demonstration**

(19ECAP07- ADDICTION PSYCHIATRY)

Introduction

This course is designed for developing an understanding of the good personality, identification, and prevention and nursing management of common personality disorders with special emphasis on therapeutic intervention

COURSE OBJECTIVE AND SUMMARY

- To give to the student some understanding of the history and attitudes and beliefs of drug abuse through the years by both the lay public and investigators.
- Learners will be able to list the current diagnostic criteria for substance use disorders
- Learners will understand the existing clinical treatment approaches for substance use disorders, including alcohol, opioids, stimulants, and benzodiazepines
- To provide an introduction to epidemiological research into substance use and substance use disorders.

- To provide an overview into early life predictors of substance use disorders in early adulthood
- To provide an overview of some current methods in epidemiological research into substance use disorder

Unit	Learning Objective	Content	**Hrs**
I	To give to the student some understanding of the history and attitudes and beliefs of drug abuse through the years by both the lay public and investigators.	**Introduction / History of Addiction ResearchBehaviour management**, Introduction a) Overview of course and learning objectives b) Class organization c) Evaluation and grading 2. Definition of Substance Use Disorders 3. History of substance use and societal views	T (10) P (3)
II	Learners will understand the existing clinical treatment approaches for substance use disorders, including alcohol, opioids, stimulants, and benzodiazepines	**Current Approaches in Diagnosis & Treatment of Substance Use DisordersMeaning ,** Diagnostic criteria for substance use disorders – DSM IV and V 2. Alcohol Disorders a) Behavioral treatment b) Pharmacological treatment 3. Opioid Disorders a) Maintenance treatment with methadone b) Maintenance treatment with buprenorphine c) Naltrexone treatment 4. Stimulant Disorders a) Cocaine b) Methamphetamine c) Contingency management 5. Benzodiazepine Disorders a) Medically managed withdrawal treatment (detoxification) 6. Polysubstance Disorders Required Readings: - Helping Patients Who Drink Too much: A Clinician's Guide	T (10) P (3)
III	To provide an introduction to epidemiological research into substance use	**Epidemiology of Addiction:** . Overview: the use of epidemiology in alcohol and substance use research	T (10) P (4)

	and substance use disorders.	2. Case studies: epidemiological studies of substance use disorders in emerging and early adulthood a) Prenatal alcohol exposure b) Early life predictors of adult drinking c) Age of onset and substance use disorders 3. Case studies: current methods in epidemiological substance use research a) Drinking trajectories b) Latent class analysis of alcohol use disorder criteria c) Structural equation modeling of the relationship between impulsivity and alcohol misuse	

Teaching- Learning Strategies

(xi) Lecture cum Discussion
(xii) Seminar
(xiii) Lab
(xiv) Demonstration
(xv) Assignments

Assessment Techniques of each topic of the course

S.No	Topic	Assessment Techniques
1.	**Introduction / History of Addiction ResearchBehaviour management**	Short answer
2.	**Current Approaches in Diagnosis & Treatment of Substance Use DisordersMeaning ,**	Short answers, Descriptive type, Antenatal Assessment and demonstration of breathing exercises.
3.	**Epidemiology of Addiction**	Descriptive type, Health Education Return demonstration

(19ECAH08)- PERSONALITY DEVELOPMENT

Introduction

This two-credit course focuses on the major public health issues of adolescents in the programs and policies that improve the health and well being of this Students. The course is designed to examine the prevalence and etiology of health and wellness indicators for youth. This course is designed for graduate students in the health sciences and other health-related areas.

COURSE OBJECTIVE AND SUMMARY

- Delineate the health status of adolescents with regard to the following indicators:
- Describe major health issues of youth (e.g., obesity, homicide, suicide, sexually transmitted infections, pregnancy)
- enumerate the behaviors associated with adolescent health (e.g., unsafe sexual activity; alcohol, tobacco, and drug use; food choices)
- Enlist the social and environmental factors that influence the health and well-being of adolescents.
- Analyze the relationship between and among environmental, social, and personal factors that influence adolescent health.
- Describe and analyze strategies for preventing public health problems and for improving adolescent health.
- Synthesize research and theory to develop recommendations to prevent health-related problems and promote the health of adolescents

Unit	Learning Objective	Content	**Hrs**
I	Explain growth and development of adolescent	**Puberty** a. Normal growth and development b. Abnormal growth and development 2. Interviewing and communicating with adolescents 3 Confidentiality Issues 4. Health Screening	T (10) P (3)
II	Describe sexuality	**Sexuality** a. Sexuality overview b. Menses c. Contraception d. Sexually transmitted infections including overview, urethritis/cervicitis, vaginitis, pelvic pain, genital ulcers, genital growths	T (10) P (3)

III	Explain medical problems of adolescent	**Medical problems** **a.** Common medical problems i. Abdominal pain ii. Chest pain iii. Headaches iv. Sleep disorders **b.** Orthopedic problems i. Osgood-Schlatter Disease ii. Patellofemoral syndrome iii. Slipped capital femoral epiphysis iv. Growing pains v. Back pain vi. Scoliosis **c.** Dermatology (b4) i. Acne (derm #1) ii. Skin growths (derm #2) iii. Hair lesions iv. Papulosquamous lesions v. Misc. dermatology lesions 7. Eating disorders (B7) Substance Abuse (B8) a. Categories of abused drugs b. Prevalence of drug use c. Etiology of Drug use and abuse d. Designer and Club Drugs e. Management of drug abuse	T (10) P (4)

Teaching- Learning Strategies

(xvi) Lecture cum Discussion
(xvii) Seminar
(xviii) Lab
(xix) Demonstration
(xx) Assignments

Assessment Techniques of each topic of the course

S.No	Topic	Assessment Techniques
1.	**puberty**	**Short answer**
2.	**sexuality**	**Short answers, Descriptive type, Antenatal Assessment and demonstration of breathing exercises.**

3.	**Medical problems of adolescent**	**Descriptive type, Health Education Return demonstration**

19ECSH09- SPORTS HEALTH

Introduction

The Introduction to Sports Medicine Class is designed for students interested in fields such as athletic training, physical therapy, medicine, fitness, exercise physiology, kinesiology, nutrition and other sports medicine related fields. This class includes both classroom work as well as hands-on application in order to provide students with an avenue to explore these fields. Through these connections students will understand the importance that exercise, nutrition, treatment modalities, and rehabilitation play in athletic health. Students will study basic anatomy and the psychological impact of athletic injuries along with assessment and treatment techniques as they apply to athletic injuries.

Course Objective

1) The acquisition and refinement of motor skills,
2) To equip the students with the scientific knowledge of body response to various types of exercise.
3) Maintenance of fitness for optimal health and well being,
4) Attainment of knowledge and the growth of positive attitude towards physical activity and sports.

SL NO	**LEARNING OBJECTIVES**	**SPORTS HEALTH**	**Hrs**	
			T	**P**
1	Identify the essential components of an effective sports health program	**Introduction to sports health** •Identify the essential components of an effective sports health program. •Identify personal characteristics of sports medicine practitioners •Define medical terminology and abbreviations •Basic injury treatment and taping procedures	**5**	
2	Describe and demonstrate various first aid procedures	**Emergency procedures** •Demonstrate the proper procedure in providing cardiopulmonary resuscitation. **(american red cross certification in both cpr and first aid.** •Describe and demonstrate various first aid procedures (splinting,	**10**	**10**

		bleeding control, etc.) •Demonstrate the procedures in obtaining vital signs of an injured person. •Identify the steps to take in planning for athletic emergencies. •Demonstrate the function of the emergency equipment necessary for handling athletic emergencies. •Describe and demonstrate the anatomical basis, specific evaluative procedures, preventive exercises/techniques, and treatment techniques for head and cervical spine injuries. •Describe and demonstrate how to recognize and treat environmental illness (heat stroke, heat exhaustion, hypothermia		
3	Describe how the human body reacts to injury	**Athletic injuries: evaluation, treatment, and taping/wrapping** •Describe how the human body reacts to injury. •Identify the differences between acute and chronic injuries. •Identify different types of sports injuries. •Perform an injury evaluation using the HOPS procedure •Describe and demonstrate basic treatment procedures for sports injuries (RICES) . •Identify the basic procedures and supplies needed for athletic taping and wrapping.	**5**	**6**
4	Describe and demonstrate the anatomical basis, preventive exercises, specific evaluative procedures, treatment techniques.	**Specific sports injuries** •Describe and demonstrate the anatomical basis, preventive exercises, specific evaluative procedures, treatment techniques, and specific taping and wrapping procedures for: a. Foot/ankle/lower leg injuries b. Knee/thigh injuries C) trunk injuries (hip/spine/rib) D)internal injury E)shoulder injuries F)elbow/wrist/hand injuries	**10**	**4**

Teaching- Learning Strategies

- Management. of Professional development.
- Lecture cum Discussion
- Visualization. ...
- Cooperative learning. ...
- Inquiry-based instruction. ...
- Differentiation. ...
- Technology in the **classroom**. ...
- Assignments
- High-Fidelity Simulation. ...
- Seminar
- Online Course. ... Games. ..
- Role Playing. ...

Assessment Techniques of each topic of the course

S. No	Topic	Assessment techniques
1.	Introduction to sports health	Short answer and objective type
2.	Emergency procedures	Short answer and objective type • Mock drills • Post tests Checklist
3.	Athletic injuries: evaluation, treatment, and taping/wrapping	Short answer and objective type
4.	Specific sports injuries	Short answer and objective type Performanceassessment

19ECAPS10- ACCREDITATION AND PRACTICE STANDARDS

Introduction

. The accreditation review process provides professional judgments on the quality of a social work education program in an institution. These findings are based on applying the Educational Policy and Accreditation Standards (EPAS) promulgated by the Commission on Educational Policy (COEP) and the COA. The essential purpose of the accreditation process is to provide a professional judgment of the quality of the program offered and to encourage continual improvement. Moreover, systematic examination of compliance with established standards supports public confidence in the quality of professional social work education and in the competence of social work practice.

Course Objective

1) Explains how its field education program provides generalist practice opportunities for students to demonstrate social work competencies with individuals, families, groups, organizations, and

communities and illustrates how this is accomplished in field setting

2) Provides its criteria for admission into field education and explains how its field education program admits only those students who have met the program's specified criteria

3) Describes how its field education program specifies policies, criteria, and procedures for selecting field settings; placing and monitoring students; supporting student safety; and evaluating student learning and field setting effectiveness congruent with the social work competencies

SL NO	LEARNING OBJECTIVES	ACCREDITATION AND STANDARD PRACTICE	Hrs	
			T	P
1	State the scope of accreditation	**Scope of accreditation** • Scope of Accreditation for Doctoral Programs • Scope of Accreditation for Internship Programs • Scope of Accreditation for Postdoctoral Residency • Programs	5	
2	Describe the Guiding principles of accreditation	**Guiding principles of accreditation** • The Purpose and Practice of Accreditation • General, liberal education; • Technical, vocational education and training; and • Education and training for the professions. • Professional Values- Quality. , Transparency. Peer Review. • Outcome Oriented Evaluation Focus • Function of the CoA: Professional Judgment	5	
3	Explain the aims, competencies, curriculum, and outcomes	**Aims, competencies, curriculum, and outcomes** • Aims of the Program • .Discipline-Specific Knowledge, Profession Wide Competencies, and Learning/Curriculum Elements Required by the Profession • Program-Specific Elements—Degree Type, Competencies, and Related Curriculum 1. Degree Type. All accredited programs in psychology • Evaluation of Students and Program	10	

4	Describe the program leadership, administration, and management	**Program leadership, administration, and management** • Faculty Sufficiency • Additional Core Faculty Professional Characteristics • Supervision • Internship Program Alumni. • Evaluation of Program Effectiveness and Quality Improvement Efforts • Communication practices • Communication and relationship with the accrediting body • Periodic review by the coA	**10**	
	Explain the accreditation standards	**Accreditation standards** 1. Nursing Resource Management (NRM). 2. Nursing Care of Patient (NCP). 3. Management of Medication (MOM). 4. Education, Communication and Guidance (ECG). 5. Infection Control Practices (ICP). 6. Empowerment and Governance (EG). 7. Nursing Quality Indicators (NQI)	**10**	

Teaching- Learning Strategies

- Management. of
- Professional development.
- Lecture cum Discuss
- Technology in the **classroom**. ...
- Assignments
- Seminar
- workshop
- panel discussion

Assessment Techniques of each topic of the course

S. No	Topic	Assessment techniques
1.	Scope of accreditation	Short answer and objective type
2.	Guiding principles of accreditation	Short answer and objective type Assignments

3.	Aims, competencies, curriculum, and outcomes	Short answer and objective type Assessment test
4.	Programleadership, administration, and management	Short answer and objective type Performanceassessment
5.	Accreditation standards	Short answer and objective type

19ECDP11- DEVELOPMENTAL PSYCHOLOGY

Introduction

The course provides an introduction to developmental psychology. It focuses on conveying an understanding of key developmental phenomena and theories of typical development in children and adolescents. Perceptual, cognitive, linguistic, and emotional, personality and social development will be discussed, in light of developmental models and developmental studies. The phenomena and theories within the various development areas are considered in the light of modern empirical research.

Course Objective

Compare and contrast the major theories in human growth and development.
Identify current research in the field of developmental psychology.
Explain how to apply developmental psychology to the student's life.
Summarize developmental stages and process and the sequence of the stages.
Identify cultural differences in the understanding of developmental stages.
Explain the physical, cognitive, affective and social aspects of development.
Distinguish and describe the stages of death and dying.

SL NO	Learning Objectives	DEVELOPMENTAL PSYCHOLOGY	Hrs	
			T	P
1	State the Development over the lifespan	• Introduction • Development over the lifespan • Methods and models of lifespan development • Prenatal development	5	
2	Explain the emotional and language development	• Attachment and emotional development • Cross-cultural perspectives • Language development • Cognition	10	10

3	Describe the Learning in a developmental context	• Learning in a developmental context • Pretend play, Theory of Mind, Autism • Moral development	**5**	**6**
4	Identify the peer relationships	• Peer relationships • Parenting • Media exposure: Developmental Implications	**10**	**4**

Teaching- Learning Strategies

- management. of
- Professional development.

Lecture cum Discussion

- Visualization. ...
- Cooperative learning. ...
- Inquiry-based instruction. ...
- Differentiation. ...
- Technology in the **classroom**. ...
- Assignments
- High-Fidelity Simulation. ...
- Seminar
- Role Playing. ...
- Jigsaw **Classroom**. ...

Assessment Techniques of each topic of the course

S. No	Topic	Assessment techniques
1.	Development over the lifespan	Short answer and objective type Assignment
2.	Language development Cognition	Short answer and objective type Post tests
3.	Moral development	Short answer and objective type quizz
4.	Peer relationships Parenting	Short answer and objective type Performanceassessment

19ECH13- MENOPAUSAL HEALTH

Introduction

This course describe the physiology and demography of the climacteric, menopause and premature ovarian failure Understand the short, intermediate and long term consequences of ovarian failure, identify need for genetic screening and counselling, Undertake cognitive assessment, to include computerised testing Be aware of the benefits of HRT to cognitive function and memory, Explanation of lifestyle and therapeutic interventions to those at risk of osteoporosis and to those with established disease.

Course Objective

. Develop special expertise in the management of the peri menopausal and menopausal woman, as well as women with premature ovarian failure and treatment induced menopause.

2. Understand the normal physiology of aging and the impact of estrogen deficiency on various organ systems, including the brain (including cognition, sleep and mood), cardiovascular system and lipids, bone, rheumatology, genitourinary system, skin and other organ systems.

3. Formulate options of therapies for treatment of vasomotor symptoms. 4. Develop expertise in the diagnosis and management of abnormal uterine bleeding.

SL NO	LEARNING OBJECTIVES	MENOPAUSAL HEALTH	Hrs	
			T	P
1	Describe appropriate health evaluation, risk assessment and screening methods for women in peri- and post menopause	**Menopause Physiology** • terminology for menopause related conditions and treatments • Definitions for menopause, perimenopause, postmenopause, menopausal transition • Distinguish normal physical, hormonal and emotional changes at menopause from pathophysiologic conditions and effects of aging • Describe appropriate health evaluation, risk assessment and screening methods for women in peri- and post menopause • Prepare appropriate counseling strategies that lead to positive lifestyle changes for women at menopause and beyond • Hormone Therapy • Explain Women's Health Initiative Study and its major findings • Describe benefits other than vasomotor symptom relief • Review risks and	10	

		contraindications (cardiovascular, breast cancer, other)		
2	Identify the Vasomotor symptoms . Sleep disturbances Urogenital atrophy	**Estrogen Deficiency in the Menopausal Patient** I. **Vasomotor symptoms** a. Describe prevalence and presentation b. Explain physiologic mechanisms c. Be familiar with treatment options i. Lifestyle/behavioral changes ii. Prescription options iii. Nonprescription options II. **Sleep disturbances** a. Describe prevalence and presentation b. Describe physiology c. Be familiar with treatment options i. Lifestyle/behavioral changes ii. Prescription options iii. Nonprescription options III. **Urogenital atrophy** a. Describe prevalence and presentation b. Describe physiology c. Be familiar with treatment options i. Lifestyle/behavioral changes ii. Prescription options iii. Nonprescription options	**10**	**10**
3	Explain the Breast Health in the Menopausal Patient	**Breast Health in the Menopausal Patient** • Epidemiology • Screening • Breast masses in menopausal women • Breast cancer in menopausal women	**10**	**6**
4	Describe the Bone Health in the Menopausal Patient	**Bone Health in the Menopausal Patient** • Osteoporosis and osteopenia • Screening and diagnosis of osteoporosis/osteopenia • Treatment of osteoporosis • Menopause and Cardiovascular Disease	**10**	**4**

		• Menopause and Autoimmune Disease		

Teaching- Learning Strategies

- management. of
- Professional development.

Lecture cum Discussion

- Visualization. ...
- Cooperative learning. ...
- Inquiry-based instruction. ...
- Differentiation. ...
- Technology in the **classroom**. ...
- Assignments
- High-Fidelity Simulation. ...
- Seminar
- Online Course. ... Games. ..
- Role Playing. ...
- Jigsaw **Classroom**. ...

Assessment Techniques of each topic of the course

S. No	Topic	Assessment techniques
1.	Menopause Physiology	Short answer and objective type
2.	Vasomotor symptoms Sleep disturbances Urogenital atrophy	Short answer and objective type
3.	Breast Health in the Menopausal Patient	Short answer and objective type Demonstration
4.	Bone Health in the Menopausal Patient	Short answer and objective type Assessment

19ECSH09- HEALTH ECNOMICS

Introduction

The course provides an overview of a number of core areas in health economics; microeconomic tools and concepts, efficient markets, public goods, market failures and government interventions, the physician-patient relationship, health insurance and information problems, competition in the hospital industry, innovation

Course Objective

1) Identify with central ethical principles that are considered when society makes decisions and influence public health.
2) Combine different aspects of health and understand how to derive the societies cost for illness.
3) Explain and predict peoples' health related behaviour and use this understanding to predict the consequences of different social actions.

4) state the methods can be used to judge if a public health work should be recommended from an economic perspective.

SL NO	LEARNING OBJECTIVES	HEALTH ECNOMICS	Hrs	
			T	P
1	identifyHealth measurement, determinants and long run trends	**Introduction to Health Economics** • The economic way of thinking about health • Health measurement, determinants and long run trends • Health care spending	5	
2	Describe theEconomic Models of Health Health Insurance	**Economic Models of Health Health Insurance** • Introduction and Moral Hazard • Adverse Selection in Health Insurance • Social Insurance: Medicaid and Medicare	10	
3	Explain the Uninsurance and the Affordable Care Act	• **Uninsurance and the Affordable Care Act** • Unhealthy behaviour: evidence and policy issues • The Behavioral Economics of Health • Health and economic development	5	
4	State theExternalities and public health	**Externalities and public health** Pharmaceuticals and Technological Innovation	10	

Teaching- Learning Strategies

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- Lecture cum Discussion
- Visualization. ...
- Cooperative learning. ...
- Inquiry-based instruction. ...
- Differentiation. ...
- Technology in the **classroom**. ...
- Assignments
- High-Fidelity Simulation. ...
- Seminar

- Online Course. ... Games. ..
- Role Playing. ...

Assessment Techniques of each topic of the course

S. No	Topic	Assessment techniques
1.	Introduction to Health Economics	Short answer and objective type
2.	Economic Models of Health Health Insurance	Short answer and objective type Checklist
3.	Uninsurance and the Affordable Care Act	Short answer and objective type Performanceassessment
4.	Externalities and public health Pharmaceuticals and Technological Innovation	Short answer and objective type Assignment

(19CHN19) -CHILD HEALTH NURSING I PLACEMENT: VSEMESTER

THEORY: 2 Credits (80Hours)
Skill Lab: 1 Credit (40Hrs)
Clinical: 2 Credits (160 Hrs)

DESCRIPTION: This course is designed for developing an understanding of the modern approach to child-care, identification, prevention and nursing management of common health problems of neonates and children.

COMPETENCIES

On completion of the course, the students will be able to

1. Develop understanding of the history and modern concepts of child health and child-care
2. Explore the national child welfare services, national programs and legislation in the light of National Health Policy2017
3. Describe the role of preventive pediatrics and perform preventive measures towardsaccidents
4. Identify the developmental needs of children and provide parentalguidance
5. Participate in national immunization programs /Universal Immunization program(UIP)
6. Demonstrate competencies in newborn assessment, planning and implementation of care to normal and high-risk newborn including neonatal resuscitation
7. Apply the principles and strategies of Integrated management of neonatal and childhood illness(IMNCI)
8. Apply the knowledge of pathophysiology and provide nursing care to children with common childhooddiseases
9. Identify and meet childhood emergencies and perform childCPR

COURSE OUTLINE

UNIT NO.	TIME (HRS)	LEARNING OUTCOMES	CONTENT	TEACHING LEARNING ACTIVITIES	ASSESSMENT METHODS
I.	**T10 L10**	Explain the modern concept of child-care Describe National policy, programs & legislation in relation to child health & welfare	**Introduction**: **Modern concepts of child-care** - Historical development of childhealth - Philosophy &Modern concept of child-care - Cultural and religious considerations inchild-care - National policy and legislations in relation to child health andwelfare. - National programsand	- Lecture Discussion - Demonstration of common pediatric procedures	- Shortanswers - Objective type - Assessment of skillswith checklist

		Describe role of preventive pediatrics List major causes of death during infancy, early & latechildhood Differentiate between an adult and child in terms of illness and response Describe the major functions & role of the pediatric nurse in caring for a hospitalized child. Describe the principles of child health nursing and perform child health nursing procedures	agencies related to welfare services to the children. - Internationally accepted rights of thechild - Changing trends in hospital care, preventive,promotive and curative aspect of child health - *Preventive pediatrics:* o Concept o Immunization o Immunization programs and coldchain. o Care of under-five and Under-five Clinics /Well-babyclinics o Preventive measures towards accidents - Child morbidity and mortalityrates - Difference between an adult and child which affect response toillness o Physiological o Psychological o Social o Immunological - Hospital environment for sickchild - Impact of hospitalization on the child andfamily - Communication techniques forchildren - Grief andbereavement - The role of a child health nurse in caring fora hospitalized child - Principles of pre and postoperative care of infants and children. *Child Health Nursing procedures:* - Administration of medication: oral, I/M, &I/V - Calculation of fluid requirement		

			▪ Application ofrestraints ▪ Assessment of pain in children. o FACES pain ratingscale o FLACCscale o Numericalscale		
II.	**T12**	Describe the normal growth and development of children at different ages Identify the needs of children at different ages & provide parental guidance Identify the nutritional needs of children at different ages & ways of meeting needs Identify the role of play for normal & sick children	**The healthy child** ▪ Definition and principles of growth anddevelopment. ▪ Factors affecting growth and development. ▪ Growth and development from birth toadolescence ▪ Growth and developmental theories (Freud, Erickson, Jean Piaget,Kohlberg) ▪ The need of normal children through the stages of developmental andparental guidance ▪ Nutritional needs of children andinfants. - breastfeeding - exclusive breast feeding - Supplementary / artificial feeding and weaning ▪ Baby friendly hospital concept ▪ Types and value of play and selection of playmaterial	▪ Lecture Discussion ▪ Demonstration ▪ Developmental study ofinfant and children ▪ Observation study of normal &sick child ▪ Field visit to Anganwadi, childguidance clinic ▪ Videos on breastfeeding ▪ Clinical practice/field	▪ Shortanswers ▪ Objective type ▪ Assessment of field visitsand developmental study reports

III.	**T15 L20**	Provide care to normal and high-risk neonates Perform neonatal resuscitation Recognize and manage common neonatal problems	**Nursing care of neonate:** • Appraisal ofNewborn • Nursing care of a normal newborn /essential newborn care. • Neonatalresuscitation • Nursing management of low birth weightbaby. • Kangaroo mothercare • Nursing management of commonneonatal disorder. - Hyperbilirubinemia - Hypothermia, hyperthermia - Metabolicdisorder - Neonatalinfections - Neonatalseizures - Respiratory distress syndrome - Retinopathy of Prematurity • Organization of neonatal careunit • Neonatalequipment	• Modular based teaching**: ENBC and FBNC module (oral drills, videos, self - evaluation exercises)** • Workshop on neonatal resuscitation: NRP module • Demonstration • Practice Session • Clinical practice • Lecture Discussion	• OSCE • Shortanswers • Objective type
IV.	**T10 L 05**	Apply principles and strategies of IMNCI	**Integrated management of neonatal and childhood Illnesses**	*Modular based teaching:* **IMNCImodule** • Clinical practice/field	• OSCE
V.	**28**	Describe the etiology, pathophysiology, clinical manifestation and nursing management of children with disorders of respiratory, cardiovascular, gastrointestinal, genitourinary, nervous and endocrine system	**Nursing management in common childhood diseases.** **Respiratory system**: • Identification and Nursing management ofcongenital malformations • Congenital disorders: Tracheoesophageal fistula, Diaphragmatichernia • Others: Acute naso-pharyngitis, Tonsillitis, Croup,Bronchitis, Bronchiolitis, Pneumonia, Asthma **Cardiovascular system**: • Identification and Nursing management of congenital malformations • Congenital heartdiseases:	• Lecture Discussion • Demonstration • Practice session • Clinical practice	• Shortanswers • Objective type • Assessment of skillswith checklist

			Cyanotic and Acyanotic (ASD,VSD, PDA,TOF) ¡ Others: - Rheumatic fever and Rheumatic heartdisease, Congestive cardiac failure ¡ Hematologicalconditions: a) Congenital:Hemophilia, Thalassemia. b) Others: Anemia, Leukemia, Idiopathic thrombocytopenic purpura, Hodgkins and non-hodgkins lymphoma **Gastro-intestinal system**: ¡ Identification and Nursing management of congenital malformations. ¡ Congenital: Cleft lip, Cleft palate,Congenital hypertrophic pyloric stenosis, Hirschsprungs disease (Megacolon), Anorectal malformation, Malabsorption syndrome, Abdominal wall defects, Hernia **Others:** Gastroenteritis, Diarrhea, Vomiting, Protein energy malnutrition, Intestinal obstruction, Hepatic diseases, intestinal parasites **Genitourinary urinarysystem:** ¡ Identification and Nursing management ofcongenital malformations. ¡ Congenital: Wilms tumor, Extrophy ofbladder, Hypospadiasis, Epispadiasis, Obstructive uropathy ¡ Others: Nephrotic syndrome, Acute glomerulonephritis, renal failure **Nervous system:** ¡ Identification and Nursing management of congenital malformations a) Congenital: Spinabifida, Hydrocephalous. b) Others: Meningitis, Encephalitis,Convulsive		

			disorders (convulsions and seizures), Cerebral palsy head injury. **Endocrine system**: Juvenile Diabetes mellitus, Hypo-thyroidism		
VI	**T5** **L5**	Develop ability to meet child- hood emergencies and perform child CPR	▪ Child health emergencies: Accidents -causesand prevention, Poisoning, Foreign bodies, Hemorrhage, Burns and Drowning ▪ NALS/PLS/PALS(AHA Guidelines)	▪ Lecture ▪ Discussion ▪ Demonstration ▪ Workshop	▪ OSCE

CHILD HEALTH NURSING- I CLINICAL

PLACEMENT: V SEMESTER- 2 credits (160Hrs)

CLINICAL- 3 Credits (240 Hours) **8 weeks x 30 hours/week (5 weeks + 3 weeks)**

PRACTICE COMPETENCIES

On completion of the course, the students will be able to

1. Perform assessment of children: health, developmental &anthropometric
2. Provide nursing care to children with various medicaldisorders
3. Provide pre & postoperative care to children with common pediatric surgical conditions/malformation
4. Perform immunization as perNIS
5. Provide nursing care to critically illchildren
6. Give health education/ nutritional education toparents
7. Counsel parents according to identified counselingneeds

CLINICAL POSTINGS

Clinical area/unit	Duration (in weeks)	Learning Outcomes	Procedural competencies/Clinical skills	Clinical Requirements	Assessment Methods
Pediatric Medical Ward	**V Sem - 2 Weeks**	▪ Provide nursing care to children with various medical disorders	▪ Taking pediatrichistory ▪ Physical examination &assessment ofchildren ▪ Administration of oral, I/M, & I/V. medicine/fluids ▪ Calculation of fluid replacement ▪ Preparation of different strengths of I/Vfluids ▪ Baby bath/spongebath ▪ Feeding children by Katori spoon, Paladaicup ▪ Teaching mothers/parents □ Malnutrition □ Oral rehydrationtherapy □ Feeding &Weaning □ Immunizationschedule ▪ Playtherapy	▪ Nursing care plan- 1 ▪ Health talk -1	▪ Assess performance with rating scale ▪ Assess each skillwith checklist OSCE/ OSPE ▪ Evaluation of case study/ presentation & health education session ▪ Completion ofactivity record.

Clinical area/unit	Duration (in weeks)	Learning Outcomes	Procedural competencies/Clinical skills	Clinical Requirements	Assessment Methods
Pediatric Surgical Ward	**V Sem- 2 Weeks**	▪ Recognize different pediatric surgical conditions/ malformations ▪ Provide pre &postoperative care to children with common paediatric surgical conditions/ malformation Counsel & educate parents	▪ Calculation, preparation & administration of I/Vfluids ▪ Feeding □ Naso-gastric □ Gastrostomy □ Jejunostomy ▪ Care of surgicalwounds □ Dressing Suture removal	▪ Case study/ presentation – 1	▪ Assess performance with rating scale ▪ Assess each skillwith checklist OSCE/ OSPE ▪ Evaluation of case study/ presentation ▪ Completion of activity record.
Pediatric OPD/Immunization room	**V Sem- 1 Week**	▪ Perform assessmentof children: health, developmental & anthropometric ▪ Perform immunization ▪ Give health education/ nutritional education	Assessment ofchildren □ Healthassessment □ Developmental assessment □ Anthropometric assessment □ Nutritionalassessment ▪ Immunization ▪ Health / Nutritionaleducation	▪ Growth and Developmental study: Infant -1 Toddler-1 Preschooler -1 Schooler-1 Adolescent-1	▪ Assess performance with rating scale ▪ Completion ofactivity record.

Skill Lab

Use of Manikins and Simulators

NALS, PLS/PALS, CPAP, Endotracheal Suction Pediatric NursingProcedures:

- Administration of medication-oral, IM &IV
- Oxygenadministration
- Application ofrestraints
- Specimencollection
- Urinary catheterization anddrainage
- Ostomycare
- Feeding-NG, gastrostomy,Jejunostomy
- Wounddressing
- Sutureremoval

INTERNSHIP
(INTEGRATED PRACTICE)

CHILD HEALTH NURSING – PRACTICAL

Placement:VIIISemester **Time: Internship – 4weeks**

Clinical area/unit	**Duration (in weeks)**	**Learning Outcomes**	**Procedural competencies/Clinical skills**	**Assessment methods**
Pediatric Medical Ward/ICU	**1**	¡ Provide Comprehensive care tochildren with various medical conditions	¡ Integrated Practice	¡ Assess clinical performance with rating scale
Pediatric Surgical Ward/ICU	**1**	¡ Provide Comprehensive care tochildren with various surgical conditions	¡ Integrated Practice	¡ Assess clinical performance with rating scale
NICU	**2**	¡ Provide Intensive care to neonates	¡ Integrated Practice	¡ Assess clinical performance with rating scale

MENTAL HEALTH NURSING I (19MHN20)

PLACEMENT: VSEMESTER THEORY: 4 Credits (80Hours)
Clinical: 1 Credit (80 Hours)

DESCRIPTION: This course is designed to develop basic understanding of the principles and standards of mental health nursing and skill in application of nursing process in assessment and care of patients with mental healthdisorders.

COMPETENCIES:

On completion of the course, the students will be competent to

1. Trace the historical development of mental health nursing and discuss its scope
2. Identify the classification of the mental disorders
3. Develop basic understanding of the principles and concepts of mental health nursing
4. Apply the INC practice standards for psychiatric mental health nursing in supervised clinicalsettings
5. Conduct mental health assessment
6. Identify and maintain therapeutic communication and nurse patient relationship
7. Demonstrate knowledge of the various treatment modalities and therapies used in mentaldisorders
8. Apply nursing process in delivering care to patients with mentaldisorders
9. Provide nursing care to patients with schizophrenia and other psychotic disorders based on assessment findingsand treatment/therapies used
10. Provide nursing care to patients with mood disorders based on assessment findings and treatment/therapiesused
11. Provide nursing care to patients with neurotic disorders based on assessment findings and treatment/therapiesused
12. Demonstrate skills in caring for patients with substance usedisorders
13. Identify the needs of patients with personality and sexual disorders and provide appropriatecare
14. Provide nursing care to patients with childhood and adolescent disorders based on assessment findings and treatment/therapiesused

COURSE OUTLINE

UNIT	TIME (HRS)	LEARNING OUTCOMES	CONTENT	ACHING LEARNING ACTIVITIES	ASSESSMENT METHODS
I	6 (T)	Describe the historical development &current trends in mental healthnursing Discuss the scope of mental health nursing Describe the concept of normal & abnormal behaviour	**Introduction** Perspectives of Mental Health and MentalHealth Nursing, evolution of mental health services, treatments and nursing practices Mental healthteam Nature & scope of mentalhealth nursing Role & functions of mental health nurse in varioussettings and factors affecting the level of nursing practice Concepts of normal andabnormal behaviour	Lecture cum Discussion	
II	10	Define the various terms used in mental health Nursing Explain the classification of mental disorders Explain the psychodynamics of maladaptive behaviour Discuss the etiological factors &psychopathology of mental	**Principles and Concepts of Mental Health Nursing** Definition: mental health nursing and terminology used Classification of mental disorders: ICD & DSM Review of personality development, defensemechanisms Etiology bio-psycho-social factors Psychopathology of mental disorders: review of structure and function of brain, limbic system and abnormal	Lecture discussion Explain using Charts Review of personality development	

		Disorders Explain the principles and standards of Mental health Nursing Describe the conceptual models of mental health nursing	neurotransmission Principles of Mental health Nursing Ethics and responsibilities Practice Standards for Psychiatric Mental health Nursing (INC standards) Conceptual modelsand the role of nurse: Existential model Psychoanalytical models Behavioural model Interpersonal model		
III	6	Describe nature, purpose and process of assessment of mental health status	**Mental Health Assessment** Historytaking Mental status examination Mini mental status examination Neurological examination Investigations: RelatedBlood chemistry, EEG, CT & MRI Psychologicaltests	Lecture discussion Demonstration Practice session Clinical practice	
IV	6	Identify therapeutic Communication & techniques Describe therapeutic relationship Describe Therapeutic impasses and Its Interventions	**Therapeutic communication and nurse-patient relationship** Therapeutic communication: Types, techniques, characteristics and barriers Therapeutic nurse-patientrelationship Interpersonal relationship-Elements of nurse patient contract, Review of technique of IPR- Johari	Lecture discussion Demonstration Role play Process recording Simulation (video)	

			window - Therapeutic impasse and itsmanagement		
V	10	Explain treatment modalities and therapies used in mental disorders and role of the nurse	**Treatment modalities and therapies used in mental disorders** **Physical therapies**: Psychopharmacology, Electro Convulsive therapy **Psychological Therapies**: Psychotherapy, Behaviour therapy, CBT, **Psychosocial**: Group therapy, Family therapy, Therapeutic Community, Recreational therapy, Art therapy (Dance, Music etc), Occupational therapy **Alternative & Complementary**: Yoga, meditation, Relaxation **Consideration for specialpopulations**	- Lecture discussion - Demonstration - Group work - Practice session - Clinical practice	- Essay type - Short answers - Objective type
VI	8	Describe the etiology, psycho-dynamics/ pathology, clinical manifestations, diagnostic criteria and management of patients with Schizophrenia, and other psychotic disorders	**Nursing management of patient with Schizophrenia, and other psychotic disorders** - Prevalence and incidence - Classification - Etiology, psychodynamics, clinical manifestation, diagnostic criteria/formulations **Nursingprocess** - Nursing Assessment-History, Physical and mental assessment - Treatment modalitiesand	- Lecture discussion - Case discussion - Case presentation - Clinical practice	- Essay type - Short answers - Assessment of patient management problems

			nursing management of patients with Schizophrenia and other psychotic disorders Geriatric considerations and considerations for special populations Follow up and home care and rehabilitation		
VII	6	Describe the etiology, psycho-dynamics, clinical manifestations, diagnostic criteriaand management of patients with mood disorders	**Nursing management of patient with mood disorders** Prevalence and incidence Mood disorders: Bipolar affective disorder,mania depression and dysthymia etc. Etiology, psycho dynamics,clinical manifestation, diagnosis Nursing Assessment History,Physical and mental assessment Treatment modalitiesand nursing management of patients with mood disorders Geriatric considerations/considerations for special populations Follow-up and home careand rehabilitation	Lecture discussion Case discussion Case presentation Clinical practice	Essay type Short answers Assessment of patient management problems
VIII	8	Describe the etiology, psycho-dynamics, clinical manifestations, diagnostic	**Nursing management of patient with neurotic, stress related and somatisation disorders** Prevalence and incidence	Lecture discussion Case discussion Case presentation Clinical	Essay type Short answers Assessment ofpatient management problems

		criteria and management of patients with neurotic, stress related and somatization disorders	▪ classifications ▪ Anxiety disorder, Phobias, Disassociative and Conversion disorder ▪ Etiology, psychodynamics, clinical manifestation, diagnostic criteria/formulations ▪ Nursing Assessment:History,Physical and mental assessment ▪ Treatment modalitiesand nursing management of patients with neurotic and stress related disorders ▪ Geriatric considerations/Considerations for special populations ▪ Follow-up and home careand rehabilitation	practice	
IX	6	Describe the etiology, psycho-dynamics, clinical manifestations, diagnostic criteria and management of patients with substance use disorders	**Nursing management patients with Substance use disorders** ▪ Prevalence and incidence ▪ Commonly used psychotropic substance: classifications, forms, routes, action, intoxication and withdrawal ▪ Psychodynamics/etiology of substance usedisorder (Terminologies - Substance Use, Abuse, tolerance, Dependence, Withdrawal)	▪ Lecture discussion ▪ Case discussion ▪ Case presentation ▪ Clinical practice	▪ Essaytype ▪ Short answers ▪ Assessment of patient management problems

			▪ Diagnostic criteria/formulations ▪ Nursing Assessment-History (substancehistory), Physical, mental assessment and drug and drug assay ▪ Treatment (detoxification, antabuse and narcotic antagonist therapy and harm reduction, Brief interventions, MET, refusal skills, maintenance therapy) and nursing management of patients with substance use disorders ▪ Special considerations for Vulnerable population ▪ Follow-up and home care and rehabilitation		
X	6	▪ Describe the etiology, psycho-dynamics, clinical manifestations, diagnostic criteria and management of patients with personality, Sexual and Eating disorders	**Nursing management of patient with Personality and Sexual disorders** ▪ Prevalence and incidence ▪ Classification of disorders ▪ Etiology, psycho-pathology, characteristics, diagnosis ▪ Nursing Assessment-History, Physical and mental assessment ▪ Treatment modalitiesand nursing management of patients with	▪ Lecture discussion ▪ Case discussion ▪ Case presentation ▪ Clinical practice	▪ Essaytype ▪ Short answers ▪ Assessment of patient management problems

			Personality, Sexual and Eating disorders - Geriatric considerations - Follow-up and home care and rehabilitation		
XI	8	Describe the etiology, psycho-pathology, clinical manifestations, diagnostic criteria and management of childhood and adolescent disorders including mental deficiency	**Nursing management of Behavioural& Emotional disorders occurring during childhood and adolescence (**Intellectual disability, autism, attention deficit, hyperactive disorder, eating disorder, learning disorder) - Prevalence and incidence - Classifications - Etiology, psychodynamics, Characteristics, diagnostic criteria/formulations - Nursing Assessment-History, Physical, mental status examination and IQ assessment - Treatment modalitiesand nursing management of childhood disorders including intellectual disability - Follow-up and home careand rehabilitation	- Lecture discussion - Case discussion - Case presentation - Clinical practice	- Essaytype - Short answers - Assessment of patient management problems

NURSING MANAGEMENT AND LEADERSHIP (19NML21)

PLACEMENT: V Semester

THEORY: 3credits (60 hours) 2 credits (80hours)
Lab: 10 hours

Clinical: 70 hours

DESCRIPTION: This course is designed to enable students to acquire knowledge and competencies in areas of administration, and management of nursing services and education. Further prepares the students to develop leadership competencies and perform their role as effective leaders in anorganization.

COMPETENCIES

On completion of the course, the students will be able to

1. Analyze the health care trends influencing development of nursing services and education inIndia
2. Describe the principles, functions and process of management applied tonursing
3. Develop basic understanding and beginning competencies in planning and organizing nursing services in ahospital
4. Apply the concept of human resource management and identify the job descriptionforallcategoriesofnursingpersonnelincludinginserviceeducation
5. Discuss the principles and methods of staffing and scheduling in an individual hospital/nursingunit
6. Develop skill in management of materials and supplies including inventory control
7. Develop team working and inter professional collaborationcompetencies
8. Identify effective leadership styles and develop leadershipcompetencies
9. Utilize the knowledge of principles and line of control and participate in quality management and evaluationactivities
10. Utilize the knowledge related to financial planning in nursing services and education during budgetaryprocess
11. Apply the knowledge of nursing informatics in maintenance of records and reports relevant to patient information, nursing care andprogress
12. Demonstrate understanding of the INC guidelines for establishment and accreditation of educational institutions in terms of faculty norms, physical infrastructure and clinicalfacilities
13. Demonstrate beginning competencies in planning, organizing and staffing at college including implementation and evaluation ofcurriculum
14. Identify the legal issues and laws relevant to nursing practice andeducation
15. Apply the knowledge and utilize the various opportunities for professional advancement

COURSE OUTLINE

THEORY: 60 Hours (3 Credits)

UNIT	TIME (Hours)		LEARNING OUTCOMES	CONTENT	TEACHING/ LEARNING ACTIVITIES	ASSESSMENT METHODS
	T	P				
I	1		Explore the health care, development of nursing services and education in India and trends	**Health care and development of nursing services in India** • Current health care delivery system ofIndia-review • Planning and development of nursing services and education at globaland nationalscenario • Recent trends and issues of nursing service and management	• Lecture cum discussion • Directed reading and written assignment	• Short answer type • Assessment of assignment
II	2		Explain the principles and functions of management applied to nursing Describe the introductory concepts of management as aprocess	**Management basics applied to Nursing** • Definitions, concepts and theories ofmanagement • Importance, features and levels ofmanagement • Management and administration • Functions ofmanagement • Principles ofmanagement • Role of a nurse as a manager **Introduction to Management process** • Planning • Organizing • Staffing • Directing/Leading • Controllin	• Lecture & Discussion	• MCQ • Short answer type

				MANAGEMENT OF NURSING SERVICES		
III	4		Describe the essential elements of planning	**Planning nursing services** • Vision, Mission, philosophy,objectives • Nursing service policies, procedures andmanuals • Functional and operational planning • Strategicplanning • Program planning: Gantt chart & milestonechart • Budgeting- concepts, principles,types, • Budget proposal, cost benefitanalysis • Planning hospital and patient care unit(Ward) • Planning for emergency and disaster	• Lecture &Discussion • Visit to specific hospital/ patient careunits • Demonstration of disaster drill in therespective setting	• Formulate Mission &Vision Statement for the nursing department/ unit • Assessment ofproblem-solving exercises • VisitReport
IV	4	2	Discuss the concepts of organizing including hospital organization	**Organizing** • Organizing as a process-assignment, delegation and coordination • Hospital –types, functions & organization • Organizational development • Organizationalstructure • Organizationalcharts • Organizational effectiveness • Hospital administration, Control & line ofauthority • Hospital statistics including hospital utilizationindices • Nursing care delivery systems andtrends • Role of nurse in maintenance of effective organizationalclimate	• Lecture cum discussion • Comparison of organizational structure ofvarious organizations • Nursing care delivery systems – assignment • Preparation of Organizational chart of hospital/ Nursing services	• Shortanswer • Assessment of assignment

V	8	2	Identify the significance of human resource management (HRM) and material	**Staffing (Human resource management)** ▪ Definition, objectives, components andfunctions *Staffing & Scheduling* ▪ Staffing-Philosophy,	▪ Lecture & Discussion, role play	▪ Formulate Job description at different levels of care &

			management and discuss its elements Explain the procedural steps of material management Develop managerial skill in inventory control and actively participate in procurement process	staffing activities - Recruiting, selecting, deployment - Training, development, credentialing, retaining, promoting, transfer, terminating, superannuation - Staffing units- Projecting staffingrequirements /calculation of requirements of staff resources Nurse patient ratio, Nurse Population ratio as per SIU norms/IPHNorms,andPatient classificationsystem - Categories of nursingpersonnel including job description of all levels - Assignment and nursing careresponsibilities - Turnover andabsenteeism - Staffwelfare - Discipline andgrievances **In-service education** - Nature and scope of in-service educationprogram - Principles of adult learning-review - Planning and organizing in-service educationalprogram - Methods, techniques and evaluation - Preparation ofreport **Material resource management** - Procurement, purchasing process, inventory control& role of nurse - Auditing and maintenance in hospital and patient care unit	- Games self-assessment, Case discussion and practicesession - Calculation of staffing requirements for a specified ward Visit to inventory store of the institution	compare with existingsystem - Preparation of dutyroster - Preparation of MMF/records - Preparation of log book & condemnation documents - VisitReport

VI	5	6	Describe the important methods of supervision and guidance	**Directing and leading** • Definition, principles, elements ofdirecting • Supervision andguidance • Participatorymanagement • Inter professional collaboration • Management byobjectives • Teammanagement • Assignments,rotations • Maintenance ofdiscipline • Leadership inmanagement	• Lecture &Discussion • Demonstration of record &report maintenance in specific wards/ departments	• Assignment on Reports & Records maintained in nursing department/ • Preparation of protocols and manuals
VII	4		Discuss the significance and changing trends of nursing leadership Analyze the different leadership styles and develop leadership competencies	**Leadership** • Definition, concepts, and theories • Leadership principles and competencies • Leadership styles-Situational leadership, Transformationalleadership • Methods of leadership development • Mentorship/ preceptorship innursing • Delegation, power & politics, empowerment, mentoring and coaching • Decision making and problemsolving • Conflict management and negotiation • Implementing planned change	• Lecture cum discussion • Self-assessment • Report on types of leadership adoptedat different levels of health care in the givensetting • Problem solving/ Conflict management exercise • Observation of managerial rolesat different levels (middle level mangers-ward incharge, ANS)	• Shortanswer • Essay • Assessment of exercise/report
VIII	3		Explain the process of controlling and itsactivities	**Controlling** • Implementing standards, policies, procedures, protocols andpractices • Nursing performance audit, patientsatisfaction • Nursing rounds, Documentation-records and reports • Total quality management-Quality assurance, Quality andsafety • Performanceappraisal	• Lecture cum discussion • Preparation of policies/protocols for nursing units/department	• Assessment of prepared protocols

				▪ Program evaluation review technique(PERT) ▪ Bench marking, Activity plan (Ganttchart) ▪ Critical pathanalysis		
IX	3		Explain the concepts of organizational behavior and group dynamics	**Organizational behavior and human relations** ▪ Concepts and theories of organizationalbehavior ▪ Group dynamics ▪ Review: Interpersonal relationship ▪ Humanrelations ▪ Public relations in the context ofnursing ▪ Relations with professional associations and employee unions ▪ Collectivebargaining ▪ Review: Motivation and morale building ▪ Communication in the workplace-assertive communication ▪ Committees- importance in the organization, functioning	▪ Lecture &Discussion ▪ Role play/exercise- Group dynamics & humanrelations	▪ Shortanswer ▪ OSCE
X	2		Describe the financial management related to nursing services	**Financial management** ▪ Definition, objectives, elements, functions, principles & scope offinancial management ▪ Financial planning (budgeting for nursing department) ▪ Proposal, projecting requirement for staff, equipment and supplies for: Hospital& patient care units & emergency and disaster units ▪ Budget and Budgetary process ▪ Financialaudit	▪ Lecture cum discussion ▪ Budget proposal review ▪ Preparation of budget proposal for a specific department	▪ Short answer type ▪ Essay ▪ Assessment of assignment

XI	1		Review the concepts, principles and methods and use of nursing informatics	**Nursing informatics/Information management -Review** • Patientrecords • Nursingrecords • Use of computers in hospital, collegeand community • Telemedicine &Tele nursing • Electronic Medical Records (EMR),EHR	• Review • Practicesession • Visit to departments	• Short answer type
XII	1		Review personal management in terms of management of emotions, stress and resilience	**Personal Management-review** • Emotionalintelligence • Resiliencebuilding • Stress and time management-destressing • Careerplanning	• Review • Discussion	

XIII	4		Describe the process of establishing educational institutions and its accreditation guidelines	**Establishment of nursing educational institutions** • Indian Nursing Council norms andguidelines-Faculty norms, physical facilities, clinical facilities, curriculum implementation, and evaluation/examination guidelines • Coordination with regulatory bodies- INCand State Nursing Council • Accreditation-Inspections • Affiliation with university/State council/ board of examinations	• Lecture &discussion • Visit to one of the regulatorybodies	• Visitreport
XIV	4		Explain the planning and organizing functions of a nursingcollege	**Planning and organizing** • Philosophy, objectives and mission of thecollege • Organization structure of school/college • Review: Curriculum planning • Planning teaching and learning experiences, clinical facilities-master plan, time table and clinical rotation • Budgetplanning-faculty,	• Directed reading-INCCurriculum • Preparation of organizational structure of the college • Written assignment-writing philosophy of a teaching department • Preparation of master plan, time	• Shortanswer • Essay • Assessment of assignment

				staff, equipment & supplies, AV aids, Lab equipment, library books, journals, computers and maintenance - Infrastructure facilities- college, classrooms,hostel, library, labs, computer lab, transport facilities - Records & reports for students, staff, facultyand administrative - Committees and functioning - Clinicalexperiences	table and clinical rotation	
XV	4		Develop understanding of staffing the college and selecting the students	**Staffing and Student selection** - Faculty/staff selection, recruitment and placement, jobdescription - Performanceappraisal - Facultydevelopment - Faculty/staffwelfare - Student recruitment, admission,clinical placement	- Guided reading on faculty norms - Faculty welfare activitiesreport - Writing job description of tutors	- Short answer - Activity report - Assessment of job description
XVI	4		Analyze the leadership and management activities in an educational organization	**Directing and controlling** - Review: Curriculum implementation and evaluation - Leadership and motivation, supervision-review - Guidance andcounseling - Quality management- educationalaudit - Program evaluation, evaluation ofperformance - Maintainingdiscipline - Institutional records and reports-administrative, faculty, staff and students	- Review principles ofevaluation - **Assignment-** Identify disciplinary problems among students - Writing student record	- Shortanswer - Assessment of assignmentand record

XVII	4		Identify various legal issues and laws relevant to nursing practice	**PROFESSIONAL CONSIDERATIONS** **Review: Legal and Ethical issues** - Nursing as a profession: Characteristics of a professionalnurse - Nursing practice- philosophy, aim and objectives		

				▪ Regulatory bodies –INC and SNC constitution andfunctions *Review: Professional ethics* ▪ Code of ethics and professional conduct-INC &ICN ▪ Practice standards fornursing-INC ▪ International Council for Nurses(ICN) *Legal aspects in nursing:* ▪ Consumer protection act, patientrights ▪ Legal terms related to practice, legal system-types of law, tort law& liabilities ▪ Laws related to nursing practice-negligence, malpractice, breach, penalties, ▪ Invasion of privacy, defamation of character ▪ Nursing regulatory mechanisms-registration, licensure,renewal, accreditation, nurse practice act, regulation for nurse practitioner/specialist nursing practice		
XVIII	2		Explain various opportunities for professional advancement	**Professional advancement** ▪ Continuing NursingEducation ▪ Careeropportunities ▪ Membership with professional organizations-nationaland international ▪ Participation in researchactivities ▪ Publications-journals,newspaper	▪ Prepare journal list available in India ▪ Write an article-research/clinical	▪ Assessment of assignments
		70 hrs			**Clinical posting-Management experience in hospital/college**	

80 hrs (Lab-10 and clinical-70 hrs)

Practice competencies:

Hospital

1. Prepare organizational chart of hospital/ Nursing services/nursingdepartment
2. Calculate staffing requirements for a particular nursingunit/ward
3. Formulate Job description at different levels ofcare
4. Prepare duty roster for staff/ students at differentlevels
5. Participate in procuring/purchase of equipment &supplies
6. Prepare log book/MMF for specific equipment/materials
7. Maintain and store inventory and keep dailyrecords
8. Prepare and maintain various records & reports of the settings- incident reports/adverse reports/auditreports
9. Prepare and implement protocols &manuals
10. Participate in supervision, evaluation and conducting in service education for thestaff

College & Hostel

1. Prepare organizational chart ofcollege
2. Formulate job description fortutors
3. Prepare Master plan, time table and clinicalrotation
4. Prepare studentanecdotes
5. Participate in planning, conducting and evaluation of clinicalteaching
6. Participate in evaluation of students' clinicalexperience
7. Participate in planning and conducting practical examination OSCE-end of posting

NURSING RESEARCH AND STATISTICS (19NRS22)

PLACEMENT: VSEMESTER

THEORY - 2 Credits (40Hours)

1 Credits (80 Hours) Lab: 30hrs
Clinical project-50hrs

DESCRIPTION: The Course is designed to enable students to develop an understanding of basic concepts of research, research process and statistics. It is further, structured to conduct/ participate in need-based research studies in various settings and utilize the research findings to provide quality nursing care. The hours for practical will be utilized for conducting individual/group research project.

COMPETENCIES

On completion of the course, students will be competent to

1. Identify research priorityareas
2. Formulate research questions/problemstatement/hypotheses
3. Review related literature on selected research problem and prepare annotated bibliography
4. Prepare sample data collectiontool
5. Analyze and interpret the givendata
6. Practice computing, descriptive statistics andcorrelation
7. Draw figures and types of graphs on given selectdata
8. Develop a researchproposal
9. Plan and conduct a group/individual researchproject

UNIT	TIME (HRS)		LEARNING OUTCOMS	CONTENT	TEACHING/ LEARNINGACTIVITIES	ASSESSMENT METHODS
	T	P				
I	6		Describe the concept of research, terms, need and areas of research in nursing Explain thestepsof research process	**Research and research Process** Introductionand needfornursing research Definition of Research & nursingresearch Steps of scientific method Characteristicsof goodresearch	LectureDiscussion Narrate steps of researchprocess followed from examples of published studies Identify research priorities on a given area/specialty List examples of Evidence Based Practice	Shortanswer Objectivetype
			State the purposes and steps of Evidence Based Practice	Steps of Research process-overview Evidence Based Practice: Concept, Meaning,Purposes, Steps of EBP Process and Barriers		
II	2	6	Identify and state the research problem and objectives	**Research Problem/Question** Identification of problemarea Problemstatement Criteria of a good research problem. Writing objectives and hypotheses	LectureDiscussion Exercise on writing statement ofproblem and objectives	Shortanswer Objective type Formulation of research questions/objectives/hypothesis
III	2	6	Review the related literature	**Review of Literature** Location Sources On linesearch; CINHAL, COCHRANE etc Purposes Method ofreview	Lecture cumDiscussion Exercise onreviewing one research report/ article for a selected research problem. Prepare annotated Bibliography	Shortanswer Objective type Assessment of review of literatureon given topic presented

IV	4		Describe the Research approaches and designs	**Research approaches and designs** • Historical, surveyand experimental • Qualitative and Quantitativedesigns	• LectureDiscussion • Identify typesof research approaches used from examples of published and unpublished research Studies with rationale	• Shortanswer • Objective type
V	6	4	Explain the Sampling process Describe the methods of data collection	**Sampling and data Collection** • Definition of Population,Sample, • Sampling criteria, factorsinfluencing sampling process, types of sampling techniques. • Data- why, what, from whom, when and where tocollect. • Data collection methods andinstruments- o Methods of data collection o Questioning, interviewing o Observations, record analysis and measurement o Typesof instruments, Validity & Reliability of the Instrument • Researchethics • Pilot study • Data collection procedure	• LectureDiscussion • Reading assignment on examples of data collectiontools • Preparation of sample data collectiontool • Conduct group research project	• Shortanswer /Objective type • Developing questionnaire/ Interview Schedule/ Checklist
VI	4	4	Analyze, Interpret and summarize the researchdata	**Analysis of data:** • Compilation, Tabulation, classification, summarization, presentation, interpretation of data	• LectureDiscussion • Preparation of sample tables.	• Shortanswer • Objective type • Analyze and interpret given data

VII	12	6	Explain the use of statistics, scales of measurement and graphical presentation ofdata. Describe the measures of central tendency and variability and methods of Correlation.	**Introduction to statistics** • Definition, use of statistics, scales ofmeasurement. • Frequency distribution and graphical presentation ofdata • Mean, Median, Mode, Standard deviation • Normal Probability and tests of significance • Co-efficient of correlation • Statistical packages and itsapplication	• LectureDiscussion • Practice on graphical presentations • Practice on computation of measures ofcentral tendency, variability & correlation	• Shortanswer • Objective type • Computation of descriptive statistics
VIII	4	4 50hrs (Project)	Communicate and utilize the research findings.	**Communication and utilization of Research** • Communication of researchfindings • Verbalreport • Writing research report • Writing scientific article/paper • Critical review of published research including publicationethics • Utilization of researchfindings • Conducting group researchproject	• LectureDiscussion • Read/Presentationsof asample published/ unpublished research report Plan, conduct and Write individual/group research project	• Shortanswer • Objective type • Oral Presentation • Development ofresearch proposal Assessment of researchProject.

HEALTH AND NURSING INFORMATICS AND TECHNOLOGY (19HIT23)

PLACEMENT: VSEMESTER THEORY: 1.5 Credits (30Hours)
PRACTICAL: Lab- 0.5 Credit (20 Hours)

DESCRIPTION: This course is designed to equip novice nursing students with knowledge and skills necessary to deliver efficient informatics- led health care services.

COMPETENCIES

On completion of the course, the students will be able to

1. Develop a basic understanding of computer application in patient care and nursingpractice
2. Apply the knowledge of computer and information technology in patient care and nursing education, practice, administration andresearch
3. Describe the principles of health informatics and its use in developing superior healthcare
4. Demonstrate the use of information system in healthcare for patient care and utilization of nursingdata
5. Demonstrate the knowledge of using EHR system in clinicalpractice
6. Apply the knowledge of interoperability standards in clinicalsetting
7. Apply the knowledge of information and communication technology in public healthpromotion
8. Utilize the functionalities of NIS system innursing
9. Demonstrate the skills of using data in management of healthcare
10. Apply the knowledge of the principles of digital ethical and legal issues in clinicalpractice
11. Utilize evidence-based practices in informatics and technology for providing quality patientcare
12. Update and utilize evidence-based practices in nursing education, administration, andpractice.

COURSE OUTLINE

UNIT	TIME (Hrs)		LEARNING OUTCOMES	CONTENT	TEACHING LEARNING ACTIVITIES	ASSESSMENT METHODS
	T	P				
I	10	10	Describe the importance computer and technology in patient care and nursing practice	**Introduction to computer applications for patient care delivery system and nursing practice** ¡ Use of computers in teaching, learning, research and nursing practice	¡ LectureDiscussion ¡ Practicesession ¡ Supervised clinical practice onEHR use ¡ Participate in data analysis using statisticalpackage with statistician	(T) ¡ Shortanswers ¡ Objectivetype ¡ Visitreports ¡ Assessment of assignments

			Demonstrate the use of computer and technology in patient care, nursing education, practice, administration and research.	Windows, MS office: Word, Excel, Power Point Internet Literaturesearch Statisticalpackages Hospital management informationsystem	Visit to hospitals with different hospital management systems	(P) Assessment of skills using checklist
II	3	2	Describe the principles of health informatics Explain the ways data, knowledge and information can be used for effective healthcare	**Principles of Health Informatics** Health informatics-needs, objectivesand limitations Use of data, information and knowledge formore effective healthcare and better health	Lecture Discussion Practical session Work in groups with health informatics team in a hospital to extract nursing data and prepare a report	(T) Essay Short answers Objective type Assessment ofreport
III	2	2	Describe the concepts of information system in health Demonstrate the use of health information system in hospitalsetting	**Information Systems in Healthcare** Introduction to the role and architecture of information systems in modern healthcare environments Clinical Information System(CIS)/Hospital information System (HIS)	Lecture Discussion Demonstration Practical session Work in groups with nurse leaders to understand the hospital information system	(T) Essay Short answers Objective type
IV	2	2	Explain the use of electronic health records in nursing practice Describe the latest trend in electronic health records standards and interoperability	**Shared Care & Electronic Health Records** Challenges of capturing richpatient histories in a computableform Latest global developmentsand standards to enable lifelong electronic health records to be integrated from disparatesystems.	Lecture Discussion Practice on Simulated EHR system Practical session Visit to health informatics department of a hospital to understand the use of EHR in nursing practice Prepare a report on current EHR standards in Indian setting	(T) Essay Short answers Objective type (P) Assessment of skills using checklist
V	2		Describe the advantages and	**Patient Safety & Clinical Risk**	Lecture Discussion	(T) Essay

			limitations of health informatics in maintaining patient safety and risk management	▪ Relationship between patient safetyand informatics ▪ Function and application of the risk managementprocess		▪ Short answers ▪ Objective type
VI	2	2	Explain the importance of knowledge management Describe the standardized languages used in health informatics	**Clinical Knowledge & Decision Making** ▪ Role of knowledge managementin improving decision-making in both the clinical and policy contexts ▪ Systematized Nomenclatureof Medicine, Clinical Terms, SNOMED CT to ICD-10-CM Map, standardized nursing terminologies (NANDA, NOC), Omaha system.	▪ Lecture ▪ Discussion ▪ Demonstration ▪ Practical session ▪ Work in groups to prepare a report on standardized languages used in health informatics. ▪ Visit health informatics department to understand the standardized languages used in hospital setting	(T) ▪ Essay ▪ Short answers ▪ Objective type
VII	2		Explain the use of information and communication technology in patient care Explain the application of public health informatics	**eHealth: Patients and the Internet** ▪ Use of information andcommunication technology to improve or enable personal and public healthcare ▪ Introduction to public health informatics and role ofnurses	▪ Lecture ▪ Discussion ▪ Demonstration	▪ Essay ▪ Short answers ▪ Objective type ▪ Practical exam
VIII	3	2	Describe the functions of nursing informationsystem Explain the use of healthcare data in management of health care organization	**Using Information in Healthcare Management** ▪ Components of NursingInformation system(NIS) ▪ Evaluation, analysis and presentationof healthcare data to inform decisions in the management of healthcare organizations	▪ Lecture ▪ Discussion ▪ Demonstration on simulated NIS software ▪ Visit to health informatics department of the hospital to understand use of healthcare data in decision making	(T) ▪ Essay ▪ Short answers ▪ Objective type
IX	2		Describe the ethical and legal issues in healthcare informatics	**Information Law & Governance in Clinical Practice** ▪ Ethical-legalissues	▪ Lecture ▪ Discussion ▪ Case discussion/role	(T) ▪ Essay ▪ Short answers

			Explains the ethical and legal issues related to nursinginformatics	pertaining to healthcare information in contemporary clinicalpractice - Ethical- legal issues related todigital health applied to nursing	play	- Objective type (P) - OSCE
X	2		Explain the relevance of evidence-based practices in providing quality healthcare	**Healthcare Quality & Evidence BasedPractice** - Use of scientific evidence in improving the quality of healthcare and technical and professional informatics standards	- Lecture Discussion - Casestudy	(T) - Essay - Short answers - Objective type

SKILLS

- Utilize computer in improving various aspects of nursingpractice
- Use technology in patient care and professionaladvancement
- Use data in professional development and efficient patientcare
- Use information system in providing quality patientcare.
- Use the information system to extract nursingdata
- Conducting literaturereview

INTRODUCTION TO FORENSIC NURSING AND INDIAN LAWS (19FNIL24)

PLACEMENT:VSEMESTER THEORY**:** 1 Credit(20 Hours)

DESCRIPTION

This course is designed to help students to know the importance of forensic science in Total patient care and to recognize forensic nursing as a specialty discipline in Professional nursing practice.

COMPETENCIES

On completion of the course, the students will be able to

1. Identify forensic nursing as an emerging specialty in healthcare and nursing practice
2. Explore the history and scope of forensic nursingpractice
3. Identify forensic team, role and responsibilities of forensic nurse in total care of victim of violence and in preservation ofevidence
4. Develop basic understanding of the Indian judicial system and legalprocedure

COURSE OUTLINE

UNIT	TIME (Hrs)	LEARNING OUTCOMES	CONTENT	TEACHING/ LEARNING ACTIVITES	ASSESSMENT METHODS
I	3	Describe the nature of forensic science and discus issues concerning violence	**Forensic science** ▪ Definition ▪ History ▪ Importance in medical science ▪ Forensic science laboratory **Violence** ▪ Definition ▪ Epidemiology ▪ Source of data Sexual abuse-childand women	▪ Lecture cum discussion ▪ Visit to regional/state forensicscience laboratory	▪ Quiz-MCQ ▪ Write visitreport

I	2	Explain concepts of forensic nursing and scope of practice for forensicnurse	**Forensic nursing** ¡ Definition ¡ History and development ¡ Scope - setting of practice, areasof practice and subspecialties ¡ Ethicalissues ¡ Roles and responsibilities of nurse ¡ INC & SNCActs	¡ Lecture cum discussion	¡ Short answer Objectivetype
III	7	Identify members of forensic team and describe role of forensic nurse	**Forensic team** ¡ Members and their roles **Comprehensive forensic nursing care of victim and family** ¡ Physical aspects ¡ Psychosocialaspects ¡ Cultural and spiritual aspects ¡ Legalaspects ¡ Assist forensic team in care beyond scopeof her practice ¡ Admission and discharge/referral/death of victim ofviolence ¡ Responsibilities of nurse as awitness **Evidence preservation-role of nurses** ¡ Observation ¡ Recognition ¡ Collection ¡ Preservation ¡ Documentation of Biological andother evidence related to criminal/traumatic event ¡ Forwarding biological samples for forensic examination	¡ Lecture cum Discussion ¡ Hypothetical/real casepresentation ¡ Observation of post-mortem ¡ Visit to department of forensicmedicine	¡ Objectivetype ¡ Shortanswer ¡ Write report

IV	3	Describe fundamental rights and human rights commission	**Introduction of Indian constitution** **Fundamental rights** - Rights ofvictim - Rights ofaccused **Human rights commission**	- Lecture cum discussion - WrittenAssignment - Visit toprison	- Shortanswer - Assessment of written assignment Write visit report
V	5	Explain Indian judicial system and laws Discuss the importance of POSCO Act	**Sources of laws and law-making powers** **Overview of Indian judicialsystem** - JFMC - District - State - Apex **Civil and criminal case procedures** - IPC - ICPC - IEAct **Overview of POSCO Act**	- Lecture cum discussion - Guidedreading Lecture cum discussion	- Quiz - Shortanswer

(19CHN25) CHILD HEALTH NURSING II PLACEMENT: VI SEMESTER

THEORY: 20 Hours
Clinical: 80 Hours

DESCRIPTION: This course is designed for developing an understanding of the modern approach to child-care, identification, prevention and nursing management of common health problems of neonates and children.

COMPETENCIES

On completion of the course, the students will be able to

1. Apply the knowledge of pathophysiology and provide nursing care to childrenwith orthopedic disorders, eye, ear and skin disorders and communicablediseases
2. Provide care to children with common behavioural, social and psychiatricproblems
3. Manage challengedchildren
4. Identify the social and welfare services for challengedchildren

COURSE OUTLINE

UNIT NO.	TIME (HRS)	LEARNING OUTCOMES	CONTENT	TEACHING LEARNING ACTIVITIES	ASSESSMENT METHODS
VII	**T110**	Describe the etiology, pathophysiology, clinical manifestation and nursing management of children with Orthopedic disorders, eye, ear and skin disorders Explain the preventive measures and strategies for children with communicable diseases	**Orthopedic disorders**: • Clubfoot • Hip dislocationand • Fracture **Disorder of eye, ear and skin**: • Refractoryerrors • Otitis mediaand • Atopicdermatitis **Communicable diseases in children**, their identification/diagnosis, nursing management in hospital, in home, control & prevention: • Tuberculosis • Diphtheria • Tetanus • Pertussis • Poliomyelitis • Measles	• Lecture Discussion • Demonstration • Practicesession • Clinicalpractice	• Shortanswers • Objectivetype • Assessment of skillswith checklist

UNIT NO.	TIME (HRS)	LEARNING OUTCOMES	CONTENT	TEACHING LEARNING ACTIVITIES	ASSESSMENT METHODS
			▪ Mumps,and ▪ Chickenpox ▪ HIV/AIDS ▪ Denguefever		
VIII	**T 10**	Describe the management of children with behavioral &social problems Identify the social & welfare services for challenged children	**Management of behavior and social problems in children.** • Child Guidanceclinic • Common behavior disorders in children and management o Enuresis andEncopresis o Nervousness o Nailbiting o Thumbsucking o Tempertantrum o Stealing o Aggressiveness o Juveniledelinquency o Schoolphobia o Learningdisability ▪ Psychiatric disorders in children andmanagement o Childhoodschizophrenia o Childhooddepression o Conversionreaction o Posttraumatic stress disorder o Autistic spectrumdisorders ▪ Eating disorder in children andmanagement o Obesity o Anorexianervosa o Bulimia ▪ Management of challengedchildren. o Mentally o Physically o Socially o Childabuse, o substanceabuse ▪ Welfare services for challenged childrenin	▪ Lecture Discussion ▪ Field visits to childguidance clinics, school for mentally & physically, socially challenged	▪ Shortanswers ▪ Objectivetype ▪ Assessment of fieldreports

UNIT NO.	TIME (HRS)	LEARNING OUTCOMES	CONTENT	TEACHING LEARNING ACTIVITIES	ASSESSMENT METHODS
			India		

CHILD HEALTH NURSING II

PLACEMENT:VISEMESTER 1 Credit (80 Hrs) THEORY: 20Hours
Clinical: 80 Hours

Pediatric Medical Ward	**VI Sem- 1 Week**	▪ Counsel & educate parents	▪ Application ofrestraints ▪ Administration of O_2 inhalation bydifferent methods ▪ Collection of specimens for commoninvestigations ▪ Assisting with common diagnosticprocedures	▪ Case study/ presentation – 1	▪ Assess performance with rating scale ▪ Assess each skillwith checklist OSCE/ OSPE ▪ Evaluation ofcase study/ presentation & health education session ▪ Completion of activity record.
Pediatric Surgical Ward	**VI Sem- 1 Weeks**	▪ Recognize different pediatric surgical conditions/ malformations ▪ Provide pre& postoperative	▪ Bowel wash, insertion of suppositories ▪ Care forostomies: □ ColostomyIrrigation □ Ureterostomy □ Gastrostomy □ Enterostomy ▪ Urinary catheterization&	▪ Nursing care plan- 1	▪ Assess performance with rating scale ▪ Assess each skillwith checklist OSCE/

		care to children with common paediatric surgical conditions/ malformation Counsel & educate parents	drainage		OSPE Evaluation ofcase study/ presentation Completion ofactivity record.
NICU & PICU	**VI Sem-1 Week**	Provide nursing care to critically ill children	Care of a baby in incubator / warmer Care of a child onventilator, CPAP EndotrachealSuction ChestPhysiotherapy Administration of fluids with infusionpumps Total ParenteralNutrition Phototherapy Monitoring ofbabies Recording &reporting Cardiopulmonary Resuscitation (NALS,PLS,PALS)	Newborn assessment-1 Nursing Care Plan-1	Assess performance with rating scale Evaluation of observation report Completion ofactivity record.

MENTAL HEALTH NURSING II (19MHN26)

PLACEMENT: VISEMESTER

TEORY: 1credit (20 Hours) PRACTICAL: Clinical: 2 Credits (160 Hours)

DESCRIPTION: This course is designed to provide the students with basic understanding and skills essential to meet psychiatric emergencies and perform the role of community mental health nurse.

COMPETENCIES

On completion of the course, the students will be able to

1. Apply nursing process in providing care to patients with organic braindisorders
2. Identify and respond to psychiatricemergencies
3. Carry out crisis interventions during emergencies undersupervision
4. Perform admission and discharge procedures as per MHCA2017
5. Explore the roles and responsibilities of community mental health nurse in delivering community mental health services

UNIT	TIME (HRS)	LEARNING OUTCOMES	CONTENT	TEACHING LEARNING ACTIVITIES	ASSESSMENT METHODS
XII	5	Describe the etiology, psycho-pathology, clinical manifestations, diagnostic criteria and management of organic brain disorders.	**Nursing management of organic brain disorders** (Delirium, Dementia, amnestic disorders) ¦ Prevalence andincidence ¦ Classification ¦ Etiology, psycho-pathology, clinical features, diagnosis and Differential diagnosis ¦ Nursing Assessment-History,	¦ Lecture discussion ¦ Case discussion ¦ Case presentation ¦ Clinical practice	¦ Essaytype ¦ Short answers ¦ Assessment of patient management problems

			Physical, mental and neurological assessment - Treatment modalitiesand nursing management of organic brain disorders - Follow-up and homecare and rehabilitation		
XIII	6	- Identify psychiatric emergencies and carry out crisis intervention	**Psychiatric emergencies and crisis intervention** - Types of psychiatric emergencies (Attempted suicide, violence/aggression, stupor, delirium tremens and other psychiatric emergencies) and their managements - Maladaptive behaviourof individual and groups, stress, crisis and disaster(s) - Types of crisis - Crisis intervention: Principles, Techniques and Process -Stress reduction interventions as per stress adaptation model -Coping enhancement -Techniques of counseling	- Lecture discussion - Case discussion - Case presentation - Clinical practice	- Short answers - Objective type

XIV	4	▪ Explain legal aspects applied in mental health settings and role of the nurse	**Legal issues in Mental Health Nursing** ▪ Overview of IndianLunacy Act and The Mental Health Act 1987 ▪ (Protection of Childrenfrom Sexual Offence) POSCO Act ▪ Mental Health CareAct (MHCA) 2017 ▪ Rights of mentally ill clients ▪ Forensic psychiatry ▪ Acts related to narcoticand psychotropic substances and illegal drug trafficking ▪ Admission anddischarge procedures as per MHCA2017 ▪ Role and responsibilities of nurses in implementing MHCA 2017	▪ Lecture discussion ▪ Case discussion	▪ Short answers ▪ Objective type
XV	5	▪ Describe the modelof preventive psychiatry ▪ Describes Community Mental health services and role of thenurse	**Community Mental Health Nursing** ▪ Development ofCommunity Mental Health Services: ▪ National mentalhealth policy viz. National Health Policy ▪ National Mental Health Programme	▪ Lecture discussion ▪ Clinical/fieldpractice ▪ Field visits tomental health service agencies	▪ Short answers ▪ Objective type ▪ Assessment of the field visitreports

			▪ Institutionalization Versus Deinstitutionalization ▪ Model of Preventive psychiatry ▪ Mental Health Services available at the primary, secondary, tertiary levels including rehabilitation and nurses' responsibilities ▪ Mental Health Agencies: Government and voluntary, National and International ▪ Mental health nursing issues for special populations: Children, Adolescene, Women Elderly, Victims of violence and abuse, Handicapped, HIV/AIDS etc.		

CLINICAL - MENTAL HEALTH NURSING - II

SEMESTER V & VI

MENTAL HEALTH NURSING I & II-PRACTICAL: 3 Credits (240 Hours) - 35 hrs 7 weeks

(MENTAL HEALTH NURSING I – 2 Credits (160 Hours) & MENTAL HEALTH NURSING II – 1 Credit (80 Hours)

PRACTICE COMPETENCIES:

On completion of the course, the students will be able to:

1. Assess patients with mental healthproblems/disorders
2. Observe and assist in various treatment modalities ortherapies
3. Counsel and educate patients andfamilies
4. Perform individual and grouppsycho-education
5. Provide nursing care to patients with mental healthproblems/disorders
6. Motivate patients in the community for early treatment and followup
7. Observe the assessment and care of patients with substance abuse disorders in dead dictioncentre

CLINICAL POSTINGS

Areas	Duration (in weeks)	Learning Outcomes	Skills/Procedural competencies	Clinical requirements	Assessments Methods
Psychiatric OPD	1	¡ Assess patientswith mental health problems ¡ Observe and assistin therapies ¡ Counsel and educate patients,and families	¡ Historytaking ¡ Perform mental statusexamination (MSE) ¡ Observe/practice Psychometric assessment ¡ Perform Neurological examination ¡ Observing and assisting in therapies ¡ Individual and group psycho-education □ Mental hygienepractice	¡ History taking andMental status examination-2 ¡ Health education-1 ¡ Observation report ofOPD	¡ Assess performance with rating scale ¡ Assesss eachskill with checklist ¡ Evaluatio n ofhealth education ¡ Assessme ntof observation report ¡ Completi on ofactivity

			education □ Family psycho-education		record
Child Guidance clinic	1	¡ Assessment ofchildren with various mental health problems ¡ Counsel andeducate children, families and significant others	¡ History &mentalstatus examination ¡ Observe/practice psychometric assessment ¡ Observe and assist in various therapies ¡ Parental teaching for child with mental deficiency	¡ Case work-1 ¡ Observation report of different therapies-1	¡ Assess performance with rating scale ¡ Assess eachskill with checklist ¡ Evaluation ofthe observation report
Inpatient ward	4	¡ Assess patientswith mental health problems ¡ To provide nursingcare for patients with various mental health problems ¡ Assist in various therapies ¡ Counsel andeducate patients, families and significant others	¡ Historytaking ¡ Mental status examination(MSE) ¡ Neurological examination ¡ Assisting in psychometric assessment ¡ Recording therapeutic communication ¡ Administration ofmedications ¡ Assist Electro-convulsive Therapy (ECT) ¡ Participating in alltherapies ¡ Preparing patients for Activities ofDaily living (ADL) ¡ Conducting admission and discharge counselling ¡ Counseling and teaching patients andfamilies	¡ Give care to 2-3 patientswith various mental disorders ¡ Casestudy-1 ¡ Care plan- 2 ¡ Clinical presentation1 ¡ Process recording2 ¡ Maintain drug book	¡ Assess performance with rating scale ¡ Assess eachskill with checklist ¡ Evaluation of thecase study, care plan, clinical presentation, process recording ¡ Completion ofactivity record

Community psychiatry & Deaddiction centre	1	¡ To identify patientswith various mental disorders ¡ To motivate patientsfor early treatment and follow up ¡ To assist in follow upclinic ¡ Counsel and educatepatient, family and community ¡ Observe the assessmentand care of patients at deaddiction centre	¡ Conduct home visit and casework ¡ Identifying individualswith mental health problems ¡ Assisting in organizationsof Mental Health camp ¡ Conducting awarenessmeetings for mental health & mental illness ¡ Counseling and Teachingfamily members, patients and community ¡ Observing deaddictioncare	¡ Casework-1 ¡ Observation report onfield visits ¡ Visit to deaddiction centre	¡ Assess performance with rating scale ¡ Evaluation ofcase work and observation report ¡ Completi on ofactivity record

INTERNSHIP

Area	Duration	Objective	Skills	Assessment
Psychiatry ward	4 weeks	¡ Provide comprehensive care to patients with mental health problems ¡ Carry out Specific Nursing interventions for the clients with different mental disorders	¡ Integrated Practice	¡ Assessclinical performance with rating scale

(19CHNE27)-COMMUNITY HEALTH NURSING -I INCLUDING EPIDEMIOLOGY

PLACEMENT:VISEMESTER THEORY**:** 5 Credits (100Hours)

Clinical: 2 Credits (160 Hours)

DESCRIPTION: This course is designed to help students to practice Community Health Nursing for the individuals, family and groups at rural, urban and tribal settings by applying principles of community health nursing and epidemiological approach. It also helps the students to develop knowledge and competencies required to screen, assess, diagnose, manage and refer clients appropriately in various health care settings. It prepares the students to provide primary healthcare to clients of all ages in the community, DH, PHC, CHC, SC/HWC and develop beginning skills in participating in all the National HealthPrograms.

COMPETENCIES

On completion of the course, the students will be able to

1. Describe community health nursing approaches andconcepts
2. Describe the role and responsibilities of community health nursingpersonnel
3. Utilize the knowledge and skills in providing comprehensive primary health care across the life span at varioussettings
4. Make effective home visits applying principles and methods used for home visiting
5. Use epidemiological approach in communitydiagnosis
6. Utilize the knowledge of epidemiology, epidemiological approaches in caring for people with communicable and non-communicablediseases
7. Describe the methods of collection and interpretation of demographicdata
8. Investigate an epidemic of communicablediseases
9. Assess, diagnose, manage and refer clients for various communicable and non-communicablediseasesappropriatelyattheprimaryhealthcarelevel
10. Provide maternal, newborn and child care, and reproductive health including adolescent care in the urban and rural health caresettings
11. Demonstrate beginning practice competencies/skills relevant to provide comprehensive primary health care/community-based care to clients with common diseases and disorders including emergency and first aid care at home/clinics/centres as per predetermined protocols/drug standing orders approved byMOH&FW
12. Identify and perform the roles and responsibilities of nurses in implementing various national health programs in the community for the prevention, control and management of communicable and non-communicable diseases particularly in screening, identification, primary management and referral to a health facility/First Referral Unit(FRU)
13. Explain population control & its impact on the society and describe the approaches towards limiting familysize

COURSE OUTLINE					
UNIT	**TIME (Hours)**	**LEARNING OUTCOMES**	**CONTENT**	**TEACHING/LEARNING ACTIVITIES**	**ASSESSMENT METHODS**
I	7 T	Describe community health nursing approaches and concepts Describe and identify the activities of community health nurse to promote and maintain family health through homevisits	**Community health nursing approaches, concepts, roles and responsibilities of community health nursing personnel** *Approaches:* ○ Nursingprocess ○ Epidemiological approach ○ Problem solving approach ○ Evidence based approach ○ Empowering people to care forthemselves *Review* -Primary health care and Comprehensive Primary Health Care (CPHC) **Home Visits**: Concept, Principles, Process, & Techniques: Bag technique Qualities of Community Health Nurse Roles and responsibilities of community health nursing personnel in family health services *Review:* Principles &techniques of counseling	Lecture Discussion Demonstration Role plays Supervised field practice	Short answers Essays Assessment of supervised field practice

II	10 T	Explain the specific activities of community health nurse in assisting individuals and groups to promote and maintain their health	**Assisting individuals and families to promote and maintain their health** *A. Assessment of individuals and families* (Review from Child helath nursing, Medical surgical nursing and	Lecture Discussion Demonstration Role plays	Short answers Essay type Assessment of clinical performance in the field practicearea

		Provide primary care at home/health centers (HWC) using standing orders/protocols as per public health standards/approved by MOH&FW and INC regulation Develop skill in maintenance of records and reports Develop beginning skills in handling social issues affecting the health and development of thefamily	OBG Nursing) ▪ Assessment of children, women, adolescents,elderly etc ▪ Children-Monitoring growth and development, milestones ▪ Anthropometric measurements, BMI ▪ Socialdevelopment ▪ Temperature and Blood pressure monitoring ▪ Menstrualcycle ▪ Breast self examination (BSE) and testicles self examination (TSE) ▪ Warning Signs of variousdiseases ▪ Tests:Urine for sugar and albumin,blood sugar, Hemoglobin *B. Provision of health services/ primary health care:* ▪ Routine check- up, Immunization, counseling, and diagnosis ▪ Management of common diseasesat home and health centre level ○ Care based on standing orders/protocols approved by MOH&FW ○ Drugs dispensing and injections at health centre *C. Continue medical care and follow up* in community for various	Document and maintain: ▪ Individualrecords ▪ Familyrecords ▪ Health centerrecords	▪ Assessment of procedural skills in lab procedures ▪ Evaluation of records andreports ▪ Evaluation of field visit reports

		Identify and assist the families to utilize the community resources appropriately	diseases/ disabilities *D. Carry out therapeutic procedures* as prescribed/required for client and family *E. Maintenance of health records and reports* ¡ Maintenance of client records ¡ Maintenance of health records at the facility level ¡ Report writing and documentationof activities carried out during home visits, in the clinics/centers and field visits *F. Sensitize and handle social issues affecting health and development of the family* ¡ Womenempowerment ¡ Women and child abuse ¡ Abuse ofelders ¡ Femalefoeticide ¡ Commercial sex workers ¡ Substanceabuse *G. Utilize community resources for client and family* ¡ Traumaservices ¡ Old agehomes ¡ Orphanages ¡ Homes for physically challengedindividuals ¡ Homes fordestitute ¡ Palliative carecentres ¡ Hospice carecentres ¡ Assisted livingfacility	¡ Fieldvisits	

III	10 T	Describe the concepts, approaches and methods of epidemiology Investigate an epidemic of communicable disease	**Introduction to Epidemiology- Epidemiological Approaches, and Processes** ¡ Epidemiology- Concept and Definition ¡ Distribution and frequency ofdisease ¡ Aims & uses of epidemiology ¡ Epidemiological models of causation of disease ¡ Concepts of disease transmission ¡ Modes of transmission-Direct, Indirect and chain of infection ¡ Time trends or fluctuations indisease occurrence ¡ Epidemiological approaches- Descriptive, analytical and experimental ¡ Principles of control measures/ levels of prevention of disease ¡ Investigation of an epidemic of communicable disease ¡ Use of basic epidemiological tools to makecommunity diagnosis for effective planning and intervention	¡ Lecture, ¡ Discussion ¡ Demonstration ¡ Roleplay ¡ Field visits- communicabledisease hospital & Entomology office ¡ Investigation of an epidemic of communicable disease	¡ Short answers ¡ Essaytype ¡ Report on visit to communica ble disease hospital ¡ Report on visit to entomology office ¡ Report and presentation on Investigatin g an epidemic of communica ble disease
IV	15 T	Explain the epidemiology of specific communicable diseases Describe the	**Communicable diseases and National health programs** **1.** *Communicable Diseases – Vector borne diseases (Every disease will be dealt under the followingheadlines)*	¡ Lecture ¡ Discussion, ¡ Demonstration ¡ Roleplay ¡ Suggested field	¡ Field visit reports ¡ Assessment of family

		various methods of prevention, control and management of communicable diseases and the role of nurses in screening, diagnosing, primary management and referral to a health facility	▪ **Epidemiology of the following vectorborn diseases** ▪ **Prevention &control measures** ▪ **Screening, and diagnosing the following conditions, primary management, referral and follow up** o Malaria o Filaria o Kala-azar o Japaneseencephalitis o Dengue o Chickungunya **2.** *Communicable diseases: Infectious diseases (Every disease will be dealt under the followingheadlines)* ▪ **Epidemiology of the following infectious diseases** ▪ **Prevention &Controlmeasures** ▪ **Screening, diagnosing the following conditions, primary management, referral and follow up** o Leprosy o Tuberculosis o Vaccine preventable diseases-Diphtheria, whooping cough, tetanus, poliomyelitis andmeasles o Entericfever o Viralhepatitis o HIV/AIDS/RTI infections- o HIV/AIDS, and Sexually Transmitted Diseases/Reproductive	visits ▪ Field practice ▪ Assessment of clients with non-communicable diseases	case study ▪ OSCE assessment ▪ Short answers ▪ Essaytype

		Identify the relevant national health programmes and explain the role of nurses in implementation of theseprogrammes	tract infections (STIs/RTIs) ○ Diarrhoea ○ Respiratory tract infections ○ Helminthic –soil &food transmitted and parasitic infections- Scabies and pediculosis **3**. *Communicable diseases: Zoonotic diseases* ▪ **Epidemiology of Zoonoticdiseases** ▪ **Prevention &control measures** ▪ **Screening and diagnosing the following conditions, primary management, referral and follow up** ○Rabies: Identify, suspect, primary management and referral to a health facility ▪ Role of a nurses in control of communicable diseases **National Health Programmes** 1. UIP-Universal Immunization Programme (Diphtheria, Whooping cough, Tetanus, Poliomyelitis, Measles and Hepatitis B) 2. National Leprosy Eradication Programme(NLEP) 3. Revised National TuberculosisControl		

			Programme(RNTCP) 4. Integrated Disease SurveillenceProgramme (IDSP)- Enteric fever, Diarrhea, Respiratory infections andScabies 5. National Aids Control Organization(NACO) 6. National Vector Borne Disease Control Programme 7. National Air Quality Monitoring Programme 8. Any other newly addedprogrammes		
V	15 T	Describe the national health programmes for the control of non-communicable diseases and the role of nurses in screening, identification primary management and referral to a health facility	**Non- Communicable diseases and National Health programmes(NCD)** ▪ **National response to NCDs** **(Every disease will be dealt under the following headlines** ▪ **Epidemiology of specificdiseases** ▪ **Prevention and controlmeasures** ▪ **Screening, diagnosing/ identification and primary management, referral and follow upcare** **NCD-1** o DiabetesMellitus o Hypertension o Cardiovascular diseases o Stroke &Obesity o **Blindness**-Categories of visual impairementand national programme for control of blindness o **Deafness-** national	▪ Lecture, ▪ Discussion, ▪ Demonstration ▪ Roleplay ▪ Suggested fieldvisits ▪ Fieldpractice ▪ Assessment of clients with non-communicablediseases	▪ Field visit reports ▪ Assessment of family case study ▪ OSCE assessment ▪ Short answers ▪ Essaytype

			programme for prevention and control ofdeafness o **Thyroiddiseases** o **Injury and accidents**- Risk factors for Road traffic injuries and operational guidelines for trauma care facility onhighways **NCD-2Cancers** o CervicalCancer o BreastCancer o Oralcancer o Epidemiology of specific cancers, Risk factors/Causes, Prevention, Screening, diagnosis- signs, Signs & symptoms, and early management & referral o Palliativecare o Role of a nurse in non-communicable disease controlprogramme **National Health Programmes** ▪ National programmefor prevention and control of cancer, Diabetes, Cardiovascular Diseases and Stroke (NPCDCS) ▪ National programmefor control ofblindness ▪ National programmefor prevention and control ofdeafness ▪ National tobacco controlprogramme ▪ **Standard treatment protocols usedin National Health Programmes**	▪ Participation in national healthprogrammes	

VI	10 T	Explain nurses' role in identifying, primary management and referral of clients with common disorders/ conditions and emergencies including firstaid	**Management of common conditions and emergencies including firstaid** ▪ Standing orders: Definition,uses **Screening, diagnosing/identification, primary care and referral of Gastrointestinalsystem:** o Abdominalpain o Nausea andvomiting o Diarrhea o Constipation o Jaundice o GIbleeding o Abdominaldistension o Dysphagia and dyspepsia o Aphthousulcers **Respiratory System:** o Acute upper respiratory infections- Rhinitis, Sinusitis, Pharyngitis, Laryngitis,Tonsillitis o Acute lower respiratoryinfections- o Bronchitis, pneumonia and bronchialasthma o Hemoptysis, Acute chestpain **Heart & Blood** o Common heart diseases- Heart attack/coronary artery disease, heart failure, arrhythmia o Blood-anemia, blood cancers, bleeding disorders **Eye & ENT conditions** Eye-local infections, redness of eye, conjunctivitis, stye, trachoma and refractive errors ENT-Epistaxis, ASOM, sore throat,deafness	▪ Lecture, ▪ Discussion, ▪ Demonstration ▪ Roleplay ▪ Suggested fieldvisits ▪ Fieldpractice ▪ Assessment of clients with common conditions and provide referral	▪ Short answers ▪ Essaytype ▪ Field visit reports ▪ OSCE assessment

			Urinary system Urinary tract infections-cystitis, pyelonephritis, prostatitis, UTIs in children **First aid in common emergency conditions - Review** High fever, low blood sugar, minor injuries, fractures, fainting, bleeding, shock, stroke, bites, burns, choking, seizures, RTAs, poisoning, drowning and foreign bodies		
VII	20 T	Provide reproductive, maternal, newborn and child care, including adolescent care in the urban and rural health caresettings	**Reproductive, maternal, newborn, child and adolescent Health (Review from OBG Nursing and application in communitysetting)** ▪ Present situation of reproductive,maternal and child health in India **Antenatal care** ▪ Objectives, antenatal visits and examination, nutrition during pregnancy,counseling ▪ Calcium and iron supplementation in pregnancy ▪ Antenatal care at centre level ▪ Birthpreparedness ▪ High risk approach-Screening/early identification and primary management of complications-Antepartum hemorrhage, pre-eclampsia, eclampsia, Anemia, Gestational diabetes mellitus, Hypothyroidism, Syphilis ▪ Referral, follow up	▪ Lecture ▪ Discussion ▪ Demonstration ▪ Roleplay ▪ Suggested field visits, and fieldpractice ▪ Assessment of antenatal, postnatal, newborn, infant, preschool child, school child, and adolescent health ▪	▪ Short answers ▪ Essaytype ▪ OSCE assessment

		Promote adolescent health	and maintenance of records and reports **Intra natal care** ¡ Normal labour-process, onset, stages oflabour ¡ Monitoring and active management of different stagesof labour ¡ Care of women after labour ¡ Early identification, primary management, referral and followup-preterm labour, fetal distress, prolonged and obstructed labour, vaginal & perennial tears, ruptured uterus ¡ Care of newborn immediately afterbirth ¡ Maintenance of records andreports ¡ Use of Safe child birth checklist ¡ SBAmodule-Review ¡ Organization of labourroom **Postpartum care** ¡ Objectives, Postnatal visits, care ofmother and baby, breast feeding, diet during lactation, and health counseling ¡ Early identification, primarymanagement, referral and follow up of complications, Danger signs-postpartum hemorrhage, shock, puerperal sepsis, breast conditions, post partumdepression ¡ Postpartum visit by health care provider **Newborn and childcare**		¡ Screen, manageand refer adolescents ¡ Counsel adolescents

			▪ *Review:* Essential newborncare ▪ Management of common neonatal problems ▪ Management of commonchildhealth problems: Pneumonia, Diarrhoea, Sepsis, screening for congenital anomalies andreferral ▪ *Review:* IMNCI Module ▪ Under fiveclinics **Adolescent Health** ▪ Common health problems and risk factors in adolescent girls and boys ▪ Common Gynecological conditions- dysmenoorhea, Premenstrual Syndrome (PMS), Vaginal discharge, Mastitis, Breast lump, pelvic pain, pelvic organprolapse ▪ Teenage pregnancy, awareness about legal age ofmarriage, nutritional status of adolescents National Menstrual Hygiene scheme ▪ Counseling for parents and teen agers **National programmes** ▪ RMNCH +A Approach- Aims, Health systems strengthening, RMNCH+A strategies, Interventions across life stages, programmemanagemen t,		

			monitoring and evaluationsystems - Universal Immunization Programmeas per Government of India guidelines-Review - Rashtriya Bal SwasthyaKaryakaram (RSBK) -children - Rashtriya Kishor Swasthya Karyakram (RKSK)-adolscents - Other new programmes		
VIII	4 T	Enumerate the school health activities and the role functions of a school healthnurse	**School Health Services** - Objectives - Health problems of schoolchildren - Components of school healthservices - Maintenance of school healthrecords - Initiation and planning of school health services - Role of a school health nurse	- Lecture - Discussion - Demonstration - Roleplay - Suggested fieldvisits - Fieldpractice	- Short answers - Essaytype - Evaluation of health counseling to school children - Screen, diagnose, manage and refer school children - OSCE assessment
IX	3 T	Discuss the concepts and scope ofdemography	**Demography, Surveillance and Interpretation ofData** - Demography and vital statistics-demographic cycle, world population trends, vital statistics - Sex ratio and child sex ratio, trends of sexratio in India,The causesand socialimplications - Sources of vital statistics- Census, registration of vital events, sample	- Lecture - Discussion - Demonstration - Roleplay - Suggested fieldvisits - Fieldpractice	- Short answers - Essaytype

			registration system - Morbidity and mortalityindicators: Definition, calculation and interpretation - Surveillance, Integrateddisease surveillance project (IDSP), Organization of IDSP, flow of information and mother and child tracking system (MCTS) inIndia - Collection, analysis, interpretation, useof data - *Review*- Common sampling techniques- random and nonrandom techniques Disaggregation of data		
X	6 T	Discuss population explosion and its impact on social and economic development of India Describe the various methods of populationcontrol	**Population and its Control** - Population Explosion and its impacton Social, Economic development of individual, society and country. - Population Control – Women Empowerment; Social, Economic and Educational Development - Limiting Family Size – Promotion ofsmall family norm, Temporary Spacing Methods (natural, biological, chemical, mechanical methods etc), Terminal Methods (Tubectomy, Vasectomy) - Emergency Contraception - Counseling in	- Lecture - Discussion - Demonstration - Roleplay - Suggested fieldvisits - Fieldpractice	- Short answers - Essaytype - OSCE assessment - Counseling on family planning

			reproductive, sexual health including problems of adolescents ▪ Medical Termination of pregnancy andMTP Act ▪ National Population Stabilization Fund/JSK (JansankhyaSthirata Kosh) ▪ Family planning2020 ▪ National Family WelfareProgram ▪ Role of a nurse in Family Welfare Program		

COMMUNITY HEALTH NURSING I

CLINICALPOSTINGS: 4 Weeks x 40 hours/week Total hours: 160hours

CLINICAL AREA/UNIT	DURATION IN WEEKS	LEARNING OUTCOMES	PROCEDURAL COMPETENCIES/ CLINICAL SKILLS	CLINICAL REQUIREMENTS	ASSESSMENT METHODS
Urban Rural	2 weeks 2 Weeks	Identify prevalent communicable and non-communicable diseases Perform health assessment for clients of various agegroups Screen, diagnose, manage and refer clients with common health problems in the community and refer high riskclients Assess and provide antenatal, intrapartum, postnatal and new- borncare Participate in school health programme	▪ Investigating an epidemic - Community health survey ▪ Health assessment including nutritional assessment for clients of different age groups ▪ Screening, diagnosing, primary management of common health problems in the community and referral of high-risk clients to FRUs	▪ Community health survey to investigatean epidemic-1 ▪ Health assessmentof woman-1, infant/under five-1, adolescent-1, adult-1 ▪ Growth monitoringof under- five children- 1 **Screening, diagnosing and primary management and referral**: ▪ Communicable disease-1 ▪ Non-communicable diseases-1 ▪ Dental problems-1 ▪ Eye problems-1 ▪ Ear, nose, and throatproblems-1 ▪ Highrisk	▪ Clinical performance assessment ▪ OSCE during posting ▪ Final clinical examination (University)

		Counsel and educate individual, family andcommunity Provide family welfareservices Participate in implementation of national health programmes Maintain records and reports	▪ Assessment (physical & nutritional) of antenatal, intrapartum, postnatal and newborn ▪ Conduction of normal delivery at health center Newborn care ▪ Participation in school health programme ▪ Health counselling to different clients ▪ Group health education ▪ Family planning counselling ▪ Insertion and removal of IUCD ▪ Participation in National Health Programmes ▪ Documentation skills	pregnant woman-1 ▪ High risk neonate-1 ▪ Emergencies- 1 ▪ Minor ailments-2 ▪ Primary managementand care based on standing orders/protocols approved by MOH&FW ▪ Assessment of antenatal-1, intrapartum-1, postnatal-1 and newborn-1 ▪ Conduction of normaldelivery at health center and documentation-2 ▪ Immediate newborncare and documentation-1 ▪ Participation in schoolhealth programme-1 ▪ **Health counselingfor** ○ Adult with Communicable diseases/NCD-1 ○ Adolescent ▪ Group health Education - 1 (Rural/Urban) ▪ Family planning counselling-1 ▪ Insertionof	▪ Evaluation of Group health education ▪ Family Case study evaluation

				IUCD-1 ▪ Removal of IUCD-1 ▪ Family case study- 1 (Rural/Urban) ▪ Participation in any two National Health programmes ▪ **Document and maintain**: o Individualrecord o Familyrecord o Health center record ▪ Writing report on Health center activities	

Reference: Modules used in Certificate programme for community Health for nurses (Bridge Programme)

(19MOG28)-MIDWIFERY / OBSTETRIC AND GYNECOLOGY NURSING- I

PLACEMENT: VISEMESTER THEORY**:** 2 Credits (40 Hours)

Skill lab **:** 1 Credit (40 Hours) Clinical : 2 Credits (160Hours)

DESCRIPTION: This course is designed for students to develop knowledge and competencies on the concepts and principles of midwifery. It helps them to acquire knowledge and skills in rendering respectful maternity care to woman during antenatal, natal and postnatal periods in hospitals and community settings. It further helps to develop skills in managing normal neonates and participate in family welfare programme.

COMPETENCIES

On completion of the program, the students will be able to:

1. Demonstrate professional accountability for the delivery of nursing care as per INC standards/ICM competencies that are consistent with moral, altruistic, legal, ethical, regulatory and humanistic principles in midwiferypractice.
2. Communicate effectively with individuals, families and professional colleagues fosteringmutualrespectandshareddecisionmakingtoenhancehealthoutcomes.
3. Recognize the trends and issues in midwifery/obstetricalnursing.
4. Review and describe the anatomy and physiology of human reproductive system andconception
5. Describe and apply the physiology in the management of normal pregnancy, birth andpuerperium.
6. Demonstrate competency in providing respectful maternity care for the women during the antenatal, intranatal and postnatalperiod.
7. Conduct normal deliveries and provide essential newborncare
8. Apply nursing process in caring for women and theirfamilies

COURSE OUTLINE

UNIT	TIME (Hours)	LEARNING OUTCOMES	CONTENT	TEACHING/ LEARNING ACTIVITIES	ASSESSMENT METHODS
I	T- 4	Identify the trends and issues in midwifery	**Introduction to midwifery** ▪ History of midwifery inIndia ▪ Current scenario: Midwiferyin India- Transformative education for relationship based and transformative midwifery practice in India, National health programs related toRMNCH		

			▪ Current trends in midwiferyand gynecology nursing: o Respectful maternity and newborn care(RMNC) o Midwife led care units (MLCU) o Birthing centers, water birth, lotusbirth o Essential competencies for basic midwifery practice (ICM) o Universal rights of child-bearing women o Sexual and reproductive health andrights ▪ Legal provisions in midwifery practice inIndia: INC/MOH&FW regulations ▪ Ethical issues in maternal and neonatalcare ▪ Adoption laws, MTP act,Pre-Natal Diagnostic Test (PNDT)Act, Surrogate mothers -Roles And responsibilities of a midwife in different settings (hospital / community)	▪ Discussion ▪ Demonstration ▪ Role play ▪ Directed reading and assignment: ICM competencies ▪ Scenario based learning	▪ Short answers ▪ Objective type ▪ Essay ▪ Quiz
II	T-4 L-4	Describe / Review the anatomy and physiology of human reproductive system	**Maternal, Fetal & Newborn physiology:** **Anatomy and physiology of human reproductive system andconception** *Review:* ▪ Female organs of reproduction ▪ Female pelvis –bones,joints, ligaments, planes, diameters, landmarks, inclination, variations in pelvis shape ▪ Foetal skull- bones,sutures, fontanelles, diameters, moulding ▪ Fetopelvicrelationship ▪ Physiology of menstrualcycle,	▪ Lecture ▪ Discussion ▪ Self-directed learning ▪ Models ▪ Videos & films	▪ Quiz ▪ Simulation ▪ Short answers ▪ OSCE

			menstrual hygiene - Fertilization, conception andimplantation - Embryologicaldevelopment - Placentaldevelopment - Placental function: blood brain barrier - Fetal growth and development Fetal circulation & Fetalnutrition		
III	T – 10 L - 10 C - 40	Provide preconception care to eligible couples Describe the physiology, assessment and management of normal pregnancy including pre pregnancy care Demonstrate knowledge of midwifery practice throughout 1st,2nd and 3rd trimesters	**Assessment and management of normal pregnancy(ante-natal)** **Pre pregnancy Care** - Review of sexual development (SelfLearning) - Socio-cultural aspects of human sexuality (Self Learning) - Preconceptioncare - Pre-conception counseling (including awarenessregarding normal births), Genetic counseling (Self Learning) - Plannedparenthood **Pregnancy assessmentand antenatal care (I, II & III Trimesters)** **Normal pregnancy** - Assess and confirm pregnancy: Diagnosisof pregnancy - Signs, differential diagnosis and confirmatory tests - Review of maternal nutrition& malnutrition - Building partnership with women following RMC protocol - Fathers engagementin maternity care - Physiological changes during pregnancy. -Reproductive system, Cardio-vascular system Respiratory system Urinary system, Gastero	- Lecture - Discussion - Demonstration - Health talk - Role play - Counselin gsession - Case discussion/ presentation - Simulation - Supervised Clinical practice - ReferSBA module & Safe motherhoo d booklet	- Shortanswers - Objectivetype - Assessmentof skills with check list - Casestudy evaluation - OSCE

			intestinal system, Metabolic changes, Skeletal changes, Skin changes Endocrine system & psychological changes **Ante-natal care:** **ITrimester** ▪ Antenatal assessment: History taking, physical examination, breast examinationlaboratory investigation ▪ Identification and management of minor discomforts of pregnancy ▪ Antenatal care and counseling (lifestyles in pregnancy, nutrition, shareddecision making, risky behavior in pregnancy, counseling regarding sexual life during pregnancy etc) ▪ Danger signs duringpregnancy ▪ Birth preparedness and complicationreadiness (including promoting normalcy during pregnancy) ▪ Respectful care and compassionatecommunication ▪ Recording and reporting: Clinical procedures as per the GoIsguideline ▪ GoI current model of ANC provision ▪ Role ofDoula/ASHAs **II Trimester** ▪ Education and management of physiological changes and discomforts of 2nd trimester ▪ Rh negative and prophylactic anti D ▪ Second trimester tests and health education	▪ Lab tests-performance, and interpretation ▪ Refer Guidelines for calcium supplementation ▪ Demonstration of birthing positions ▪ Scenario based learning ▪ Workshop on alternative birthing	

			¡ Interpreting screeningresults ¡ Health education on IFA, calcium and vitaminD supplementation, glucose tolerance test, immunization etc ¡ Antenatal assessment: abdominal palpation,fetal assessment, auscultate fetal heart rate -Doppler and pinnard's stethoscope, ¡ Assessment of fetal well-being:, DFMC,biophysical profile, Non stress test, cardio-tocography, USG, Vibro acoustic stimulation, biochemical tests. ¡ Antenatalcare ¡ Women centeredcare ¡ Respectful care and compassionatecommunication ¡ Referral and collaboration, empowerment ¡ Ongoing risk assessment Maternal MentalHealth **III Trimester** ¡ Education and management of physiological changes and discomforts of 3rdtrimester ¡ Third trimester tests and screening ¡ Fetal engagement in late pregnancy ¡ 3rd trimester antenatal educationclasses ¡ Birth preparedness and complicationreadiness ¡ Health education on exclusive breastfeeding ¡ Danger signs of pregnancy-recognition of ruptured membranes ¡ Ongoing riskassessment ¡ Culturalneeds ¡ Women centeredcare ¡ Respectful and compassionate communication	positions	

			women's preferred choices • Role of Doula /ASHA's		
IV	T -10 L -12 C -60	Apply the physiology of labour Describe the management and care during labour Discuss how to maintain an environment for labour in which the woman feels safe Work effectively with pain during labour Discuss how the midwife provides care and support for the women	**Physiology, management and care during labour** **Review of** • Normal labour andbirth • Onset of birth/labour • Per vaginalexamination • Stages oflabour • Organization of labor room-Triage, preparation forbirth • Positive birthenvironment • Respectful care and communication • Drugs used inlabour **FistStage** • Physiology of normallabour • Monitoring progress of labour using Partograph • Assessing and monitoring fetal wellbeing • Care during 1st stage of normal labour • Pain relief in labour(non-pharmacological and pharmacological) • Psychological support-Managingfear • Activity and positioning during first stage oflabour • Nutrition duringlabour • Promote positive childbirth experience forwomen • Birth companion forlabour • Role of Doula /ASHA's **Second stage** • Physiology (Mechanism of labour) • Signs of imminentlabour • Intrapartummonitoring • Birth position ofchoice • Vaginalexaminati	• Lecture • Discussion • Demonstration • Bedsideclinics • Casediscussion/ presentation • Simulated practice • Supervised Clinical practice – Per vaginal examination, Conduction of deliveries • SBAmodule • LaQshyaguide lines • Dakshithag uidelines	• Essaytype • Shortanswers • Objectivetype • Casestudy evaluation • Assessment of skills withcheck list • OSCE

		during birth to enhance physiology and promote normal birth Assess and provide care of the newborn immediately following birth Discuss the impact of labour and birth as a transitional event in the woman's life Ensure initiation of breast feeding and adequate latching	▪ Non-directivecoaching ▪ Management of birth/Conduction ofdelivery-preparation and supporting physiologicalbirthing ▪ Essential newborn care (ENBC) ▪ Assessment and care of the newborn immediately followingbirth ▪ Role of Doula /ASHA's **Third Stage** ▪ Physiology - placental separation and expulsion, homeostasis ▪ Physiological management of third stage oflabour ▪ Active management of third stage oflabour ▪ Examination of placenta, membranes andvessels ▪ Assess perineal, vaginal tear / injuries and suture ifrequired ▪ Insertion of postpartumIUCD ▪ Immediate perinealcare ▪ Initiation of breastfeeding ▪ Skin to skincontact ▪ Vitamin Kprophylaxis ▪ Newbornresuscitation **Fourth Stage** **Care during 4th Stage of labour***Observation, Critical Analysis and Management of mother and newborn* ▪ Maternal assessment, observation fundalheight, uterine consistency, urine output, blood loss ▪ Documentation and Record of birth ▪ Breastfeeding andlatching ▪ Managing uterine cramp ▪ Alternative/complementary therapies ▪ Role of Doula /ASHA's	▪ Demonstration ▪ Groupwork ▪ Scenario based learning	

			▪ Various childbirthpractices ▪ Safe environment for mother and newborn topromote bonding ▪ Maintaining records andreports		
V	T-6 L-6 C- 30	Describe the physiology, management and care of normal puerperium	**Postpartum care/Ongoing care of women** ▪ Normalpuerperium- Physiology, duration ▪ Physiology ofpuerperium ▪ Post-natal assessment and care-facility and home-basedcare ▪ Perineal hygiene andcare ▪ Bladder and bowelfunction ▪ Minor disorders of puerperium and itsmanagement ▪ Physiology of lactation and lactationmanagement ▪ Postnatal counseling and psychologicalsupport ▪ Normal postnatal baby blues and recognition ofpost-natal depression ▪ Transition toparenthood ▪ Careforthemotherfrom72 hours to 6 weeks after the delivery ○ Cultural competence (Taboos related to postnatal diet and practices) ▪ Diet duringlactation-review ▪ Post-partum familyplanning ▪ Follow – up of postnatal mothers. ▪ Drugs used in the postnatal period Records andreports	▪ Lecture ▪ Discussion ▪ Demonstration ▪ Healthtalk ▪ Simulated practice ▪ Supervised Clinical practice ▪ Refer SBA module ▪ ENBCmodule	▪ Essaytype ▪ Shortanswers ▪ Objectivetype ▪ Assessmentof skills with checklist ▪ OSCE
VI	T-6 L-8 C- 30	Discuss the need for compassionate, family centered midwifery care of thenewborn and how thisis	**Assessment and ongoing care of normal neonates** ▪ Family centredcare ▪ Respectful care and communication ▪ Normal Neonate-	▪ Lecture ▪ Discussion ▪ Demonstration ▪ Simulated practicesession	▪ Essaytype ▪ Shortanswers ▪ Objectivetype ▪ Assessment of skills with checklist

		provided Describe the assessment and management of normal neonate	Physiological adaptation Newborn assessment andcare Screening for congenital anomalies Care of newborn from 72 hours to 6 weeks after thedelivery (Routine care of newborn) Skin to skin contact and thermoregulation Infection prevention (asepsis and hand washing) Immunization Minor disorders of newborn and itsmanagement	Supervised clinicalpractice Refer safe deliver app module-newborn management	□ OSCE

(Skill lab & Clinical)

PLACEMENT: VISEMESTER

Total Hours:200hrs
Skill Lab: 1 Credit (40 Hours)
Clinical: 2 Credits (160 Hours)

Practice Competencies:

On completion of the course, the students will be able to:

1. Counsel women and their families on pre-conceptioncare
2. Demonstrate lab tests Eg. urine pregnancytest
3. Perform antenatal assessment of pregnantwomen
4. Assess and care for normal antenatalmothers
5. Assist and perform specific investigations for antenatalmothers
6. Counsel mothers and their families on antenatal care and preparation for parenthood
7. Conduct childbirth educationclasses
8. Set up and manage a deliveryunit
9. Prepare and provide respectful maternity care for mothers inlabour
10. Perform per-vaginal examination for a woman in labour ifindicated
11. Conduct normal delivery with essential newborncare
12. Demonstrate skills in resuscitating thenewborn
13. Assist women in the transition to motherhood
14. Assess and care for normal postnatal mothers
15. Provide care for postnatal mothers and theirnewborn
16. Perform postnatal and newbornassessment
17. Counsel mothers on postnatal and newborncare

SKILL LAB:

Procedures/ Skills for demonstration and return demonstration:

1. Urine pregnancytest
2. Calculation of EDD, Obstetrical score, gestationalweeks
3. Antenatalassessment
4. Counseling antenatal mothers – micro birthplanning
5. PVexamination
6. Plotting and interpretation ofpartograph
7. Preparation for delivery – setting up labour room, articles,equipment
8. Mechanism of labour –normal
9. Conduction of delivery with essential newborncare
10. Active management of third stage oflabour
11. Placentalexamination
12. Newbornresuscitation
13. Monitoring during fourth stage of labour
14. Postnatalassessment
15. Newbornassessment
16. Kangaroo mothercare

CLINICALPOSTINGS 4 weeks x40hours/week

CLINICAL AREA	DURATION IN WEEKS	CLINICAL LEARNING OUTCOMES	PROCEDURAL COMPETENCIES /CLINICAL SKILLS	CLINICAL REQUIREMENTS	ASSESSMENT METHODS
Antenatal OPD and Antenatal ward	1 week	Perform antenatal assessment Perform laboratory tests for antenatal women and assist in selected antenatal diagnostic procedures Counsel antenatal women	History collection Physical examination Obstetric examination Pregnancy confirmation test Urine testing Blood testing for Hemoglobin Blood test for malaria Blood test for grouping and typing Kick chart /DFMC /NST / CTG / USG Antenatal counseling Preparation for childbirth Birth preparedness and complication readiness	Antenatal palpation Health talk Case study	OSCE Case presentation
Post-partum clinic / PTCT Centre and Postnatal Ward	1 week	Perform postnatal assessment Provide care to normal postnatal mothers and newborn Postnatal counseling Provide family welfareservices	Postnatal assessment Care of postnatal mothers – normal Care of normal newborn Lactation management Postnatal counselling	Postnatal assessment Newborn assessment Case study Case presentation Cu-T insertion andremoval	Assignment case study case presentation

			▪ Health teaching on postnatal and newborncare ▪ Family welfare counseling		
Labour room	2 weeks	Monitor labour using partograph Provide care to women during labour Conduct normal delivery, provide care to mother and immediate care of newborn	▪ Assessment of woman in labour ▪ Partograph ▪ Per vaginal examination if indicated ▪ Obstetric examination ▪ Care during first stage of labour ▪ Pain management techniques ▪ Positions in labour ▪ Preparation for labour – articles, physical, psychological ▪ Conduction of Normal Delivery ▪ Essential newborn care ▪ Newborn resuscitation ▪ Active management of third stage of Labour ▪ Monitoring and care during fourth stage of Labour	▪ Partograph recording ▪ PV examination ▪ Assisting / Conduction of normal delivery ▪ Case study ▪ Case presentation ▪ Episiotomy and suturing ▪ Newborn resuscitation	▪ Assignment case study ▪ Case presentation

(19CHN29) - COMMUNITY HEALTH NURSING – II

PLACEMENT:VIISEMESTER THEORY: 2 Credits (40Hours)
Clinical: 1 Credit (80 Hours)

DESCRIPTION: This course is designed to help students gain broad perspective of specialized roles and responsibilities of community health nurses and to practice in various specialized health care settings. It helps students to develop knowledge and competencies required for assessment, diagnosis, treatment, and nursing management ofindividualsandfamilieswithinthecommunityinwellnessandillnesscontinuum.

COMPETENCIES
On completion of the course, the students will be able to

1. Describe occupational health hazards, occupational diseases and the role of nurses in occupational healthprogrammes
2. Identify health problems of older adults and provide primary care, counseling and supportive healthservices
3. Participate in screening for mental health problems in the community and providing appropriate referralservices
4. Discuss the methods of data collection for HMIS, analysis and interpretation of data
5. Discuss about effective management of health information in community diagnosis andintervention
6. Describe the management system of delivery of community health services in rural and urbanareas
7. Describe the leadership role in guiding, supervising, and monitoring the health services and the personnel at the PHCs, SCs and community level including financial management and maintenance of records &reports
8. Describe the roles and responsibilities of Mid-Level Health Care Providers (MHCPs) in Health Wellness Centers(HWCs
9. Identify the roles and responsibilities of health team members and explain their jobdescription
10. Demonstrate initiative in preparing themselves and the community for disaster preparedness andmanagement
11. Demonstrate skills in proper bio-medical waste management as perprotocols
12. Explain the roles and functions of various national and international health agencies

COURSE OUTLINE

UNIT	TIME	LEARNING OUTCOMES	CONTENT	TEACHING/ LEARNING ACTIVITIES	ASSESSMENT METHODS
I	4	Describe occupational health hazards, occupational diseases and the role of nurses in occupational health programmes	**Occupational Health** • Occupational health hazards • Occupationaldiseases • ESIAct • National/ State OccupationalHealth Programmes • Role of a nurse in occupational health services-Screening, diagnosing, management and referral of clients with occupational health problems	• Lecture, Discussion, • Demonstration, Role play • Suggested field visits, Field practice	• Essay type Short answers • Clinical performance evaluation
II	5	Identify health problems of older adults and provide primary care, counseling and supportive health services	**Geriatric Health Care** • Health problems of older adults • Management of common geriatricailments: counseling, supportive treatment of olderadults • Organization of geriatric healthservices • National programmefor health care of elderly (NPHCE) • State level programmes/ Schemes for olderadults • Role of a community health nurse ingeriatric health services-Screening, diagnosing, management and referral of older adults with health problems	• Lecture • Discussion • Demonstration	• Visit report on elderly home • Essay type Short answers

III	4 hours	Describe screening for mental health problems in the community, take preventive measures and provide appropriate referral services	**Mental Health Disorders** ▪ Screening, management, prevention and referral for mental healthdisorders ▪ *Review:* ○ Depression, anxiety, acute psychosis,Schizophrenia ○ Dementia ○ Suicide ○ Alcohol and substance abuse ○ Drug deaddiction programme ○ National Mental Health Programme ○ National Mental Health Policy ○ National Mental Health Act ▪ Role of a community health nurse inscreening, initiation of treatment and follow up of mentally ill clients	▪ Lecture Discussion, ▪ Demonstration Role play ▪ Health counseling on promotionof mentalhealth ▪ Suggested field visits, Field practice	▪ Essay type Short answers ▪ Counseling report
IV	4 hours	Discuss about effective management of health information in community diagnosis and intervention	**Health Management Information System (HMIS)** ▪ Introduction to health management system:data elements, recording and reporting formats, data quality issues ▪ *Review:* ○ Basic Demography and vitalstatistics ○ Sources of vitalstatistics ○ Common sampling techniques, frequency distribution ○ Collection, analysis, interpretation ofdata ▪ Analysis of data for communityneeds assessment and preparation of health action plan	▪ Lecture Discussion ▪ Demonstration, Role play ▪ Suggested field visits, Field practice ▪ Group project on community diagnosis-data management	▪ Group project report ▪ Essay type Short answers
V	5 hours	Describe the system management of delivery of community health services in rural and	**Delivery of community health services:** ▪ Planning, budgeting and material managementof CHC, PHC, SC/HWC	▪ Lecture Discussion ▪ Visits to various health care	▪ Essay type Short answers ▪ Filed visit reports

		urban areas	▪ **Manpower planning as per IPHSstandards** ▪ **Rural:** Organization, staffing and material management ofrural health services provided by Government at village, SC/HWC, PHC, CHC, hospitals- district, state and central ▪ **Urban:** Organization, staffing, and functionsof urban health services provided by Government at slums, dispensaries, special clinics, municipal and corporate hospitals ▪ Defenseservices ▪ Institutionalservices ▪ Other systems of medicine and health: Indiansystem of medicine, AYUSH clinics, Alternative health care system referral systems, Indigenous healthservices	▪ delivery systems ▪ Supervised field practice	
VII	8	Describe the leadership role in guiding, supervising, and monitoring the health services and the personnel at the PHCs, SCs and community level including financial management Describe the roles and responsibilities of Mid-Level Health Care Providers (MHCPs) in Health Wellness Centers (HWCs	**Leadership, Supervision and Monitoring** ▪ Understanding work responsibilities/job description of DPHN, Health Visitor, PHN, MPHW (Female), Multipurpose health Worker (Male), AWWs and ASHA ▪ Roles and responsibilities of Mid -Level Health Care Providers(MLHPs) ▪ Village Health Sanitation and NutritionCommittees (VHSNC) : objectives, composition and roles & responsibilities ▪ Health teammanagement	▪ Lecture, Discussion ▪ Demonstration Role play ▪ Suggested field visits ▪ Field practice	▪ Report on interaction with MPHWs, HVs , ASHA, AWWs ▪ Participation in training programmes ▪ Essay Type Short answers

			▪ *Review*: Leadership &supervision- concepts, principles &methods ▪ Leadership in health: leadership approaches in healthcare setting,taking control of health of community and organizing health camps, village clinics ▪ Training, Supportive supervisionand monitoring-concepts, principles and process Eg.performance of frontline healthworkers ▪ **Financial Management and Accounting& Computing at Health Centers (SC)** o Activities for which funds arereceived o Accounting and book keeping requirements- accounting principles & policies, book of accounts to be maintained, basic accounting entries, accounting process, payments & expenditure, fixed asset, SOE reporting format, utilization certificate (UC)reporting o Preparing abudget o Audit **Records & Reports:** ▪ **Concepts of records and reports-**importance, legal implications,purposes, use of records, principles of record writing, filing of records ▪ **Types ofrecords-** communityrelated records, registers, guidelines for maintaining ▪ **Reportwriting-** purposes, documentation of activities, types of reports		

			▪ **Medical Records Department**-functions, filing and retention of medical records ▪ **Electronic Medical Records(EMR)-** capabilities and components of EMR, electronic health record (EHR), levels of automation, attributes, benefits and disadvantages of EHR ▪ **Nurses' responsibility in record keepingand reporting**		
VII	4 hours	Demonstrate initiative in preparing themselves and the community for disaster preparedness and management	**Disaster Management** ▪ Disaster types and magnitude ▪ Disasterpreparedness ▪ Emergencypreparedness ▪ Common problems during disasters and methodsto overcome ▪ Basic disaster supplieskit ▪ Disaster response includingemergency relief measures and Life saving techniques ▪ Use disaster management module	▪ Lecture, Discussion, Demonstration, Role play ▪ Suggested field visits, andfield practice ▪ Mockdrills ▪ Refer-Disaster module (NDMA) National Disaster /INC – Reaching out in emergencies	▪
VIII	3 hours	Describe the importance of bio-medical waste management, its process and management	**Bio-Medical Waste Management** ▪ Waste collection, segregation,transportation and management in the community ▪ Waste management in healthcenter/clinics ▪ Bio-medical waste management guidelines – 2016, 2018(Review)	▪ Lecture cum Discussion ▪ Field visit to waste management site	▪ Field visitreport
IX	3 hours	Explain the roles and functions of various national and international health agencies	**Health agencies International** ▪ WHO, UNFPA, UNDP, World Bank,FAO, UNICEF, European Commision, Red cross, USAID,UNESCO,	▪ Lecture ▪ Discussion ▪ Fieldvisits	▪ Essay type ▪ Shortanswers

			ILO, CAR, CIDA, JHPIEGO, any other ▪ **National:** Indian Red cross, Indian Council for Child Welfare, Family Planning Association of India, Tuberculosis Association of India, Central Social Welfare Board, All India Women's Conference, Blind Association of India, any other **Voluntary Health Association of India(VHA)**		

COMMUNITY HEALTH NURSING II

CLINICALPOSTINGS **2 Weeks x 40 hrs/week Total hours: 80hours**

CLINICAL AREA	DURATION IN WEEKS	LEARNING OUTCOMES	PROCEDURAL COMPETENCIES/ CLINICAL SKILLS	CLINICAL REQUIREMENTS	ASSESSMENT METHODS
Urban Rural	1week 1Week	▪ Participate in community diagnosis -data management ▪ Screen, diagnose, manage and refer clients with occupational health problem ▪ Screen, diagnose, manage and refer clients who are mentally unhealthy ▪ Screen, assess and manage elderly with health problems and refer appropriately ▪ Participate in health centre activities ▪ Organize and conduct clinics/health camps in the community ▪ Prepare for disaster preparedness and management	▪ Participation in Community diagnosis-data management ▪ Screening, diagnosing, management and referral of clients with occupational health problems ▪ Mental health screening ▪ Health assessment of elderly ▪ Writing health center activityreport ▪ Organizing and conducting clinics/camp ▪ Participation in disaster mock drills	▪ Group project: Community diagnosis-data management ▪ Screening, diagnosing, management and referral of clients with occupational health problems-1 ▪ Mental health screening survey-1 ▪ Health assessment (Physical & nutritional)of elderly- 1 ▪ write report on healthcenter activities-1 ▪ Organizing and conducting: ○ Antenatal/underfive clinic/Health camp- 1 ▪ Participation in disaster mock drills ▪ Field visit to bio-medical waste managementsite ▪ Visit to AYUSH clinic	▪ Assignment evaluation ▪ Field visit report ▪ Clinical performance assessment ▪ OSCE during posting ▪ Final clinical examination (University)

Reference: Modules used in Certificate programme for community Health for nurses (Bridge Programme)

(19MOG30) - MIDWIFERY / OBSTETRIC AND GYNECOLOGY NURSING- II

PLACEMENT: VIISEMESTER THEORY : 4 Credits(80 hours)

Skill lab : 1 Credit (40 hours) Clinical : 7 Credits (560 hours)

DESCRIPTION: This course is designed for students to develop knowledge and competencies on the concepts and principles of obstetrical and gynecology nursing. It helps them to acquire knowledge and skills in rendering respectful maternity care to high risk woman during antenatal, natal and postnatal periods in hospitals and community settings and help to develop skills in initial management and referral of high risk neonates and participate in family welfare programme. It would also help students to gain knowledge, attitude and skills in caring for women with gynecological disorders.

COMPETENCIES

On completion of the course, the students will be able to:

1. Describe the assessment, initial management, referral and respectful maternity care of women with high riskpregnancy.
2. Demonstrate competency in identifying deviation from normalpregnancy.
3. Describe the assessment, initial management, referral and nursing care of women with high risklabour.
4. Assist in the conduction of abnormal vaginal deliveries and caesareansection.
5. Describe the assessment, initial management, referral and nursing care of women with abnormal postnatalconditions.
6. Demonstrate competency in the initial management of complications during the postnatal conditions.
7. Demonstrate competency in providing care for high risknewborn.
8. Apply nursing process in caring for high risk women and theirfamilies.
9. Describe the assessment and management of women with gynecological disorders.
10. Demonstrate skills in performing and assisting in specific gynecological procedures.
11. Counsel and care for couples withinfertility
12. Describe artificial reproductivetechnology
13. Describe the drugs used in obstetrics andgynecology
14. Demonstrate skills in implementing various government programs related to MNCH care.
15. Identify the role of a midwife in vital statistics and health information management
16. Recognize the importance of family welfare programme and describe the methods of contraception and role of nurse in familywelfare

COURSE OUTLINE

UNIT	TIME	LEARNING OUTCOMES	CONTENT	TEACHING/ LEARNING ACTIVITIES	ASSESSMENT METHODS
I	T-20 L-10 C-120	Describe the assessment, Initial management, and referral of women with abnormal/problems during Pregnancy Support women with complicated pregnancy and facilitate safe and positive birthingoutcome	**Recognition and Management of problems duringPregnancy** ▪ Assessment of high-risk pregnancy ▪ **Problems/complications ofpregnancy** o Hyper-emesis gravidarum, o Bleeding in early pregnancy: abortion, ectopic pregnancy, vesicular mole o Bleeding in late pregnancyplacenta previa, abruption placenta, trauma o Medicalconditions complicating pregnancy: Anemia, PIH, GDM, cardiac disease, pulmonary disease, thyrotoxicosis, STDs, HIV, Rh incompatibility o Infections inpregnancy - urinary tract infection, bacterial, viral, protozoal, fungal o Surgical conditions complicating pregnancy: appendicitis, acute abdomen o Hydramnios o Multiplepregnancy o Abnormalities of placenta and cord o Intra uterinegrowth	▪ Lecture Discussion ▪ Demonstration ▪ Video & films ▪ Scan reports ▪ Case discussion ▪ Case presentation ▪ Drug presentation ▪ Health talk ▪ Simulation ▪ Role play ▪ Supervised Clinical practice ▪ **SBA module** ▪ WHO midwifery toolkit ▪ GoI guideline – screening for hypothyroidism, screening for syphilis, deworming during pregnancy, ▪ diagnosis and management of GDM	▪ Essay type Short answers Objectivetype Assessmentof skills with check list OSCE ▪

			restriction o Intra uterine fetal death o Gynaecological conditions complicating pregnancy o Mental health issues during pregnancy o Adolescent pregnancy, elderly primi, grand multiparity o Management and care of conditions as per the protocol o Policy for the referral services o Drugs used in management of high-risk pregnancies o Maintenance of records andreports		
II	T - 20 L – 15 C - 120	Identify, provide initial management and refer women with problems during labour within the scope of midwifery practice.	**Recognition of deviations from the normal and management during labour** ▪ Pretermlabour: Prevention and management of preterm labour;(Use of antenatal corticosteroids in preterm labour) ▪ Premature rupture of membranes ▪ Malposition's and abnormalpresentations (breech, brow, face, shoulder) ▪ Contracted Pelvis, Cephalo Pelvic Disproportion(CPD) ▪ Disorders ofuterine action-Prolonged labour, Precipitate labour,	▪ Lecture ▪ Discussion ▪ Demonstration ▪ Case discussion/ presentation ▪ Simulation ▪ Role play ▪ Drugpresentation ▪ Supervised Clinical practice ▪ SBAmodule ▪ WHOmidwifery toolkit ▪ GoIguidelines-use of uterotonics during labour	▪ Essaytype ▪ Short answers ▪ Objectiv e type ▪ Assessme nt ofskills with check list ▪ OSCE

			Dysfunctional labour - Complications of third stage: Retainedplacenta, Injuries to birth canal, Postpartum hemorrhage **(bimanual compression of the uterus, aortic compression, uterine balloon tamponade)** - Obstetricemergencies- Ruptured uterus, Obstetrical shock, Amniotic fluid embolism, Foetal distress, Cord prolapse, Shoulder dystocia, Uterine inversion, Vasaprevia - Episiotomy andsuturing - Obstetric procedures- Forceps delivery, Vacuum delivery, Version - Manual removal of the placenta - Induction of labour- Medical &surgical - Caesarean section: indications and preparation - Nursing management of women undergoing Obstetricaloperations and procedures - Drugs used in management of abnormallabour - Anesthesia andanalgesia in obstetrics		
III	T-10 L – 5 C - 80	Describe the assessment, initial management, referral and nursing care of women with	**Recognition and Management of postnatal problems** - Physicalexamination, identification of deviation from normal - Puerperalcomplications	- Lecture - Demonstration - Case discussion/ presentation - Drugpresentation - Supervised Clinical practice - GoI guidancenote	- Quiz - Simulation - Short answers - OSC

		abnormal postnatal conditions.	and its management o Puerperalpyrexia o Puerperalsepsis o Urinarycomplications o Secondary Postpartum hemorrhage o Vulvalhematoma o Breast engorgement including mastitis/breast abscess, feeding problem o Thrombophlebitis o DVT o Uterine subinvolution o Vesico vaginal fistula (VVF), Recto vaginal fistula (RVF) o Postpartum blues / psychosis ▪ Drugs used in abnormal puerperium ▪ Policy about referral	on prevention and management of PPH	E
IV	T -7 L -5 C – 40	Describe high risk neonates and their nursing management	**Assessment and management of High-risk newborn (Review)** ▪ Models of newborncare in India – NBCC; SNCUs ▪ Screening of high-risk newborn ▪ Protocols, levels of neonatal care, infection control ▪ Prematurity,Postmaturity ▪ Low birthweight o Kangaroo Mother Care ▪ Birth asphyxia / Hypoxic encephalopathy ▪ Neonatalsepsis ▪ Hypothermia ▪ Respiratorydistress ▪ Jaundice ▪ Neonatalinfections ▪ Highfever	▪ Lecture ▪ Discussion ▪ Demonstration ▪ Simulation ▪ Case discussion/ presentation ▪ Drugpresentation ▪ Supervised Clinical practice	▪ Short answers ▪ Objectivetype ▪ Assessmentof skills with check list ▪ OSCE

			▪ Convulsions ▪ Neonataltetanus ▪ Congenitalanomalies ▪ Baby of HIV positive mothers ▪ Baby of Rh negative mothers ▪ Birth injuries ▪ SIDS (Sudden Infant Death Syndrome) prevention, Compassionate care ▪ Calculation offluid requirements, EBM / formula feeds / tube feeding ▪ Home basednewborn care program - community facility integration in newborn care ▪ Decision making about management and referral ▪ IntegratedManagementofNeonatal Childhood Illnesses (IMNCI) ▪ Bereavementcounseling ▪ Drugs used for high risk newborns ▪ Maintenance of recordsand reports		
V	T - 15 L - 5 C - 120	Describe the assessment and management of women with gynecological disorders.	**Assessment and management of women with gynecological disorders** ▪ Gynecological assessment - Historyand Physical assessment ▪ Breast Self-Examination ▪ Congenital abnormalities of femalereproductive system	▪ Lecture ▪ Discussion ▪ Demonstration ▪ Case discussion/ presentation ▪ Drugpresentation ▪ Videos,films ▪ Simulatedpractice ▪ SupervisedClinical	▪ Essaytype ▪ Short answers ▪ Objective type ▪ Assessment of skills with check list

			▪ Etiology, Pathophysiology,clinical manifestations, diagnosis, treatment modalities and management of disorder of female reproductive system o Menstrual abnormalities o Abnormal uterine bleed o Pelvic inflammatory disease o Infections of the reproductivetract o Uterinedisplacement o Endometriosis o Uterine and cervical fibroids andpolyps o Tumors – uterine, cervical, ovarian, vaginal,vulval o Cysts – ovarian,vulval o Cystocele, urethrocele, rectocele o Genitor-urinary fistulas o Breast disorders – infections, deformities, cysts,tumors o HPVvaccination o Disorders of Puberty andmenopause o Hormonal replacement therapy ▪ Assessmentand management of couples with infertility o Infertility – definition,causes o Counseling the infertilecouple o Investigations – male andfemale o Artificial reproductive technology	practice ▪ Visit to infertility clinic and ART centers	▪ OSCE

			○ Surrogacy, sperm and ovum donation, cryopreservation ▪ Adoption – counselling, procedures ▪ Injuries and Trauma; Sexual violence ▪ Drugs used in treatment of gynaecological disorders		
VI	T- 8 C-80	Describe family planning and the national programs related to family welfare, MNCH+Acare	**Family planning and family welfare programs** ▪ *Review:* Vitalindicators - Maternal mortality ratio, Infant Mortality Rate, Neonatal Mortality Rate, perinatal mortality rate, fertilityrates ▪ Maternal deathaudit ▪ National healthMission ▪ Nationalprograms related to maternal newborn child health and adolescentservices ▪ **Familywelfare services** ○ PlannedParenthood ○ Impact of early / frequent childbearing ○ Comprehensive range of family planning methods- Action, effectiveness, advantages, disadvantages, myths, misconception and medical eligibility criteria (MEC)for use of various family planningmethods ○ Emergency contraceptives ○ Family planning Counseling using BalancedCounseling	▪ Lecture ▪ Supervisedpractice ▪ Fieldvisits ▪ GoI guidelines – injectable contraceptives, oral contraceptives, male and female sterilization	▪ Essaytype ▪ Short answers ▪ Objectiv e type ▪ Field visit reports

			Strategy (BCS) o Importance of follow up and recommendedtiming o Unintended or mistimed pregnancy o Post abortioncounseling ▪ Recent trends and researchin contraception		

(Skill lab & Clinical)

PLACEMENT:VIISEMESTER

Total Hours:600hrs
Skill Lab – 40 (1 credit)
Clinical - 560 (7 credits)

Practice Competencies:

On completion of the course, the students will be able to:

1. Identify and refer antenatal mothers withcomplications
2. Conduct labour anddelivery
3. Demonstrate skills in resuscitating the newborn
4. Assist and manage complications during labour
5. Assist in the conduction of abnormal vaginal deliveries and caesareansection.
6. Identify postnatal and neonatal complications and referthem
7. Provide care for high risk antenatal, intranatal and postnatal mothers and their families using nursing processapproach
8. Provide care for high risknewborn
9. Assist in advanced clinical procedures inmidwifery
10. Provide family welfareservices
11. Provide care for women during their non childbearingperiod.
12. Provide post abortioncare
13. Demonstrate IUCD insertion andremoval
14. Participate in national family welfare programs
15. Assess women with gynecologicaldisorders
16. Demonstrate skills in performing and assisting in specific gynecological procedures
17. Counsel and care for couples withinfertility

I. SKILLLAB:

Procedures/ Skills for demonstration and return demonstration:

1) Antenatal assessment and identification ofcomplications
2) Counselling antenatal women – complicationreadiness
3) PVexamination
4) Plotting and interpretation ofpartograph
5) Preparation for delivery – setting up labour room, articles,equipment
6) Mechanism of labour – normal andabnormal
7) Conduction of delivery with essential newborncare
8) Active management of third stage oflabour
9) Placentalexamination
10) Newbornresuscitation
11) Monitoring during fourth stage oflabour
12) Postnatalassessment
13) Newbornassessment
14) Kangaroo mothercare
15) Management of complications during pregnancy / labour /post partum (case studies / simulatedscenarios)
16) Administration of Magnesiumsulphate
17) Starting and maintaining an oxytocindrip
18) Management of PPH - Bimanual compression ofuterus
19) Management of PPH –Balloontamponade
20) Family planningcounselling.
21) PPIUCDinsertion
22) Instruments used in obstetrics andgynecology
23) Visual inspection of cervix with aceticacid
24) Cervicalbiopsy
25) Breastexamination

CLINICALPOSTINGS 14 weeks x 40hours/week

CLINICAL AREAS	DURATION IN WEEKS	LEARNING OUTCOMES	PROCEDURAL COMPETENCIES/ CLINICAL SKILLS	CLINICAL REQUIREMENTS	ASSESSMENT METHODS
Antenatal OPD including infertility clinics / Reproductive medicine,	2 weeks	Perform antenatal assessment and identify complications during antenatal period Perform laboratory tests for antenatal	Pregnancy confirmation test History collection Physical examination Obstetric examination Urine testing Blood testing for	Antenatal palpation Health talk Case study	Simulation Case presentation

Family welfareand post-partum clinic / PTCT Centre Antenatal ward	2 weeks	women Perform and assist in selected advanced antenatal diagnostic procedures Provide antenatal care for women with complications of pregnancy Counsel antenatal mothers	Hemoglobin Blood test for malaria Blood test for grouping and typing Kick chart, DFMC Assist in NST/CTG/USG Care of mothers with complications in pregnancy Antenatal counselling Antenatal interventions Preparation for childbirth Birth preparedness and complication readiness		
Postnatal Ward	2 wks	Perform postnatal assessment and identification of postnatal complications Provide post abortion care and postnatal counselling Provide postnatal care	Postnatal history collection and physical examination Identify postnatal complications Post abortion care Post abortion counselling Care of postnatal mothers – normal, caesarean section Care of normal newborn Lactation management Postnatal	Health talk Antenatal assessment Postnatal assessment Newborn assessment Case studies Case presentation IUCD insertion and removal	Role play Assignment Case study, Case presentation Simulation Vignettes

		Provide family welfare services	counselling Health teaching on postnatal and newborncare Family welfare counselling		
Labour room	4 weeks	Conduction of normal deliveries Conduct / assist in abnormal deliveries Monitor labour usingpartograph Identify and manage complications during labour	Assessment of woman in labour Partograph Pervaginal examination if indicated Obstetric examination Care during first stage of labour Pain management techniques Positions in labour Preparation for labour – articles, physical, psychological Conduction of normal delivery Essential newborn Care Newborn Resuscitation Active management of third stage of Labour Monitoring and care during fourth stage of labour Identification and management of prolonged labour, cervicaldystocia, CPD, contracted Pelvis Assist in the management of Abnormal deliveries – posterior position, breech deliveries,	Partograph recording Pain management during labour Conduction of delivery Assisting in abnormal deliveries Managing complication during labour Case study Case presentation	Assignment Case study Case presentation

			twin deliveries, vacuum extraction, forceps delivery, shoulder dystocia Assist in cervical encerclage procedures, D&C, D&E Management of trauma to the birth canal, retained placenta, post partum hemorrhage, uterineatony Management of obstetricshock		
Neonatal Intensive Care Unit	2 weeks	Perform assessment of newborn and identify complications/congenital anomalies Perform neonatal resuscitation Care of high risk newborn Provide care for newborns in ventilator, incubator etc Assist / perform special neonatal procedures	Neonatal assessment – identification of complication, congenital anomalies. Observation of newborn Neonatal resuscitation Phototherapy and management of jaundice in newborn Assist in Exchange transfusion Care of baby in incubator, ventilator, warmer. Infectioncontrol in the nursery Neonatal medications Neonatalfeeding	Case study Case presentation Assignments Simulated practice	Case presentation Care study Care plan Simulation, Vignettes

			– spoon and katori, paladai, NGtube Starting IV line for newborn, drug calculation Assist in advanced neonatal procedures		
obstetric / Gynae operation theatre	1 week	Assist in gynecological and obstetric surgeries	Observe / Assist in caesarean section Management of retained placenta Gynecological surgeries Hysterectomy Uterine rupture.	Assisting in obstetric and gynecological surgery Trayset-up	Assignment Tray set-up for obstetric and gynecologic alsurgeries
Gynecology ward	2 weeks	Care for women with gynecological disorders	Care of women with gynecological conditions Vaginal douche application Healtheducation	Careplan	Case presentation Simulation Vignettes

CHC, PHC, SC / Community midwifery	1 week	Provide MNCH+A care in the community Provide midwifery care for women in the community Implement family welfare programs	Conduction of antenatal and postnatal clinics Conduction of other special clinics and camps – Tubectomy, vasectomy Tracking every pregnancy – RCH number Maintaining vital statistics Care of antenatal and postnatal mother at home Newborn care at home Identification of complication and referral Follow up of mothers and newborns Micro birth planning Conduction of family welfare clinics Distribution of contraceptives Community health education	Reports Record maintenance Conducting special clinics Health talkHome visit	Assignment Report submission

ELECTIVE COURSES

(19ECSWS14)- SCIENTIFIC WRITING SKILLS

Introduction

A course designed to give graduate students the skills necessary to write a thesis, and to prepare other professional materials for presentation or publication. Topics covered in this course include: searching the scientific literature; scientific writing style; writing graduate level papers, proposals, projects, and thesis components; preparing scientific presentations; presentation of data; using visual aids; and using word processing, spreadsheet, and presentation software.

Course Objective

1. Prepare scientific and technical papers, and presentations.
2. Format documents and presentations to optimize their visual appeal when viewed in-press, as a podcast or audio/video file format on the internet, or through personal presentations to an audience

Effectively use features of Microsoft Office to create eye-catching professional documents and presentations.

3. Effectively use features of Microsoft Word, Powerpoint, and Excel to create professional looking tables, graphs and figures.
4. Accept constructive criticism and use reviewers' comments to improve quality and clarity of written reports and presentations.

Learning Objective	Content	**Hrs**
Explain the introduction of Scientific writing skills	Introduction. • Research – What is it? • How do researchers communicate? • Types of scientific communication • Examining examples of different types of • scientific communication	T (5) P (3)
Describe the various Scientific Literature	Scientific Literature • Searching the scientific literature • Using the UTM library • Using online search engines • What is a refereed journal? • Plagiarism and how to avoid it	T (10) P (3)
Discuss the Beginning to Write	Beginning to Write • Establishing your constraints Organizing your writing • Preparing outlines • Standard formats for scientific papers, research projects and theses • Style guides	T (5) P (2)

Explain the content	Content • Creating a literature review Preparing other sections of a research report • Including and summarizing research data	T (10) P (2)

Teaching- Learning Strategies

(i) Lecture cum Discussion
(ii) Seminar
(iii) Health education
(iv) Assignments

Assessment Techniques of each topic of the course

S.No	Topic	Assessment Techniques
1.	Introduction Of Scientific writing skills	Short answer
2.	various Scientific Literature	Short answers, Descriptive type,
3.	Explain the content in scientific writing skills	Descriptive type, Health Education

(19ECLM15) LACTATION MANAGEMENT

Introduction of the Course

Lactation describes the secretion of milk from the mammary glands and the period of time that a mother lactates to feed her young. Breastfeeding, also called nursing, is the process of feeding human breast milk to a child, either directly from the breast or by expressing (pumping out) the milk from the breast and bottle-feeding it to the infant. The World Health Organization (WHO) recommends that breastfeeding begin within the first hour of a baby's life. Changes early in pregnancy prepare the breast for lactation.

COURSE OBJCTIVE
1) The students would be able to 2) Define lactation or Breast feeding 3) Review anatomy and physiology of Mammary glands 4) Brief the process of lactation 5) Explain the reflexes involved in lactation

Unit	Learning Objective	Content	Hrs
I	Define lactation and Revise anatomy and physiology of mammary glands	INTRODUCTION -Anatomy and physiology of mammary glands - definition of Lactation -process of lacation Mammagenesis Lactogenesis Galactokinesis Galactopoiesis	T (10) P (5)
II	Explain the reflexes involved in lactation	HORMONAL CONTROL OF LACTATION - Prolactin regulationduring lactation - Oxytocin regulation during lactation - Milk ejection reflex - Let down reflex	T (10) P (3)
III	List the breast feeding techniques and discuss about lactation management centers	BREAST FEEDING TECNIQUES - Football hold - Cross body - Cradle hold - Side lying Lactation management centres Baby friendly hospital inititative	T(10) P (2)

Assessment Techniques

S.No	Topic	Assessment Techniques
1	Introduction to Lactation	Short answer
2	Hormonal control of lactation	Short answers, Descriptive type, Drug and its indication
3	Breast feeding techniques	Descriptive type, Health Education Return demonstration

(19ECSH16) – Sexuality And Health

Introduction

Introduction: One overall goal of this course is for you all to work together to develop a sexual health curriculum, centering on a broader concept of wellbeing, which will be implemented at the Care Center. Students in this course will gain broad exposure to a number of women's sexual health issues and the interdisciplinary theorizing of feminist, medical social scientists, and public health scholars.

Course objectives and summary:

1. Develop and articulate a more critical understanding of the concepts of gender, sexuality, and health, as applied to self and others.
2. Identify how gender and sexuality impact the overall health and well-being of self and others.
3. Define and continuously re-define what is meant by "sexual health" for self and others within changing social and cultural contexts.
4. Review and critically evaluate research on gender and sexual health and defend these critiques through ongoing discussions of readings.
5. Apply basic theories, concepts, and models from a range of social and behavioral sciences disciplines that are used in gender-based and sexual health research and practice

Unit	Learning Objectives	Content	Time (Hrs)
I	Develop a critical understanding of the concepts of gender, sexuality, and health.	**Course Introductionand Overview** • the anatomy and physiology of sex organs • sexuality in a life-cycle perspective • sexual expressions and variations • sexuality during disease and illness • prevention of sexual ill-health and sexually transmitted disease • the effects of commonly used medications on sexuality • supportive nurse-patient dialogue	T (7)
II	Identify how gender and sexuality impact the overall health and well-being of self and others	**Biological & Sociological Approaches to Gender& Sexuality** • Biological Componentsof Sexuality Part Female (Assigned at Birth) Sexual Anatomy • Biological Componentsof Sexuality Part Male (Assigned at Birth) Sexual Anatomy • Sexual Response &Arousal • Gender Dimensions &Gender Explored (Sociological)	T (8)
III	Explain the sexual orientation	**Sexual Orientation(Biological & Sociological)** • Sexuality Throughoutthe Life course/Aging/Disability • National Social Policies and Constrained Choice	T (8)

		• STIs & HIV • Birth Control / Contraception and • Pregnancy • Gender & Barriers toHealth: Constrained Choice in Everyday Decisions	
IV	Discuss the issues and violence related to sexuality	**Violence & Sexuality** • Communicating about Sex • The Impact of Community on Health • Priorities and Expectations: Men's and Women's Work, Family Life, and Health • Gender and Individual Health Choices • Opportunities for Change	T (7)

(19ECSM17) – STRESS MANAGEMENT

Introduction

Introduction: This course is designed for students to Instruction on the effects of stress as it relates to work, sport, and

S.No	Topic	Assessment Techniques
1.	Course Introductionand Overview	Short answers, Descriptive type
2.	Biological & Sociological Approaches to Gender& Sexuality	Assignment, Short answers.
3.	Sexual Orientation(Biological & Sociological)	Descriptive type and Essay answers
4.	Violence & Sexuality	Presentations on various methods of sexual violence.

academics; coping strategies are discussed and applied through physical conditioning interventions. The nature of stress, determinant causes, and the physiological and psychological reactions to stress are addressed in the lecture portionof the course. The activity portion of the class will introduce and implement physiological, cognitive and behavioral stress management techniques and exercise programming.

Course objectives and summary:

1. Understand the nature of stress;
2. Comprehend the psychological and physiological effects of stress
3. Grasp the concepts related to individual and cultural differences in stress reactionsacross lifespan;
4. Assess individual risk factors as related to stress (behavioural, emotional, physical,spiritual);
5. Understand and learn how to use various techniques and determine the mostappropriate method to aid in managing your reaction to stress;
6. Develop the ability to tap personal strengths for preventing stress and achievingmeaningful goals; and
7. Accept the responsibility of taking charge of your own levels of stress

Unit	Learning Objectives	Content	Time(Hrs)	Alignment to COs
I	Describe different types of stressors	**Introduction to Stress** (i) Introduction to stress: Meaning, Definition, Eustress, Distress (ii) Types of stress	T (5)	CO1
II	Identify the contributing factors to the stress	**Sources of stress** (i) Psychological, Social, Environmental (ii) (ii) Academic, Family and Work stress	T (5)	CO2
III	Identify the psycho-physiological indicators of	**Impact of stress** (i) Physiological Impact of stress - Autonomic Nervous System	T (5)	CO3, CO4

	excessive stress	Changes, (ii) Changes in Brain, General adaptive syndrome (GAD), (iii) Quality of sleep, Diet and Health effects Psychological Impact of stress - impaired Mental functions - Poor memory Social Impact of stress - Stressful Life Events -Social support and health		
IV	Describe the many types of coping responses to stress	**Stress Response** Fight or Flight' Response, Stress warning signals	T (5)	CO3
V	Explain the importance of combating the effects of stress	**Stress and Coping:** Coping Mechanisms: Appraisal focused, Emotional focused and Problem focused	T (5) P (5)	CO5
VI		**Stress Reduction Techniques:** 1. Autogenic Training 2. Biofeedback 3. Relaxation 4. Yoga and Meditation	T (5) P (5)	CO6

Assessment Techniques of each topic of the course

S.No	Topic	Assessment Techniques
1.	**Introduction to Stress**	**Short answers, Descriptive type**
2.	**Sources of stress**	**Assignment, Short answers.**
3.	**Impact of stress**	**Short answers and health education**
4.	**Stress Response**	**Presentations on various methods of abortion**
5.	**Stress and Coping**	**Descriptive type and Essay answers**
6.	**Stress Reduction Techniques:**	**Short answers**

19ECJEH18)- JOB READINESS AND EMPLOYABILITY IN HEALTH CARE SETTINGS

Introduction

Employability Skills are identified as one of the valuable policy tools to upgrade mobility and earnings. Organization's employees are required to possess the knowledge and skills for increasing the organization's performance and competitiveness. This research paper is an attempt to find the major employability skills needed in medical service vertical of the Healthcare Industry. These role-specific skills have to developed and acuminated by providing right type of trainings time to time.

Course Objectives:

1. Explain the introduction of Employer's health care
2. Describe the various methods of job readiness employability health care
3. Discuss the Employer-Worker Relationship

Unit	Learning Objective	Content	**Hrs**
I	Explain the introduction of Employer's health care	Introduction. • Employer's perceptions • Recent graduate perceptions	T (10) P (3)
II	Describe the various methods of job readiness employability health care	Method • Survey instrument • Survey sample • Job search strategies • Rating of employability skills • Discussion • Implication of the study • Further research	T (10) P (5)
III	Discuss the Employer-Worker Relationship	Employer-Worker Relationship • Labor Acquisition/Hiring • Training And Development • Remuneration • Employee Benefits • Organizational Justice • Workforce Organizing • Ending Employment	T (10) P (2)

Teaching- Learning Strategies

Lecture cum Discussion
Seminar

Health education
Assignments

Assessment Techniques of each topic of the course

S.No	Topic	Assessment Techniques
1.	Introduction Of Employer's health care	Short answer
2.	Methods of job readiness employability health care	Short answers, Descriptive type,
3.	Employer-Worker Relationship	Descriptive type, Health Education Return demonstration

(19ECSS19) SOFT SKILL

Introduction

Introduction:The course is designed to enable the students to develop an understanding about the basic concepts of soft skills. The Programme aims at increasing leaner's knowledge and to develop attribute that enhances interpersonal communication, earning power and job performance.

Course Objective and Summary

1. To identify the earning power and job performance
2. To formulate essential skills to prepare them to deal with the external world in a collaborative manner.
3. To developthe interpersonal communication
4. To analysesolve problem
5. To plan and take initiative demonstrate positive work ethics.

S.NO	Learning Objectives	SOFT SKILLS	Hrs
1	Explain the Introduction about soft skills	**Soft skills I** • Introduction to Soft skills • Communication Skills • Presentation skills • Time Management Skills •	4
2	Enumerate the Body language and etiquettes	**Soft skills II** • Body language and etiquettes • Group Discussion & Interview Skills • Preparation of CV • Emotional Intelligence Skills	6(T) 2(P)

		• Life Skills • Presentation on Soft skills • Activities related to Soft Skills	
3	Describe the Fundamentals of Computer application & Operating system	**Fundamentals of Computer Application & Operating System** • Introduction to Computer • Windows	2(T) 1(P)
4	Explain about Management information system	**Management information system** • Basic Concepts • Application in Organization • Issues & challenges	4(T)
5	Enumerate the MS Word	**MS Word** • Starting MS Word • Working with symbols and pictures • Working with Tables • Working with headers, footers and other controls • Working with Shortcuts	6(T) 2(P)
6	Describe the MS Excel	**MS Excel** • Starting MS Excel • Working with Graphics • Formatting a worksheet • Working with charts and Controls	2(T) 2(P)
7	Describe the MS Power point	**MS Power point** • Starting MS Power point • Working with textboxes and slides • Features of power point • Starting a presentation	4(T) 2(P)

Teaching- Learning Strategies

- Lecture cum Discussion
- Exercise on writing statement of the problem and objectives and reviewing literature
- Critique Research anyone research study
- Prepare annotated Bibliography
- Preparation of sample data collection tool
- Preparation of sample tables
- Practice on computation of central tendency, Variability and correlation
- Practice on graphical graphical presentations
- Planconduct and write individual/group research projects.

BHARATH INSTITUTE OF HIGHER EDUCATION AND RESEARCH

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B.A., LLB (Hons.)

FIVE YEAR INTEGRATED DEGREE COURSE

SYLLABUS

With SUBJECT CREDITS

Applicable from Academic Year

2018-19

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47.	U18PCAL421	Law of Taxation	84
48.	U18CCAL403	CC-III - Alternate Dispute Resolution	86
49.	U18PTAL404	Internship & Practical Training – IV	88
50.	U18HCAL504	Hons. IV - Minorities Law	89
51.	U18HCAL505	Hons. V - Gender Justice and Feminist Jurisprudence	91
52.	U18HCAL506	Hons. VI - Medical and Health Law	93
53.	U18PCAL522	Civil Procedure Code	94
54.	U18CCAL504	CC-IV - Drafting, Pleading and Conveyancing	96
55.	U18HCAL507	Hons. VII - International Refugee Law	97
56.	U18HCAL508	Hons. VIII - Cyber Law	100
57.	U18PCAL523	Criminal Procedure Code	102
58.	U18PCAL524	Law of Elections and Local Self Governments	103
59.	U18CCAL505	CC-V - Public Interest Lawyering, Legal Aid, Court & Chamber Visits	105
60.	U18PTAL505	Internship & Practical Training - V	107
61.	U18PEAL311	Legal Research Methodology	110
62.	U18PEAL312	Legal Methods and Techniques	112
63.	U18PEAL321	Intellectual Property Rights	113
64.	U18PEAL322	Maritime Law	116
65.	U18PEAL431	Criminology and Penology	118
66.	U18PEAL432	Law Relating to Women and Children	120
67.	U18PEAL541	Forensic Science	122
68.	U18PEAL542	Medical Jurisprudence	124
69.	U18PEAL551	Consumer & Competition Law	125
70.	U18PEAL553	Telecommunication Law	127
71.	U18OEAL501	Right to Information and Education	128
72.	U18OEBL501	International Financial Transactions and Valuation	130
73.	U18OECL501	Private International Law	132
74.	U18OEDL501	Environment and International Legal Order	134

CREDITS FOR FIVE YEAR INTEGRATED HONOURS COURSE (B.B.A/B.Com/B.A., LL.B)

SL. NO.	NATURE OF SUBJECTS	CATEGORY	NUMBER OF SUBJECTS	SUBJECT CREDIT ALLOTTED	TOTAL CREDIT POINTS
1	Language Studies	LS	2	3	06
2	Pre-Law Course	PL	16	3	48
3	Professional Core	PC	24	4	96
4	Clinical Core	CC	5	3	15
5	Professional Elective	PE	5	3	15
6	Open Elective	OE	1	3	03
7	Honours Course	HC	8	4	32
8	Practical Training	PT	5	2	10
Total			**66**	--	**225**
Non-Credit Courses					
9	Functional Training	FT	11	0	0
10	Mandatory Course	MC	9	0	0
Total			**20**	**--**	**0**
OVERALL TOTAL			**86**	**--**	**225**

Credits:

Credit defines the quantum of contents/syllabus prescribed for a course and determines the number of hours of instruction required per week. Thus, normally in each of the courses, credits will be assigned on the basis of the number of lectures/ tutorial & Practical works.

Hence, the Credits are assigned on the basis of the Lectures (L) / Tutorials (T) / Practical (P)

- **L - One credit** for **one hour** lecture per week (1 credit course = 15 hours)
- **T - One credit** for **one hour** lecture per week(1 credit course = 15 hours)
- **P - One credit** for every **two hours** of practical (1 credit course = 30 hours)

	Hour	Credit
Lecture (L)	**1**	**1**
Tutorial (T)	**1**	**1**
Practical (P)	**2**	**1**

****Maximum Total Credits per semester is 20 - 27**

B.A., LLB (Hons.)

Five Year Integrated Degree Course

SUBJECT CREDITS

FIRST YEAR – I SEMESTER								
S. No.	**Subject Code**	**Category**	**Subject**	**Contact Periods**	**L**	**T**	**P**	**C**
THEORY								
1.	U18LSCL101	LS	English – I	3	2	1	0	3
2.	U18PLAL101	PL	History – I	3	2	1	0	3
3.	U18PLAL102	PL	Sociology – I	3	2	1	0	3
4.	U18PLAL103	PL	Political Science – I	3	2	1	0	3
5.	U18PCAL101	PC	Law of Contract - I	4	3	1	0	4
6.	U18PCAL102	PC	Law of Torts	4	3	1	0	4
PRACTICAL								
7.	U18FTAL101	FT	Moot Court Training	4	0	0	4	0
8.	U18FTAL102	FT	Case Study	3	0	0	3	0
ACTIVITY BASED COURSE								
9.	U18MCAL101	MC	Physical Health – Sports & Games	3	0	0	3	0
			TOTAL	**30**	**14**	**6**	**10**	**20**

FIRST YEAR – II SEMESTER								
S. No.	**Subject Code**	**Category**	**Subject**	**Contact Periods**	**L**	**T**	**P**	**C**
THEORY								
1.	U18LSAL102	LS	English – II	3	2	1	0	3
2.	U18PLAL104	PL	Modern Governments	3	2	1	0	3
3.	U18PLAL105	PL	Sociology – II	3	2	1	0	3
4.	U18PLAL106	PL	Legal & Constitutional History of India	3	2	1	0	3
5.	U18PCAL103	PC	Law of Contract - II	4	3	1	0	4
6.	U18PCAL104	PC	Law of Crimes	4	3	1	0	4
PRACTICAL								
7.	U18PTAL101	PT	Internship & Practical Training - I	4	0	0	4	2
8.	U18FTAL103	FT	Prison Observation	3	0	0	3	0
ACTIVITY BASED COURSE								
9.	U18MCAL102	MC	Social Service	3	0	0	3	0
			TOTAL	**30**	**14**	**6**	**10**	**22**

SECOND YEAR – III SEMESTER								
S. No.	**Subject Code**	**Category**	**Subject**	**Contact Periods**	**L**	**T**	**P**	**C**
THEORY								
1.	U18PLAL207	PL	History - II	3	2	1	0	3
2.	U18PLAL208	PL	Economics - I	3	2	1	0	3
3.	U18PLAL209	PL	Political Science - II	3	2	1	0	3
4.	U18PCAL205	PC	Constitutional Law – I	4	3	1	0	4
5.	U18PCAL206	PC	Family Law – I	4	3	1	0	4
6.	U18PCAL207	PC	Jurisprudence and Interpretation of Statutes	4	3	1	0	4
PRACTICAL								
7.	U18FTAL204	FT	Mock Trail Training	4	0	0	4	0
8.	U18FTAL205	FT	Legislature Session Observation	3	0	0	3	0
ACTIVITY BASED COURSE								
9.	U18MCAL203	MC	Yoga	2	0	0	2	0
			TOTAL	**30**	**15**	**6**	**9**	**21**

SECOND YEAR – IV SEMESTER								
S. No.	**Subject Code**	**Category**	**Subject**	**Contact Periods**	**L**	**T**	**P**	**C**
THEORY								
1.	U18PLAL210	PL	Economics - II	3	2	1	0	3
2.	U18PLAL211	PL	Sociology - III	3	2	1	0	3
3.	U18PLAL212	PL	Indian Public Administration	3	2	1	0	3
4.	U18PCAL208	PC	Constitutional Law – II	4	3	1	0	4
5.	U18PCAL209	PC	Family Law – II	4	3	1	0	4
6.	U18PCAL210	PC	Law of Evidence	4	3	1	0	4
PRACTICAL								
7.	U18PTAL202	PT	Internship & Practical Training - II	4	0	0	4	2
8.	U18FTAL206	FT	Police Station Visit	3	0	0	3	0
ACTIVITY BASED COURSE								
9.	U18MCAL204	MC	Legal Awareness to General Public	3	0	0	3	0
			TOTAL	**31**	**15**	**6**	**10**	**23**

THIRD YEAR – V SEMESTER								
S. No.	**Subject Code**	**Category**	**Subject**	**Contact Periods**	**L**	**T**	**P**	**C**
THEORY								
1.	U18PLAL313	PL	Economics - III	3	2	1	0	3
2.	U18PLAL314	PL	International Relations	3	2	1	0	3
3.	U18PCAL311	PC	Banking Law Including Negotiable Instruments Act	4	3	1	0	4
4.	U18PCAL312	PC	Property Law	4	3	1	0	4
5.	U18PCAL313	PC	Human Rights	4	3	1	0	4
6.		PE	Elective – I	3	2	1	0	3
PRACTICAL								
7.	U18FTAL307	FT	Legal Aid	4	0	0	4	0
8.	U18FTAL308	FT	Client Counselling	3	0	0	3	0
ACTIVITY BASED COURSE								
9.	U18MCAL305	MC	Mock Crime Scene Investigation	2	0	0	2	0
			TOTAL	**30**	**15**	**6**	**9**	**21**

THIRD YEAR – VI SEMESTER								
S. No.	**Subject Code**	**Category**	**Subject**	**Contact Periods**	**L**	**T**	**P**	**C**
THEORY								
1.	U18PLAL315	PL	Law and Society	3	2	1	0	3
2.	U18PLAL316	PL	Law and Economics	3	2	1	0	3
3.	U18PCAL314	PC	Public International Law	4	3	1	0	4
4.	U18PCAL315	PC	Company Law	4	3	1	0	4
5.		PE	Elective - II	3	2	1	0	3
PRACTICAL								
6.	U18CCAL301	CC	CC-I Moot Court	5	0	1	4	3
7.	U18PTAL303	PT	Internship & Practical Training - III	4	0	0	4	2
8.	U18FTAL309	FT	Registration Department Visit	3	0	0	3	0
ACTIVITY BASED COURSES								
9.	U18MCAL306	MC	Physical Health – NCC	2	0	0	2	0
			TOTAL	**31**	**12**	**6**	**13**	**22**

FOURTH YEAR – VII SEMESTER								
S. No.	**Subject Code**	**Category**	**Subject**	**Contact Periods**	**L**	**T**	**P**	**C**
THEORY								
1.	U18HCAL401	HC	Hons. I Media Law	4	3	1	0	4
2.	U18HCAL402	HC	Hons.II Disaster Management Law	4	3	1	0	4
3.	U18PCAL416	PC	Labour Law – I	4	3	1	0	4
4.	U18PCAL417	PC	Administrative Law	4	3	1	0	4
5.	U18PCAL418	PC	Environmental Law	4	3	1	0	4
PRACTICAL								
6.	U18CCAL402	CC	CC – II Professional Ethics, Accountancy for Lawyers and Bar Bench Relations	4	1	1	2	3
7.	U18FTAL410	FT	Chamber Observations	4	0	0	4	0
ACTIVITY BASED COURSE								
8.	U18MCAL407	MC	Model State Legislature	3	0	0	3	0
			TOTAL	**31**	**16**	**6**	**9**	**23**

FOURTH YEAR – VIII SEMESTER								
S. No.	**Subject Code**	**Category**	**Subject**	**Contact Periods**	**L**	**T**	**P**	**C**
THEORY								
1.	U18HCAL403	HC	Hons.III Land Laws including Tenure & Tenancy System	4	3	1	0	4
2.	U18PCAL419	PC	Labour Law II	4	3	1	0	4
3.	U18PCAL420	PC	Law of Insurance	4	3	1	0	4
4.	U18PCAL421	PC	Law of Taxation	4	3	1	0	4
5.		PE	Elective – III	3	2	1	0	3
PRACTICAL								
6.	U18CCAL403	CC	CC-III Alternate Dispute Resolution	5	1	1	2	3
7.	U18PTAL404	PT	Internship & Practical Training - IV	4	0	0	4	2
ACTIVITY BASED COURSES								
9.	U18MCAL408	MC	Model Parliamentary Debate	2	0	0	2	0
			TOTAL	**30**	**15**	**6**	**8**	**24**

FIFTH YEAR – IX SEMESTER								
S. No.	**Subject Code**	**Category**	**Subject**	**Contact Periods**	**L**	**T**	**P**	**C**
THEORY								
1.	U18HCAL504	HC	Hons. IV Minorities Law	4	3	1	0	4
2.	U18HCAL505	HC	Hons. V Gender Justice and Feminist Jurisprudence	4	3	1	0	4
3.	U18HCAL506	HC	Hons. VI Medical and Health Law	4	3	1	0	4
4.	U18PCAL522	PC	Civil Procedure Code	4	3	1	0	4
5.		PE	Elective – IV	3	2	1	0	3
PRACTICAL								
6.	U18CCAL504	CC	CC-IV Drafting, Pleading and Conveyancing	5	0	1	4	3
7.	U18FTAL511	FT	Court Observations	4	0	0	4	0
ACTIVITY BASED COURSE								
8.	U18MCAL509	MC	Model UNO	2	0	0	2	0
			TOTAL	**30**	**14**	**6**	**10**	**22**

FIFTH YEAR – X SEMESTER								
S. No.	**Subject Code**	**Category**	**Subject**	**Contact Periods**	**L**	**T**	**P**	**C**
THEORY								
1.	U18HCAL507	HC	Hons. VII International Refugee Law	4	3	1	0	4
2.	U18HCAL508	HC	Hons. VIII Cyber Law	4	3	1	0	4
3.	U18PCAL523	PC	Criminal Procedure Code	4	3	1	0	4
4.	U18PCAL524	PC	Law of Elections and Local Self Governance	4	3	1	0	4
5.		PE	Elective – V	3	2	1	0	3
6.		OE	Elective – VI	3	2	1	0	3
PRACTICAL								
7.	U18CCAL505	CC	CC-V Public Interest Lawyering, Legal Aid, Court & Chamber Visits	5	1	0	4	3
8.	U18PTAL505	PT	Internship & Practical Training - V	4	0	0	4	2
			TOTAL	**31**	**17**	**6**	**8**	**27**

First Year - First Semester	*Subject Code: U18LSCL101*	*Subject Credits: 03*

ENGLISH – I

Objective: To develop written and oral communication skills that maximizes the impact of lawyers' credibility and progresses towards mastery of professional diction and style and to develop the basic ability to analyze and advice the legal aspects to various professional audiences.

COURSE OUTLINE

UNIT – I: ENGLISH LANGUAGE AND LINGUISTICS
Tracing the Historical Development of English language –Indo-European Language Tree – Eastern and Western languages Groups- Germanic Groups –Old English-Middle English – Modern English - Vocabulary: Development of Vocabulary in English Languages –Influence of other languages Vocabulary-Etymology-semantics.

UNIT – II: PHONETICS; TRANSCRIPTION EXERCISES
Phonetics: R.P Phonemes-Identification and Classification- Vowels' Diphthongs and Consonants.Transcription Exercises: Accent –Rhythm in connected speech Kinds of Accents Intonation- Falling Tone and Raising Tone

UNIT – III: PROSE SECTION
Advice to a Young Man Interested in Going in to Law - Frank Further, The Language of the Law – Urban A. Lavery, The Five Functions of Lawyer – Arthur T. Vanderbilt, Court Scene – Merchant of Venice- William Shakespeare, Gettysburg Address –Abraham Lincoln.

UNIT – I: GRAMMAR
Parts of Speech -Reported Speech – Voice - Degrees of Comparison - Question Tags -Words often confused- Idioms and phrases -Synonyms and Antonyms.

UNIT – V: LEGAL TERMS
Accomplice, Ad – Idem, Adjournment, Admission, Amicus Curiae, Approver, Acquittal, Bail, Coercion, Consent, Defamation, Defense, Evidence, Ex – parte, Habeas Corpus, Homicide, Malafides, Minor, Negligence, Negotiable Instrument, Plaintiff, Quid pro quo, Resjudicata, Sine – die, Summons, Surety, Trespass, Trial, Ultra – vires, Tort

Books Prescribed:

1. Bhatnagar: Law and Language; Macmillan Publishers India Limited, 2012
2. Glanville Llewelyn Williams: Glanville Williams: Learning the Law; Sweet & Maxwell Thomson Reuters, 16th Edn. (2016)
3. Francis Bacon: Bacon's Essays; J. W. Parker, 3rd Edn. (1857)

Books for Reference:

1. David Green: Contemporary English Grammar Structure and composition; Trinity Press; 2nd Edn. (2015)

2. T. Balasubramanian: A Textbook of English Phonetics for Indian Students; MacMillan Indian Ltd.; (2000)
3. Otto Jesperson: Growth & Structure of English Language; Atlantic Publishers, 2nd Edn., (revised (2015)
4. Xavier Pinto: Shakespeare's merchant of Venice; Beeta Publications, 2nd Edn. (2014)

First Year - First Semester	*Subject Code: U18PLAL101*	*Subject Credits: 03*

HISTORY – I

Objectives: To make the students understand the ancient, medieval and modern history of India and to provide an in-depth knowledge of the social, economic, political and judicial administration of India prior to the British rule.

COURSE OUTLINE

UNIT – I: ANCIENT INDIA

Sources for the study of Indian History – Society in Harappan Civilization – Vedic Age – Early vedic and later vedic period – Political, Economic, Social and Judicial administration – Dharmashastra – Manudharma – Sabha and Samithi – Position of women – Caste system.

UNIT – II: POLITY, STATE AND ADMINISTRATION

Emergence of new religions – Mauryan Dynasty – Arthasashtra – Political, Social, Economic, Cultural and Judicial administration – Gupta Dynasty – Administration – Pallavas and Cholas – Administration.

UNIT – III: MEDIEVAL INDIA

Delhi Sultanate – Impact of Islam on India – Administration – Judicial organization of the Sultanate – Establishment of the Mughal Empire – Political and Judicial administration - Decline of the Mughal Empire.

UNIT – IV: ADVENT OF THE EUROPEANS

Arrival of Europeans – The Portuguese-The Dutch-English East India Company – The French East India Company - Establishment of English East India Company – Battle of Plassey 1757 – Warren Hastings – Lord Cornwallis – Wellesley – William Bentinck – Lord Dalhousie – Great Revolt of 1857.

UNIT – V: THE GROWTH AND DEVELOPMENT OF THE INDIAN NATIONAL MOVEMENT

Indian National Congress – Moderates and Extremists – Indian Councils Act 1909 – Gandhian Era – Government of India Act 1919 – Non-Cooperation Movement – Simon Commission – Round Table Conferences - Civil Disobedience Movement – Dandi March - Quit India Movement – Gandhi - Irwin Pact - Home Rule movement - Jallian Wallah Bagh Tragedy - The Khilafat Movement– Nehru Report - Rajaji Plan – August Offer - Wavell Plan – Cabinet Mission – Mountbatten Plan – Partition of India – Independence.

Books Prescribed:

1. Bipan Chandra, History Modern India, Orient Black Swan; 1st Edition (2009)

2. L.P. Sharma: History of Ancient India (Pre-Historic Age to 1200 AD), Konark Publication Pvt. Ltd, 3rd Edition, 2010
3. L.P. Sharma: History of Modern India; Konark Publication Pvt. Ltd, 2nd Edition, 2010
4. Bipan Chandra, India's Struggle for Independence, Penguin Books, New Delhi, 1989.

Books for Reference:

1. R.C. Majumdar, Ancient India, Motilal Banarsidass Publication, (2017)
2. V.D. Mahajan, Modern Indian History; S. Chand Publication, 17th Edition (2019)
3. H V Sreenivasa Murthy: History of India; EBC Publication Pvt. Ltd,(2011)
4. Krishna Reddy: Indian History, McGraw Hill Education Pvt Ltd, (2015)
5. Satish Chandra: Medieval India, Har-Anand Publications Pvt. Ltd, 3rd Reprint (2007)

First Year - First Semester	*Subject Code: U18PLAL102*	*Subject Credits: 03*

SOCIOLOGY – I

Objective: The objective of the course is to introduce to the students the basic concepts of Sociology and also the important social institutions and their importance in the social structure, it also gives an insight to the social background of the various laws related to Family and Marriage that has been enacted.

COURSE OUTLINE

UNIT-I: **INTRODUCTION**
Origin and Development, Meaning, Nature and Scope of Sociology-Basic concepts of sociology-Applied Sociology.

UNIT-II: IMPORTANCE AND UTILITY OF SOCIOLOGICAL INFORMATION
Relevance of sociology to law students-The inter-relationship of Sociology with other social sciences.

UNIT-III: **CUSTOM, LAW AND MORALITY**
Social factors in the development of legal control. Values and Mores-Sources of Social Control-Legal Sanctions.

UNIT-IV: SOCIAL INSTITUTION
Marriage and Family-Social Security-Industrial Sociology-Religions-Social Stratification.

UNIT-V: **SOCIAL JUSTICE**
Legal and Non-legal Norms-Types and sources of bias-Behavior and Social theory-Social and Moral roots of legal behaviours.

Books Prescribed:

1. C. N. Shankar Rao; Sociology of Indian Society, S. Chand Limited, 2004.
2. F.H. Giddings; the Principles of Sociology, Genesis Publishing Pvt. Ltd, 2004.
3. Herbert Spencer; Principles of Sociology, D. Appleton and Company, 1883.

Books for Reference:

1. Bryan S. R. Green, Edward A. Johns; An Introduction to Sociology, Elsevier, 201.
2. Theodor W. Adorno; Introduction to Sociology, Stanford University Press, 2002.
3. Anthony Giddens, Mitchell Duneier; Introduction to Sociology, W. W. Norton & Company Incorporated, 2000.

First Year - First Semester	*Subject Code: U18PLAL103*	*Subject Credits: 03*

POLITICAL SCIENCE – I

Objective: The objective of this course is to introduce the students about the introduction of the discipline political science, Relationship of political science with other social sciences, various methods and approaches, origin of state, Political though of various eminent political thinkers western and Indian respectively.

COURSE OUTLINE

UNIT-I: INTRODUCTION TO POLITICAL SCIENCE
Meaning, Nature & scope of Political Science-Political Science and other Social Sciences

UNIT-II: **POLITICAL APPROACHES**
Traditional approach - Modern approach - Post-modern approach - Behavioralism - Post-behavioralism - Systems approach -Structural functional analysis - Marxist approach

UNIT-III: **STATE**
Meaning, definition, Elements - State and Society - State and Government - State and Association - Theories of origin of State:Divine origin theory, The Force theory, Social Contract theory, Patriarchal and Matriarchal theories- Evolutionary theory.

UNIT-IV: SOVEREIGNTY
Meaning, Nature, characteristics and types of Sovereignty-Austin's Theory of Sovereignty-Law- Meaning, definition, sources and types- Rights and duties, classification of rights, theories of rights.

UNIT-V: POLITICAL IDEOLOGIES
Liberalism, Socialism, Marxism, Fascism, Gandhism and Feminism**.**

Books Prescribed:

1. A.C.Kapur: Principles of Political Science; S.Chand & Company, 1st Edition (1987)
2. J.C.Johari: Foundation of Political Science; Vishal Publishing Co, 1st Edition (2019)
3. N.D.Arora: Political Science; McGraw Hill Education, 1st Edition (2011)
4. Vidya Bhushan: Comparative Politics; Atlantic, 2nd Edition (2006)
5. Kalra Kush: Law for the Common Man; VIJ Books Pty Ltd, 1st Edition

Books for Reference:

1. V.D.Mahajan: Political Theory; S.Chand Publishing, 1st Edition (2013)
2. George H. Sabine: A History of Political Theory; Oxford University Press, 4th Edition (1973)
3. S.P.Varma: Modern Political Theory; Vikas Publishing House, 1st Edition (1975)
4. Heywood: Political Ideologies; Palgrave, 5th Edition (2013)
5. Southern Inquirer: Popular Sovereignty: the reviewer reviewed; Gale, Making of Modern Law; 1st Edition

First Year - First Semester	*Subject Code: U18PCAL101*	*Subject Credits: 04*

LAW OF CONTRACT - I

Objective: The Indian Contract Act occupies the most important place in the Commercial Law. The objective of the Contract Act is to ensure rights and that the obligations arising out of a contract are honored and that legal remedies are made available to those who are affected.

COURSE OUTLINE

UNIT – I: BASIC NATURE OF CONTRACT

Indian Contract Act, 1872 - Formation of Contract - Objects of a contract – Essentials of valid contact - Offer - Acceptance - Revocation - lapse of offer and acceptance - Intention to create legal relationship -Terms of contract and Standard form of contracts.

UNIT – II: CONSIDERATION

Past, Present and Future consideration - Value and adequacy of consideration - Rule in Pinnel's case - Exceptions to consideration - Capacity to contract- Free consent - Factors which vitiate free consent - unlawful and illegal objects or considerations - valid, voidable and void agreements.

UNIT III: PERFORMANCE OF THE CONTRACT

Privity of contract - time as essence to performance - place and order of performance - Performance of reciprocal promises - Wagering agreement - contingent contracts - joint promises - appropriation of payments.

UNIT IV: DISCHARGE OF CONTRACTS

By impossibility of performance - Discharge by Agreement - Frustration - Novation Recession - Alteration- Discharge by breach -Waiver - Accord and Satisfaction- Material alteration - Damages - types and Measures.

UNIT V: QUASI CONTRACTS

Quantum Meruit - Specific Relief Act 1963 - Recovery of possession - Specific Performance of contracts - Rectification - Cancellation of instruments - Rescission – declaratory decrees - Injunctions.

Statutory Material

1. Indian Contract Act 1872
2. Specific Relief Act 1963

Books Prescribed:

1. Avtar Singh; Contract and Specific Relief Act; Eastern Book Company; 16th Edn. (2010)
2. Dr.S.K. Kapoor; Contract and Specific Relief Act; Central Law Agency; 14th Edn., (2015)
3. Dr. Kailash Rai; Contract and Specific Relief Act; Central Law Agency; 14th Edn., (2014)
4. Prof. G.C.V. Subba Rao's; Law of Contracts; Narender Gogia & Vompany; 11th Edn.; Updated (2015)
5. Dr. R.K. Bangia; Contarct 1; Allahabad Law Agency; Reprint. (2016)
6. R.L. Meena; Textbook on law of Contract; Universal Law Publishing Co. Pvt. Ltd.; Edn. (2008)

Books for Reference:

1. V. Kesava Rao; Contract - Cases and Materials; Lexis Nexis; 2nd Edn.(2014)
2. Sir Dinshaw Fardunji Mulla; the Inidan Contract Act; Lexis Nexis; 15th Edn. (2016)
3. Nilima Bhadbhade; Contract Law in India; Kluwer Law International; 3rd Edn. (2016)
4. Charles Mitchell & Paul Mitchell; Landmark cases in the Law of Contarct; Hart Publishing; 2008

First Year - First Semester	*Subject Code: U18PCAL102*	*Subject Credits: 04*

LAW OF TORTS

Objective: This paper is to make students understand the common law and its evolution and the Law of Torts is a fundamental common law with established cases.

COURSE OUTLINE

UNIT-I: INTRODUCTION

Origin and Development of Torts - Definition of Tort - Distinction between Tort and Crime, Tort and Contract, Tort and Breach of Trust – Constituents of Tort*: injuria sine damnum, damnum sine injuria*

UNIT-II: GENERAL DEFENCES

volenti non-fit injuria - Necessity - Plaintiff's default - Act of God - Inevitable accidents – Private Defence – Mistake – Statutory Authority

UNIT – III: SPECIFIC TORTS

Negligence -Essentials of negligence - Standard of care - duty to take care - breach of duty - Doctrine of Contributory Negligence - Damages - *Res Ipsa Loquitur* - Medical and professional negligence – Nuisance – Nervous Shock

UNIT-IV: TORTS AGAINST HUMAN BEING AND PROPERTY

Assault – Battery – Distress – Malicious – False Imprisonment and Malicious Prosecution – Conspiracy – Defamation – Libel and Slander – Trespass to Land – To Goods

UNIT-V: LIABILITY

Vicarious Liability – Doctrine of Sovereign Immunity - No Fault Liability – Strict Liability – Absolute Liability

Books Prescribed:

1. Ratanlal & Dhirajlal: The Law of Torts; Lexis Nexis, 26th Edition (2013)
2. R.K.Bangia: Law of Torts; Allahabad Law Agency, 2017
3. Dr. N.V. Pranjape: Law of Torts Consumer Protection Law and Compensation under other Statutory Law; Central Law Agency, 3rd Edition (2015)
4. P.S.A. Pillai: Law of Torts; Eastern Book Company, 9th Edition (2004)
5. B.M. Gandhi: Law of Torts; Eastern Book Company, 4th Edition (2011)
6. Avtar Singh and Harpreet Kaur: Introduction to the Law of Torts & Consumer Protection; Lexis Nexis, 3rd Edition (2013)
7. M.N. Shukla : The Law of Torts; Central Law Agency, 20th Edition (2013)
8. S.K. Kapoor: Law of Torts and Consumer Protection Act; Central Law Agency, 9th Edition (2015)

Books for References:

1. Ramaswamy Iyer: The Law of Torts, Lexis Nexis, 10th Edition (2007)
2. Winfield: Law of Tort; Sweet & Maxwell, 18th Edition (2010)
3. Salmond: Law of Tort: Sweet & Maxwell, 21st Edition (1996)

First Year - Second Semester	*Subject Code: U18LSAL102*	*Subject Credits: 03*

ENGLISH – II

Objective: Aims to improve language skills (LSRW) within a legal context and to learn read and understand legal text such as articles and case briefs and to develop efficient and effective skills on language.

COURSE OUTLINE

UNIT – I: COMMUNICATION:
Definition – Methods – Types – Principles of Effective Communication – Barriers to Communication – Relevance and Importance of Business Communication – E-CommunicationFour Skills of Language Acquisition – Understanding Spoken Language – Speaking – Written Language – Writing.

UNIT – II: LETTER CORRESPONDENCE:
Business Letters – Layout –Acknowledgement – E-mail writing – Complaint Drafting – Precise Writing & Summarizing

UNIT – III: PROSE SECTION – LEARNING THE LAW BY GLANVILLE WILLIAMS:
The Division of Law – Methods of Study – Case Law Techniques – In the Examination Room – Moots and Mock Trials.

UNIT – IV: LEGAL WRITING SKILLS:
Report Writing – Agenda - Minutes of Meeting – Dialogue Writing – Note Making – Advertisement making

UNIT – V: LEGAL MAXIMS:
Actus non – facit reum nisi mens sit rea - Actio personalis moritur cum persona - Audi Alterm partem - Communis error facit jus- Delegatus non potest delegare - Ex nudo pacto non oritur action - Ex turpi causa non oritur action - In pari delicto potier est conditio defendantis - Falsus in uno falsus in omnibus - Generalia specialibus non derogant - Ignorantia facti excusat, ignorantia juris non excusat - In jure non remota causa, sed proxima spectator - Qui facit per alium facit per se - Respondeat superior - Res ipsa loquitur - Sic utere tuo ut alienum non laedas - Ubi jus remedium - Volenti non ibi remedium - Salus populi suprema lex - Novus actus interveniens - Rex non potest peccare - Vigilantibus non dorminetibus, jura subvenient

Books Prescribed:

1. Rajendra Pal, Korlahalli. J. S.: Essentials of Business Communication; Sultan Chand & Sons, 1st Edn. 2011
2. Shirley Taylor: Communication for Business: A Practical Approach; Longman, 1999, 3rd Edn. (1999)
3. Courtland L. Bovée, John V. Thill, Barbara E. Schatzman: Business Communication Today; Prentice Hall, 7th Edn. 2003

Books for Reference:

1. John M. Penrose, Robert W. Rasberry, Robert J. Myers: Advanced Business Communication; South-Western College Pub., 3rd Edn. 1997
2. Simon Collin: Doing Business on the Internet: Kogan Page, illustrated, reprint (1999)
3. Mary Ellen Guffey & Dana Loewy: Business Communication Process & Product; South- Western Cengage Learning, 7th Edn. (2008)

First Year - Second Semester	*Subject Code: U18PLAL104*	*Subject Credits: 03*

MODERN GOVERNMENTS

Objectives: This subject focuses on the analysis of the concept of government, its organs and various types. It lays the theoretical foundations for further study of specific constitutional systems of a country.

COURSE OUTLINE

UNIT I: CONCEPT OF GOVERNMENT AND ITS ORGANS

Government: Definitional Characteristics - Legislature: Meaning and Types - Executive: Meaning and Functions - Judiciary: Importance and Functions

UNIT II: CLASSIFICATION OF GOVERNMENTS IN CONTEMPORARY WORLD

Unitary and Federal: Defining Features and Comparative Advantages and Disadvantages - Parliamentary and Presidential – Basic Characteristics and Comparative Analysis - Democratic and Dictatorship – Types, Merits and Demerits

UNIT III: AMERICAN AND FRENCH CONSTITUTIONAL SYSTEM

American Federation – President – Congress – Supreme Court – Unwritten Law – Constitution of French Fifth Republic – Its Nature – President – Cabinet – Parliament – Judiciary.

UNIT IV: SWITZERLAND CONSTITUTIONAL SYSTEM

Constitution of Switzerland - Nature of Swiss Federation – Federal Council – Federal Council – Federal Legislature – Federal Tribunal

UNIT V: UK CONSTITUTIONAL SYSTEM

Constitution of UK – Sources – Conventions - Queen Cabinet – Parliament – Rule of Law – Political Parties.

Books Prescribed:

1. Peter Leyland: The Constitution of the United Kingdom a Contextual analysis; Hart Publishing, 1st Edition. (2012)
2. Alexander Misic & Nicole Topperwien: the Constitutional law in Switzerland; Kluwer Law Interational, 2nd Edition (2018)
3. Charles Herman Pritchett: the American Constitutional System; McGraw-Hill, 3rd Edition (2016)
4. Sophie Boyron: The Constitution of the French a Contextual analysis; Hart Publishing, 1st Edition (2013)

Books for Reference:

1. D. Deol: Comparative Government and Politics, Imprint Unknown, 1st Edition (1978)
2. K.R. Bombwell: Major Contemporary Constitutional Systems, Modern Publications, 1st Edition (1958)
3. J.C. Johari: Modern Major Political Systems, Shoban Lal & amp Co, 5th Edition (2012)

First Year - Second Semester	*Subject Code: U18PLAL105*	*Subject Credits: 03*

SOCIOLOGY – II

Objective: The objective of the course is to present a comprehensive, integrated and empirically based profile of Indian society and to sensitize the students to the emerging social issues and problems of contemporary India which enables them to acquire sociological understanding of these issues and problems.

COURSE OUTLINE

UNIT-I: **INDIAN SOCIETY**

Indian Society – Structure – India as a plural society - unity and Diversity, Stratification in India (Caste and Class).

UNIT-II: **VILLAGE ADMINISTRATION**

Village- The structure and composition of Indian Villages- Panchayat Raj System in India – Rural and Urban Society.

UNIT-III: **CASTEISM**

Backward Classes: Scheduled Castes, Scheduled Tribes and Other Backward Classes.

UNIT-IV: SOCIAL CHANGE

Social Change: Factors of social change-Theories of Social Change - Trends of change in Indian society.

UNIT-V: **SOCIAL PROBLEMS**

Social Problems: Child Labour – Beggary – Poverty - Alcoholism and Drug Addiction – Prostitution - Bonded Labour – Unemployment - Status of Women.

Books Prescribed:

1. C. N. Shankar Rao; Principles of Sociology; S. Chand, 2014
2. Ram Ahuja; Social Problem in India; Rawat, 2014
3. M. N. Srinivas – Changes in Indian Society & change, Black Saran, 1995

Books for References:

1. Kuppuswamy; Social Change in India, Konark, 2006
2. Raghubirsinha; Indian Society Continuity and change, Pearson Edu. India, 2016
3. Biswanath Ghosh; Contemporary Social Problems of India, Himalayan Publishing House, 1999

First Year - Second Semester	*Subject Code: U18PLAL106*	*Subject Credits: 03*

LEGAL AND CONSTITUTIONAL HISTORY OF INDIA

Objective: This Course is to enlighten the students about the development of the Legal and Constitutional History of India during the ancient, medieval, modern period and contemporary periods.

COURSE OUTLINE

UNIT I: JUDICIAL SYSTEM IN ANCIENT INDIA

Judicial System during the ancient Hindu period – Dharmashastra – Administration of Justice – Constitution of Courts – Crimes and Punishments.

UNIT II: JUDICIAL SYSTEM IN MEDIEVAL INDIA

Judicial System during medieval Muslim period – Delhi Sultanate – Courts – Justice System under the Sultans – The Mughal period – Administration of Justice under the Mughals.

UNIT III: JUDICIAL ADMINISTRATION IN PRESIDENCY TOWNS

Establishment of English East Indian Company [Charter of 1600] – Administration of Justice in Madras, Bombay and Calcutta Presidencies – Charter of 1726 – Charter of 1753.

UNIT IV: JUDICIAL SYSTEM IN BRITISH INDIA

Adalat System in Bengal – Warren Hastings Plan of 1772 – The Regulating Act 1773 – Supreme Court of Calcutta 1774 – Landmark Cases – Judicial Reforms of Cornwallis 1793 – Indian High Courts Act 1861, 1911 – Government of India Act 1935 and Judicial reforms – The Privy Council – Supreme Court of India.

UNIT V: CONSTITUTIONAL HISTORY OF INDIA

Constitutional History of India – Early Charters of 1600, 1661 - The Regulating Act 1773 – Act of Settlement 1781 – Pitts India Act 1784 – Government of India Act 1857 – Queen Victoria's Proclamation - Indian Councils Act [Minto-Morley Reforms] 1909 – Government of India Act [Montague-Chelmsford Reforms] 1919 - Government of India Act 1935 – Constitutional Developments between 1937 to 1947 – Indian Independence Act 1947 - The Constituent Assembly – Constitution of India – Dr. B.R. Ambedkar's Role in the drafting of the Constitution – Salient Features of the Constitution – The Constitutional Manifesto

Books Prescribed:

1. Kulshreshtha V.D: Landmarks in Indian Legal and Constitutional History, Western Book Company, 11th Edition (2006).
2. M.P. Jain: Legal and Constitutional History of India, Lexis Nexis Publication, 7th Edition (2006)

3. Dr. N.V. Parajape: Indian Legal and Constitutional History, Central Law Agency (2014)
4. Justice M. Rama Jois: Legal and Constitutional History of India, Universal Law Publishing Co Ltd, (2014)
5. Kailash Rai: Indian Legal & Constitutional History, Allahabad Law Agency; 5th Edition (2016)

Books for References:

1. Bipin Chandra: India since Independence, Penguin Random Publication, Revised Edition (2017)
2. Muhammad Basheer Ahmed: The Administration of Justice In Medieval India. A Study in outline of the Judicial System under the Sultans and Badshahs of Delhi based mainly upon cases decided by Medieval Courts in India between 1206-1705 A.D.; Cosmo Publications (2015)
3. Gokulesh Sharma: Ancient Judicial System of India; Deep & Deep Publications (2008)
4. Raja Rammohun Roy: Exposition of the Practical Operation of the Judicial and Revenue Systems of India; Wentworth Press (2016)

First Year - Second Semester	*Subject Code: U18PCAL103*	*Subject Credits: 04*

LAW OF CONTRACT - II

Objective: This paper is a broader speculative about law of contracts with the addition of Sale of Goods Act for the wider knowledge of the students.

COURSE OUTLINE

UNIT – I: INDEMNITY AND GUARANTEE

Indemnity - Definition - Rights of the Indemnity Holder - Rights of the Indemnifier – Guarantee - Essentials and nature of Guarantee – Continuing Guarantee - Surety's Liability - Kinds of Guarantee - Discharge of Surety - Distinction between Indemnity and Guarantee.

UNIT – II: BAILMENT

Definition - Indian and English Definitions - Essentials of Bailment and classification - Distinction between Bailment and Pledge – Rights and Duties of Bailor and Bailee - Pledge - Definition - Rights of the Pawnor and Pawnee - Lien - Finder of Lost Goods

UNIT – III: AGENCY

Definition of Contract of Agency - Creation of Agency - Kinds of Agency - Distinction between Agent and Servant and Independent Contractor - Who may be an Agent - Kinds of Agent - Different Kinds of Agent - Authority of Agent - Delegation of Authority - Delegates Non Protest Delegare - Sub Agent - Substituted Agent- Essential of Ratification - Effect of Notice to Agent - Necessary Conditions to Bind Principal and Third Parties - Doctrine of Undisclosed Principal and Concealed Principal - Termination of Agency.

UNIT – IV: SALES OF GOODS ACT, 1930

Distinction between Sale and Agreement to sell - Hire Purchase Agreement - Definition - Goods - Specific Goods - Future Goods - Documents of Title of Goods - Conditions and Warranties - Effect of Breach - When condition is treated as Warranty - Implied Conditions and Warranties - Unpaid Vendor - His rights or Lien and Stoppage in Transit - Remedies available to Seller and Buyer.

UNIT – V: PARTNERSHIP

Distinction between Partnership and co-ownership Joint Hindu Family - Kinds of Partners and Duration of Partnership - Mutual Rights and Duties of Partners - Minor as a Partner - Difference in English Law - Rights of Legal Representative and Surviving Partners - Authority of Partner - Liability of the Partner of the Acts of the Firm and for the Wrongful Acts of other partner - Nature of Liability - Goodwill - Retirement of Partners - Dissolution of Firm - Effect of Non-registration of firm.

Statutory Material

1. Indian Contract Act, 1972
2. Sales Of Goods Act,1930
3. Indian Partnership Act,1932

Books Prescribed:

1. Dr. S.K. Kapoor; Contact – II along with Sale of Goods Acs and the Partnership Act; Central Law Agency; 14th Edn. (2014)
2. Prof. G.C.V. Subba Rao's; Law of Contract; Central Law Publication; 11th Edn. (2015)
3. R. K. Bangia; Indian Contact Act; Allahabd Law Agency; 14th Edn. (2009)

Books for Reference:

1. Akhileshwar Pathak; Lae Relating to Special Contracts; Lexis Nexis; 1st Edn. (2014)
2. Velandai Gopalayyar; The Law of Contract in India; Eastern Book Company; 1970
3. Smith & Thomas; a Casebook on Contract; Sweets and Maxwell; 11th Edn. (2000)
4. Chechire, Fifoot & Furmston's; Law of Contract; Oxford University Press; 14th Edn. 2007

First Year - Second Semester	*Subject Code: U18PCAL104*	*Subject Credits: 04*

LAW OF CRIMES

Objective: The criminal justice system is essentially an instrument of social control. Society considers some behaviours so dangerous and destructive that it either strictly controls their occurrence or outlaws them outright. This paper aims to provide a vast knowledge about various crimes, its ingredients and punishments and to equip the students with practical legal knowledge.

COURSE OUTLINE

UNIT – I: NATURE AND SCOPE OF CRIMINAL LAW

History of Indian Penal Code, 1860 – Essentials of Crime - *actus reus* and *mens rea*- Theories of Punishment- Justification of Punishment – General Defences – Excusable Defences – Justifibale Defences – Private Defence – Joint and Constructive Liability – Abetment – Conspiracy – Attempt – Corporate Liability – Jurisdiction – Territorial – Extra Territorial – Personal and Admiralty

UNIT – II: GENERAL OFFENCES

Offences against State - Offences against the public tranquility - Offences relating to election - Offences relating to Religion - Contempt of lawful authority and public servants - False evidence and offences against public trust - Offences relating to coins and Government Stamps - Offences relating to weights and measures.

UNIT – III: OFFENCES AGAINST HUMAN BODY

Offences affecting human life - Causing miscarriage - Injuries to unborn children - Exposure of infants - Concealment of birth – Hurt -grievous hurt - Wrongful restraint - Wrong confinement - Criminal force and Assault - Kidnapping, Abduction - Slavery and forced labour - Rape: custodial rape - marital rape - Prevention of immoral traffic - Prohibition of indecent representation of women - Unnatural offences.

UNIT – IV: OFFENCES AGAINST PROPERTY

Criminal Misappropriation of property- Criminal breach of trust - Receiving of stolen property - Cheating - Fraudulent deeds and disposition of property.

UNIT –V: OFFENCES RELATING TO MARRIAGE AND REPUTATION

Offences relating to marriage - Bigamy - Adultery - Marital Rape - Defamation - Criminal intimidation and annoyance and attempt to commit such offences.

Statutory Materials

1. Indian Penal Code, 1860.
2. The Criminal Law (Amendment) Act, 2013.

Books Prescribed

1. J.W. Cecil Turner, Kennys: Outlines of Criminal Law; Cambridge University Press, 18th Edition, (2013)
2. Ratanlal & Dhirajlal: The Indian Penal Code; Lexis Nexis, 35th Edition (2017)
3. K.D. Gaur: Indian Penal Code; Lexis Nexis, 6th Edition (2016).
4. P. Atchuthan Pillai: Criminal Law; Lexis Nexis, 13th Edition (2017).
5. B.M. Gandhi, K.A.Panday: Indian Penal Code; Eastern Book Co., 4th Edition (2015)

Books for Reference

1. Dennis Baker: Glanville Williams Textbook of Criminal Law; Sweet Maxwell, 4th Edition (2015).
2. Russell: Criminal Law; Sage Publications, 1st Edition (2015).
3. Ejaz Ahmed: Law of Crimes; Rajasthan Law House, 3rd Edition (1987).
4. Ram Chandra Nigam: Law of Crimes in India (Volume 1); Asia Publishing House, 1st Edition (1965).
5. Dr.H.S. Gour: Penal Law of India; Law Publishers, 7th Edition (1961).
6. V.V. Raghavan: Law of Crimes; Orient Law House, 3rd Edition (1984).

First Year - Second Semester	*Subject Code: U18PTAL101*	*Subject Credits: 02*

INTERNSHIP AND PRACTICAL TRAINING – I

Objective: The internship programmes are designed to acquaint the student with the actual practice of law by working under the supervision of legal luminaries. The student gains experience of applying theoretical knowledge from prior classroom training, when exposed to practical environment.

COURSE OUTLINE

During the summer vacation the students should compulsorily undergo Internship for a continuous period of 4 weeks and submit an internship report along with ainternship certificate. This will be evaluated by the Internship Faculty Guide.

The student may choose to intern under any one the following category:

- Trial Advocate
- Appellate Advocate
- Law Firms
- Non-Governmental Organization
- Police Stations
- Banks
- Non Banking Financial Institutions
- Companies
- Registration Department
- Judiciary
- Legal Regulatory Authorities
- Legislatures
- Market Institutions
- Local Self-Government
- Other Legal Functionaries
- Dispute resolution Bodies
- Legal Services Authority

On completion of successful internship training every student will be awarded 2 credits

Second Year - Third Semester	*Subject Code: U18PLAL207*	*Subject Credits: 03*

HISTORY – II

Objectives : This Course is to study more on alien Political domination and native resistance and to estimate the colonial contribution in the development of Indian Social structure and to understand the emergence of Nationalism in Tamil Nadu and to study about the rise of regional Sub-nationalism in Tamil Nadu.

COURSE OUTLINE

UNIT I: SOUTH INDIAN REBELLION

Geography – Pre & Post history of South India – Beginning of Civilization – Sources for the Study of South India – People – Race- Results of South Indian Rebellion –Palayakara Rebellion - Vellore Mutiny of 1806 - causes, course and consequences - The British Administration in Tamil Nadu - Land Revenue Administration - Ryotwari system - Judicial administration -

UNIT II: EARLY HISTORY OF TAMILNADU

Pre Sangam age- Sangam Age – Historicity – Political & Social Organisation – The Pallavas – Origin: Early Pallavas & Later Pallavas – Political, Social and Economic Conditions – Early Bhakthi Movement – The First Pandyan Empire – Sources – Triangular conflict between Pallavas, Pandyas and Western Chalukyas – Administration – The Imperial Cholas – Raja Raja Chola I - Rajendra Chola I – the Later Cholas – Kulothunga the Chalukya-Chola relations– Political History – Administration – Social and Economic life – Maritime Trade & Commerce – Religion – Literature – Education – Art and Architecture – Sculpture – Cultural Expansion - The second Pandyan Empire (1190-1312 AD) – Triangular contest between Cholas, Pandyas and Hoysalas – Decline of the Pandyan Empire – Social and Economic Life – Muslim Invasions – Madurai Sultanate – Rise of Vijayanagar Empire - Nayak dynasty.

UNIT III: SOCIO RELIGIOUS REFORM MOVEMENTS

Western Education - Christian missionary activities - Socio religious reform movements - Ramalinga Adigal- Vaikunda Swamigal - Temple Entry Movement - the rise and fall of Justice Party - EVR - Self Respect Movement.

UNIT IV: ROLE OF TAMIL LEADERS IN FREEDOM STRUGGLE

Role of Tamilnadu in freedom struggle –Puli Thevar – Velu Nachiyar & Maruthu Brothers - V.O. Chidambaram Pillai - Subramania Bharathi - Vanchinathan - Subramania Siva - Rajaji - Satya moorthy – Kamaraj

UNIT V: POLITICAL HISTORY OF TAMIL NADU

Tamil Nadu under Congress rule -Rajaji - Kamaraj - administration - Industrial development under Kamaraj - educational development - Bhaktavatsalam - The Anti-Hindi Agitation of 1965- C.N. Annadurai - The Rise of Dravidian Parties to power - C.N. Annadurai - The

economic development of Tamil Nadu after 1947 - The development of industries - social welfare measures – Rise of Political Parties in Tamil Nadu.

Books Prescribed:

1. K. Rajayyan, History of Tamil Nadu from 1565 to the present day, Madurai Publishing house, Madurai, (1978)
2. N. Subramanian, Social and Cultural History of Tamil Nadu (1336-1984), Ennes publication, (2007)
3. K.A. Nilakanta Sastri, A history of South India, Oxford India Pvt., 4th Edition (2009)

Books for References:

1. T. Stalin Gunasekaran, The Role of Tamilnadu in Freedom Struggle (Tamil) Nivethitha Pathippagam, (2000)
2. R.L. Hardgrave, The Dravidian Movement, Popular Prakashan, Bombay, (1965)
3. Dr. A. Swamynathan: Socio-Cultural History of Tamil Nadu, Deepa Publication (Tamil), 1990.
4. P.N. Chopra, T.K. Ravindran, N. Subrahmanian: History of South India, S. Chand & Company, 1st Edition, (2003)

Second Year - Third Semester	*Subject Code: U18PLAL208*	*Subject Credits: 03*

ECONOMICS – I

Objective: To acquaint the students with the basic study of Economics. To ponder upon the importance of Theory of Consumer Behaviour and the Theory of Demand & Supply. To highlight the concept of Production and Cost Analysis. To describe about the concept of Market Structure.

COURSE OUTLINE

UNIT I: INTRODUCTION TO THE STUDY OF ECONOMICS
Introduction to the Study of Economics – Definition of Economics – Wealth – Welfare – Scarcity. Divisions of Economics – Micro & Macro. Nature and Scope of Economics – Positive and Normative Economics.

UNIT II: THEORY OF CONSUMER BEHAVIOR
Theory of Consumer Behavior – Theory of Utility – Law of Diminishing Marginal Utility – Total Utility – Marginal Utility – Consumer Equilibrium.

UNIT III: THEORY OF DEMAND AND SUPPLY
Theory of Demand and Supply – Definition of Demand – Law of Demand and its Determinants. Elasticity of Demand – Types of Elasticity of Demand. Indifference Curve – Characteristics of Indifference curve.

UNIT IV: PRODUCTION AND COST ANALYSIS
Production – Factors of Production Function – Law of Returns. Cost – Different Types of Cost Conditions.

UNIT V: MARKET STRUCTURE
Market Structure – Price and Output Determination under different Markets – Features of Perfect Competition – Monopoly – Monopolistic Competition – Duopoly – Oligopoly.

Books Prescribed:

1. H L Ahuja: Advanced Micro Economics; Sultan & Chand Publication, Latest Edition, Delhi.
2. M L Jhingan: Micro Economic Theory; Vrinda Publications (P) Ltd, Latest Edition.
3. Karl E. Case and Ray C. Fair: Principles of Economics; Pearson Education, Inc., 8th Edn, 2007.
4. N. Gregory Mankiw: Economics: Principles and Applications; Cengage Learning India Private Limited, 4th Edn, 2007.

Books for Reference:

1. Paul A. Samuelson: Economics; Tata McGraw-Hill Education, 2010
2. Thomas Sowell: Basic Economics; Hachette UK, 2014
3. Roger A. Arnold: Economics; Cengage Learning, 9th Edn. 2008

Second Year - Third Semester	*Subject Code: U18PLAL209*	*Subject Credits: 03*

POLITICAL SCIENCE – II

Objective: The objective of this course is to introduce to the students about western political thought and the various organs of the government in general and also with special reference to Indian Constitution, the features of Indian constitution, the importance of grass root democracy, role and function of non-constitutional bodies and issues that are affecting the contemporary Indian politics.

COURSE OUTLINE

UNIT-I: WESTERN POLITICAL THOUGHT

Plato, Aristotle, Machiavelli, Hobbes, Locke, Rousseau, John S.Mill, Marx, Bentham, Lenin and Mao-Tse-Tung - Justice: Conceptions of justice with special reference to Rawl's theory of justice and its communitarian critiques. - Equality: Social, political and economic.

UNIT-II: INDIAN POLITICAL THOUGHT

Arthashastra, Sir Syed Ahmed Khan, Sri Aurobindo, Raja Ram Mohan Ray, Swami Dayanand, Gopal Krishan Gokhle, Swami Vivekanand, M.K. Gandhi, M.N. Roy,Jawaharlal Nehru, B.R.Ambedkar, Subhash Chander Bose & Bhagat Singh

UNIT-III: DEMOCRATIC VALUES IN INDIA

Federalism and its Working with reference to Centre-State Relations - Demand for State Autonomy - Emerging Trends in Indian Federalism - Panchayati Raj and Municipal Government - significance of 73rd and 74th Amendments.

UNIT-IV: AUTONOMOUS BODIES

Election Commission- National Human Rights Commission- Central Vigilance Commission- Union Public Service Commission – Right to Information

UNIT-V: PARTY SYSTEM

National and regional political parties, ideological and social bases of parties; patterns of coalition politics; Pressure groups, trends in electoral behaviour; Caste, Religion and Ethnicity in Indian Politics.

Books Prescribed:

1. Amal Kuma Mukhopadhyaya: Political Sociology : An Introductory Analysis; K.P.Bagchi, 1st Edition (1977)
2. Robert A Dahl: Modern Political Analysis; Prentice Hall, 6th Edition (2002)
3. Madan G. Gandhi: Modern Political Analysis; Oxford & ibh Publications Co, 2nd edition (1981)
4. M. Sharma: Political Theory and Thought; Anmol Publisher, 1st Edition (2004)

Books for Reference:

1. Om Bakshi: The Crisis Of Political Theory; OUP India, 1st Edition (1988)
2. O.P. Gauba: An Introductory to Political Theory; National paperbacks, 8th Edition
3. R.C. Agarwal: Political Theory (Principles of Political science); S.Chand publishing, 5th Edition (1976)
4. Nonet Philippe: Law and Society in Transition; Taylor & Francis Ltd, 1st Edition

Second Year - Third Semester	*Subject Code: U18PCAL205*	*Subject Credits: 04*

CONSTITUTIONAL LAW – I

Objective: Our Constitution is not just a mere set of fundamental laws that form the basis of governance of our country but it embodies and reflects certain basic values, philosophy and objectives. This paper provides a broader perspective for the students about the law of the land and explains the most vital features of a citizen in this country

COURSE OUTLINE

UNIT – I: CLASSIFICATION OF CONSTITUTION AND GOVERNMENTS

Definition and Meaning of Constitution - Kinds of Constitution - Meaning of Constitutionalism – Features of Indian constitution - Parliamentary Supremacy - Theory of Separation of Powers - Doctrine of Checks and Balances - Doctrine of Judicial Review.

UNIT – II: PREAMBLE, UNION AND ITS TERRITORIES AND CITIZENSHIP

Preamble - Meaning - Scope and Importance - Objectives and Values - Union and its Territories – Citizenship - Citizenship at the commencement of the Constitution - Deprivation and Renunciation of the Citizenship – Parliament's Power to regulate Citizenship Act.

UNIT – III: STATE

Definition and Meaning - Article 12 - Article 13 - Constitutional and Post Constitutional Laws - Various Doctrines - Eclipse - Severability – Colourable legislation – Waiver - Judicial Preview under Article 13.

UNIT – IV: FUNDAMENTAL RIGHTS

Rights to Equality: General Equality clause under Article 14 - Judicial Interpretation on Equality - Reasonable Classification - Protective Discrimination Clause - Preservation and Social Justice under Articles 15 – 18 - Rights to Freedom: Freedom of Speech and Expression - Art 19 - Scope and Ambit and 19(1) (a) and (2) - Balance between individual interest and collective interest reasonable restrictions

Rights of the Accused: Article 20 - Ex-post Facto Law - Double Jeopardy - Self-incrimination Art 21 - Judicial Interpretation on Life and Personal Liberty - Article 22 - Preventive Detention - Rights against Preventive Detention - Exceptions – Safeguards against preventive detention.

Freedom of Religion: Articles 25-28 - Secularism - Judicial Interpretation - Restrictions on Freedom of Religion.

Cultural and Educational Rights: Articles 29-30 - Protection for Minorities – Recent trends on Minority Educational Institutions.

Rights to Constitutional Remedies: Article 32 and 226 - Writ Jurisdiction

UNIT – V: DIRECTIVE PRINCIPLES OF STATE POLICY AND FUNDAMENTAL DUTIES

Directive Principles and Directions for Social Change - Social and Economic Charter -Social Security Charter - Community Welfare Charter - Fundamental duties - Nexus between Fundamental Rights and DPSP

Statutory Materials

The constitution of India Bare act with Short comments; Professional Book Publishers (2018)

Books Prescribed

1. V.N. Shukla; Constitution of India; Eastern Book Company;13th Edition; reprint (2019)
2. M.P .Jain; Indian constitutional law; Lexis Nexis; 8th Edition (2018)
3. Dr. J. N. Pandey; Constitutional Law of India; Central Law Agency, Allhabad;51st Edition (2014)

Books for Reference

1. D. D. Basu; Shorter Constitution of India; Lexis Nexis; 15th Edition (2017)
2. M. P. Singh; Constitution of Indi; Eastern Book Company; 12th Edition (2016)
3. H. M. Seervai; Constitutional Law of India; Universal Law Publishing;4th Edition (2015)

Second Year - Third Semester	*Subject Code: U18PCAL206*	*Subject Credits: 04*

FAMILY LAW – I

Objective: Every natural and legal person is assigned a personal law defining his or her status and capacity. The connecting factors determining one's personal law vary from one legal system to another. This paper gives a detailed summary about all personal laws and its governance and also will give the students and insight about personal laws.

COURSE OUTLINE

UNIT – I: SOURCES AND SCHOOLS OF PERSONAL LAWS

Application of various personal laws -Traditional and modern sources of Hindu law and Muslim law - Schools of Hindu law and Muslim law - Origin of the school - Main schools and Sub-schools - Effect of migration.

UNIT – II: LAW ON MARRIAGE

Nature of marriage - Various forms of marriage and requirements for a valid marriage on a comparative analysis - Void, voidable and valid marriage in different religious texts and statutes - Law and issues on marriage under the special marriages act - Unisex marriage and question on living together - The demand of dowry and the concept of dower under the relevant personal law - Ceremonies of marriage under various religious system.

UNIT – III: LAW ON DIVORCE AND MAINTENANCE

Restitution of conjugal rights - Judicial separation - Nullity of marriage and Divorce - Law of divorce under various personal laws - Divorce in camera proceedings - Decree on proceedings maintenance under Hindu, Muslim and Christian laws - Permanent alimony -Maintenance under code of criminal procedure - Jurisdiction of family court act.

UNIT – IV: LAW ON LEGITIMACY OF CHILDREN AND ADOPTION

Legitimacy of children born of void and voidable marriages - Their rights and legal issues - Adoption in different religious groups - Requisites and Conditions - Procedure of adoption Effect of adoption - Inter country adoption.

UNIT – V: LAW OF MINORITY AND GUARDIANSHIP

Guardian under the Hindu minority and Guardianship act 1956 - Definition types of guardians - Guardianship under Muslim law - Procedure for appointment and their powers -Guardian under the guardian and wards act 1890.

Statutory Material

1. The Hindu marriage act 1955
2. The adoptions and maintenance act 1956
3. The Hindu Minority and Guardianship act 1956

4. The Special Marriage act,1954
5. The Guardian and Wards act 1890
6. The Dissolution of Muslim Marriage act 1939
7. The Christian marriage act 1872
8. Indian Divorce act ,1869
9. Indian Majority act ,1875
10. The Muslim Women (protection of rights on divorce)act 1986
11. The Family Court act1984
12. The Dowry Prohibition act 1961
13. The Hindu Widows' remarriage act 1856
14. Prohibition of Child Marriage act 2006

Books Prescribed:

1. Prof. G. C. V. Subba Rao: Family Law in India: Narendra Gogia, 10th Edition (2018)
2. Paras Diwan, Peeyushi Diwan: Family Law: Allahabad Law Agency (2018)
3. Dr. Shivani Goswami: Family Law-1: Central Law Publications (2018)
4. H. K. Saharay: Family Law in India; Eastern Law House; 2011 edition (2012)
5. Paras Diwan, Peeyushi Diwan: Modern Hindu Law; Allahabad law agency; 22nd Edition (2013)
6. Dr. Mohammad Nazmi: Mohammadan Law; Central Law Publications (CLP); 1st edition (2012)

Books for References:

1. Paras Diwan: Law of Marriage and Divorce: A Comprehensive treatise on Matrimonial Laws of all the Indian communities including Hindus, Muslims, Christians, Parsis and Jews; Universal Law Publishing - An Imprint of LexisNexis; Seventh edition (2016)
2. Dinshaw Fardunji Mulla: Mulla's Hindu Law; *Lexis Nexis*; Twenty third edition (2018)
3. Sir Dinshaw Fardunji Mulla: Mulla's Principles of Mahomedan Law; Lexis Nexis; Twenty Second edition (2017)

Second Year - Third Semester	*Subject Code: U18PCAL207*	*Subject Credits: 04*

JURISPRUDENCE AND INTERPRETATION OF STATUTES

Objective: This paper is the documentary and earlier data on law and a guiding element to interpret and understand various statutes through the precedents.

COURSE OUTLINE

UNIT – I: NATURE, DEFINITION AND SCHOOLS OF JURISPRUDENCE

Nature and Definition of Jurisprudence – Analytical Positivism - Natural Law - Historical School - Sociological School - Economic Interpretation of Law - Indian Jurisprudence - Concept of Dharma – PIL - Social Justice and Compensatory Jurisprudence.
Nature and Purpose of Law
Nature and Definition of Law - Feminist Jurisprudence - Administration of Justice.

UNIT – II: SOURCES OF LAW

Legislation – Nature of Legislation - Supreme and Subordinate Legislation - Sources of - Codification and the Interpretation of Enacted Law - Precedents - Authority of Precedents - Circumstances destroying or weakening the binding force of Precedent - Ratio Decidendi and Judicial Reasoning - Custom: Kinds of Custom, Conventional Custom - Local Custom. - General Custom.
Legal Concepts – I :Legal Rights and Duties - Correlation of Right and Duty - Persons -Nature of Personality - Status of Unborn, Minor, Lunatic, Drunken and Dead Persons - Corporate Personality - Possession and Ownership.
Legal Concepts – II:Title - Property, Liability, Obligation and the Procedural Law

UNIT – III: LAW MAKING

Legislature, Executive and the Judiciary - Principle of Utility - Law and Public Opinion - Law and Social Control - Law and Morals - Meaning Objective and Scope of 'Interpretation', 'Construction' and 'Statute' - Public Opinion and Law Making.
Nature and Kinds of Indian Laws: Statutory, Non Statutory, Codified, Uncodified, State made and State Recognized Laws - Parts of a Statute -Commencement, Operation and Repeal and Revival of Statutes - Purpose of Statutory Interpretation - Basic sources of Statutory Interpretation -The General Clauses Act, 1897: Nature, Scope and Relevance – Definition clauses in various Legislation: Nature and Imperative Rule.

UNIT – IV: RULES OF STATUTORY INTERPRETATION

Literal and Logical Rules of Interpretation -Legalism and Creativity - Golden Rule and Mischief Rule - Strict construction of Penal Laws and Taxation Laws - Internal Aids and External Aids of Interpretation.

Interpretation of Constitution : Principles and Theories - Preamble as a Tool - Directive Principles and Fundamental Duties with Fundamental Rights – Interpretation of International Instruments - Presumption against Exceeding Territorial Nexus – Presumption against Ouster of Jurisdiction of Courts – Presumption against changes in Common Law - Presumption against including what is Inconvenient or Unreasonable - Presumption against Retrospective Operation of Law – Presumption against Violation of International Law.

UNIT – V: LEGISLATIVE DRAFTING

Principles and Process of Legislative Drafting - Simplicity, Preciseness, consistency, Alignment with Existing Law - Brevity – Drafting General Laws – Special Laws – Rules – Orders.

Books Prescribed:

1. G.C. Venkata subbaRao; Jurisprudnce and Legal Theoru; Eastern Book Company; 9th Edn.,Reprinted 2012
2. R.W.M. Dias; Jurisprudence; Lexis Nexis; %th Edn., 2013; Reprinted 2014
3. Dr. N.V. Paranjape; Studies in Jurisprudence and Legal Thoery; Central Law agency; 7th Edn. 2013; Reprint (2015)
4. G.W. Paton; A Textbook of Jurisprudence; Oxford University Press; 14th Edn. 1972; 1st Indian Edn. (2004)
5. B.N. Mani Tripathi; Jurisprudence the Legal Theory; Allahabad Law Agency; 19th Ed.(2012); Reprinted (2015)
6. V.D.Mahajan's; Jurisprudence and Legal Theory; Eastern Book Company; Reprinted 2015
7. Prof. T. Bhattacharyya; the Interpretation of Statites; Central Law Agenecy; 9th Edn. (2014)
8. B.M.Gandhi; Interpretation of Statues; Eastern Book Company; 2nd Edn. (2014)
9. Dr. M.P. Tandon; Interpretation of Statutes; Allahabd Law Agency; 11th Edn. (2205)
10. Vepa. P. Sarathi; Interpretation of Statutes; Eastern Book Company; 14th Edn.(2003); Reprinted (2013)
11. P.St. J. Langan; Maxwell on the Interpretation of Statutes; Lexis Nexis; 19th Edn. (2013)

Books for Reference:

1. H.L.A Hart, the Concept of Law; Oxford University Press; 3rd Edn. 2012
2. Edgar Bodenheimer; Jurisprudence; Harvard University Press, 1974; 2nd Edn.
3. Edgar Bodenheiner; Jurisprudence the Philosophy and Method of the Law; Harvard University Press, 1981
4. Thomas Erskine Holland D.C.L; The Elemets of Jurisprudence; the Lawbook Exchange, Ltd.,2nd Edn., 2008

5. G. C. Mathur, Vidya Dhar Mahajan; Jurisprudence and Legal Theory; Eastern Book Company, 1987; 5 Edn., reprint
6. Vepa P. Sarathi; Interpretation of Statutes; State Mutual Book & Periodical Service, Limited, 1986; 3rd Edn.
7. A.B. Kafaltiya; Interprettaion of Statutes; Universal Law Publishing Co.; 2008 Edn. Reprint 2010
8. G. E. Devenish; Interpretation of Statutes; Juta, 1992
9. Peter Benson Maxwell; On the Interpretation of Statutes; Creative Media Partners, LLC, 2015

Second Year - Fourth Semester	*Subject Code: U18PLAL210*	*Subject Credits: 03*

ECONOMICS – II

Objectives: This course is to understand the Indian Economics and to familiarize the students with the concept and theories of economics which have great relevance to day to day problems India.

COURSE OUTLINE

UNIT-I: MIXED ECONOMY

India as a mixed Economy: Role of Public sector, private Sector and joint sector - National Income of India- Poverty, Unemployment and Rural Employment Guarantee Programmes - Population Problems: Malthusian theory of Population, Optimum theory of Population, Population Policy.

UNIT-II: AGRICUTURAL POLICIES IN INDIA

Agriculture: Role of Agriculture, Low Productivity and its Causes - Land Reforms, rural indebtedness, Green Revolution, Agricultural Credit – Problem of Agricultural Labour.

UNIT-III: INDUSTRIAL POLICIES IN INDIA

Industrial Policy **–** Small Scale and cottage industries - and Industrial Labour, Trade Unions, Industrial Relations- Labour Legislation **–** Social Security Schemes

UNIT-IV: PLANNING IN INDIA

Planning in India – Five Year Plans, Priorities between agriculture and Industry – choice of technology, Deficit Financing

UNIT-V: ECONOMIC REFORMS

Economic Reforms since 1991– Liberalization – Privatization, Devaluation **-** Second Generation Reforms – Demonetization.

Books Prescribed:

1. Paul Samuelson & William Nordhaus: Economics; McGraw Hill Education; 19 edition (13 July 2010)
2. Richard G. Lipsey & K.Alec Chrystal: An Introduction to Positive Economics; Oxford University Press, 8th Revised Edn. (1995)
3. M. L. Seth: Principles of Economics; Lakshmi Narain Agarwal Educational Publishers; 2017 Edn. (2017)

Books for Reference:

1. Datt Ruddar & KPM Sundharam: Indian Economy; S Chand; 50th New Edn. (2004)

2. Ahuja H.L.; Macro Economics: Theory and Policy, S Chand; 11th Rev. Edn. 2006 Edn. (2010)
3. N. Gregory Mankiw: Principles of Economics; Cengage Learning Asia Pvt. Limited, (2015)

Second Year - Fourth Semester	*Subject Code: U18PLAL211*	*Subject Credits: 03*

SOCIOLOGY – III

Objectives: The objective of this course is to enable the students to understand the influence of the wider societal aspects in the context of Industrial sociology and social psychology.

COURSE OUTLINE

UNIT-I: SOCIAL CHANGES

Islamization and westernization - Sanskritization and secularization - Industrialization and Globalization

UNIT-II: CLASSICAL SOCIAL THINKERS – I

August Comte - Law of three stages in Human Progress - Hierarchy of Sciences - Social Statics and Dynamics – Positivism - Herbert Spencer - Theory of Social Evolution - Organismic Analogy - Emile Durkheim -Social Facts - Sociology of Religion - Division of Labour - Organic and Mechanical Solidarity - Types of Suicide

UNIT-III: CLASSICAL SOCIAL THINKERS – II

Karl Marx: Dialectical Materialism - Theory of Class Struggle – Alienation - Max Weber - Ideal Type - Verstehen – Bureaucracy - Types of Authority - Protestant Ethic and Spirit of Capitalism - Class, Status and Power

UNIT-IV: INDUSTRIAL SOCIOLOGY

Sociology of Industry - Types of productive systems - Guild systems, putting - out system, factory system - History of Industrial Sociology in India - Impact of Industrialization on society - Relationship at Work - Informal Social relations, Informal groups - Formal Group - Primary, Secondary - Trade Union and other types of production relationships - Changing work relationships, Behaviour of workgroups.

UNIT-V: SOCIAL PSYCHOLOGY

Scope and nature of social psychology - Methods of social psychology - Importance of social psychology - Personality types and traits - Influence of culture on personality

Books Prescribed

1. Aronson. Elliot, Wilson D. Timothy and Akery M. Robert; Social Psychology, Longman Publishers, 1997.
2. Baron, A. Robert Boon Byrne; Social Psychology, Prentice Hall of India, India.
3. Aron, Raymond; Main Currents in Sociological Thoughts, Penguin Books, London, (2 Volumes).

Books for References:

1. Ritzer; Sociology Theory; Me. Grew Hill, 2012
2. Dr. Kumarraka & Dr. Saumya Shankar – Sociology, Jawahar Publication, 2018

3. H. K. Rawat; Sociology Basic Concepts, Rawat Rubius, 2007
4. Haralambos; Sociology Themes & Perspectives, Harper Collins, 2014

Second Year - Fourth Semester	*Subject Code: U18PLAL212*	*Subject Credits: 03*

INDIAN PUBLIC ADMINISTRATION

Objectives: To introduce the student the concept and nature of public administration and also to give them an in-depth knowledge on various fundamental theories behind the discipline. To understand the structure involving functioning of the administration. It also speaks about the public policy and the accountability of the authorities.

COURSE OUTLINE

UNIT-I: INTRODUCTION

Meaning, scope and significance of Public Administration; Wilson's vision of Public Administration; Evolution of the discipline and its present status; New Public Administration; Public Choice approach; Challenges of liberalization, Privatization , Globalisation; Good Governance: concept and application; New Public Management.

UNIT-II: ADMINISTRATIVE THOUGHT

Scientific Management and Scientific Management movement; Classical Theory; Weber's bureaucratic model – its critique and post-Weberian Developments; Dynamic Administration (Mary Parker Follett); Human Relations School (Elton Mayo and others); Functions of the Executive (C.I. Barnard).

UNIT-III: ADMINISTRATIVE BEHAVIOUR

Process and techniques of decision-making; Communication; Morale; Motivation Theories – content, process and contemporary; Theories of Leadership: Traditional and Modern.

UNIT-IV: ORGANISATIONS

Theories – systems, contingency; Structure and forms: Ministries and Departments, Corporations, Companies, Boards and Commissions; Ad hoc and advisory bodies; Headquarters and Field relationships; Regulatory Authorities; Public - Private Partnerships.

UNIT-V: ACCOUNTABILITY AND CONTROL: CONCEPTS OF ACCOUNTABILITY AND CONTROL

Legislative, Executive and Judicial control over administration; Citizen and Administration; Role of media, interest groups, voluntary organizations; Civil society; Citizen's Charters; Right to Information; Social audit. Public Policy: Models of policy-making and their critique; Processes of conceptualization, planning, implementation, monitoring, evaluation and review and their limitations; State theories and public policy formulation.

Books Prescribed:

1. Rumki Basu: Public Administration: Concepts and Theories; Sterling Publications, 3rd Edition (1994)
2. Ramesh Kumar Arora: Indian Public Administration: Institutions and Issues; New Age International, 2nd Edition (1996)
3. M.Laxmikanth: Public Administration; McGraw Hill Education; 1stEdition (2011)
4. Hilaire Barnett: Constitutional & Administrative Law; Routledge Cavendish, 6thEdition (2006)

Books for Reference:

1. A.R. Tyagi: Public Administration : Principles and Practice; The University of Michigan, 2nd Edition (2007)
2. R.K. Sapru: Administrative Theories and Management Thought; Prentice Hall India Learning Private Limited, 3rdEdition (2013)
3. Suili Sarkar: Public Administartion in India; PHI Learning, 2ndEdition (2018)
4. Herbert A. Simon: Administrative Behavior; Free Press, 1stEdition (1997)
5. Kunda Kalaba: Financial Crime Risks Challenges Management & Compliance: The African Perpective; EMCE Publishing House, 1stEdition (2016)

Second Year - Fourth Semester	*Subject Code: U18PCAL208*	*Subject Credits: 04*

CONSTITUTIONAL LAW – II

Objective: This paper elucidates the parliamentary form of aspects, the role of Executive, Legislative and Judiciary and the role of Election Commission which interprets the current system and gives an overall perspective to students.

COURSE OUTLINE

UNIT – I: THE UNION AND STATE EXECUTIVE

The Union Executive - The President - Election, Term of Office, Powers and Functions, Impeachment - Immunities - Pardoning Power - Ordinance making power - President and Union Council of Ministers - The State Executive -Governor - Appointment, Powers and Functions - Immunities - Pardoning Power - Removal of Governor - Doctrine of Pleasure.

UNIT – II: LEGISLATURE AND JUDICIARY

Composition of Parliament and State Legislatures - Office of the Speaker - Qualification / Disqualification of Members - Legislative Procedure, Legislative Privileges -Judicial Interpretation - Anti Defection Law, X Schedule. Union Judiciary -Supreme Court of India Composition, Appointment and Removal of Judges of Supreme Court - Writ Jurisdiction of Supreme court under Art 32 – Kinds of Jurisdiction - Public Interest Litigation Compensatory Jurisprudence -Independence of Judiciary - State Judiciary - High Courts in the States - Composition, Appointment and Removal of Judges - Writ Jurisdiction of High Courts under Art. 226.

UNIT – III: CENTRE – STATE RELATIONS:

Distribution of Legislative, Administrative and Fiscal Powers and Freedom of Trade and Commerce - Distribution of Legislative Powers - Doctrine of Territorial Nexus - Subject matter of laws made by Parliament and Legislature of States - Doctrine of Harmonious Construction - Doctrine of Pith and Substance - Doctrine of Occupied Field - Colourable Legislation -Parliament's Power to Legislate in State List - Implied and Residuary Power - Doctrine of Repugnancy - Administrative Relations - Centre and Inter-State Conflict Management Financial Relations - Sharing of Tax - Grants-in-Aid -Restriction on the power of State Legislatures - Doctrine of Immunity - Borrowing Powers - Constitution Limitations - Freedom of Trade, Commerce and Intercourse - Power of Parliament - Restrictions - Goods and Service Tax (GST) - Impact of Globalization.

UNIT – IV: OTHER CONSTITUTIONAL FUNCTIONARIES

Organization - Power and Functions of Election Commission of India - Union Public Service Commission - State Public Commission - Comptroller and Auditor General - Attorney General & Advocate General - Constitutional Safeguards for Civil Servants - Protection

against Arbitrary Dismissal - Removal or Reduction in Rank - Exceptions to Art 311 – Role of Finance Commission - Planning Commission - Inter – State Council - National Development Council - Local Self Government (Panchayat Raj).

UNIT – V: EMERGENCY PROVISIONS

Emergency Provisions - National Emergency - Duty of the Union to protect the States against External Aggression and Internal Disturbance - Power of Union Executive to issue directions and the effect of non-compliance.

State Emergency - Imposition of President's Rule in States - Grounds, Limitations, Parliamentary Control, Judicial Review.

Financial Emergency (Article 360) - Emergency and Suspension of Fundamental Rights.

Books Prescribed

1. Dr. J.N. Pandey: Constitutional Law of India; Central Law Agency, 52nd Edition (2015)
2. M.P. Jain: Indian Constitutional Law; Lexis Nexis; 7th Edition (2014)
3. Prof. S.R. Bhansali: The Constitution of India; Universal Law Publishing; 1st Edition (2015)

Books for References:

1. Durga Das Basu: Constitution of India; Lexis Nexis, 23rd Edition (2018)
2. H.M. Seervai: Constitution of India (Vol.1-3) Universal Law Publishing; 4th edition (2015)
3. Dr. V.N. Shukla: Constitution of India, Eastern Book Company, 12th Edition, 2013
4. Justice Sujata V. Manohar, T K Tope Constitutional Law of India, Eastern Book Company, 3rd Edition, 2010

Second Year - Fourth Semester	*Subject Code: U18PCAL209*	*Subject Credits: 04*

FAMILY LAW - II

Objective: This paper will provide a broader explanation about the systems, property related litigation and its measures according to their personal laws.

COURSE OUTLINE

UNIT – I: JOINT HINDU FAMILY

Institution of Joint Family - Coparcenary System - Classification of Properties – Karta- Status, Powers and Duties - Principles of Survivorship and Succession - Partition

UNIT – II: INTESTATE SUCCESSION

General Principles of Succession under Hindu Law, Muslim law and Christian Law -Statutory Conditions Disinheritance and Disentitlement - Comparative analysis of Rights to Property of Women under Different Religion - Statutory Law - Rights of Pre-emption

UNIT – III: TESTAMENTARY SUCCESSION

Testamentary succession under Hindu, Muslim and Christian Law- Limitation under various Religious and Statutory Laws - Will and Administration of Will - Codicil Lapse, Abatement and Ademption of Legacies - Probate, Letters of Administration and Succession Certificate.

UNIT – IV: GIFT UNDER ISLAMIC LAW

Hiba - Nature and Characteristics of Hiba - Subject matter of hiba and hiba-bil-iwaz - Revocation of Gift.

UNIT – V: RELIGIOUS ENDOWMENT AND WAKF

Hindu Religious Endowment - Wakf: Meaning – Creation of Wakf - Formalities - Types and Administration of Wakf - Mutawalli and his powers and duties.

Statutory Material

1. Hindu Succession Act, 1956
2. Indian Succession Act, 1925
3. The Hindu Women's right to property Act, 1937 (repealed)
4. The Wakfs Act, 1954

Books Prescribed:

1. Prof. G. C. V. Subba Rao: Family Law in India: Narendra Gogia, 10th Edition (2018)
2. Paras Diwan, Peeyushi Diwan: Family Law: Allahabad Law Agency (2018)
3. H. K. Saharay: Family Law in India; Eastern Law House; 2011 edition (2012)
4. Paras Diwan, Peeyushi Diwan: Modern Hindu Law; Allahabad law agency; 22nd Edition (2013)

5. Dr. Mohammad Nazmi: Mohammadan Law; Central Law Publications (CLP); 1st edition (2012)

Books for References:

1. Dinshaw Fardunji Mulla: Mulla's Hindu Law; *Lexis Nexis*; Twenty third edition (2018)
2. Sir Dinshaw Fardunji Mulla: Mulla's Principles of Mahomedan Law; Lexis Nexis; Twenty Second edition (2017)
3. Paras Diwan: Law of Intestate and Testamentary Succession; Universal Law Publishing - An imprint of LexisNexis; Fourth edition (2013)

Second Year - Fourth Semester	*Subject Code: U18PCAL210*	*Subject Credits: 04*

LAW OF EVIDENCE

Objective: The Indian Evidence Act, 1872 is a long piece of legislation that codifies the rules of evidence. However, a detailed discussion of all the leading principles that will be covered will provide the students to have a good theoretical and working knowledge of the Indian Evidence Act, 1872 and will equip them to study the subject on their own.

COURSE OUTLINE

UNIT – I: INDIAN EVIDENCE ACT, 1872

Scope, Object and Applicability of Indian Evidence Act and Exclusion - Statutory Definition - Golden Rule Evidence -Presumption of Law and Fact - Kinds of Evidence.

UNIT – II: RELEVANCY OF FACT

Admissibility of Facts - Res Gestae -Omission - Cause and Effect - Motive, Preparation and Conduct -Explanatory Facts - When facts not otherwise relevant become relevant - Conspiracy - Admission and Confession - Dying Declaration

UNIT – III: RELEVANCY

Relevancy of Statement made by person who cannot be called as Witness - Relevance of Judgments - Relevance of Opinion of Third Persons - Expert Opinion- Scientific Examination and Expert Witness under Section 112A - Relevance of Character in Civil and Criminal Cases.

UNIT – IV: BURDEN OF PROOF

General conception of onus probandi- General and special exceptions to onus probandi- Justification of presumption and of the doctrine of judicial notice - Justification as to presumptions as to certain offences - Presumption as to dowry death - Scope of the doctrine of judicial notice.

Estoppel

The rationale - Estoppel - res judicata and waiver and presumption - Estoppel by deed - Estoppel by conduct - Equitable and promissory estoppel - Questions of corroboration.

UNIT – V: WITNESSES

Examination and Cross Examination - Competency to testify - State privilege - Professional privilege - Approval testimony - General principles of examination and cross examination - Leading questions - Lawful questions in cross-examination - Compulsion to answer questions put to witness - Hostile witness - Impeaching of the standing or credit of witness.

Statutory Material

Indian Evidence Act, 1872

Books Prescribed:

1. Ratanlal and Dhirajlal: Law of Evidence; Lexis Nexis; 26th Edn. (18 July 2017)
2. Avatar Singh: Law of Evidence; Central Law Publication; 20th Edn. (2014)
3. Vepa Sarathi: Law of Evidence; Eastern Book Co. (EBC); 2017 Edn. (2017)
4. V. Krishnamachari: Law of Evidence; Narender Gogia & Company; 2018 Edn. (2018)

Books for References:

1. Sarkar: Law of Evidence; Lexis Nexis India; 17th Edn. (2010)
2. Woodroffe and Amir Ali; Law of Evidence; Lexis Nexis India; 27th Edn. (2017)
3. Batuk Lal; Law of Evidence; Central Law Agency (CLA); 2018 Edn. (2018)

Second Year - Fourth Semester	*Subject Code: U18PTAL202*	*Subject Credits: 02*

INTERNSHIP AND PRACTICAL TRAINING - II

Objective: The internship programmes are designed to acquaint the student with the actual practice of law by working under the supervision of legal luminaries. The student gains experience of applying theoretical knowledge from prior classroom training, when exposed to practical environment.

COURSE OUTLINE

During the summer vacation the students should compulsorily undergo Internship for a continuous period of 4 weeks and submit an internship report along with internship certificate. This will be evaluated by the Internship Faculty Guide.

The student may choose to intern under any one the following:

- Trial Advocate
- Appellate Advocate
- Law Firms
- Non-Governmental Organization
- Police Stations
- Banks
- Non Banking Financial Institutions
- Companies
- Registration Department
- Judiciary
- Legal Regulatory Authorities
- Legislatures
- Market Institutions
- Local Self-Government
- Other Legal Functionaries
- Dispute resolution Bodies
- Legal Services Authority

On completion of successful internship training every student will be awarded 2 credits

Third Year - Fifth Semester	*Subject Code: U18PLAL313*	*Subject Credits: 03*

ECONOMICS – III

Objective: This course deals about the economic development. The emphasis will be on thinking like an economist and the course will illustrate how economic development proceeds and track the aggregate models of growth and cross-national comparisons of the growth experience that can help evaluate the models

COURSE OUTLINE

UNIT – I: CONCEPTIONS OF DEVELOPMENT

Economic growth and development - Factors affecting economic development - Obstacles to economic development - Indicators of economic development - Alternative measures of development - Documenting the international variation in these measures - Comparing development trajectories across nations and within them

UNIT – II: THEORIES OF ECONOMIC DEVELOPMENT & GROWTH

Classical theory - Marxian theory of capitalist development - Schumpeterian theory of capitalist development - Harrod- Domar model of steady growth - Neo-Classical growth Model – Solow, Rostow‟s stages of economic growth; The endogenous growth models, (Romar& Lucas), Human Capital & Growth - Evidence on the determinants of growth - Patterns of Economic Growth.

UNIT – III: ECONOMIC DEVELOPMENT IN INDIA

Economic Development since Independence - Major features of the economy at independence; - growth and development under different policy regimes—goals, constraints, institutions and policy framework; an assessment of performance—sustainability and regional contrasts; structural change, savings and investment

UNIT – IV: POPULATION AND HUMAN DEVELOPMENT

Demographic trends and issues – education, health and malnutrition as a factor in Economic Development in India

UNIT – V: ECONOMIC POLICIES AND PERFORMANCE

Policies and Performance in Agriculture Growth – productivity - agrarian structure and technology - capital formation - trade; pricing and procurement - Policies and Performance in Industry Growth; productivity; diversification; small scale industries; public sector; competition policy; foreign investment.

Books Prescribed:

4. Paul Samuelson & William Nordhaus: Economics; McGraw Hill Education; 19 edition (13 July 2010)
5. Richard G. Lipsey & K.Alec Chrystal: An Introduction to Positive Economics; Oxford University Press, 8th Revised Edn. (1995)
6. M. L. Seth: Principles of Economics; Lakshmi Narain Agarwal Educational Publishers; 2017 Edn. (2017)

Books for Reference:

4. Datt Ruddar & KPM Sundharam: Indian Economy; S Chand; 50th New Edn. (2004)
5. Ahuja H.L.; Macro Economics: Theory and Policy, S Chand; 11th Rev. Edn. 2006 Edn. (2010)
6. N. Gregory Mankiw: Principles of Economics; Cengage Learning Asia Pvt. Limited, (2015)

Third Year - Fifth Semester	*Subject Code: U18PLAL314*	*Subject Credits: 03*

INTERNATIONAL RELATIONS

Objectives: This course aims to equip the students with: Effective exertion of the International Relations conceptions; Professionalism in the field of diplomacy; Better knowledge in international affairs.

COURSE OUTLINE

UNIT – I: INTRODUCTION

Definition, Nature, Scope and Development of the International Relations; and Autonomy Debate regarding International Relations

UNIT – II: APPROACHES TO THE STUDY OF INTERNATIONAL RELATIONS

Idealist, Realist; System and Marxist- Leninist

UNIT – III: MAJOR CONCEPTS

National Power: Definition, Elements & Assessment; Limitation of Power: International Law, International Morality and World Public Opinion - Balance of Power, Collective Security, Environmentalism and Globalization

UNIT IV: INTERNATIONAL RELATIONS THEORIES

Defining Theory; Theorizing about International Relations and System of Analysis; Major Theoretical Debates - Contending Theories of International Relations: Realism (Classical & Structural) / Neorealism; Liberalism / Neoliberalism. - Other Alternatives to Realist School of Thought: Constructivism; Critical Theory; Feminist Theories; Post- modernism. - Global Conflict and Cooperation Theories: Balance of Power; Security Dilemma; Regime Stability; Power Politics vs. International Order and Cooperation - Post Cold War IR Theory: "Democratic Peace" Theory – "Neoliberal Institutional" Theory - Decision-Making Theories

UNIT V: INDIA'S FOREIGN POLICY

Decline of Soviet Russia – Development of Uni-polar world – Economic Nationalism and Economic internationalism – India's Diplomatic relationship with South Asian Countries - India's Diplomatic relationship with US and European Countries - India's Diplomatic relationship with Russia and China.

Books Prescribed:

1. Palmer and Perkins: International Relations; CBS Publishers & Distributors, 3rd Edition (2001)

2. Mahendra Kumar: Theoritical Aspects of International Politics; Shiva Lal Agarwala & Co, 1st Edition (1969)
3. J.C.Johari: International Relations & Politics; Vantage Press, 2nd Edition (1984)
4. Robert Jackson & Georg Sorenson: Introduction to International Relation; Oxford University Press, 5th Edition (2018)

Books for Reference:

1. Goldstein: International relation; Pearson Education, 8th Edition (2008)
2. B.S.Murthy: International Relation & Organisation; Eastern Book Company, 1st Edition (2017)
3. Anthony d. Burke: An Introduction to International Relation; Cambridge University Press, 2nd Edition (2012)
4. Scott Burchill: Theories of International Relations; Macmillan, 5th Edition (2015)
5. Shibdas Bhattacharjee: India's Fragile Foreign Policy Towards Neighbouring Nations; Overseas Press India Private Limited, 1st Edition (2017)

Third Year - Fifth Semester	*Subject Code: U18PCAL311*	*Subject Credits: 04*

BANKING LAW INCLUDING NEGOTIABLE INSTRUMENTS ACT

Objective: This paper produces an insight to the students about the Banking Law and the emerging trends in the banking sector and various procedural aspects in a simplified manner.

COURSE OUTLINE

UNIT – I: PRELIMINARY

History of Banking - Different types of Banks including Foreign Banks – Nationalisation of Banks - RBI's Control over Commercial Banks - Special status of RBI and State Bank of India - Subsidiary Banks -Emerging trends in Banking -Digital Banking.

UNIT – II: BANKING REGULATION ACT, 1949

Banker and Customer: Definition of Banker and Customer and relationship - Special types of Customers - Banker as Borrower - Different types of accounts - Duties and Rights of the Banker and different types of instrument - Paying Banker and Collecting Banker.

UNIT – III: LAWS RELATING TO LOANS, ADVANCES AND INVESTMENTS BY BANKS

Subsidiary Business Operations of Banker with special reference of Safety Deposit Lockers - Liability of Banker in case of Bank Robberies and Fraud by Bank Employees - Vicarious Liability of the Bank and Bank Employees - Recovery of Loans and Advances - Recovery of Debts due to Banks - Financial Institutions Act, 1993 and SARFAESI Act, 2002.

UNIT – IV: WINDING UP OF BANKING COMPANIES

Effect of Winding Up of Banking Companies - Rights of Customers on Winding Up of Companies - Necessity for reforms in Indian Banking Law to meet Global Challenges - Banking Ombudsman - Various Committee Reports.

UNIT – V: NEGOTIABLE INSTRUMENTS ACT, 1881

Definition and Characteristics - Parties to Negotiable Instruments - Presentation - Discharge and Dishonour - Liability -Various kinds of Crossing of Cheque - Rights of Holder and Holder in due Course against Banker - Civil and Criminal Liability for Dishonour of Cheques under Section 138 to Section 142 of the Amended Negotiable Instruments Act.

Statutory Materials:

1. Banking Regulation Act, 1949
2. Negotiable Instruments Act, 1881
3. SARFAESI Act, 2002

4. Financial Institutions Act, 1993

Books Prescribed:

1. Arun Kumar & Anoop Kumar: Banking Industry and NPA's; New Century Publication; 1st Edn. (2018)
2. Taxmann: Digital Banking; Taxmann Publications, 1st Edn. (2016)
3. Indian Institute of Banking and Finance: Principles and Practices of Banking; McMillan Publications, 3rd Edn. (2015)
4. V.V.K. Subburaj: Rbi, Reserve Bank of India; Sura College of Competition, 2004

Books for Reference:

1. Dr. S. S. Srivastsava: Banking Law and Negotiable Instruments Act; Central Law Agency, 1st (2015)
2. Taxmann: Guide to SARFAESI Act – 2002 and Recovery of Debts and Bankruptcy act – 1993; Taxmann Publications, 2nd Edn. (2017)
3. Bimal N. Patel: Banking Law and Negotiable Instruments Act; 1st Edn. (2015)

Third Year - Fifth Semester	*Subject Code: U18PCAL312*	*Subject Credits: 04*

PROPERTY LAW

Objective: By its very existence, society mandates interaction, exchange or transfer. A property, movable or immovable, is transferred from one person to another under various different situations and circumstances and for different values. This paper details about the property law, the litigation based on that and the recent amendments to the property law.

COURSE OUTLINE

UNIT – I: GENERAL PRINCIPLES OF TRANSFER

Transfer of Property Act, 1882 - Concept of Property - Definition of Transfer of Property - Kinds of Interest-Conditional Transfer - Document of Election - Ostensible Owner – Feeding the Grant - Improvement made by Bonafide Purchase- Lis Pendens - Fraudulent Transfer - Doctrine of Part Performance and other General Principles of Transfer.

UNIT – II: SPECIFIC TRANSFERS -TRANSFER OF ABSOLUTE INTEREST

Sale - Definition of sale - rights and liabilities of seller and buyer - Gift - Definition- Onerous Gift - Universal Donor and Donee - Death Bed Gift - Suspension and Revocation of Gifts – Exchange

UNIT – III: TRANSFER OF LIMITED INTEREST

Mortgage: Different Kinds of Mortgages - Redemption - Clog on Redemption - Partial Redemption - Rights and Liabilities of Mortgagor and Mortgagee including Doctrine of consolidation Marshalling Contribution – Subrogation - Charge

UNIT – IV: LEASE

Rights and Liabilities of Lessor and Lessee - Determination of lease - Doctrine of Holding Over - Forfeiture of Lease - Actionable claims.

UNIT –V: EASEMENT

Definition - Acquisition of Easement - Easement of Necessity and Quasi Easement - Easement by Prescription – Extinction - Suspension and Revival of Easements and License.

Statutory Material:

1. Transfer of Property Act, 1882
2. Indian Easements Act, 1882

Books Prescribed:

1. Avtar Singh: Transfer of Property Act; Universal Law Publishing, 5th Edition (2016)

2. Dr. R.K. Sinha: The Transfer of Property Act; Central Law Agency, 19th Edition (2018)
3. S.N. Shukla: The Transfer of Property Act; Allahabad Law Agency, 29th Edition (2018)
4. Vepa. P. Sarathi: Law of Transfer of Property; Eastern Book Company, 6th Edition(2017)
5. Dr. Poonam Pradhan Saxena: Property Law; Lexis Nexis, 3rd Edition (2017)
6. G.P. Tripathi: Transfer of Property Act; Central Law Publication, 19th Edition (2016)

Books for References:

1. Mulla: The Transfer of Property Act; Lexis Nexis, 13th Edition (2018)
2. Darashaw J. Vakil & HR Jhingta: Commentaries on the Transfer of Property Act; Lexis Nexis, 5th Edition (2017)
3. Goyle: A Commentary on the Transfer of Property Act; Eastern Law House, 2nd Edition (2001)
4. Sandeep Bhalla: Digest of cases on Transfer of Property in India; Eastern Book Company, 2nd Edition (2012)

Third Year - Fifth Semester	*Subject Code: U18PCAL313*	*Subject Credits: 04*

HUMAN RIGHTS

Objective: The understanding of human rights is the foundation for the development of a good citizen and a responsible legal professional. The main objective of this course is to provide an insight into the meaning and significance of various human rights in the contemporary era and the mechanisms developed at the international and national level for protection and promotion of such rights. This course attempts to increase the knowledge of law students with respect to human rights; to focus their attention on the underlying values of human rights and to explore various international and national legal frameworks which embody human rights and promote them in practice.

COURSE OUTLINE

UNIT I: CONCEPT OF HUMAN RIGHTS

Origin and Development of Human Rights- Generations of Human Rights - Civil and Political Rights -Economic, Social and Cultural Rights - Solidarity Rights - U.N Charter - Universal Declaration of Human Rights, International Covenant on Civil and Political Rights and Optional Protocols - International Covenant on Economic and Social Cultural Rights and Optional Protocols.

UNIT II: VULNERABLE GROUPS AND HUMAN RIGHTS

Discrimination against Women, Status of Women in India, Conferences of Women, Rights of Child, Optional Protocols to the Convention on the Rights of the child Labour, Migrant Workers, Rights of the Migrant Workers, Reporting System, Inter - State Communications System, Historical Development of International Refugee Law, United Nations High Commissioner for Refugees (UNRRA), Stateless Persons, Disabled Persons, Indigenous Persons.

UNIT III: HUMAN RIGHTS AND NON-GOVERNMENTAL ORGANIZATIONS

NGO's and United Nations, Human Rights and the NGO's - Amnesty International and Human Rights Watch, India and Human Rights NGO's - People union for Civil Liberties. - international humanitarian law - Application and Historical Development of Humanitarian Law- Treatment of Prisoners of War, Treatment of Alien Enemies, Human Rights and Terrorism.

UNIT IV: IMPLEMENTATION OF HUMAN RIGHTS

UN Commission on Human Rights (Human Rights Council) - The Human Rights Committee (CCPR) under ICCPR- The Committee on Economic, Social and Cultural Rights (CESCR) under ICESCR.

UNIT V: HUMAN RIGHTS PROTECTION IN INDIA

Provisions under the Indian Constitution – Fundamental Rights, Enumerated and Unremunerated Human Rights, Restrictions on Human Rights and Fundamental Rights- Protection of Human Rights Act 1993 - National and State Human Rights Commissions – Establishment, Powers and Functions of NHRC and SHRC - Role of NHRC and SHRC - Application of International Human Rights Law in India- Role of Indian Judiciary in enforcing human rights - Judicial Activism.

Statutory Materials

The Protection of Human Rights Act, 1993.

Books Prescribed

1. Paras Diwan: Human Rights and the Law; Deed & Deep Publications, 1st Edition (1999)
2. Sankarsen: Human Rights; Law Enforcing Concept Publishing Co. , 1st Edition, (2002).
3. Maurice Cransten: What are Human Rights; Taplinger Publishing Co., 1st Edition (1978).
4. Dr.H.O.Agarwal: International Law and Human Rights; Central Law Publications, 20th Edition (2000).

Books for Reference

1. H. Kramer, Simmonds & Steiner: Debate over Rights; Oxford University Press, 1st Edition (2000).
2. John Locke: Civil Government; Wildside Press, Reprint (2008).
3. Dr. U.Chandra: Human Rights; Allahabad Law Agency Publications, 5th Edition (2004).
4. Galius Esejoifer: Protection of Human Rights under the International Law; Laiden Boston, 1st Edition (2007).
5. Raphael D.D, Macmillan: Human Rights Old and New; Rouledge and Kegal Paul, 1st Edition (1981).

Third Year - Sixth Semester	*Subject Code: U18PLAL315*	*Subject Credits: 03*

LAW AND SOCIETY

Objective: This course introduces the relationship between law and society. It discusses and promotes a foundational understanding of the concept of law and the origins, development, and role of law in society, particularly outside of formal legal institutions.

COURSE OUTLINE

UNIT I: SOCIOLOGY AND LAW

Definition - Nature and Scope of Sociology - Relationship between Law and Sociology – Law as a Product of Tradition and Culture - Law as a Social Institution

UNIT II: SOCIAL CHANGES AND LAW

Law as Instrument of Social Change - Impact of Law in Society - Notions of Social Control - Distinctive Features of Law as a Means of Social Control - Imposition of Obligation to Obey the Law – Compliance - Education as Agencies of Social Control Varieties of Sanctions - Legal Administration as an aspect of Social Control

UNIT III: REGIONALISM, CASTEISM AND LAW

Role of Regionalism as a divisive and integrative factor - Concept of India as one unit – Language as a social element - Caste System among Ethinic Groups – Emergence of Concept of Social Justice - Scheduled Castes and Scheduled Tribes, Backward Classes, linguistic minorities.

UNIT IV: WOMEN, CHILDREN AND LAW

Social injustice against women and children and its various forms - Women's commission. Empowerment of women - Child labour - Sexual exploitation - Adoption and related problems - Children and education

UNIT V: THEORIES OF UNDERDEVELOPMENT AND DEVELOPMENT

Underdevelopment Theories: Baran's theory, World System theory, Dependency theory & Theory of Unequal Exchange Development Theories: Theory of Economic Growth, Theory of Positivistic Development and Theory of Realistic Development

Books Prescribed:

1. C. N. Shankar Rao: Sociology, Indian Society; S. Chand Publications, 1st Revised Edn. (2006)
2. J.S. Gandhi: Law, State and Society Indian Context; Rawat Publications, 5th Edn. (2004)

3. M.N. Srivasa: Social Change in Modern India Orient Black Swan, (1995)

Books for Reference:

1. C. N. Shankar Rao: Sociology, Indian Social Problems; S. Chand Publications, 1st Revised, Edn. (2015)
2. A. Javier Trevito: the Sociology of Law, Classical & Contemporary Perspective Routledge, 1st Edn. (2008)
3. March Galanterled: Law & Society in Modern India; Oxford Press, 1st Edn. (1993)
4. Robert Lingat: The Classical Law of India; Munshram Motian Lal, 1st Edn. (1993)
5. U. Baxi: the Crisis of the Indian Legal System; Vikas , New Delhi (1982)
6. U. Baxiled: Law & Poverty Essay; Tripathi Bombay, (1988)

Third Year - Sixth Semester	*Subject Code: U18PLAL316*	*Subject Credits: 03*

LAW AND ECONOMICS

Objective: The course provides an introduction to the subject of law and economics in which laws and legal rules and procedures are analyzed from the perspective of economic efficiency. The focus of the course is on economic analysis of laws.

COURSE OUTLINE

UNIT I: INDIAN PLANNING AND ECONOMIC REFORMS

Five Year Plans - Achievement and failures of India's five year plans

UNIT II: NATIONAL INCOME OF INDIA

Trends - Estimation and Distribution - Structural changes in Indian Economy through National Income Statistics- Changes in Occupational Patterns - Sectoral Distribution of Income

UNIT III: MONEY AND BANKING

Monetary Policies - Role of Indian Commercial Banks- Credit Control Policy of Reserve Bank of India-Money market in India; inflation: basic facts, causes and anti-inflationary policies —asset liability accounting for central bank and commercial bank, Functions of Central Bank- Functions of Commercial Banks—Money multiplier theory and credit Creation— Credit Control Methods.

UNIT IV: RESOURCE ADMINISTRATION AND ECONOMIC DEVELOPMENT

Land Resources - Land Reforms in India - Forest Resources - National Forest Policies - Mineral Resources and Mineral Policy – Energy and Water Resources - Fisheries Resources - Economic Development and Environmental Protection - Agricultural Credit - Agricultural Marketing

UNIT V: TRADE AND FINANCIAL SYSTEM

Composition of India's Foreign Trade - Trend of Principal imports - Pattern of exports - Direction of India's Foreign Trade – Economic and Trade policies of India – Export Import regulations.

Books Prescribed:

1. Dutta R. & K. P. M. Sundaram: Indian Economy, S. Chand & Co., New Delhi, 72th Edn. (2016)
2. Misra, S.K. & Puri V.K.: Indian Economy, Himalayas Publishing Co., Mumbai, 33rd Edn. (2016)

3. S.B. Gupta: Monetary Economics; S. Chand Publications, 1st Edn. (2014)

Books for Reference:

1. K.C. Gopala krishnan: Legal Economics; EBC Publications, (2010)
2. Paul A. samuelson, William D. Nordhous: Economics; MC Graw Hill Edu., 1st Edn. (2010)
3. Mitchell A. Polinsky: Introduction to Law & Economics; Aspen Publication, 4th Edn. (2011)
4. Agarwal A. N.: Indian Economy; Newage International Publication, 4th Edn. (2016)

Third Year - Sixth Semester	*Subject Code: U18PCAL314*	*Subject Credits: 04*

PUBLIC INTERNATIONAL LAW

Objective: This paper explains about the International Law and its scope and significance, its impact on the states and imparts the students a wider knowledge on the International legislation.

COURSE OUTLINE

UNIT – I: INTRODUCTION

Development of International Law - Definitions - Nature of International law- Legality of International Law - Positive Morality - Theories as to basis of International Law.

UNIT – II: SOURCES AND SUBJECTS OF INTERNATIONAL LAW

Introduction - International Conventions - International Customs - General Principles of Law recognized by Civilized States - Decisions of Judicial or Arbitral Tribunals - Other Sources - Subjects of International Law- Various Theories - Realistic Theory - Fictional Theory- Functional Theory

Concept of State - State and Individual as a subject - Rights and Duties / Responsibilities - State Recognition -Theories - Kinds, Modes and Legal Effects - Nationality - Acquisition and Loss related issues - Asylum – Extradition - Territorial Sovereignty - Modes of Acquisition and Loss of Territory - State - Jurisdiction - State Succession and Liability

UNIT – III: LAW OF SEA

Historical Background- Maritime Belt - Territorial Sea - The Contiguous Zone- Exclusive Economic Zone - Continental shelf - The High Seas - International Sea Bed Area - Law of the Sea Conventions.

UNIT – IV: CONCEPT OF TREATY

Kinds of Treaties - Binding Force of Treaties- Pacta Sunt Servanda- Jus Cogens - Rebus Sic Stantibus - Parties of a Treaty - Formation of a Treaty- Reservations - Invalidity and Termination of Treaties.

UNIT – V: INTERNATIONAL ORGANIZATION

Origin, Nature and Scope of International Organizations - League of Nations, United Nations and it's Organs - International Tribunals.

Books Prescribed:

1. Dr. H.O.Agarwal: International Law & Human Rights; Central Law Publications, 20thEdition (2015)
2. M.P.Tandon: Public International Law; Allahabad Law Agency, 17th Edition (2014)
3. Joseph Gabriel Starke: Strake's International Law; Butterworths, 11thEdition (1994)

4. R.P. Anand: Salient documents in International Law; Banyan publications, 1st Edition (1994)
5. Yosifumi Tanaka: The International Law of the Sea; Cambridge University Press, 2nd Edition

Books for Reference:

1. S.K.Kapoor: A text book of International Law; Central Law Agency, 5th Edition (1982)
2. K.K.Bhattacharya: Public International Law; Central Law Agency, 5th Edition (1976)
3. Malcolm N.Shaw: International Law; Cambridge University Press, 8th Edition (2018)
4. Antonio Cassese: International Law; Oxford University Press, 2nd Edition (2001)
5. Ian Brownlie: Principles of Public International Law; Oxford University Press, 7th Edition (2008)
6. David John Haris: Cases & Materials on International Law; Sweet & Maxwell, 4th Edition (1991)

Third Year - Sixth Semester	*Subject Code: U18PCAL315*	*Subject Credits: 04*

COMPANY LAW

Objective: This paper is imparted in the view of increasing emphasis on adherence to norms of good corporate governance. Company Law assumes an added importance in the corporate legislative milieu, as it deals with structure, management, administration and conduct of affairs of Companies.

COURSE OUTLINE

UNIT – I: INTRODUCTION

Company: - Meaning and definition - characteristics - Kinds of Companies - private and public, government companies - statutory companies - Chartered - Registered - Limited and unlimited - Lifting of the corporate veil.

UNIT – II: COMPANIES ACT, 2013

Types of Companies and their incorporation - Formation of Companies - Procedural Aspects - Memorandum of Association - definition, clauses, provisions and procedures for alteration - - Articles of Association - definition, contents - provisions and procedures for alteration - distinction between Memorandum and Articles of Association • Doctrine of Ultra-Vires, Constructive Notice, Indoor Management - Promoters - Meaning, Position, Duties, Rights, Responsibilities and Liabilities - Prospectus - Contents - Statements in Lieu of Prospectus - Liabilities for misstatement.

UNIT – III: SHARES AND DEBENTURES

Shares - Classes of shares - Preference and equity shares -Public issue of shares - SEBI guidelines - Allotment of shares - Irregular allotment - Issue of shares at premium, par and discount - Listing of shares - Sweat equity shares - Right shares - Bonus shares - Shares with differential rights - Share certificate and share warrant. Calls, forfeiture, lien, surrender of shares - Demat form of shares -Transfer and transmission of shares - Buyback of shares Transfer under depository system - Debentures - Charges and Debenture Holder - Dividends - Borrowings - Lending - Investments - Contracts.

UNIT – IV:CORPORATE GOVERNANCE

Management of Companies: - Directors - Managing Director - Appointment – Qualification - Rights - Responsibilities and liabilities – Disqualification of directors Meetings - Requisites - Statutory, Annual, Extra ordinary and Board Meetings, Resolutions – Types -Accounts and Audits - Internal Auditing - National Financial Reporting Authority - E-filing and Information Technology Act, 2000 - Corporate Social Responsibility - Prevention of Oppression and Mismanagement – Investigation – Powers of Inspectors – Powers of NCLT, Company Law Board - Insider Trading.

UNIT – V: COMPROMISES, ARRANGEMENTS AND WINDING UP

Compromises - Arrangements and Amalgamations - Mergers and Acquisitions - Winding Up - Meaning - modes of winding up - winding up by the tribunal - Members voluntary winding up - creditor's voluntary winding up - winding up under the supervision of the court - Administration of NCLT and CLAT and Special Courts - Powers of Liquidators - Removal of Names of Companies from Register of Companies - Defunct Companies and Restoration - Revival and Rehabilitation of Sick Companies.

Emerging issues in Company Law: Producer Company - Limited liability partnership - Concept and formation of corporate governance - relevance and provisions under listing agreement - Securities and Exchange Board of India act 1992: Introduction - Object - establishment and management of SEBI - Functions and powers of SEBI – Securities Appellate Tribunal.

Statutory Materials:

1. Companies Act, 2013
2. Securities and Exchange Board of India Act, 1992
3. Information Technology Act, 2000

Books Prescribed:

1. Avtar Singh: Company Law; Eastern Book Company, 16th Edition (2015)
2. S.C. Tripathi: New Company Law; Central Law Publication, 1st Edition (2014)
3. Karn Gupta: Introduction to Company Law; Lexis Nexis, 1st Edition (2013)

Books for References:

1. Gower: Principles of Modern Company Law, Sweet & Maxwell, 9th Edition (2012)
2. Plamer: Company Law Manual; Sweet & Maxwell, 25th Edition (1992)
3. C.A. Kamal Garg: Bharat's Corporate & Allied Laws; 2nd Edition (2012)
4. G.K. Kapoor: Company Law and Practice, Taxmann's Publication, 23rd Edition (2018)

Third Year - Sixth Semester	*Subject Code: U18CCAL301*	*Subject Credits: 03*

CLINICAL COURSE – I
MOOT COURT

Objective: Moot court simulate a court hearing, in which students analyze a problem, research the relevant law, prepare written submissions, and present oral argument. Mooting enables students to enhance their argumentative skills, drafting skills and legal research and to demonstrate their interest in advocacy.

COURSE OUTLINE

This course consists of following:

1. Every student will do at least five moot courts in following subjects. The moot court work will be on assigned problems.
    - Constitutional Law
    - Environmental Law
    - International Law
    - Administrative Law
    - Family Law
    - Criminal Law
    - Civil Law

2. **WRITTEN SUBMISSIONS:**
    - The students should mandatorily submit 5memorials on either side based on the discretion of the concern faculty. The maximum mark for each memorial is 10.
3. **ORAL ARGUMENTS:**
    - Every student will be asked to argue on any two moot problems mandatorily i.e. one on petitioner/claimant side and another on Respondent side.

4. **EVALUATION SCHEME**

5 Written Submissions	10 Marks Each	5x10 = 50 Marks
2 Oral Arguments	25 Marks Each	2x25 = 50 Marks
TOTAL		**100 Marks**

Third Year - Sixth Semester	*Subject Code: U18PTAL303*	*Subject Credits: 02*

INTERNSHIP AND PRACTICAL TRAINING - III

Objective: The internship programmes are designed to acquaint the student with the actual practice of law by working under the supervision of legal luminaries. The student gains experience of applying theoretical knowledge from prior classroom training, when exposed to practical environment.

COURSE OUTLINE

During the summer vacation the students should compulsorily undergo Internship for a continuous period of 4 weeks and submit an internship report along with a internship certificate. This will be evaluated by the Internship Faculty Guide.

The student may choose to intern under any one the following category:

- Trial Advocate
- Appellate Advocate
- Law Firms
- Non-Governmental Organization
- Police Stations
- Banks
- Non Banking Financial Institutions
- Companies
- Registration Department
- Judiciary
- Legal Regulatory Authorities
- Legislatures
- Market Institutions
- Local Self-Government
- Other Legal Functionaries
- Dispute resolution Bodies
- Legal Services Authority

On completion of successful internship training every student will be awarded 2 credits

Fourth Year - Seventh Semester	*Subject Code: U18HCAL401*	*Subject Credits: 04*

HONOURS COURSE: I

MEDIA LAW

Objective: This paper seeks to establish a co-relationship of the much-flaunted Constitutional objective of freedom of speech and expression, and existing Rights and Restrictions governing the fourth estate, an essential pillar of Democratic Governance.

COURSE OUTLINE

UNIT - I: MASS MEDIA

Types of Press Films, Radio and Television - Ownership pattern-Press-Private-Public, Films-Private, Ownership patterns Radio & Television, Public - Difference between Visual and non-Visual Media-impact on People's minds - Press-Freedom of Speech and Expression-Article 19 (1) (a) Includes Freedom of the Press - Laws of defamation - obscenity - blasphemy and sedition. Law relating to employees wages and service conditions - Price and Page Schedule Regulation - Newsprint Control Order – Advertisement is it included within freedom of speech and expression? Press and the Monopolies and Restrictive Trade Practices Act.

UNIT – II: FILMS

How far included in freedom of speech and expression? Censorship of films-Constitutionality - The Abbas Case, Bandit queen case, Jolly LLB Case, Innocence of Muslims Case, Dam 999 Case - Difference between films and Press - why pre-censorship valid for films but not for the press? Censorship under the Cinematograph Act.

UNIT – III: RADIO AND TELEVISION

Monopoly of the Government over Radio and Television - Effect of television on people, Report of the Chanda Committee, Vargheese Committee, Government policy on Television and Radio - Commercial advertisement, Internal Scrutiny of serials etc., Judicial Review of Doordarshan decisions - Freedom to telecast.

UNIT – IV: CONSTITUTIONAL RESTRICTIONS RADIO AND TELEVISION

Subject to law of defamation and obscenity - Power to legislate-Article 246 read with the Seventh Schedule - Power to impose tax-licensing and licensing fee.

UNIT – V: MEDIA AND HUMAN RIGHTS

Media and Information, communication technology, Media and RTI, Media and Violation of Human Rights - Media and Right to Privacy.

Statutory materials:

1. Prashar Bharti Act 1990
2. Broadcasting Bill
3. Cinematography Act 1952
4. Cable T.V.Networks (regulation) Act of 1995
5. Advertisement Act of 1954
6. Indecent Representation (Prohibition) Act, 1986

Books Prescribed:

1. H.M. Seervai: Constitutional Law of India; Universal Law Publication, 1st Edn. (1991)
2. M.P. Jain: Constitutional Law of India; Lexis Nexis, 8th Edn. (2018)
3. Myneni: Media Law; Asia Law House, 2nd Edn. (2017)

Books for Reference:

1. S. Kundra: Media Laws and Indian Constitiotion; Anmol Publiccations, 1st Edn. (2005)
2. M. Neelamalar: Media Law and Ethics; Prentice hall, India Learning Ltd., 2nd Edn. (2009)
3. Vanita Kohli Khandekar: Inidan Media Business; Sage Publications, 4th Edn. (2017)

Fourth Year - Seventh Semester	*Subject Code: U18HCAL402*	*Subject Credits: 04*

HONOURS COURSE: II

DISASTER MANAGEMENT LAW

Objective: This paper is imparted to provide basic conceptual understanding of disasters and its relationships with development and to understand Medical and Psycho-Social Response to Disasters and to enhance awareness of Disaster Risk Management institutional processes in India.

COURSE OUTLINE

UNIT-1: INTRODUCTION TO DISASTER

Concepts of Hazard, Vulnerability, Risks, Natural Disasters (earthquake, Cyclone, Floods, Volcanoes) - Man Made Disaster (Armed conflicts and civil strip, Technological disasters, Human Settlement, Slow Disasters (famine, draught, epidemics) - Rapid Onset Disasters (Air Crash, tidal waves, Tsunami) Risks - Difference between Accidents and Disasters, Simple and Complex Disasters – Refugee problems, Political, Social, Economic impacts of Disasters, Gender and Social issues during disasters - principles of psychosocial issues and recovery during emergency situations - Equity issues in disasters - Refugee operations during disasters, Human Resettlement and Rehabilitation issues during and after disasters, Inter-sectoral coordination during disasters.

UNIT-II: DISASTER RISK MANAGEMENT IN INDIA:

The Disaster Management Act, 2005 - Definitions - The National Disaster Management Authority- Establishment of National Disaster Management Authority - Meetings of National Authority - Appointment of officers and other employees of the National Authority - Powers and functions of National Authority - Constitution of advisory committee by National Authority - Constitution of National Executive Committee -Constitution of sub-committees - Powers and functions of National Executive Committee - National plan - Guidelines for minimum standards of relief - Relief in loan repayment and others.

UNIT-III: STATE AND DISTRICT DISASTER MANAGEMENT AUTHORITY

Establishment of State and District Disaster Management Authority - Meetings of the State Authority - Appointment of officers and other employees of State Authority - Constitution of advisory committee by the State Authority - Powers and functions of State Authority- Guidelines for minimum standard of relief by State Authority - Constitution of State Executive Committee - Constitution of sub-committees by State Executive Committee - Functions of the State Executive Committee - State Plan - Powers and functions of State Executive Committee in the event of threatening disaster situation.

UNIT IV: OFFENCES AND PENALTIES

Punishment for obstruction - Punishment for false claim - Punishment for misappropriation of money or materials - Punishment for false warning - Offences by Departments of the Government - Failure of officer in duty or his connivance at the contravention of the provisions of this Act - Penalty for contravention of any order regarding requisitioning - Offence by companies - Previous sanction for prosecution - Cognizance of offences - Finance, Accounts And Audit : National Disaster Response Fund - National Disaster Mitigation Fund - Establishment of funds by State Government - Allocation of funds by Ministries and Departments - Emergency procurement and accounting.

UNIT V: PUBLIC HEALTH RESPONSE AND INTERNATIONAL COOPERATION

Principles of Disaster Epidemiology - Rapid Health Assessment - Outbreak Investigation - Environment health hygiene and sanitation issues during disasters - Preventive and prophylactic measures - International cooperation in funding on public health during disaster - International Health Regulation, United Nation International Strategy for Disaster Risk Reduction (UNISDR), United Nation Disaster Management Team, International Search and Rescue Advisory Group, (INSARAG, Global Facility for Disaster Risk Reduction (GFDRR), Asean Region Forum (ARF), Asian disaster Reduction Centre (ADRC), SAARC 277 Disasters Management Centre (SDMC), USAID), UNDAC,UNOCHA, USAR.

Statutory Materials

1. The Disaster Management Act, 2005
2. The Disaster Management (National Disaster Response Force) Rules, 2008
3. Hazardous Wastes (Management and Handling) Rules, 1989

Books Prescribed:

1. R. Subramaniam: Disaster Management; Vikas Publishing House, 1st Edition (2018)
2. Tushar Battacharya: Disaster science and Management, Mc Graw Hill Education, (2017).
3. Harsh K. Gupta: Disaster Management; Universities Press, (2003)

Books for References:

1. Damon P. Coppola: Introduction to International Disaster Management, Butterworth-Heinemann; 3rd Edition (2015)
2. David Townes: Health in Humanitarian Emergencies: Principles and Practice for Public Health and Healthcare Practitioners; Cambridge University Press; 1 edition (31 May 2018)
3. Dr. Amit Awasthy: Disaster Management, Warning Response And Community Relocation, Global India Publications, New Delhi 2009.

Fourth Year - Seventh Semester	*Subject Code: U18PCAL416*	*Subject Credits: 04*

LABOUR LAW – I

Objective: This paper explains about the labour legislations viz Industrial disputes Act, the legislation which governs the factories and the scope and significance of Trade Union in a broader perspective.

COURSE OUTLINE

UNIT – I: EVOLUTION OF LABOUR LEGISLATION

Origin and Development of Labour Legislation - Object and Nature of Labour Legislation- Evolution of concept of Master and Servant Relationship - Theory of Laissez Faire and State Regulation of Labour Legislation and its Special Features- Role of International Labour Organization in Setting Labour Standards.

UNIT – II: TRADE UNION ACT, 1926

Definitions - History of Trade Union Movement - Registration of Trade Unions-Rights and Liabilities of Trade Unions-Immunities and Privileges of a Registered Trade Union - Trade Union Funds - Collective Bargaining - Amalgamation and Dissolution of Trade Unions-Recognition in Trade Unions.

UNIT – III: INDUSTRIAL DISPUTES ACT, 1947

Scope, Applicability and Definitions - Appropriate Government – Workmen – Industry - Industrial Disputes – Award – Settlement - Public Utility Service – Strike - Lock Out - Retrenchment - Lay Off - Closure - Machinery for the Settlement of Industrial Disputes - Works Committee - Conciliation Officers - Board of Conciliation - Court of Inquiry - Labour Court - Industrial Tribunal - Power to the Government for reference - Voluntary Arbitration - Unfair Labour Practices.

UNIT – IV: FACTORIES ACT, 1948

Object and Scope of the Act - Important Definitions - Statutory Agencies and their Powers for Enforcement of the Act - Approval, Licensing and Registration of Factories - Notice by Occupier -General Duties of the Occupier - General Duties of Manufacturers - Measures to be taken by Factories for Health, Safety and Welfare of Workers - Special Provisions relating to hazardous processes - Working hours of Adults - Additional provisions regulating employment of women in a factory - Employment of Children - Annual Leave with Wages - Penalties and Procedures - Compliances Under The Act.

UNIT – V: INDUSTRIAL EMPLOYMENT (STANDING ORDERS) ACT, 1946

Scope and Definitions – Procedure for Certification of Standing Orders – Duration and Modification of Certified Standing Orders – Domestic Enquiry and Disciplinary Procedures.

Statutory Materials

1. Industrial Disputes Act 1947
2. Trade Union Act 1926
3. Industrial Employment (Standing Orders) Act 1946
4. Factories Act 1948

Books Prescribed

1. K.M. Pillai; Labour and Industrial Law; Allahabad Law Agency;16th Edition (2016)
2. S.N. Misra; Labour and Industrial Law; Central Law Agency 28th Edition (2018)
3. Dr.V.G. Goswami; Labour and Industrial Laws; Central Law Agency latest edition (2019)

Books for Reference

1. O.P. Malhotra; The Law of Industrial disputes; Lexis Nexis;7th edition (2015)
2. K.D. Srivastava; Law relating to Trade Unions and Unfair Labour practices in India; Eastern Book Company 4th edition (2002)
3. K.D. Srivastava; Industrial Employment (Standing Orders) Act 1946;Eastern Book Company;4th edition (2000)

Fourth Year - Seventh Semester	*Subject Code: U18PCAL417*	*Subject Credits: 04*

ADMINISTRATIVE LAW

Objective: This paper includes all the major facets of Administrative Law and guides the students to understand the basic concepts and significances it changes according to the social, economic and political changes. It is only in the twentieth century that administrative law developed as a separate branch of legal discipline.

COURSE OUTLINE

UNIT – I: INTRODUCTION

Definition - Nature, Scope and Significance of Administrative Law - Relationship between Constitutional Law and Administrative Law - Evolution and Development of Administrative Law - India, UK, USA and France - Basic Doctrines- Rule of Law and its application in India – Montesquieu's Doctrine of Separation of Powers - Doctrine of Separation of Powers and its relevance in Contemporary Times

UNIT – II: PRINCIPLES OF NATURAL JUSTICE

Concept, Evolution and Importance - Principles of Natural Justice - Rule against Bias and Rule of Fair Hearing - Exceptions to Natural Justice - Violations of Natural Justice - Application of Natural Justice in India.

UNIT – III: DELEGATED LEGISLATION

Meaning of Delegated Legislation and its Growth - Delegated Legislation in USA and UK - Delegated Legislation in India - Comparison with USA & UK - Pre and Post Constitutional Period - Rules and Principles of Administrative Rule making - Delegated legislation - Excessive delegation - Permissible and Non permissible Delegated Legislation - Control Mechanisms of Delegated Legislation - Judicial Control - Parliamentary Control - Procedural Control - Sub-delegation - Conditional Legislation

UNIT – IV: ADMINISTRATIVE ADJUDICATION

Meaning, Needs and Reasons for its growth - Problems of Administrative Adjudication - Mechanism for Administrative Adjudication - Quasi judicial bodies – Tribunals - meaning, difference between tribunals and courts - its types- Statutory and Domestic Tribunals - Administrative Tribunal - Definition - Constitutional Status - Finality of decisions and Judicial Review - Administrative Directions - Meaning, Nature and Need for Administrative Directions - Enforceability of Administrative Directions - Administrative Discretion- Meaning and significance of Administrative Discretion - Judicial Control of Administrative Discretion - Grounds of control

UNIT – V: REVIEW OF ADMINISTRATIVE ACTIONS AND REMEDIES

Writ jurisdiction of Supreme Court and High Court, when the writs can be issued -when the writs cannot be issued - principles of writ jurisdiction - Grounds of review –Illegality, Irrationality, Procedural Impropriety, Proportionality - Doctrines developed by Judiciary - Doctrine of Legitimate Expectation - Doctrine of Proportionality - Doctrine of Reasonableness - Doctrine of Public Accountability - Doctrine of Promissory Estoppel - Equitable Remedies - Emerging Trends In Administration - Good Governance and Administrative Law - Ombudsman - Lok Pal and Lokayukta - Global administrative law

Books prescribed

1. M. P. Jain & S. N. Jain ;Principles of Administrative law; Lexis Nexis;7th edition (2019)
2. I. P. Massey, Administrative Law; Eastern Book Company; 9th edition (2017)
3. C. K. Takwani; Lectures on Administrative Law; Eastern Book Company latest edition (2014)

Books for reference

1. S. P. Sathe ; Administrative Law; Lexis Nexis; 7th edition (2016)
2. M.C Jain Kagzi; The Indian Administrative Law; Universal Law Publishing & Co 53rd edition (2014)
3. H. W. Wade & C.F Forsyth; Administrative Law; Oxford University Press;10th edition (2009)

Fourth Year - Seventh Semester	*Subject Code: U18PCAL418*	*Subject Credits: 04*

ENVIRONMENTAL LAW

Objective: Environmental law is a complex group of laws and regulations which operate to regulate the interaction of human life to the natural environment. This paper will be an eye opener for the students about the growing issues in this arena and need for immediate legislative action.

COURSE OUTLINE

UNIT – I: INTRODUCTION

Environment: Meaning - Environment Pollution: Meaning and Issues - Environmental (Protection) Act, 1986 - Meaning of 'Environment', 'Environment Pollutant', 'Environment Pollution' - Powers and Functions of Central Govt - Important Notifications-Constitutional Guidelines - Right to Wholesome Environment - Evolution and Application - Relevant Provisions: Art. 14, 19 (1) (g), 21, 48-A, 51-A(g) - Environment Protection through Public Interest Litigation - Important doctrines - Doctrine of Strict Liability - Doctrine of Absolute Liability - Public trust doctrine - Polluter pays principle - Precautionary principle - Doctrine of Sustainable development – Agenda 21.

UNIT – II: PREVENTION AND CONTROL OF WATER, AIR, NOISE AND LAND POLLUTION

The Water (Prevention and Control of Pollution) Act, 1974 - Water Pollution: Definition - Central and State Pollution Control Boards: Constitution, Powers and Functions - Water Pollution Control Areas - Sample of effluents: Procedure - Restraint Order - Consent requirement: Procedure, Grant/Refusal, Withdrawal - Citizen Suit Provision

Air (Prevention and Control of Pollution) Act, 1981 - Air Pollution: Definition - Central and State Pollution Control Boards: Constitution, Powers and Functions - Air Pollution Control Areas -. Consent Requirement: Procedure, Grant/Refusal, Withdrawal - Sample of Effluents: Procedure - Restraint Order - Citizen Suit Provision -Environmental Impact Assessment

Noise Pollution Control Order, 2000 & 2002 and Land Pollution

BioMedical Waste Regulation - Plastic Waste (Management and Handling) Rules 2011 - E-Waste (Management) Rules, 2016.

UNIT – III: RESOURCE CONSERVATION & PROTECTION OF FORESTS AND WILD LIFE

Resource Conservation - Chennai Metropolitan Area Groundwater Authority (Regulation) Act 1987 - Rain Water Harvesting - Tamil Nadu Protection of Tanks and Eviction of Encroachment Act, 2007 - Role of Local Bodies.

Forest Act, 1927 - Kinds of forest - Private, Reserved, Protected and Village Forests - Protection of Specified Plants - The Forest (Conservation) Act, 1980 - Biological Diversity Act,2002 - Cartagena Biosafety Protocol- Forest Conservation Vis-a Vis Tribals' Rights

The Wild Life (Protection) Act, 1972 - Authorities to be Appointed and Constituted under the Act - Hunting of Wild Animals -Prevention of Cruelty to Animals Act, 1960 - Protected Area - Trade or Commerce in Wild Animals - Animal Articles and Trophies - Its Prohibition

UNIT – IV: INTERNATIONAL ENVIRONMENT LAWS

Introduction to International Environmental Laws - Human Rights Perspective - Stockholm Declaration: Brief overview - Rio-Declaration: Brief Overview - United Nations Environment Programme- Nairobi Declaration, 1982 - Brundtland Report, 1987 - UNEP - National Green Tribunal - Constitution - Functions and Powers

UNIT – V: CURRENT TRENDS

Global Climate Change and Energy Policy - United Nations Environmental Programme (UNEP) - The United Nations' Framework Convention on Climate Change (UNFCC) - Kyoto Protocol - Human Rights and the Environment.

Statutory Materials

1. The Water (Prevention and Control of Pollution) Act, 1974
2. The Air (Prevention and Control of Pollution) Act, 1981
3. The Indian Forest Act, 1927 4. The Forest (Conservation) Act, 1980
4. The Wild Life Protection Act, 1972 6. The Environment (Protection) Act, 1986
5. The Public Liability Insurance Act, 1991
6. The National Environment Tribunal Act, 1995
7. The National Environment Appellate Authority Act, 1997
8. Biological Diversity Act,2002
9. Noise Pollution Control Order, 2000 & 2002
10. E-Waste (Management) Rules, 2016.

Books Prescribed:

1. S. Shanthakumar: Environmental Law-An Introduction: Lexis Nexis: 2nd Edition(2008)
2. P.Leelakrishnan: Environmental Law in India: Lexis Nexis: 5th Edition(2018)
3. Dr. S.C. Shastri: Environmental Law: Eastern Book Company: 6th Edition(2018)

Books for Reference:

1. Justice T.S. Doabia: Environmental and Pollution Laws in India(Vol 1&2): Lexis Nexis: 3rd Edition(2017)
2. Shyam Divan & Armin Rosencranz: Environmental Law and Policy in India: Oxford University Press: 2nd Edition(2002)
3. P.Leelakrishnan: Environmental Law case book: Lexis Nexis: 2nd Edition(2010)

Fourth Year - Seventh Semester	*Subject Code: U18CCAL402*	*Subject Credits: 03*

CLINICAL COURSE: II

PROFESSIONAL ETHICS, ACCOUNTANCY FOR LAWYERS &BAR BENCH RELATIONS

Objective: Every profession has rules of ethics to which its members are bound and the one who violates them will be imposed with liability in various forms. Likewise, a lawyer who does not follow ethical and other rules of professional conduct can be censured and can also be suspended from law practice or even disbarred. This paper will introduce students to the rules of professional ethics which applies to lawyers in India. This paper is designed with a main purpose of making law students [on the verge of completing their law course] to get acquainted with, analyze and critically examine such rules of professional ethics.

COURSE OUTLINE

UNIT-I: DEVELOPMENT OF LEGAL PROFESSION IN INDIA

The Advocates Act, 1961 - Right to Practice - a right or privilege? - Constitutional guarantee under Article 19(1) (g) and its scope - Enrolment and Practice - Regulation governing enrolment and practice - Practice of Law - Solicitors firm - Elements of Advocacy

UNIT-II: SEVEN LAMPS OF ADVOCACY

Advocates duties towards public, clients, court, and other advocates and legal aid - Bar Council Code of Ethics.

UNIT-III: DISCIPLINARY PROCEEDINGS

Professional misconduct - Disqualifications - Functions of Bar Council of India/State Bar Councils in dealing with the disciplinary proceedings - Disciplinary Committees - Powers and functions - Disqualification and removal from rolls.

UNIT-IV: ACCOUNTANCY FOR LAWYERS

Nature and functions of accounting - Important branches of accounting - Accounting and Law - Bar Bench Relations.

ALLOCATION OF MARKS

The written examination of this paper will be for 50 marks and the remaining 50 marks for record and viva voce

External Examination	**50 Marks**
Project work	**30 Marks**
Viva-Voce	**20 Marks**
TOTAL	**100 Marks**

Record (30 marks): Each student shall write 50 selected opinions of the Disciplinary Committees of Bar Councils and 10 major judgments of the Supreme Court of India in the Record. The Record shall be evaluated for 30marks by the teacher concerned.

Viva- voce (20marks): There shall be viva-voce examination on the above components

Note: All the three components of the paper (written examination, submission of record and attendance in viva) shall be compulsory.

Statutory Material

1. Advocates Act, 1961

Books Prescribed:

1. J.P.S.Sirohi: Professional Ethics, Accountancy for Lawyers and Bench Bar Relations, Allahabadh Law Agency, (2015)
2. Dr.S.R.Myneni: Professional Ethics, Accountancy for Lawyers and Bench Bar Relations, Asia Law House, First Edition, (2018)
3. Kailash Rai: Professional Ethics, Accountancy for Lawyers and Bench Bar Relation, Allahabad Law agency, First Edition, (2015)

Books for Reference:

2. Ram Chandra Jha, (Advocate), Girish D Bhatt, B S Chauhan, and India - Supreme Court; Bar Council of India Trust: Selected Judgments on Professional Ethics, Bar Council of India Trust, 2002.
3. G.B.Reddy: Practical Advocacy of Law, Gogia Law Agency, Hyderabad, 2nd Edition, 2005.
4. S.P.Gupta: Professional Ethics, Accountancy for Lawyers and Bench bar Relations, Asia Law House, and Hyderabad.

Fourth Year - Eighth Semester	*Subject Code: U18HCAL403*	*Subject Credits: 04*

HONOURS COURSE: III

LAND LAWS INCLUDING TENURE AND TENANCY SYSTEM

Objective: This paper focuses on land reforms in Tamil Nadu. Besides, it deals with land acquisition procedures and the rent laws which inculcate the students to be familiar with Central & State Land Laws.

UNIT – I: CONCEPTUAL AND HISTORICAL BACKGROUND ON LAND REFORMS AND LAND LAWS

Origin of land rights - Different kind of land rights - Ownership of land - Constitutional Perspective – Article 31- A, Article 31-B, Article 31-C, Read With Ninth Schedule, Article 300 A - Doctrine of Eminent Domain - Doctrine of Escheat - Early Revenue Administration in Tamil Nadu – Grants, Zamindari, Ryotwari and Inamdhari Systems - The Zamindari System: Rights and Obligations of Zamindars – Abolition of Zamindari System - Inamdhari System: Major and Minor Inams – Abolition of Inams - Permanent settlement – Ryotwari System: Rights and liabilities of Ryotwari Pattadar – Tamil Nadu Estates (Abolition and Conversion into Ryotwari) Act, 1948 - Laws relating to abolition of Intermediaries.

UNIT – II: LANDS ACQUISITION

Laws relating to acquisition of property and Governmental control and use of land Land Acquisition Act, 1894 (repealed) – Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 (LARR Act, 2013) – Need for new land acquisition law – Definitions: affected family land, landowner, holding of land etc., Safeguards against indiscriminate land acquisition – Compensation, Rehabilitation and Resettlement – LARR Authority – Apportionment of compensation – Payment of Compensation – Temporary Occupation of Land – Amendment Ordinance 2014 – Time to time amendments.

UNIT – III: ENACTMENTS ON CULTIVATING TENANTS

Tamil Nadu Cultivating Tenants Protection Act, 1955: Definitions – landlord not entitled to evict the tenant – Right to restoration of Possession-Special provision for member of armed forces-Bar of Jurisdiction of Civil Courts Revision by High Courts – Tamil Nadu Cultivating Tenants Arrears of Rent Relief Act, 1972, 1980 - Tamil Nadu Cultivating Tenants Protection from Eviction Act, 1983, 1989

Tamil Nadu Cultivating Tenants (Payment of Fair Rent) Act, 1956: Definitions – Interpretations - Right and liabilities of cultivating tenants and land owner - Fair rent - Alteration or Revision of Fair Rent – Rent Court and Rent Tribunals – Exception - Powers of High Court

The Tamil Nadu Cultivating Tenants Special Provisions Act, 1968: Payment of Installment – Land Lord may evict a Cultivating Tenant for default in payment of installments

Tamil Nadu Agricultural Land Record of Tenancy Right Act, 1969: Definition - Preparation of Records of Tenancy Rights - Record Officer - Advisory Committee - Modification of entries in the draft and approved record of tenancy rights - Appeals – Revision – Penalty for failure to furnish information cognizance of offence

Tamil Nadu Occupants of Kudiyiruppu and Conferment of Ownership Act, 1971: Definitions – Occupant - Conferment of Ownership - Alternative Site - Prohibition of alienation- authorized Officer-compensation – Offences by companies

UNIT- IV: LAWS ON LAND CEILING

Land Ceiling: Urban Land Ceiling and Agrarian Land Ceiling - Tamil Nadu Land Reforms Fixation of Ceiling on Land Act, 1961 and Amended Act 1971: Preliminary – Definitions: Ceiling area, Family, Stridhana Property, Standard Acre, etc., Fixation of Ceiling on land holdings - Land Board Industrial undertakings – Publication of statement - Land Tribunal-Authorized officer - Determination of Compensation –Exemptions - Special Appellate Tribunal - Courts - Penal Provisions.

UNIT V: TAMIL NADU BUILDINGS AND TENANCY LAW

Tamil Nadu Buildings (Lease and Rent Control) Act, 1960: Introduction – Definitions – Fixation of Fair rent-Changes in Fair Rent-Agreed rent-Procedure for avoid default in

payment of rent-Grounds for eviction of tenant-Jurisdiction of the Rent Controller – Execution Proceedings by Legal representatives or against Legal representatives- Appeal.

Tamil Nadu Apartment Ownership Act, 1994: Definition- Ownership, Heritability and transferability of Apartment – Deeds of Apartment and its Registration-Societies or Association of Apartment Owners, its bye-laws and Functions

Statutory Materials

1. The Right to Fair Compensation and Transparency in land Acquisition, Rehabilitation & Resettlement Act, 2013. (Land Acquisition Act, 2013)
2. The Tamil Nadu Buildings (Lease & Rent Control) Act, 1960.
3. Urban Land (Ceiling &Regulation) Act, 1976.

Books Prescribed

1. Judith Anne Mackenzie & Mary Phillips: Land Law; Oxford University Press, 14th Edition (2012).
2. V.G.Ramachandran: Law of Land Acquisition and Compensation; Law Publication in Komm. (1983)
3. Pro. A. Chandrasekaran: Land Laws of Tamil Nadu; C. Sitharaman & Co. Pvt Ltd, Edition (2013).
4. P.K.Agrawal: Land Reforms in India; M.D.Publication Pvt.Ltd, 1st Edition (1993).

Books for Reference

1. Avtar Singh: Law of Carriage; Eastern Book Co., 4th Edition (2005).
2. K.P.Palaniappan: Law of Land Acquisition and Compensation, (1963)
3. Durga Das Basu: Indian Constitutional Law; Kamal Law House, 3rd Edition (2011).
4. Dr. N. Maheshwara Swamy: Land Laws under the Constitution of India,; Asia Law House, Hyderabad, 1st Edition 2006.
5. Hemant Goel: Land Laws; New Era Law Publication

Fourth Year - Eighth Semester	*Subject Code: U18PCAL419*	*Subject Credits: 04*

LABOUR LAW – II

Objective: This paper will provide extensive knowledge and guidance to the student about social security legislations in India and how far it has been implemented to attain welfare state which is described in the Directive Principles of State Policy.

COURSE OUTLINE

UNIT – I: THE PAYMENT OF WAGES ACT, 1936

Object, Scope and Application of the Act -Definition of Wage, Responsibility for Payment of Wages, Fixation of Wage Period, and Time of Payment of Wage Deductions which may be made from Wages, Maximum Amount of Deduction.

The Minimum Wages Act, 1948: Concept of Minimum Wage, Fair Wage, Living Wage and Need Based Minimum Constitutional Validity of the Minimum Wages Act, 1948, Procedure for Fixation and Revision of Minimum Wages, Fixation of Minimum Rates of Wage by Time Rate or by Piece Rate, Procedure for Hearing and Deciding Claims

UNIT – II: THE EMPLOYEE'S COMPENSATION ACT, 1923

Definition of Dependant, Workman, Partial Disablement and Total Disablement - Employer's Liability for Compensation - Doctrine of Notional Extension, When Employer is not liable Employer's Liability when Contract or is engaged, Amount of Compensation, Distribution of Compensation - Procedure in Proceedings before Commissioner , Appeals Retirement Benefits. Employee's Provident fund and miscellaneous provisions Act, 1952 - Employees Pension Scheme, 1995 and Family Pension Scheme - Social Security for the unorganized Sector

Employees Provident Funds And Miscellaneous Provisions Act, 1952: Introduction : Application of the Act - Important Definitions - Schemes Under the Act - Employees Provident Fund Scheme - Page Employees' Pension Scheme - Employees' Deposit-Linked Insurance Scheme - Determination of Moneys Due from Employers - Transfer of Accounts - Protection against Attachment - Power to Exempt

UNIT – III: PAYMENT OF BONUS ACT, 1965

Object and Scope of the Act - Application of the Act, Act not to Apply to Certain Classes of Employees - Important Definitions - Calculation of Amount Payable as Bonus - Computation of gross profits - Deductions from gross profits - Calculation of direct tax payable by the employer - Computation of available surplus - Eligibility for Bonus and its Payment - Bonus Linked with Production or Productivity - Power of Exemption - Penalties - Offences by Companies

Payment of Gratuity Act, 1972: Introduction - Who is an Employee - Important Definitions - When, is Gratuity Payable - To Whom is Gratuity Payable - Exemptions - Rights and

Obligations of Employees - Rights and Obligations of the Employer - Recovery of Gratuity - Protection of Gratuity –

Maternity Benefit Act, 1961 :Introduction - Definition - Employment of or work by women prohibited during certain periods - Right to payment of maternity benefits - Notice of claim for maternity benefit -Nursing -Registers - Penalty for contravention of Act by employer

UNIT – IV: CONTRACT LABOUR (REGULATION AND ABOLITION) ACT, 1970

Scope and Application -Act not to Apply to Certain Establishments - Important Definitions - The Advisory Boards - Registration of Establishments Employing Contract Labour - Effect of Non-registration - Prohibition of Employment of Contract Labour - Appointment of Licensing Officer and Licensing of Contractors - Welfare and Health of Contact Labour - Rules Framed Under the Act by the Central Government on the Question of Wages -Penalties and Procedure - Inspectors -Maintenance of Records and Registers

UNIT– V: RESOLUTION OF INDUSTRIAL DISPUTE

Industrial Dispute and Individual Dispute Arena of Interaction and Participants: Industry, Workman and Employer - Settlement of Industrial Dispute i) Works Committee ii) Conciliation Machinery iii) Court of Enquiry iv) Voluntary Arbitration - Adjudication: Labour Court, Tribunal and National Tribunal - Powers of the Appropriate Government under the Industrial Disputes Act, 1947 - Unfair Labour Practice

Statutory materials

1. The payment of Wages Act 1936
2. The Minimum Wages Act 1948
3. The Employees Compensation Act 1923
4. Payment of Bonus Act 1965
5. Employees Provident Funds and Miscellaneous Provisions Act 1952
6. Payment of Gratuity Act 1972
7. Maternity Benefit Act 1961
8. Contract Labour (Regulation and Abolition) Act 1970

Books Prescribed

1. P.L. Malik: Industrial Law; Eastern Book Company; 25th edition (2017)
2. N.D. Kapoor: Hand book of Industrial Law ;Sultan Chand and sons (2011)
3. H.L. Kumar; Compliances under Labor Laws-A user's guide to adhere with provisions under various employment related Acts; Universal law publishing ;5th edition (2017)

Books for Reference:

1. M.S. Sidhiqui; Labour Law and Industrial relations cases and materials; Indian law Institute, 3rd edition (2007)
2. S. M. Chaturvedi ; Labour and Indistrial Laws ;Jain Book Agency; 12th edition (2001)
3. P.L. Malik; Industrial Law; Eastern Book Company, latest edition (2017)

Fourth Year - Eighth Semester	*Subject Code: U18PCAL420*	*Subject Credits: 04*

LAW OF INSURANCE

Objective : The object of this course is to make students understand the concept of Insurance as it is a wide spread business and the syllabus covers the various aspects of IRDA, Life Insurance, premium, risk, Marine Insurance, Fire Insurance etc.,

COURSE OUTLINE

UNIT – I: NATURE OF INSURANCE

Contract of Insurance- definition, nature and meaning, General principles of Insurance, Insurable Interest and Premium- definition, Mode of payment, forfeiture, return of premium, classifications of contract of insurance, duration of insurable interest and days of grace. Insurance Business –Control by State Agencies, Life Insurance Corporation Act – 1956, Functions and Powers of Corporation, Control Envisaged by the Central Agency, General Insurance Corporation, Powers and Functions.

UNIT – II: RISK

Meaning, scope, elements, alteration of risk, Insurance Policy –classification, commencement, duration of the policy, terms and conditions, effect of breach of conditions ,lapse and revival of the policy, Assignment and Nomination of Policy, Double Insurance, Re-insurance, Assurance, Insurance Regulatory and development Authority.

UNIT – III: LIFE INSURANCE

Definition, nature and scope, kinds of Life Insurance, non-disclosure and misrepresentation, Doctrine of Utmost good faith, circumstances affecting the risk, Amount recoverable under life insurance policy, Automatic extension clause, and persons entitled to payment, Assignment and Nomination, settlement of claim and payment of money.

UNIT – IV: FIRE INSURANCE AND MARINE INSURANCE

Definition, nature and scope of fire insurance, Amount recoverable under fire insurance, doctrine of reinstatement, doctrine of subrogation, Doctrine of contribution. Nature and scope of Marine insurance, classification of Marine Policies, voyage- Deviation Perils of the sea,

proximate cause, measure of Indemnity, warranties in marine insurance, loss and kinds of losses.

UNIT – V: MOTOR AND ACCIDENT INSURANCE – Scope and nature, legal parameters, tribunals, Other types of Insurance- burglary and theft Insurance, fidelity Insurance, Public Liability Insurance, Plate-Glass Insurance, Goods in transit Insurance, Insurance covering the risk of storm and tempest.

Books Prescribed:

1. K. S. N. Murthy, K.V. S. Sarma: Modern Law of Insurance In India; Lexis Nexis;1st edition (2013)
2. Gaurav Varshney: Insurance Laws; Lexis Nexis; 1st Edition (2017)
3. Avtar Singh: Law of Insurance; Eastern Book Company (2017)
4. Dr. C.L. Tyagi: Insurance Law and Practice; Atlantic Publication; 2nd Edition (2016)

Books for References:

1. M.N. Srinivasan, K. Kannan: Principles of Insurance Law; Lexis Nexis; Tenth edition (2017)
2. Neelam C. Gulati: Banking and Insurance: Principles & Practices; Excel Books (2011)
3. Taxmann: Insurance Laws Manual; Taxmann's Publication; 20th Edition (2019)

Fourth Year - Eighth Semester	*Subject Code: U18PCAL421*	*Subject Credits: 04*

LAW OF TAXATION

Objective: The objective of this course is to introduce to the students the concept of tax, various kinds of taxes, calculation of Income tax, exemption from taxation, deductions, ceiling limit etc. This course also aims to impart knowledge to the students regarding various taxing statutes and to provide detailed in-depth knowledge in the area of Direct and Indirect Taxation.

COURSE OUTLINE

UNIT – I: CONCEPT OFTAXATION

Definition of Tax - Distinction between Tax and Fee - Mutual relationship between Income Tax Act and Finance Act – Cannons of taxation - Kinds of taxes - Progressive, Proportion, Regressive and Digressive - Direct and Indirect taxes - Tax Avoidance - Tax Evasion - Double Taxation.

UNIT – II: CONSTITUTIONAL BASIS FOR TAXATION

Applicability of doctrine under the constitution to taxation laws – Article 265 – Union & State List entities – Fundamental Rights and taxing Statutes - Interpretation of tax laws.

UNIT – III: THE INDIAN INCOME TAX ACT, 1961

A. **Preliminaries-** Concepts; 'income', 'agricultural income', 'casual income', 'assessee' 'person'- Residential status – Previous year, Assessment year – General charging section and specific charging section – Income – Received – Arising – 'Accrual'- Scope and total income – Exemption from taxation

B. **Taxability** under 'specific heads':

   a) Income from 'salaries'
   b) Income from 'house property'
   c) Income from 'business or profession'
   d) Income from 'capital gains'
   e) Income from 'other sources'

C. **Clubbing of income:** Income of other persons in assessee's total income.

UNIT – IV: COMPUTATION OF TAXABLE INCOME

Procedure for assessment - Computation of total income and tax liability of an individual, H.U.F., and firm - Tax deduction at source - Advance payment of tax - Treatment of losses – set-off-carry forward of loss - Deductions allowed in certain cases – chapter VIA deductions - Assessment of special class of assesses

UNIT – V: GOODS AND SERVICE TAX

A. Overview of GST - Concepts – Limitations of VAT – Need for Tax Reforms - Justification for introduction of GST - Shortcomings and advantages at the Central Level and State Level on introduction of GST- Process of Introduction of GST - Constitutional Amendments.

B. Subsumed under GST - Taxes and Duties outside the purview of GST: Tax on items containing Alcohol – Tax on Petroleum products - Tax on Tobacco products - Taxation of Services

C. Registration Procedure

D. Meaning and Scope of Supply: Taxable Supply - Supply of Goods and Supply of Services - Course or Furtherance of Business - Special Transactions - Time of Supply

E. Assessment: Self-assessment - Provisional assessment –Security of Returns - Assessment of Non-filers of returns - Assessment of Unregistered persons –Audit and Assessment – Other features of Dual GST model.

F. Levy and Exemption of Tax: Chargeability – Collection at Source –E-Commerce - Composition Levy - Tax under Central GST and State GST - Zero-rating of Exports – GST on Imports –Returns under GST –Taxation of Services–Remission of Tax - Adjustment and Refund of GST.

Books Prescribed:

1. B.K.Goyal: Taxation Laws; Singhal Law Publications (2018)
2. Dr. Vinod K. Singhania: Direct Taxes Ready Reckoner; Taxmann Publications Pvt. Ltd.; 41st Edition (2019)
3. Dr. H.C. Mehrotra and Prof. V.P. Agarwal: Goods and Services Tax GST (4th Edition)
4. Dr.Sanjiv Agarwal: Goods and Services Tax - Laws, Concepts & Impact Analysis; Bloomsbury India; First edition (2017)
5. Prof. Jayakumar Sithanandam: Textbook on Goods and Services Tax Laws; White Falcon Publishing; 1 edition (2019)

Books for References:

1. C. A. Atul Kumar Gupta: Goods and Services Tax: Law, Practice & Procedures; OakBridge Publishing (2019)
2. Dr. Girish Ahuja and Dr. Ravi Gupta: Direct Taxes Law & Practice; Wolters Kluwer India Pvt. Ltd.; Tenth edition (2018)
3. U.K. Bhargava: Income Tax Act-as Amended by Taxation Laws (64th Edition 2019)

Fourth Year - Eighth Semester	*Subject Code: U18CCAL403*	*Subject Credits: 03*

CLINICAL COURSE: III

ALTERNATE DISPUTE RESOLUTION

Objective: This paper is imparted to create practical knowledge and awareness in the Arbitration, Conciliation and Mediation proceedings in India and International Arena.

COURSE OUTLINE

UNIT – I: INTRODUCTION

Concept and Essential features - Need of Arbitration in International and Indian Law - Arbitration Law before 1996 - Arbitration Law after 1996 - Arbitration Agreement - Appointment of Arbitrator - Conduct of Arbitration Proceedings - Power of Courts to interfere in Arbitration Proceedings - Place of Arbitration - Law applicable to the Arbitration - Evolution of mediation/conciliation as a mode of settlement of disputes - distinction between arbitration, mediation, conciliation and negotiation – International Commercial Arbitration.

UNIT – II: MEDIATION AND CONCILIATION

Theory of mediation - Role of the mediator - Drafting Mediation and Conciliation clauses and agreements initiating mediation (court annexed and private) -The Mediation/Conciliation process Confidentiality - Mediation /Conciliation Mediation in India, institutions, and their role - Lok Adalats.

UNIT – III: INTERIM MEASURES

Jurisdictional Issues - Arbitral Award - Setting Aside the Arbitral Award - Enforcement of Arbitral Award - Online Dispute Resolution - International Dispute Resolution - Foreign Award - New York Convention -Geneva Convention - Enforcement of Foreign Award -Public Order.

MARKS ALLOCATION

External Examination	**50 Marks**
Project work on Arbitration / Mediation (Practical exercises in the preparation and conduct of arbitration &mediation)	**25 Marks**
Viva-Voce	**25 Marks**
TOTAL	**100 Marks**

Statutory Materials:

1. International Conventions
2. Arbitration and Conciliation Act, 1996
3. Arbitration and conciliation (Amendment) Act, 2015

Books Prescribed:

1. Avtar Singh: The Law of Arbitration and Conciliation; Eastern Book Company, 11th Edition (2018)
2. Mallika Taly: Arbitration Law- A Primer; Eastern Book Company, 1st Edition(2011)
3. K V Satyanarayana: Law of Arbitration and Conciliation in India; Asia Law House, 1st Edition (2017)
4. Dr. N.V. Paranjape: Law Relating to Arbitration and Conciliation in India; Central Law Agency, 7th Edition (2016)
5. Dr. S.C.Tripathi: Arbitration and Conciliation Act, 1996 with Alternate Means of Settlement of Disputes; Central Law Publication, 8th Edition (2017)

Books for References:

1. J.G. Merrills: International Dispute Settlement; Cambridge University Press, 5th Edition (2005)
2. P.C.Markanda: Arbitration Step By Step; Lexis Nexis, 2nd Edition (2017)
3. Nakul Dewa: Enforcing Arbitral Awards in India; Lexis Nexis, 1st Edition (2017)
4. Justice S.B.Malik: Commentary on the Arbitration and Conciliation Act; Universal Law Publications, 8th Edition (2018)
5. Justice R.S.Bachawat: The Law of Arbitration & Conciliation; Lexis Nexis, 6th Edition (2018)
6. Dr. Ashwinie Kumar Bansal: Arbitration Awards - Law on Setting Aside and Execution of Arbitration Awards, Agreements and Appoimtment of Arbitrators; Universal Law Publications, 3rd Edition (2014)

Fourth Year - Eighth Semester	*Subject Code: U18PTAL404*	*Subject Credits: 02*

INTERNSHIP AND PRACTICAL TRAINING - IV

Objective: The internship programmes are designed to acquaint the student with the actual practice of law by working under the supervision of legal luminaries. The student gains experience of applying theoretical knowledge from prior classroom training, when exposed to practical environment.

COURSE OUTLINE

During the summer vacation the students should compulsorily undergo Internship for a continuous period of 4 weeks and submit an internship report along with a internship certificate. This will be evaluated by the Internship Faculty Guide.

The student may choose to intern under any one the following category:

- Trial Advocate
- Appellate Advocate
- Law Firms
- Non-Governmental Organization
- Police Stations
- Banks
- Non Banking Financial Institutions
- Companies
- Registration Department
- Judiciary
- Legal Regulatory Authorities
- Legislatures
- Market Institutions
- Local Self-Government
- Other Legal Functionaries
- Dispute resolution Bodies
- Legal Services Authority

On completion of successful internship training every student will be awarded 2 credits

Fifth Year - Ninth Semester	*Subject Code: U18HCAL504*	*Subject Credits: 04*

HONOURS COURSE: IV

MINORITIES LAW

Objective: To make the students aware of the importance of rights of minorities, to familiarize them with the constitutional provisions related to minorities, to acquaint them with the rights of minority educational institutions and exposition of the subject matter in detail with the help of legislative, judicial and other materials.

COURSE OUTLINE

UNIT – I: INTRODUCTION

Minorities in Indian Society: Concept of Minorities Linguistic Minorities Religious Minorities Secularism

UNIT – II: INTERNATIONAL NORMS FOR PROTECTION OF MINORITIES

Human Rights of Minorities Minority Rights under the International Covenant on Civil and Political Rights Non-discrimination provisions of the United Nations Charter 1945 Declaration on Rights of Minorities

UNIT – III: MINORITY RIGHTS

Right to religion Linguistic rights Right to culture and traditions National Commission for Minority

UNIT – IV: RIGHTS OF MINORITY IN EDUCATIONAL INSTITUTIONS

Educational rights of Minorities Right to administer Minority educational institution Aided and Unaided Minority Educational Institutions and Governmental Controls National Commission for Minority Educational Institutions

UNIT – V: SOCIETAL STATUS OF MINORITIES

Victimistion- Muslim victims over past ten decades, Caste based violence over minorities, linguistic minorities, Minorities in rural areas over the country.

Books Prescribed:

1. M.P. Jain: Constitutional Law of India; Lexis Nexis, 8th Edn. (2018)
2. D.D. Basu: Commentary on the constitution of India; Lexis Nexis, 7th Edn. (2016)
3. A. P. Datar: Commentary on the constitution of India; Lexis Nexis, 1st Edn. (2007)
4. H.M. Seervai: Constitutional Law of India; Universal Law Publication, 1st Edn. (2015)
5. M. P. Singh: Constitution of India; Eastern Book Company, (2016)

Books for Reference:

1. Stephan Mary: Ethnicity, Nationalism & Minority Rights; Cambridge University Press, (2004)
2. Thornberry, Patrick: International Law and the Rightd of the Minorities; Calendor Press, (1993)
3. Sheth D. L. & Gurpreet Mahajan: Internation law and the Nation State; Oxford University Press, 1st Edn. (2000)

Fifth Year - Ninth Semester	*Subject Code: U18HCAL505*	*Subject Credits: 04*

HONOURS COURSE: V

GENDER JUSTICE AND FEMINIST JURISPRUDENCE

Objective: The uneven trajectory of social change may help to inform feminist legal debates and the teaching of feminist jurisprudence among those contemplating the inclusion of such material in their law curriculum. This paper will be an eye-opener for the students in this area of Jurisprudence.

COURSE OUTLINE

UNIT – I: WOMEN EMPOWERMENT AS A SOCIAL CHANGE

- Role of law in empowering women –Feminism and Feminist Jurisprudence – Emergence of feminism and feminist jurisprudence -Different theories of feminism and feminist jurisprudence- Distinction between "sex" (nature) and "gender" (culture)-Concept of gender justice - Gender Discrimination - Gender Equality

UNIT - II: GENDER JUSTICE UNDER THE CONSTITUTION OF INDIA

Social justice and gender justice - interrelationship - Article 14, 15 and 16, Article 21& 23, Directive Principles of State Policy and fundamental duties- Reservation under 73rd &74th Constitutional amendment - Judicial approaches to equality - Formal and Substantive equality – Sameness, Correctionist and Protectionist approaches of Judiciary – Role of Human Rights Commissions,Women's Commissions and judiciary in ensuring Gender Justice.

UNIT- III: PERSONAL LAWS AND GENDER JUSTICE

Marriage and Divorce, Maintenance – guardianship-adoption Inheritance Right, Uniform Personal Code, Concept of Matrimonial property - emancipation of Women - Empowerment of Women and Local Self Government.

UNIT- IV: GENDER JUSTICE AND CRIMINAL LAW

Protection of women's interests under IPC - relevant offences Dowry death -Rape - Bigamy - Adultery - Cruelty to married women - Criminal Law Amendment Act 2013 -Special legislations for Women - Prisons Act 1894, Factories Act 1948, Mines Act 1952, Immoral Traffic (Prevention Act) 1956, Dowry Prohibition Act 1961, Maternity Benefit Act 1961, Medical Termination of Pregnancy Act 1971, Equal Remuneration Act 1976, indecent Representation of Women (Prohibition) Act 1986, Commission of Sati (Prevention) Act 1987, Pre-conception and Prenatal Diagnostics Techniques (Prohibition of sex Selection) Act 1994, Prevention of Women from Domestic Violence Act 2005, Sexual Harassment of women at Workplace (Prevention, Prohibition and Redressal) Act 2013

UNIT - V: GENDER JUSTICE UNDER INTERNATIONAL CONVENTIONS AND DECLARATIONS

Judicial Attitude towards Gender Justice

Books Prescribed:

1. Prof. Dr. G. Rajasekharan Nair: Gender Justice under Criminal Justice System; Eastern Law House; 2nd Edn. (2011)
2. G.B. Reddy: Women and the Law; Gogia Law Agency; 2nd Edn. (2015)
3. S.P. Sathe: Towards Gender Justice; Journal of ILI No. 1-37 & No 12 (Apr – June) 1995

Books for Reference:

1. Dr. Sheetal Konwal: Gender Justice and Feminist Jurisprudence; Amar Law Publications, 2nd Edn. (2015)
2. Dr. Puja Khetraphal: Gender Justice and Feminist Jurisprudence; Puja Law House, 1st Edn. (2019)
3. Dr. Ishita Chatterjee: Gender Justice and Feminist Jurisprudence; Central Law Publications, 1st Edn. (2019)

Fifth Year - Ninth Semester	*Subject Code: U18HCAL506*	*Subject Credits: 04*

HONOURS COURSE: VI

MEDICAL AND HEALTH LAW

Objective: This paper seeks to explore various areas of the law that deal with creating and maintaining and regulating 'health.' The paper aims to give comprehensive and practical approach to the students to make them aware of the developments in medical sciences and to enable them to be equipped to face the recent challenges raised by the modern issues in contemporary era.

COURSE OUTLINE

UNIT – I: INTRODUCTION

Concept of health, public health - Law and health - development of interrelationship - Health Law and Bio Ethics

UNIT – II: LEGAL ASPECTS OF HEALTH CARE

Role of WHO - Constitutional law- regulation of health - Important legislations dealing with law and medicine

UNIT – III: MEDICAL PROFESSIONAL, PATIENT AND THE LAW

Nature and concept of physician - patient relationship - Informed consent and confidentiality - Concept of duty of care - standard of care - Code of ethics in medical profession - Role of judiciary in regulating the medical profession.

UNIT – IV: BIOETHICS - ISSUES AND CHALLENGES

Euthanasia and physician assisted suicide - Reproductive technology - Surrogate Motherhood - Medical termination of pregnancy - Prenatal diagnostic techniques.

UNIT – V: LAW RELATING TO MENTAL HEALTH

Stress management - Mental rehabilitation centers and law -Pschyco analysis and law - its impact over society - Mental Asylums and its governance under the law - International conventions and guidelines regarding psycho-legal law.

Books Prescribed:

1. Satish Tiwar, Mahesh Badwa, Mukul Tiwari & Alka kuthe: Text Book on Medico Legal Issues; Jaypee Brothers Medical Publishers, 1st Edition (2012)
2. Dr. Jaisigh P.Modi: A text book of Medical Jurisprudence and Toxicology; Lexis Nexis, 26th Edition (2018)
3. S.V. Jayarao: Current issues in Criminal Justice and Medical Law; Eastern Law House, 1st Edition (1999)

Books for References:

1. R.K. Bag: Medical Negligence and Compensation, Eastern Law House, (2015)
2. S.K. Singhal: Forensic Medicine and Jurisprudence; NBD, 5th Edition (2015)
3. Jonathan Herring: Medical Law and Ethics; OUP UK, (2014)

Fifth Year - Ninth Semester	*Subject Code: U18PCAL522*	*Subject Credits: 04*

CIVIL PROCEDURE CODE

Objective: The objective of this course is to introduce to the students the procedure to be adopted in filing a civil Suit in a civil court. The Code provides for a fair procedure for redressal of disputes by providing litigants a fair trial. This Course deals in detail the Sections and Orders including the important amendments brought in the Code.

COURSE OUTLINE

UNIT – I: INTRODUCTION

Definitions: Decree, Judgment, Order - Foreign Court - ForeignJudgment - Mesne, Profits – Affidavit – Suit – Plaint - Written Statement -ImportantConcepts: Res Sub-Judice-Resjudicata – Restitution – Caveat - Inherent powers of courts.

UNIT – II: INITIAL STEPS IN A SUIT

Jurisdiction and place of suing - Institution of suit - Pleadings: General rules - Amendment of pleadings - Plaint and written statement - Discovery - Inspection and production of documents - Appearance and non-appearance of parties - First hearing – Summons - Suits in particular- Suits by or against Government - Suits by Indigent persons -Interpleader Suit - Summary Procedure - Suits relating to public nuisance

UNIT – III: JUDGMENT AND DECREE

Judgment: Definition – Essentials – Pronouncement - Contents and Alteration - Decree: Definition – Essentials -Types, Drawing up of a decree - Contents, and Decree in particular cases - Interest - Costs- Setting Aside Ex Parte decree – Grounds - Temporary Injunctions – Meaning, Grounds and Principles of Injunctions, Inherent Power to grant Injunction, Interlocutory orders - Receiver – Meaning, Powers, Duties and Liabilities of Receivers - Death of Plaintiff or Defendant, Consequences, Suit against dead person, Marriage of a Party, Insolvency of Plaintiff or Defendant - Reference to High Court - Reference, Review and Revision - Appeals

UNIT – IV: EXECUTION

Courts by which decree may be executed - Payment under decree - Application for Execution - Mode of Execution - Stay of Execution - Questions to be determined by executing court – Arrest and detention - Attachment - Sale – Commissions.

UNIT – V: LIMITATION ACT

Definition - Limitation of Suits - Appeals - Computation of Period of Limitation - Acquisition of Ownership by Possession.

Statutory Materials

1. Code of Civil Procedure – 1908
2. Limitation Act – 1963

Books Prescribed:

1. C. K. Takwani: Civil Procedure with Limitation Act 1963; Eastern Book Company; 8th Edition (2018)
2. Dr. Ashok K. Jain: Code of Civil Procedure; ASCENT Publications; 1st edition (2019)
3. Ray Sukumar: The Code of Civil Procedure; Universal Law Publishing, 2008

Books for References:

1. M. P. Jain Dr. Medha Kolhatkar: The Code of Civil Procedure (Vols.1); Lexis Nexis Butterworth India; 2019 edition (2019)
2. Sarkar, Justice M. L. Singhal: Sarkar Code of Civil Procedure; Lexis Nexis; Twelfth edition (2016)
3. Sir Dinshaw Fardunji Mulla: Mulla's the Code of Civil Procedure; Lexis Nexis; Nineteenth edition (2017)

Fifth Year - Ninth Semester	*Subject Code: U18CCAL504*	*Subject Credits: 03*

CLINICAL COURSE-IV

DRAFTING, PLEADING AND CONVEYANCING

Objective: This Paper 'Drafting, Appearances and Pleadings' has been included in the syllabus with a view to equip the students with legal drafting abilities, legal frame work pertaining to the appearances before various tribunals/ quasi judicial bodies and the basic understanding of the principles of pleadings. For this purpose, the course contents of this study material have been so designed as to provide practical orientation and develop necessary acumenship in drafting legal documents

COURSE OUTLINE

Drafting: General principles of Drafting and relevant substantive Rules, drafting of Notices

Pleadings:

a. **Civil**: Plaint, Written Statement, Interlocutory Application, Original Petition, Affidavit, Execution Petition, Memorandum of Appeal and Revision, Petition under Articles 226 and 32 of the Constitution of India.

b. **Criminal**: Complaint, Criminal Miscellaneous Petition, Bail Application, Memorandum of Appeal and Revision.

Conveyancing:

Sale Deed, Mortgage Deeds, Lease Deed, Gift Deed, Promissory Note,

Power of Attorney – General and Special power of Attorney, Will.

Mark allocation:

Record work – 1 15 Exercises in Drafting of Pleadings	**15 Marks**
Record work – 2 15 Exercises in Conveyancing	**15 Marks**
Viva-Voce	**20 Marks**
External Examination	**50 Marks**
Total	**100 Marks**

Fifth Year - Tenth Semester	*Subject Code: U18HCAL507*	*Subject Credits: 04*

HONOURS COURSE: VII

INTERNATIONAL REFUGEE LAW

Objective: This paper provides students a basic knowledge and understanding of the substantive and procedural aspects of International Refugee Law and to improve them the juridical way of thinking, enlarges point of view and common understanding of international legal documents.

COURSE OUTLINE

UNIT-I: INTRODUCTION

The Global Population Movements in Historical Retrospect-The Origin and Development of International Refugee Principles & International Refugee Law - The Evolution of Refugee Status in International Law - The Legal and Institutional Framework for Refugee Protection under the 1951 UN Convention Relating to the Status of Refugees (UNCSR) and its Expansion via 1967 Protocol (UNCSR Protocol) - The Main Features of 1951 UN Convention and the Statute of the UNHCR - The Concept of Migrant, Immigrant - Theories of Migration and Emergence of Forced Displacement and Forced Migration - Inter-Relationship between National and International Protection and Summation.

UNIT-II: SOURCES OF INTERNATIONAL REFUGEE PROTECTION REGIME

The Global Standards of Human Rights-Main Sources of International Refugee Law, UN Charter - IRO,UDHR, IOM, International Bill of Rights - Statute and Role of the UNHCR and ICRC, UNDTA, International Refugee Law and its Relationship with International Human Rights Law (IHRL), International Humanitarian Law (IHL) and Other Disciplines and Summation.

UNIT-III: THE RIGHTS OF REFUGEES AND THE INSTITUTION OF ASYLUM, NON REFOULEMENT, GENDER AND THEIR DIMENSIONS IN INTERNATIONAL LAW OF REFUGEE PROTECTION

Principles and Concepts of Refugee Protection-Protection Gaps-The Rights of Refugees under International Refugee Law - Definition of Asylum in the Context of International Refugee Law - Non-refoulement - Non-discrimination - Gender and Securitization - The Principle of Family Unity and the Right to Family Reunification - Defending Refugee Rights in Administrative and Judicial Institutions - Durable Solutions and International Cooperation and Summation.

UNIT-IV: PROTECTION OF INTERNALLY DISPLACED PERSONS (IDPS), STATELESSNESS ANDTEMPORARY AND OTHER FORMS OF REFUGEE PROTECTION

Internally Displaced Persons (IDPs)- and UN 1998 Guidelines on IDPs - Kampala Convention on IDPs - Rights of Stateless Persons (SLPs) and Problems of Statelessness - The Concept of Temporary Protection - Other Alternatives - Recent Trends in International Refugee Legislation, Litigation and Policy and Summation.

UNIT-V: CONTEMPORARY ISSUES IN INTERNATIONAL REFUGEE LAW AND IT'S FUTURE

International Refugee Law and Strategies Towards Interpretative Harmony, Individual Risk-Armed Conflict and the Standard of Roof in Complementary Protection Claims - Running Scared Since 9/11: Refugees - UNHCR and the Purposive Approach to Treaty Interpretation - Economic Harm as a Basis for Refugee Status and the Application of Human Rights Law to the Interpretation of Economic Persecution, The fragmented Nature of the International Refugee Regime and its Consequences: a Comparative Analysis of the Applications of the 1951 Convention - Refugee Issues: Climate Refugees: New Class of Refugees - Women and Children Refugees - Non-Refoulement: A Peremptory Norm of International Law, Loss and Denial of Refugee Status.

Books Prescribed:

1) Helene Lambert; International refugee law; Ashgate publishing; 1st Edn. 2010
2) Kate Jastram, Inter-parliamentary Union, Marilyn Achiron, Office of the United Nations High Commissioner for Refugees; Refugee protection: a guide to international refugee law; Inter-Parliamentary Union, 2001
3) B S Chimni; International Refugee Law: A Reader; SAGE Publications, 2000
4) Erika Feller, Volker Turk and Frances Nicholson; Refugee Protection in international law; UNHCR's Global Consultations on International protection; Cambridge University Press; 1st published 2003

Books for Reference:

1. M. Rafiqul Islam, Jahid Hossain Bhuiyan; An Introduction to International Refugee Law; Martinus Nijhoff Publishers, 2013
2. Micheller Foster & Helene Lambert; International Refugee law and the Protetcion of Stateless Persons; Oxford University Press; 1st Edn. (2009)
3. James C. Simeon; Critical issues in International Refugee Law; Cambridge University Press; 1st Edn. (2010)
4. Karen Musalo, Jennifer Moore, Richard A. Boswell; Refugee Law and Policy: A Comparative International Approach, 2005 Supplement; Carolina Academic Press, 2nd Edn.(2005)

Reference Cases:

1. Tahir Hussain Khan v Canada, November 18, 1994 [Committee Against Torture]
2. Chahal v UK [extracts European Court of Human Rights]

3. National Legal Services Authority v. Union of India and others, Writ Petition (Civil) No. 400 of 2012, India: Supreme Court, 15 April 2014,
4. Suresh Kumar Koushal and another v. NAZ Foundation and others, Civil Appeal No.10972 of 2013, India: Supreme Court, 11 December 2013,
5. Servai v. State of Tamil Nadu, Criminal Appeal No. 958 of 2011, India: Supreme Court, 19 April 2011
6. Salibian v Minister of Employment and Immigration [1990]
7. Peoples‟ Union For Civil Liberties [PUCL] v. Union Of India and Another, AIR 1997 SC 568
8. Prem Shankar Shukla v. Delhi Administration, 1980 SCC 526
9. Citizens for Democracy v. State of Assam, 1995 SCC 743
10. D.K Basu v. State Of West Bengal, AIR 1997 SC 610

Fifth Year - Tenth Semester	*Subject Code: U18HCAL508*	*Subject Credits: 04*

HONOURS COURSE: VIII

CYBER LAW

Objective: This paper explains about the most needed legislation of the hour and discusses about the cyber space issues and remedial measures.

COURSE OUTLINE

UNIT – I: INTRODUCTION

Cyber Space - Introduction and UNCITRAL Model Law - Information Technology Act, 2000 with Recent Amendments - Jurisdictional Issues - Digital Signatures - Regulation of Certifying Authorities - Cyber Regulation Appellate Tribunal

UNIT – II: CYBER LAW AND E - COMMERCE

Formation of Online Contracts - E-Banking Transactions - Online Payment Options - Online Advertising - Taxation Issues in Cyber Space - Indirect Tax - Tax Evasion - Double Tax - Financial Frauds - International Tax Permanent Establishment

UNIT – III: CYBER CRIMES

Understanding Cyber Crimes - Actus Reus and Mens Rea - Types of Crimes in the Internet - Against Person, Against Property, Against Government - Cyber Forensics Investigation- Introduction - Investigation Tools – E - Discovery - Digital Evidence Collection and Preservation - E-Mail Investigation , Tracking and Recovery - Encryption and Decryption methods - Search and Seizure of Computers - Recovering deleted evidences -Password Cracking - Investigation and Adjudication of Cyber Crimes in India - Cyber Arbitration - Cyber Security - Implementing Hardware Based Security - Software Based Firewalls -Security Standards - Assessing Threat Levels - Forming an Incident Response Team, Reporting Cyber crime - Operating System Attacks - Application Attacks - Reverse Engineering & Cracking Techniques.

UNIT – IV: IPR AND CYBER SPACE

Copyright Issues in the Internet - Protection of Computer Software - Caching - International Regime - OSS - DMCA - Trademark Issues in the Internet - Domain Name Registration - Domain Name Dispute - ICANN – URDP Policy - Linking - Meta tagging - Database issues in the internet.

UNIT – V: CONTEMPORARY ISSUES

Convergence Technologies - Cloud Computing - Online Digital Libraries - Access to Internet: A Human Right Issue - Issue of Censorship - Privacy issues - National Security and Social Security.

Statutory Materials:

1. Information Technology Act, 2000
2. Digital Millennium Copyright Act, 1998

Books Prescribed:

1. Harish Channder; Cyber laws and IT Protection; PHI Learning Private Limited; 1st Edn. (2012)
2. Pavan Duggal; Cyber law: the Indian perspective; Saakshar Law Publications, 2002
3. Vakul Sharma; Information Technology Law and Practice; Universal Law Publishing Co.; 3rd Edn. (2011)
4. Rohit Arvind Jain; Cyber Crimes and Law, A Overview on Securing Cyber Space; Evincepub Publishing; 1st Edn. 2018
5. M. Dasgupta, Pranay Chaturvedi, Ankur Dalal; Cyber crime in India: a comparative study; Eastern Law House, 1st Edn. (2009)
6. Aparna Viswanathan; Cyber Law: Indian & International Perspectives on Key Topics Including Data Security, E-commerce, Cloud Computing and Cyber Crimes; LexisNexis Butterworths Wadhwa, 2012

Books for Reference:

1. Talat Fatima; Cyber Law in India; Wolters Kluwer; 1st Edn. 2008
2. Pooja Kiyawat, Manish Yadav; Critical Analysis of Cyber Laws with Respect to Cyber-Crimes in India; SPS, 2016
3. Farooq Ahmad; Cyber Law in India: (law on Internet); Pioneer Books, 2001
4. Susan W. Brenner; CyberCrime and the law Challenges, issues and Outcomes; Noth Eastern University Press; 2012
5. Matthew Richardson: Cyber Crime: Law and Practice; Wildy, Simmonds & Hill Publishing, 2014

Fifth Year - Tenth Semester	*Subject Code: U18PCAL523*	*Subject Credits: 04*

CRIMINAL PROCEDURE CODE

Objectives: This paper aims to familiarize the students with the crucial aspects relating to investigation and trial of offences and to sensitize the students about critical issues in administration of criminal justice.

COURSE OUTLINE

UNIT – I: INTRODUCTION

Definitions - Constitution and powers of Criminal Courts and Offices - Provisions for Investigations - Information to the Police and their powers to investigate

UNIT – II: PRE-TRIAL PROCEEDINGS

Stages of Investigation - Process compelling for the presence of the accused for Investigation and Trial – Arrest - Procedure for Arrest - Rights of Arrested Persons - Consequences of Non-Compliance of Arrest Procedure - Search and Seizure - Process of Investigation by Police - Investigation of Unnatural and Suspicious Death -Local Jurisdiction of the Courts in Inquires and Trials - Cognizance of Offence and Commencement of Proceedings.

UNIT – III: TRIAL PROCEDURE

Principal features of Fair Trial - Charge - Disposal of Criminal Cases without Full Trial - Trial before a Court of Session - Trial of Warrant Cases by Magistrates -Trial ofSummons-Summary Trial - Bail Procedures – Types of Bail - General Provision regarding Bond of Accused and Sureties.

UNIT – IV: APPEAL PROCEDURE

Types of Appeals - Reference and Transfer of Criminal Cases - Execution, Suspension, Remission and Commutation of Sentences - Execution of Sentence - Death Penalty and Imprisonment - Preventive and Precautionary Measures for Keeping Peace and Good Behaviour- Maintenance Procedures - Conditions for Claiming Maintenance - Cancellation of Maintenance - Sec 125 of CrPC.

UNIT – V: JUVENILE JUSTICE CARE AND PROTECTION ACT, 2000, THE CRIMINAL LAW AMENDMENT 2013 AND PROBATION OF OFFENDERS ACT, 1958

Introduction - Object - Definitions - Statutory Bodies- Juveniles under the Act - Nirbhaya case - Reformative Institutions - Juvenile - Special Offences - Probation - Object and Meaning Criminal Court and Probation - Duties of Probation Officers - Report of the Probation Officers - Conditions and Cancellation of Probation.

Statutory Materials

1. The Code of Criminal Procedure, 1973.
2. The Criminal Law (Amendment) Act, 2005.
3. The Criminal Law (Amendment) Act, 2008.
4. The Criminal Law (Amendment) Act, 2010.
5. The Criminal Law (Amendment) Act, 2013.
6. The Criminal Law (Amendment) Act, 2018.

Books Prescribed

1. Ratanlal & Dhirajlal: The Code of Criminal Procedure; Lexis Nexis, 22nd Edition (2017).
2. Sarkar: The Code of Criminal Procedure; Lexis Nexis, 10th Edition (2013).
3. R.V.Kelkar: Criminal Procedure Code; Eastern Book Company, 6th Edition (2018).
4. Durga Das Basu: Criminal Procedure Code; Lexis Nexis, 6th Edition (2017).

Books for Reference

1. K.N.Chandrasekaran Pillai: General Principles of Criminal Law; Eastern Book Co., (2003) Edition, Reprinted (2007).
2. Iyer, Mitter & Anand: Law of Bails; Law Publishers (India) Pvt. Ltd., 4th Edition (2012).
3. P.V. Ramakrishna: Law of Bail, Bonds, Arrest and Custody; Lexis Nexis, 1st Edition (2008).
4. P.K.Majumdar, R.P. Kataria: Law of Bails, Bonds and Arrest; Orient Publication, 2nd Edition (2003).

Fifth Year - Tenth Semester	*Subject Code: U18PCAL524*	*Subject Credits: 04*

LAW OF ELECTIONS AND LOCAL SELF GOVERNANCE

Objectives: This paper is intended to acquaint the students regarding the significance of free and fair elections and various intricacies of the Elections Law, including electoral corrupt practices, which will facilitate them to choose responsive representatives for good governance**.** The local self-government on the other hand creates the scope for enjoying democracy and ensures democracy at grass root levels. It is through these local self-governments that the local problems can be considered and solved adequately and properly. This paper gives an insight to the students about this area of law.

COURSE OUTLINE

UNIT – I: MEANING AND CONCEPT OF ELECTION

Election: Meaning and Process - Constitutional Provisions & Mandate - Laws governing elections - Election disputes - Election to the Offices of the President and Vice President

UNIT –II: ELECTION COMMISSION

Composition – Functions – Powers - Delimitation of Constituencies - Preparation and Revision of Electoral Rolls

UNIT –III: ELECTORAL PRACTICES

Qualifications and Disqualifications of Candidates - Constitutional and Statutory Provisions - Disqualifications of sitting members - Nomination and Candidature - Voters Right to Information Anti Defection Law (Tenth Schedule to the Constitution of India) - Corrupt Practices in the Election Law- Electoral Offences

UNIT IV: LOCAL SELF-GOVERNANCE

Local Government – Evolution, Meaning, Features and Significance – Village Panchayats in Ancient India - Gandhiji's idea of village panchayats - Various Committee Reports - Urban Local Bodies - Municipal Corporation - Municipal Council and Municipal Committees – Meaning, Features - Role and Significance - Statutory Authorities under Local Governance System - State Finance Commission - State Election Commission – Tribunals Ombudsman – Audit

UNIT V: PANCHAYAT RAJ

Panchayatraj Institutions – The Nature and Scope of Article 40 - 73rd and 74th Constitution Amendment Act - Panchayati Raj Institutions – Composition – Functions - Sources of Income of Gram Panchayats - Panchayat Samiti and Zila Parishads - District Planning Committee - - Governmental and Judicial Control over Panchayatraj Institutions.

Statutory Materials:

1. The Representation of People Act, 1950
2. The Representation of People Act, 1952
3. The Presidential and Vice- Presidential Elections Act, 1952
4. The President and Vice- President Election Rules, 1974
5. Constitution of India

Books Prescribed:

1. T.M.Joseph: Local Governance in India Ideas, Challenges and Strategies; Concept Publishing Company,1st Published (2007)
2. Durga Das Basu, V. R. Manohar, Bhagabati Prosad Banerjee, Shakeel Ahmad Khan: Introduction to the Constitution of India; Lexis Nexis Butterworths Wadhwa Nagpur, 20th Edn. (2008)
3. R. V. Jathar: Evolution of Panchayati Raj in India; Institute of Economic Research, 1964
4. M.P. Sharma: Local Self-Government In India Seventh Revised Edition; Munshiram Manoharlal Publishers Pvt. Limited, 1978
5. Debidas Nanda: Municipal Administration in India; Ganga Kaveri Publishing House, 1998

Books for Reference:

1. S. K. Sharma, V. N. Chawla: Municipal Administration in India: Some Reflections; International Book Company, 1975
2. Durgesh Nandini: Rural Development Administration; Rawat Publications, 1992
3. Hoshiar Singh & Pankaj Singh: Indian Administration; Pearson Education India
4. Bidyut Chakrabarty, Rajendra Kumar Pandey: Local Governance in India; SAGE Publications, 2019
5. Shantaram K. Bhogle: Local Government and Administration in India; Parimal Prakashan, 1977

Fifth Year - Tenth Semester	*Subject Code: U18CCAL505*	*Subject Credits: 03*

CLINICAL COURSE – V

PUBLIC INTEREST LAWYERING, LEGAL AID, COURT & CHAMBER VISITS

Objectives: This course brings in-depth practical knowledge on legal and the para-legal services. This motivates the students to work for the welfare of the society.

COURSE OUTLINE

INTERVIEWING TECHNIQUES AND PRE-TRIAL PREPARATIONS - (40marks)

- **Two interviewing sessions of clients: 15 marks**

Each student will observe 2 (two) interviewing sessions of clients at the Lawyers' Office/Legal Aid Office and record the proceedings in a diary which will carry 15 marks.

- **Observation of the preparation of documents and court papers: 15 marks**

Each student will further observe the preparation of documents and court papers by the Advocate and the procedure for the filing of the suit/petition. This will be recorded in the diary which will carry 15 marks.

- **Viva-Voce Examination on above two components: 10 marks**

COURT ATTENDANCE & LOK ADALAT - (40marks)

- **CIVIL PROCEEDING OBSERVATION: 10 Marks**

The students must observe the civil proceedings in the court and record the proceedings in a diary which will carry 15 marks.

- **CRIMINAL PROCEEDING OBSERVATION: 10 Marks**

The students must observe the criminal proceedings in the court and record the proceedings in a diary which will carry 15 marks.

- **LOK ADALAT OBSERVATION: 10 Marks**

The students must attend lokadalats with the help of district legal services authority and submit a project to the faculty in charge. This project report carry of 10 marks

- **Viva-Voce Examination on above two components: 10 marks**

LEGAL AID-COUNSELING AND SERVICES (40 marks)

The students are directed to visit semi-urban and rural areas for providing free counseling and creating awareness among the people relating to socio-legal problems and submit a project to the faculty in-charge. This clinical study will comprise of 10 marks for project work and 10 marks for viva-voce.

Fifth Year - Tenth Semester	*Subject Code: U18PTAL505*	*Subject Credits: 02*

INTERNSHIP AND PRACTICAL TRAINING - V

Objective: The internship programmes are designed to acquaint the student with the actual practice of law by working under the supervision of legal luminaries. The student gains experience of applying theoretical knowledge from prior classroom training, when exposed to practical environment.

COURSE OUTLINE

During this vacation the students should compulsorily undergo Internship for a continuous period of 4 weeks and submit an internship report along with a internship certificate. This will be evaluated by the Internship Faculty Guide.

The student may choose to intern under any one the following category:

- Trial Advocate
- Appellate Advocate
- Law Firms

On completion of successful internship training every student will be awarded 2 credits

B.A., LLB (Hons.)

SYLLABUS FOR ELECTIVE SUBJECTS

S.No	ELECTIVE SUBJECT CODE	ELECTIVE SUBJECT NAME
V SEMESTER - ELECTIVE – 1		
1.	U18PEAL311	Legal Research Methodology
2.	U18PEAL312	Legal Methods and Techniques
V SEMESTER - ELECTIVE – 2		
4.	U18PEAL321	Intellectual Property Rights
5.	U18PEAL322	Maritime Law
VII SEMESTER - ELECTIVE – 3		
6.	U18PEAL431	Criminology and Penology
7.	U18PEAL432	Law Relating to Women and Children
IX SEMESTER – ELECTIVE – 4		
8.	U18PEAL541	Forensic Science
9.	U18PEAL542	Medical Jurisprudence
X SEMESTER – ELECTIVE – 5		
10.	U18PEAL551	Consumer & Competition Law
11.	U18PEAL553	Telecommunication Law
OPEN ELECTIVES		
12.	U18OEAL501	Right to Information and Education
13.	U18OEBL501	International Financial Transactions and Valuation
14.	U18OECL501	Private International Law
15.	U18OEDL501	Environment and International Legal Order

NOTE:

- The Students are free to choose the elective subjects in **V/VI/VIII/IX/X** semester within the list of elective subjects offered in concerned semester.
- One has to choose -
    - One Elective Subject from **V/VI/VIII/IX** Semester group of electives in respective semesters
    - One Elective Subject from X Semester group of electives in X Semester
    - One Elective Subject from open elective group of electives in X Semester
- **University may restrict subjects in a group for offering options based on availability of faculty and other facilities.**

Third Year - Fifth Semester	*Subject Code: U18PEAL311*	*Subject Credits: 03*

LEGAL RESEARCH METHODOLOGY

Objectives: When research is undertaken as a part of the process of law reform, the contributions through the research will be indefinite and will help to make concrete law which improves the societal welfare. This paper is a tool and guidance for the legal research carried out by the students and scholars in a simplified manner.

COURSE OUTLINE

UNIT – I: LEGAL RESEARCH

Meaning of Research - Legal Research – Characteristics - Objectives and Types of Legal Research - Qualities of Good Legal Researcher - Nature, Scope and Objectives of Legal Research and Methodology - Methods of Legal Research - Collaborative Research - Doctrinal and Non-Doctrinal

UNIT – II: RESEARCH DESIGN

Identification and Formulation of Research Problem - Hypothesis and Research Design - Database for Legal Research: Legislations - Judicial Decisions - Juristic Writings - Traditional and Online Databases

UNIT – III: RESEARCH TECHNIQUES

Methodology: Tool and Techniques for collection of data - collection of case materials and juristic literature - Use of historical and comparative research material - Use of questionnaire and interview - Census and Survey - Sampling: Types - Merits and Demerits - Observation - Interview - Questionnaire

UNIT – IV: DATA PROCESSING AND REPORT WRITING

Data Analysis and Interpretation - Report Writing - Supervision - Guidelines for researchers - Research Ethics – Meaning – Purpose - Importance of a Research Report - Preparation of the Legal Research Report - Content of Research Report.

UNIT – V: SAMPLING DESIGN FOR LEGAL RESEARCH

Meaning of Sampling - Merits and Demerits of Sampling Method - Size of Sample - Procedure to select a Sample - Types of Sampling - collection of data in socio legal research - sources of data collection - original sources of law - method of legal research for law reforms – analytical research method - historical research method - comparative research method - ethical research method - statistical research method - critical research method.

Books prescribed

1. S.K. Verma and M. Afzal Wani; Legal Research and Methodology; Indian Law Institute, 2nd Edition (2001).
2. Goode and Hatt; Methods in Social Research; Mc.Graw Hill Book Co., 1985 (reprint), Singapore,
3. Upendra Baxi; Socio-Legal Research in India; A Program Schriff, ICSSR, Occasional Monograph, 1975.

Books for References:

1. Cohen; Legal Research; Morris L, West Publishing Co. Minnesota, 1985.
2. Ghosh; Scientific Method and Social Research; B.N, Sterling Publishers Pvt. Ltd., New Delhi, 1984
3. Johari J.C.; Introduction to the Method of Social Sciences; Sterling Publishers Pvt. Ltd. New Delhi, 1988.
4. Kothari C.K.; Research Methodology: Method and Techniques; Wiley Eastern Ltd., New Delhi, 1980.

Third Year - Fifth Semester	*Subject Code: U18PEAL312*	*Subject Credits: 03*

LEGAL METHODS & TECHNIQUES

Objectives: This paper focuses on orientation of students to legal studies from the point of time of view basic concepts of law and legal systems.

COURSE OUTLINE

UNIT -I: **MEANING AND CLASSIFICATION OF LAWS**
Meaning and definition – functions of law – classification of laws – public law and private law, substantive law and procedural law, municipal law and International law.

UNIT - II: SOURCES OF LAW
Custom – Precedent – Legislation.

UNIT-III: BASIC CONCEPTS OF INDIAN LEGAL SYSTEMS:
Common law – constitution as the basic law – Rule of law – Separation of powers – Judicial system in India.

UNIT -IV: **LEGAL WRITING AND RESEARCH:**
Legal materials – case law – statutes – Reports – Journals – Manuals – Digests – Importance of legal research – Techniques of legal research – Legal writings and citations.

UNIT - V: **JUDICIARY AND SOCIAL CHANGES:**
Law as an instrument of social change – Introduction to judicial process – role of judiciary in social change – Independence and accountability of judiciary.

Books prescribed:

1. Ram Ahuja: Research Methods, Rawt Publications, 2001
2. Nomita Aggarwal: Jurisprudence (Legal Theory), Law Book Publishers, 2014.
3. Glanville Williams: Leaning the Law, Universal Law Publishing, An imprint of Lexis Nexis, 2013.

Books for References:

1. Benjamin N. cardozo: The nature of judicial process, Martino Fine Books, 2011.
2. Gregory A. Pasco: Criminal Financial Investigations, the Use of Forensic Accounting, CRC Press, 2012.
3. Daniel Albuquerque: Legal Aspects of Business, OUP India Publishers, 2017.

Third Year - Sixth Semester	*Subject Code: U18PEAL321*	*Subject Credits: 03*

INTELLECTUAL PROPERTY RIGHTS

Objective: This paper produces a detailed insight on Intellectual Property Law and gives a wider picture to students about growing trends in IPR connected with International Perspective.

COURSE OUTLINE

UNIT – I: INTELLECTUAL PROPERTY

Meaning and Concept of Intellectual Property - Need for Protection - The World Intellectual Property Organisation (WIPO) Convention - Origin and Functions of World Trade Organisation (WTO) - Trade Related Intellectual Property Rights (TRIPS) - Agreement of WTO and its effects of Intellectual Property Law in India - Dispute Settlement Mechanism - Ethical Issues in IPR - Interface between IPR and Human Rights.

UNIT – II: THE PATENTS ACT, 1970

The Patents Act, 1970 & Patent Amendment Act, 2005: Definition - Salient Features - Patentable and Non - Patentable Inventions - Product and Process Patents – Procedural aspects - Patent Office and Powers of Controller - Right of Patentees - Term of Patent - Remedies for Infringement of Patents - Register of Patents - Surrender and Revocation of Patents - Compulsory Licenses - Exclusive Marketing Rights - Patent Agents - International Agreements - Knowledge Transfer - IPR and Information Technology – Bio tech patents -

UNIT – III: THE COPYRIGHT ACT, 1957 AND RECENT AMENDMENTS

Works in which Copyright Subsists - Meaning of Copyright - Ownership and Rights of the Owner - Term of Copyright – Powers and Functions of the Copyright Board – Registration of Copyright - Compulsory License - Copyright Societies – Fair Use doctrine - Rights and Remedies against Infringement - The Copyright (Amendment) Act 2012 - Rights of Broadcasting Organizational and of Performers - International Copyright Act - Digital Millennium Copyright Act.

UNIT – IV: TRADE OF MARKS, 1999

Object - Definitions - Salient Features - Distinctiveness - Deceptive Similarity - Procedures and Conditions for Registration - Effects of Registration – Powers and Functions of Registrar - Concurrent Registration - Rectification and Correction of Register – Rights of Registered Trade Mark Owner - – Protection of Trade Secrets and Deceptive Trade Practices - Special Provisions Relating To Protection of Trade Marks through International Registration under Madrid Protocol – Collective Marks - Appellate Board -Infringement Action - Passing Off Action.

UNIT – V: Industrial Designs, Geographical Indication and Traditional Knowledge

The Designs Act 2000 - Definition - Registration of Designs - Copyright in Registered Deisigns - Piracy of Registered Designs - Remedies - Powers and Duties of Controller - Semi Conductor Integrated Circuit Layout - Protection of Plant Variety and Farmers Right Act, 2001 (PPVFR Act) - National Law on Conservation of Biological Diversity - Geographical Indication of Goods (Registrations and Protection) Act, 1999 - Object, Definition – Procedure and Conditions for Registration - Prohibition of Registration of Certain Geographical Indications - Effect of Registration - Traditional Knowledge – Rationale and modes of protecting TK – Sui generis protection -Benefit Sharing -Turmeric Patent Case - Neem Oil Case.

Statutory Materials:

1. The Patents Act, 1970
2. Patent Amendment Act, 2005
3. The Trade Marks Act, 1999
4. The Copyright Act, 1957
5. The Copyright (Amendment) Act, 2012
6. The Designs Act, 2000
7. The Geographical Indications Act, 1999

Books Prescribed:

1. P.Narayanan: Intellectual Property Law; Eastern Law House, 3rd Edition (2001)
2. Dr. B.L. Wadehra: Law relating to Patents, Trademarks, Copyright, Designs and Geographical Indications; Universal Law Publishing, 5th Edition (2011)
3. Avtar Singh: Intellectual Property Law; Eastern Book Company, 1st Edition (2013)
4. V.K. Ahuja: Intellectual Property rights in India; Lexis Nexis, 2nd Edition (2015)
5. Dr. Bhandari: Law relating to Intellectual Property Rights; Central Law Publication, 4th Edition (2015)

Books for References:

1. Cornish: Intellectual Property:Patents, Copyright, Trademark and allied rights; Sweet&Maxwell, 7th Edition (2010)
2. Barret, Margreth; Intellectual Property; Aspen Publishers, 3rd Edition (2009)
3. Nard, Craig Allen: Law of Intellectual Property; Aspen Publishers, 2nd Edition (2008)
4. Arora, Manish: Guide to Trademark; Universal Publication, 2nd Edition (2007)
5. Sterling J.L.A.: World Copyright Law; Sweet&Maxwell, 3rd Edition (2008)

Third Year - Sixth Semester	*Subject Code: U18PEAL322*	*Subject Credits: 03*

MARITIME LAW

Objective: The law relating to activities at sea is based primarily on Maritime Law and the Law of the Sea. Maritime Law is the law of things, activities and events related with the sea. This paper provides legal knowledge to the students concerning seagoing personnel, ships and other seagoing vessels, charter contracts and ocean transport, ship ownership and sales, maritime safety, incidents at sea and marine insurance.

COURSE OUTLINE

UNIT – I: INTERNATIONAL LAW OF THE SEA

Evolution of Law of the sea – Freedom of the sea – High seas – customary principles - Developments during inter-war period (1930 – 1945) – Delimitation of territorial sea – Internal waters – Hague Conference 1930 – freedom of navigation – freedom of fishing – other freedoms of the sea – Geneva Conference 1958 – Geneva Convention, 1958 –Geneva Conference of 1960 – United Nations Convention on Law of the Sea, 1982 - Territorial waters – contiguous zone – continental shelf – Exclusive Economic Zone - High seas - rights of coastal states – freedom of the sea in diverse zones –Equi-distance method and alternatives – Rights and duties of states in coastal waters of others – rights of Archipelagic states - rights of land locked states – Hot pursuit – Common Heritage of Mankind – Maritime Zones Act

UNIT – II: INDIAN MARITIME LAW

Admiralty Act and Bill of 2005 - Admiralty Jurisdiction of High Courts - International convention for arrest of ships, Wrongful arrest - Release from arrest, - Maritime claims, Limitation of liability, Damage done by or to a ship, Salvage, Loss of life or Personal Injury - Admiralty Bill, 2005, its salient features and present status

UNIT – III: THE MERCHANT SHIPPING ACT, 1958

Structure of the Shipping administration in India - Ministry of Shipping, Director General of Shipping - Mercantile Marine Department, Surveyors, Seamen's welfare officers - Major and Minor Ports – Application of National Laws and State Laws at ports – Registration of Indian Ships – procedure and documentation – certificate of registration – Transfer of ownership – national character and flag - International treaties, Conventions and protocols relevant to Indian maritime law, their objective, applicability and legal status - International Convention on the Prevention of Marine Pollution by Dumping of Waste Convention, 1972 - Maritime Lien - Territorial waters Act, relevant provisions of Customs Act, Merchant Shipping Act - Jurisdictional issues and relevant provisions under Indian Laws - Fisheries Act

UNIT IV: MARITIME LAW & PRACTICES

The Territorial Waters, Continental Shelf, Exclusive Economic Zone and other Maritime Zones Act, 1976 - The Maritime Zones of India (Regulation of Fishing by Foreign Vessels) Act, 1981 - Suppression of Unlawful Acts Against Safety of Maritime Navigation and Fixed Platforms on Continental Shelf Act, 2002 - The Merchant Shipping Act, 1958 – Sec. 69 Proceedings on forfeiture of ship, Sec 334 Unseaworthy ship not to be sent to sea, Sec 336 Power to detain unsafe ship and procedure for detention, Sec 337 Liability of Central Govt. for costs and damage when ship wrongly detained - Part X-B Civil Liability for Oil Pollution Damage. Sec 352 Part XI A Prevention and Containment of Pollution of the sea by Oil - Fishing Boats - Provisions of Environmental issues and provisions - International Convention on the Prevention of Marine Pollution by Dumping of Waste Convention, 1972

UNIT V: DISPUTE RESOLUTION

Conservation and management of living resources under UNCLOS– settlement of disputes relating to living resources in EEZ - Maritime research – rights and duties of researching states – settlement of disputes thereof – protection and preservation of Maritime environment – military uses of the seas – rights of the landlocked states - Settlement of disputes – International Sea Tribunals - International Sea Bed Authority – International Court of Justice - Unit –Alternative Dispute Resolution – Role and significance of ADR–International Arbitration – International and domestic commercial arbitration – Online Dispute Resolution

Books Prescribed:

1. Massimo Lando: Maritime Delimitation as a Judicial Process, Cambridge University Press, 2019
2. Prof. K. R. Singh: Coastal Security Maritime Dimensions of India's Homeland Security, Vij Books India Pvt Ltd, 2012
3. Prof. K. R. Singh: Coastal Security Maritime Dimensions of India's Homeland Security, Vij Books India Pvt Ltd, 2012

Books for Reference:

1. Guidelines on the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1972; IMO Publishing, 2006
2. Ratanlal and Dhirajlal: Law of Evidence; Lexis Nexis; 26th Edn. (18 July 2017)
3. Parvinrai Mulwantrai Bakshi: The Constitution of India, LexisNexis, 2018
4. B. M. Gandhi: Indian Penal Code, Eastern Book Company, 2006

Fourth Year - Eighth Semester	*Subject Code: U18PEAL431*	*Subject Credits: 03*

CRIMINOLOGY AND PENOLOGY

Objective: The objective of this paper is to provide depth of understanding of dimensions of crime, crime causation, prevention of crime, penalizing the crime, functioning of penal institutions along with rehabilitation and protection of crime victims.

COURSE OUTLINE

UNIT – I: INTRODUCTION

Meaning and Significance of Crime - Concept of Crime and basis of Criminalization - Definition of Crime - Criminology - Criminological Reminiscence: Global Scenario - Renaissance - Modern Age - Focus on the need for Criminological Study - Ingredients of Crime - Distinction between criminality and non- criminality- Classification of Crimes - Development of Criminal Law - Sources and uses of Crime Data - Crime Reporting - Schools of Criminology.

UNIT – II: CRIME CAUSATION

Individual Centric Causes - Societal Centric Causes - Theories on Crime Causation - Juvenile Delinquency - Legislation - Juvenile Justice (Care and Protection of Children) Act, 2000 - 2013 Amendment Act -Statutory Bodies and Procedure - Reformative Institutions under the Act - Rehabilitation Process - Case Law.

UNIT – III: TYPES OF CRIME

White-Collar Crime and Blue-Collar Crime: Implications of White Collar Crimes - White Collar Crimes in India - Santhanam Committee Report – Wanchoo Committee Report - 47th Law Commission Report - Detection and Investigation - Trial of White-Collar Crimes - Case Law - Crimes and Women: Dowry Prohibition (Amendment) Act, 1986 - Crimes against Women- Crimes of Passion - New Legislation - Prostitution - Immoral Traffic Offender (Prevention) Act - Medical Termination of Pregnancy Act - Pre-Conception and Pre Natal diagnosis Techniques (Regulation) Act - Domestic Violence Act, 2005- Criminal Law Amendment Act, 2013- POSCO – Terrorism: Definition - Nature of Terrorism - Causative Factors - Funds for Terrorism - Kinds of terrorism - Terroristic Spectrum - Punishments and Measures for Coping with TADA-POTA-NSA, 2010-] - Criticism - Anti-Terrorist Measures - Communal Violence - Causes and Cures - Victims of Marginal Crimes - Social Deviance and Marginal Crimes - Kinds of Marginal Crimes - Victimless Crimes - Hidden Victims - Drug and Crime -Depiction of Offences and Punishments under NDPS Act - Modern Crimes and International Crimes: Computer Crime -Cyber crimes - definition -kinds - Information Technology Act, 2000 - Organ Trafficking - International Crimes - Environmental Crimes.

UNIT – IV: THE POLICE AND CRIMINAL JUSTICE SYSTEM

Police: Organisational Structure of Indian Police - Police Bureaucracy - Police Setup - Custodial deaths - Modernization in Police - Crime Records Management - Traditional Vis-à-vis Modern Crime Records Management - Police Community Relations - Thana Level Committee - Police Advisory Committees - Media and Police - Discipline and Lawlessness - Interpol -Criminal Justice System: Objectives of Criminal Justice System - Rights of Accused and Arrested Person - Plea Bargaining - Human Rights and Administration of Criminal Justice.

UNIT – V: CORRECTIONAL INSTITUTION AND CRIME PREVENTION

Probation and Parole: Origin - Salient features of Probation of Offenders Act, 1958 - Parole - Parole Regulations - Parole Recommendations - Prison System in India: Problems of Prisoners -Organized Setup - Prison Discipline - Prison Labour - Prison Education - Open Prison - The Prison Community - Prison Reform in India -Dr. Wreckless Committee Report - International Perspective.Crime Prevention - Theories of Punishment - Kinds of Punishment - Recidivism - Various form of Recidivist -Prevention of Crime and Delinquency.

Books Prescribed

1. Dr. Rajendra K. Sharma: Criminology and Penology; Atlantic Publishers and Distributers, 1st Edtition (1998).
2. Ahamed Siddique: Criminology Problems and Perspectives; Eastern Book Company, 1st Edition (1997)
3. Dr. J.P.S. Sirohi: Criminology and Penology; Allahabad Law Agency, Reprint 2014
4. N.V. Paranjape: Criminology Penology and Victimology; Central Law Publications, 2017 Edition (2017).

Books for Reference

1. Harry Elmer Barnes: New Horizons of Criminology; Bames and Teeters, 3rd Edition (1959)
2. Mark S.Gaylord: The Criminology of Edwin Sutherland; Transaction Publishers, 1st edition (1988).
3. Taft and England: Criminology; Collier & Macmillan, 4th Edition (1964).

Fourth Year - Eighth Semester	*Subject Code: U18PEAL432*	*Subject Credits: 03*

LAW RELATING TO WOMEN AND CHILDREN

Objective: The course draws the attention to the feeble condition of women, children and their exploitation. The legal limitation on their capacity and legal rights and protection provided in the Constitution and in various laws are to be studied critically.

UNIT – I: OFFENCES AGAINST WOMEN

Sexual crimes – Rape, Unnatural Offences, Indecent Assault - Matrimonial Offences – Mock Marriage, Bigamy, Adultery, Criminal elopement, Dowry Death, Harassment, Provisions relating to Dowry under IPC and Dowry Prohibition Act 1961. - Offences relating to Miscarriage under IPC - The Medical Termination of Pregnancy Act, 1971 - The Pre-conception and Pre-natal Diagnostic Techniques (Prohibition of sex selection) Act, 1994– Offences relating to trafficking under IPC, Offences under the Immoral Traffic (Prevention) Act, 1956

UNIT – II: GENDER INJUSTICE&WOMEN'S COMMISSION

Gender Injustice - A Global issue, Constitutional provision to protect gender injustice in India, Pre-natal sex-selective – Abortion - Sexual Harassments in work place – Guideline laid down in Vishaka v. State of Rajasthan - Constitution and procedure of Commission, Powers and Function of the Commission.

UNIT – III: LEGISLATIVE EMPOWERMENT OF WOMEN

International perspective - Constitutional provisions for Empowerment of Women - Empowerment of Women under Criminal Law - The Immoral Traffic (Prevention) Act, 1956 - Dowry Prohibition Act, 1961, Labour legislation, The medical Termination of pregnancy Act, 1971 - The Commission of Sati (Prevention) Act, 1987.

UNIT – IV: EXPLOITATION OF CHILDREN

Child Labour – Reason for child Labour - international Framework to eliminate Child Labour, - Constitutional Provision to eliminate child labour - Salient Features of Child Labour (Prohibition and Regulation) Act, 1986 - Child Labour and National Human Rights Commission - Role of Judiciary in Solving Labour Problem - Child Prostitution - Child Pornography - Child Trafficking - Incestuous Sexual Exploitation - Child Marriages.

UNIT – V: PROTECTION OF CHILD RIGHTS

Child Marriage (Restraint) Act,1929 - Problems relating to Adoption In India - UN Convention on the Rights of Child 1989 - Hindu Adoption and Maintenance Act, 1956 - Inter Country Adoptions - Right to Education and Human Rights Instruments - Right to education in India - Art 21-A of the Indian Constitution - Policies of Government on Education, Problems relating to Child Education - Establishment of National and State Commission for protection of Child Rights - Functions and Powers of the Commission - Children's Courts.

Statutory materials

1. Indian Penal Code 1860
2. Dowry prohibition Act 1961
3. The medical termination of Pregnancy Act 1971
4. The pre-conception and Pre-natal Diagnostic Techniques(Prohibition of Sex selection) Act 1994
5. The Immoral Traffic(prevention)Act 1987
6. Child labour (prohibition and regulation) Act 1987
7. Child marriage restraint Act 1929
8. Hindu Adoptions and Maintenance Act 1956

Books Prescribed

1. Mamta Rao; Law relating to women and children; Eastern Book Co ;4th edition (2018)
2. G.S Sharma, Anil Kumar Tandi; Law relating to women &Children; Asia Law House;1st edition (2015)
3. S. C. Tripathi & Vibha Arora; Law relating to women and Children; Central Law Publications; 6th edition (2015)

Books for Reference

1. Manjula Batra; Women & Law with law relating to children in India; Allahabad Law Agency; latest edition (2012)
2. Dr. Anjani Kant; Law relating to women and children; Central law Publications ;1st edition (2003)
3. Dr. S. R. Myneni; women and Law; Asia Law House; 2nd edition (2011)

Fifth Year - Ninth Semester	*Subject Code: U18PEAL541*	*Subject Credits: 03*

FORENSIC SCIENCE

Objective: This paper seeks to explore various areas of the law that deal with creating and maintaining and regulating 'health.' The paper aims to give comprehensive and practical approach to the students to make them aware of the developments in medical sciences and to enable them to be equipped to face the recent challenges raised by the modern issues in contemporary era.

COURSE OUTLINE

UNIT – I: CRIME & CRIMINAL BEHAVIOUR

Definition of Crime, Various types of crime, Criminal behaviour-cause and theories, Modus Operandi Criminal profiling, Corpus Delicti - Criminal Justice System-Important wings of criminal justice system, Its structure & functioning, Role of Police officers, prosecution & judicial officers, Role of Forensic scientists, medico-legal doctors, Expert Testimony Forensic Science-Basic Principles & Significance, History & Development of Forensic Science, Organizational structure of Forensic Science labs in Central & State. Crime Scene Management-Defining the Scene of crime, Managing a crime scene & its hierarchy, Role of First Responding Officers, Search Patterns of a crimescene,Crime scene Documentation,Collection, Packaging, Labelling & Forwarding of exhibits to forensic laboratories,Preservation of evidence, Health & Safety Protocols.

UNIT – II: FORENSIC SCIENCE AND ITS APPLICATION IN CRIME INVESTIGATION

Definition, Nature, And Need & Scope of Forensic Science: Crime Scene Evidences, Blood, Semen & other Biological fluids, Viscera, Shoe impressions, Tool marks, Tyre marks, Bite Marks, Hair – Animal & Human, Fibres & Fabrics, Glass, Soil, pollen Paint Establishment of identity of Individuals, DNA, Fingerprints/Foot prints, Anthropology – Skeletal Remains, Odontology, Questioned Document and Their Identification- Identification of objects by shape and size, Handwriting and signature-analysis, identification and examination, Procedure for examination, Types of forgery, Anonymous letter, Charred document, Idented writing, Counterfeit coins and notes, Small coins (offence) Act 1971, Standards of Weight and Measures Act 1976

UNIT – III: FORENSIC MEDICINE AND THE LAWS:

Medical Jurisprudence- Brief History & current scenario at National & International level Forwarding of Biological samples to Forensic Laboratories, Medico legal aspect of Death-Concept of Human Anatomy & Physiology, Time of Death, Causes of Death, Injuries: classification, forms and medico legal aspects, Medico Legal Aspects – PM report, Dying Declaration & Expert Testimony (Evidence Act) Sexual offences – Sexual, Offences - Rape, DFSA (Drug Facilitated Sexual Assault),Examination of the victim & the accused, Collection

of evidence, Infanticide, Abortion, Artificial Insemination, Medical Termination of Pregnancy Act 1971, Prenatal Diagnostic Technique Act 1984, Legal Aspects - Mental Health Act 1987, Prevention of Food Adulteration Act 1954, NDPS Act 1985, Petroleum Act 1934, Prevention of Damage to Public Property Act 1984, Prevention of Illicit Trafficking in NDPS Act 1985, Arms Act 1950, Explosives Act 1984, Explosive Substance Act 1908, The Drugs Act 1940, The Drugs and Cosmetics Act 1945

UNIT – IV: RECENT ADVANCES IN FORENSIC SCIENCE AND THE LAWS

Cyber crime: definition, hacking, virus, obscenity, pornography, software piracy. It Act, 2000 .Intellectual property right-domain name, Trademark. Computer security encryption, decryption and digital signature, Forensic Speaker identification-Introduction inter speaker and intra-speaker variation, forensic Phonetics-acoustic and auditory parameter, vocal tract, speaker recognition identification and verification, spectrograph. Study of extortion threatening calls, hoax calls, drugs transactions and the recorded voice.

UNIT – V: NARCO ANALYSIS AND DNA FINGER PRINTING

Theory, forensic significance of narco-analysis, admissibility in court, future prospect, case study. Brain mapping- introduction, EEG, P-3000 wave, brain mapping in forensic Science, Limitation of technique, admissibility in court, case study. Polygraph: Principle and technique polygraph as forensic investigative tool, NHRC guidelines for polygraph test, case study. Forensic DNA Finger Printing-DNA-Introduction, source of DNA in Forensic case work, Extraction of DNA, Techniques of DNA fingerprinting-RFLP, STR, PCR. DNA fingerprinting in paternity disputes, mass disaster and other forensic case work, legal issues in DNA fingerprinting, case study.

Books Prescribed:

1. Dr. Jaising P. Modi: A Textbook of Medical Jurisprudence and Toxicology; Lexis Nexis, 26th Edition (2018)
2. B.V. Subrahmanyam: Parikh's Textbook of Medical Jurisprudence, Forensic Medicine and Taxicology; CBS Publishers and Distributors Pvt. Ltd; 8th Edition (2019)
3. Sarita Jand, Forensic Science & Law, Allahabad Law Agency; First Edition (2017)

Books for References:

1. R A Witthaus: Medical Jurisprudence, Forensic Medicine and Toxicology. Volume 2 of 4; Gale, Making of Modern Law, (2010)
2. Nabar BS, Forensic Science in Crime Investigation, Asia Law House; 3 edition (2013)
3. B R Sharma : Scientific Criminal Investigation; Universal Law Publishing - An imprint of Lexis Nexis; 2nd Edition (2016)

Fifth Year - Ninth Semester	*Subject Code: U18PEAL542*	*Subject Credits: 03*

MEDICAL JURISPRUDENCE

Objectives: This course intense to analyze Medico-Legal Aspects, which helps the students to understand the investigative process involved in medical field.

COURSE OUTLINE

UNIT – I: MEDICAL RELATIONSHIP WITH CRIME

Forensic Science and Crime – Crime Scene Examination – Detection – Role of Investigator – Criminal Trial – Expert Witness – Role of Medical Evidence.

UNIT – II: THE WORK OF POLICE SPECIALISTS AND FORENSIC SCIENTISTS

Personal Identification – Examination of Living and Dead – Cases of Homicide and Suicide – Examination of Wounds and Injuries –Gun Shot – Asphyxia death – Death and Injuries by Burns / Scalds / Cold and Starvation - Virginity and Defloration – Pregnancy through Crime, Legitimacy and Tracing of Inheritance – Rape – Abortion – Infanticide – Unnatural Sexual Offences - Contact Traces – Marks Scratches of Paint, Glass etc.

UNIT – III: IDENTIFICATION FORESICS

Blood Stains and Seminal Stains – Blood and other Body Fluids – Finger Prints – Tracing of Hair, Bone Teeth etc. –Paternity Forensics - Identification of property – Road Accidents – Tracing of hit and run Vehicles - Identification of Photos and Documents –Detection Powders.

UNIT – IV: WORK OF CHEMIST AND BIOLOGIST

Work of Chemist – Methods – Tracing Alcohol - Work of Biologist – Tracing Blood and other Biological Matters.

UNIT –V: TOXICOLOGY

Introduction to Toxicology - Classification and Effect - Corrosive & Irritant Poisons.

Statutory Materials:

1. Code of Criminal Procedure, 1973
2. The Narcotic Drugs and Psychotropic Substances Act, 1985

Books Prescribed:

4. Dr. Jaising P. Modi: A Textbook of Medical Jurisprudence and Toxicology; Lexis Nexis, 26th Edition (2018)

5. B.V. Subrahmanyam: Parikh's Textbook of Medical Jurisprudence, Forensic Medicine and Taxicology; CBS Publishers and Distributors Pvt. Ltd; 8th Edition (2019)
6. B R Sharma : Scientific Criminal Investigation; Universal Law Publishing - An imprint of Lexis Nexis; 2nd Edition (2016)

Books for References:

4. R A Witthaus: Medical Jurisprudence, Forensic Medicine and Toxicology. Volume 2 of 4; Gale, Making of Modern Law, (2010)
5. Alfred Swaine: Taylor The Principles and Practice of Medical Jurisprudence: By Alfred Swaine Taylor; Volume 1; Palala Press, (2018)
6. V.S.R. Avadhani, V. Soubhagya Valli: Criminal Investigation (Law, Practice & Procedure); Asia Law House; 1st Edition (2015)

Fifth Year - Tenth Semester	*Subject Code: U18PEAL551*	*Subject Credits: 03*

CONSUMER AND COMPETITION LAW

Objectives: The Process of globalization and liberalization has brought a considerable awareness towards improving the competitive process in developing countries such as India. The course aims to study the developments and analyze the progress of competition law in various legal systems.

COURSE OUTLINE

UNIT – I: **COMPETITION POLICIES**

Evolution – Objective - scope and Nature of Competitive Laws - Concept of perfect competition - Theories on IP and competition - Concept of Open market system - MRTP Act, 1969 - Ragavan Committee Report - Formation and features - Anti – Competitive Practices and its regulation under MRTP Act - Regulatory Authorities – SEBI, TRAI, IRDA, NCDRC, CERC - Competition policy and Consumer Protection - Competition Policy and IPR – Introduction to various IP Assets, Patent Policy and its regulation under the Indian Laws, Abuse of IPR and regulation of Combination, Conflict of Combination Policy and Patent policy, TRIPS and its impact on Competition and Patent – Monopoly.

UNIT – II: COMPETITION ACT 2002

Drawbacks under the MRTP Act and need for the Competition Act - Regulation of Unfair Competition - Anti-competitive agreements - Abuse of dominant position - Combination, Competition Commission of India – Constitution, duties, powers and functions of commission - Competition Advocacy - Competition Appellate Tribunal, Changes brought in by Competition (Amendment) Act 2009.

UNIT – III: INTERNATIONAL PERSPECTIVES

Competition Policy under the EU and USA – Regulation of Unfair Competition in UK - The Competition Act 1989 - Anti – trust policy and Unfair Competition in USA – Federal trade commission Act 1914 - US Enforcement, Treaty on functions of European Union – Art 101, Art 102 - Globalization and Competition Law, WTO and its impact on competition laws with reference to UNTCAD - Competition rules of WTO, International Enforcement and Judicial Assistance.

UNIT – IV: CONSUMER PROTECTION LAW AND POLICIES

Origin and History of the Movement - Salient features of consumer protection act - Objective of the legislation - Consumer Protection Act, 1986 – Procedure – Deficiency of Service – Defect in Goods – Unfair Trade Practice - Consumer Protection Councils – its organization, objects and Procedure - Consumer Disputes Redressal Agencies – Kinds, establishment, composition, and jurisdiction - Complaint – manner in which made, procedure on receipt of appeals, limitation period, dismissal of frivolous or vexatious complaints - Orders of the Consumer Disputes Redressal Agencies – Findings of the

Forum– Finality of orders, Review of orders, enforcement of orders - Penalties and Remedies

UNIT – V: EMERGING TRENDS IN CONSUMERISM

Goods – Case laws on manufacturing defects - Service Sector – Airlines, Banking, Insurance, Housing - Medical negligence - Lawyers negligence - WTO and Consumer Protection - E-Commerce and Consumer Rights - Role of Civil Society in Consumer Protection - Access to justice and Consumer Laws - ADR in resolution of Consumer disputes - Data protection

Books Prescribed:

1. S. M. Dugar; Guide to Competition Law (Containing Commentary On The Competition Act, 2002; Mrtp Act, 1969 & The Consumer Protection Act, 1986), Lexis Nexis; 6th Edn. (2016)
2. Iain Ramsay: Consumer Law and Policy: Text and Materials on Regulating Consumer Markets, Bloomsbury Publishing, 3rd Edn. 2012
3. Dennis Campbell: International Consumer Protection, Springer Science & Business Media, 2013

Books for Reference:

1. Dr. V.K.Agarwal; Competition Act, 2002, Bharat Law House, Delhi; 2019 Edn. (2019)
2. Thomas Wilhelmsson: Consumer Law in the Information Society, Springer Netherlands, 2000
3. D. P. Mittal: Competition Law & Practice, Taxmann Publications Pvt. Limited, 2008

Fifth Year - Tenth Semester	*Subject Code: U18PEAL553*	*Subject Credits: 03*

TELECOMMUNICATION LAW

Objectives: The main objective of the paper is to introduce to the students the concepts of Telecommunications Law and its regulation at the International Level. Apart from the above, the paper covers the approaches of privatization in Telecommunications and Issues and challenges related to it. The paper will give theoretical perspective of Telecommunication Laws.

COURSE OUTLINE

UNIT – I: INTRODUCTION

Historical Perspective of Telecommunications Law - Conceptual Analysis - Public Broadcasting, Right to Broadcast - Cable Distribution - Broadcasting Licensing - Telecommunication Laws in India

UNIT – II: TELECOMMUNICATIONS

International Relevance - International regulation related to Telecommunications - ITU reform - Self-governance of the Internet: ICANN - WTO

UNIT – III: PRIVATIZATION

Privatization in telecommunications - Liberalization and deregulation - Privatization of INTELSAT

UNIT – IV: TELECOMMUNICATIONS: ISSUES AND CHALLENGES

Access - Dispute Settlement - Advertisement, consumer protection - Protection of minors (children) - Indecency, piracy - Jurisdictional issues

UNIT – V: TRAI

Framework, rules and regulations- merits and demerits - Case study method-Public awareness over the policies of telecommunication authorities.

Statutory Materials:

Telecommunications Policies and Specifications, Acceptable Materials, The Law Library, 2019.

Books Prescribed:

1. R.U.S.Prasad: Resolving Disputes in Telecommunications, Oxford University Press, 2010.
2. Law Walden:Telecommunications Law and Regulations, OUP Oxford,2018.
3. Vikram Raghavan: Communications Law in India, Lexis Nexis, 2007.

Books for Reference:

1. Miklos Kengyel:Electronic Technology and CPC, Springer Publications, 2014.
2. Antoni Gobeo: Journal of Cyber Security for Business Information Systems, River Publishers, 2018.
3. Archibald Putt: Putt's Law and Successful Technocrat, Wiley- Blackwell, 2006.

Fifth Year - Tenth Semester	*Subject Code: U18OEAL501*	*Subject Credits: 03*

RIGHT TO INFORMATION AND EDUCATION

Objectives: The right to information and right to education have been recognized as a fundamental human right, which upholds the inherent dignity of all human beings. These statutory rights play a crucial role in democracy - it is essential to ensure education accountability and good governance. Hence, the basic object of this subject is to empower the students to have an in-depth knowledge about Right to Information and Right to Education

COURSE OUTLINE

UNIT – I: INTRODUCTION TO RIGHT TO INFORMATION

The evolution of the Right to Information in India - The important terms and concepts used in the Act - The salient features of the Act Public Authorities and their Obligations under the Act - Public Authority - Public Authorities covered under the Act - Public Authorities are exempted from the ambit of the Act - Obligations of Public Authorities - Role of Public Information Officers: PIOs and APIOs - Accepting an Information Request - Processing and Disposing - The specific Duties & Responsibilities of Information Officers - The liabilities of a PIO for non-compliance with the provisions of the Act - The time limits for disposal of information requests - The fees and costs to be charged for providing information - The grounds on which requests can be rejected and the procedure for such rejection.

UNIT – II: EXEMPTIONS AND DISCLOSURES

Exemptions from Disclosure of Information - Partial Disclosure - Third Party Information - Specific provisions of the Act which exempt certain kinds of information - the classification of such exempted information - Application of public interest test with respect to exempted information - Grounds that allow for partial disclosure of information - The concept of ‘Third Party' and the issues and considerations revolving around its involvement.

UNIT – III: APPEALS

The roles and responsibilities of Appellate Officers within Public Authorities - The process involved in making first appeals to designated Appellate Officers - Timelines for making a first appeal and disposal of the appeal - First Appeals and Appellate Officers - Information Commission: Powers and Functions - The Role and Responsibilities of the Information Commissions - The relevant provisions in the RTI Act dealing with Complaints to the Information Commission and the specifications thereof - The "Second Appeal" process and the Commissions' mandate for the same - The power of Information Commissions with regard to enforcing compliance of public authorities with the provisions of the RTI Act, imposing penalty / recommending disciplinary action against erring PIOs etc.

UNIT – IV: RIGHT TO EDUCATION: INTERNATIONAL PERSPECTIVES

Education as Human Rights - Major intervention of International Declarations - Universal Declaration of Human Rights 1948 - Conventions on Child Rights 1989 - Current status and Challenges

UNIT – V: RIGHT TO EDUCATION: INDIAN PERSPECTIVES

Constitution (Eighty-sixth Amendment) Act, 2002 - Article 21-A in the Constitution of India - Elementary Education in India: Retrospect and Prospect - Historical background of RTE Act 2009 - Major provisions of RTE Act 2009 - Challenges in implementation and current status - Opportunities and Challenges of RTE Act 2009

Books Prescribed:

1. N.V. Paranjapee: Right to Information Law in India: Lexis Nexis: 1st Edition(2014)
2. Sarbjit Sharma & Krishnan Gopal: Right to Information: Authors Press: 1st Edition(2005)
3. Gursharan Singh Kaimth: Right to Education – A Roadmap ahead: Neha Publishers and distributors: 1st Edition(2014)

Books for Reference:

1. Justice Rajesh Tandon: Right to Information – Law and practice : Lexis Nexis: 2nd Edition(2015)
2. S.P. Sathe: Right to information: Lexis Nexis India: Latest Edition(2006)
3. Ajit Mondal & Jayanta Mete: Right to Education in India(Vol 1&2): Gyan Publishing house: 1st Edition(2016)

Fifth Year - Tenth Semester	*Subject Code: U18OEBL501*	*Subject Credits: 03*

INTERNATIONAL FINANCIAL TRANSACTIONS AND VALUATION

Objective: To analyse the concept of international financial environment and balance of payments. To provide knowledge of foreign exchange market, currency derivatives, exchange rate determination and international financial markets. To study about foreign trade finance, foreign exchange exposure and international capital structure.

COURSE OUTLINE

UNIT – I: INTERNATIONAL FINANCIAL ENVIRONMENT:
'Globalization', goals of International Financial Management.
Balance of Payments: concepts and principles of balance of payments and its various components. The Current Account Deficit and Surplus and Capital Account Convertibility.

UNIT – II: FOREIGN EXCHANGE MARKET:
Origin of the concept of foreign exchange, the difference between fixed and floating rates. Foreign exchange transactions and the derivatives instruments traded in foreign exchange market such as forwards, futures, swaps, and options.
Currency Derivatives: forward markets and the different concepts, currency futures markets and currency options markets and functions.

UNIT – III: EXCHANGE RATE DETERMINATION:
Exchange rate movements, factors that influence exchange rates, movements in cross exchange rates, concepts of international arbitrage, interest rate parity, and purchasing power parity and the International Fisher effect.
International Financial Markets: basic concepts of the international money market. International credit markets (loans in various forms) from the creditors/investors.

UNIT – IV: FOREIGN TRADE FINANCE:
Concept of foreign trade finance. concepts of financing exports and financing imports and documentary collections, factoring, forfeiting and countertrade
Nature and Measurement of Foreign Exchange Exposure: nature and measurement of foreign exchange exposure. Types of exposures and the various types of translation methods.

UNIT – V: MANAGEMENT OF FOREIGN EXCHANGE EXPOSURE:
Concept of exposure forward and foreign exchange exposure, various tools and techniques of foreign risk management and the risk management products.

International Capital Structure: international capital structure, cost of capital, the capital structure of MNCs, cost of capital in segmented versus integrated markets.

Books Prescribed:

1. Prakash. G. Apte: International Finance: Business Perspective; McGraw Hill Education; 2 Edition (2017)
2. Cheol Eun, International Financial Management; McGraw-Hill Higher Education; 5th Edition (2009)
3. Sharan V: International Financial Management; Prentice Hall India Learning Private Limited; 6th Edition (2010)
4. Paul R. Krugman: International Finance: Theory and Policy, Pearson Education; 10th edition (2017)

Books for References:

1. Julian Walmsley: The Foreign Exchange and Money Markets Guide (Frontiers in Finance Series); John Wiley & Sons; 2nd edition (2000)
2. Vibha Mathur, Foreign Trade, Export-Import Policy & Regional Trade Agreements of India; New Century Publications (2012)
3. Alan C. Shapiro, Peter Moles: International Financial Management; Wiley (2016)

Fifth Year - Tenth Semester	*Subject Code: U18OECL501*	*Subject Credits: 03*

PRIVATE INTERNATIONAL LAW

Objective: This course introduces students to private international law, as to the basic concepts and mechanism of this branch of law, and the legislative rules, judicial interpretations issued by various Authorities, also some representative judicial cases ruled abroad.

COURSE OUTLINE

UNIT – I: INTRODUCTION

Definition - Nature and Scope of Private International Law - THEORIES OF PRIVATE INTERNATIONAL LAW – Development of English Private International Law, Modern Theories and Development – Theory of Acquired Rights, Local Law Theory, American Revolution - Meaning of Classification of the Cause of Action - Basis of Classification, Meaning of Incidental Question, Elements of Incidental Question, Application and Exclusion of Foreign Law.

UNIT – II: RENVOI, DOMICILE AND JURISDICTION

Doctrine of Single Renvoi - Doctrine of Total Renvoi - Scope of the Application of Renvoi - Acquisition of a Domicile of Choice - Domicile of Dependent Persons and Married Women - Concept of Residence - Jurisdiction of English Court and Limitations on Jurisdiction.

UNIT – III: PRIVATE INTERNATIONAL LAW RELATING TO MARRIAGE AND OTHER MATRIMONIAL CAUSES

Meaning and Formalities of Marriage - Capacity to Marry - Polygamous Marriages – Divorce - Nullity and Judicial Separation - Presumption of Death and Dissolution of Marriage - Civil Partnership.

UNIT – IV: PRIVATE INTERNATIONAL LAW RELATING TO ADOPTION

Adoption Proceedings in England – Adoption and Children Act, 2002 - 1993 Hague Convention on Protection on Children and Co-operation in Respect of Inter Country Adoption - Effect of Foreign Adoption.

UNIT – V: PRIVATE INTERNATIONAL LAW RELATING TO PROPERTY AND OBLIGATION

Distinction between Movable Property and Immovable Property - Distinction between Tangible and Intangible Property - Transfer of Movable and Immovable Property – Succession - Matrimonial Property – Contracts - Nature of the Problem and Solutions to the Problem - Rome Convention - Special Contracts and Limitation on the Dominant of the Applicable Law.

Books Prescribed

1. Paras Diwan, Peeyushi Diwan: Private International Law, Deep Deep Publication, 4th Edition (1998).
2. I.A. Shearer: Starke's International Law; Oxford University Press, 11th Edition (1994).
3. Dr. S.R. Myneni: Private International Law; Asia Law House, 1st Edition reprinted (2015).

Books for Reference

1. Dr. H.O. Agarwal: International Law; Central Law Publications, 20th Edition (2014).
2. Govindaraj V.C: Private International Law a case study; OUP India, (2018).
3. Ugljesa Grusic, Christian Heinze: Cheshire, North & Fawcett's Private International Law; OUP Oxford, 15th Edition (2017)

Fifth Year - Tenth Semester	*Subject Code: U18OEDL501*	*Subject Credits: 03*

ENVIRONMENT AND INTERNATIONAL LEGAL ORDER

Objective: The term environmental order is however largely unknown. It is more than peripheral short-term environmental protection effected on a case-by-case basis to ward off risks rather it means blanket, comprehensive and long-term protective care in line with the enduring responsibility we bear for the world around us, for the world we share with others and for the world of the generations to come. This paper is imparted to create legal and social awareness for the students regarding environmental order.

COURSE OUTLINE

UNIT – I: INTRODUCTION

Concept of "Environment"- Definition, Meaning and Scope of the term 'Environment' and 'Pollution'- Meaning of the term 'Population ', 'Biome', 'Biosphere' - Meaning of the term 'Ecosystem: Macro-Ecosystem and Micro- Ecosystem - Relationship between Population, Environment and Development - Population –Vs- Development - Development –Vs- Environment Concept of 'Common Property' and 'State Property' - Notion of Doctrine of Public Trust

UNIT – II: INTERNATIONAL ENVIRONMENT LAW AND GLOBAL ISSUES: International Environmental Campaigns - The United Nations Conference on Human Environment, 1972 (Stockholm Conference) - Framework of the Conference - Aims and Objectives - Concept of Sustainable Development - Polluters Pay's Principle - Precautionary Principle - Concept of Equity - Inter-Generational Equity - Intra-Generational Equity - The United Nations Conference on Environment and Development, (UNCED) (Earth Summit 1992) - Framework of the Conference - Aims and Objectives - Earth Charter or Rio Declaration - Agenda 21 : Blue Print for action in 21st Century - Earth Summit Plus Five - The Johannesburg Declaration on Sustainable Development, - Framework of the Declaration - Aims and - From Stockholm to Rio De Janeiro to Johannesburg -World Charter for Nature 1982

UNIT – III: OTHER MAJOR INTERNATIONAL ENVIRONMENTAL ARRANGEMENTS

Kyoto Conference and Pact on Global Warming, 1997, and onwards -Noordwijk Declaration on Climate change, 1989 - Helsinki Declaration on the Protection of Ozone Layer, 1989 - Basel Convention, 1989 - Nairobi Declaration, 1982 - Environmental Obligations: International Financing Policy - Global Environment Facility - World Environment Fund - United Nations Organisation and Environment - Millennium Development Goals 2000 - Global Environmental Issues and their Impacts: Global Warming - Oil Pollution - Ozone Layer Depletion - Green House Effect - Acid Rain.

UNIT – IV: BIODIVERSITY AND ITS NECESSITY

Definitions - Meaning and Importance - Role of Flora and Fauna in maintaining Biodiversity - Threats to Biodiversity - Need for protection of Biodiversity - Biodiversity and Economic Valuation - Laws, Policies and Measures for Biodiversity: Convention on Biological Diversity, 1992 - The Biological Diversity Act, 2002 - Protection of Plant Varieties and Farmers Right Act, 2001 - The Geographical Indications (Regulation and Protection) Act, 1999

UNIT – V: BIODIVERSITY AND ETHICAL ISSUES

Utilization of flora for Bio-Medical purposes - Cosmetic Plants - Medicinal Plants -Utilization of fauna/animals for Bio-Medical purposes - Genetic Mutation of Seeds - Experimentation on Animals - Genetically Modified Organisms - Genetic Engineering - Biodiversity and Intellectual Property Rights - Biodiversity And Priority Sectors: Sanctuaries - Zoo and Parks - Biosphere Reserves - Protected Forest and Reserved Forests - Conservation of Biodiversity: Role of NGO - Role of Indigenous People - Role of Media and Publications.

Books Prescribed:

1. Dr. S.C. Tripathi: Environmental Law: Central Law publications: Latest Edition(2015)
2. Shashi Kumar: Biodiversity and Food Security: Atlantic: Latest Edition(2002)
3. Alok Pandey: Environmental Law – an emerging issues in India: ABS books: 1st edition(2016)

Books for Reference:

1. V. R. Krishna Iyer: Environmental Pollution and the Law: Vedpal Law House: Edition(1984)
2. Prof. Philippe sands, Prof. Jacqueline Peel, Prof. Adriana Fabra & Dr. Ruth Machenzie: Principles of International Environmental Law: Cambridge university press: 3rd Edition(2012)
3. Jonathan A. Newman, Gary Varner & Stefan Linquist: Defending Biodiversity Environmental science & Ethics: Cambridge University Press: 1st Edition(2017)

BHARATH INSTITUTE OF HIGHER EDUCATION AND RESEARCH

BHARATH INSTITUTE OF LAW

No. 173, Agharam Road, Selaiyur, Chennai - 600 073

B.B.A., LLB (Hons.)

FIVE YEAR INTEGRATED DEGREE COURSE

SYLLABUS

With SUBJECT CREDITS

Applicable from Academic Year

2018-19

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3.	U18PLBL102	Principles of Management	09
4.	U18PLBL103	Financial Accounting	10
5.	U18PCBL101	Law of Contract - I	11
6.	U18PCBL102	Law of Torts	13
7.	U18LSBL102	English – II	14
8.	U18PLBL104	Business Economics	15
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CREDITS FOR FIVE YEAR INTEGRATED HONOURS COURSE (B.B.A/B.Com/B.A., LL.B)

SL. NO.	NATURE OF SUBJECTS	CATEGORY	NUMBER OF SUBJECTS	SUBJECT CREDIT ALLOTTED	TOTAL CREDIT POINTS
1	Language Studies	LS	2	3	06
2	Pre-Law Course	PL	16	3	48
3	Professional Core	PC	24	4	96
4	Clinical Core	CC	5	3	15
5	Professional Elective	PE	5	3	15
6	Open Elective	OE	1	3	03
7	Honours Course	HC	8	4	32
8	Practical Training	PT	5	2	10
Total			**66**	--	**225**
Non-Credit Courses					
9	Functional Training	FT	11	0	0
10	Mandatory Course	MC	9	0	0
Total			**20**	**--**	**0**
OVERALL TOTAL			**86**	**--**	**225**

Credits:

Credit defines the quantum of contents/syllabus prescribed for a course and determines the number of hours of instruction required per week. Thus, normally in each of the courses, credits will be assigned on the basis of the number of lectures/ tutorial & Practical works.

Hence, the Credits are assigned on the basis of the Lectures (L) / Tutorials (T) / Practical (P)

- **L - One credit** for **one hour** lecture per week (1 credit course = 15 hours)
- **T - One credit** for **one hour** lecture per week(1 credit course = 15 hours)
- **P - One credit** for every **two hours** of practical (1 credit course = 30 hours)

	Hour	Credit
Lecture (L)	**1**	**1**
Tutorial (T)	**1**	**1**
Practical (P)	**2**	**1**

****Maximum Total Credits per semester is 20 - 27**

B.B.A., LLB (Hons.)

Five Year Integrated Degree Course

SUBJECT CREDITS

FIRST YEAR – I SEMESTER								
S. No.	**Subject Code**	**Category**	**Subject**	**Contact Periods**	**L**	**T**	**P**	**C**
THEORY								
1.	U18LSBL101	LS	English – I	3	2	1	0	3
2.	U18PLBL101	PL	Principles of Economics	3	2	1	0	3
3.	U18PLBL102	PL	Principles of Management	3	2	1	0	3
4.	U18PLBL103	PL	Financial Accounting	3	2	1	0	3
5.	U18PCBL101	PC	Law of Contract - I	4	3	1	0	4
6.	U18PCBL102	PC	Law of Torts	4	3	1	0	4
PRACTICAL								
7.	U18FTBL101	FT	Moot Court Training	4	0	0	4	0
8.	U18FTBL102	FT	Case Study	3	0	0	3	0
ACTIVITY BASED COURSE								
9.	U18MCBL101	MC	Physical Health – Sports & Games	3	0	0	3	0
			TOTAL	**30**	**14**	**6**	**10**	**20**

FIRST YEAR – II SEMESTER								
S. No.	**Subject Code**	**Category**	**Subject**	**Contact Periods**	**L**	**T**	**P**	**C**
THEORY								
1.	U18LSBL102	LS	English – II	3	2	1	0	3
2.	U18PLBL104	PL	Business Economics	3	2	1	0	3
3.	U18PLBL105	PL	Advanced Accounting	3	2	1	0	3
4.	U18PLBL106	PL	Legal and Constitutional History of India	3	2	1	0	3
5.	U18PCBL103	PC	Law of Contract - II	4	3	1	0	4
6.	U18PCBL104	PC	Law of Crimes	4	3	1	0	4
PRACTICAL								
7.	U18PTBL101	PT	Internship & Practical Training - I	4	0	0	4	2
8.	U18FTBL103	FT	Prison Observation	3	0	0	3	0
ACTIVITY BASED COURSE								
9.	U18MCBL102	MC	Social Service	3	0	0	3	0
			TOTAL	**30**	**14**	**6**	**10**	**22**

SECOND YEAR – III SEMESTER								
S. No.	**Subject Code**	**Category**	**Subject**	**Contact Periods**	**L**	**T**	**P**	**C**
THEORY								
1.	U18PLBL207	PL	Marketing Management	3	2	1	0	3
2.	U18PLBL208	PL	Management Accounting	3	2	1	0	3
3.	U18PLBL209	PL	Financial Management	3	2	1	0	3
4.	U18PCBL205	PC	Constitutional Law – I	4	3	1	0	4
5.	U18PCBL206	PC	Family Law – I	4	3	1	0	4
6.	U18PCBL207	PC	Jurisprudence and Interpretation of Statutes	4	3	1	0	4
PRACTICAL								
7.	U18FTBL204	FT	Mock Trail Training	4	0	0	4	0
8.	U18FTBL205	FT	Legislature Session Observation	3	0	0	3	0
ACTIVITY BASED COURSE								
9.	U18MCBL203	MC	Yoga	2	0	0	2	0
			TOTAL	**30**	**15**	**6**	**9**	**21**

SECOND YEAR – IV SEMESTER								
S. No.	**Subject Code**	**Category**	**Subject**	**Contact Periods**	**L**	**T**	**P**	**C**
THEORY								
1.	U18PLBL210	PL	Organizational Behaviour	3	2	1	0	3
2.	U18PLBL211	PL	Management Information System	3	2	1	0	3
3.	U18PLCL212	PL	Entrepreneurial Development	3	2	1	0	3
4.	U18PCBL208	PC	Constitutional Law – II	4	3	1	0	4
5.	U18PCBL209	PC	Family Law – II	4	3	1	0	4
6.	U18PCBL210	PC	Law of Evidence	4	3	1	0	4
PRACTICAL								
7.	U18PTBL202	PT	Internship & Practical Training - II	4	0	0	4	2
8.	U18FTBL206	FT	Police Station Visit	3	0	0	3	0
ACTIVITY BASED COURSE								
9.	U18MCBL204	MC	Legal Awareness to General Public	3	0	0	3	0
			TOTAL	**31**	**15**	**6**	**10**	**23**

THIRD YEAR – V SEMESTER								
S. No.	**Subject Code**	**Category**	**Subject**	**Contact Periods**	**L**	**T**	**P**	**C**
THEORY								
1.	U18PLBL313	PL	International Business	3	2	1	0	3
2.	U18PLBL314	PL	Logistics and Supply Chain Management	3	2	1	0	3
3.	U18PCBL311	PC	Banking Law Including Negotiable Instruments Act	4	3	1	0	4
4.	U18PCBL312	PC	Property Law	4	3	1	0	4
5.	U18PCBL313	PC	Human Rights	4	3	1	0	4
6.		PE	Elective – I	3	2	1	0	3
PRACTICAL								
7.	U18FTBL307	FT	Legal Aid	4	0	0	4	0
8.	U18FTBL308	FT	Client Counselling	3	0	0	3	0
ACTIVITY BASED COURSE								
9.	U18MCBL305	MC	Mock Crime Scene Investigation	2	0	0	2	0
			TOTAL	**30**	**15**	**6**	**9**	**21**

THIRD YEAR – VI SEMESTER								
S. No.	**Subject Code**	**Category**	**Subject**	**Contact Periods**	**L**	**T**	**P**	**C**
THEORY								
1.	U18PLBL315	PL	Business Strategy & Policy	3	2	1	0	3
2.	U18PLBL316	PL	Human Resources Management	3	2	1	0	3
3.	U18PCBL314	PC	Public International Law	4	3	1	0	4
4.	U18PCBL315	PC	Company Law	4	3	1	0	4
5.		PE	Elective - II	3	2	1	0	3
PRACTICAL								
6.	U18CCBL301	CC	CC-I Moot Court	5	0	1	4	3
7.	U18PTBL303	PT	Internship & Practical Training - III	4	0	0	4	2
8.	U18FTBL309	FT	Registration Department Visit	3	0	0	3	0
ACTIVITY BASED COURSES								
9.	U18MCBL306	MC	Physical Health – NCC	2	0	0	2	0
			TOTAL	**31**	**12**	**5**	**13**	**22**

FOURTH YEAR – VII SEMESTER								
S. No.	**Subject Code**	**Category**	**Subject**	**Contact Periods**	**L**	**T**	**P**	**C**
THEORY								
1.	U18HCBL401	HC	Hons. I Media Law	4	3	1	0	4
2.	U18HCBL402	HC	Hons.II Disaster Management Law	4	3	1	0	4
3.	U18PCBL416	PC	Labour Law – I	4	3	1	0	4
4.	U18PCBL417	PC	Administrative Law	4	3	1	0	4
5.	U18PCBL418	PC	Environmental Law	4	3	1	0	4
PRACTICAL								
6.	U18CCBL402	CC	CC – II Professional Ethics, Accountancy for Lawyers and Bar Bench Relations	4	1	1	2	3
7.	U18FTBL410	FT	Chamber Observations	4	0	0	4	0
ACTIVITY BASED COURSE								
8.	U18MCBL407	MC	Model State Legislature	3	0	0	3	0
			TOTAL	**31**	**16**	**6**	**9**	**23**

FOURTH YEAR – VIII SEMESTER								
S. No.	**Subject Code**	**Category**	**Subject**	**Contact Periods**	**L**	**T**	**P**	**C**
THEORY								
1.	U18HCBL403	HC	Hons.III Land Laws including Tenure & Tenancy System	4	3	1	0	4
2.	U18PCBL419	PC	Labour Law II	4	3	1	0	4
3.	U18PCBL420	PC	Law of Insurance	4	3	1	0	4
4.	U18PCBL421	PC	Law of Taxation	4	3	1	0	4
5.		PE	Elective – III	3	2	1	0	3
PRACTICAL								
6.	U18CCBL403	CC	CC-III Alternate Dispute Resolution	5	1	1	2	3
7.	U18PTBL404	PT	Internship & Practical Training - IV	4	0	0	4	2
ACTIVITY BASED COURSES								
9.	U18MCBL408	MC	Model Parliamentary Debate	2	0	0	2	0
			TOTAL	**30**	**15**	**6**	**8**	**24**

FIFTH YEAR – IX SEMESTER								
S. No.	**Subject Code**	**Category**	**Subject**	**Contact Periods**	**L**	**T**	**P**	**C**
THEORY								
1.	U18HCBL504	HC	Hons. IV Minorities Law	4	3	1	0	4
2.	U18HCBL505	HC	Hons. V Gender Justice and Feminist Jurisprudence	4	3	1	0	4
3.	U18HCBL506	HC	Hons. VI Medical and Health Law	4	3	1	0	4
4.	U18PCBL522	PC	Civil Procedure Code	4	3	1	0	4
5.		PE	Elective – IV	3	2	1	0	3
PRACTICAL								
6.	U18CCBL504	CC	CC-IV Drafting, Pleading and Conveyancing	5	0	1	4	3
7.	U18FTBL511	FT	Court Observations	4	0	0	4	0
ACTIVITY BASED COURSE								
8.	U18MCBL509	MC	Model UNO	2	0	0	2	0
			TOTAL	**30**	**14**	**6**	**10**	**22**

FIFTH YEAR – X SEMESTER								
S. No.	**Subject Code**	**Category**	**Subject**	**Contact Periods**	**L**	**T**	**P**	**C**
THEORY								
1.	U18HCBL507	HC	Hons. VII International Refugee Law	4	3	1	0	4
2.	U18HCBL508	HC	Hons. VIII Cyber Law	4	3	1	0	4
3.	U18PCBL523	PC	Criminal Procedure Code	4	3	1	0	4
4.	U18PCBL524	PC	Securities Law	4	3	1	0	4
5.		PE	Elective – V	3	2	1	0	3
6.		OE	Elective – VI	3	2	1	0	3
PRACTICAL								
7.	U18CCBL505	CC	CC-V Public Interest Lawyering, Legal Aid, Court & Chamber Visits	5	1	0	4	3
8.	U18PTBL505	PT	Internship & Practical Training - V	4	0	0	4	2
			TOTAL	**31**	**17**	**6**	**8**	**27**

First Year - First Semester	*Subject Code: U18LSBL101*	*Subject Credits: 03*

ENGLISH – I

Objective: To develop written and oral communication skills that maximizes the impact of lawyers' credibility and progresses towards mastery of professional diction and style and to develop the basic ability to analyze and advice the legal aspects to various professional audiences.

COURSE OUTLINE

UNIT – I: ENGLISH LANGUAGE AND LINGUISTICS
Tracing the Historical Development of English language –Indo-European Language Tree – Eastern and Western languages Groups- Germanic Groups –Old English-Middle English – Modern English - Vocabulary: Development of Vocabulary in English Languages –Influence of other languages Vocabulary-Etymology-semantics.

UNIT – II: PHONETICS; TRANSCRIPTION EXERCISES
Phonetics: R.P Phonemes-Identification and Classification- Vowels' Diphthongs and Consonants.Transcription Exercises: Accent –Rhythm in connected speech Kinds of Accents Intonation- Falling Tone and Raising Tone

UNIT – III: PROSE SECTION
Advice to a Young Man Interested in Going in to Law - Frank Further, The Language of the Law – Urban A. Lavery, The Five Functions of Lawyer – Arthur T. Vanderbilt, Court Scene – Merchant of Venice- William Shakespeare, Gettysburg Address –Abraham Lincoln.

UNIT – I: GRAMMAR
Parts of Speech -Reported Speech – Voice - Degrees of Comparison - Question Tags -Words often confused- Idioms and phrases -Synonyms and Antonyms.

UNIT – V: LEGAL TERMS
Accomplice, Ad – Idem, Adjournment, Admission, Amicus Curiae, Approver, Acquittal, Bail, Coercion, Consent, Defamation, Defense, Evidence, Ex – parte, Habeas Corpus, Homicide, Malafides, Minor, Negligence, Negotiable Instrument, Plaintiff, Quid pro quo, Resjudicata, Sine – die, Summons, Surety, Trespass, Trial, Ultra – vires, Tort

Books Prescribed:

1. Bhatnagar: Law and Language; Macmillan Publishers India Limited, 2012
2. Glanville Llewelyn Williams: Glanville Williams: Learning the Law; Sweet & Maxwell Thomson Reuters, 16th Edn. (2016)
3. Francis Bacon: Bacon's Essays; J. W. Parker, 3rd Edn. (1857)

Books for Reference:

1. David Green: Contemporary English Grammar Structure and composition; Trinity Press; 2nd Edn. (2015)

2. T. Balasubramanian: A Textbook of English Phonetics for Indian Students; MacMillan Indian Ltd.; (2000)
3. Otto Jesperson: Growth & Structure of English Language; Atlantic Publishers, 2nd Edn., (revised (2015)
4. Xavier Pinto: Shakespeare's merchant of Venice; Beeta Publications, 2nd Edn. (2014)

First Year - First Semester	*Subject Code: U18PLBL101*	*Subject Credits: 03*

PRINCIPLES OF ECONOMICS

Objective: To acquaint the students with the basic study of Economics. To ponder upon the importance of Theory of Consumer Behaviour and the Theory of Demand & Supply. To highlight the concept of Production and Cost Analysis. To describe about the concept of Market Structure.

COURSE OUTLINE

UNIT I: INTRODUCTION TO THE STUDY OF ECONOMICS
Introduction to the Study of Economics – Definition of Economics – Wealth – Welfare – Scarcity. Divisions of Economics – Micro & Macro. Nature and Scope of Economics – Positive and Normative Economics.

UNIT II: THEORY OF CONSUMER BEHAVIOR
Theory of Consumer Behavior – Theory of Utility – Law of Diminishing Marginal Utility – Total Utility – Marginal Utility – Consumer Equilibrium.

UNIT III: THEORY OF DEMAND AND SUPPLY
Theory of Demand and Supply – Definition of Demand – Law of Demand and its Determinants. Elasticity of Demand – Types of Elasticity of Demand. Indifference Curve – Characteristics of Indifference curve.

UNIT IV: PRODUCTION AND COST ANALYSIS
Production – Factors of Production Function – Law of Returns. Cost – Different Types of Cost Conditions.

UNIT V: MARKET STRUCTURE
Market Structure – Price and Output Determination under different Markets – Features of Perfect Competition – Monopoly – Monopolistic Competition – Duopoly – Oligopoly.

Books Prescribed:

1. H L Ahuja: Advanced Micro Economics; Sultan & Chand Publication, Latest Edition, Delhi.
2. M L Jhingan: Micro Economic Theory; Vrinda Publications (P) Ltd, Latest Edition.
3. Karl E. Case and Ray C. Fair: Principles of Economics; Pearson Education, Inc., 8th Edn, 2007.
4. N. Gregory Mankiw: Economics: Principles and Applications; Cengage Learning India Private Limited, 4th Edn, 2007.

Books for Reference:

1. Paul A. Samuelson: Economics; Tata McGraw-Hill Education, 2010
2. Thomas Sowell: Basic Economics; Hachette UK, 2014
3. Roger A. Arnold: Economics; Cengage Learning, 9th Edn. 2008

First Year - First Semester	*Subject Code: U18PLBL102*	*Subject Credits: 03*

PRINCIPLES OF MANAGEMENT

Objective: To gain knowledge about the management functions. To learn the levels of management, understand the concepts of planning, to gain knowledge on centralization and decentralization, staffing and to familiarize on the concepts of direction and control

COURSE OUTLINE

UNIT I: INTRODUCTION
Definition – Nature of Management – Science or Art – Qualities of a Manager – Role of Manager in an Organization – The management process – Difference between Administration and Management – Henry Fayol's Principles of Management.

UNIT II: PLANNING
Definition – Characteristics – Types of Planning – Objectives of Planning – Elements of a good planning – Planning Process – Benefits and Limitations of Planning – Management by Objectives – Process of MBO.

UNIT III: ORGANIZING
Definition – Nature and purpose of organizing – Formal and Informal Organization – Organizational Structure – Types of Organizational Structure – Authority and responsibility – Delegation – Centralization and Decentralization – Job Design.

UNIT IV: STAFFING
Definition – Steps in Staffing Process – Manpower Planning – Recruitment – Selection – Training and Development – Performance Appraisal – Career Development – Objectives – Career Development Techniques.

UNIT V: DIRECTION AND CONTROLLING
Characteristics of Direction – Importance of Direction – Leadership Styles – Communication – Process of Communication – Barrier in Communication – Characteristics of Control – Importance of Control – Control Process.

Books Prescribed:

1. H.L. Ahuja, Business Economics, S.Chand & Co. Ltd, 2016.
2. S. Shankaran, Business Economics, Margham Publications, 2014.
3. P.N. Reddy & H.R. Appanniah, Principles of Business Economics, S.Chand & Co. Ltd, 2003.

Books for Reference:

1. P.L. Mehta, Managerial Economics by Analysis, Problems & Cases, Sultan Chand & Sons.
2. S.K. Agarwal, Business Economics, S.Chand & Co. Ltd, Ca Foundation, 5th Edition, 2018.
3. Francis Cherunilam, Business Environment, Himalaya Publishing House.

First Year - First Semester	*Subject Code: U18PLBL103*	*Subject Credits: 03*

FINANCIAL ACCOUNTING

Objective: Acquaintance with the format of Trading, Profit & Loss Account and the Balance Sheet. Clear insight into the basics of Accounting. The knowledge of the Average due date and depreciation. Familiarity with the procedure of Single entry system.

COURSE OUTLINE

UNIT I - ACCOUNTING CONCEPTS

Meaning and scope of Accounting – Basic Accounting Concepts and Conventions – Objectives Of Accounting – Accounting Transactions – Journal, Ledger and Preparation of Trial Balance.

UNIT II - FINAL ACCOUNTS

Preparation of Final Accounts of a Sole Trading Concern – Adjustments – Closing Stock, Outstanding and Prepaid Items – Depreciation, Provision of Bad Debts – Provision for Discount on Debtors – Interest on Capital and Drawing.

UNIT III – AVERAGE DUE DATE-ACCOUNT CURRENT

Bill of Exchange – Average Due Date – Account Current.

UNIT IV - DEPRECIATION

Depreciation – Meaning, Causes, Types – Straight Line Method – Written Down Value Method (Change in Method Excluded). Insurance Claims – Average Clauses.

UINT V - SINGLE ENTRY SYSTEM

Single Entry System – Meaning, Features, Defects – Differences Between Single Entry and Double Entry System – Statement of Affairs Method – Conversion Method (Only Simple Problems).

(Theory 25% Problems 75%)

Books Prescribed:

1. Reddy T.S. & Murthy A.; Financial Accounting - Margham Publication, Chennai, 2013.
2. Jain & Narang; Financial Accounting, Kalyani Publications, New Delhi, 2013.

Books for References:

1. Gupta R.L. & Gupta V.K.; Advanced Accounting- Sultan Chand Publication,New Delhi, 2011.
2. Jawahar Lal, Seema; Financial accounting, S. Chand & Company Publication, New Delhi, 2012.

First Year - First Semester	*Subject Code: U18PCBL101*	*Subject Credits: 04*

LAW OF CONTRACT – I

Objective: The Indian Contract Act occupies the most important place in the Commercial Law. The objective of the Contract Act is to ensure rights and that the obligations arising out of a contract are honored and that legal remedies are made available to those who are affected.

COURSE OUTLINE

UNIT – I: BASIC NATURE OF CONTRACT

Indian Contract Act, 1872 - Formation of Contract - Objects of a contract – Essentials of valid contact - Offer - Acceptance - Revocation - lapse of offer and acceptance - Intention to create legal relationship -Terms of contract and Standard form of contracts.

UNIT – II: CONSIDERATION

Past, Present and Future consideration - Value and adequacy of consideration - Rule in Pinnel's case - Exceptions to consideration - Capacity to contract- Free consent - Factors which vitiate free consent - unlawful and illegal objects or considerations - valid, voidable and void agreements.

UNIT III: PERFORMANCE OF THE CONTRACT

Privity of contract - time as essence to performance - place and order of performance - Performance of reciprocal promises - Wagering agreement - contingent contracts - joint promises - appropriation of payments.

UNIT IV: DISCHARGE OF CONTRACTS

By impossibility of performance - Discharge by Agreement - Frustration - Novation Recession - Alteration- Discharge by breach -Waiver - Accord and Satisfaction- Material alteration - Damages - types and Measures.

UNIT V: QUASI CONTRACTS

Quantum Meruit - Specific Relief Act 1963 - Recovery of possession - Specific Performance of contracts - Rectification - Cancellation of instruments - Rescission – declaratory decrees - Injunctions.

Statutory Material

1. Indian Contract Act 1872
2. Specific Relief Act 1963

Books Prescribed:

1. Avatar Singh; Contract and Specific Relief Act; Eastern Book Company; 16th Edn. (2010)
2. Dr.S.K. Kapoor; Contract and Specific Relief Act; Central Law Agency; 14th Edn., (2015)
3. Dr. Kailash Rai; Contract and Specific Relief Act; Central Law Agency; 14th Edn., (2014)
4. Prof. G.C.V. Subba Rao's; Law of Contracts; Narender Gogia & Vompany; 11th Edn.; Updated (2015)
5. Dr. R.K. Bangia; Contarct 1; Allahabad Law Agency; Reprint. (2016)
6. R.L. Meena; Textbook on law of Contract; Universal Law Publishing Co. Pvt. Ltd.; Edn. (2008)

Books for Reference:

1. V. Kesava Rao; Contract Cases ad materials; Lexis Nexis; @nd Edn.(2014)
2. Sir Dinshaw Fardunji Mulla; the Inidan Contract Act; Lexis Nexis; 15th Edn. (2016)
3. Nilima Bhadbhade; Contract Law in India; Kluwer Law International; 3rd Edn. (2016)
4. Charles Mitchell & Paul Mitchell; Landmark cases in the Law of Contarct; Hart Publishing; 2008

First Year - First Semester	*Subject Code: U18PCBL102*	*Subject Credits: 04*

LAW OF TORTS

Objective: This paper is to make students understand the common law and its evolution and the Law of Torts is a fundamental common law with established cases.

COURSE OUTLINE

UNIT-I: INTRODUCTION

Origin and Development of Torts - Definition of Tort - Distinction between Tort and Crime, Tort and Contract, Tort and Breach of Trust – Constituents of Tort*: injuria sine damnum, damnum sine injuria*

UNIT-II: GENERAL DEFENCES

volenti non-fit injuria - Necessity - Plaintiff's default - Act of God - Inevitable accidents – Private Defence – Mistake – Statutory Authority

UNIT – III: SPECIFIC TORTS

Negligence -Essentials of negligence - Standard of care - duty to take care - breach of duty - Doctrine of Contributory Negligence - Damages - *Res Ipsa Loquitur* - Medical and professional negligence – Nuisance – Nervous Shock

UNIT-IV: TORTS AGAINST HUMAN BEING AND PROPERTY

Assault – Battery – Distress – Malicious – False Imprisonment and Malicious Prosecution – Conspiracy – Defamation – Libel and Slander – Trespass to Land – To Goods

UNIT-V: LIABILITY

Vicarious Liability – Doctrine of Sovereign Immunity - No Fault Liability – Strict Liability – Absolute Liability

Books Prescribed:

1. Ratanlal & Dhirajlal: The Law of Torts; Lexis Nexis, 26thEdition (2013)
2. R.K.Bangia: Law of Torts; Allahabad Law Agency, 2017
3. Dr. N.V. Pranjape: Law of Torts Consumer Protection Law and Compensation under other Statutory Law; Central Law Agency, 3rd Edition (2015)
4. P.S.A. Pillai: Law of Torts; Eastern Book Company, 9th Edition (2004)
5. B.M. Gandhi: Law of Torts; Eastern Book Company, 4th Edition (2011)
6. Avtar Singh and Harpreet Kaur: Introduction to the Law of Torts & Consumer Protection; Lexis Nexis, 3rd Edition (2013)
7. M.N. Shukla : The Law of Torts; Central Law Agency, 20th Edition (2013)
8. S.K. Kapoor: Law of Torts and Consumer Protection Act; Central Law Agency, 9th Edition (2015)

Books for References:

1. Ramaswamy Iyer: The Law of Torts, Lexis Nexis, 10th Edition (2007)
2. Winfield: Law of Tort; Sweet & Maxwell, 18th Edition (2010)
3. Salmond: Law of Tort: Sweet & Maxwell, 21st Edition (1996)

First Year - Second Semester	*Subject Code: U18LSBL102*	*Subject Credits: 03*

ENGLISH – II

Objective: Aims to improve language skills (LSRW) within a legal context and to learn read and understand legal text such as articles and case briefs and to develop efficient and effective skills on language.

COURSE OUTLINE

UNIT – I: COMMUNICATION:
Definition – Methods – Types – Principles of Effective Communication – Barriers to Communication – Relevance and Importance of Business Communication – E-Communication Four Skills of Language Acquisition – Understanding Spoken Language – Speaking – Written Language – Writing.

UNIT – II: LETTER CORRESPONDENCE:
Business Letters – Layout –Acknowledgement – E-mail writing – Complaint Drafting – Precise Writing & Summarizing

UNIT – III: PROSE SECTION – LEARNING THE LAW BY GLANVILLE WILLIAMS:
The Division of Law – Methods of Study – Case Law Techniques – In the Examination Room – Moots and Mock Trials.

UNIT – IV: LEGAL WRITING SKILLS:
Report Writing – Agenda - Minutes of Meeting – Dialogue Writing – Note Making – Advertisement making

UNIT – V: LEGAL MAXIMS:
Actus non – facit reum nisi mens sit rea - Actio personalis moritur cum persona - Audi Alterm partem - Communis error facit jus- Delegatus non potest delegare - Ex nudo pacto non oritur action - Ex turpi causa non oritur action - In pari delicto potier est conditio defendantis - Falsus in uno falsus in omnibus - Generalia specialibus non derogant - Ignorantia facti excusat, ignorantia juris non excusat - In jure non remota causa, sed proxima spectator - Qui facit per alium facit per se - Respondeat superior - Res ipsa loquitur - Sic utere tuo ut alienum non laedas - Ubi jus remedium - Volenti non ibi remedium - Salus populi suprema lex - Novus actus interveniens - Rex non potest peccare - Vigilantibus non dorminetibus, jura subvenient

Books Prescribed:

1. Rajendra Pal, Korlahalli. J. S.: Essentials of Business Communication; Sultan Chand & Sons, 1st Edn. 2011
2. Shirley Taylor: Communication for Business: A Practical Approach; Longman, 1999, 3rd Edn. (1999)
3. Courtland L. Bovée, John V. Thill, Barbara E. Schatzman: Business Communication Today; Prentice Hall, 7th Edn. 2003

Books for Reference:

1. John M. Penrose, Robert W. Rasberry, Robert J. Myers: Advanced Business Communication; South-Western College Pub., 3rd Edn. 1997
2. Simon Collin: Doing Business on the Internet: Kogan Page, illustrated, reprint (1999)
3. Mary Ellen Guffey & Dana Loewy: Business Communication Process & Product; South- Western Cengage Learning, 7th Edn. (2008)

First Year - Second Semester	*Subject Code: U18PLBL104*	*Subject Credits: 03*

BUSINESS ECONOMICS

Objective: To acquaint the students with the basic of Business Economics. To ponder upon the Pricing Policy and Methods. To highlight the concept of Economic Fluctuations. To describe about the National income concepts and the Measurement of national income. To Bring out the Theories of Rent, Wages and Interest.

COURSE OUTLINE

UNIT I: INTRODUCTION TO THE STUDY OF BUSINESS ECONOMICS
Introduction to Business Economics – Meaning – Objectives – Natue and Scope of Business Economics – Responsibilities of Business Economics – Basic concepts of Economics.

UNIT II: PRICING POLICY AND METHODS
Formulation of Pricing policies – General Considerations – Factors affecting Price Policy – Role of Cost in Pricing – Demand factor in Pricing – Consumer Psychology – Pricing Practices – Pricing Methods – Break Even Analysis.

UNIT III: ECONOMIC FLUCTUATIONS
Economic fluctuations and business – Business Cycle: Phases of Trade Cycle, Depression, Recovery, Boom, Crisis, Slump, Recession – Business Policy – Inflation and Deflation with reference to India.

UNIT IV: NATIONAL INCOME
Meaning – Definitions – Elements of National Income – Measurement of National Income – National Income Concepts – Methods of Calculating National Income – Uses of National Income Estimates.

UNIT V: THEORIES OF RENT, WAGES AND INTEREST
Meaning of Rent – Recardian Theory of Rent – Quasi Rent – Real Wages – Money Wages – Marginal Productivity Theory – Meaning of Interest – Classical Theory of Interest – Liquidity Preference Theory of Interest.

Books Prescribed:

4. H.L. Ahuja, Business Economics, S.Chand & Co. Ltd, 2016.
5. S. Shankaran, Business Economics, Margham Publications, 2014.
6. P.N. Reddy & H.R. Appanniah, Principles of Business Economics, S.Chand & Co. Ltd, 2003.

Books for Reference:

4. P.L. Mehta, Managerial Economics by Analysis, Problems & Cases, Sultan Chand & Sons.
5. S.K. Agarwal, Business Economics, S.Chand & Co. Ltd, Ca Foundation, 5th Edition, 2018.
6. Francis Cherunilam, Business Environment, Himalaya Publishing House.

First Year - Second Semester	*Subject Code: U18PLBL105*	*Subject Credits: 03*

ADVANCED ACCOUNTING

Objective: Acquaintance with the format of Branch Account. Clear insight into the basics of department Accounting. The knowledge of hire purchase and familiarity with the procedure for preparing partnership, admission, retirement of partner and death of partner.

COURSE OUTLINE

UNIT I - BRANCH ACCOUNTING

Branch Accounting – Meaning – Objectives - Types of Branches – Accounting Treatment – Debtors System - Stock and Debtors System-Distinction between Wholesale Profit and Retail Profit -Independent Branch (foreign branches excluded)

UNIT II - DEPARTMENT ACCOUNTING

Departmental Accounting – Basis for Allocation of Expenses – Inter Departmental Transfer at Cost or Selling Price.

UNIT III - HIRE PURCHASE

Hire Purchase – Accounting Treatment – Calculation of Interest – Default, Partial Repossession – Complete Repossession – Installment System (simple problems)

UNIT IV - PARTNERSHIP

Partnership – Definition – Capital Accounts of Partners – Profit Sharing Ratios – Treatment of Goodwill – Admission of a Partner – Retirement of a Partner – Death of a Partner.

UNIT V - DISSOLUTION

Dissolution of a Partnership – Insolvency of a Partner (Application of Indian Partnership Act 1932) Insolvency of all Partners – Garner Vs Murray – Gradual Realization of Assets and Piecemeal Distribution.

Theory 25% Problem: 75%

Books Prescribed:

1. Reddy T.S. & Murthy A. (2013): "Financial Accounting"- Margham Publication, Chennai.
2. Jain & Narang (2012): "Financial Accounting", Kalyani Publications, New Delhi.

Books for Reference:

1. Gupta R.L. & Gupta V.K., (2008): "Advanced Accounting"- Sultan Chand Publication - New Delhi.
2. Jawahar Lal, Seema, "Financial accounting", S. Chand & Company Publication, New Delhi.
3. Shulka & Grewal (2010): "Advanced Accounting"- S Chand Publication – New Delhi.

First Year - Second Semester	*Subject Code: U18PLBL106*	*Subject Credits: 03*

LEGAL AND CONSTITUTIONAL HISTORY OF INDIA

Objective: This Course is to enlighten the students about the development of the Legal and Constitutional History of India during the ancient, medieval, modern period and contemporary periods.

COURSE OUTLINE

UNIT I: JUDICIAL SYSTEM IN ANCIENT INDIA

Judicial System during the ancient Hindu period – Dharmashastra – Administration of Justice – Constitution of Courts – Crimes and Punishments.

UNIT II: JUDICIAL SYSTEM IN MEDIEVAL INDIA

Judicial System during medieval Muslim period – Delhi Sultanate – Courts – Justice System under the Sultans – The Mughal period – Administration of Justice under the Mughals.

UNIT III:JUDICIAL ADMINISTRATION IN PRESIDENCY TOWNS

Establishment of English East Indian Company [Charter of 1600] – Administration of Justice in Madras, Bombay and Calcutta Presidencies – Charter of 1726 – Charter of 1753.

UNIT IV: JUDICIAL SYSTEM IN BRITISH INDIA

Adalat System in Bengal – Warren Hastings Plan of 1772 – The Regulating Act 1773 – Supreme Court of Calcutta 1774 – Landmark Cases – Judicial Reforms of Cornwallis 1793 – Indian High Courts Act 1861, 1911 – Government of India Act 1935 and Judicial reforms – The Privy Council – Supreme Court of India.

UNIT V: CONSTITUTIONAL HISTORY OF INDIA

Constitutional History of India – Early Charters of 1600, 1661 - The Regulating Act 1773 – Act of Settlement 1781 – Pitts India Act 1784 – Government of India Act 1857 – Queen Victoria's Proclamation - Indian Councils Act [Minto-Morley Reforms] 1909 – Government of India Act [Montague-Chelmsford Reforms] 1919 - Government of India Act 1935 – Constitutional Developments between 1937 to 1947 – Indian Independence Act 1947 - The Constituent Assembly – Constitution of India – Dr. B.R. Ambedkar's Role in the drafting of the Constitution – Salient Features of the Constitution – The Constitutional Manifesto

Books Prescribed:

1. Kulshreshtha V.D: Landmarks in Indian Legal and Constitutional History, Western Book Company, 11th Edition (2006).
2. M.P. Jain: Legal and Constitutional History of India, Lexis Nexis Publication, 7th Edition (2006)

3. Dr. N.V. Parajape: Indian Legal and Constitutional History, Central Law Agency (2014)
4. Justice M. Rama Jois: Legal and Constitutional History of India, Universal Law Publishing Co Ltd, (2014)
5. Kailash Rai: Indian Legal & Constitutional History, Allahabad Law Agency; 5th Edition (2016)

Books for References:

1. Bipin Chandra: India since Independence, Penguin Random Publication, Revised Edition (2017)
2. Muhammad Basheer Ahmed: The Administration of Justice In Medieval India. A Study in outline of the Judicial System under the Sultans and Badshahs of Delhi based mainly upon cases decided by Medieval Courts in India between 1206-1705 A.D.; Cosmo Publications (2015)
3. Gokulesh Sharma: Ancient Judicial System of India; Deep & Deep Publications (2008)
4. Raja Rammohun Roy: Exposition of the Practical Operation of the Judicial and Revenue Systems of India; Wentworth Press (2016)

First Year - Second Semester	*Subject Code: U18PCBL103*	*Subject Credits: 04*

LAW OF CONTRACT - II

Objective: This paper is a broader speculative about law of contracts with the addition of Sale of Goods Act for the wider knowledge of the students.

COURSE OUTLINE

UNIT – I: INDEMNITY AND GUARANTEE

Indemnity - Definition - Rights of the Indemnity Holder - Rights of the Indemnifier – Guarantee - Essentials and nature of Guarantee – Continuing Guarantee - Surety's Liability - Kinds of Guarantee - Discharge of Surety - Distinction between Indemnity and Guarantee.

UNIT – II: BAILMENT

Definition - Indian and English Definitions - Essentials of Bailment and classification - Distinction between Bailment and Pledge – Rights and Duties of Bailor and Bailee - Pledge - Definition - Rights of the Pawnor and Pawnee - Lien - Finder of Lost Goods

UNIT – III: AGENCY

Definition of Contract of Agency - Creation of Agency - Kinds of Agency - Distinction between Agent and Servant and Independent Contractor - Who may be an Agent - Kinds of Agent - Different Kinds of Agent - Authority of Agent - Delegation of Authority - Delegates Non Protest Delegare - Sub Agent - Substituted Agent- Essential of Ratification - Effect of Notice to Agent - Necessary Conditions to Bind Principal and Third Parties - Doctrine of Undisclosed Principal and Concealed Principal - Termination of Agency.

UNIT – IV: SALES OF GOODS ACT, 1930

Distinction between Sale and Agreement to sell - Hire Purchase Agreement - Definition - Goods - Specific Goods - Future Goods - Documents of Title of Goods - Conditions and Warranties - Effect of Breach - When condition is treated as Warranty - Implied Conditions and Warranties - Unpaid Vendor - His rights or Lien and Stoppage in Transit - Remedies available to Seller and Buyer.

UNIT – V: PARTNERSHIP

Distinction between Partnership and co-ownership Joint Hindu Family - Kinds of Partners and Duration of Partnership - Mutual Rights and Duties of Partners - Minor as a Partner - Difference in English Law - Rights of Legal Representative and Surviving Partners - Authority of Partner - Liability of the Partner of the Acts of the Firm and for the Wrongful Acts of other partner - Nature of Liability - Goodwill - Retirement of Partners - Dissolution of Firm - Effect of Non-registration of firm.

Statutory Material

1. Indian Contract Act, 1972
2. Sales of Goods Act,1930
3. Indian Partnership Act,1932

Books Prescribed:

1. Dr. S.K. Kapoor; Contact – II along with Sale of Goods Acs and the Partnership Act; Central Law Agency; 14th Edn. (2014)
2. Prof. G.C.V. Subba Rao's; Law of Contract; Central Law Publication; 11th Edn. (2015)
3. R. K. Bangia; Indian Contact Act; Allahabd Law Agency; 14th Edn. (2009)

Books for Reference:

1. Akhileshwar Pathak; Lae Relating to Special Contracts; Lexis Nexis; 1st Edn. (2014)
2. Velandai Gopalayyar; The Law of Contract in India; Eastern Book Company; 1970
3. Smith & Thomas; a Casebook on Contract; Sweets and Maxwell; 11th Edn. (2000)
4. Chechire, Fifoot & Furmston's; Law of Contract; Oxford University Press; 14th Edn. 2007

First Year - Second Semester	*Subject Code: U18PCBL104*	*Subject Credits: 04*

LAW OF CRIMES

Objective: The criminal justice system is essentially an instrument of social control. Society considers some behaviours so dangerous and destructive that it either strictly controls their occurrence or outlaws them outright. This paper aims to provide a vast knowledge about various crimes, its ingredients and punishments and to equip the students with practical legal knowledge.

COURSE OUTLINE

UNIT – I: NATURE AND SCOPE OF CRIMINAL LAW

History of Indian Penal Code, 1860 – Essentials of Crime - *actus reus* and *mens rea*- Theories of Punishment- Justification of Punishment – General Defences – Excusable Defences – JustifibaleDefences – Private Defence – Joint and Constructive Liability – Abetment – Conspiracy – Attempt – Corporate Liability – Jurisdiction – Territorial – Extra Territorial – Personal and Admiralty

UNIT – II: GENERAL OFFENCES

Offences against State - Offences against the public tranquility - Offences relating to election - Offences relating to Religion - Contempt of lawful authority and public servants - False evidence and offences against public trust - Offences relating to coins and Government Stamps - Offences relating to weights and measures.

UNIT – III: OFFENCES AGAINST HUMAN BODY

Offences affecting human life - Causing miscarriage - Injuries to unborn children - Exposure of infants - Concealment of birth – Hurt -grievous hurt - Wrongful restraint - Wrong confinement - Criminal force and Assault - Kidnapping, Abduction - Slavery and forced labour - Rape: custodial rape - marital rape - Prevention of immoral traffic - Prohibition of indecent representation of women - Unnatural offences.

UNIT – IV: OFFENCES AGAINST PROPERTY

Criminal Misappropriation of property- Criminal breach of trust - Receiving of stolen property - Cheating - Fraudulent deeds and disposition of property.

UNIT –V: OFFENCES RELATING TO MARRIAGE AND REPUTATION

Offences relating to marriage - Bigamy - Adultery - Marital Rape - Defamation - Criminal intimidation and annoyance and attempt to commit such offences.

Statutory Materials

1. Indian Penal Code, 1860.
2. The Criminal Law (Amendment) Act, 2013.

Books Prescribed

1. J.W. Cecil Turner, Kennys: Outlines of Criminal Law; Cambridge University Press, 18th Edition, (2013)
2. Ratanlal & Dhirajlal: The Indian Penal Code; Lexis Nexis, 35th Edition (2017)
3. K.D. Gaur: Indian Penal Code; Lexis Nexis, 6th Edition (2016).
4. P. Atchuthan Pillai: Criminal Law; Lexis Nexis, 13th Edition (2017).
5. B.M. Gandhi, K.A.Panday: Indian Penal Code; Eastern Book Co., 4th Edition (2015)

Books for Reference

1. Dennis Baker: Glanville Williams Textbook of Criminal Law; Sweet Maxwell, 4th Edition (2015).
2. Russell: Criminal Law; Sage Publications, 1st Edition (2015).
3. Ejaz Ahmed: Law of Crimes; Rajasthan Law House, 3rd Edition (1987).
4. Ram Chandra Nigam: Law of Crimes in India (Volume 1); Asia Publishing House, 1st Edition (1965).
5. Dr.H.S. Gour: Penal Law of India; Law Publishers, 7th Edition (1961).
6. V.V. Raghavan: Law of Crimes; Orient Law House, 3rd Edition (1984).

First Year - Second Semester	*Subject Code: U18PTBL101*	*Subject Credits: 02*

INTERNSHIP AND PRACTICAL TRAINING – I

Objective: The internship programmes are designed to acquaint the student with the actual practice of law by working under the supervision of legal luminaries. The student gains experience of applying theoretical knowledge from prior classroom training, when exposed to practical environment.

COURSE OUTLINE

During the summer vacation the students should compulsorily undergo Internship for a continuous period of 4 weeks and submit an internship report along with ainternship certificate. This will be evaluated by the Internship Faculty Guide.

The student may choose to intern under any one the following category:

- Trial Advocate
- Appellate Advocate
- Law Firms
- Non-Governmental Organization
- Police Stations
- Banks
- Non Banking Financial Institutions
- Companies
- Registration Department
- Judiciary
- Legal Regulatory Authorities
- Legislatures
- Market Institutions
- Local Self-Government
- Other Legal Functionaries
- Dispute resolution Bodies
- Legal Services Authority

On completion of successful internship training every student will be awarded 2 credits

Second Year - Third Semester	*Subject Code: U18PLBL207*	*Subject Credits: 03*

MARKETING MANAGEMENT

Objective: To understand the concept of marketing with selling. To highlight the concept of marketing mix. To familiarize with Market Segmentation, Targeting and Positioning. To gain knowledge on Product related decisions, pricing decisions and physical distribution. To understand the concept of marketing communication.

COURSE OUTLINE

UNIT – I: MARKETING – AN OVERVIEW
Meaning and Definition of Marketing – Marketing Entities – Importance of Marketing – Functions of Marketing – Difference between Marketing and Selling – Various Environmental factors affecting the marketing functions.

UNIT – II: CONSUMER BEHAVIOUR, MARKETING MIX & STP APPROACH
Consumer Behavior – Factors influencing Consumer Behavior – Marketing Concepts – Marketing Mix – Market segmentation – Targeting – positioning.

UNIT – III: PRODUCT RELATED DECISIONS
Product – Characteristics – Classifications – Consumer goods and Industrial goods – New Product Development process – Product Life Cycle – Branding – Packaging.

UNIT – IV: PRICING DECISIONS & PHYSICAL DISTRIBUTION
Pricing – Factors influencing pricing decisions – Pricing Objectives – Pricing Strategies. Physical Distribution: Importance – Components – Types of Marketing Channels – Distribution Problems.

UNIT – V: MARKETING COMMUNICATION
Advertising – Publicity – Public Relations – Importance & Types – Methods of Sales Promotion – Personal Selling – Direct Selling.

Books Prescribed:

1. Philip Kotler, Kevin Lane Keller: Marketing Management; Prentice Hall of India Private Limited, New Delhi, Latest Edition.
2. Rajan Saxena: Marketing Management; Tata Mcgraw Hill, 2009.
3. Dr.Nirmala Prasad & Sherlekar: Marketing Management; Himalaya Publishing House, Latest Edition.
4. J. C Gandhi: Marketing Management; Tata McGraw Hill, 2010.

Books for Reference:

1. RamasamyNamakumari: Marketing Management; Macmillan Company, 2012.
2. P.K.Agarwal: Marketing Management, Pragati Prakashan Publication, 2012.
3. McCarthy, E.J., Basic Marketing: A managerial approach, Irwin, New York

Second Year - Third Semester	*Subject Code: U18PLBL208*	*Subject Credits: 03*

MANAGEMENT ACCOUNTING

Objective: Acquaintance with the format of Management Accounting. Familiarity with the procedure for preparing Comparative and Common Size Statements. Clear insight into the basics of Ratio Analysis and Fund Flow Analysis. The knowledge of budget and budgetary control and marginal costing.

COURSE OUTLINE

UNIT I - MANAGEMENT ACCOUNTING

Management Accounting – Meaning, objectives, functions – Advantages and limitations – Differences between Financial accounting and management accounting – Financial statement analysis – Various kinds of Techniques – Comparative and Common Size Statements – Trend Analysis.

UNIT II - RATIO ANALYSIS

Ratio analysis – Meaning, significance, advantages and limitations of Ratio analysis – Classification of accounting ratios – Basic purposes of various ratios – Liquidity, Solvency, Turnover and Profitability ratios – Computation of ratios.

UNIT III - FUND FLOW ANALYSIS

Fund Flow Analysis – Meaning - Concept of fund – Sources and uses of funds – Fund flow statement – Uses of fund flow statement – Cash Flow Analysis – Meaning – Preparation of Cash Flow Statement – Objectives and limitations of cash flow statement – Differences between fund flow statement and cash flow statement.

UNIT IV - BUDGET AND BUDGETARY CONTROL

Budget and Budgetary control – Meaning, objectives, Advantages and limitations of budgetary control – Functional budget – Flexible Budget (Simple problems only).

UNIT V - MARGINAL COSTING

Marginal Costing – Meaning, Definition – Difference between Absorption Costing and Marginal Costing – CVP Analysis – BEP Analysis – Break Even Chart.

Note: Theory – 40%, Problems – 60%

Books Prescribed:

1. S.N. Maheswari; Management Accounting, Sultan Chand, New Delhi, (2012)
2. T.S. Reddy and Hari Prasad Reddy, Management Accounting, Margham Publications, Chennai, (2013)
3. S.P. Gupta; Management Accounting, Sultan Chand, New Delhi, (2011).

Books for Reference:

1. S. N. Maheshwari; Principles of Management Accounting, S. Chand, 1982
2. Manmohan Prasad & Kamini Sinha; Principles of Management Accounting, Motilal Banarsidass Publisher.
3. Reddy T.S.; &Hariprasad Reddy. Y.; Management Accounting, Margham Publication.

Second Year - Third Semester	*Subject Code: U18PLBL209*	*Subject Credits: 03*

FINANCIAL MANAGEMENT

Objective: To educate the students on the basics of finance and to depict the overriding importance of Financial Management in an Organization. To narrate the changing roles and responsibilities of Modern Finance Manager. To Focus on the Various Financial Decisions. To distinguish between Wealth Maximization and Profit Maximization

COURSE OUTLINE

UNIT I – An Overview of Financial Management
Finance – Definition, Sources of Finance, Short and long term Finance - Financial Management - Meaning, Definition, Scope, Objectives and Importance - Financial Manager – Role & Functions in Financial Management - Profit Maximization versus Wealth Maximization

UNIT II – Time Value of Money and Capital Budgeting
Time Value of Money – Meaning, Compounding technique, Present Value technique – Capital Budgeting – Objectives, Need and Significance – Factors influencing Capital Budgeting decisions – Evaluation of Capital Budgeting Proposal – Pay Back period method & Net Present Value Method

UNIT III – Cost of Capital and Leverages
Cost of Capital – Meaning, Definition, Components of cost of Capital, Importance of Cost of Capital – Types of Cost of Capital – Computation of Cost of Capital – Leverages – Meaning, Types – Operating, Financial and Combined Leverage

UNIT IV – Financial Planning, Capital Structure and Dividend Policy
Financial Planning – Definition, Scope, Objectives, Characteristics and Significance – Factors Affecting Financial Planning – Essentials of a Sound Financial Plan – Difference Between Fixed and Working Capital – Capitalization – Over Capitalization, Under Capitalizations and its effects - Capital Structure - Difference between Capital Structure and Capitalization - Factors affecting Capital Structures – Optimum capital structure – Theories of Capital Structures – Dividends and types - Dividend Policies – Factors affecting Dividend Policy

UNIT V – Working Capital Management and Inventory Management
Working Capital – Components of Working Capital – Working Capital Operating Cycle – Factors influencing Working Capital – Determining (or) Forecasting of Working Capital requirements – Inventory Management – Meaning and Objective – Purpose and Benefits of Holding Inventory – Economic order quantity

Books Prescribed

1. Dr. A. Murthy: Financial Management; Margam Publications, (2016)
2. S.N. Mageshwari: Financial Management: Sultan Chand & Sons, (2012)
3. I.M. Pandey: Finacial Management; Vikas Publishing (2014)

Books for References

1. Prasanna Chandra: Finacial Management – Theory and Practice; Tata Mcgraw Hill, 9th Edition, (2015)
2. Rajiv Srivastava & Anil Misra: Financial Management: Oxford University Press; 4th Edition (2009)
3. Y.Khan& Jain: Finacial Management; Tata Mcgraw Hill, 5th Edition, (2012)

Second Year - Third Semester	*Subject Code: U18PCBL205*	*Subject Credits: 04*

CONSTITUTIONAL LAW – I

Objective: Our Constitution is not just a mere set of fundamental laws that form the basis of governance of our country but it embodies and reflects certain basic values, philosophy and objectives. This paper provides a broader perspective for the students about the law of the land and explains the most vital features of a citizen in this country

COURSE OUTLINE

UNIT – I: CLASSIFICATION OF CONSTITUTION AND GOVERNMENTS

Definition and Meaning of Constitution - Kinds of Constitution - Meaning of Constitutionalism – Features of Indian constitution - Parliamentary Supremacy - Theory of Separation of Powers - Doctrine of Checks and Balances - Doctrine of Judicial Review.

UNIT – II: PREAMBLE, UNION AND ITS TERRITORIES AND CITIZENSHIP

Preamble - Meaning - Scope and Importance - Objectives and Values - Union and its Territories – Citizenship - Citizenship at the commencement of the Constitution - Deprivation and Renunciation of the Citizenship – Parliament's Power to regulate Citizenship Act.

UNIT – III: STATE

Definition and Meaning - Article 12 - Article 13 - Constitutional and Post Constitutional Laws - Various Doctrines - Eclipse - Severability – Colourable legislation – Waiver - Judicial Preview under Article 13.

UNIT – IV: FUNDAMENTAL RIGHTS

Rights to Equality: General Equality clause under Article 14 - Judicial Interpretation on Equality - Reasonable Classification - Protective Discrimination Clause - Preservation and Social Justice under Articles 15 – 18 - Rights to Freedom: Freedom of Speech and Expression - Art 19 - Scope and Ambit and 19(1) (a) and (2) - Balance between individual interest and collective interest reasonable restrictions

Rights of the Accused: Article 20 - Ex-post Facto Law - Double Jeopardy - Self-incrimination Art 21 - Judicial Interpretation on Life and Personal Liberty - Article 22 - Preventive Detention - Rights against Preventive Detention - Exceptions – Safeguards against preventive detention.

Freedom of Religion: Articles 25-28 - Secularism - Judicial Interpretation - Restrictions on Freedom of Religion.

Cultural and Educational Rights: Articles 29-30 - Protection for Minorities – Recent trends on Minority Educational Institutions.

Rights to Constitutional Remedies: Article 32 and 226 - Writ Jurisdiction

UNIT – V: DIRECTIVE PRINCIPLES OF STATE POLICY AND FUNDAMENTAL DUTIES

Directive Principles and Directions for Social Change - Social and Economic Charter -Social Security Charter - Community Welfare Charter - Fundamental duties - Nexus between Fundamental Rights and DPSP

Statutory Materials

The constitution of India Bare act with Short comments; Professional Book Publishers (2018)

Books Prescribed

1. V.N. Shukla; Constitution of India; Eastern Book Company;13th Edition; reprint (2019)
2. M.P .Jain; Indian constitutional law; Lexis Nexis; 8th Edition (2018)
3. Dr. J. N. Pandey; Constitutional Law of India; Central Law Agency, Allhabad;51st Edition (2014)

Books for Reference

1. D. D. Basu; Shorter Constitution of India; Lexis Nexis; 15th Edition (2017)
2. M. P. Singh; Constitution of Indi; Eastern Book Company; 12th Edition (2016)
3. H. M. Seervai; Constitutional Law of India; Universal Law Publishing;4th Edition (2015)

Second Year - Third Semester	*Subject Code: U18PCBL206*	*Subject Credits: 04*

FAMILY LAW – I

Objective: Every natural and legal person is assigned a personal law defining his or her status and capacity. The connecting factors determining one's personal law vary from one legal system to another. This paper gives a detailed summary about all personal laws and its governance and also will give the students and insight about personal laws.

COURSE OUTLINE

UNIT – I: SOURCES AND SCHOOLS OF PERSONAL LAWS

Application of various personal laws -Traditional and modern sources of Hindu law and Muslim law - Schools of Hindu law and Muslim law - Origin of the school - Main schools and Sub-schools - Effect of migration.

UNIT – II: LAW ON MARRIAGE

Nature of marriage - Various forms of marriage and requirements for a valid marriage on a comparative analysis - Void, voidable and valid marriage in different religious texts and statutes - Law and issues on marriage under the special marriages act - Unisex marriage and question on living together - The demand of dowry and the concept of dower under the relevant personal law - Ceremonies of marriage under various religious system.

UNIT – III: LAW ON DIVORCE AND MAINTENANCE

Restitution of conjugal rights - Judicial separation - Nullity of marriage and Divorce - Law of divorce under various personal laws - Divorce in camera proceedings - Decree on proceedings maintenance under Hindu, Muslim and Christian laws - Permanent alimony -Maintenance under code of criminal procedure - Jurisdiction of family court act.

UNIT – IV: LAW ON LEGITIMACY OF CHILDREN AND ADOPTION

Legitimacy of children born of void and voidable marriages - Their rights and legal issues - Adoption in different religious groups - Requisites and Conditions - Procedure of adoption Effect of adoption - Inter country adoption.

UNIT – V: LAW OF MINORITY AND GUARDIANSHIP

Guardian under the Hindu minority and Guardianship act 1956 - Definition types of guardians - Guardianship under Muslim law - Procedure for appointment and their powers -Guardian under the guardian and wards act 1890.

Statutory Material

1. The Hindu marriage act 1955
2. The adoptions and maintenance act 1956
3. The Hindu Minority and Guardianship act 1956

4. The Special Marriage act,1954
5. The Guardian and Wards act 1890
6. The Dissolution of Muslim Marriage act 1939
7. The Christian marriage act 1872
8. Indian Divorce act ,1869
9. Indian Majority act ,1875
10. The Muslim Women (protection of rights on divorce)act 1986
11. The Family Court act1984
12. The Dowry Prohibition act 1961
13. The Hindu Widows' remarriage act 1856
14. Prohibition of Child Marriage act 2006

Books Prescribed:

1. Prof. G. C. V. Subba Rao: Family Law in India: Narendra Gogia, 10th Edition (2018)
2. Paras Diwan, Peeyushi Diwan: Family Law: Allahabad Law Agency (2018)
3. Dr. Shivani Goswami: Family Law-1: Central Law Publications (2018)
4. H. K. Saharay: Family Law in India; Eastern Law House; 2011 edition (2012)
5. Paras Diwan, Peeyushi Diwan: Modern Hindu Law; Allahabad law agency; 22nd Edition (2013)
6. Dr. Mohammad Nazmi: Mohammadan Law; Central Law Publications (CLP); 1st edition (2012)

Books for References:

1. Paras Diwan: Law of Marriage and Divorce: A Comprehensive treatise on Matrimonial Laws of all the Indian communities including Hindus, Muslims, Christians, Parsis and Jews; Universal Law Publishing - An Imprint of LexisNexis; Seventh edition (2016)
2. Dinshaw Fardunji Mulla: Mulla's Hindu Law; *Lexis Nexis*; Twenty third edition (2018)
3. Sir Dinshaw Fardunji Mulla: Mulla's Principles of Mahomedan Law; Lexis Nexis; Twenty Second edition (2017)

Second Year - Third Semester	*Subject Code: U18PCBL207*	*Subject Credits: 04*

JURISPRUDENCE AND INTERPRETATION OF STATUTES

Objective: This paper is the documentary and earlier data on law and a guiding element to interpret and understand various statutes through the precedents.

COURSE OUTLINE

UNIT – I: NATURE, DEFINITION AND SCHOOLS OF JURISPRUDENCE

Nature and Definition of Jurisprudence – Analytical Positivism - Natural Law - Historical School - Sociological School - Economic Interpretation of Law - Indian Jurisprudence - Concept of Dharma – PIL - Social Justice and Compensatory Jurisprudence.
Nature and Purpose of Law
Nature and Definition of Law - Feminist Jurisprudence - Administration of Justice.

UNIT – II: SOURCES OF LAW

Legislation – Nature of Legislation - Supreme and Subordinate Legislation - Sources of - Codification and the Interpretation of Enacted Law - Precedents - Authority of Precedents - Circumstances destroying or weakening the binding force of Precedent - Ratio Decidendi and Judicial Reasoning - Custom: Kinds of Custom, Conventional Custom - Local Custom. - General Custom.
Legal Concepts – I :Legal Rights and Duties - Correlation of Right and Duty - Persons -Nature of Personality - Status of Unborn, Minor, Lunatic, Drunken and Dead Persons - Corporate Personality - Possession and Ownership.
Legal Concepts – II: Title - Property, Liability, Obligation and the Procedural Law

UNIT – III: LAW MAKING

Legislature, Executive and the Judiciary - Principle of Utility - Law and Public Opinion - Law and Social Control - Law and Morals - Meaning Objective and Scope of 'Interpretation', 'Construction' and 'Statute' - Public Opinion and Law Making.
Nature and Kinds of Indian Laws: Statutory, Non Statutory, Codified, Uncodified, State made and State Recognized Laws - Parts of a Statute -Commencement, Operation and Repeal and Revival of Statutes - Purpose of Statutory Interpretation - Basic sources of Statutory Interpretation -The General Clauses Act, 1897: Nature, Scope and Relevance – Definition clauses in various Legislation: Nature and Imperative Rule.

UNIT – IV: RULES OF STATUTORY INTERPRETATION

Literal and Logical Rules of Interpretation -Legalism and Creativity - Golden Rule and Mischief Rule - Strict construction of Penal Laws and Taxation Laws - Internal Aids and External Aids of Interpretation.

Interpretation of Constitution : Principles and Theories - Preamble as a Tool - Directive Principles and Fundamental Duties with Fundamental Rights – Interpretation of International Instruments - Presumption against Exceeding Territorial Nexus – Presumption against Ouster of Jurisdiction of Courts – Presumption against changes in Common Law - Presumption against including what is Inconvenient or Unreasonable - Presumption against Retrospective Operation of Law – Presumption against Violation of International Law.

UNIT – V: LEGISLATIVE DRAFTING

Principles and Process of Legislative Drafting - Simplicity, Preciseness, consistency, Alignment with Existing Law - Brevity – Drafting General Laws – Special Laws – Rules – Orders.

Books Prescribed:

1. G.C. Venkata subbaRao; Jurisprudnce and Legal Theoru; Eastern Book Company; 9th Edn.,Reprinted 2012
2. R.W.M. Dias; Jurisprudence; Lexis Nexis; %th Edn., 2013; Reprinted 2014
3. Dr. N.V. Paranjape; Studies in Jurisprudence and Legal Thoery; Central Law agency; 7th Edn. 2013; Reprint (2015)
4. G.W. Paton; A Textbook of Jurisprudence; Oxford University Press; 14th Edn. 1972; 1st Indian Edn. (2004)
5. B.N. Mani Tripathi; Jurisprudence the Legal Theory; Allahabad Law Agency; 19th Ed.(2012); Reprinted (2015)
6. V.D.Mahajan's; Jurisprudence and Legal Theory; Eastern Book Company; Reprinted 2015
7. Prof. T. Bhattacharyya; the Interpretation of Statites; Central Law Agenecy; 9th Edn. (2014)
8. B.M.Gandhi; Interpretation of Statues; Eastern Book Company; 2nd Edn. (2014)
9. Dr. M.P. Tandon; Interpretation of Statutes; Allahabd Law Agency; 11th Edn. (2205)
10. Vepa. P. Sarathi; Interpretation of Statutes; Eastern Book Company; 14th Edn.(2003); Reprinted (2013)
11. P.St. J. Langan; Maxwell on the Interpretation of Statutes; Lexis Nexis; 19th Edn. (2013)

Books for Reference:

1. H.L.A Hart, the Concept of Law; Oxford University Press; 3rd Edn. 2012
2. Edgar Bodenheimer; Jurisprudence; Harvard University Press, 1974; 2nd Edn.
3. Edgar Bodenheiner; Jurisprudence the Philosophy and Method of the Law; Harvard University Press, 1981
4. Thomas Erskine Holland D.C.L; The Elemets of Jurisprudence; the Lawbook Exchange, Ltd., 2nd Edn., 2008

5. G. C. Mathur, Vidya Dhar Mahajan; Jurisprudence and Legal Theory; Eastern Book Company, 1987; 5 Edn., reprint
6. Vepa P. Sarathi; Interpretation of Statutes; State Mutual Book & Periodical Service, Limited, 1986; 3rd Edn.
7. A.B. Kafaltiya; Interprettaion of Statutes; Universal Law Publishing Co.; 2008 Edn. Reprint 2010
8. G. E. Devenish; Interpretation of Statutes; Juta, 1992
9. Peter Benson Maxwell; On the Interpretation of Statutes; Creative Media Partners, LLC, 2015

Second Year - Fourth Semester	*Subject Code: U18PLBL210*	*Subject Credits: 03*

ORGANISATIONAL BEHAVIOUR

Objective: Assess the potential effects of organizational models. Analyze the behavior of individuals and groups in organizations in terms of the key factors that influence organizational behavior. To know and understand the basic approaches in Leadership a power. To gain knowledge in the dynamics of organizational behavior.

COURSE OUTLINE

UNIT I: INTRODUCTION TO ORGANIZATIONAL BEHAVIOUR

Introduction – Organizational Process – Importance of Organizational Behaviour – Nature and Scope – Frame work – Organizational behaviour models.

UNIT II: INDIVIDUAL BEHAVIOUR

Personality – types – Factors influencing personality – Perceptions – Importance – Factors influencing perception – Motivation – Early Theories, Contemporary Theories, Motivation at work.

UNIT III: GROUP BEHAVIOUR

Organization structure – Formation – Groups in organizations – Influence – Group dynamics – Group decision making techniques – Teambuilding – Communication – Control.

UNIT IV: LEADERSHIP AND POWER

Meaning – Importance – Leadership styles – Leaders Vs Managers – Sources of power – Power and Politics.

UNIT V: DYNAMICS OF ORGANIZATIONAL BEHAVIOUR

Organizational culture and climate – Factors affecting organizational climate – Importance – Organizational Change – the change process – Resistance to change – Managing change – Stress – Prevention and management of stress – Balancing work and Life.

Books Prescribed:

1. Stephen P. Robbins; Organizational behavior; Pearson Education, 9th edition
2. K. Aswathappa; Organizational Behavior; McMillan India Ltd
3. R.S. Dwivedi; Human Relations & organizational behavior, Mc Millan India Ltd., 5th edition.

Books for References:

1. Mc Shane & Von Glinov, Organisational Behaviour, 4th Edition, Tata Mc Graw Hill, 2007.
2. Udai Pareek, Understanding Organisational Behaviour, 2nd Edition, Oxford Higher Education, 2004.
3. Ivancevich, Konopaske & Maheson, Oranisational Behaviour & Management, 7th edition, Tata McGraw Hill, 2008.
4. L., M. Prasad, Organisational Behaviour, Sultan Chand & sons.

Second Year - Fourth Semester	*Subject Code: U18PLBL211*	*Subject Credits: 03*

MANAGEMENT INFORMATION SYSTEM

Objective: To analyze about MIS organization. To study about the System Approach in MIS, Functional Areas of Business and Application of IT in business. To gain knowledge in the security and ethical issues in MIS.

COURSE OUTLINE

UNIT – I: INTRODUCTION TO MANAGEMENT INFORMATION SYSTEM
Introduction to Management Information Systems, History of MIS, Impact of MIS, Role and Importance, MIS Categories, Managers and Activities in IS, Types of Computers Used by Organizations in Setting up MIS, Hardware support for MIS

UNIT II: SYSTEM APPROACH
Defining a System – Types of System – Elements of a System – System Development Life Cycle – Phases of System Development Life Cycle – Approaches of MIS Development – Constraints in Developing an MIS – Limitations of MIS.

UNIT III: FUNCTIONAL AREAS OF BUSINESS
Introduction – Functional Areas of Business – Manufacturing Information Systems – Marketing Information Systems – Quality Information Systems – Research and Development Information Systems – Human Resource Information Systems – Geographical Information Systems.

UNIT – IV: APPLICATION OF IT IN BUSINESS
Introduction E-Business – E-commerce – Application of E-Commerce in India – Successful E-Commerce –Mobile Commerce – E-Governance

UNIT – V: SECURITY AND ETHICAL ISSUES
Control Issues in Management Information Systems – Risks of Online Operations – Security Hazards – Ethical Responsibility of Business Professionals: Business Ethics and Technology Ethics – Ethical Issues – Technical solutions for Privacy Protection.

Books Prescribed:

1. Goyal DP, Management Information Systems, Macmillan, 2000.
2. W.S. Jawadekar, Management Information Systems, Tata McGraw Hill Pulbishing Co. Ltd, New Delhi, Latest Edition.
3. James A O'Brein, Management Information System Tata Mcgraw Hill New Delhi, 1999.

Books for Reference:

1. Gordon B. Davis, Management Information System: Conceptual Foundations, Structure and Development, McGraw Hill 1974.
2. Turban Mc Lean and Wetherbe, Information technology for Management making connections for strategic advantage, John Wiley 1999.
3. Kendall & Kendall, Systems Analysis and Design Prentice Hall of India fifth edition, New Delhi.

Second Year - Fourth Semester	*Subject Code: U18PLBL212*	*Subject Credits: 03*

ENTREPRENEURIAL DEVELOPMENT

Objective: To develop necessary knowledge and skills among entrepreneur, manager and intrapreneur. To impart basis managerial knowledge and training. To provide knowledge about project feasibility and preparation of project report. To provide knowledge of sole proprietorship, partnership, joint stock company. To analyse about women entrepreneur and development of rural entrepreneurship.

COURSE OUTLINE

UNIT – I
Meaning of Entrepreneur – Entrepreneur and Enterprise – Entrepreneur and Manager – Entrepreneur and Intrapreneur – Qualities (Traits) of True Entrepreneur – Characteristics of Entrepreneur – Types of Entrepreneur – Function of an Entrepreneur – Roles of Entrepreneur in the Economic Development

UNIT – II
Establishing an Enterprise – Project Identification – Section of the Product – Project Formulation – Assessment of Project Feasibility – Preparation of Project Report – Selection of Site (Location)

UNIT – III
Selection of Types of Organization – Sole Proprietorship- Partnership Joint Stock Company – Factors Influencing the choice of Organization – Sources of Project Finance – Sources of Long Term Finance – Sources of Short Term Finance.

UNIT – IV
Incentives and Subsidies – Meaning of Incentives and Subsidies – Need and Problems – Incentives for Development of Backward Area – Incentives of SSI Units in Backward Areas – Taxation Benefits to SSI Units – Subsidies and Incentives in Tamil Nadu.

UNIT – V
Women Entrepreneurs – Concept – Functions and Role – Problems of Women Entrepreneurs – Suggestions for Development of Women Entrepreneurs – Rural Entrepreneurship – Need – Problems – How to Develop Rural Entrepreneurship.

Books Prescribed:

1. S. S. Khanka; Entrepreneurial Development, S. Chand Publishing, 2006
2. Poornima M. Charantimath: Entrepreneurship Development and Small Business Enterprise, Pearson Education India, 2005
3. Sanjay Tiwari & Anshuja Tiwari: Women Entrepreneurship and Economic Development, Sarup & Sons, 2007

Books for Reference:

1. Gupta C.B.: Strategic Management, S. Chand Publishing, 2016

2. S. S. Khanka: Entrepreneurial Development, S. Chand Publishing, 2006

3. Vasant Desai: Dynamics of Entrepreneurial Development and Management, Himalaya Publishing House, 5th Edn. 2009

Second Year - Fourth Semester	*Subject Code: U18PCBL208*	*Subject Credits: 04*

CONSTITUTIONAL LAW – II

Objective: This paper elucidates the parliamentary form of aspects, the role of Executive, Legislative and Judiciary and the role of Election Commission which interprets the current system and gives an overall perspective to students.

COURSE OUTLINE

UNIT – I: THE UNION AND STATE EXECUTIVE

The Union Executive - The President - Election, Term of Office, Powers and Functions, Impeachment - Immunities - Pardoning Power - Ordinance making power - President and Union Council of Ministers - The State Executive -Governor - Appointment, Powers and Functions - Immunities - Pardoning Power - Removal of Governor - Doctrine of Pleasure.

UNIT – II: LEGISLATURE AND JUDICIARY

Composition of Parliament and State Legislatures - Office of the Speaker - Qualification / Disqualification of Members - Legislative Procedure, Legislative Privileges -Judicial Interpretation - Anti Defection Law, X Schedule. Union Judiciary -Supreme Court of India Composition, Appointment and Removal of Judges of Supreme Court - Writ Jurisdiction of Supreme court under Art 32 – Kinds of Jurisdiction - Public Interest Litigation Compensatory Jurisprudence -Independence of Judiciary - State Judiciary - High Courts in the States - Composition, Appointment and Removal of Judges - Writ Jurisdiction of High Courts under Art. 226.

UNIT – III: CENTRE – STATE RELATIONS:

Distribution of Legislative, Administrative and Fiscal Powers and Freedom of Trade and Commerce - Distribution of Legislative Powers - Doctrine of Territorial Nexus - Subject matter of laws made by Parliament and Legislature of States - Doctrine of Harmonious Construction - Doctrine of Pith and Substance - Doctrine of Occupied Field - Colourable Legislation -Parliament's Power to Legislate in State List - Implied and Residuary Power - Doctrine of Repugnancy - Administrative Relations - Centre and Inter-State Conflict Management Financial Relations - Sharing of Tax - Grants-in-Aid -Restriction on the power of State Legislatures - Doctrine of Immunity - Borrowing Powers - Constitution Limitations - Freedom of Trade, Commerce and Intercourse - Power of Parliament - Restrictions - Goods and Service Tax (GST) - Impact of Globalization.

UNIT – IV: OTHER CONSTITUTIONAL FUNCTIONARIES

Organization - Power and Functions of Election Commission of India - Union Public Service Commission - State Public Commission - Comptroller and Auditor General - Attorney General & Advocate General - Constitutional Safeguards for Civil Servants - Protection

against Arbitrary Dismissal - Removal or Reduction in Rank - Exceptions to Art 311 – Role of Finance Commission - Planning Commission - Inter – State Council - National Development Council - Local Self Government (Panchayat Raj).

UNIT – V: EMERGENCY PROVISIONS

Emergency Provisions - National Emergency - Duty of the Union to protect the States against External Aggression and Internal Disturbance - Power of Union Executive to issue directions and the effect of non-compliance.

State Emergency - Imposition of President's Rule in States - Grounds, Limitations, Parliamentary Control, Judicial Review.

Financial Emergency (Article 360) - Emergency and Suspension of Fundamental Rights.

Books Prescribed

1. Dr. J.N. Pandey: Constitutional Law of India; Central Law Agency, 52nd Edition (2015)
2. M.P. Jain: Indian Constitutional Law; Lexis Nexis; 7th Edition (2014)
3. Prof. S.R. Bhansali: The Constitution of India; Universal Law Publishing; 1st Edition (2015)

Books for References:

1. Durga Das Basu: Constitution of India; Lexis Nexis, 23rd Edition (2018)
2. H.M. Seervai: Constitution of India (Vol.1-3) Universal Law Publishing; 4th edition (2015)
3. Dr. V.N. Shukla: Constitution of India, Eastern Book Company, 12th Edition, 2013
4. Justice Sujata V. Manohar, T K Tope Constitutional Law of India, Eastern Book Company, 3rd Edition, 2010

Second Year - Fourth Semester	*Subject Code: U18PCBL209*	*Subject Credits: 04*

FAMILY LAW - II

Objective: This paper will provide a broader explanation about the systems, property related litigation and its measures according to their personal laws.

COURSE OUTLINE

UNIT – I: JOINT HINDU FAMILY

Institution of Joint Family - Coparcenery System - Classification of Properties – Kartha-Status, Powers and Duties - Principles of Survivorship and Succession - Partition

UNIT – II: INTESTATE SUCCESSION

General Principles of Succession under Hindu Law, Muslim law and Christian Law -Statutory Conditions Disinheritance and Disentitlement - Comparative analysis of Rights to Property of Women under Different Religion - Statutory Law - Rights of Pre-emption

UNIT – III: TESTAMENTARY SUCCESSION

Testamentary succession under Hindu, Muslim and Christian Law- Limitation under various Religious and Statutory Laws - Will and Administration of Will - Codicil Lapse, Abatement and Ademption of Legacies - Probate, Letters of Administration and Succession Certificate.

UNIT – IV: GIFT UNDER ISLAMIC LAW

Hiba - Nature and Characteristics of Hiba - Subject matter of hiba and hiba-bil-iwaz - Revocation of Gift.

UNIT – V: RELIGIOUS ENDOWMENT AND WAKF

Hindu Religious Endowment - Wakf: Meaning – Creation of Wakf - Formalities - Types and Administration of Wakf - Mutawalli and his powers and duties.

Statutory Material

1. Hindu Succession Act, 1956
2. Indian Succession Act, 1925
3. The Hindu Women's right to property Act, 1937 (repealed)
4. The Wakfs Act, 1954

Books Prescribed:

1. Prof. G. C. V. Subba Rao: Family Law in India: Narendra Gogia, 10th Edition (2018)
2. Paras Diwan, Peeyushi Diwan: Family Law: Allahabad Law Agency (2018)
3. H. K. Saharay: Family Law in India; Eastern Law House; 2011 edition (2012)
4. Paras Diwan, Peeyushi Diwan: Modern Hindu Law; Allahabad law agency; 22nd Edition (2013)

5. Dr. Mohammad Nazmi: Mohammadan Law; Central Law Publications (CLP); 1st edition (2012)

Books for References:

1. Dinshaw Fardunji Mulla: Mulla's Hindu Law; *Lexis Nexis*; Twenty third edition (2018)
2. Sir Dinshaw Fardunji Mulla: Mulla's Principles of Mahomedan Law; Lexis Nexis; Twenty Second edition (2017)
3. Paras Diwan: Law of Intestate and Testamentary Succession; Universal Law Publishing - An imprint of LexisNexis; Fourth edition (2013)

Second Year - Fourth Semester	*Subject Code: U18PCBL210*	*Subject Credits: 04*

LAW OF EVIDENCE

Objective: The Indian Evidence Act, 1872 is a long piece of legislation that codifies the rules of evidence. However, a detailed discussion of all the leading principles that will be covered will provide the students to have a good theoretical and working knowledge of the Indian Evidence Act, 1872 and will equip them to study the subject on their own.

COURSE OUTLINE

UNIT – I: INDIAN EVIDENCE ACT, 1872

Scope, Object and Applicability of Indian Evidence Act and Exclusion - Statutory Definition - Golden Rule Evidence -Presumption of Law and Fact - Kinds of Evidence.

UNIT – II: RELEVANCY OF FACT

Admissibility of Facts - Res Gestae -Omission - Cause and Effect - Motive, Preparation and Conduct -Explanatory Facts - When facts not otherwise relevant become relevant - Conspiracy - Admission and Confession - Dying Declaration

UNIT – III: RELEVANCY

Relevancy of Statement made by person who cannot be called as Witness - Relevance of Judgments - Relevance of Opinion of Third Persons - Expert Opinion- Scientific Examination and Expert Witness under Section 112A - Relevance of Character in Civil and Criminal Cases.

UNIT – IV: BURDEN OF PROOF

General conception of onus probandi- General and special exceptions to onus probandi- Justification of presumption and of the doctrine of judicial notice - Justification as to presumptions as to certain offences - Presumption as to dowry death - Scope of the doctrine of judicial notice.

Estoppel

The rationale - Estoppel - res judicata and waiver and presumption - Estoppel by deed - Estoppel by conduct - Equitable and promissory estoppel - Questions of corroboration.

UNIT – V: WITNESSES

Examination and Cross Examination - Competency to testify - State privilege - Professional privilege - Approval testimony - General principles of examination and cross examination - Leading questions - Lawful questions in cross-examination - Compulsion to answer questions put to witness - Hostile witness - Impeaching of the standing or credit of witness.

Statutory Material

Indian Evidence Act, 1872

Books Prescribed:

1. Ratanlal and Dhirajlal: Law of Evidence; Lexis Nexis; 26th Edn. (18 July 2017)
2. Avatar Singh: Law of Evidence; Central Law Publication; 20th Edn. (2014)
3. Vepa Sarathi: Law of Evidence; Eastern Book Co. (EBC); 2017 Edn. (2017)
4. V. Krishnamachari: Law of Evidence; Narender Gogia & Company; 2018 Edn. (2018)

Books for References:

1. Sarkar: Law of Evidence; Lexis Nexis India; 17th Edn. (2010)
2. Woodroffe and Amir Ali; Law of Evidence; Lexis Nexis India; 27th Edn. (2017)
3. Batuk Lal; Law of Evidence; Central Law Agency (CLA); 2018 Edn. (2018)

Second Year - Fourth Semester	*Subject Code: U18PTBL202*	*Subject Credits: 02*

INTERNSHIP AND PRACTICAL TRAINING - II

Objective: The internship programmes are designed to acquaint the student with the actual practice of law by working under the supervision of legal luminaries. The student gains experience of applying theoretical knowledge from prior classroom training, when exposed to practical environment.

COURSE OUTLINE

During the summer vacation the students should compulsorily undergo Internship for a continuous period of 4 weeks and submit an internship report along with internship certificate. This will be evaluated by the Internship Faculty Guide.

The student may choose to intern under any one the following:

- Trial Advocate
- Appellate Advocate
- Law Firms
- Non-Governmental Organization
- Police Stations
- Banks
- Non Banking Financial Institutions
- Companies
- Registration Department
- Judiciary
- Legal Regulatory Authorities
- Legislatures
- Market Institutions
- Local Self-Government
- Other Legal Functionaries
- Dispute resolution Bodies
- Legal Services Authority

On completion of successful internship training every student will be awarded 2 credits

Third Year - Fifth Semester	*Subject Code: U18PLBL313*	*Subject Credits: 03*

INTERNATIONAL BUSINESS

Objective: To understand the important linkages between domestic economy and its external sector and to gain the conceptual clarity of the theoretical aspects of international trade and finance. To examine the broad pattern of changes in the international economic policy and to examine the business implications of international economic environment. To identify the basic macroeconomic relationships as they affect the behavior of firm and to incorporate international issues in designing corporate strategies in a fast changing environment.

COURSE OUTLINE

UNIT – I: INTRODUCTION TO INTERNATIONAL BUSINESS
Meaning and Definition of International Business – Theories of International Trade – Economic Theories – Forms of International Business – Nature of International Business

UNIT – II: MODES OF ENTRY INTO INTERNATIONAL BUSINESS
Mode of Entry – Exporting – Licensing – Franchising – Contract Manufacturing – Turn Key Projects – Foreign Direct Investment – Mergers, Acquisitions and Joint Ventures – Comparison of different modes of Entry

UNIT – III: GLOBALIZATION
Meaning – Features – Stages –Production – Investment and Technology, Globalization – Advantages and Disadvantages – Methods and Essential Conditions for Globalization. MNC's and International Business: Definitions – Distinction between Indian Companies – MNC – Global Companies and TNC – Organizational Transformations – Merits and Demerits of MNC‟s in India

UNIT – IV: INTERNATIONAL MARKETING INTELLIGENCE
Information required – Source of Information – International Marketing Information System and Marketing Research

UNIT – V: EXIM TRADE
Export Trade, Procedure, Steps & Documentation, Direction of India‟s Trade – Export Financing –Documents related to Export Trade – Export Marketing – Import Trade, Procedure, Steps, Documentations and Problems - EXIM Policy - Balance of Payment – Disequilibrium and Measures for Rectification - Institutions connected with EXIM Trade

Books Prescribed:

1. Aseem Kumar; Export and Import Management, Excel Books Publications, New Delhi, 2007.
2. David Stewart; International Supply Chain Management, Cengage publications, 2008.
3. Ram Singh; Export Management, Indian Institute of Foreign Trade, New Delhi, 2008.
4. Helen Deresky; International Management – Managing Across Borders and Cultures, Pearson, 9th Edn, 2016.

Books for Reference:

1. Fred Luthans & Jonathan Doh, International Management – Culture, Strategy &Behavior, Pearson, 9th Edition, 2012.
2. Dirk; Strategic International Management – Text and Cases, Springer, 2009.
3. P.K.Khurana; Export Management, Galgotia Publication, New Delhi, 2010.
4. Jeevanandam C; Foreign Exchange: Practices Concepts and control, Sultan Chand Publications, 2002

Third Year - Fifth Semester	*Subject Code: U18PLBL314*	*Subject Credits: 03*

LOGISTICS AND SUPPLY CHAIN MANAGEMENT

Objective: To acquaint the students with the basic aspects of Logistics Management. To ponder upon the types of inventory control. To highlight the importance of Distribution Channel Management. To describe the concepts of Supply Chain Management

COURSE OUTLINE

UNIT – I: INTRODUCTION
Logistics Management: Origin and Definition – Customer Service and Logistics Management: A perspective – Concepts in Logistics and Physical Distribution – Distribution Inventory.

UNIT – II: INVENTORY CONTROL
Types of Inventory Control – Demand Forecasting – Warehousing and Stores Management – Routing – Transportation Management – Commercial Aspects in Distribution Management – Codification – Distribution Channel Management – Distribution Resource Planning – Logistics in 21st Century.

UNIT – III: SUPPLY CHAIN MANAGEMENT
Introduction – Nature and Concept - The need for supply chain – Understanding the supply chain management – Participants in supply chain – levels of supply chain.

UNIT – IV: ROLE OF MANAGER IN SUPPLY CHAIN
Role of Manager in Supply Chain – Supply Chain Performance Drivers – Key enablers in supply chain improvement – Inter–relation between enablers and levels of supply chain management- Systems and Values of Supply Chain.

UNIT – V: SUPPLY CHAIN AND BUSINESS STRATEGY
Aligning the supply chain with Business Strategy – Supply Chain Relationships – Conflict Resolution Strategies – Certifications.

Books Prescribed:

1. Douglas M. Lambert, James R. Stock, Lisa M. Ellram,: Fundamentals of Logistics Management, Singapore, Irwin/ McGraw Hill, International edition 1998.
2. John T Mentzer ed.: Supply Chain Management, A South Asian Reprint India, New Delhi, Sage Publication Ltd., 2001.
3. Christopher, M.: Logistics and Supply Chain Management: Strategies for Reducing Costs and Improving Services London, Pitsman, 1992
4. Benjamin S. Blanchard: Logistics Engineering and Management, New Jersey, Prentice - Hall Inc., 3rd ed. 1996.

5. Ron Moore: Making Common Sense Common Practice Models for Manufacturing Excellence, The Indian Print, New Delhi, Prentice Hall of India Pvt. Ltd., 2000.

Books for Reference:

1. D K Agarwal - Textbook of Logistics and Supply Chain Management - MacMillan publishers (Eight impression) - 2009.
2. Dr. L. Natarajan, Logistics and Supply Chain Management, Margham Publications, 2018.
3. G Raghuram& N Rangaraj - Logistics and Supply Chain Management - Cases and Concepts. Mac Millan - 2000.
4. Martin Christopher - Logistics & Supply Chain Management: Creating Value-Adding Networks - FT Press – 4th edition.
5. David J. Bloomberg, Stephen Lemay and Joe B. Hanna: Logistics New Delhi, Prentice Hall of India Pvt. Ltd., 2002.

Third Year - Fifth Semester	*Subject Code: U18PCBL311*	*Subject Credits: 04*

BANKING LAW INCLUDING NEGOTIABLE INSTRUMENTS ACT

Objective: This paper produces an insight to the students about the Banking Law and the emerging trends in the banking sector and various procedural aspects in a simplified manner.

COURSE OUTLINE

UNIT – I: PRELIMINARY

History of Banking - Different types of Banks including Foreign Banks – Nationalisation of Banks - RBI's Control over Commercial Banks - Special status of RBI and State Bank of India - Subsidiary Banks -Emerging trends in Banking -Digital Banking.

UNIT – II: BANKING REGULATION ACT, 1949

Banker and Customer: Definition of Banker and Customer and relationship - Special types of Customers - Banker as Borrower - Different types of accounts - Duties and Rights of the Banker and different types of instrument - Paying Banker and Collecting Banker.

UNIT – III: LAWS RELATING TO LOANS, ADVANCES AND INVESTMENTS BY BANKS

Subsidiary Business Operations of Banker with special reference of Safety Deposit Lockers - Liability of Banker in case of Bank Robberies and Fraud by Bank Employees - Vicarious Liability of the Bank and Bank Employees - Recovery of Loans and Advances - Recovery of Debts due to Banks - Financial Institutions Act, 1993 and SARFAESI Act, 2002.

UNIT – IV: WINDING UP OF BANKING COMPANIES

Effect of Winding Up of Banking Companies - Rights of Customers on Winding Up of Companies - Necessity for reforms in Indian Banking Law to meet Global Challenges - Banking Ombudsman - Various Committee Reports.

UNIT – V: NEGOTIABLE INSTRUMENTS ACT, 1881

Definition and Characteristics - Parties to Negotiable Instruments - Presentation - Discharge and Dishonour - Liability -Various kinds of Crossing of Cheque - Rights of Holder and Holder in due Course against Banker - Civil and Criminal Liability for Dishonour of Cheques under Section 138 to Section 142 of the Amended Negotiable Instruments Act.

Statutory Materials:

1. Banking Regulation Act, 1949
2. Negotiable Instruments Act, 1881
3. SARFAESI Act, 2002

4. Financial Institutions Act, 1993

Books Prescribed:

1. Arun Kumar & Anoop Kumar: Banking Industry and NPA's; New Century Publication; 1st Edn. (2018)
2. Taxmann: Digital Banking; Taxmann Publications, 1st Edn. (2016)
3. Indian Institute of Banking and Finance: Principles and Practices of Banking; McMillan Publications, 3rd Edn. (2015)
4. V.V.K. Subburaj: Rbi, Reserve Bank of India; Sura College of Competition, 2004

Books for Reference:

1. Dr. S. S. Srivastsava: Banking Law and Negotiable Instruments Act; Central Law Agency, 1st (2015)
2. Taxmann: Guide to SARFAESI Act – 2002 and Recovery of Debts and Bankruptcy act – 1993; Taxmann Publications, 2nd Edn. (2017)
3. Bimal N. Patel: Banking Law and Negotiable Instruments Act; 1st Edn. (2015)

Third Year - Fifth Semester	*Subject Code: U18PCBL312*	*Subject Credits: 04*

PROPERTY LAW

Objective: By its very existence, society mandates interaction, exchange or transfer. A property, movable or immovable, is transferred from one person to another under various different situations and circumstances and for different values. This paper details about the property law, the litigation based on that and the recent amendments to the property law.

COURSE OUTLINE

UNIT – I: GENERAL PRINCIPLES OF TRANSFER

Transfer of Property Act, 1882 - Concept of Property - Definition of Transfer of Property - Kinds of Interest-Conditional Transfer - Document of Election - Ostensible Owner – Feeding the Grant - Improvement made by Bonafide Purchase- Lis Pendens - Fraudulent Transfer - Doctrine of Part Performance and other General Principles of Transfer.

UNIT – II: SPECIFIC TRANSFERS -TRANSFER OF ABSOLUTE INTEREST

Sale - Definition of sale - rights and liabilities of seller and buyer - Gift - Definition- Onerous Gift - Universal Donor and Donee - Death Bed Gift - Suspension and Revocation of Gifts – Exchange

UNIT – III: TRANSFER OF LIMITED INTEREST

Mortgage: Different Kinds of Mortgages - Redemption - Clog on Redemption - Partial Redemption - Rights and Liabilities of Mortgagor and Mortgagee including Doctrine of consolidation Marshalling Contribution – Subrogation - Charge

UNIT – IV: LEASE

Rights and Liabilities of Lessor and Lessee - Determination of lease - Doctrine of Holding Over - Forfeiture of Lease - Actionable claims.

UNIT –V: EASEMENT

Definition - Acquisition of Easement - Easement of Necessity and Quasi Easement - Easement by Prescription – Extinction - Suspension and Revival of Easements and License.

Statutory Material:

1. Transfer of Property Act, 1882
2. Indian Easements Act, 1882

Books Prescribed:

1. Avtar Singh: Transfer of Property Act; Universal Law Publishing, 5th Edition (2016)

2. Dr. R.K. Sinha: The Transfer of Property Act; Central Law Agency, 19th Edition (2018)
3. S.N. Shukla: The Transfer of Property Act; Allahabad Law Agency, 29th Edition (2018)
4. Vepa. P. Sarathi: Law of Transfer of Property; Eastern Book Company, 6th Edition(2017)
5. Dr. Poonam Pradhan Saxena: Property Law; Lexis Nexis, 3rd Edition (2017)
6. G.P. Tripathi: Transfer of Property Act; Central Law Publication, 19th Edition (2016)

Books for References:

1. Mulla: The Transfer of Property Act; Lexis Nexis, 13th Edition (2018)
2. Darashaw J. Vakil & HR Jhingta: Commentaries on the Transfer of Property Act; Lexis Nexis, 5th Edition (2017)
3. Goyle: A Commentary on the Transfer of Property Act; Eastern Law House, 2nd Edition (2001)
4. Sandeep Bhalla: Digest of cases on Transfer of Property in India; Eastern Book Company, 2nd Edition (2012)

Third Year - Fifth Semester	*Subject Code: U18PCBL313*	*Subject Credits: 04*

HUMAN RIGHTS

Objective: The understanding of human rights is the foundation for the development of a good citizen and a responsible legal professional. The main objective of this course is to provide an insight into the meaning and significance of various human rights in the contemporary era and the mechanisms developed at the international and national level for protection and promotion of such rights. This course attempts to increase the knowledge of law students with respect to human rights; to focus their attention on the underlying values of human rights and to explore various international and national legal frameworks which embody human rights and promote them in practice.

COURSE OUTLINE

UNIT I: CONCEPT OF HUMAN RIGHTS

Origin and Development of Human Rights- Generations of Human Rights - Civil and Political Rights -Economic, Social and Cultural Rights - Solidarity Rights - U.N Charter - Universal Declaration of Human Rights, International Covenant on Civil and Political Rights and Optional Protocols - International Covenant on Economic and Social Cultural Rights and Optional Protocols.

UNIT II: VULNERABLE GROUPS AND HUMAN RIGHTS

Discrimination against Women, Status of Women in India, Conferences of Women, Rights of Child, Optional Protocols to the Convention on the Rights of the child Labour, Migrant Workers, Rights of the Migrant Workers, Reporting System, Inter - State Communications System, Historical Development of International Refugee Law, United Nations High Commissioner for Refugees (UNRRA), Stateless Persons, Disabled Persons, Indigenous Persons.

UNIT III: HUMAN RIGHTS AND NON-GOVERNMENTAL ORGANIZATIONS

NGO's and United Nations, Human Rights and the NGO's - Amnesty International and Human Rights Watch, India and Human Rights NGO's - People union for Civil Liberties. - international humanitarian law - Application and Historical Development of Humanitarian Law- Treatment of Prisoners of War, Treatment of Alien Enemies, Human Rights and Terrorism.

UNIT IV: IMPLEMENTATION OF HUMAN RIGHTS

UN Commission on Human Rights (Human Rights Council) - The Human Rights Committee (CCPR) under ICCPR- The Committee on Economic, Social and Cultural Rights (CESCR) under ICESCR.

UNIT V: HUMAN RIGHTS PROTECTION IN INDIA

Provisions under the Indian Constitution – Fundamental Rights, Enumerated and Unremunerated Human Rights, Restrictions on Human Rights and Fundamental Rights- Protection of Human Rights Act 1993 - National and State Human Rights Commissions – Establishment, Powers and Functions of NHRC and SHRC - Role of NHRC and SHRC - Application of International Human Rights Law in India- Role of Indian Judiciary in enforcing human rights - Judicial Activism.

Statutory Materials

The Protection of Human Rights Act, 1993.

Books Prescribed

1. Paras Diwan: Human Rights and the Law; Deed & Deep Publications, 1st Edition (1999)
2. Sankarsen: Human Rights; Law Enforcing Concept Publishing Co. , 1st Edition, (2002).
3. Maurice Cransten: What are Human Rights; Taplinger Publishing Co., 1st Edition (1978).
4. Dr.H.O.Agarwal: International Law and Human Rights; Central Law Publications, 20th Edition (2000).

Books for Reference

1. H. Kramer, Simmonds & Steiner: Debate over Rights; Oxford University Press, 1st Edition (2000).
2. John Locke: Civil Government; Wildside Press, Reprint (2008).
3. Dr. U.Chandra: Human Rights; Allahabad Law Agency Publications, 5th Edition (2004).
4. Galius Esejoifer: Protection of Human Rights under the International Law; Laiden Boston, 1st Edition (2007).
5. Raphael D.D, Macmillan: Human Rights Old and New; Rouledge and Kegal Paul, 1st Edition (1981).

Third Year - Sixth Semester	*Subject Code: U18PLBL315*	*Subject Credits: 03*

BUSINESS STRATEGY & POLICY

Objective: Acquaintance with the format of Auditing and Collection of Evidence. Clear insight into the basics of internal control system. The knowledge of the fundamental Vouching Cash Transaction and verification and valuation of assets and liabilities. Familiarity with the procedure for preparing appointment, recruitment and removable auditors. The knowledge of the fundamental in corporate audit and audit report (CARO 2003).

COURSE OUTLINE

UNIT – I
Meaning of Auditing – Scope & Objectives – Advantages & Limitations – Types of Audit and their applications – An overview of audit as a process – Determination of assertions to be verified – Audit Planning - Collection of audit evidence – Audit documentation.

UNIT – II
Internal Control System — meaning and objectives – role of internal audit & Statutory audit overview of vouchers documents and registers maintained by an organisation. Internal check system for cash, sales and purchases.

UNIT – III
Vouching: Meaning – Vouching of cash transactions – Vouching of trading transactions – Audit of Impersonal ledger; Verification and Valuation of assets & Liabilities.

UNIT – IV
Statutory Audit: Need for statutes on audit – Corporate audit (as per Companies Amendment Bill 2003) – Appointment, remuneration and removal of auditors – Rights duties and liabilities of a corporate auditor – Professional Ethics & Misconduct.

UNIT – V
Scope of Corporate Audit: Audit of Share capital – Debentures – Depreciation, provisions and reserves – Auditors Report (with reference to CARO, 2003)

Books Prescribed:

1. J. Thomas Cannon: Business strategy and policy, Harcourt, Brace & World, 1968
2. G. V. Satya Sekhar: Business Policy and Strategic Management, I. K. International Pvt Ltd, 2009
3. WIlliam H. Tomlinson, Robert G. Murdick, R. Carl Moor: Business Policy and Strategy: An Action Guide, Sixth Edition, CRC Press, 2000

Books for Reference:

1. Gupta C.B.: Business Policy and Strategy, S. Chand Publishing
2. B. Hiriyappa: Strategic Management and Business Policy, Booktango, 2013
3. Azhar Kozami: Business Policy and Strategic Management, Tata McGraw-Hill Education, 2002

Third Year - Sixth Semester	*Subject Code: U18PLBL316*	*Subject Credits: 03*

HUMAN RESOURCES MANAGEMENT

Objective: To acquaint the students with the importance of Human Resource Management and the qualities of Personnel Managers. To gain knowledge about the importance of Human resource planning. To familiarize with the process of Recruitment, selection, Training and Development. To highlight the importance of performance evaluation and Time management.

COURSE OUTLINE

UNIT I: INTRODUCTION OF HUMAN RESOURCE MANAGEMENT
Definition – Importance of Human Resources – Objectives of Human Resources Management – Functions of Human Resource Management – Qualities of Personnel Managers.

UNIT II: HUMAN RESOURCE PLANNING
Human Resource Planning – Importance and factors influencing HRP – Job Analysis – Job Description and Job Specification.

UNIT III: RECRUITMENT, SELECTION, TRAINING & DEVELOPMENT
Recruitment – Process and Sources of Recruitment – Selection – Purpose and process of Selection – Training and Development – Objectives and Importance of training and Development – Methods / Techniques of training.

UNIT IV: PERFORMANCE EVALUATION AND CONTROL PROCESS
Methods of Performance Evaluation – Promotion, Demotion, Transfer & Separation – Control process.

UNIT V: TIME MANAGEMENT
Introduction to Time Management – Setting goals and priorities – Importance of Time factor – Prioritizing work scheduling – Functions of the Time office – Flexible Work Arrangements.

Books Prescribed:

1. DeCenzo, D.A. and Robbins; S.P., Human Resource Management, Wiley India Pvt. Ltd., 10th Edn. 2011.
2. Ivanecevich, J.M.; Human Resource Management, Tata McGraw-Hill Education Pvt. Ltd., 10th Edn. 2010.
3. Mathis, R.L., Jackson, J. and Johnson, R.; Human Resource Management, South Western, 10th Edn, 2010.
4. Noe, R.A., Hollenbeck, Gerhart and Wright; Fundamentals of Human Resource Management, McGrawHill Education Ltd., 3rd Edn. 2012.
5. Rao, V.S.P., Human Resource Management, Excel Books, 3rd Edn, 2010.

Books for Reference:

1. L.M. Prasad; Human Resource Management, S. Chand &Sons, 2007.

2. Mamoria, C.B. and Gaonkar,S.V.; Personnel Management, Himalaya Publishing House, 2011.
3. Dessler, G.; Human Resource Management, Pearson, 12th Edn, 2011.
4. S.S. Khanka; Human Resource Management, S. Chand Ltd., 2007.
6. Ashwathappa, K.; Human Resource Management, Tata McGraw-Hill Education Pvt. Ltd., 6th Edn, 2010.

Third Year - Sixth Semester	*Subject Code: U18PCBL314*	*Subject Credits: 04*

PUBLIC INTERNATIONAL LAW

Objective: This paper explains about the International Law and its scope and significance, its impact on the states and imparts the students a wider knowledge on the International legislation.

COURSE OUTLINE

UNIT – I: INTRODUCTION

Development of International Law - Definitions - Nature of International law- Legality of International Law - Positive Morality - Theories as to basis of International Law.

UNIT – II: SOURCES AND SUBJECTS OF INTERNATIONAL LAW

Introduction - International Conventions - International Customs - General Principles of Law recognized by Civilized States - Decisions of Judicial or Arbitral Tribunals - Other Sources - Subjects of International Law- Various Theories - Realistic Theory - Fictional Theory- Functional Theory

Concept of State - State and Individual as a subject - Rights and Duties / Responsibilities - State Recognition -Theories - Kinds, Modes and Legal Effects - Nationality - Acquisition and Loss related issues - Asylum – Extradition - Territorial Sovereignty - Modes of Acquisition and Loss of Territory - State - Jurisdiction - State Succession and Liability

UNIT – III: LAW OF SEA

Historical Background- Maritime Belt - Territorial Sea - The Contiguous Zone- Exclusive Economic Zone - Continental shelf - The High Seas - International Sea Bed Area - Law of the Sea Conventions.

UNIT – IV: CONCEPT OF TREATY

Kinds of Treaties - Binding Force of Treaties- Pacta Sunt Servanda- Jus Cogens - Rebus Sic Stantibus - Parties of a Treaty - Formation of a Treaty- Reservations - Invalidity and Termination of Treaties.

UNIT – V: INTERNATIONAL ORGANIZATION

Origin, Nature and Scope of International Organizations - League of Nations, United Nations and it's Organs - International Tribunals.

Books Prescribed:

1. Dr. H.O.Agarwal: International Law & Human Rights; Central Law Publications, 20thEdition (2015)
2. M.P.Tandon: Public International Law; Allahabad Law Agency, 17th Edition (2014)
3. Joseph Gabriel Starke: Strake's International Law; Butterworths, 11thEdition (1994)

4. R.P. Anand: Salient documents in International Law; Banyan publications, 1st Edition (1994)
5. Yosifumi Tanaka: The International Law of the Sea; Cambridge University Press, 2nd Edition

Books for Reference:

1. S.K.Kapoor: A text book of International Law; Central Law Agency, 5th Edition (1982)
2. K.K.Bhattacharya: Public International Law; Central Law Agency, 5th Edition (1976)
3. Malcolm N.Shaw: International Law; Cambridge University Press, 8th Edition (2018)
4. Antonio Cassese: International Law; Oxford University Press, 2nd Edition (2001)
5. Ian Brownlie: Principles of Public International Law; Oxford University Press, 7th Edition (2008)
6. David John Haris: Cases & Materials on International Law; Sweet & Maxwell, 4th Edition (1991)

Third Year - Sixth Semester	*Subject Code: U18PCBL315*	*Subject Credits: 04*

COMPANY LAW

Objective: This paper is imparted in the view of increasing emphasis on adherence to norms of good corporate governance. Company Law assumes an added importance in the corporate legislative milieu, as it deals with structure, management, administration and conduct of affairs of Companies.

COURSE OUTLINE

UNIT – I: INTRODUCTION

Company: - Meaning and definition - characteristics - Kinds of Companies - private and public, government companies - statutory companies - Chartered - Registered - Limited and unlimited - Lifting of the corporate veil.

UNIT – II: COMPANIES ACT, 2013

Types of Companies and their incorporation - Formation of Companies - Procedural Aspects - Memorandum of Association - definition, clauses, provisions and procedures for alteration - - Articles of Association - definition, contents - provisions and procedures for alteration - distinction between Memorandum and Articles of Association • Doctrine of Ultra-Vires, Constructive Notice, Indoor Management - Promoters - Meaning, Position, Duties, Rights, Responsibilities and Liabilities - Prospectus - Contents - Statements in Lieu of Prospectus - Liabilities for misstatement.

UNIT – III: SHARES AND DEBENTURES

Shares - Classes of shares - Preference and equity shares -Public issue of shares - SEBI guidelines - Allotment of shares - Irregular allotment - Issue of shares at premium, par and discount - Listing of shares - Sweat equity shares - Right shares - Bonus shares - Shares with differential rights - Share certificate and share warrant. Calls, forfeiture, lien, surrender of shares - Demat form of shares -Transfer and transmission of shares - Buyback of shares Transfer under depository system - Debentures - Charges and Debenture Holder - Dividends - Borrowings - Lending - Investments - Contracts.

UNIT – IV:CORPORATE GOVERNANCE

Management of Companies: - Directors - Managing Director - Appointment – Qualification - Rights - Responsibilities and liabilities – Disqualification of directors Meetings - Requisites - Statutory, Annual, Extra ordinary and Board Meetings, Resolutions – Types -Accounts and Audits - Internal Auditing - National Financial Reporting Authority - E-filing and Information Technology Act, 2000 - Corporate Social Responsibility - Prevention of Oppression and Mismanagement – Investigation – Powers of Inspectors – Powers of NCLT, Company Law Board - Insider Trading.

UNIT – V: COMPROMISES, ARRANGEMENTS AND WINDING UP

Compromises - Arrangements and Amalgamations - Mergers and Acquisitions - Winding Up - Meaning - modes of winding up - winding up by the tribunal - Members voluntary winding up - creditor's voluntary winding up - winding up under the supervision of the court - Administration of NCLT and CLAT and Special Courts - Powers of Liquidators - Removal of Names of Companies from Register of Companies - Defunct Companies and Restoration - Revival and Rehabilitation of Sick Companies.

Emerging issues in Company Law: Producer Company - Limited liability partnership - Concept and formation of corporate governance - relevance and provisions under listing agreement - Securities and Exchange Board of India act 1992: Introduction - Object - establishment and management of SEBI - Functions and powers of SEBI – Securities Appellate Tribunal.

Statutory Materials:

1. Companies Act, 2013
2. Securities and Exchange Board of India Act, 1992
3. Information Technology Act, 2000

Books Prescribed:

1. Avtar Singh: Company Law; Eastern Book Company, 16th Edition (2015)
2. S.C. Tripathi: New Company Law; Central Law Publication, 1st Edition (2014)
3. Karn Gupta: Introduction to Company Law; Lexis Nexis, 1st Edition (2013)

Books for References:

1. Gower: Principles of Modern Company Law, Sweet & Maxwell, 9th Edition (2012)
2. Plamer: Company Law Manual; Sweet & Maxwell, 25th Edition (1992)
3. C.A. Kamal Garg: Bharat's Corporate & Allied Laws; 2nd Edition (2012)
4. G.K. Kapoor: Company Law and Practice, Taxmann's Publication, 23rd Edition (2018)

Third Year - Sixth Semester	*Subject Code: U18CCBL301*	*Subject Credits: 03*

CLINICAL COURSE – I
MOOT COURT

Objective: Moot court simulate a court hearing, in which students analyze a problem, research the relevant law, prepare written submissions, and present oral argument. Mooting enables students to enhance their argumentative skills, drafting skills and legal research and to demonstrate their interest in advocacy.

COURSE OUTLINE

This course consists of following:

1. Every student will do at least five moot courts in following subjects. The moot court work will be on assigned problems.
    - Constitutional Law
    - Environmental Law
    - International Law
    - Administrative Law
    - Family Law
    - Criminal Law
    - Civil Law

2. **WRITTEN SUBMISSIONS:**
    - The students should mandatorily submit 5memorials on either side based on the discretion of the concern faculty. The maximum mark for each memorial is 10.

3. **ORAL ARGUMENTS:**
    - Every student will be asked to argue on any two moot problems mandatorily i.e. one on petitioner/claimant side and another on Respondent side.

4. **EVALUATION SCHEME**

5 Written Submissions	10 Marks Each	5x10 = 50 Marks
2 Oral Arguments	25 Marks Each	2x25 = 50 Marks
TOTAL		**100 Marks**

Third Year - Sixth Semester	*Subject Code: U18PTBL303*	*Subject Credits: 02*

INTERNSHIP AND PRACTICAL TRAINING - III

Objective: The internship programmes are designed to acquaint the student with the actual practice of law by working under the supervision of legal luminaries. The student gains experience of applying theoretical knowledge from prior classroom training, when exposed to practical environment.

COURSE OUTLINE

During the summer vacation the students should compulsorily undergo Internship for a continuous period of 4 weeks and submit an internship report along with a internship certificate. This will be evaluated by the Internship Faculty Guide.

The student may choose to intern under any one the following category:

- Trial Advocate
- Appellate Advocate
- Law Firms
- Non-Governmental Organization
- Police Stations
- Banks
- Non Banking Financial Institutions
- Companies
- Registration Department
- Judiciary
- Legal Regulatory Authorities
- Legislatures
- Market Institutions
- Local Self-Government
- Other Legal Functionaries
- Dispute resolution Bodies
- Legal Services Authority

On completion of successful internship training every student will be awarded 2 credits

Fourth Year - Seventh Semester	*Subject Code: U18HCBL401*	*Subject Credits: 04*

HONOURS COURSE: I

MEDIA LAW

Objective: This paper seeks to establish a co-relationship of the much-flaunted Constitutional objective of freedom of speech and expression, and existing Rights and Restrictions governing the fourth estate, an essential pillar of Democratic Governance.

COURSE OUTLINE

UNIT - I: MASS MEDIA

Types of Press Films, Radio and Television - Ownership pattern-Press-Private-Public, Films-Private, Ownership patterns Radio & Television, Public - Difference between Visual and non-Visual Media-impact on People's minds - Press-Freedom of Speech and Expression-Article 19 (1) (a) Includes Freedom of the Press - Laws of defamation - obscenity - blasphemy and sedition. Law relating to employees wages and service conditions - Price and Page Schedule Regulation - Newsprint Control Order – Advertisement is it included within freedom of speech and expression? Press and the Monopolies and Restrictive Trade Practices Act.

UNIT – II:FILMS

How far included in freedom of speech and expression? Censorship of films-Constitutionality - The Abbas Case, Bandit queen case, Jolly LLB Case, Innocence of Muslims Case, Dam 999 Case - Difference between films and Press - why pre-censorship valid for films but not for the press? Censorship under the Cinematograph Act.

UNIT – III: RADIO AND TELEVISION

Monopoly of the Government over Radio and Television - Effect of television on people, Report of the Chanda Committee, Vargheese Committee, Government policy on Television and Radio - Commercial advertisement, Internal Scrutiny of serials etc., Judicial Review of Doordarshan decisions - Freedom to telecast.

UNIT – IV: CONSTITUTIONAL RESTRICTIONS RADIO AND TELEVISION

Subject to law of defamation and obscenity - Power to legislate-Article 246 read with the Seventh Schedule - Power to impose tax-licensing and licensing fee.

UNIT – V: MEDIA AND HUMAN RIGHTS

Media and Information, communication technology, Media and RTI, Media and Violation of Human Rights - Media and Right to Privacy.

Statutory materials:

1. Prashar Bharti Act 1990
2. Broadcasting Bill
3. Cinematography Act 1952
4. Cable T.V.Networks (regulation) Act of 1995
5. Advertisement Act of 1954
6. Indecent Representation (Prohibition) Act, 1986

Books Prescribed:

1. H.M. Seervai: Constitutional Law of India; Universal Law Publication, 1st Edn. (1991)
2. M.P. Jain: Constitutional Law of India; Lexis Nexis, 8th Edn. (2018)
3. Myneni: Media Law; Asia Law House, 2nd Edn. (2017)

Books for Reference:

1. S. Kundra: Media Laws and Indian Constitiotion; Anmol Publiccations, 1st Edn. (2005)
2. M. Neelamalar: Media Law and Ethics; Prentice hall, India Learning Ltd., 2nd Edn. (2009)
3. Vanita Kohli Khandekar: Inidan Media Business; Sage Publications, 4th Edn. (2017)

Fourth Year - Seventh Semester	*Subject Code: U18HCBL402*	*Subject Credits: 04*

HONOURS COURSE: II

DISASTER MANAGEMENT LAW

Objective: This paper is imparted to provide basic conceptual understanding of disasters and its relationships with development and to understand Medical and Psycho-Social Response to Disasters and to enhance awareness of Disaster Risk Management institutional processes in India.

COURSE OUTLINE

UNIT-1: INTRODUCTION TO DISASTER

Concepts of Hazard, Vulnerability, Risks, Natural Disasters (earthquake, Cyclone, Floods, Volcanoes) - Man Made Disaster (Armed conflicts and civil strip, Technological disasters, Human Settlement, Slow Disasters (famine, draught, epidemics) - Rapid Onset Disasters (Air Crash, tidal waves, Tsunami) Risks - Difference between Accidents and Disasters, Simple and Complex Disasters – Refugeeproblems, Political, Social, Economic impacts of Disasters, Gender and Social issues during disasters - principles of psychosocial issues and recovery during emergency situations - Equity issues in disasters - Refugee operations during disasters, Human Resettlement and Rehabilitation issues during and after disasters, Inter-sectoral coordination during disasters.

UNIT-II: DISASTER RISK MANAGEMENT IN INDIA:

The Disaster Management Act, 2005 - Definitions - The National Disaster Management Authority- Establishment of National Disaster Management Authority - Meetings of National Authority - Appointment of officers and other employees of the National Authority - Powers and functions of National Authority - Constitution of advisory committee by National Authority - Constitution of National Executive Committee -Constitution of sub-committees - Powers and functions of National Executive Committee - National plan - Guidelines for minimum standards of relief - Relief in loan repayment and others.

UNIT-III: STATE AND DISTRICT DISASTER MANAGEMENT AUTHORITY

Establishment of State and District Disaster Management Authority - Meetings of the State Authority - Appointment of officers and other employees of State Authority - Constitution of advisory committee by the State Authority - Powers and functions of State Authority- Guidelines for minimum standard of relief by State Authority - Constitution of State Executive Committee - Constitution of sub-committees by State Executive Committee - Functions of the

State Executive Committee - State Plan - Powers and functions of State Executive Committee in the event of threatening disaster situation.

UNIT IV: OFFENCES AND PENALTIES

Punishment for obstruction - Punishment for false claim - Punishment for misappropriation of money or materials - Punishment for false warning - Offences by Departments of the Government - Failure of officer in duty or his connivance at the contravention of the provisions of this Act - Penalty for contravention of any order regarding requisitioning - Offence by companies - Previous sanction for prosecution - Cognizance of offences - Finance, Accounts And Audit : National Disaster Response Fund - National Disaster Mitigation Fund - Establishment of funds by State Government - Allocation of funds by Ministries and Departments - Emergency procurement and accounting.

UNIT V: PUBLIC HEALTH RESPONSE AND INTERNATIONAL COOPERATION

Principles of Disaster Epidemiology - Rapid Health Assessment - Outbreak Investigation - Environment health hygiene and sanitation issues during disasters - Preventive and prophylactic measures - International cooperation in funding on public health during disaster - International Health Regulation, United Nation International Strategy for Disaster Risk Reduction (UNISDR), United Nation Disaster Management Team, International Search and Rescue Advisory Group, (INSARAG, Global Facility for Disaster Risk Reduction (GFDRR), Asean Region Forum (ARF), Asian disaster Reduction Centre (ADRC), SAARC 277 Disasters Management Centre (SDMC), USAID), UNDAC,UNOCHA, USAR.

Statutory Materials

1. The Disaster Management Act, 2005
2. The Disaster Management (National Disaster Response Force) Rules, 2008
3. Hazardous Wastes (Management and Handling) Rules, 1989

Books Prescribed:

1. R. Subramaniam: Disaster Management; Vikas Publishing House, 1st Edition (2018)
2. Tushar Battacharya: Disaster science and Management, Mc Graw Hill Education, (2017).
3. Harsh K. Gupta: Disaster Management; Universities Press, (2003)

Books for References:

1. Damon P. Coppola: Introduction to International Disaster Management, Butterworth-Heinemann; 3rd Edition (2015)
2. David Townes: Health in Humanitarian Emergencies: Principles and Practice for Public Health and Healthcare Practitioners; Cambridge University Press; 1 edition (31 May 2018)
3. Dr. Amit Awasthy: Disaster Management, Warning Response And Community Relocation, Global India Publications, New Delhi 2009.

Fourth Year - Seventh Semester	*Subject Code: U18PCBL416*	*Subject Credits: 04*

LABOUR LAW – I

Objective: This paper explains about the labour legislations viz Industrial disputes Act, the legislation which governs the factories and the scope and significance of Trade Union in a broader perspective.

COURSE OUTLINE

UNIT – I: EVOLUTION OF LABOUR LEGISLATION

Origin and Development of Labour Legislation - Object and Nature of Labour Legislation- Evolution of concept of Master and Servant Relationship - Theory of Laissez Faire and State Regulation of Labour Legislation and its Special Features- Role of International Labour Organization in Setting Labour Standards.

UNIT – II: TRADE UNION ACT, 1926

Definitions - History of Trade Union Movement - Registration of Trade Unions-Rights and Liabilities of Trade Unions-Immunities and Privileges of a Registered Trade Union - Trade Union Funds - Collective Bargaining - Amalgamation and Dissolution of Trade Unions-Recognition in Trade Unions.

UNIT – III: INDUSTRIAL DISPUTES ACT, 1947

Scope, Applicability and Definitions - Appropriate Government – Workmen – Industry - Industrial Disputes – Award – Settlement - Public Utility Service – Strike - Lock Out - Retrenchment - Lay Off - Closure - Machinery for the Settlement of Industrial Disputes - Works Committee - Conciliation Officers - Board of Conciliation - Court of Inquiry - Labour Court - Industrial Tribunal - Power to the Government for reference - Voluntary Arbitration - Unfair Labour Practices.

UNIT – IV: FACTORIES ACT, 1948

Object and Scope of the Act - Important Definitions - Statutory Agencies and their Powers for Enforcement of the Act - Approval, Licensing and Registration of Factories - Notice by Occupier -General Duties of the Occupier - General Duties of Manufacturers - Measures to be taken by Factories for Health, Safety and Welfare of Workers - Special Provisions relating to hazardous processes - Working hours of Adults - Additional provisions regulating employment of women in a factory - Employment of Children - Annual Leave with Wages - Penalties and Procedures - Compliances Under The Act.

UNIT – V: INDUSTRIAL EMPLOYMENT (STANDING ORDERS) ACT, 1946

Scope and Definitions – Procedure for Certification of Standing Orders – Duration and Modification of Certified Standing Orders – Domestic Enquiry and Disciplinary Procedures.

Statutory Materials

1. Industrial Disputes Act 1947
2. Trade Union Act 1926
3. Industrial Employment (Standing Orders) Act 1946
4. Factories Act 1948

Books Prescribed

1. K.M. Pillai; Labour and Industrial Law; Allahabad Law Agency;16th Edition (2016)
2. S.N. Misra; Labour and Industrial Law; Central Law Agency 28th Edition (2018)
3. Dr.V.G. Goswami; Labour and Industrial Laws; Central Law Agency latest edition (2019)

Books for Reference

1. O.P. Malhotra; The Law of Industrial disputes; Lexis Nexis;7th edition (2015)
2. K.D. Srivastava; Law relating to Trade Unions and Unfair Labour practices in India; Eastern Book Company 4th edition (2002)
3. K.D. Srivastava; Industrial Employment (Standing Orders) Act 1946;Eastern Book Company;4th edition (2000)

Fourth Year - Seventh Semester	*Subject Code: U18PCBL417*	*Subject Credits: 04*

ADMINISTRATIVE LAW

Objective: This paper includes all the major facets of Administrative Law and guides the students to understand the basic concepts and significances it changes according to the social, economic and political changes. It is only in the twentieth century that administrative law developed as a separate branch of legal discipline.

COURSE OUTLINE

UNIT – I: INTRODUCTION

Definition - Nature, Scope and Significance of Administrative Law - Relationship between Constitutional Law and Administrative Law - Evolution and Development of Administrative Law - India, UK, USA and France - Basic Doctrines- Rule of Law and its application in India – Montesquieu's Doctrine of Separation of Powers - Doctrine of Separation of Powers and its relevance in Contemporary Times

UNIT – II: PRINCIPLES OF NATURAL JUSTICE

Concept, Evolution and Importance - Principles of Natural Justice - Rule against Bias and Rule of Fair Hearing - Exceptions to Natural Justice - Violations of Natural Justice - Application of Natural Justice in India.

UNIT – III: DELEGATED LEGISLATION

Meaning of Delegated Legislation and its Growth - Delegated Legislation in USA and UK - Delegated Legislation in India - Comparison with USA & UK - Pre and Post Constitutional Period - Rules and Principles of Administrative Rule making - Delegated legislation - Excessive delegation - Permissible and Non permissible Delegated Legislation - Control Mechanisms of Delegated Legislation - Judicial Control - Parliamentary Control - Procedural Control - Sub-delegation - Conditional Legislation

UNIT – IV: ADMINISTRATIVE ADJUDICATION

Meaning, Needs and Reasons for its growth - Problems of Administrative Adjudication - Mechanism for Administrative Adjudication - Quasi judicial bodies – Tribunals - meaning, difference between tribunals and courts - its types- Statutory and Domestic Tribunals - Administrative Tribunal - Definition - Constitutional Status - Finality of decisions and Judicial Review - Administrative Directions - Meaning, Nature and Need for Administrative Directions - Enforceability of Administrative Directions - Administrative Discretion- Meaning and significance of Administrative Discretion - Judicial Control of Administrative Discretion - Grounds of control

UNIT – V: REVIEW OF ADMINISTRATIVE ACTIONS AND REMEDIES

Writ jurisdiction of Supreme Court and High Court, when the writs can be issued -when the writs cannot be issued - principles of writ jurisdiction - Grounds of review –Illegality, Irrationality, Procedural Impropriety, Proportionality - Doctrines developed by Judiciary - Doctrine of Legitimate Expectation - Doctrine of Proportionality - Doctrine of Reasonableness - Doctrine of Public Accountability - Doctrine of Promissory Estoppel - Equitable Remedies - Emerging Trends In Administration - Good Governance and Administrative Law - Ombudsman - Lok Pal and Lokayukta - Global administrative law

Books prescribed

1. M. P. Jain & S. N. Jain ;Principles of Administrative law; Lexis Nexis;7th edition (2019)
2. I. P. Massey, Administrative Law; Eastern Book Company; 9th edition (2017)
3. C. K. Takwani; Lectures on Administrative Law; Eastern Book Company latest edition (2014)

Books for reference

1. S. P. Sathe ; Administrative Law; Lexis Nexis; 7th edition (2016)
2. M.C Jain Kagzi; The Indian Administrative Law; Universal Law Publishing & Co 53rd edition (2014)
3. H. W. Wade & C.F Forsyth; Administrative Law; Oxford University Press;10th edition (2009)

Fourth Year - Seventh Semester	*Subject Code: U18PCBL418*	*Subject Credits: 04*

ENVIRONMENTAL LAW

Objective: Environmental law is a complex group of laws and regulations which operate to regulate the interaction of human life to the natural environment. This paper will be an eye opener for the students about the growing issues in this arena and need for immediate legislative action.

COURSE OUTLINE

UNIT – I: INTRODUCTION

Environment: Meaning - Environment Pollution: Meaning and Issues - Environmental (Protection) Act, 1986 - Meaning of 'Environment', 'Environment Pollutant', 'Environment Pollution' - Powers and Functions of Central Govt. - Important Notifications-Constitutional Guidelines - Right to Wholesome Environment - Evolution and Application - Relevant Provisions: Art. 14, 19 (1) (g), 21, 48-A, 51-A(g) - Environment Protection through Public Interest Litigation - Important doctrines - Doctrine of Strict Liability - Doctrine of Absolute Liability - Public trust doctrine - Polluter pays principle - Precautionary principle - Doctrine of Sustainable development – Agenda 21.

UNIT – II: PREVENTION AND CONTROL OF WATER, AIR, NOISE AND LAND POLLUTION

The Water (Prevention and Control of Pollution) Act, 1974 - Water Pollution: Definition - Central and State Pollution Control Boards: Constitution, Powers and Functions - Water Pollution Control Areas - Sample of effluents: Procedure - Restraint Order - Consent requirement: Procedure, Grant/Refusal, Withdrawal - Citizen Suit Provision

Air (Prevention and Control of Pollution) Act, 1981 - Air Pollution: Definition - Central and State Pollution Control Boards: Constitution, Powers and Functions - Air Pollution Control Areas -. Consent Requirement: Procedure, Grant/Refusal, Withdrawal - Sample of Effluents: Procedure - Restraint Order - Citizen Suit Provision -Environmental Impact Assessment

Noise Pollution Control Order, 2000 & 2002 and Land Pollution

BioMedical Waste Regulation - Plastic Waste (Management and Handling) Rules 2011 - E-Waste (Management) Rules, 2016.

UNIT – III: RESOURCE CONSERVATION & PROTECTION OF FORESTS AND WILD LIFE

Resource Conservation - Chennai Metropolitan Area Groundwater Authority (Regulation) Act 1987 - Rain Water Harvesting - Tamil Nadu Protection of Tanks and Eviction of Encroachment Act, 2007 - Role of Local Bodies.

Forest Act, 1927 - Kinds of forest - Private, Reserved, Protected and Village Forests - Protection of Specified Plants - The Forest (Conservation) Act, 1980 - Biological Diversity Act, 2002 - Cartagena Bio safety Protocol- Forest Conservation Vis-a Vis Tribals' Rights
The Wild Life (Protection) Act, 1972 - Authorities to be Appointed and Constituted under the Act - Hunting of Wild Animals -Prevention of Cruelty to Animals Act, 1960 - Protected Area - Trade or Commerce in Wild Animals - Animal Articles and Trophies - Its Prohibition

UNIT – IV: INTERNATIONAL ENVIRONMENT LAWS

Introduction to International Environmental Laws - Human Rights Perspective - Stockholm Declaration: Brief overview - Rio-Declaration: Brief Overview - United Nations Environment Programme- Nairobi Declaration, 1982 – Brundt land Report, 1987 - UNEP - National Green Tribunal - Constitution - Functions and Powers

UNIT – V: CURRENT TRENDS

Global Climate Change and Energy Policy - United Nations Environmental Programme (UNEP) - The United Nations' Framework Convention on Climate Change (UNFCC) - Kyoto Protocol - Human Rights and the Environment.

Statutory Materials

1. The Water (Prevention and Control of Pollution) Act, 1974
2. The Air (Prevention and Control of Pollution) Act, 1981
3. The Indian Forest Act, 1927 4. The Forest (Conservation) Act, 1980
4. The Wild Life Protection Act, 1972 6. The Environment (Protection) Act, 1986
5. The Public Liability Insurance Act, 1991
6. The National Environment Tribunal Act, 1995
7. The National Environment Appellate Authority Act, 1997
8. Biological Diversity Act,2002
9. Noise Pollution Control Order, 2000 & 2002

Books Prescribed:

1. S. Shanthakumar: Environmental Law-An Introduction: Lexis Nexis: 2nd Edition(2008)
2. P.Leelakrishnan: Environmental Law in India: Lexis Nexis: 5th Edition(2018)
3. Dr. S.C. Shastri: Environmental Law: Eastern Book Company: 6th Edition(2018)

Books for Reference:

1. Justice T.S. Doabia: Environmental and Pollution Laws in India(Vol 1&2): Lexis Nexis: 3rd Edition(2017)
2. Shyam Divan & Armin Rosencranz: Environmental Law and Policy in India: Oxford University Press: 2nd Edition(2002)
3. P.Leelakrishnan: Environmental Law case book: Lexis Nexis: 2nd Edition(2010)

Fourth Year - Seventh Semester	*Subject Code: U18CCBL402*	*Subject Credits: 03*

CLINICAL COURSE: II
PROFESSIONAL ETHICS, ACCOUNTANCY
FOR LAWYERS &BAR BENCH RELATIONS

Objective: Every profession has rules of ethics to which its members are bound and the one who violates them will be imposed with liability in various forms. Likewise, a lawyer who does not follow ethical and other rules of professional conduct can be censured and can also be suspended from law practice or even disbarred. This paper will introduce students to the rules of professional ethics which applies to lawyers in India. This paper is designed with a main purpose of making law students [on the verge of completing their law course] to get acquainted with, analyze and critically examine such rules of professional ethics.

COURSE OUTLINE

UNIT-I: DEVELOPMENT OF LEGAL PROFESSION IN INDIA

The Advocates Act, 1961 - Right to Practice - a right or privilege? - Constitutional guarantee under Article 19(1) (g) and its scope - Enrolment and Practice - Regulation governing enrolment and practice - Practice of Law - Solicitors firm - Elements of Advocacy

UNIT-II: SEVEN LAMPS OF ADVOCACY

Advocates duties towards public, clients, court, and other advocates and legal aid - Bar Council Code of Ethics.

UNIT-III: DISCIPLINARY PROCEEDINGS

Professional misconduct - Disqualifications - Functions of Bar Council of India/State Bar Councils in dealing with the disciplinary proceedings - Disciplinary Committees - Powers and functions - Disqualification and removal from rolls.

UNIT-IV: ACCOUNTANCY FOR LAWYERS

Nature and functions of accounting - Important branches of accounting - Accounting and Law - Bar Bench Relations.

ALLOCATION OF MARKS

The written examination of this paper will be for 50 marks and the remaining 50 marks for record and viva voce

MARKS ALLOCATION

External Examination	**50 Marks**
Project work	**30 Marks**
Viva-Voce	**20 Marks**
TOTAL	**100 Marks**

Record (30 marks): Each student shall write 50 selected opinions of the Disciplinary Committees of Bar Councils and 10 major judgments of the Supreme Court of India in the Record. The Record shall be evaluated for 30marks by the teacher concerned.

Viva- voce (20marks): There shall be viva-voce examination on the above components

Note: All the three components of the paper (written examination, submission of record and attendance in viva) shall be compulsory.

Statutory Material

1. Advocates Act, 1961

Books Prescribed:

1. J.P.S.Sirohi: Professional Ethics, Accountancy for Lawyers and Bench Bar Relations, Allahabadh Law Agency, (2015)
2. Dr.S.R.Myneni: Professional Ethics, Accountancy for Lawyers and Bench Bar Relations, Asia Law House, First Edition, (2018)
3. Kailash Rai: Professional Ethics, Accountancy for Lawyers and Bench Bar Relation, Allahabad Law agency, First Edition, (2015)

Books for Reference:

2. Ram Chandra Jha, (Advocate), Girish D Bhatt, B S Chauhan, and India - Supreme Court; Bar Council of India Trust: Selected Judgments on Professional Ethics, Bar Council of India Trust, 2002.
3. G.B.Reddy: Practical Advocacy of Law, Gogia Law Agency, Hyderabad, 2nd Edition, 2005.
4. S.P.Gupta: Professional Ethics, Accountancy for Lawyers and Bench bar Relations, Asia Law House, and Hyderabad.

Fourth Year - Eighth Semester	*Subject Code: U18HCBL403*	*Subject Credits: 04*

HONOURS COURSE: III

LAND LAWS INCLUDING TENURE AND TENANCY SYSTEM

Objective: This paper focuses on land reforms in Tamil Nadu. Besides, it deals with land acquisition procedures and the rent laws which inculcate the students to be familiar with Central & State Land Laws.

UNIT – I: CONCEPTUAL AND HISTORICAL BACKGROUND ON LAND REFORMS AND LAND LAWS

Origin of land rights - Different kind of land rights - Ownership of land - Constitutional Perspective – Article 31- A, Article 31-B, Article 31-C, Read With Ninth Schedule, Article 300 A - Doctrine of Eminent Domain - Doctrine of Escheat - Early Revenue Administration in Tamil Nadu – Grants, Zamindari, Ryotwari and Inamdhari Systems - The Zamindari System: Rights and Obligations of Zamindars – Abolition of Zamindari System - Inamdhari System: Major and Minor Inams – Abolition of Inams - Permanent settlement – Ryotwari System: Rights and liabilities of Ryotwari Pattadar – Tamil Nadu Estates (Abolition and Conversion into Ryotwari) Act, 1948 - Laws relating to abolition of Intermediaries.

UNIT – II: LANDS ACQUISITION

Laws relating to acquisition of property and Governmental control and use of land Land Acquisition Act, 1894 (repealed) – Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 (LARR Act, 2013) – Need for new land acquisition law – Definitions: affected family land, landowner, holding of land etc., Safeguards against indiscriminate land acquisition – Compensation, Rehabilitation and Resettlement – LARR Authority – Apportionment of compensation – Payment of Compensation – Temporary Occupation of Land – Amendment Ordinance 2014 – Time to time amendments.

UNIT – III: ENACTMENTS ON CULTIVATING TENANTS

Tamil Nadu Cultivating Tenants Protection Act, 1955: Definitions – landlord not entitled to evict the tenant – Right to restoration of Possession-Special provision for member of armed forces-Bar of Jurisdiction of Civil Courts Revision by High Courts – Tamil Nadu Cultivating Tenants Arrears of Rent Relief Act, 1972, 1980 - Tamil Nadu Cultivating Tenants Protection from Eviction Act, 1983, 1989

Tamil Nadu Cultivating Tenants (Payment of Fair Rent) Act, 1956: Definitions – Interpretations - Right and liabilities of cultivating tenants and land owner - Fair rent - Alteration or Revision of Fair Rent – Rent Court and Rent Tribunals – Exception - Powers of High Court

The Tamil Nadu Cultivating Tenants Special Provisions Act, 1968: Payment of Installment – Land Lord may evict a Cultivating Tenant for default in payment of installments

Tamil Nadu Agricultural Land Record of Tenancy Right Act, 1969: Definition - Preparation of Records of Tenancy Rights - Record Officer - Advisory Committee - Modification of entries in the draft and approved record of tenancy rights - Appeals – Revision – Penalty for failure to furnish information cognizance of offence

Tamil Nadu Occupants of Kudiyiruppu and Conferment of Ownership Act, 1971: Definitions – Occupant - Conferment of Ownership - Alternative Site - Prohibition of alienation-authorised Officer-compensation – Offences by companies

UNIT- IV: LAWS ON LAND CEILING

Land Ceiling: Urban Land Ceiling and Agrarian Land Ceiling - Tamil Nadu Land Reforms Fixation of Ceiling o

n Land Act, 1961 and Amended Act 1971: Preliminary – Definitions: Ceiling area, Family, Stridhana Property, Standard Acre, etc., Fixation of Ceiling on land holdings - Land BoardIndustrial undertakings – Publication of statement - Land Tribunal-Authorised officer - Determination of Compensation –Exemptions - Special Appellate Tribunal - Courts - Penal Provisions.

UNIT V: TAMIL NADU BUILDINGS AND TENANCY LAW

Tamil Nadu Buildings (Lease and Rent Control) Act, 1960: Introduction – Definitions – Fixation of Fair rent-Changes in Fair Rent-Agreed rent-Procedure for avoid default in payment of rent-Grounds for eviction of tenant-Jurisdiction of the Rent Controller – Execution Proceedings by Legal representatives or against Legal representatives- Appeal.

Tamil Nadu Apartment Ownership Act, 1994: Definition- Ownership, Heritability and transferability of Apartment – Deeds of Apartment and its Registration-Societies or Association of Apartment Owners, its bye-laws and Functions

Statutory Materials

1. The Right to Fair Compensation and Transparency in land Acquisition, Rehabilitation & Resettlement Act, 2013. (Land Acquisition Act, 2013)
2. The Tamil Nadu Buildings (Lease & Rent Control) Act, 1960.
3. Urban Land (Ceiling &Regulation) Act, 1976.

Books Prescribed

1. Judith Anne Mackenzie & Mary Phillips: Land Law; Oxford University Press, 14th Edition (2012).
2. V.G.Ramachandran: Law of Land Acquisition and Compensation; Law Publication in Komm. (1983)
3. Pro. A. Chandrasekaran: Land Laws of Tamil Nadu; C. Sitharaman & Co. Pvt Ltd, Edition (2013).
4. P.K.Agrawal: Land Reforms in India; M.D.Publication Pvt.Ltd, 1st Edition (1993).

Books for Reference

1. Avtar Singh: Law of Carriage; Eastern Book Co., 4th Edition (2005).
2. K.P.Palaniappan: Law of Land Acquisition and Compensation, (1963)
3. Durga Das Basu: Indian Constitutional Law; Kamal Law House, 3rd Edition (2011).
4. Dr. N. Maheshwara Swamy: Land Laws under the Constitution of India,; Asia Law House, Hyderabad, 1st Edition 2006.
5. Hemant Goel: Land Laws; New Era Law Publication

Fourth Year - Eighth Semester	*Subject Code: U18PCBL419*	*Subject Credits: 04*

LABOUR LAW – II

Objective: This paper will provide extensive knowledge and guidance to the student about social security legislations in India and how far it has been implemented to attain welfare state which is described in the Directive Principles of State Policy.

COURSE OUTLINE

UNIT – I: THE PAYMENT OF WAGES ACT, 1936

Object, Scope and Application of the Act -Definition of Wage, Responsibility for Payment of Wages, Fixation of Wage Period, Time of Payment of Wage Deductions which may be made from Wages, Maximum Amount of Deduction.

The Minimum Wages Act, 1948: Concept of Minimum Wage, Fair Wage, Living Wage and Need Based Minimum Constitutional Validity of the Minimum Wages Act, 1948, Procedure for Fixation and Revision of Minimum Wages, Fixation of Minimum Rates of Wage by Time Rate or by Piece Rate, Procedure for Hearing and Deciding Claims

UNIT – II: THE EMPLOYEE'S COMPENSATION ACT, 1923

Definition of Dependant, Workman, Partial Disablement and Total Disablement - Employer's Liability for Compensation - Doctrine of Notional Extension, When Employer is not liable Employer's Liability when Contract or is engaged, Amount of Compensation, Distribution of Compensation - Procedure in Proceedings before Commissioner , Appeals Retirement Benefits. Employee's Provident fund and miscellaneous provisions Act, 1952 - Employees Pension Scheme, 1995 and Family Pension Scheme - Social Security for the unorganized Sector

Employees Provident Funds And Miscellaneous Provisions Act, 1952: Introduction : Application of the Act - Important Definitions - Schemes Under the Act - Employees Provident Fund Scheme - Page Employees' Pension Scheme - Employees' Deposit-Linked Insurance Scheme - Determination of Moneys Due from Employers - Transfer of Accounts - Protection against Attachment - Power to Exempt

UNIT – III: PAYMENT OF BONUS ACT, 1965

Object and Scope of the Act - Application of the Act, Act not to Apply to Certain Classes of Employees - Important Definitions - Calculation of Amount Payable as Bonus - Computation of gross profits - Deductions from gross profits - Calculation of direct tax payable by the employer - Computation of available surplus - Eligibility for Bonus and its Payment - Bonus Linked with Production or Productivity - Power of Exemption - Penalties - Offences by Companies

Payment of Gratuity Act, 1972: Introduction - Who is an Employee - Important Definitions - When, is Gratuity Payable - To Whom is Gratuity Payable - Exemptions - Rights and Obligations of Employees - Rights and Obligations of the Employer - Recovery of Gratuity - Protection of Gratuity –

Maternity Benefit Act, 1961 :Introduction - Definition - Employment of or work by women prohibited during certain periods - Right to payment of maternity benefits - Notice of claim for maternity benefit -Nursing -Registers - Penalty for contravention of Act by employer

UNIT – IV: CONTRACT LABOUR (REGULATION AND ABOLITION) ACT, 1970

Scope and Application -Act not to Apply to Certain Establishments - Important Definitions - The Advisory Boards - Registration of Establishments Employing Contract Labour - Effect of Non-registration - Prohibition of Employment of Contract Labour - Appointment of Licensing Officer and Licensing of Contractors - Welfare and Health of Contact Labour - Rules Framed Under the Act by the Central Government on the Question of Wages -Penalties and Procedure - Inspectors -Maintenance of Records and Registers

UNIT– V: RESOLUTION OF INDUSTRIAL DISPUTE

Industrial Dispute and Individual Dispute Arena of Interaction and Participants: Industry, Workman and Employer - Settlement of Industrial Dispute i) Works Committee ii) Conciliation Machinery iii) Court of Enquiry iv) Voluntary Arbitration - Adjudication: Labour Court, Tribunal and National Tribunal - Powers of the Appropriate Government under the Industrial Disputes Act, 1947 - Unfair Labour Practice

Statutory Material:

1. The Payment of Wages Act, 1936
2. The Minimum Wages Act, 1948
3. The Employee's Compensation Act, 1923
4. Employees Provident Funds And Miscellaneous Provisions Act, 1952
5. Payment of Bonus Act, 1965
6. Payment of Gratuity Act, 1972
7. Maternity Benefit Act, 1961
8. Contract Labour (Regulation and Abolition) Act, 1970

Books Prescribed:

1. Industrial Law; Eastern Book Company by P.L. Malik; Lalbagh, Lucknow.
2. Handbook of Industrial Law by N.D. Kapoor, Sultan Chand & Sons
3. Economic, Labour and Industrial Laws by S.S. Gulshan, Sultan Chand & Sons,
4. Labour and Industrial Laws (Pocket Edition) by P. L. Malik, Eastern Book Company.
5. Labour Laws by H.L. Kumar, Universal Laws Publishing Co. Pvt. Ltd.,
6. Labour& Industrial Laws (Legal Manual) : Universal Law Publishing Co. Pvt. Ltd
7. Principles of Statutory Interpretation by G.P. Singh, Wadhwa Publishing Company
8. Interpretation of Statutes by B.M.Gandhi; Eastern Book Company.

Books for References

1. Cases and Materials onLabour Law and Labour Relation by M.S Siddiqui, Indian Law Institute, 1963
2. Industrial Law by P.L. Malik, Eastern Book Company, 2013
3. Labour and Industrial Law by Dr. Goswami, Central Law Agency, 2011
4. Labour and Industrial Law byChaturvedi
5. Labour Adjudication in India by ZMS Siddiqi and M.AfzalWani, ILI, 2001.

Journals

1. e-bulletin : Available on ICSI website - www.icsi.edu
2. Chartered Secretary: The ICSI, New Delhi-110 003. (Monthly)
3. All India Reporter : All India Reporter Ltd., Congress Nagar, Nagpur

Fourth Year - Eighth Semester	*Subject Code: U18PCBL420*	*Subject Credits: 04*

LAW OF INSURANCE

Objective : The object of this course is to make students understand the concept of Insurance as it is a wide spread business and the syllabus covers the various aspects of IRDA, Life Insurance, premium, risk, Marine Insurance, Fire Insurance etc.,

COURSE OUTLINE

UNIT – I: NATURE OF INSURANCE

Contract of Insurance- definition, nature and meaning, General principles of Insurance, Insurable Interest and Premium- definition, Mode of payment, forfeiture, return of premium, classifications of contract of insurance, duration of insurable interest and days of grace. Insurance Business –Control by State Agencies, Life Insurance Corporation Act – 1956, Functions and Powers of Corporation, Control Envisaged by the Central Agency, General Insurance Corporation, Powers and Functions.

UNIT – II: RISK

Meaning, scope, elements, alteration of risk, Insurance Policy –classification, commencement, duration of the policy, terms and conditions, effect of breach of conditions ,lapse and revival of the policy, Assignment and Nomination of Policy, Double Insurance, Re-insurance, Assurance, Insurance Regulatory and development Authority.

UNIT – III: LIFE INSURANCE

Definition, nature and scope, kinds of Life Insurance, non-disclosure and misrepresentation, Doctrine of Utmost good faith, circumstances affecting the risk, Amount recoverable under life insurance policy, Automatic extension clause, persons entitled to payment, Assignment and Nomination, settlement of claim and payment of money.

UNIT – IV: FIRE INSURANCE AND MARINE INSURANCE

Definition, nature and scope of fire insurance, Amount recoverable under fire insurance, doctrine of reinstatement, doctrine of subrogation, Doctrine of contribution. Nature and scope of Marine insurance, classification of Marine Policies, voyage- Deviation Perils of the

sea, proximate cause, measure of Indemnity, warranties in marine insurance, loss and kinds of losses.

UNIT – V: MOTOR AND ACCIDENT INSURANCE – Scope and nature, legal parameters, tribunals, Other types of Insurance- burglary and theft Insurance, fidelity Insurance, Public Liability Insurance, Plate-Glass Insurance, Goods in transit Insurance, Insurance covering the risk of storm and tempest.

Books Prescribed:

1. K. S. N. Murthy, K.V. S. Sarma: Modern Law of Insurance In India; Lexis Nexis;1st edition (2013)
2. Gaurav Varshney: Insurance Laws; Lexis Nexis; 1st Edition (2017)
3. Avtar Singh: Law of Insurance; Eastern Book Company (2017)
4. Dr. C.L. Tyagi: Insurance Law and Practice; Atlantic Publication; 2nd Edition (2016)

Books for References:

1. M.N. Srinivasan, K. Kannan: Principles of Insurance Law; Lexis Nexis; Tenth edition (2017)
2. Neelam C. Gulati: Banking and Insurance: Principles & Practices; Excel Books (2011)
3. Taxmann: Insurance Laws Manual; Taxmann's Publication; 20th Edition (2019)

Fourth Year - Eighth Semester	*Subject Code: U18PCBL421*	*Subject Credits: 04*

LAW OF TAXATION

Objective: The objective of this course is to introduce to the students the concept of tax, various kinds of taxes, calculation of Income tax, exemption from taxation, deductions, ceiling limit etc. This course also aims to impart knowledge to the students regarding various taxing statutes and to provide detailed in-depth knowledge in the area of Direct and Indirect Taxation.

COURSE OUTLINE

UNIT – I: CONCEPT OFTAXATION

Definition of Tax - Distinction between Tax and Fee - Mutual relationship between Income Tax Act and Finance Act – Cannons of taxation - Kinds of taxes - Progressive, Proportion, Regressive and Digressive - Direct and Indirect taxes - Tax Avoidance - Tax Evasion - Double Taxation.

UNIT – II: CONSTITUTIONAL BASIS FOR TAXATION

Applicability of doctrine under the constitution to taxation laws – Article 265 – Union & State List entities – Fundamental Rights and taxing Statutes - Interpretation of tax laws.

UNIT – III: THE INDIAN INCOME TAX ACT, 1961

A. **Preliminaries-** Concepts; 'income', 'agricultural income', 'casual income', 'assessee' 'person'- Residential status – Previous year, Assessment year – General charging section and specific charging section – Income – Received – Arising – 'Accrual'- Scope and total income – Exemption from taxation

B. **Taxability** under 'specific heads':

   a) Income from 'salaries'
   b) Income from 'house property'
   c) Income from 'business or profession'
   d) Income from 'capital gains'
   e) Income from 'other sources'

C. **Clubbing of income:** Income of other persons in assessee's total income.

UNIT – IV: COMPUTATION OF TAXABLE INCOME

Procedure for assessment - Computation of total income and tax liability of an individual, H.U.F., and firm - Tax deduction at source - Advance payment of tax - Treatment of losses – set-off-carry forward of loss - Deductions allowed in certain cases – chapter VIA deductions - Assessment of special class of assesses

UNIT – V: GOODS AND SERVICE TAX

A. Overview of GST - Concepts – Limitations of VAT – Need for Tax Reforms - Justification for introduction of GST - Shortcomings and advantages at the Central Level and State Level on introduction of GST- Process of Introduction of GST - Constitutional Amendments.

B. Subsumed under GST - Taxes and Duties outside the purview of GST: Tax on items containing Alcohol – Tax on Petroleum products - Tax on Tobacco products - Taxation of Services

C. Registration Procedure

D. Meaning and Scope of Supply: Taxable Supply - Supply of Goods and Supply of Services - Course or Furtherance of Business - Special Transactions - Time of Supply

E. Assessment: Self-assessment - Provisional assessment –Security of Returns - Assessment of Non-filers of returns - Assessment of Unregistered persons –Audit and Assessment – Other features of Dual GST model.

F. Levy and Exemption of Tax: Chargeability – Collection at Source –E-Commerce - Composition Levy - Tax under Central GST and State GST - Zero-rating of Exports – GST on Imports –Returns under GST –Taxation of Services–Remission of Tax - Adjustment and Refund of GST.

Books Prescribed:

1. B.K.Goyal: Taxation Laws; Singhal Law Publications (2018)
2. Dr. Vinod K. Singhania: Direct Taxes Ready Reckoner; Taxmann Publications Pvt. Ltd.; 41st Edition (2019)
3. Dr. H.C. Mehrotra and Prof. V.P. Agarwal: Goods and Services Tax GST (4th Edition)
4. Dr.Sanjiv Agarwal: Goods and Services Tax - Laws, Concepts & Impact Analysis; Bloomsbury India; First edition (2017)
5. Prof. Jayakumar Sithanandam: Textbook on Goods and Services Tax Laws; White Falcon Publishing; 1 edition (2019)

Books for References:

1. C. A. Atul Kumar Gupta: Goods and Services Tax: Law, Practice & Procedures; OakBridge Publishing (2019)

2. Dr. Girish Ahuja and Dr. Ravi Gupta: Direct Taxes Law & Practice; Wolters Kluwer India Pvt. Ltd.; Tenth edition (2018)
3. U.K. Bhargava: Income Tax Act-as Amended by Taxation Laws (64th Edition 2019)

Fourth Year - Eighth Semester	*Subject Code: U18CCBL403*	*Subject Credits: 03*

CLINICAL COURSE: III

ALTERNATE DISPUTE RESOLUTION

Objective: This paper is imparted to create practical knowledge and awareness in the Arbitration, Conciliation and Mediation proceedings in India and International Arena.

COURSE OUTLINE

UNIT – I: INTRODUCTION

Concept and Essential features - Need of Arbitration in International and Indian Law - Arbitration Law before 1996 - Arbitration Law after 1996 - Arbitration Agreement - Appointment of Arbitrator - Conduct of Arbitration Proceedings - Power of Courts to interfere in Arbitration Proceedings - Place of Arbitration - Law applicable to the Arbitration - Evolution of mediation/conciliation as a mode of settlement of disputes - distinction between arbitration, mediation, conciliation and negotiation – International Commercial Arbitration.

UNIT – II: MEDIATION AND CONCILIATION

Theory of mediation - Role of the mediator - Drafting Mediation and Conciliation clauses and agreements initiating mediation (court annexed and private) -The Mediation/Conciliation process Confidentiality - Mediation /Conciliation Mediation in India, institutions, and their role - Lok Adalats.

UNIT – III: INTERIM MEASURES

Jurisdictional Issues - Arbitral Award - Setting Aside the Arbitral Award - Enforcement of Arbitral Award - Online Dispute Resolution - International Dispute Resolution - Foreign Award - New York Convention -Geneva Convention - Enforcement of Foreign Award -Public Order.

MARKS ALLOCATION

External Examination	**50 Marks**
Project work on Arbitration / Mediation (Practical exercises in the preparation and conduct of arbitration &mediation)	**25 Marks**
Viva-Voce	**25 Marks**
TOTAL	**100 Marks**

Statutory Materials:

1. International Conventions
2. Arbitration and Conciliation Act, 1996

3. Arbitration and conciliation (Amendment) Act, 2015

Books Prescribed:

1. Avtar Singh: The Law of Arbitration and Conciliation; Eastern Book Company, 11th Edition (2018)
2. Mallika Taly: Arbitration Law- A Primer; Eastern Book Company, 1st Edition(2011)
3. K V Satyanarayana: Law of Arbitration and Conciliation in India; Asia Law House, 1st Edition (2017)
4. Dr. N.V. Paranjape: Law Relating to Arbitration and Conciliation in India; Central Law Agency, 7th Edition (2016)
5. Dr. S.C.Tripathi: Arbitration and Conciliation Act, 1996 with Alternate Means of Settlement of Disputes; Central Law Publication, 8th Edition (2017)

Books for References:

1. J.G. Merrills: International Dispute Settlement; Cambridge University Press, 5th Edition (2005)
2. P.C.Markanda: Arbitration Step By Step; Lexis Nexis, 2nd Edition (2017)
3. Nakul Dewa: Enforcing Arbitral Awards in India; Lexis Nexis, 1st Edition (2017)
4. Justice S.B.Malik: Commentary on the Arbitration and Conciliation Act; Universal Law Publications, 8th Edition (2018)
5. Justice R.S.Bachawat: The Law of Arbitration & Conciliation; Lexis Nexis, 6th Edition (2018)
6. Dr. Ashwinie Kumar Bansal: Arbitration Awards - Law on Setting Aside and Execution of Arbitration Awards, Agreements and Appoimtment of Arbitrators; Universal Law Publications, 3rd Edition (2014)

Fourth Year - Eighth Semester	*Subject Code: U18CCBL403*	*Subject Credits: 02*

INTERNSHIP AND PRACTICAL TRAINING - IV

Objective: The internship programmes are designed to acquaint the student with the actual practice of law by working under the supervision of legal luminaries. The student gains experience of applying theoretical knowledge from prior classroom training, when exposed to practical environment.

COURSE OUTLINE

During the summer vacation the students should compulsorily undergo Internship for a continuous period of 4 weeks and submit an internship report along with a internship certificate. This will be evaluated by the Internship Faculty Guide.

The student may choose to intern under any one the following category:

- Trial Advocate
- Appellate Advocate
- Law Firms
- Non-Governmental Organization
- Police Stations
- Banks
- Non Banking Financial Institutions
- Companies
- Registration Department
- Judiciary
- Legal Regulatory Authorities
- Legislatures
- Market Institutions
- Local Self-Government
- Other Legal Functionaries
- Dispute resolution Bodies
- Legal Services Authority

On completion of successful internship training every student will be awarded 2 credits

Fifth Year - Ninth Semester	*Subject Code: U18HCBL504*	*Subject Credits: 04*

HONOURS COURSE: IV

MINORITIES LAW

Objective: To make the students aware of the importance of rights of minorities, to familiarize them with the constitutional provisions related to minorities, to acquaint them with the rights of minority educational institutions and exposition of the subject matter in detail with the help of legislative, judicial and other materials.

COURSE OUTLINE

UNIT – I: INTRODUCTION

Minorities in Indian Society: Concept of Minorities Linguistic Minorities Religious Minorities Secularism

UNIT – II: INTERNATIONAL NORMS FOR PROTECTION OF MINORITIES

Human Rights of Minorities Minority Rights under the International Covenant on Civil and Political Rights Non-discrimination provisions of the United Nations Charter 1945 Declaration on Rights of Minorities

UNIT – III: MINORITY RIGHTS

Right to religion Linguistic rights Right to culture and traditions National Commission for Minority

UNIT – IV: RIGHTS OF MINORITY IN EDUCATIONAL INSTITUTIONS

Educational rights of Minorities Right to administer Minority educational institution Aided and Unaided Minority Educational Institutions and Governmental Controls National Commission for Minority Educational Institutions

UNIT – V: SOCIETAL STATUS OF MINORITIES

Victimistion- Muslim victims over past ten decades, Caste based violence over minorities, linguistic minorities, Minorities in rural areas over the country.

Books Prescribed:

1. M.P. Jain: Constitutional Law of India; Lexis Nexis, 8th Edn. (2018)
2. D.D. Basu: Commentary on the constitution of India; Lexis Nexis, 7th Edn. (2016)
3. A. P. Datar: Commentary on the constitution of India; Lexis Nexis, 1st Edn. (2007)
4. H.M. Seervai: Constitutional Law of India; Universal Law Publication, 1st Edn. (2015)
5. M. P. Singh: Constitution of India; Eastern Book Company, (2016)

Books for Reference:

1. Stephan Mary: Ethnicity, Nationalism & Minority Rights; Cambridge University Press, (2004)
2. Thornberry, Patrick: International Law and the Rightd of the Minorities; Calendor Press, (1993)
3. Sheth D. L. & Gurpreet Mahajan: Internation law and the Nation State; Oxford University Press, 1st Edn. (2000)

Fifth Year - Ninth Semester	*Subject Code: U18HCBL505*	*Subject Credits: 04*

HONOURS COURSE: V

GENDER JUSTICE AND FEMINIST JURISPRUDENCE

Objective: The uneven trajectory of social change may help to inform feminist legal debates and the teaching of feminist jurisprudence among those contemplating the inclusion of such material in their law curriculum. This paper will be an eye-opener for the students in this area of Jurisprudence.

COURSE OUTLINE

UNIT – I: WOMEN EMPOWERMENT AS A SOCIAL CHANGE

- Role of law in empowering women –Feminism and Feminist Jurisprudence – Emergence of feminism and feminist jurisprudence -Different theories of feminism and feminist jurisprudence- Distinction between "sex" (nature) and "gender" (culture)-Concept of gender justice - Gender Discrimination - Gender Equality

UNIT - II: GENDER JUSTICE UNDER THE CONSTITUTION OF INDIA

Social justice and gender justice - interrelationship - Article 14, 15 and 16, Article 21& 23, Directive Principles of State Policy and fundamental duties- Reservation under 73rd &74th Constitutional amendment - Judicial approaches to equality - Formal and Substantive equality – Sameness, Correctionist and Protectionist approaches of Judiciary – Role of Human Rights Commissions,Women's Commissions and judiciary in ensuring Gender Justice.

UNIT- III: PERSONAL LAWS AND GENDER JUSTICE

Marriage and Divorce, Maintenance – guardianship-adoption Inheritance Right, Uniform Personal Code, Concept of Matrimonial property - emancipation of Women - Empowerment of Women and Local Self Government.

UNIT- IV: GENDER JUSTICE AND CRIMINAL LAW

Protection of women's interests under IPC - relevant offences Dowry death -Rape - Bigamy - Adultery - Cruelty to married women - Criminal Law Amendment Act 2013 -Special legislations for Women - Prisons Act 1894, Factories Act 1948, Mines Act 1952, Immoral Traffic (Prevention Act) 1956, Dowry Prohibition Act 1961, Maternity Benefit Act 1961, Medical Termination of Pregnancy Act 1971, Equal Remuneration Act 1976, indecent Representation of Women (Prohibition) Act 1986, Commission of Sati (Prevention) Act 1987, Pre-conception and Prenatal Diagnostics Techniques (Prohibition of sex Selection) Act 1994, Prevention of Women from Domestic Violence Act 2005, Sexual Harassment of women at Workplace (Prevention, Prohibition and Redressal) Act 2013

UNIT - V: GENDER JUSTICE UNDER INTERNATIONAL CONVENTIONS AND DECLARATIONS

Judicial Attitude towards Gender Justice

Books Prescribed:

1. Prof. Dr. G. Rajasekharan Nair: Gender Justice under Criminal Justice System; Eastern Law House; 2nd Edn. (2011)
2. G.B. Reddy: Women and the Law; Gogia Law Agency; 2nd Edn. (2015)
3. S.P. Sathe: Towards Gender Justice; Journal of ILI No. 1-37 & No 12 (Apr – June) 1995

Books for Reference:

1. Dr. Sheetal Konwal: Gender Justice and Feminist Jurisprudence; Amar Law Publications, 2nd Edn. (2015)
2. Dr. Puja Khetraphal: Gender Justice and Feminist Jurisprudence; Puja Law House, 1st Edn. (2019)
3. Dr. Ishita Chatterjee: Gender Justice and Feminist Jurisprudence; Central Law Publications, 1st Edn. (2019)

Fifth Year - Ninth Semester	*Subject Code: U18HCBL506*	*Subject Credits: 04*

HONOURS COURSE: VI

MEDICAL AND HEALTH LAW

Objective: This paper seeks to explore various areas of the law that deal with creating and maintaining and regulating 'health.' The paper aims to give comprehensive and practical approach to the students to make them aware of the developments in medical sciences and to enable them to be equipped to face the recent challenges raised by the modern issues in contemporary era.

COURSE OUTLINE

UNIT – I: INTRODUCTION

Concept of health, public health - Law and health - development of interrelationship - Health Law and Bio Ethics

UNIT – II: LEGAL ASPECTS OF HEALTH CARE

Role of WHO - Constitutional law- regulation of health - Important legislations dealing with law and medicine

UNIT – III: MEDICAL PROFESSIONAL, PATIENT AND THE LAW

Nature and concept of physician - patient relationship - Informed consent and confidentiality - Concept of duty of care - standard of care - Code of ethics in medical profession - Role of judiciary in regulating the medical profession.

UNIT – IV: BIOETHICS - ISSUES AND CHALLENGES

Euthanasia and physician assisted suicide - Reproductive technology - Surrogate Motherhood - Medical termination of pregnancy - Prenatal diagnostic techniques.

UNIT – V: LAW RELATING TO MENTAL HEALTH

Stress management - Mental rehabilitation centers and law -Pschyco analysis and law - its impact over society - Mental Asylums and its governance under the law - International conventions and guidelines regarding psycho-legal law.

Books Prescribed:

1. Satish Tiwar, Mahesh Badwa, Mukul Tiwari & Alka kuthe: Text Book on Medico Legal Issues; Jaypee Brothers Medical Publishers, 1st Edition (2012)
2. Dr. Jaisigh P.Modi: A text book of Medical Jurisprudence and Toxicology; Lexis Nexis, 26th Edition (2018)
3. S.V. Jayarao: Current issues in Criminal Justice and Medical Law; Eastern Law House, 1st Edition (1999)

Books for References:

1. R.K. Bag: Medical Negligence and Compensation, Eastern Law House, (2015)
2. S.K. Singhal: Forensic Medicine and Jurisprudence; NBD, 5th Edition (2015)
3. Jonathan Herring: Medical Law and Ethics; OUP UK, (2014)

Fifth Year - Ninth Semester	*Subject Code: U18PCBL522*	*Subject Credits: 04*

CIVIL PROCEDURE CODE

Objective: The objective of this course is to introduce to the students the procedure to be adopted in filing a civil Suit in a civil court. The Code provides for a fair procedure for redressal of disputes by providing litigants a fair trial. This Course deals in detail the Sections and Orders including the important amendments brought in the Code.

COURSE OUTLINE

UNIT – I: INTRODUCTION

Definitions: Decree, Judgment, Order - Foreign Court - ForeignJudgment - Mesne, Profits – Affidavit – Suit – Plaint - Written Statement -ImportantConcepts: Res Sub-Judice-Resjudicata – Restitution – Caveat - Inherent powers of courts.

UNIT – II: INITIAL STEPS IN A SUIT

Jurisdiction and place of suing - Institution of suit - Pleadings: General rules - Amendment of pleadings - Plaint and written statement - Discovery - Inspection and production of documents - Appearance and non-appearance of parties - First hearing – Summons - Suits in particular- Suits by or against Government - Suits by Indigent persons -Interpleader Suit - Summary Procedure - Suits relating to public nuisance

UNIT – III: JUDGMENT AND DECREE

Judgment: Definition – Essentials – Pronouncement - Contents and Alteration - Decree: Definition – Essentials -Types, Drawing up of a decree - Contents, and Decree in particular cases - Interest - Costs- Setting Aside Ex Parte decree – Grounds - Temporary Injunctions – Meaning, Grounds and Principles of Injunctions, Inherent Power to grant Injunction, Interlocutory orders - Receiver – Meaning, Powers, Duties and Liabilities of Receivers - Death of Plaintiff or Defendant, Consequences, Suit against dead person, Marriage of a Party, Insolvency of Plaintiff or Defendant - Reference to High Court - Reference, Review and Revision - Appeals

UNIT – IV: EXECUTION

Courts by which decree may be executed - Payment under decree - Application for Execution - Mode of Execution - Stay of Execution - Questions to be determined by executing court – Arrest and detention - Attachment - Sale – Commissions.

UNIT – V: LIMITATION ACT

Definition - Limitation of Suits - Appeals - Computation of Period of Limitation - Acquisition of Ownership by Possession.

Statutory Materials

1. Code of Civil Procedure – 1908
2. Limitation Act – 1963

Books Prescribed:

1. C. K. Takwani: Civil Procedure with Limitation Act 1963; Eastern Book Company; 8th Edition (2018)
2. Dr. Ashok K. Jain: Code of Civil Procedure; ASCENT Publications; 1st edition (2019)
3. Ray Sukumar: The Code of Civil Procedure; Universal Law Publishing, 2008

Books for References:

1. M. P. Jain Dr. Medha Kolhatkar: The Code of Civil Procedure (Vols.1); Lexis Nexis Butterworth India; 2019 edition (2019)
2. Sarkar, Justice M. L. Singhal: Sarkar Code of Civil Procedure; Lexis Nexis; Twelfth edition (2016)
3. Sir Dinshaw Fardunji Mulla: Mulla's the Code of Civil Procedure; Lexis Nexis; Nineteenth edition (2017)

Fifth Year - Ninth Semester	*Subject Code: U18CCBL504*	*Subject Credits: 03*

CLINICAL COURSE-IV

DRAFTING, PLEADING AND CONVEYANCING

Objective: This Paper 'Drafting, Appearances and Pleadings' has been included in the syllabus with a view to equip the students with legal drafting abilities, legal frame work pertaining to the appearances before various tribunals/ quasi judicial bodies and the basic understanding of the principles of pleadings. For this purpose, the course contents of this study material have been so designed as to provide practical orientation and develop necessary acumenship in drafting legal documents

COURSE OUTLINE

Drafting: General principles of Drafting and relevant substantive Rules, drafting of Notices

Pleadings:

a. **Civil**: Plaint, Written Statement, Interlocutory Application, Original Petition, Affidavit, Execution Petition, Memorandum of Appeal and Revision, Petition under Articles 226 and 32 of the Constitution of India.

b. **Criminal**: Complaint, Criminal Miscellaneous Petition, Bail Application, Memorandum of Appeal and Revision.

Conveyancing:

Sale Deed, Mortgage Deeds, Lease Deed, Gift Deed, Promissory Note,

Power of Attorney – General and Special power of Attorney, Will.

Mark allocation:

Record work – 1 15 Exercises in Drafting of Pleadings	**15 Marks**
Record work – 2 15 Exercises in Conveyancing	**15 Marks**
Viva-Voce	**20 Marks**
External Examination	**50 Marks**
Total	**100 Marks**

Fifth Year - Tenth Semester	*Subject Code: U18HCBL507*	*Subject Credits: 04*

HONOURS COURSE: VII

INTERNATIONAL REFUGEE LAW

Objective: This paper provides students a basic knowledge and understanding of the substantive and procedural aspects of International Refugee Law and to improve them the juridical way of thinking, enlarges point of view and common understanding of international legal documents.

COURSE OUTLINE

UNIT-I: INTRODUCTION

The Global Population Movements in Historical Retrospect-The Origin and Development of International Refugee Principles & International Refugee Law - The Evolution of Refugee Status in International Law - The Legal and Institutional Framework for Refugee Protection under the 1951 UN Convention Relating to the Status of Refugees (UNCSR) and its Expansion via 1967 Protocol (UNCSR Protocol) - The Main Features of 1951 UN Convention and the Statute of the UNHCR - The Concept of Migrant, Immigrant - Theories of Migration and Emergence of Forced Displacement and Forced Migration - Inter-Relationship between National and International Protection and Summation.

UNIT-II: SOURCES OF INTERNATIONAL REFUGEE PROTECTION REGIME

The Global Standards of Human Rights-Main Sources of International Refugee Law, UN Charter - IRO,UDHR, IOM, International Bill of Rights - Statute and Role of the UNHCR and ICRC, UNDTA, International Refugee Law and its Relationship with International Human Rights Law (IHRL), International Humanitarian Law (IHL) and Other Disciplines and Summation.

UNIT-III: THE RIGHTS OF REFUGEES AND THE INSTITUTION OF ASYLUM, NON REFOULEMENT, GENDER AND THEIR DIMENSIONS IN INTERNATIONAL LAW OF REFUGEE PROTECTION

Principles and Concepts of Refugee Protection-Protection Gaps-The Rights of Refugees under International Refugee Law - Definition of Asylum in the Context of International Refugee Law - Non-refoulement - Non-discrimination - Gender and Securitization - The Principle of Family Unity and the Right to Family Reunification - Defending Refugee Rights in Administrative and Judicial Institutions - Durable Solutions and International Cooperation and Summation.

UNIT-IV: PROTECTION OF INTERNALLY DISPLACED PERSONS (IDPS), STATELESSNESS ANDTEMPORARY AND OTHER FORMS OF REFUGEE PROTECTION

Internally Displaced Persons (IDPs)- and UN 1998 Guidelines on IDPs - Kampala Convention on IDPs - Rights of Stateless Persons (SLPs) and Problems of Statelessness - The Concept of Temporary Protection - Other Alternatives - Recent Trends in International Refugee Legislation, Litigation and Policy and Summation.

UNIT-V: CONTEMPORARY ISSUES IN INTERNATIONAL REFUGEE LAW AND IT'S FUTURE

International Refugee Law and Strategies Towards Interpretative Harmony, Individual Risk-Armed Conflict and the Standard of Roof in Complementary Protection Claims - Running Scared Since 9/11: Refugees - UNHCR and the Purposive Approach to Treaty Interpretation - Economic Harm as a Basis for Refugee Status and the Application of Human Rights Law to the Interpretation of Economic Persecution, The fragmented Nature of the International Refugee Regime and its Consequences: a Comparative Analysis of the Applications of the 1951 Convention - Refugee Issues: Climate Refugees: New Class of Refugees - Women and Children Refugees - Non-Refoulement: A Peremptory Norm of International Law, Loss and Denial of Refugee Status.

Books Prescribed:

1) Helene Lambert; International refugee law; Ashgate publishing; 1st Edn. 2010
2) Kate Jastram, Inter-parliamentary Union, Marilyn Achiron, Office of the United Nations High Commissioner for Refugees; Refugee protection: a guide to international refugee law; Inter-Parliamentary Union, 2001
3) B S Chimni; International Refugee Law: A Reader; SAGE Publications, 2000
4) Erika Feller, Volker Turk and Frances Nicholson; Refugee Protection in international law; UNHCR's Global Consultations on International protection; Cambridge University Press; 1st published 2003

Books for Reference:

1. M. Rafiqul Islam, Jahid Hossain Bhuiyan; An Introduction to International Refugee Law; Martinus Nijhoff Publishers, 2013
2. Micheller Foster & Helene Lambert; International Refugee law and the Protetcion of Stateless Persons; Oxford University Press; 1st Edn. (2009)
3. James C. Simeon; Critical issues in International Refugee Law; Cambridge University Press; 1st Edn. (2010)
4. Karen Musalo, Jennifer Moore, Richard A. Boswell; Refugee Law and Policy: A Comparative International Approach, 2005 Supplement; Carolina Academic Press, 2nd Edn.(2005)

Reference Cases:

1. Tahir Hussain Khan v Canada, November 18, 1994 [Committee Against Torture]
2. Chahal v UK [extracts European Court of Human Rights]

3. National Legal Services Authority v. Union of India and others, Writ Petition (Civil) No. 400 of 2012, India: Supreme Court, 15 April 2014,
4. Suresh Kumar Koushal and another v. NAZ Foundation and others, Civil Appeal No.10972 of 2013, India: Supreme Court, 11 December 2013,
5. Servai v. State of Tamil Nadu, Criminal Appeal No. 958 of 2011, India: Supreme Court, 19 April 2011
6. Salibian v Minister of Employment and Immigration [1990]
7. Peoples‟ Union For Civil Liberties [PUCL] v. Union Of India and Another, AIR 1997 SC 568
8. Prem Shankar Shukla v. Delhi Administration, 1980 SCC 526
9. Citizens for Democracy v. State of Assam, 1995 SCC 743
10. D.K Basu v. State Of West Bengal, AIR 1997 SC 610

Fifth Year - Tenth Semester	*Subject Code: U18HCBL508*	*Subject Credits: 04*

HONOURS COURSE: VIII

CYBER LAW

Objective: This paper explains about the most needed legislation of the hour and discusses about the cyber space issues and remedial measures.

COURSE OUTLINE

UNIT – I: INTRODUCTION

Cyber Space - Introduction and UNCITRAL Model Law - Information Technology Act, 2000 with Recent Amendments - Jurisdictional Issues - Digital Signatures - Regulation of Certifying Authorities - Cyber Regulation Appellate Tribunal

UNIT – II: CYBER LAW AND E - COMMERCE

Formation of Online Contracts - E-Banking Transactions - Online Payment Options - Online Advertising - Taxation Issues in Cyber Space - Indirect Tax - Tax Evasion - Double Tax - Financial Frauds - International Tax Permanent Establishment

UNIT – III: CYBER CRIMES

Understanding Cyber Crimes - Actus Reus and Mens Rea - Types of Crimes in the Internet - Against Person, Against Property, Against Government - Cyber Forensics Investigation- Introduction - Investigation Tools – E - Discovery - Digital Evidence Collection and Preservation - E-Mail Investigation , Tracking and Recovery - Encryption and Decryption methods - Search and Seizure of Computers - Recovering deleted evidences -Password Cracking - Investigation and Adjudication of Cyber Crimes in India - Cyber Arbitration - Cyber Security - Implementing Hardware Based Security - Software Based Firewalls -Security Standards - Assessing Threat Levels - Forming an Incident Response Team, Reporting Cyber crime - Operating System Attacks - Application Attacks - Reverse Engineering & Cracking Techniques.

UNIT – IV: IPR AND CYBER SPACE

Copyright Issues in the Internet - Protection of Computer Software - Caching - International Regime - OSS - DMCA - Trademark Issues in the Internet - Domain Name Registration - Domain Name Dispute - ICANN – URDP Policy - Linking - Meta tagging - Database issues in the internet.

UNIT – V: CONTEMPORARY ISSUES

Convergence Technologies - Cloud Computing - Online Digital Libraries - Access to Internet: A Human Right Issue - Issue of Censorship - Privacy issues - National Security and Social Security.

Books Prescribed:

1. Harish Channder; Cyber laws and IT Protection; PHI Learning Private Limited; 1st Edn. (2012)
2. Pavan Duggal; Cyber law: the Indian perspective; Saakshar Law Publications, 2002
3. Vakul Sharma; Information Technology Law and Practice; Universal Law Publishing Co.; 3rd Edn. (2011)
4. Rohit Arvind Jain; Cyber Crimes and Law, A Overview on Securing Cyber Space; Evincepub Publishing; 1st Edn. 2018
5. M. Dasgupta, Pranay Chaturvedi, Ankur Dalal; Cyber crime in India: a comparative study; Eastern Law House, 1st Edn. (2009)
6. Aparna Viswanathan; Cyber Law: Indian & International Perspectives on Key Topics Including Data Security, E-commerce, Cloud Computing and Cyber Crimes; LexisNexis Butterworths Wadhwa, 2012

Books for Reference:

1. Talat Fatima; Cyber Law in India; Wolters Kluwer; 1st Edn. 2008
2. Pooja Kiyawat, Manish Yadav; Critical Analysis of Cyber Laws with Respect to Cyber-Crimes in India; SPS, 2016
3. Farooq Ahmad; Cyber Law in India: (law on Internet); Pioneer Books, 2001
4. Susan W. Brenner; CyberCrime and the law Challenges, issues and Outcomes; Noth Eastern University Press; 2012
5. Matthew Richardson: Cyber Crime: Law and Practice; Wildy, Simmonds & Hill Publishing, 2014

Fifth Year - Tenth Semester	*Subject Code: U18PCBL523*	*Subject Credits: 04*

CRIMINAL PROCEDURE CODE

Objectives: This paper aims to familiarize the students with the crucial aspects relating to investigation and trial of offences and to sensitize the students about critical issues in administration of criminal justice.

COURSE OUTLINE

UNIT – I: INTRODUCTION

Definitions - Constitution and powers of Criminal Courts and Offices - Provisions for Investigations - Information to the Police and their powers to investigate

UNIT – II: PRE-TRIAL PROCEEDINGS

Stages of Investigation - Process compelling for the presence of the accused for Investigation and Trial – Arrest - Procedure for Arrest - Rights of Arrested Persons - Consequences of Non-Compliance of Arrest Procedure - Search and Seizure - Process of Investigation by Police - Investigation of Unnatural and Suspicious Death -Local Jurisdiction of the Courts in Inquires and Trials - Cognizance of Offence and Commencement of Proceedings.

UNIT – III: TRIAL PROCEDURE

Principal features of Fair Trial - Charge - Disposal of Criminal Cases without Full Trial - Trial before a Court of Session - Trial of Warrant Cases by Magistrates -Trial ofSummons-Summary Trial - Bail Procedures – Types of Bail - General Provision regarding Bond of Accused and Sureties.

UNIT – IV: APPEAL PROCEDURE

Types of Appeals - Reference and Transfer of Criminal Cases - Execution, Suspension, Remission and Commutation of Sentences - Execution of Sentence - Death Penalty and Imprisonment - Preventive and Precautionary Measures for Keeping Peace and Good Behaviour- Maintenance Procedures - Conditions for Claiming Maintenance - Cancellation of Maintenance - Sec 125 of CrPC.

UNIT – V: JUVENILE JUSTICE CARE AND PROTECTION ACT, 2000, THE CRIMINAL LAW AMENDMENT 2013 AND PROBATION OF OFFENDERS ACT, 1958

Introduction - Object - Definitions - Statutory Bodies- Juveniles under the Act - Nirbhaya case - Reformative Institutions - Juvenile - Special Offences - Probation - Object and Meaning Criminal Court and Probation - Duties of Probation Officers - Report of the Probation Officers - Conditions and Cancellation of Probation.

Statutory Materials:

1. The Code of Criminal Procedure, 1973.
2. The Criminal Law (Amendment) Act, 2005.
3. The Criminal Law (Amendment) Act, 2008.
4. The Criminal Law (Amendment) Act, 2010.
5. The Criminal Law (Amendment) Act, 2013.
6. The Criminal Law (Amendment) Act, 2018.

Books Prescribed:

1. Ratanlal & Dhirajlal: The Code of Criminal Procedure; Lexis Nexis, 22nd Edition (2017).
2. Sarkar: The Code of Criminal Procedure; Lexis Nexis, 10th Edition (2013).
3. R.V.Kelkar: Criminal Procedure Code; Eastern Book Company, 6th Edition (2018).
4. Durga Das Basu: Criminal Procedure Code; Lexis Nexis, 6th Edition (2017).

Books for Reference:

1. K.N.Chandrasekaran Pillai: General Principles of Criminal Law; Eastern Book Co., (2003) Edition, Reprinted (2007).
2. Iyer, Mitter & Anand: Law of Bails; Law Publishers (India) Pvt. Ltd., 4th Edition (2012).
3. P.V. Ramakrishna: Law of Bail, Bonds, Arrest and Custody; Lexis Nexis, 1st Edition (2008).
4. P.K.Majumdar, R.P. Kataria: Law of Bails, Bonds and Arrest; Orient Publication, 2nd Edition (2003).

Fifth Year - Tenth Semester	*Subject Code: U18PCBL524*	*Subject Credits: 04*

SECURITIES AND REGULATORY LAW

Objectives: It is one of the unique courses to the students. It brings in-depth knowledge on various securities laws and the regulatory frameworks which standardize the basic need of the society.

COURSE OUTLINE

UNIT – I: CONCEPT OF SECURITIES:

Arena of Securities: Equity, Debentures, Preference Shares - Sweat Equity, Non-Voting Shares, Share Warrants - Issue and Listing of Securities - Listing of Securities - Issue of Capital and Disclosure Requirements (ICDR) - Procedure for Issue of Various Types of Shares and Debentures - Employee Stock Option Scheme and Employee Stock Purchase Scheme - Delisting of Securities –Securities Market Intermediaries.

UNIT-II: SEBI REGULATIONS

Securities Contracts (Regulation) Act, 1956- SEBI Act, 1992 - Objective, Powers and Functions of SEBI - Securities Appellate Tribunal, -Appeals, Appearance before SAT

UNIT-III:DEPOSITORIES ACT, 1996

Depositories Act, 1996 - Definitions, -Setting up of Depository, its type,- Role and Functions Depository Participants - Admission of Securities - Difference between Dematerialization &Rematerialisation- Depository Process - Inspection and Penalties - Internal Audit and Concurrent Audit of Depository Participants

UNIT-IV:CAPITAL MARKETS & INVESTOR PROTECTION

Primary Market and Secondary Market -Intermediaries: Roles and Functions, -Merchant Bankers, -Stock Brokers, Syndicate Members, -Registrars, -Underwriters, -Bankers to an Issue, Portfolio Managers, Debenture Trustees,- Foreign Institutional Investors,- Custodians,- Credit Rating Agencies, Venture Capitalists - An Overview of Law relating to Insider Trading and Takeovers - Investor Protection -Investors' Rights and Responsibilities,- types of grievances and dealing authority,- Investor Education and Protection Fund (IEPF) under SEBI Regulations and Companies Act, 2013,- Financial Education,- Investor Grievance Redressal Mechanism at SEBI etc.

UNIT-V: OTHER REGULATORY LAWS

The Real Estate (Regulation and Development) Act, 2016 - Salient features – Establishment of Real Estate Regulatory Authority – Powers & functions of the Authority – Registration – Mandatory disclosures – Dispute resolution mechanism – Penalties - Central Advisory

Council. - The Telecom Regulatory Authority of India Act, 1997 –Establishment and incorporation of TRAI – Powers and function of authority – Settlement of dispute – Amendment in 2000 - Electricity Act 2003 – Licensing – National electricity policy and plan – Central electricity authority – Regulatory commissions – Powers – State Commissions – Tamil Nadu Electricity (Reorganization and reforms) Transfer Scheme 2010 - Pension Fund Regulatory and Development Authority Act, 2013 –Powers and functions.

Statutory Material:

1. Securities & Exchange Board of India Act, 1992
2. Telecom Regulatory Authority of India, 1997
3. The Electricity Act, 2003.
4. Pension Fund Regulatory & Development Authority Act, 2013.
5. The Real Estate (Regulation And Development) Act, 2016

Books Prescribed:

1) Kondaiah Jonnalagadda: Securities law; Lexis Nexis,1st Edition(2015)
2) Nicholas L. Georgako poulos: The Logic of Securities law; Cambridge university Press,Reprint edition(2018)
3) Savithri Parekh & Shailashri Bhaskar: Listing obligations and disclosure requirements; Lexis Nexis, 1st Edition (2016)

Books for Reference:

1) Vikram Raghavan: Communications law in India: Legal aspects of telecom, broadcasting & cable services; Lexis Nexis, latest edition(2007)
2) CA Shiva Chaudhari: RERA for everyone; Educreation publishing, 1st edition(2018)
3) S.K. Chatterjee: Commentary on Electricity Laws with state Reforms;Delhi law house, 2nd Edition(2010)

Fifth Year - Tenth Semester	*Subject Code: U18CCBL505*	*Subject Credits: 03*

CLINICAL COURSE – V

PUBLIC INTEREST LAWYERING, LEGAL AID, COURT & CHAMBER VISITS

Objectives: This course brings in-depth practical knowledge on legal and the para-legal services. This motivates the students to work for the welfare of the society.

COURSE OUTLINE

INTERVIEWING TECHNIQUES AND PRE-TRIAL PREPARATIONS - (40marks)

- **Two interviewing sessions of clients: 15 marks**

Each student will observe 2 (two) interviewing sessions of clients at the Lawyers' Office/Legal Aid Office and record the proceedings in a diary which will carry 15 marks.

- **Observation of the preparation of documents and court papers: 15 marks**

Each student will further observe the preparation of documents and court papers by the Advocate and the procedure for the filing of the suit/petition. This will be recorded in the diary which will carry 15 marks.

- **Viva-Voce Examination on above two components: 10 marks**

COURT ATTENDANCE & LOK ADALAT - (40marks)

- **CIVIL PROCEEDING OBSERVATION: 10 Marks**

The students must observe the civil proceedings in the court and record the proceedings in a diary which will carry 15 marks.

- **CRIMINAL PROCEEDING OBSERVATION: 10 Marks**

The students must observe the criminal proceedings in the court and record the proceedings in a diary which will carry 15 marks.

- **LOK ADALAT OBSERVATION: 10 Marks**

The students must attend lokadalats with the help of district legal services authority and submit a project to the faculty in charge. This project report carry of 10 marks

- **Viva-Voce Examination on above two components: 10 marks**

LEGAL AID-COUNSELING AND SERVICES (40 marks)

The students are directed to visit semi-urban and rural areas for providing free counseling and creating awareness among the people relating to socio-legal problems and submit a project to the faculty in-charge. This clinical study will comprise of 10 marks for project work and 10 marks for viva-voce.

Fifth Year - Tenth Semester	*Subject Code: U18PTBL505*	*Subject Credits: 02*

INTERNSHIP AND PRACTICAL TRAINING - V

Objective: The internship programmes are designed to acquaint the student with the actual practice of law by working under the supervision of legal luminaries. The student gains experience of applying theoretical knowledge from prior classroom training, when exposed to practical environment.

COURSE OUTLINE

During this vacation the students should compulsorily undergo Internship for a continuous period of 4 weeks and submit an internship report along with a internship certificate. This will be evaluated by the Internship Faculty Guide.

The student may choose to intern under any one the following category:

- Trial Advocate
- Appellate Advocate
- Law Firms

On completion of successful internship training every student will be awarded 2 credits

B.B.A., LLB (Hons.)

SYLLABUS FOR ELECTIVE SUBJECTS

S.No	ELECTIVE SUBJECT CODE	ELECTIVE SUBJECT NAME
V SEMESTER - ELECTIVE – 1		
1.	U18PEBL311	Legal Research Methodology
2.	U18PEBL312	Legal Methods and Techniques
V SEMESTER - ELECTIVE – 2		
4.	U18PEBL321	Intellectual Property Rights
5.	U18PEBL322	Maritime Law
VII SEMESTER - ELECTIVE – 3		
6.	U18PEBL431	Criminology and Penology
7.	U18PEBL432	Law Relating to Women and Children
IX SEMESTER – ELECTIVE – 4		
8.	U18PEBL541	Forensic Science
9.	U18PEBL542	Medical Jurisprudence
X SEMESTER – ELECTIVE – 5		
10.	U18PECL551	Consumer & Competition Law
11.	U18PECL553	Telecommunication Law
OPEN ELECTIVES		
12.	U18OEAL501	Right to Information and Education
13.	U18OEBL501	International Financial Transactions and Valuation
14.	U18OECL501	Private International Law
15.	U18OEDL501	Environment and International Legal Order

NOTE:

- The Students are free to choose the elective subjects in **V/VI/VIII/IX/X** semester within the list of elective subjects offered in concerned semester.
- One has to choose -
    - One Elective Subject from **V/VI/VIII/IX** Semester group of electives in respective semesters
    - One Elective Subject from X Semester group of electives in X Semester
    - One Elective Subject from open elective group of electives in X Semester
- **University may restrict subjects in a group for offering options based on availability of faculty and other facilities.**

Third Year - Fifth Semester	*Subject Code: U18PEBL311*	*Subject Credits: 03*

LEGAL RESEARCH METHODOLOGY

Objectives: When research is undertaken as a part of the process of law reform, the contributions through the research will be indefinite and will help to make concrete law which improves the societal welfare. This paper is a tool and guidance for the legal research carried out by the students and scholars in a simplified manner.

COURSE OUTLINE

UNIT – I: LEGAL RESEARCH

Meaning of Research - Legal Research – Characteristics - Objectives and Types of Legal Research - Qualities of Good Legal Researcher - Nature, Scope and Objectives of Legal Research and Methodology - Methods of Legal Research - Collaborative Research - Doctrinal and Non-Doctrinal

UNIT – II: RESEARCH DESIGN

Identification and Formulation of Research Problem - Hypothesis and Research Design - Database for Legal Research: Legislations - Judicial Decisions - Juristic Writings - Traditional and Online Databases

UNIT – III: RESEARCH TECHNIQUES

Methodology: Tool and Techniques for collection of data - collection of case materials and juristic literature - Use of historical and comparative research material - Use of questionnaire and interview - Census and Survey - Sampling: Types - Merits and Demerits - Observation - Interview - Questionnaire

UNIT – IV: DATA PROCESSING AND REPORT WRITING

Data Analysis and Interpretation - Report Writing - Supervision - Guidelines for researchers - Research Ethics – Meaning – Purpose - Importance of a Research Report - Preparation of the Legal Research Report - Content of Research Report.

UNIT – V: SAMPLING DESIGN FOR LEGAL RESEARCH

Meaning of Sampling - Merits and Demerits of Sampling Method - Size of Sample - Procedure to select a Sample - Types of Sampling - collection of data in socio legal research - sources of data collection - original sources of law - method of legal research for law reforms – analytical research method - historical research method - comparative research method - ethical research method - statistical research method - critical research method.

Books prescribed

1. S.K. Verma and M. Afzal Wani; Legal Research and Methodology; Indian Law Institute, 2nd Edition (2001).
2. Goode and Hatt; Methods in Social Research; Mc.Graw Hill Book Co., 1985 (reprint), Singapore,
3. Upendra Baxi; Socio-Legal Research in India; A Program Schriff, ICSSR, Occasional Monograph, 1975.

Books for References:

1. Cohen; Legal Research; Morris L, West Publishing Co. Minnesota, 1985.
2. Ghosh; Scientific Method and Social Research; B.N, Sterling Publishers Pvt. Ltd., New Delhi, 1984
3. Johari J.C.; Introduction to the Method of Social Sciences; Sterling Publishers Pvt. Ltd. New Delhi, 1988.
4. Kothari C.K.; Research Methodology: Method and Techniques; Wiley Eastern Ltd., New Delhi, 1980.

Third Year - Fifth Semester	*Subject Code: U18PEBL312*	*Subject Credits: 03*

LEGAL METHODS & TECHNIQUES

Objectives: This paper focuses on orientation of students to legal studies from the point of time of view basic concepts of law and legal systems.

COURSE OUTLINE

UNIT -I: **MEANING AND CLASSIFICATION OF LAWS**
Meaning and definition – functions of law – classification of laws – public law and private law, substantive law and procedural law, municipal law and International law.

UNIT - II: SOURCES OF LAW
Custom – Precedent – Legislation.

UNIT-III: BASIC CONCEPTS OF INDIAN LEGAL SYSTEMS:
Common law – constitution as the basic law – Rule of law – Separation of powers – Judicial system in India.

UNIT -IV: **LEGAL WRITING AND RESEARCH:**
Legal materials – case law – statutes – Reports – Journals – Manuals – Digests – Importance of legal research – Techniques of legal research – Legal writings and citations.

UNIT - V: **JUDICIARY AND SOCIAL CHANGES:**
Law as an instrument of social change – Introduction to judicial process – role of judiciary in social change – Independence and accountability of judiciary.

Books prescribed:

1. Ram Ahuja: Research Methods, Rawt Publications, 2001
2. Nomita Aggarwal: Jurisprudence (Legal Theory), Law Book Publishers, 2014.
3. Glanville Williams: Leaning the Law, Universal Law Publishing, An imprint of Lexis Nexis, 2013.

Books for References:

1. Benjamin N. cardozo: The nature of judicial process, Martino Fine Books, 2011.
2. Gregory A. Pasco: Criminal Financial Investigations, the Use of Forensic Accounting, CRC Press, 2012.
3. Daniel Albuquerque: Legal Aspects of Business, OUP India Publishers, 2017.

Third Year - Sixth Semester	*Subject Code: U18PEBL321*	*Subject Credits: 03*

INTELLECTUAL PROPERTY RIGHTS

Objective: This paper produces a detailed insight on Intellectual Property Law and gives a wider picture to students about growing trends in IPR connected with International Perspective.

COURSE OUTLINE

UNIT – I: INTELLECTUAL PROPERTY

Meaning and Concept of Intellectual Property - Need for Protection - The World Intellectual Property Organisation (WIPO) Convention - Origin and Functions of World Trade Organisation (WTO) - Trade Related Intellectual Property Rights (TRIPS) - Agreement of WTO and its effects of Intellectual Property Law in India - Dispute Settlement Mechanism - Ethical Issues in IPR - Interface between IPR and Human Rights.

UNIT – II: THE PATENTS ACT, 1970

The Patents Act, 1970 & Patent Amendment Act, 2005: Definition - Salient Features - Patentable and Non - Patentable Inventions - Product and Process Patents – Procedural aspects - Patent Office and Powers of Controller - Right of Patentees - Term of Patent - Remedies for Infringement of Patents - Register of Patents - Surrender and Revocation of Patents - Compulsory Licenses - Exclusive Marketing Rights - Patent Agents - International Agreements - Knowledge Transfer - IPR and Information Technology – Bio tech patents -

UNIT – III: THE COPYRIGHT ACT, 1957 AND RECENT AMENDMENTS

Works in which Copyright Subsists - Meaning of Copyright - Ownership and Rights of the Owner - Term of Copyright – Powers and Functions of the Copyright Board – Registration of Copyright - Compulsory License - Copyright Societies – Fair Use doctrine - Rights and Remedies against Infringement - The Copyright (Amendment) Act 2012 - Rights of Broadcasting Organizational and of Performers - International Copyright Act - Digital Millennium Copyright Act.

UNIT – IV: TRADE OF MARKS, 1999

Object - Definitions - Salient Features - Distinctiveness - Deceptive Similarity - Procedures and Conditions for Registration - Effects of Registration – Powers and Functions of Registrar - Concurrent Registration - Rectification and Correction of Register – Rights of Registered Trade Mark Owner - – Protection of Trade Secrets and Deceptive Trade Practices - Special Provisions Relating To Protection of Trade Marks through International Registration under Madrid Protocol – Collective Marks - Appellate Board -Infringement Action - Passing Off Action.

UNIT – V: Industrial Designs, Geographical Indication and Traditional Knowledge

The Designs Act 2000 - Definition - Registration of Designs - Copyright in Registered Deisigns - Piracy of Registered Designs - Remedies - Powers and Duties of Controller - Semi Conductor Integrated Circuit Layout - Protection of Plant Variety and Farmers Right Act, 2001 (PPVFR Act) - National Law on Conservation of Biological Diversity - Geographical Indication of Goods (Registrations and Protection) Act, 1999 - Object, Definition – Procedure and Conditions for Registration - Prohibition of Registration of Certain Geographical Indications - Effect of Registration - Traditional Knowledge – Rationale and modes of protecting TK – Sui generis protection -Benefit Sharing -Turmeric Patent Case - Neem Oil Case.

Statutory Materials:

1. The Patents Act, 1970
2. Patent Amendment Act, 2005
3. The Trade Marks Act, 1999
4. The Copyright Act, 1957
5. The Copyright (Amendment) Act, 2012
6. The Designs Act, 2000
7. The Geographical Indications Act, 1999

Books Prescribed:

1. P.Narayanan: Intellectual Property Law; Eastern Law House, 3rd Edition (2001)
2. Dr. B.L. Wadehra: Law relating to Patents, Trademarks, Copyright, Designs and Geographical Indications; Universal Law Publishing, 5th Edition (2011)
3. Avtar Singh: Intellectual Property Law; Eastern Book Company, 1st Edition (2013)
4. V.K. Ahuja: Intellectual Property rights in India; Lexis Nexis, 2nd Edition (2015)
5. Dr. Bhandari: Law relating to Intellectual Property Rights; Central Law Publication, 4th Edition (2015)

Books for References:

1. Cornish: Intellectual Property:Patents, Copyright, Trademark and allied rights; Sweet&Maxwell, 7th Edition (2010)
2. Barret, Margreth; Intellectual Property; Aspen Publishers, 3rd Edition (2009)
3. Nard, Craig Allen: Law of Intellectual Property; Aspen Publishers, 2nd Edition (2008)
4. Arora, Manish: Guide to Trademark; Universal Publication, 2nd Edition (2007)
5. Sterling J.L.A.: World Copyright Law; Sweet&Maxwell, 3rd Edition (2008)

Third Year - Sixth Semester	*Subject Code: U18PEBL322*	*Subject Credits: 03*

MARITIME LAW

Objective: The law relating to activities at sea is based primarily on Maritime Law and the Law of the Sea. Maritime Law is the law of things, activities and events related with the sea. This paper provides legal knowledge to the students concerning seagoing personnel, ships and other seagoing vessels, charter contracts and ocean transport, ship ownership and sales, maritime safety, incidents at sea and marine insurance.

COURSE OUTLINE

UNIT – I: INTERNATIONAL LAW OF THE SEA

Evolution of Law of the sea – Freedom of the sea – High seas – customary principles - Developments during inter-war period (1930 – 1945) – Delimitation of territorial sea – Internal waters – Hague Conference 1930 – freedom of navigation – freedom of fishing – other freedoms of the sea – Geneva Conference 1958 – Geneva Convention, 1958 –Geneva Conference of 1960 – United Nations Convention on Law of the Sea, 1982 - Territorial waters – contiguous zone – continental shelf – Exclusive Economic Zone - High seas - rights of coastal states – freedom of the sea in diverse zones –Equi-distance method and alternatives – Rights and duties of states in coastal waters of others – rights of Archipelagic states - rights of land locked states – Hot pursuit – Common Heritage of Mankind – Maritime Zones Act

UNIT – II: INDIAN MARITIME LAW

Admiralty Act and Bill of 2005 - Admiralty Jurisdiction of High Courts - International convention for arrest of ships, Wrongful arrest - Release from arrest, - Maritime claims, Limitation of liability, Damage done by or to a ship, Salvage, Loss of life or Personal Injury - Admiralty Bill, 2005, its salient features and present status

UNIT – III: THE MERCHANT SHIPPING ACT, 1958

Structure of the Shipping administration in India - Ministry of Shipping, Director General of Shipping - Mercantile Marine Department, Surveyors, Seamen's welfare officers - Major and Minor Ports – Application of National Laws and State Laws at ports – Registration of Indian Ships – procedure and documentation – certificate of registration – Transfer of ownership – national character and flag - International treaties, Conventions and protocols relevant to Indian maritime law, their objective, applicability and legal status - International Convention on the Prevention of Marine Pollution by Dumping of Waste Convention, 1972 - Maritime Lien - Territorial waters Act, relevant provisions of Customs Act, Merchant Shipping Act - Jurisdictional issues and relevant provisions under Indian Laws - Fisheries Act

UNIT IV: MARITIME LAW & PRACTICES

The Territorial Waters, Continental Shelf, Exclusive Economic Zone and other Maritime Zones Act, 1976 - The Maritime Zones of India (Regulation of Fishing by Foreign Vessels) Act, 1981 - Suppression of Unlawful Acts Against Safety of Maritime Navigation and Fixed Platforms on Continental Shelf Act, 2002 - The Merchant Shipping Act, 1958 – Sec. 69 Proceedings on forfeiture of ship, Sec 334 Unseaworthy ship not to be sent to sea, Sec 336 Power to detain unsafe ship and procedure for detention, Sec 337 Liability of Central Govt. for costs and damage when ship wrongly detained - Part X-B Civil Liability for Oil Pollution Damage. Sec 352 Part XI A Prevention and Containment of Pollution of the sea by Oil - Fishing Boats - Provisions of Environmental issues and provisions - International Convention on the Prevention of Marine Pollution by Dumping of Waste Convention, 1972

UNIT V: DISPUTE RESOLUTION

Conservation and management of living resources under UNCLOS– settlement of disputes relating to living resources in EEZ - Maritime research – rights and duties of researching states – settlement of disputes thereof – protection and preservation of Maritime environment – military uses of the seas – rights of the landlocked states - Settlement of disputes – International Sea Tribunals - International Sea Bed Authority – International Court of Justice - Unit –Alternative Dispute Resolution – Role and significance of ADR–International Arbitration – International and domestic commercial arbitration – Online Dispute Resolution

Books Prescribed:

1. Massimo Lando: Maritime Delimitation as a Judicial Process, Cambridge University Press, 2019
2. Prof. K. R. Singh: Coastal Security Maritime Dimensions of India's Homeland Security, Vij Books India Pvt Ltd, 2012
3. Prof. K. R. Singh: Coastal Security Maritime Dimensions of India's Homeland Security, Vij Books India Pvt Ltd, 2012

Books for Reference:

1. Guidelines on the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1972; IMO Publishing, 2006
2. Ratanlal and Dhirajlal: Law of Evidence; Lexis Nexis; 26th Edn. (18 July 2017)
3. Parvinrai Mulwantrai Bakshi: The Constitution of India, LexisNexis, 2018
4. B. M. Gandhi: Indian Penal Code, Eastern Book Company, 2006

Fourth Year - Eighth Semester	*Subject Code: U18PEBL431*	*Subject Credits: 03*

CRIMINOLOGY AND PENOLOGY

Objective: The objective of this paper is to provide depth of understanding of dimensions of crime, crime causation, prevention of crime, penalizing the crime, functioning of penal institutions along with rehabilitation and protection of crime victims.

COURSE OUTLINE

UNIT – I: INTRODUCTION

Meaning and Significance of Crime - Concept of Crime and basis of Criminalization - Definition of Crime - Criminology - Criminological Reminiscence: Global Scenario - Renaissance - Modern Age - Focus on the need for Criminological Study - Ingredients of Crime - Distinction between criminality and non- criminality- Classification of Crimes - Development of Criminal Law - Sources and uses of Crime Data - Crime Reporting - Schools of Criminology.

UNIT – II: CRIME CAUSATION

Individual Centric Causes - Societal Centric Causes - Theories on Crime Causation - Juvenile Delinquency - Legislation - Juvenile Justice (Care and Protection of Children) Act, 2000 - 2013 Amendment Act -Statutory Bodies and Procedure - Reformative Institutions under the Act - Rehabilitation Process - Case Law.

UNIT – III: TYPES OF CRIME

White-Collar Crime and Blue-Collar Crime: Implications of White Collar Crimes - White Collar Crimes in India - Santhanam Committee Report – Wanchoo Committee Report - 47th Law Commission Report - Detection and Investigation - Trial of White-Collar Crimes - Case Law - Crimes and Women: Dowry Prohibition (Amendment) Act, 1986 - Crimes against Women- Crimes of Passion - New Legislation - Prostitution - Immoral Traffic Offender (Prevention) Act - Medical Termination of Pregnancy Act - Pre-Conception and Pre Natal diagnosis Techniques (Regulation) Act - Domestic Violence Act, 2005- Criminal Law Amendment Act, 2013- POSCO – Terrorism: Definition - Nature of Terrorism - Causative Factors - Funds for Terrorism - Kinds of terrorism - Terroristic Spectrum - Punishments and Measures for Coping with TADA-POTA-NSA, 2010-] - Criticism - Anti-Terrorist Measures - Communal Violence - Causes and Cures - Victims of Marginal Crimes - Social Deviance and Marginal Crimes - Kinds of Marginal Crimes - Victimless Crimes - Hidden Victims - Drug and Crime -Depiction of Offences and Punishments under NDPS Act - Modern Crimes and International Crimes: Computer Crime -Cyber crimes - definition -kinds - Information Technology Act, 2000 -Organ Trafficking - International Crimes - Environmental Crimes.

UNIT – IV: THE POLICE AND CRIMINAL JUSTICE SYSTEM

Police: Organisational Structure of Indian Police - Police Bureaucracy - Police Setup - Custodial deaths - Modernization in Police - Crime Records Management - Traditional Vis-à-vis Modern Crime Records Management - Police Community Relations - Thana Level Committee - Police Advisory Committees - Media and Police - Discipline and Lawlessness - Interpol -Criminal Justice System: Objectives of Criminal Justice System - Rights of Accused and Arrested Person - Plea Bargaining - Human Rights and Administration of Criminal Justice.

UNIT – V: CORRECTIONAL INSTITUTION AND CRIME PREVENTION

Probation and Parole: Origin - Salient features of Probation of Offenders Act, 1958 - Parole - Parole Regulations - Parole Recommendations - Prison System in India: Problems of Prisoners -Organized Setup - Prison Discipline - Prison Labour - Prison Education - Open Prison - The Prison Community - Prison Reform in India -Dr. Wreckless Committee Report - International Perspective.Crime Prevention - Theories of Punishment - Kinds of Punishment - Recidivism - Various form of Recidivist -Prevention of Crime and Delinquency.

Books Prescribed

1. Dr. Rajendra K. Sharma: Criminology and Penology; Atlantic Publishers and Distributers, 1st Edtition (1998).
2. Ahamed Siddique: Criminology Problems and Perspectives; Eastern Book Company, 1st Edition (1997)
3. Dr. J.P.S. Sirohi: Criminology and Penology; Allahabad Law Agency, Reprint 2014
4. N.V. Paranjape: Criminology Penology and Victimology; Central Law Publications, 2017 Edition (2017).

Books for Reference

1. Harry Elmer Barnes: New Horizons of Criminology; Bames and Teeters, 3rd Edition (1959)
2. Mark S.Gaylord: The Criminology of Edwin Sutherland; Transaction Publishers, 1st edition (1988).
3. Taft and England: Criminology; Collier & Macmillan, 4th Edition (1964).

Fourth Year - Eighth Semester	*Subject Code: U18PEBL432*	*Subject Credits: 03*

LAW RELATING TO WOMEN AND CHILDREN

Objective: The course draws the attention to the feeble condition of women, children and their exploitation. The legal limitation on their capacity and legal rights and protection provided in the Constitution and in various laws are to be studied critically.

UNIT – I: OFFENCES AGAINST WOMEN

Sexual crimes – Rape, Unnatural Offences, Indecent Assault - Matrimonial Offences – Mock Marriage, Bigamy, Adultery, Criminal elopement, Dowry Death, Harassment, Provisions relating to Dowry under IPC and Dowry Prohibition Act 1961. - Offences relating to Miscarriage under IPC - The Medical Termination of Pregnancy Act, 1971 - The Pre-conception and Pre-natal Diagnostic Techniques (Prohibition of sex selection) Act, 1994– Offences relating to trafficking under IPC, Offences under the Immoral Traffic (Prevention) Act, 1956

UNIT – II: GENDER INJUSTICE&WOMEN'S COMMISSION

Gender Injustice - A Global issue, Constitutional provision to protect gender injustice in India, Pre-natal sex-selective – Abortion - Sexual Harassments in work place – Guideline laid down in Vishaka v. State of Rajasthan - Constitution and procedure of Commission, Powers and Function of the Commission.

UNIT – III: LEGISLATIVE EMPOWERMENT OF WOMEN

International perspective - Constitutional provisions for Empowerment of Women - Empowerment of Women under Criminal Law - The Immoral Traffic (Prevention) Act, 1956 - Dowry Prohibition Act, 1961, Labour legislation, The medical Termination of pregnancy Act, 1971 - The Commission of Sati (Prevention) Act, 1987.

UNIT – IV: EXPLOITATION OF CHILDREN

Child Labour – Reason for child Labour - international Framework to eliminate Child Labour, - Constitutional Provision to eliminate child labour - Salient Features of Child Labour (Prohibition and Regulation) Act, 1986 - Child Labour and National Human Rights Commission - Role of Judiciary in Solving Labour Problem - Child Prostitution - Child Pornography - Child Trafficking - Incestuous Sexual Exploitation - Child Marriages.

UNIT – V: PROTECTION OF CHILD RIGHTS

Child Marriage (Restraint) Act,1929 - Problems relating to Adoption In India - UN Convention on the Rights of Child 1989 - Hindu Adoption and Maintenance Act, 1956 - Inter Country Adoptions - Right to Education and Human Rights Instruments - Right to education in India - Art 21-A of the Indian Constitution - Policies of Government on Education, Problems relating to Child Education - Establishment of National and State Commission for protection of Child Rights - Functions and Powers of the Commission - Children's Courts.

Statutory materials

1. Indian Penal Code 1860
2. Dowry prohibition Act 1961
3. The medical termination of Pregnancy Act 1971
4. The pre-conception and Pre-natal Diagnostic Techniques(Prohibition of Sex selection) Act 1994
5. The Immoral Traffic(prevention)Act 1987
6. Child labour (prohibition and regulation) Act 1987
7. Child marriage restraint Act 1929
8. Hindu Adoptions and Maintenance Act 1956

Books Prescribed

1. Mamta Rao; Law relating to women and children; Eastern Book Co ;4th edition (2018)
2. G.S Sharma, Anil Kumar Tandi; Law relating to women &Children; Asia Law House;1st edition (2015)
3. S. C. Tripathi & Vibha Arora; Law relating to women and Children; Central Law Publications; 6th edition (2015)

Books for Reference

1. Manjula Batra; Women & Law with law relating to children in India; Allahabad Law Agency; latest edition (2012)
2. Dr. Anjani Kant; Law relating to women and children; Central law Publications ;1st edition (2003)
3. Dr. S. R. Myneni; women and Law; Asia Law House; 2nd edition (2011)

Fifth Year - Ninth Semester	*Subject Code: U18PEBL541*	*Subject Credits: 03*

FORENSIC SCIENCE

Objective: This paper seeks to explore various areas of the law that deal with creating and maintaining and regulating 'health.' The paper aims to give comprehensive and practical approach to the students to make them aware of the developments in medical sciences and to enable them to be equipped to face the recent challenges raised by the modern issues in contemporary era.

COURSE OUTLINE

UNIT – I: CRIME & CRIMINAL BEHAVIOUR

Definition of Crime, Various types of crime, Criminal behaviour-cause and theories, Modus Operandi Criminal profiling, Corpus Delicti - Criminal Justice System-Important wings of criminal justice system, Its structure & functioning, Role of Police officers, prosecution & judicial officers, Role of Forensic scientists, medico-legal doctors, Expert Testimony Forensic Science-Basic Principles & Significance, History & Development of Forensic Science, Organizational structure of Forensic Science labs in Central & State. Crime Scene Management-Defining the Scene of crime, Managing a crime scene & its hierarchy, Role of First Responding Officers, Search Patterns of a crime scene, Crime scene Documentation, Collection, Packaging, Labelling & Forwarding of exhibits to forensic laboratories, Preservation of evidence, Health & Safety Protocols.

UNIT – II: FORENSIC SCIENCE AND ITS APPLICATION IN CRIME INVESTIGATION

Definition, Nature, And Need & Scope of Forensic Science: Crime Scene Evidences, Blood, Semen & other Biological fluids, Viscera, Shoe impressions, Tool marks, Tyre marks, Bite Marks, Hair – Animal & Human, Fibres & Fabrics, Glass, Soil, pollen Paint Establishment of identity of Individuals, DNA, Fingerprints/Foot prints, Anthropology – Skeletal Remains, Odontology, Questioned Document and Their Identification- Identification of objects by shape and size, Handwriting and signature-analysis, identification and examination, Procedure for examination, Types of forgery, Anonymous letter, Charred document, Idented writing, Counterfeit coins and notes, Small coins (offence) Act 1971, Standards of Weight and Measures Act 1976

UNIT – III: FORENSIC MEDICINE AND THE LAWS:

Medical Jurisprudence- Brief History & current scenario at National & International level Forwarding of Biological samples to Forensic Laboratories, Medico legal aspect of Death-Concept of Human Anatomy & Physiology, Time of Death, Causes of Death, Injuries: classification, forms and medico legal aspects, Medico Legal Aspects – PM report, Dying Declaration & Expert Testimony (Evidence Act) Sexual offences – Sexual, Offences - Rape,

DFSA (Drug Facilitated Sexual Assault),Examination of the victim & the accused, Collection of evidence, Infanticide, Abortion, Artificial Insemination, Medical Termination of Pregnancy Act 1971, Prenatal Diagnostic Technique Act 1984, Legal Aspects - Mental Health Act 1987, Prevention of Food Adulteration Act 1954, NDPS Act 1985, Petroleum Act 1934, Prevention of Damage to Public Property Act 1984, Prevention of Illicit Trafficking in NDPS Act 1985, Arms Act 1950, Explosives Act 1984, Explosive Substance Act 1908, The Drugs Act 1940, The Drugs and Cosmetics Act 1945

UNIT – IV: RECENT ADVANCES IN FORENSIC SCIENCE AND THE LAWS

Cyber crime: definition, hacking, virus, obscenity, pornography, software piracy. It Act, 2000 .Intellectual property right-domain name, Trademark. Computer security encryption, decryption and digital signature, Forensic Speaker identification-Introduction inter speaker and intra-speaker variation, forensic Phonetics-acoustic and auditory parameter, vocal tract, speaker recognition identification and verification, spectrograph. Study of extortion threatening calls, hoax calls, drugs transactions and the recorded voice.

UNIT – V: NARCO ANALYSIS AND DNA FINGER PRINTING

Theory, forensic significance of narco-analysis, admissibility in court, future prospect, case study. Brain mapping- introduction, EEG, P-3000 wave, brain mapping in forensic Science, Limitation of technique, admissibility in court, case study. Polygraph: Principle and technique polygraph as forensic investigative tool, NHRC guidelines for polygraph test, case study. Forensic DNA Finger Printing-DNA-Introduction, source of DNA in Forensic case work, Extraction of DNA, Techniques of DNA fingerprinting-RFLP, STR, PCR. DNA fingerprinting in paternity disputes, mass disaster and other forensic case work, legal issues in DNA fingerprinting, case study.

Books Prescribed:

1. Dr. Jaising P. Modi: A Textbook of Medical Jurisprudence and Toxicology; Lexis Nexis, 26th Edition (2018)
2. B.V. Subrahmanyam: Parikh's Textbook of Medical Jurisprudence, Forensic Medicine and Taxicology; CBS Publishers and Distributors Pvt. Ltd; 8th Edition (2019)
3. Sarita Jand, Forensic Science & Law, Allahabad Law Agency; First Edition (2017)

Books for References:

1. R. A. Witthaus: Medical Jurisprudence, Forensic Medicine and Toxicology. Volume 2 of 4; Gale, Making of Modern Law, (2010)
2. Nabar B. S., Forensic Science in Crime Investigation, Asia Law House; 3 edition (2013)
3. B. R. Sharma : Scientific Criminal Investigation; Universal Law Publishing - An imprint of Lexis Nexis; 2nd Edition (2016)

Fifth Year - Ninth Semester	*Subject Code: U18PEBL542*	*Subject Credits: 03*

MEDICAL JURISPRUDENCE

Objectives: This course intense to analyze Medico-Legal Aspects, which helps the students to understand the investigative process involved in medical field.

COURSE OUTLINE

UNIT – I: MEDICAL RELATIONSHIP WITH CRIME

Forensic Science and Crime – Crime Scene Examination – Detection – Role of Investigator – Criminal Trial – Expert Witness – Role of Medical Evidence.

UNIT – II: THE WORK OF POLICE SPECIALISTS AND FORENSIC SCIENTISTS

Personal Identification – Examination of Living and Dead – Cases of Homicide and Suicide – Examination of Wounds and Injuries –Gun Shot – Asphyxia death – Death and Injuries by Burns / Scalds / Cold and Starvation - Virginity and Defloration – Pregnancy through Crime, Legitimacy and Tracing of Inheritance – Rape – Abortion – Infanticide – Unnatural Sexual Offences - Contact Traces – Marks Scratches of Paint, Glass etc.

UNIT – III: IDENTIFICATION FORESICS

Blood Stains and Seminal Stains – Blood and other Body Fluids – Finger Prints – Tracing of Hair, Bone Teeth etc. –Paternity Forensics - Identification of property – Road Accidents – Tracing of hit and run Vehicles - Identification of Photos and Documents –Detection Powders.

UNIT – IV: WORK OF CHEMIST AND BIOLOGIST

Work of Chemist – Methods – Tracing Alcohol - Work of Biologist – Tracing Blood and other Biological Matters.

UNIT –V: TOXICOLOGY

Introduction to Toxicology - Classification and Effect - Corrosive & Irritant Poisons.

Statutory Materials:

1. Code of Criminal Procedure, 1973
2. The Narcotic Drugs and Psychotropic Substances Act, 1985

Books Prescribed:

1. Dr. Jaising P. Modi: A Textbook of Medical Jurisprudence and Toxicology; Lexis Nexis, 26th Edition (2018)
2. B.V. Subrahmanyam: Parikh's Textbook of Medical Jurisprudence, Forensic Medicine and Taxicology; CBS Publishers and Distributors Pvt. Ltd; 8th Edition (2019)

3. B R Sharma : Scientific Criminal Investigation; Universal Law Publishing - An imprint of Lexis Nexis; 2nd Edition (2016)

Books for References:

1. R A Witthaus: Medical Jurisprudence, Forensic Medicine and Toxicology. Volume 2 of 4; Gale, Making of Modern Law, (2010)
2. Alfred Swaine: Taylor The Principles and Practice of Medical Jurisprudence: By Alfred Swaine Taylor; Volume 1; Palala Press, (2018)
3. V.S.R. Avadhani, V. Soubhagya Valli: Criminal Investigation (Law, Practice & Procedure); Asia Law House; 1st Edition (2015)

Fifth Year - Tenth Semester	*Subject Code: U18PEBL551*	*Subject Credits: 03*

CONSUMER AND COMPETITION LAW

Objectives: The Process of globalization and liberalization have brought a considerable awareness towards improving the competitive process in developing countries such as India. The course aims to study the developments and analyze the progress of competition law in various legal systems.

COURSE OUTLINE

UNIT – I: **COMPETITION POLICIES**

Evolution – Objective - scope and Nature of Competitive Laws - Concept of perfect competition - Theories on IP and competition - Concept of Open market system - MRTP Act, 1969 - Ragavan Committee Report - Formation and features - Anti – Competitive Practices and its regulation under MRTP Act - Regulatory Authorities – SEBI, TRAI, IRDA, NCDRC, CERC - Competition policy and Consumer Protection - Competition Policy and IPR – Introduction to various IP Assets, Patent Policy and its regulation under the Indian Laws, Abuse of IPR and regulation of Combination, Conflict of Combination Policy and Patent policy, TRIPS and its impact on Competition and Patent – Monopoly.

UNIT – II: COMPETITION ACT 2002

Drawbacks under the MRTP Act and need for the Competition Act - Regulation of Unfair Competition - Anti-competitive agreements - Abuse of dominant position - Combination, Competition Commission of India – Constitution, duties, powers and functions of commission - Competition Advocacy - Competition Appellate Tribunal, Changes brought in by Competition (Amendment) Act 2009.

UNIT – III: INTERNATIONAL PERSPECTIVES

Competition Policy under the EU and USA – Regulation of Unfair Competition in UK - The Competition Act 1989 - Anti – trust policy and Unfair Competition in USA – Federal trade commission Act 1914 - US Enforcement, Treaty on functions of European Union – Art 101, Art 102 - Globalization and Competition Law, WTO and its impact on competition laws with reference to UNTCAD - Competition rules of WTO, International Enforcement and Judicial Assistance.

UNIT – IV: CONSUMER PROTECTION LAW AND POLICIES

Origin and History of the Movement - Salient features of consumer protection act - Objective of the legislation - Consumer Protection Act, 1986 – Procedure – Deficiency of Service – Defect in Goods – Unfair Trade Practice - Consumer Protection Councils – its organization, objects and Procedure - Consumer Disputes Redressal Agencies – Kinds, establishment, composition, and jurisdiction - Complaint – manner in which made, procedure on receipt of appeals, limitation period, dismissal of frivolous or vexatious complaints - Orders of the Consumer Disputes Redressal Agencies – Findings of the

Forum– Finality of orders, Review of orders, enforcement of orders - Penalties and Remedies

UNIT – V: EMERGING TRENDS IN CONSUMERISM

Goods – Case laws on manufacturing defects - Service Sector – Airlines, Banking, Insurance, Housing - Medical negligence - Lawyers negligence - WTO and Consumer Protection - E-Commerce and Consumer Rights - Role of Civil Society in Consumer Protection - Access to justice and Consumer Laws - ADR in resolution of Consumer disputes - Data protection

Books Prescribed:

1. S. M. Dugar; Guide to Competition Law (Containing Commentary On The Competition Act, 2002; Mrtp Act, 1969 & The Consumer Protection Act, 1986), Lexis Nexis; 6th Edn. (2016)
2. Iain Ramsay: Consumer Law and Policy: Text and Materials on Regulating Consumer Markets, Bloomsbury Publishing, 3rd Edn. 2012
3. Dennis Campbell: International Consumer Protection, Springer Science & Business Media, 2013

Books for Reference:

1. Dr. V.K.Agarwal; Competition Act, 2002, Bharat Law House, Delhi; 2019 Edn. (2019)
2. Thomas Wilhelmsson: Consumer Law in the Information Society, Springer Netherlands, 2000
3. D. P. Mittal: Competition Law & Practice, Taxmann Publications Pvt. Limited, 2008

Fifth Year - Tenth Semester	*Subject Code: U18PEBL553*	*Subject Credits: 03*

TELECOMMUNICATION LAW

Objectives: The main objective of the paper is to introduce to the students the concepts of Telecommunications Law and its regulation at the International Level. Apart from the above, the paper covers the approaches of privatization in Telecommunications and Issues and challenges related to it. The paper will give theoretical perspective of Telecommunication Laws.

COURSE OUTLINE

UNIT – I: INTRODUCTION

Historical Perspective of Telecommunications Law - Conceptual Analysis - Public Broadcasting, Right to Broadcast - Cable Distribution - Broadcasting Licensing - Telecommunication Laws in India

UNIT – II: TELECOMMUNICATIONS

International Relevance - International regulation related to Telecommunications - ITU reform - Self-governance of the Internet: ICANN - WTO

UNIT – III: PRIVATIZATION

Privatization in telecommunications - Liberalization and deregulation - Privatization of INTELSAT

UNIT – IV: TELECOMMUNICATIONS: ISSUES AND CHALLENGES

Access - Dispute Settlement - Advertisement, consumer protection - Protection of minors (children) - Indecency, piracy - Jurisdictional issues

UNIT – V: TRAI

Framework, rules and regulations- merits and demerits - Case study method-Public awareness over the policies of telecommunication authorities.

Books Prescribed:

1. R.U.S.Prasad: Resolving Disputes in Telecommunications, Oxford University Press, 2010.
2. Law Walden:Telecommunications Law and Regulations, OUP Oxford,2018.
3. Vikram Raghavan: Communications Law in India, Lexis Nexis, 2007.

Books for Reference:

1. Miklos Kengyel:Electronic Technology and CPC, Springer Publications, 2014.

2. Antoni Gobeo: Journal of Cyber Security for Business Information Systems, River Publishers, 2018.
3. Archibald Putt: Putt's Law and Successful Technocrat, Wiley- Blackwell, 2006.

Fifth Year - Tenth Semester	*Subject Code: U18OEAL501*	*Subject Credits: 03*

RIGHT TO INFORMATION AND EDUCATION

Objectives: The right to information and right to education have been recognized as a fundamental human right, which upholds the inherent dignity of all human beings. These statutory rights play a crucial role in democracy - it is essential to ensure education accountability and good governance. Hence, the basic object of this subject is to empower the students to have an in-depth knowledge about Right to Information and Right to Education

COURSE OUTLINE

UNIT – I: INTRODUCTION TO RIGHT TO INFORMATION

The evolution of the Right to Information in India - The important terms and concepts used in the Act - The salient features of the Act Public Authorities and their Obligations under the Act - Public Authority - Public Authorities covered under the Act - Public Authorities are exempted from the ambit of the Act - Obligations of Public Authorities - Role of Public Information Officers: PIOs and APIOs - Accepting an Information Request - Processing and Disposing - The specific Duties & Responsibilities of Information Officers - The liabilities of a PIO for non-compliance with the provisions of the Act - The time limits for disposal of information requests - The fees and costs to be charged for providing information - The grounds on which requests can be rejected and the procedure for such rejection.

UNIT – II: EXEMPTIONS AND DISCLOSURES

Exemptions from Disclosure of Information - Partial Disclosure - Third Party Information - Specific provisions of the Act which exempt certain kinds of information - the classification of such exempted information - Application of public interest test with respect to exempted information - Grounds that allow for partial disclosure of information - The concept of ‘Third Party' and the issues and considerations revolving around its involvement.

UNIT – III: APPEALS

The roles and responsibilities of Appellate Officers within Public Authorities - The process involved in making first appeals to designated Appellate Officers - Timelines for making a first appeal and disposal of the appeal - First Appeals and Appellate Officers - Information Commission: Powers and Functions - The Role and Responsibilities of the Information Commissions - The relevant provisions in the RTI Act dealing with Complaints to the Information Commission and the specifications thereof - The "Second Appeal" process and the Commissions' mandate for the same - The power of Information Commissions with regard to enforcing compliance of public authorities with the provisions of the RTI Act, imposing penalty / recommending disciplinary action against erring PIOs etc.

UNIT – IV: RIGHT TO EDUCATION: INTERNATIONAL PERSPECTIVES

Education as Human Rights - Major intervention of International Declarations - Universal Declaration of Human Rights 1948 - Conventions on Child Rights 1989 - Current status and Challenges

UNIT – V: RIGHT TO EDUCATION: INDIAN PERSPECTIVES

Constitution (Eighty-sixth Amendment) Act, 2002 - Article 21-A in the Constitution of India - Elementary Education in India: Retrospect and Prospect - Historical background of RTE Act 2009 - Major provisions of RTE Act 2009 - Challenges in implementation and current status - Opportunities and Challenges of RTE Act 2009

Books Prescribed:

1. N.V. Paranjapee: Right to Information Law in India: Lexis Nexis: 1st Edition(2014)
2. Sarbjit Sharma & Krishnan Gopal: Right to Information: Authors Press: 1st Edition(2005)
3. Gursharan Singh Kaimth: Right to Education – A Roadmap ahead: Neha Publishers and distributors: 1st Edition(2014)

Books for Reference:

1. Justice Rajesh Tandon: Right to Information – Law and practice : Lexis Nexis: 2nd Edition(2015)
2. S.P. Sathe: Right to information: Lexis Nexis India: Latest Edition(2006)
3. Ajit Mondal & Jayanta Mete: Right to Education in India(Vol 1&2): Gyan Publishing house: 1st Edition(2016)

Fifth Year - Tenth Semester	*Subject Code: U18OEBL501*	*Subject Credits: 03*

INTERNATIONAL FINANCIAL TRANSACTIONS AND VALUATION

Objective: To analyse the concept of international financial environment and balance of payments. To provide knowledge of foreign exchange market, currency derivatives, exchange rate determination and international financial markets. To study about foreign trade finance, foreign exchange exposure and international capital structure.

COURSE OUTLINE

UNIT – I: INTERNATIONAL FINANCIAL ENVIRONMENT:
'Globalization', goals of International Financial Management.
Balance of Payments: concepts and principles of balance of payments and its various components. The Current Account Deficit and Surplus and Capital Account Convertibility.

UNIT – II: FOREIGN EXCHANGE MARKET:
Origin of the concept of foreign exchange, the difference between fixed and floating rates. Foreign exchange transactions and the derivatives instruments traded in foreign exchange market such as forwards, futures, swaps, and options.
Currency Derivatives: forward markets and the different concepts, currency futures markets and currency options markets and functions.

UNIT – III: EXCHANGE RATE DETERMINATION:
Exchange rate movements, factors that influence exchange rates, movements in cross exchange rates, concepts of international arbitrage, interest rate parity, and purchasing power parity and the International Fisher effect.
International Financial Markets: basic concepts of the international money market. International credit markets (loans in various forms) from the creditors/investors.

UNIT – IV: FOREIGN TRADE FINANCE:
Concept of foreign trade finance. concepts of financing exports and financing imports and documentary collections, factoring, forfeiting and countertrade
Nature and Measurement of Foreign Exchange Exposure: nature and measurement of foreign exchange exposure. Types of exposures and the various types of translation methods.

UNIT – V: MANAGEMENT OF FOREIGN EXCHANGE EXPOSURE:
Concept of exposure forward and foreign exchange exposure, various tools and techniques of foreign risk management and the risk management products.

International Capital Structure: international capital structure, cost of capital, the capital structure of MNCs, cost of capital in segmented versus integrated markets.

Books Prescribed:

1. Prakash. G. Apte: International Finance: Business Perspective; McGraw Hill Education; 2 Edition (2017)
2. Cheol Eun, International Financial Management; McGraw-Hill Higher Education; 5th Edition (2009)
3. Sharan V: International Financial Management; Prentice Hall India Learning Private Limited; 6th Edition (2010)
4. Paul R. Krugman: International Finance: Theory and Policy, Pearson Education; 10th edition (2017)

Books for References:

1. Julian Walmsley: The Foreign Exchange and Money Markets Guide (Frontiers in Finance Series); John Wiley & Sons; 2nd edition (2000)
2. Vibha Mathur, Foreign Trade, Export-Import Policy & Regional Trade Agreements of India; New Century Publications (2012)
3. Alan C. Shapiro, Peter Moles: International Financial Management; Wiley (2016)

Fifth Year - Tenth Semester	*Subject Code: U18OECL501*	*Subject Credits: 03*

PRIVATE INTERNATIONAL LAW

Objective: This course introduces students to private international law, as to the basic concepts and mechanism of this branch of law, and the legislative rules, judicial interpretations issued by various Authorities, also some representative judicial cases ruled abroad.

COURSE OUTLINE

UNIT – I: INTRODUCTION

Definition - Nature and Scope of Private International Law - THEORIES OF PRIVATE INTERNATIONAL LAW – Development of English Private International Law, Modern Theories and Development – Theory of Acquired Rights, Local Law Theory, American Revolution - Meaning of Classification of the Cause of Action - Basis of Classification, Meaning of Incidental Question, Elements of Incidental Question, Application and Exclusion of Foreign Law.

UNIT – II: RENVOI, DOMICILE AND JURISDICTION

Doctrine of Single Renvoi - Doctrine of Total Renvoi - Scope of the Application of Renvoi - Acquisition of a Domicile of Choice - Domicile of Dependent Persons and Married Women - Concept of Residence - Jurisdiction of English Court and Limitations on Jurisdiction.

UNIT – III: PRIVATE INTERNATIONAL LAW RELATING TO MARRIAGE AND OTHER MATRIMONIAL CAUSES

Meaning and Formalities of Marriage - Capacity to Marry - Polygamous Marriages – Divorce - Nullity and Judicial Separation - Presumption of Death and Dissolution of Marriage - Civil Partnership.

UNIT – IV: PRIVATE INTERNATIONAL LAW RELATING TO ADOPTION

Adoption Proceedings in England – Adoption and Children Act, 2002 - 1993 Hague Convention on Protection on Children and Co-operation in Respect of Inter Country Adoption - Effect of Foreign Adoption.

UNIT – V: PRIVATE INTERNATIONAL LAW RELATING TO PROPERTY AND OBLIGATION

Distinction between Movable Property and Immovable Property - Distinction between Tangible and Intangible Property - Transfer of Movable and Immovable Property – Succession - Matrimonial Property – Contracts - Nature of the Problem and Solutions to the Problem - Rome Convention - Special Contracts and Limitation on the Dominant of the Applicable Law.

Books Prescribed

1. Paras Diwan, Peeyushi Diwan: Private International Law, Deep Deep Publication, 4th Edition (1998).
2. I.A. Shearer: Starke's International Law; Oxford University Press, 11th Edition (1994).
3. Dr. S.R. Myneni: Private International Law; Asia Law House, 1st Edition reprinted (2015).

Books for Reference

1. Dr. H.O. Agarwal: International Law; Central Law Publications, 20th Edition (2014).
2. Govindaraj V.C: Private International Law a case study; OUP India, (2018).
3. Ugljesa Grusic, Christian Heinze: Cheshire, North & Fawcett's Private International Law; OUP Oxford, 15th Edition (2017)

Fifth Year - Tenth Semester	*Subject Code: U18OEDL501*	*Subject Credits: 03*

ENVIRONMENT AND INTERNATIONAL LEGAL ORDER

Objective: The term environmental order is however largely unknown. It is more than peripheral short-term environmental protection effected on a case-by-case basis to ward off risks rather it means blanket, comprehensive and long-term protective care in line with the enduring responsibility we bear for the world around us, for the world we share with others and for the world of the generations to come. This paper is imparted to create legal and social awareness for the students regarding environmental order.

COURSE OUTLINE

UNIT – I: INTRODUCTION

Concept of "Environment"- Definition, Meaning and Scope of the term 'Environment' and 'Pollution'- Meaning of the term 'Population ', 'Biome', 'Biosphere' - Meaning of the term 'Ecosystem: Macro-Ecosystem and Micro- Ecosystem - Relationship between Population, Environment and Development - Population –Vs- Development - Development –Vs- Environment Concept of 'Common Property' and 'State Property' - Notion of Doctrine of Public Trust

UNIT – II: INTERNATIONAL ENVIRONMENT LAW AND GLOBAL ISSUES: International Environmental Campaigns - The United Nations Conference on Human Environment, 1972 (Stockholm Conference) - Framework of the Conference - Aims and Objectives - Concept of Sustainable Development - Polluters Pay's Principle - Precautionary Principle - Concept of Equity - Inter-Generational Equity - Intra-Generational Equity - The United Nations Conference on Environment and Development, (UNCED) (Earth Summit 1992) - Framework of the Conference - Aims and Objectives - Earth Charter or Rio Declaration - Agenda 21 : Blue Print for action in 21st Century - Earth Summit Plus Five - The Johannesburg Declaration on Sustainable Development, - Framework of the Declaration - Aims and - From Stockholm to Rio De Janeiro to Johannesburg -World Charter for Nature 1982

UNIT – III: OTHER MAJOR INTERNATIONAL ENVIRONMENTAL ARRANGEMENTS

Kyoto Conference and Pact on Global Warming, 1997, and onwards -Noordwijk Declaration on Climate change, 1989 - Helsinki Declaration on the Protection of Ozone Layer, 1989 - Basel Convention, 1989 - Nairobi Declaration, 1982 - Environmental Obligations: International Financing Policy - Global Environment Facility - World Environment Fund - United Nations Organisation and Environment - Millennium Development Goals 2000 - Global Environmental Issues and their Impacts: Global Warming - Oil Pollution - Ozone Layer Depletion - Green House Effect - Acid Rain.

UNIT – IV: BIODIVERSITY AND ITS NECESSITY

Definitions - Meaning and Importance - Role of Flora and Fauna in maintaining Biodiversity - Threats to Biodiversity - Need for protection of Biodiversity - Biodiversity and Economic Valuation - Laws, Policies and Measures for Biodiversity: Convention on Biological Diversity, 1992 - The Biological Diversity Act, 2002 - Protection of Plant Varieties and Farmers Right Act, 2001 - The Geographical Indications (Regulation and Protection) Act, 1999

UNIT – V: BIODIVERSITY AND ETHICAL ISSUES

Utilization of flora for Bio-Medical purposes - Cosmetic Plants - Medicinal Plants -Utilization of fauna/animals for Bio-Medical purposes - Genetic Mutation of Seeds - Experimentation on Animals - Genetically Modified Organisms - Genetic Engineering - Biodiversity and Intellectual Property Rights - Biodiversity And Priority Sectors: Sanctuaries - Zoo and Parks - Biosphere Reserves - Protected Forest and Reserved Forests - Conservation of Biodiversity: Role of NGO - Role of Indigenous People - Role of Media and Publications.

Books Prescribed:

1. Dr. S.C. Tripathi: Environmental Law: Central Law publications: Latest Edition(2015)
2. Shashi Kumar: Biodiversity and Food Security: Atlantic: Latest Edition(2002)
3. Alok Pandey: Environmental Law – an emerging issues in India: ABS books: 1st edition(2016)

Books for Reference:

1. V. R. Krishna Iyer: Environmental Pollution and the Law: Vedpal Law House: Edition(1984)
2. Prof. Philippe sands, Prof. Jacqueline Peel, Prof. Adriana Fabra & Dr. Ruth Machenzie: Principles of International Environmental Law: Cambridge university press: 3rd Edition(2012)
3. Jonathan A. Newman, Gary Varner & Stefan Linquist: Defending Biodiversity Environmental science & Ethics: Cambridge University Press: 1st Edition(2017)

BHARATH INSTITUTE OF HIGHER EDUCATION AND RESEARCH

BHARATH INSTITUTE OF LAW

No. 173, Agharam Road, Selaiyur, Chennai - 600 073

B.Com., LLB (Hons.)

FIVE YEAR INTEGRATED DEGREE COURSE

SYLLABUS

With SUBJECT CREDITS

Applicable from Academic Year 2018-19

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3.	U18PLCL102	Principles of Management	09
4.	U18PLCL103	Financial Accounting	10
5.	U18PCCL101	Contract – I	11
6.	U18PCCL102	Law of Torts	13
7.	U18LSCL102	English – II	14
8.	U18PLCL104	Business Economics	15
9.	U18PLCL105	Advanced Accounting	16
10.	U18PLCL106	Legal & Constitutional History of India	17
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29.	U18PCCL311	Banking Law Including Negotiable Instruments Act	43
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31.	U18PCCL313	Human Rights	47
32.	U18PLCL315	Practical Auditing	49
33.	U18PLCL316	Human Resources Management	50
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40.	U18PCCL416	Labour Law – I	62
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CREDITS FOR FIVE YEAR INTEGRATED HONOURS COURSE (B.B.A/B.Com/B.A., LL.B)

SL. NO.	NATURE OF SUBJECTS	CATEGORY	NUMBER OF SUBJECTS	SUBJECT CREDIT ALLOTTED	TOTAL CREDIT POINTS
1	Language Studies	LS	2	3	06
2	Pre-Law Course	PL	16	3	48
3	Professional Core	PC	24	4	96
4	Clinical Core	CC	5	3	15
5	Professional Elective	PE	5	3	15
6	Open Elective	OE	1	3	03
7	Honors Course	HC	8	4	32
8	Practical Training	PT	5	2	10
Total			**66**	--	**225**
Non-Credit Courses					
9	Functional Training	FT	11	0	0
10	Mandatory Course	MC	9	0	0
Total			**20**	**--**	**0**
OVERALL TOTAL			**86**	**--**	**225**

Credits:

Credit defines the quantum of contents/syllabus prescribed for a course and determines the number of hours of instruction required per week. Thus, normally in each of the courses, credits will be assigned on the basis of the number of lectures/ tutorial & Practical works.

Hence, the Credits are assigned on the basis of the Lectures (L) / Tutorials (T) / Practical (P)

- **L - One credit** for **one hour** lecture per week (1 credit course = 15 hours)
- **T - One credit** for **one hour** lecture per week(1 credit course = 15 hours)
- **P - One credit** for every **two hours** of practical (1 credit course = 30 hours)

	Hour	Credit
Lecture (L)	**1**	**1**
Tutorial (T)	**1**	**1**
Practical (P)	**2**	**1**

****Maximum Total Credits per semester is 20 - 27**

B.Com., LLB (Hons.)

Five Year Integrated Degree Course

SUBJECT CREDITS

FIRST YEAR – I SEMESTER								
S. No.	**Subject Code**	**Category**	**Subject**	**Contact Periods**	**L**	**T**	**P**	**C**
THEORY								
1.	U18LSCL101	LS	English – I	3	2	1	0	3
2.	U18PLCL101	PL	Principles of Economics	3	2	1	0	3
3.	U18PLCL102	PL	Principles of Management	3	2	1	0	3
4.	U18PLCL103	PL	Financial Accounting	3	2	1	0	3
5.	U18PCCL101	PC	Law of Contract - I – I	4	3	1	0	4
6.	U18PCCL102	PC	Law of Torts	4	3	1	0	4
PRACTICAL								
7.	U18FTCL101	FT	Moot Court Training	4	0	0	4	0
8.	U18FTCL102	FT	Case Study	3	0	0	3	0
ACTIVITY BASED COURSE								
9.	U18MCCL101	MC	Physical Health – Sports & Games	3	0	0	3	0
			TOTAL	**30**	**14**	**6**	**10**	**20**

FIRST YEAR – II SEMESTER								
S. No.	**Subject Code**	**Category**	**Subject**	**Contact Periods**	**L**	**T**	**P**	**C**
THEORY								
1.	U18LSCL102	LS	English – II	3	2	1	0	3
2.	U18PLCL104	PL	Business Economics	3	2	1	0	3
3.	U18PLCL105	PL	Advanced Accounting	3	2	1	0	3
4.	U18PLCL106	PL	Legal and Constituional History of India	3	2	1	0	3
5.	U18PCCL103	PC	Law of Contract - I – II	4	3	1	0	4
6.	U18PCCL104	PC	Law of Crimes	4	3	1	0	4
PRACTICAL								
7.	U18PTCL101	PT	Internship & Practical Training - I	4	0	0	4	2
8.	U18FTCL103	FT	Prison Observation	3	0	0	3	0
ACTIVITY BASED COURSE								
9.	U18MCCL102	MC	Social Service	3	0	0	3	0
			TOTAL	**30**	**14**	**6**	**10**	**22**

SECOND YEAR – III SEMESTER								
S. No.	**Subject Code**	**Category**	**Subject**	**Contact Periods**	**L**	**T**	**P**	**C**
THEORY								
1.	U18PLCL207	PL	Marketing Management	3	2	1	0	3
2.	U18PLCL208	PL	Management Accounting	3	2	1	0	3
3.	U18PLCL209	PL	Business Statistics	3	2	1	0	3
4.	U18PCCL205	PC	Constitutional Law – I	4	3	1	0	4
5.	U18PCCL206	PC	Family Law – I	4	3	1	0	4
6.	U18PCCL207	PC	Jurisprudence and Interpretation of Statutes	4	3	1	0	4
PRACTICAL								
7.	U18FTCL204	FT	Mock Trail Training	4	0	0	4	0
8.	U18FTCL205	FT	Legislature Session Observation	3	0	0	3	0
ACTIVITY BASED COURSE								
9.	U18MCCL203	MC	Yoga	2	0	0	2	0
			TOTAL	**30**	**15**	**6**	**9**	**21**

SECOND YEAR – IV SEMESTER								
S. No.	**Subject Code**	**Category**	**Subject**	**Contact Periods**	**L**	**T**	**P**	**C**
THEORY								
1.	U18PLCL210	PL	Organizational Behaviour	3	2	1	0	3
2.	U18PLCL211	PL	Cost Accounting	3	2	1	0	3
3.	U18PLCL212	PL	Entrepreneurial Development	3	2	1	0	3
4.	U18PCCL208	PC	Constitutional Law – II	4	3	1	0	4
5.	U18PCCL209	PC	Family Law – II	4	3	1	0	4
6.	U18PCCL210	PC	Law of Evidence	4	3	1	0	4
PRACTICAL								
7.	U18PTCL202	PT	Internship & Practical Training - II	4	0	0	4	2
8.	U18FTCL206	FT	Police Station Visit	3	0	0	3	0
ACTIVITY BASED COURSE								
9.	U18MCCL204	MC	Legal Awareness to General Public	3	0	0	3	0
			TOTAL	**31**	**15**	**6**	**10**	**23**

THIRD YEAR – V SEMESTER								
S. No.	**Subject Code**	**Category**	**Subject**	**Contact Periods**	**L**	**T**	**P**	**C**
THEORY								
1.	U18PLCL313	PL	International Business	3	2	1	0	3
2.	U18PLCL314	PL	Logistics and Supply Chain Management	3	2	1	0	3
3.	U18PCCL311	PC	Banking Law Including Negotiable Instruments Act	4	3	1	0	4
4.	U18PCCL312	PC	Property Law	4	3	1	0	4
5.	U18PCCL313	PC	Human Rights	4	3	1	0	4
6.		PE	Elective – I	3	2	1	0	3
PRACTICAL								
7.	U18FTCL307	FT	Legal Aid	4	0	0	4	0
8.	U18FTCL308	FT	Client Counseling	3	0	0	3	0
ACTIVITY BASED COURSE								
9.	U18MCCL305	MC	Mock Crime Scene Investigation	2	0	0	2	0
			TOTAL	**30**	**15**	**6**	**9**	**21**

THIRD YEAR – VI SEMESTER								
S. No.	**Subject Code**	**Category**	**Subject**	**Contact Periods**	**L**	**T**	**P**	**C**
THEORY								
1.	U18PLCL315	PL	Practical Auditing	3	2	1	0	3
2.	U18PLCL316	PL	Human Resources Management	3	2	1	0	3
3.	U18PCCL314	PC	Public International Law	4	3	1	0	4
4.	U18PCCL315	PC	Company Law	4	3	1	0	4
5.		PE	Elective - II	3	2	1	0	3
PRACTICAL								
6.	U18CCCL301	CC	CC-I Moot Court	5	0	1	4	3
7.	U18PTCL303	PT	Internship & Practical Training - III	4	0	0	4	2
8.	U18FTCL309	FT	Registration Department Visit	3	0	0	3	0
ACTIVITY BASED COURSES								
9.	U18MCCL306	MC	Physical Health – NCC	2	0	0	2	0
			TOTAL	**31**	**12**	**6**	**13**	**22**

FOURTH YEAR – VII SEMESTER								
S. No.	**Subject Code**	**Category**	**Subject**	**Contact Periods**	**L**	**T**	**P**	**C**
THEORY								
1.	U18HCCL401	HC	Hons. I Media Law	4	3	1	0	4
2.	U18HCCL402	HC	Hons.II Disaster Management Law	4	3	1	0	4
3.	U18PCCL416	PC	Labour Law – I	4	3	1	0	4
4.	U18PCCL417	PC	Administrative Law	4	3	1	0	4
5.	U18PCCL418	PC	Environmental Law	4	3	1	0	4
PRACTICAL								
6.	U18CCCL402	CC	CC – II Professional Ethics, Accountancy for Lawyers and Bar Bench Relations	4	1	1	2	3
7.	U18FTCL410	FT	Chamber Observations	4	0	0	4	0
ACTIVITY BASED COURSE								
8.	U18MCCL407	MC	Model State Legislature	3	0	0	3	0
			TOTAL	**31**	**16**	**6**	**9**	**23**

FOURTH YEAR – VIIISEMESTER								
S. No.	**Subject Code**	**Category**	**Subject**	**Contact Periods**	**L**	**T**	**P**	**C**
THEORY								
1.	U18HCCL403	HC	Hons.III Land Laws including Tenure & Tenancy System	4	3	1	0	4
2.	U18PCCL419	PC	Labour Law II	4	3	1	0	4
3.	U18PCCL420	PC	Law of Insurance	4	3	1	0	4
4.	U18PCCL421	PC	Law of Taxation	4	3	1	0	4
5.		PE	Elective – III	3	2	1	0	3
PRACTICAL								
6.	U18CCCL403	CC	CC-III Alternate Dispute Resolution	5	1	1	2	3
7.	U18PTCL404	PT	Internship & Practical Training - IV	4	0	0	4	2
ACTIVITY BASED COURSES								
9.	U18MCCL408	MC	Model Parliamentary Debate	2	0	0	2	0
			TOTAL	**30**	**15**	**6**	**8**	**24**

FIFTH YEAR – IX SEMESTER								
S. No.	**Subject Code**	**Category**	**Subject**	**Contact Periods**	**L**	**T**	**P**	**C**
THEORY								
1.	U18HCCL504	HC	Hons. IV Minorities Law	4	3	1	0	4
2.	U18HCCL505	HC	Hons. V Gender Justice and Feminist Jurisprudence	4	3	1	0	4
3.	U18HCCL506	HC	Hons. VI Medical and Health Law	4	3	1	0	4
4.	U18PCCL522	PC	Civil Procedure Code	4	3	1	0	4
5.		PE	Elective – IV	3	2	1	0	3
PRACTICAL								
6.	U18CCCL504	CC	CC-IV Drafting, Pleading and Conveyancing	5	0	1	4	3
7.	U18FTCL511	FT	Court Observations	4	0	0	4	0
ACTIVITY BASED COURSE								
8.	U18MCCL509	MC	Model UNO	2	0	0	2	0
			TOTAL	**30**	**14**	**6**	**10**	**22**

FIFTH YEAR – X SEMESTER								
S. No.	**Subject Code**	**Category**	**Subject**	**Contact Periods**	**L**	**T**	**P**	**C**
THEORY								
1.	U18HCCL507	HC	Hons. VII International Refugee Law	4	3	1	0	4
2.	U18HCCL508	HC	Hons. VIII Cyber Law	4	3	1	0	4
3.	U18PCCL523	PC	Criminal Procedure Code	4	3	1	0	4
4.	U18PCCL524	PC	Securities Law	4	3	1	0	4
5.		PE	Elective – V	3	2	1	0	3
6.		OE	Elective – VI	3	2	1	0	3
PRACTICAL								
7.	U18CCCL505	CC	CC-V Public Interest Lawyering, Legal Aid, Court & Chamber Visits	5	1	0	4	3
8.	U18PTCL505	PT	Internship & Practical Training - V	4	0	0	4	2
			TOTAL	**31**	**17**	**6**	**8**	**27**

First Year - First Semester	*Subject Code: U18LSCL101*	*Subject Credits: 03*

ENGLISH – I

Objective: To develop written and oral communication skills that maximizes the impact of lawyers' credibility and progresses towards mastery of professional diction and style and to develop the basic ability to analyze and advice the legal aspects to various professional audiences.

COURSE OUTLINE

UNIT – I: ENGLISH LANGUAGE AND LINGUISTICS
Tracing the Historical Development of English language –Indo-European Language Tree – Eastern and Western languages Groups- Germanic Groups –Old English-Middle English – Modern English - Vocabulary: Development of Vocabulary in English Languages –Influence of other languages Vocabulary-Etymology-semantics.

UNIT – II: PHONETICS; TRANSCRIPTION EXERCISES
Phonetics: R.P Phonemes-Identification and Classification- Vowels' Diphthongs and Consonants.Transcription Exercises: Accent –Rhythm in connected speech Kinds of Accents Intonation- Falling Tone and Raising Tone

UNIT – III: PROSE SECTION
Advice to a Young Man Interested in Going in to Law - Frank Further, The Language of the Law – Urban A. Lavery, The Five Functions of Lawyer – Arthur T. Vanderbilt, Court Scene – Merchant of Venice- William Shakespeare, Gettysburg Address –Abraham Lincoln.

UNIT – I: GRAMMAR
Parts of Speech -Reported Speech – Voice - Degrees of Comparison - Question Tags -Words often confused- Idioms and phrases -Synonyms and Antonyms.

UNIT – V: LEGAL TERMS
Accomplice, Ad – Idem, Adjournment, Admission, Amicus Curiae, Approver, Acquittal, Bail, Coercion, Consent, Defamation, Defense, Evidence, Ex – parte, Habeas Corpus, Homicide, Malafides, Minor, Negligence, Negotiable Instrument, Plaintiff, Quid pro quo, Resjudicata, Sine – die, Summons, Surety, Trespass, Trial, Ultra – vires, Tort

Books Prescribed:

1. Bhatnagar: Law and Language; Macmillan Publishers India Limited, 2012
2. Glanville Llewelyn Williams: Glanville Williams: Learning the Law; Sweet & Maxwell Thomson Reuters, 16th Edn. (2016)
3. Francis Bacon: Bacon's Essays; J. W. Parker, 3rd Edn. (1857)

Books for Reference:

1. David Green: Contemporary English Grammar Structure and composition; Trinity Press; 2nd Edn. (2015)

2. T. Balasubramanian: A Textbook of English Phonetics for Indian Students; MacMillan Indian Ltd.; (2000)
3. Otto Jesperson: Growth & Structure of English Language; Atlantic Publishers, 2nd Edn., (revised (2015)
4. Xavier Pinto: Shakespeare's merchant of Venice; Beeta Publications, 2nd Edn. (2014)

First Year - First Semester	*Subject Code: U18PLCL101*	*Subject Credits: 03*

PRINCIPLES OF ECONOMICS

Objective: To acquaint the students with the basic study of Economics. To ponder upon the importance of Theory of Consumer Behaviour and the Theory of Demand & Supply. To highlight the concept of Production and Cost Analysis. To describe about the concept of Market Structure.

COURSE OUTLINE

UNIT I: INTRODUCTION TO THE STUDY OF ECONOMICS
Introduction to the Study of Economics – Definition of Economics – Wealth – Welfare – Scarcity. Divisions of Economics – Micro & Macro. Nature and Scope of Economics – Positive and Normative Economics.

UNIT II: THEORY OF CONSUMER BEHAVIOR
Theory of Consumer Behavior – Theory of Utility – Law of Diminishing Marginal Utility – Total Utility – Marginal Utility – Consumer Equilibrium.

UNIT III: THEORY OF DEMAND AND SUPPLY
Theory of Demand and Supply – Definition of Demand – Law of Demand and its Determinants. Elasticity of Demand – Types of Elasticity of Demand. Indifference Curve – Characteristics of Indifference curve.

UNIT IV: PRODUCTION AND COST ANALYSIS
Production – Factors of Production Function – Law of Returns. Cost – Different Types of Cost Conditions.

UNIT V: MARKET STRUCTURE
Market Structure – Price and Output Determination under different Markets – Features of Perfect Competition – Monopoly – Monopolistic Competition – Duopoly – Oligopoly.

Books Prescribed:

1. H L Ahuja: Advanced Micro Economics; Sultan & Chand Publication, Latest Edition, Delhi.
2. M L Jhingan: Micro Economic Theory; Vrinda Publications (P) Ltd, Latest Edition.
3. Karl E. Case and Ray C. Fair: Principles of Economics; Pearson Education, Inc., 8th Edn, 2007.
4. N. Gregory Mankiw: Economics: Principles and Applications; Cengage Learning India Private Limited, 4th Edn, 2007.

Books for Reference:

1. Paul A. Samuelson: Economics; Tata McGraw-Hill Education, 2010
2. Thomas Sowell: Basic Economics; Hachette UK, 2014
3. Roger A. Arnold: Economics; Cengage Learning, 9th Edn. 2008.

First Year - First Semester	*Subject Code: U18PLCL102*	*Subject Credits: 03*

PRINCIPLES OF MANAGEMENT

Objective: To gain knowledge about the management functions. To learn the levels of management, understand the concepts of planning, to gain knowledge on centralization and decentralization, staffing and to familiarize on the concepts of direction and control

COURSE OUTLINE

UNIT I: INTRODUCTION
Definition – Nature of Management – Science or Art – Qualities of a Manager – Role of Manager in an Organization – The management process – Difference between Administration and Management – Henry Fayol's Principles of Management.

UNIT II: PLANNING
Definition – Characteristics – Types of Planning – Objectives of Planning – Elements of a good planning – Planning Process – Benefits and Limitations of Planning – Management by Objectives – Process of MBO.

UNIT III: ORGANIZING
Definition – Nature and purpose of organizing – Formal and Informal Organization – Organizational Structure – Types of Organizational Structure – Authority and responsibility – Delegation – Centralization and Decentralization – Job Design.

UNIT IV: STAFFING
Definition – Steps in Staffing Process – Manpower Planning – Recruitment – Selection – Training and Development – Performance Appraisal – Career Development – Objectives – Career Development Techniques.

UNIT V: DIRECTION AND CONTROLLING
Characteristics of Direction – Importance of Direction – Leadership Styles – Communication – Process of Communication – Barrier in Communication – Characteristics of Control – Importance of Control – Control Process.

Books Prescribed:

1. H.L. Ahuja, Business Economics, S.Chand & Co. Ltd, 2016.
2. S. Shankaran, Business Economics, Margham Publications, 2014.
3. P.N. Reddy & H.R. Appanniah, Principles of Business Economics, S.Chand & Co. Ltd, 2003.

Books for Reference:

1. P.L. Mehta, Managerial Economics by Analysis, Problems & Cases, Sultan Chand & Sons.
2. S.K. Agarwal, Business Economics, S.Chand & Co. Ltd, Ca Foundation, 5th Edition, 2018.
3. Francis Cherunilam, Business Environment, Himalaya Publishing House.

First Year - First Semester	*Subject Code: U18PLCL103*	*Subject Credits: 03*

FINANCIAL ACCOUNTING

Objective: Acquaintance with the format of Trading, Profit & Loss Account and the Balance Sheet. Clear insight into the basics of Accounting. The knowledge of the Average due date and depreciation. Familiarity with the procedure of Single entry system.

COURSE OUTLINE

UNIT I - ACCOUNTING CONCEPTS

Meaning and scope of Accounting – Basic Accounting Concepts and Conventions – Objectives Of Accounting – Accounting Transactions – Journal, Ledger and Preparation of Trial Balance.

UNIT II - FINAL ACCOUNTS

Preparation of Final Accounts of a Sole Trading Concern – Adjustments – Closing Stock, Outstanding and Prepaid Items – Depreciation, Provision of Bad Debts – Provision for Discount on Debtors – Interest on Capital and Drawing.

UNIT III – AVERAGE DUE DATE-ACCOUNT CURRENT

Bill of Exchange – Average Due Date – Account Current.

UNIT IV - DEPRECIATION

Depreciation – Meaning, Causes, Types – Straight Line Method – Written Down Value Method (Change in Method Excluded). Insurance Claims – Average Clauses.

UINT V - SINGLE ENTRY SYSTEM

Single Entry System – Meaning, Features, Defects – Differences Between Single Entry and Double Entry System – Statement of Affairs Method – Conversion Method (Only Simple Problems).

(Theory 25% Problems 75%)

Books Prescribed:

1. Reddy T.S. & Murthy A.; Financial Accounting - Margham Publication, Chennai, 2013.
2. Jain & Narang; Financial Accounting, Kalyani Publications, New Delhi, 2013.

Books for References:

1. Gupta R.L. & Gupta V.K.; Advanced Accounting- Sultan Chand Publication,New Delhi, 2011.
2. Jawahar Lal, Seema; Financial accounting, S. Chand & Company Publication, New Delhi, 2012

First Year - First Semester	*Subject Code: U18PCCL101*	*Subject Credits: 04*

LAW OF CONTRACT - I

Objective: The Indian Contract Act occupies the most important place in the Commercial Law. The objective of the Contract Act is to ensure rights and that the obligations arising out of a contract are honored and that legal remedies are made available to those who are affected.

COURSE OUTLINE

UNIT – I: BASIC NATURE OF CONTRACT

Indian Contract Act, 1872 - Formation of Contract - Objects of a contract – Essentials of valid contact - Offer - Acceptance - Revocation - lapse of offer and acceptance - Intention to create legal relationship -Terms of contract and Standard form of contracts.

UNIT – II: CONSIDERATION

Past, Present andFuture consideration - Value and adequacy of consideration - Rule in Pinnel's case - Exceptions to consideration - Capacity to contract- Free consent - Factors which vitiate free consent - unlawful and illegal objects or considerations - valid, voidable and void agreements.

UNIT III: PERFORMANCE OF THE CONTRACT

Privity of contract - time as essence to performance - place and order of performance - Performance of reciprocal promises - Wagering agreement - contingent contracts - joint promises - appropriation of payments.

UNIT IV: DISCHARGE OF CONTRACTS

By impossibility of performance - Discharge by Agreement - Frustration - Novation Recession - Alteration- Discharge by breach -Waiver - Accord and Satisfaction- Material alteration - Damages - types and Measures.

UNIT V: QUASI CONTRACTS

Quantum Meruit - Specific Relief Act 1963 - Recovery of possession - Specific Performance of contracts - Rectification - Cancellation of instruments - Rescission – declaratory decrees - Injunctions.

Statutory Material

1. Indian Contract Act 1872
2. Specific Relief Act 1963

Books Prescribed:

1. Avatar Singh; Contract and Specific Relief Act; Eastern Book Company; 16th Edn. (2010)
2. Dr.S.K. Kapoor; Contract and Specific Relief Act; Central Law Agency; 14th Edn., (2015)
3. Dr. Kailash Rai; Contract and Specific Relief Act; Central Law Agency; 14th Edn., (2014)
4. Prof. G.C.V. Subba Rao's; Law of Contracts; Narender Gogia & Vompany; 11th Edn.; Updated (2015)
5. Dr. R.K. Bangia; Contarct 1; Allahabad Law Agency; Reprint. (2016)
6. R.L. Meena; Textbook on law of Contract; Universal Law Publishing Co. Pvt. Ltd.; Edn. (2008)

Books for Reference:

1. V. Kesava Rao; Contract Cases ad materials; Lexis Nexis; @nd Edn.(2014)
2. Sir Dinshaw Fardunji Mulla; the Inidan Contract Act; Lexis Nexis; 15th Edn. (2016)
3. Nilima Bhadbhade; Contract Law in India; Kluwer Law International; 3rd Edn. (2016)
4. Charles Mitchell & Paul Mitchell; Landmark cases in the Law of Contarct; Hart Publishing; 2008

First Year - First Semester	*Subject Code: U18PCCL102*	*Subject Credits: 04*

LAW OF TORTS

Objective: This paper is to make students understand the common law and its evolution and the Law of Torts is a fundamental common law with established cases.

COURSE OUTLINE

UNIT-I: INTRODUCTION

Origin and Development of Torts - Definition of Tort - Distinction between Tort and Crime, Tort and Contract, Tort and Breach of Trust – Constituents of Tort*: injuria sine damnum, damnum sine injuria*

UNIT-II: GENERAL DEFENCES

volenti non-fit injuria - Necessity - Plaintiff's default - Act of God - Inevitable accidents – Private Defence – Mistake – Statutory Authority

UNIT – III: SPECIFIC TORTS

Negligence -Essentials of negligence - Standard of care - duty to take care - breach of duty - Doctrine of Contributory Negligence - Damages - *Res Ipsa Loquitur* - Medical and professional negligence – Nuisance – Nervous Shock

UNIT-IV: TORTS AGAINST HUMAN BEING AND PROPERTY

Assault – Battery – Distress – Malicious – False Imprisonment and Malicious Prosecution – Conspiracy – Defamation – Libel and Slander – Trespass to Land – To Goods

UNIT-V: LIABILITY

Vicarious Liability – Doctrine of Sovereign Immunity - No Fault Liability – Strict Liability – Absolute Liability

Books Prescribed:

1. Ratanlal & Dhirajlal: The Law of Torts; Lexis Nexis, 26th Edition (2013)
2. R.K.Bangia: Law of Torts; Allahabad Law Agency, 2017
3. Dr. N.V. Pranjape: Law of Torts Consumer Protection Law and Compensation under other Statutory Law; Central Law Agency, 3rd Edition (2015)
4. P.S.A. Pillai: Law of Torts; Eastern Book Company, 9th Edition (2004)
5. B.M. Gandhi: Law of Torts; Eastern Book Company, 4th Edition (2011)
6. Avtar Singh and Harpreet Kaur: Introduction to the Law of Torts & Consumer Protection; Lexis Nexis, 3rd Edition (2013)
7. M.N. Shukla : The Law of Torts; Central Law Agency, 20th Edition (2013)
8. S.K. Kapoor: Law of Torts and Consumer Protection Act; Central Law Agency, 9th Edition (2015)

Books for References:

1. Ramaswamy Iyer: The Law of Torts, Lexis Nexis, 10th Edition (2007)
2. Winfield: Law of Tort; Sweet & Maxwell, 18th Edition (2010)
3. Salmond: Law of Tort: Sweet & Maxwell, 21st Edition (1996)

First Year - Second Semester	*Subject Code: U18LSCL102*	*Subject Credits: 03*

ENGLISH – II

Objective: Aims to improve language skills (LSRW) within a legal context and to learn read and understand legal text such as articles and case briefs and to develop efficient and effective skills on language.

COURSE OUTLINE

UNIT – I: COMMUNICATION:
Definition – Methods – Types – Principles of Effective Communication – Barriers to Communication – Relevance and Importance of Business Communication – E-Communication Four Skills of Language Acquisition – Understanding Spoken Language – Speaking – Written Language – Writing.

UNIT – II: LETTER CORRESPONDENCE:
Business Letters – Layout –Acknowledgement – E-mail writing – Complaint Drafting – Precise Writing & Summarizing

UNIT – III: PROSE SECTION – LEARNING THE LAW BY GLANVILLE WILLIAMS:
The Division of Law – Methods of Study – Case Law Techniques – In the Examination Room – Moots and Mock Trials.

UNIT – IV: LEGAL WRITING SKILLS:
Report Writing – Agenda - Minutes of Meeting – Dialogue Writing – Note Making – Advertisement making

UNIT – V: LEGAL MAXIMS:
Actus non – facit reum nisi mens sit rea - Actio personalis moritur cum persona - Audi Alterm partem - Communis error facit jus- Delegatus non potest delegare - Ex nudo pacto non oritur action - Ex turpi causa non oritur action - In pari delicto potier est conditio defendantis - Falsus in uno falsus in omnibus - Generalia specialibus non derogant - Ignorantia facti excusat, ignorantia juris non excusat - In jure non remota causa, sed proxima spectator - Qui facit per alium facit per se - Respondeat superior - Res ipsa loquitur - Sic utere tuo ut alienum non laedas - Ubi jus remedium - Volenti non ibi remedium - Salus populi suprema lex - Novus actus interveniens - Rex non potest peccare - Vigilantibus non dorminetibus, jura subvenient

Books Prescribed:

1. Rajendra Pal, Korlahalli. J. S.: Essentials of Business Communication; Sultan Chand & Sons, 1st Edn. 2011
2. Shirley Taylor: Communication for Business: A Practical Approach; Longman, 1999, 3rd Edn. (1999)
3. Courtland L. Bovée, John V. Thill, Barbara E. Schatzman: Business Communication Today; Prentice Hall, 7th Edn. 2003

Books for Reference:

1. John M. Penrose, Robert W. Rasberry, Robert J. Myers: Advanced Business Communication; South-Western College Pub., 3rd Edn. 1997
2. Simon Collin: Doing Business on the Internet: Kogan Page, illustrated, reprint (1999)
3. Mary Ellen Guffey & Dana Loewy: Business Communication Process & Product; South- Western Cengage Learning, 7th Edn. (2008)

First Year - Second Semester	*Subject Code: U18PLCL104*	*Subject Credits: 03*

BUSINESS ECONOMICS

Objective: To acquaint the students with the basic of Business Economics. To ponder upon the Pricing Policy and Methods. To highlight the concept of Economic Fluctuations. To describe about the National income concepts and the Measurement of national income. To Bring out the Theories of Rent, Wages and Interest.

COURSE OUTLINE

UNIT I: INTRODUCTION TO THE STUDY OF BUSINESS ECONOMICS
Introduction to Business Economics – Meaning – Objectives – Nature and Scope of Business Economics – Responsibilities of Business Economics – Basic concepts of Economics.

UNIT II: PRICING POLICY AND METHODS
Formulation of Pricing policies – General Considerations – Factors affecting Price Policy – Role of Cost in Pricing – Demand factor in Pricing – Consumer Psychology – Pricing Practices – Pricing Methods – Break Even Analysis.

UNIT III: ECONOMIC FLUCTUATIONS
Economic fluctuations and business – Business Cycle: Phases of Trade Cycle, Depression, Recovery, Boom, Crisis, Slump, Recession – Business Policy – Inflation and Deflation with reference to India.

UNIT IV: NATIONAL INCOME
Meaning – Definitions – Elements of National Income – Measurement of National Income – National Income Concepts – Methods of Calculating National Income – Uses of National Income Estimates.

UNIT V: THEORIES OF RENT, WAGES AND INTEREST
Meaning of Rent – Recardian Theory of Rent – Quasi Rent – Real Wages – Money Wages – Marginal Productivity Theory – Meaning of Interest – Classical Theory of Interest – Liquidity Preference Theory of Interest.

Books Prescibed:

4. H.L. Ahuja, Business Economics, S.Chand & Co. Ltd, 2016.
5. S. Shankaran, Business Economics, Margham Publications, 2014.
6. P.N. Reddy & H.R. Appanniah, Principles of Business Economics, S.Chand & Co. Ltd, 2003.

Books for Reference:

1. P.L. Mehta, Managerial Economics by Analysis, Problems & Cases, Sultan Chand & Sons.
2. S.K. Agarwal, Business Economics, S.Chand & Co. Ltd, Ca Foundation, 5th Edition, 2018.
3. Francis Cherunilam, Business Environment, Himalaya Publishing House

First Year - Second Semester	*Subject Code: U18PLCL105*	*Subject Credits: 03*

ADVANCED ACCOUNTING

Objective: Acquaintance with the format of Branch Account. Clear insight into the basics of department Accounting. The knowledge of hire purchase and familiarity with the procedure for preparing partnership, admission, retirement of partner and death of partner.

COURSE OUTLINE

UNIT I - BRANCH ACCOUNTING

Branch Accounting – Meaning – Objectives - Types of Branches – Accounting Treatment – Debtors System - Stock and Debtors System-Distinction between Wholesale Profit and Retail Profit -Independent Branch (foreign branches excluded)

UNIT II - DEPARTMENT ACCOUNTING

Departmental Accounting – Basis for Allocation of Expenses – Inter Departmental Transfer at Cost or Selling Price.

UNIT III - HIRE PURCHASE

Hire Purchase – Accounting Treatment – Calculation of Interest – Default, Partial Repossession – Complete Repossession – Installment System (simple problems)

UNIT IV - PARTNERSHIP

Partnership – Definition – Capital Accounts of Partners – Profit Sharing Ratios – Treatment of Goodwill – Admission of a Partner – Retirement of a Partner – Death of a Partner.

UNIT V - DISSOLUTION

Dissolution of a Partnership – Insolvency of a Partner (Application of Indian Partnership Act 1932) Insolvency of all Partners – Garner Vs Murray – Gradual Realization of Assets and Piecemeal Distribution.

Theory 25% Problem: 75%

Books Prescribed:

1. Reddy T.S. & Murthy A. (2013): “Financial Accounting”- Margham Publication, Chennai.
2. Jain & Narang (2012): “Financial Accounting”, Kalyani Publications, New Delhi.

Books for Reference:

1. Gupta R.L. & Gupta V.K., (2008): “Advanced Accounting”- Sultan Chand Publication - New Delhi.
2. Jawahar Lal, Seema, “Financial accounting”, S. Chand & Company Publication, New Delhi.
3. Shulka & Grewal (2010): “Advanced Accounting”- S Chand Publication – New Delhi.

First Year - Second Semester	*Subject Code: U18PLCL106*	*Subject Credits: 03*

LEGAL AND CONSTITUTIONAL HISTORY OF INDIA

Objective: This Course is to enlighten the students about the development of the Legal and Constitutional History of India during the ancient, medieval, modern period and contemporary periods.

COURSE OUTLINE

UNIT I: JUDICIAL SYSTEM IN ANCIENT INDIA

Judicial System during the ancient Hindu period – Dharmashastra – Administration of Justice – Constitution of Courts – Crimes and Punishments.

UNIT II: JUDICIAL SYSTEM IN MEDIEVAL INDIA

Judicial System during medieval Muslim period – Delhi Sultanate – Courts – Justice System under the Sultans – The Mughal period – Administration of Justice under the Mughals.

UNIT III:JUDICIAL ADMINISTRATION IN PRESIDENCY TOWNS

Establishment of English East Indian Company [Charter of 1600] – Administration of Justice in Madras, Bombay and Calcutta Presidencies – Charter of 1726 – Charter of 1753.

UNIT IV: JUDICIAL SYSTEM IN BRITISH INDIA

Adalat System in Bengal – Warren Hastings Plan of 1772 – The Regulating Act 1773 – Supreme Court of Calcutta 1774 – Landmark Cases – Judicial Reforms of Cornwallis 1793 – Indian High Courts Act 1861, 1911 – Government of India Act 1935 and Judicial reforms – The Privy Council – Supreme Court of India.

UNIT V: CONSTITUTIONAL HISTORY OF INDIA

Constitutional History of India – Early Charters of 1600, 1661 - The Regulating Act 1773 – Act of Settlement 1781 – Pitts India Act 1784 – Government of India Act 1857 – Queen Victoria's Proclamation - Indian Councils Act [Minto-Morley Reforms] 1909 – Government of India Act [Montague-Chelmsford Reforms] 1919 - Government of India Act 1935 – Constitutional Developments between 1937 to 1947 – Indian Independence Act 1947 - The Constituent Assembly – Constitution of India – Dr. B.R. Ambedkar's Role in the drafting of the Constitution – Salient Features of the Constitution – The Constitutional Manifesto

Books Prescribed:

1. Kulshreshtha V.D: Landmarks in Indian Legal and Constitutional History, Western Book Company, 11th Edition (2006).
2. M.P. Jain: Legal and Constitutional History of India, Lexis Nexis Publication, 7th Edition (2006)

3. Dr. N.V. Parajape: Indian Legal and Constitutional History, Central Law Agency (2014)
4. Justice M. Rama Jois: Legal and Constitutional History of India, Universal Law Publishing Co Ltd, (2014)
5. Kailash Rai: Indian Legal & Constitutional History, Allahabad Law Agency; 5th Edition (2016)

Books for References:

1. Bipin Chandra: India since Independence, Penguin Random Publication, Revised Edition (2017)
2. Muhammad Basheer Ahmed: The Administration of Justice In Medieval India. A Study in outline of the Judicial System under the Sultans and Badshahs of Delhi based mainly upon cases decided by Medieval Courts in India between 1206-1705 A.D.; Cosmo Publications (2015)
3. Gokulesh Sharma: Ancient Judicial System of India; Deep & Deep Publications (2008)
4. Raja Rammohun Roy: Exposition of the Practical Operation of the Judicial and Revenue Systems of India; Wentworth Press (2016)

First Year - Second Semester	*Subject Code: U18PCCL103*	*Subject Credits: 04*

LAW OF CONTRACT - II

Objective: This paper is a broader speculative about law of contracts with the addition of Sale of Goods Act for the wider knowledge of the students.

COURSE OUTLINE

UNIT – I: INDEMNITY AND GUARANTEE

Indemnity - Definition - Rights of the Indemnity Holder - Rights of the Indemnifier – Guarantee - Essentials and nature of Guarantee – Continuing Guarantee - Surety's Liability - Kinds of Guarantee - Discharge of Surety - Distinction between Indemnity and Guarantee.

UNIT – II: BAILMENT

Definition - Indian and English Definitions - Essentials of Bailment and classification - Distinction between Bailment and Pledge – Rights and Duties of Bailor and Bailee - Pledge - Definition - Rights of the Pawnor and Pawnee - Lien - Finder of Lost Goods

UNIT – III: AGENCY

Definition of Contract of Agency - Creation of Agency - Kinds of Agency - Distinction between Agent and Servant and Independent Contractor - Who may be an Agent - Kinds of Agent - Different Kinds of Agent - Authority of Agent - Delegation of Authority - Delegates Non Protest Delegare - Sub Agent - Substituted Agent- Essential of Ratification - Effect of Notice to Agent - Necessary Conditions to Bind Principal and Third Parties - Doctrine of Undisclosed Principal and Concealed Principal - Termination of Agency.

UNIT – IV: SALES OF GOODS ACT, 1930

Distinction between Sale and Agreement to sell - Hire Purchase Agreement - Definition - Goods - Specific Goods - Future Goods - Documents of Title of Goods - Conditions and Warranties - Effect of Breach - When condition is treated as Warranty - Implied Conditions and Warranties - Unpaid Vendor - His rights or Lien and Stoppage in Transit - Remedies available to Seller and Buyer.

UNIT – V: PARTNERSHIP

Distinction between Partnership and co-ownership Joint Hindu Family - Kinds of Partners and Duration of Partnership - Mutual Rights and Duties of Partners - Minor as a Partner - Difference in English Law - Rights of Legal Representative and Surviving Partners - Authority of Partner - Liability of the Partner of the Acts of the Firm and for the Wrongful Acts of other partner - Nature of Liability - Goodwill - Retirement of Partners - Dissolution of Firm - Effect of Non-registration of firm.

Statutory Material

1. Indian Contract Act, 1972
2. Sales Of Goods Act,1930
3. Indian Partnership Act,1932

Books Prescribed:

1. Dr. S.K. Kapoor; Contact – II along with Sale of Goods Acs and the Partnership Act; Central Law Agency; 14th Edn. (2014)
2. Prof. G.C.V. Subba Rao's; Law of Contract; Central Law Publication; 11th Edn. (2015)
3. R. K. Bangia; Indian Contact Act; Allahabd Law Agency; 14th Edn. (2009)

Books for Reference:

1. Akhileshwar Pathak; Lae Relating to Special Contracts; Lexis Nexis; 1st Edn. (2014)
2. Velandai Gopalayyar; The Law of Contract in India; Eastern Book Company; 1970
3. Smith & Thomas; a Casebook on Contract; Sweets and Maxwell; 11th Edn. (2000)
4. Chechire, Fifoot & Furmston's; Law of Contract; Oxford University Press; 14th Edn. 2007

First Year - Second Semester	*Subject Code: U18PCCL104*	*Subject Credits: 04*

LAW OF CRIMES

Objective: The criminal justice system is essentially an instrument of social control. Society considers some behaviours so dangerous and destructive that it either strictly controls their occurrence or outlaws them outright. This paper aims to provide a vast knowledge about various crimes, its ingredients and punishments and to equip the students with practical legal knowledge.

COURSE OUTLINE

UNIT – I: NATURE AND SCOPE OF CRIMINAL LAW

History of Indian Penal Code, 1860 – Essentials of Crime - *actus reus* and *mens rea*- Theories of Punishment- Justification of Punishment – General Defences – Excusable Defences – Justifibale Defences – Private Defence – Joint and Constructive Liability – Abetment – Conspiracy – Attempt – Corporate Liability – Jurisdiction – Territorial – Extra Territorial – Personal and Admiralty

UNIT – II: GENERAL OFFENCES

Offences against State - Offences against the public tranquility - Offences relating to election - Offences relating to Religion - Contempt of lawful authority and public servants - False evidence and offences against public trust - Offences relating to coins and Government Stamps - Offences relating to weights and measures.

UNIT – III: OFFENCES AGAINST HUMAN BODY

Offences affecting human life - Causing miscarriage - Injuries to unborn children - Exposure of infants - Concealment of birth – Hurt -grievous hurt - Wrongful restraint - Wrong confinement - Criminal force and Assault - Kidnapping, Abduction - Slavery and forced labour - Rape: custodial rape - marital rape - Prevention of immoral traffic - Prohibition of indecent representation of women - Unnatural offences.

UNIT – IV: OFFENCES AGAINST PROPERTY

Criminal Misappropriation of property- Criminal breach of trust - Receiving of stolen property - Cheating - Fraudulent deeds and disposition of property.

UNIT –V: OFFENCES RELATING TO MARRIAGE AND REPUTATION

Offences relating to marriage - Bigamy - Adultery - Marital Rape - Defamation - Criminal intimidation and annoyance and attempt to commit such offences.

Statutory Materials

1. Indian Penal Code, 1860.
2. The Criminal Law (Amendment) Act, 2013.

Books Prescribed

1. J.W. Cecil Turner, Kennys: Outlines of Criminal Law; Cambridge University Press, 18th Edition, (2013)
2. Ratanlal & Dhirajlal: The Indian Penal Code; Lexis Nexis, 35th Edition (2017)
3. K.D. Gaur: Indian Penal Code; Lexis Nexis, 6th Edition (2016).
4. P. Atchuthan Pillai: Criminal Law; Lexis Nexis, 13th Edition (2017).
5. B.M. Gandhi, K.A.Panday: Indian Penal Code; Eastern Book Co., 4th Edition (2015)

Books for Reference

1. Dennis Baker: Glanville Williams Textbook of Criminal Law; Sweet Maxwell, 4th Edition (2015).
2. Russell: Criminal Law; Sage Publications, 1st Edition (2015).
3. Ejaz Ahmed: Law of Crimes; Rajasthan Law House, 3rd Edition (1987).
4. Ram Chandra Nigam: Law of Crimes in India (Volume 1); Asia Publishing House, 1st Edition (1965).
5. Dr.H.S. Gour: Penal Law of India; Law Publishers, 7th Edition (1961).
6. V.V. Raghavan: Law of Crimes; Orient Law House, 3rd Edition (1984).

First Year - Second Semester	*Subject Code: U18PTCL101*	*Subject Credits: 02*

INTERNSHIP AND PRACTICAL TRAINING – I

Objective: The internship programmes are designed to acquaint the student with the actual practice of law by working under the supervision of legal luminaries. The student gains experience of applying theoretical knowledge from prior classroom training, when exposed to practical environment.

COURSE OUTLINE

During the summer vacation the students should compulsorily undergo Internship for a continuous period of 4 weeks and submit an internship report along with ainternship certificate. This will be evaluated by the Internship Faculty Guide.

The student may choose to intern under any one the following category:

- Trial Advocate
- Appellate Advocate
- Law Firms
- Non-Governmental Organization
- Police Stations
- Banks
- Non Banking Financial Institutions
- Companies
- Registration Department
- Judiciary
- Legal Regulatory Authorities
- Legislatures
- Market Institutions
- Local Self-Government
- Other Legal Functionaries
- Dispute resolution Bodies
- Legal Services Authority

On completion of successful internship training every student will be awarded 2 credits

Second Year - Third Semester	*Subject Code: U18PLCL207*	*Subject Credits: 03*

MARKETING MANAGEMENT

Objective: To understand the concept of marketing with selling. To highlight the concept of marketing mix. To familiarize with Market Segmentation, Targeting and Positioning. To gain knowledge on Product related decisions, pricing decisions and physical distribution. To understand the concept of marketing communication.

COURSE OUTLINE

UNIT – I: MARKETING – AN OVERVIEW
Meaning and Definition of Marketing – Marketing Entities – Importance of Marketing – Functions of Marketing – Difference between Marketing and Selling – Various Environmental factors affecting the marketing functions.

UNIT – II: CONSUMER BEHAVIOUR, MARKETING MIX & STP APPROACH
Consumer Behavior – Factors influencing Consumer Behavior – Marketing Concepts – Marketing Mix – Market segmentation – Targeting – positioning.

UNIT – III: PRODUCT RELATED DECISIONS
Product – Characteristics – Classifications – Consumer goods and Industrial goods – New Product Development process – Product Life Cycle – Branding – Packaging.

UNIT – IV: PRICING DECISIONS & PHYSICAL DISTRIBUTION
Pricing – Factors influencing pricing decisions – Pricing Objectives – Pricing Strategies. Physical Distribution: Importance – Components – Types of Marketing Channels – Distribution Problems.

UNIT – V: MARKETING COMMUNICATION
Advertising – Publicity – Public Relations – Importance & Types – Methods of Sales Promotion – Personal Selling – Direct Selling.

Books Prescribed:

1.Philip Kotler, Kevin Lane Keller: Marketing Management; Prentice Hall of India Private Limited, New Delhi, Latest Edition.
2. Rajan Saxena: Marketing Management; Tata Mcgraw Hill, 2009.
3. Dr.Nirmala Prasad & Sherlekar: Marketing Management; Himalaya Publishing House, Latest Edition.
4. J. C Gandhi: Marketing Management; Tata McGraw Hill, 2010.

Books for Reference:

1. RamasamyNamakumari: Marketing Management; Macmillan Company, 2012.
2. P.K.Agarwal: Marketing Management, Pragati Prakashan Publication, 2012.
3. McCarthy, E.J., Basic Marketing: A managerial approach, Irwin, New York

Second Year - Third Semester	*Subject Code: U18PLCL208*	*Subject Credits: 03*

MANAGEMENT ACCOUNTING

Objective: Acquaintance with the format of Management Accounting. Familiarity with the procedure for preparing Comparative and Common Size Statements. Clear insight into the basics of Ratio Analysis and Fund Flow Analysis. The knowledge of budget and budgetary control and marginal costing.

COURSE OUTLINE

UNIT I - MANAGEMENT ACCOUNTING

Management Accounting – Meaning, objectives, functions – Advantages and limitations – Differences between Financial accounting and management accounting – Financial statement analysis – Various kinds of Techniques – Comparative and Common Size Statements – Trend Analysis.

UNIT II - RATIO ANALYSIS

Ratio analysis – Meaning, significance, advantages and limitations of Ratio analysis – Classification of accounting ratios – Basic purposes of various ratios – Liquidity, Solvency, Turnover and Profitability ratios – Computation of ratios.

UNIT III - FUND FLOW ANALYSIS

Fund Flow Analysis – Meaning - Concept of fund – Sources and uses of funds – Fund flow statement – Uses of fund flow statement – Cash Flow Analysis – Meaning – Preparation of Cash Flow Statement – Objectives and limitations of cash flow statement – Differences between fund flow statement and cash flow statement.

UNIT IV - BUDGET AND BUDGETARY CONTROL

Budget and Budgetary control – Meaning, objectives, Advantages and limitations of budgetary control – Functional budget – Flexible Budget (Simple problems only).

UNIT V - MARGINAL COSTING

Marginal Costing – Meaning, Definition – Difference between Absorption Costing and Marginal Costing – CVP Analysis – BEP Analysis – Break Even Chart.

Note: Theory – 40%, Problems – 60%

Books Prescribed:

1. S.N. Maheswari; Management Accounting, Sultan Chand, New Delhi, (2012)
2. T.S. Reddy and Hari Prasad Reddy, Management Accounting, Margham Publications, Chennai, (2013)
3. S.P. Gupta; Management Accounting, Sultan Chand, New Delhi, (2011).

Books for Reference:

1. S. N. Maheshwari; Principles of Management Accounting, S. Chand, 1982
2. Manmohan Prasad & Kamini Sinha; Principles of Management Accounting, Motilal Banarsidass Publisher.
3. Reddy T.S., &Hariprasad Reddy. Y; Management Accounting, Margham Publication.

Second Year - Third Semester	*Subject Code: U18PLCL209*	*Subject Credits: 03*

BUSINESS STATISTICS

Objective: To learn the steps in Business Statistics. Familiarity with the procedure for preparing tabulation and diagrammatic representation. To develop the knowledge on Measures of Averages and Measures of Dispersion. To study the statistical analysis in Karl Pearson Coefficient of Correlation.

COURSE OUTLINE

UNIT – I: INTRODUCTION & COLLECTION OF DATA
Introduction – Statistical Methods – Limitations of Statistics – Misuses – Collection of Data: Sources of Information – Collection of Primary Data – Sources of Secondary Data – Questionnaires.

UNIT – II: CLASSIFICATION AND TABULATION
Introduction – Qualitative Classification – Quantitative Classification – Geographical Classification – Chronological Classification – Tabulation – Frequency Distribution.

UNIT – III: DIAGRAMMATIC REPRESENTATION
Introduction – Bar Diagram – Simple Bar Diagram – Multiple Bar Diagram – Component Bar Diagram – Percentage Bar Diagram – Pie Diagram – Pictogram – Graphical Representation – Frequency Polygon – Frequency Curve – Cumulative Frequency Curve (Ogives).

UNIT – IV: MEASURES OF AVERAGES
Introduction – Arithmetic Mean (AM) – Weighted Arithmetic Mean – Combined Mean – Geometric Mean – Harmonic Mean – Merits and Demerits – Median – Mode: Its Merits and Demerits.

UNIT – V: MESURES OF DISPERSION
Introduction – Range – Quartile Deviation – Mean Deviation – Standard Deviation – Its merits and Demerits – Karl Pearson Coefficient of Correlation.

Books Prescribed:

1. P. R. Vittal, Business Statistics, Margham Publications, Chennai, 2015.
2. S.C Gupta & V.K. Kapoor, Fundamentals of Mathematical Statistics, 11th edition, Sultan chand & sons, reprint, 2007.

Books for References:

1. S. P. Gupta, Statistical Methods, 35th edition, Sultan Chand Publication, New Delhi, 2007.
2. Dr. P.N. Arora & S. Arora, Statistics for Management, S. Chand & Co. Ltd, New Delhi, 2013

Second Year - Third Semester	*Subject Code: U18PCCL205*	*Subject Credits: 04*

CONSTITUTIONAL LAW – I

Objective: Our Constitution is not just a mere set of fundamental laws that form the basis of governance of our country but it embodies and reflects certain basic values, philosophy and objectives. This paper provides a broader perspective for the students about the law of the land and explains the most vital features of a citizen in this country

COURSE OUTLINE

UNIT – I: CLASSIFICATION OF CONSTITUTION AND GOVERNMENTS

Definition and Meaning of Constitution - Kinds of Constitution - Meaning of Constitutionalism – Features of Indian constitution - Parliamentary Supremacy - Theory of Separation of Powers - Doctrine of Checks and Balances - Doctrine of Judicial Review.

UNIT – II: PREAMBLE, UNION AND ITS TERRITORIES AND CITIZENSHIP

Preamble - Meaning - Scope and Importance - Objectives and Values - Union and its Territories – Citizenship - Citizenship at the commencement of the Constitution - Deprivation and Renunciation of the Citizenship – Parliament's Power to regulate Citizenship Act.

UNIT – III: STATE

Definition and Meaning - Article 12 - Article 13 - Constitutional and Post Constitutional Laws - Various Doctrines - Eclipse - Severability – Colourable legislation – Waiver - Judicial Preview under Article 13.

UNIT – IV: FUNDAMENTAL RIGHTS

Rights to Equality: General Equality clause under Article 14 - Judicial Interpretation on Equality - Reasonable Classification - Protective Discrimination Clause - Preservation and Social Justice under Articles 15 – 18 - Rights to Freedom: Freedom of Speech and Expression - Art 19 - Scope and Ambit and 19(1) (a) and (2) - Balance between individual interest and collective interest reasonable restrictions

Rights of the Accused: Article 20 - Ex-post Facto Law - Double Jeopardy - Self-incrimination Art 21 - Judicial Interpretation on Life and Personal Liberty - Article 22 - Preventive Detention - Rights against Preventive Detention - Exceptions – Safeguards against preventive detention.

Freedom of Religion: Articles 25-28 - Secularism - Judicial Interpretation - Restrictions on Freedom of Religion.

Cultural and Educational Rights: Articles 29-30 - Protection for Minorities – Recent trends on Minority Educational Institutions.

Rights to Constitutional Remedies: Article 32 and 226 - Writ Jurisdiction

UNIT – V: DIRECTIVE PRINCIPLES OF STATE POLICY AND FUNDAMENTAL DUTIES

Directive Principles and Directions for Social Change - Social and Economic Charter -Social Security Charter - Community Welfare Charter - Fundamental duties - Nexus between Fundamental Rights and DPSP

Statutory Materials

The constitution of India Bare act with Short comments; Professional Book Publishers (2018)

Books Prescribed

1. V.N. Shukla; Constitution of India; Eastern Book Company;13th Edition; reprint (2019)
2. M.P .Jain; Indian constitutional law; Lexis Nexis; 8th Edition (2018)
3. Dr. J. N. Pandey; Constitutional Law of India; Central Law Agency, Allhabad;51st Edition (2014)

Books for Reference

1. D. D. Basu; Shorter Constitution of India; Lexis Nexis; 15th Edition (2017)
2. M. P. Singh; Constitution of Indi; Eastern Book Company; 12th Edition (2016)
3. H. M. Seervai; Constitutional Law of India; Universal Law Publishing;4th Edition (2015)

Second Year - Third Semester	*Subject Code: U18PCCL206*	*Subject Credits: 04*

FAMILY LAW – I

Objective: Every natural and legal person is assigned a personal law defining his or her status and capacity. The connecting factors determining one's personal law vary from one legal system to another. This paper gives a detailed summary about all personal laws and its governance and also will give the students and insight about personal laws.

COURSE OUTLINE

UNIT – I: SOURCES AND SCHOOLS OF PERSONAL LAWS

Application of various personal laws -Traditional and modern sources of Hindu law and Muslim law - Schools of Hindu law and Muslim law - Origin of the school - Main schools and Sub-schools - Effect of migration.

UNIT – II: LAW ON MARRIAGE

Nature of marriage - Various forms of marriage and requirements for a valid marriage on a comparative analysis - Void, voidable and valid marriage in different religious texts and statutes - Law and issues on marriage under the special marriages act - Unisex marriage and question on living together - The demand of dowry and the concept of dower under the relevant personal law - Ceremonies of marriage under various religious system.

UNIT – III: LAW ON DIVORCE AND MAINTENANCE

Restitution of conjugal rights - Judicial separation - Nullity of marriage and Divorce - Law of divorce under various personal laws - Divorce in camera proceedings - Decree on proceedings maintenance under Hindu, Muslim and Christian laws - Permanent alimony -Maintenance under code of criminal procedure - Jurisdiction of family court act.

UNIT – IV: LAW ON LEGITIMACY OF CHILDREN AND ADOPTION

Legitimacy of children born of void and voidable marriages - Their rights and legal issues - Adoption in different religious groups - Requisites and Conditions - Procedure of adoption Effect of adoption - Inter country adoption.

UNIT – V: LAW OF MINORITY AND GUARDIANSHIP

Guardian under the Hindu minority and Guardianship act 1956 - Definition types of guardians - Guardianship under Muslim law - Procedure for appointment and their powers -Guardian under the guardian and wards act 1890.

Statutory Material

1. The Hindu marriage act 1955
2. The adoptions and maintenance act 1956
3. The Hindu Minority and Guardianship act 1956

4. The Special Marriage act,1954
5. The Guardian and Wards act 1890
6. The Dissolution of Muslim Marriage act 1939
7. The Christian marriage act 1872
8. Indian Divorce act ,1869
9. Indian Majority act ,1875
10. The Muslim Women (protection of rights on divorce)act 1986
11. The Family Court act1984
12. The Dowry Prohibition act 1961
13. The Hindu Widows' remarriage act 1856
14. Prohibition of Child Marriage act 2006

Books Prescribed:

1. Prof. G. C. V. Subba Rao: Family Law in India: Narendra Gogia, 10th Edition (2018)
2. Paras Diwan, Peeyushi Diwan: Family Law: Allahabad Law Agency (2018)
3. Dr. Shivani Goswami: Family Law-1: Central Law Publications (2018)
4. H. K. Saharay: Family Law in India; Eastern Law House; 2011 edition (2012)
5. Paras Diwan, Peeyushi Diwan: Modern Hindu Law; Allahabad law agency; 22nd Edition (2013)
6. Dr. Mohammad Nazmi: Mohammadan Law; Central Law Publications (CLP); 1st edition (2012)

Books for References:

1. Paras Diwan: Law of Marriage and Divorce: A Comprehensive treatise on Matrimonial Laws of all the Indian communities including Hindus, Muslims, Christians, Parsis and Jews; Universal Law Publishing - An Imprint of LexisNexis; Seventh edition (2016)
2. Dinshaw Fardunji Mulla: Mulla's Hindu Law; *Lexis Nexis*; Twenty third edition (2018)
3. Sir Dinshaw Fardunji Mulla: Mulla's Principles of Mahomedan Law; Lexis Nexis; Twenty Second edition (2017)

Second Year - Third Semester	*Subject Code: U18PCCL207*	*Subject Credits: 04*

JURISPRUDENCE AND INTERPRETATION OF STATUTES

Objective: This paper is the documentary and earlier data on law and a guiding element to interpret and understand various statutes through the precedents.

COURSE OUTLINE

UNIT – I: NATURE, DEFINITION AND SCHOOLS OF JURISPRUDENCE

Nature and Definition of Jurisprudence – Analytical Positivism - Natural Law - Historical School - Sociological School - Economic Interpretation of Law - Indian Jurisprudence - Concept of Dharma – PIL - Social Justice and Compensatory Jurisprudence.
Nature and Purpose of Law
Nature and Definition of Law - Feminist Jurisprudence - Administration of Justice.

UNIT – II: SOURCES OF LAW

Legislation – Nature of Legislation - Supreme and Subordinate Legislation - Sources of - Codification and the Interpretation of Enacted Law - Precedents - Authority of Precedents - Circumstances destroying or weakening the binding force of Precedent - Ratio Decidendi and Judicial Reasoning - Custom: Kinds of Custom, Conventional Custom - Local Custom. - General Custom.
Legal Concepts – I :Legal Rights and Duties - Correlation of Right and Duty - Persons -Nature of Personality - Status of Unborn, Minor, Lunatic, Drunken and Dead Persons - Corporate Personality - Possession and Ownership.
Legal Concepts – II:Title - Property, Liability, Obligation and the Procedural Law

UNIT – III: LAW MAKING

Legislature, Executive and the Judiciary - Principle of Utility - Law and Public Opinion - Law and Social Control - Law and Morals - Meaning Objective and Scope of 'Interpretation', 'Construction' and 'Statute' - Public Opinion and Law Making.
Nature and Kinds of Indian Laws: Statutory, Non Statutory, Codified, Uncodified, State made and State Recognized Laws - Parts of a Statute -Commencement, Operation and Repeal and Revival of Statutes - Purpose of Statutory Interpretation - Basic sources of Statutory Interpretation -The General Clauses Act, 1897: Nature, Scope and Relevance – Definition clauses in various Legislation: Nature and Imperative Rule.

UNIT – IV: RULES OF STATUTORY INTERPRETATION

Literal and Logical Rules of Interpretation -Legalism and Creativity - Golden Rule and Mischief Rule - Strict construction of Penal Laws and Taxation Laws - Internal Aids and External Aids of Interpretation.

Interpretation of Constitution : Principles and Theories - Preamble as a Tool - Directive Principles and Fundamental Duties with Fundamental Rights – Interpretation of International Instruments - Presumption against Exceeding Territorial Nexus – Presumption against Ouster of Jurisdiction of Courts – Presumption against changes in Common Law - Presumption against including what is Inconvenient or Unreasonable - Presumption against Retrospective Operation of Law – Presumption against Violation of International Law.

UNIT – V: LEGISLATIVE DRAFTING

Principles and Process of Legislative Drafting - Simplicity, Preciseness, consistency, Alignment with Existing Law - Brevity – Drafting General Laws – Special Laws – Rules – Orders.

Books Prescribed:

1. G.C. Venkata subbaRao; Jurisprudnce and Legal Theoru; Eastern Book Company; 9th Edn.,Reprinted 2012
2. R.W.M. Dias; Jurisprudence; Lexis Nexis; %th Edn., 2013; Reprinted 2014
3. Dr. N.V. Paranjape; Studies in Jurisprudence and Legal Thoery; Central Law agency; 7th Edn. 2013; Reprint (2015)
4. G.W. Paton; A Textbook of Jurisprudence; Oxford University Press; 14th Edn. 1972; 1st Indian Edn. (2004)
5. B.N. Mani Tripathi; Jurisprudence the Legal Theory; Allahabad Law Agency; 19th Ed.(2012); Reprinted (2015)
6. V.D.Mahajan's; Jurisprudence and Legal Theory; Eastern Book Company; Reprinted 2015
7. Prof. T. Bhattacharyya; the Interpretation of Statites; Central Law Agenecy; 9th Edn. (2014)
8. B.M.Gandhi; Interpretation of Statues; Eastern Book Company; 2nd Edn. (2014)
9. Dr. M.P. Tandon; Interpretation of Statutes; Allahabd Law Agency; 11th Edn. (2205)
10. Vepa. P. Sarathi; Interpretation of Statutes; Eastern Book Company; 14th Edn.(2003); Reprinted (2013)
11. P.St. J. Langan; Maxwell on the Interpretation of Statutes; Lexis Nexis; 19th Edn. (2013)

Books for Reference:

1. H.L.A Hart, the Concept of Law; Oxford University Press; 3rd Edn. 2012
2. Edgar Bodenheimer; Jurisprudence; Harvard University Press, 1974; 2nd Edn.
3. Edgar Bodenheiner; Jurisprudence the Philosophy and Method of the Law; Harvard University Press, 1981
4. Thomas Erskine Holland D.C.L; The Elemets of Jurisprudence; the Lawbook Exchange, Ltd.,2nd Edn., 2008

5. G. C. Mathur, Vidya Dhar Mahajan; Jurisprudence and Legal Theory; Eastern Book Company, 1987; 5 Edn., reprint
6. Vepa P. Sarathi; Interpretation of Statutes; State Mutual Book & Periodical Service, Limited, 1986; 3rd Edn.
7. A.B. Kafaltiya; Interprettaion of Statutes; Universal Law Publishing Co.; 2008 Edn. Reprint 2010
8. G. E. Devenish; Interpretation of Statutes; Juta, 1992
9. Peter Benson Maxwell; On the Interpretation of Statutes; Creative Media Partners, LLC, 2015

Second Year - Fourth Semester	*Subject Code: U18PLCL210*	*Subject Credits: 03*

ORGANISATIONAL BEHAVIOUR

Objective: Assess the potential effects of organizational models. Analyze the behavior of individuals and groups in organizations in terms of the key factors that influence organizational behavior. To know and understand the basic approaches in Leadership a power. To gain knowledge in the dynamics of organizational behavior.

COURSE OUTLINE

UNIT I: INTRODUCTION TO ORGANIZATIONAL BEHAVIOUR

Introduction – Organizational Process – Importance of Organizational Behaviour – Nature and Scope – Frame work – Organizational behaviour models.

UNIT II: INDIVIDUAL BEHAVIOUR

Personality – types – Factors influencing personality – Perceptions – Importance – Factors influencing perception – Motivation – Early Theories, Contemporary Theories, Motivation at work.

UNIT III: GROUP BEHAVIOUR

Organization structure – Formation – Groups in organizations – Influence – Group dynamics – Group decision making techniques – Teambuilding – Communication – Control.

UNIT IV: LEADERSHIP AND POWER

Meaning – Importance – Leadership styles – Leaders Vs Managers – Sources of power – Power and Politics.

UNIT V: DYNAMICS OF ORGANIZATIONAL BEHAVIOUR

Organizational culture and climate – Factors affecting organizational climate – Importance – Organizational Change – the change process – Resistance to change – Managing change – Stress – Prevention and management of stress – Balancing work and Life.

Books Prescribed:

1. Stephen P. Robbins; Organizational behavior; Pearson Education, 9th edition
2. K. Aswathappa; Organizational Behavior; McMillan India Ltd
3. R.S. Dwivedi; Human Relations & organizational behavior, Mc Millan India Ltd., 5th edition.

Books for References:

1. Mc Shane & Von Glinov, Organisational Behaviour, 4th Edition, Tata Mc Graw Hill, 2007.
2. Udai Pareek, Understanding Organisational Behaviour, 2nd Edition, Oxford Higher Education, 2004.
3. Ivancevich, Konopaske & Maheson, Oranisational Behaviour & Management, 7th edition, Tata McGraw Hill, 2008.

Second Year - Fourth Semester	*Subject Code: U18PLCL211*	*Subject Credits: 03*

COST ACCOUNTING

Objective: Acquaintance with the format of Cost Accounting. Clear insight into the basics of Cost Accounting. The knowledge of the fundamental difference between Cost Accounting and Financial Accounting. The knowledge of the fundamental material, purchase and economic ordering quantity. Familiarity with the procedure for preparing LIFO and PIFO. The knowledge of fundamental in labour cost and overheads.

COURSE OUTLINE

UNIT – I

Definition, Scope and nature of cost accounting – cost concepts – classification – objectives and advantages – demerits of cost accounting – methods and techniques – cost unit – cost centers – cost sheets.

UNIT – II

Materials cost – purchase procedure – stores procedure – receipt and issue of materials – storage organization and layout – Inventory control – levels of stock, perpetual inventory. ABC Analysis, EOQ – Stores ledger – pricing of material issues, FIFO, LIFO, Simple Average & Weighted Average.

UNIT – III

Labour cost – Time recording and time booking – methods of remuneration and incentive schemes – overtime and idle time – labour turnover types – causes and remedies.

UNIT – IV

Overheads – collection, classification, allocation, apportionment, absorption – recovery rates – Over & Under absorption – cost sheet and cost reconciliation statement.

UNIT – V

Methods – job costing, contract costing, process costing (Normal loss, Abnormal loss and gains only) – operating costing.

Theory: 25% Problem: 75%

Books Prescribed:

1. Jawahar Lal: Cost Accounting 4E, Tata McGraw-Hill Education, 2009
2. Khan: Cost Accounting, McGraw Hill Education (India) Pvt Ltd, 2014
3. Jawahar Lal: Cost Accounting, McGraw-Hill Education, 2013

Books for Reference:

1. Charles T. Horngren, Srikant M. Datar, George Foster: Cost Accounting: A Managerial Emphasis, Prentice Hall, 11th Edn. 2003
2. C. Drury: Management and Cost Accounting, Pearson plc, 1996
3. S. P. Jain, K. C. Narang: Advanced Cost Accounting, Kalyani, 3rd Edn.1984

Second Year - Fourth Semester	*Subject Code: U18PLCL212*	*Subject Credits: 03*

ENTREPRENEURIAL DEVELOPMENT

Objective: To develop necessary knowledge and skills among entrepreneur, manager and intrapreneur. To impart basis managerial knowledge and training. To provide knowledge about project feasibility and preparation of project report. To provide knowledge of sole proprietorship, partnership, joint stock company. To analyse about women entrepreneur and development of rural entrepreneurship.

COURSE OUTLINE

UNIT – I

Meaning of Entrepreneur – Entrepreneur and Enterprise – Entrepreneur and Manager – Entrepreneur and Intrapreneur – Qualities (Traits) of True Entrepreneur – Characteristics of Entrepreneur – Types of Entrepreneur – Function of an Entrepreneur – Roles of Entrepreneur in the Economic Development

UNIT – II

Establishing an Enterprise – Project Identification – Section of the Product – Project Formulation – Assessment of Project Feasibility – Preparation of Project Report – Selection of Site (Location)

UNIT – III

Selection of Types of Organization – Sole Proprietorship- Partnership Joint Stock Company – Factors Influencing the choice of Organization – Sources of Project Finance – Sources of Long Term Finance – Sources of Short Term Finance.

UNIT – IV

Incentives and Subsidies – Meaning of Incentives and Subsidies – Need and Problems – Incentives for Development of Backward Area – Incentives of SSI Units in Backward Areas – Taxation Benefits to SSI Units – Subsidies and Incentives in Tamil Nadu.

UNIT – V

Women Entrepreneurs – Concept – Functions and Role – Problems of Women Entrepreneurs – Suggestions for Development of Women Entrepreneurs – Rural Entrepreneurship – Need – Problems – How to Develop Rural Entrepreneurship.

Books Prescribed:

1. S. S. Khanka; Entrepreneurial Development, S. Chand Publishing, 2006
2. Poornima M. Charantimath: Entrepreneurship Development and Small Business Enterprise, Pearson Education India, 2005
3. Sanjay Tiwari & Anshuja Tiwari: Women Entrepreneurship and Economic Development, Sarup & Sons, 2007

Books for Reference:

1. Gupta C.B.: Strategic Management, S. Chand Publishing, 2016
2. S. S. Khanka: Entrepreneurial Development, S. Chand Publishing, 2006
3. Vasant Desai: Dynamics of Entrepreneurial Development and Management, Himalaya Publishing House, 5th Edn. 2009

Second Year - Fourth Semester	*Subject Code: U18PCCL208*	*Subject Credits: 04*

CONSTITUTIONAL LAW – II

Objective: This paper elucidates the parliamentary form of aspects, the role of Executive, Legislative and Judiciary and the role of Election Commission which interprets the current system and gives an overall perspective to students.

COURSE OUTLINE

UNIT – I: THE UNION AND STATE EXECUTIVE

The Union Executive - The President - Election, Term of Office, Powers and Functions, Impeachment - Immunities - Pardoning Power - Ordinance making power - President and Union Council of Ministers - The State Executive -Governor - Appointment, Powers and Functions - Immunities - Pardoning Power - Removal of Governor - Doctrine of Pleasure.

UNIT – II: LEGISLATURE AND JUDICIARY

Composition of Parliament and State Legislatures - Office of the Speaker - Qualification / Disqualification of Members - Legislative Procedure, Legislative Privileges -Judicial Interpretation - Anti Defection Law, X Schedule. Union Judiciary -Supreme Court of India Composition, Appointment and Removal of Judges of Supreme Court - Writ Jurisdiction of Supreme court under Art 32 – Kinds of Jurisdiction - Public Interest Litigation Compensatory Jurisprudence -Independence of Judiciary - State Judiciary - High Courts in the States - Composition, Appointment and Removal of Judges - Writ Jurisdiction of High Courts under Art. 226.

UNIT – III: CENTRE – STATE RELATIONS:

Distribution of Legislative, Administrative and Fiscal Powers and Freedom of Trade and Commerce - Distribution of Legislative Powers - Doctrine of Territorial Nexus - Subject matter of laws made by Parliament and Legislature of States - Doctrine of Harmonious Construction - Doctrine of Pith and Substance - Doctrine of Occupied Field - Colourable Legislation -Parliament's Power to Legislate in State List - Implied and Residuary Power - Doctrine of Repugnancy - Administrative Relations - Centre and Inter-State Conflict Management Financial Relations - Sharing of Tax - Grants-in-Aid -Restriction on the power of State Legislatures - Doctrine of Immunity - Borrowing Powers - Constitution Limitations - Freedom of Trade, Commerce and Intercourse - Power of Parliament - Restrictions - Goods and Service Tax (GST) - Impact of Globalization.

UNIT – IV: OTHER CONSTITUTIONAL FUNCTIONARIES

Organisation - Power and Functions of Election Commission of India - Union Public Service Commission - State Public Commission - Comptroller and Auditor General - Attorney General & Advocate General - Constitutional Safeguards for Civil Servants - Protection

against Arbitrary Dismissal - Removal or Reduction in Rank - Exceptions to Art 311 – Role of Finance Commission - Planning Commission - Inter – State Council - National Development Council - Local Self Government (Panchayat Raj).

UNIT – V: EMERGENCY PROVISIONS

Emergency Provisions - National Emergency - Duty of the Union to protect the States against External Aggression and Internal Disturbance - Power of Union Executive to issue directions and the effect of non-compliance.

State Emergency - Imposition of President's Rule in States - Grounds, Limitations, Parliamentary Control, Judicial Review.

Financial Emergency (Article 360) - Emergency and Suspension of Fundamental Rights.

Books Prescribed

1. Dr. J.N. Pandey: Constitutional Law of India; Central Law Agency, 52nd Edition (2015)
2. M.P. Jain: Indian Constitutional Law; Lexis Nexis; 7th Edition (2014)
3. Prof. S.R. Bhansali: The Constitution of India; Universal Law Publishing; 1st Edition (2015)

Books for References:

1. Durga Das Basu: Constitution of India; Lexis Nexis, 23rd Edition (2018)
2. H.M. Seervai: Constitution of India (Vol.1-3) Universal Law Publishing; 4th edition (2015)
3. Dr. V.N. Shukla: Constitution of India, Eastern Book Company, 12th Edition, 2013
4. Justice Sujata V. Manohar, T K Tope Constitutional Law of India, Eastern Book Company, 3rd Edition, 2010

Second Year - Fourth Semester	*Subject Code: U18PCCL209*	*Subject Credits: 04*

FAMILY LAW - II

Objective: This paper will provide a broader explanation about the systems, property related litigation and its measures according to their personal laws.

COURSE OUTLINE

UNIT – I: JOINT HINDU FAMILY

Institution of Joint Family - Coparcenery System - Classification of Properties – Kartha-Status, Powers and Duties - Principles of Survivorship and Succession - Partition

UNIT – II: INTESTATE SUCCESSION

General Principles of Succession under Hindu Law, Muslim law and Christian Law -Statutory Conditions Disinheritance and Disentitlement - Comparative analysis of Rights to Property of Women under Different Religion - Statutory Law - Rights of Pre-emption

UNIT – III: TESTAMENTARY SUCCESSION

Testamentary succession under Hindu, Muslim and Christian Law- Limitation under various Religious and Statutory Laws - Will and Administration of Will - Codicil Lapse, Abatement and Ademption of Legacies - Probate, Letters of Administration and Succession Certificate.

UNIT – IV: GIFT UNDER ISLAMIC LAW

Hiba - Nature and Characteristics of Hiba - Subject matter of hiba and hiba-bil-iwaz - Revocation of Gift.

UNIT – V: RELIGIOUS ENDOWMENT AND WAKF

Hindu Religious Endowment - Wakf: Meaning – Creation of Wakf - Formalities - Types and Administration of Wakf - Mutawalli and his powers and duties.

Statutory Material

1. Hindu Succession Act, 1956
2. Indian Succession Act, 1925
3. The Hindu Women's right to property Act, 1937 (repealed)
4. The Wakfs Act, 1954

Books Prescribed:

1. Prof. G. C. V. Subba Rao: Family Law in India: Narendra Gogia, 10th Edition (2018)
2. Paras Diwan, Peeyushi Diwan: Family Law: Allahabad Law Agency (2018)
3. H. K. Saharay: Family Law in India; Eastern Law House; 2011 edition (2012)
4. Paras Diwan, Peeyushi Diwan: Modern Hindu Law; Allahabad law agency; 22nd Edition (2013)

5. Dr. Mohammad Nazmi: Mohammadan Law; Central Law Publications (CLP); 1st edition (2012)

Books for References:

1. Dinshaw Fardunji Mulla: Mulla's Hindu Law; *Lexis Nexis*; Twenty third edition (2018)
2. Sir Dinshaw Fardunji Mulla: Mulla's Principles of Mahomedan Law; Lexis Nexis; Twenty Second edition (2017)
3. Paras Diwan: Law of Intestate and Testamentary Succession; Universal Law Publishing - An imprint of LexisNexis; Fourth edition (2013)

Second Year - Fourth Semester	*Subject Code: U18PCCL210*	*Subject Credits: 04*

LAW OF EVIDENCE

Objective: The Indian Evidence Act, 1872 is a long piece of legislation that codifies the rules of evidence. However, a detailed discussion of all the leading principles that will be covered will provide the students to have a good theoretical and working knowledge of the Indian Evidence Act, 1872 and will equip them to study the subject on their own.

COURSE OUTLINE

UNIT – I: INDIAN EVIDENCE ACT, 1872

Scope, Object and Applicability of Indian Evidence Act and Exclusion - Statutory Definition - Golden Rule Evidence -Presumption of Law and Fact - Kinds of Evidence.

UNIT – II: RELEVANCY OF FACT

Admissibility of Facts - Res Gestae -Omission - Cause and Effect - Motive, Preparation and Conduct -Explanatory Facts - When facts not otherwise relevant become relevant - Conspiracy - Admission and Confession - Dying Declaration

UNIT – III:RELEVANCY

Relevancy of Statement made by person who cannot be called as Witness - Relevance of Judgments - Relevance of Opinion of Third Persons - Expert Opinion- Scientific Examination and Expert Witness under Section 112A - Relevance of Character in Civil and Criminal Cases.

UNIT – IV: BURDEN OF PROOF

General conception of onus probandi- General and special exceptions to onus probandi- Justification of presumption and of the doctrine of judicial notice - Justification as to presumptions as to certain offences - Presumption as to dowry death - Scope of the doctrine of judicial notice.

Estoppel

The rationale - Estoppel - res judicata and waiver and presumption - Estoppel by deed - Estoppel by conduct - Equitable and promissory estoppel - Questions of corroboration.

UNIT – V: WITNESSES

Examination and Cross Examination - Competency to testify - State privilege - Professional privilege - Approval testimony - General principles of examination and cross examination - Leading questions - Lawful questions in cross-examination - Compulsion to answer questions put to witness - Hostile witness - Impeaching of the standing or credit of witness.

Statutory Material

Indian Evidence Act, 1872

Books Prescribed:

1. Ratanlal and Dhirajlal: Law of Evidence; Lexis Nexis; 26th Edn. (18 July 2017)
2. Avatar Singh: Law of Evidence; Central Law Publication; 20th Edn. (2014)
3. Vepa Sarathi: Law of Evidence; Eastern Book Co. (EBC); 2017 Edn. (2017)
4. V. Krishnamachari: Law of Evidence; Narender Gogia & Company; 2018 Edn. (2018)

Books for References:

1. Sarkar: Law of Evidence; Lexis Nexis India; 17th Edn. (2010)
2. Woodroffe and Amir Ali; Law of Evidence; Lexis Nexis India; 27th Edn. (2017)
3. Batuk Lal; Law of Evidence; Central Law Agency (CLA); 2018 Edn. (2018)

Second Year - Fourth Semester	*Subject Code: U18PTCL2202*	*Subject Credits: 02*

INTERNSHIP AND PRACTICAL TRAINING - II

Objective: The internship programmes are designed to acquaint the student with the actual practice of law by working under the supervision of legal luminaries. The student gains experience of applying theoretical knowledge from prior classroom training, when exposed to practical environment.

COURSE OUTLINE

During the summer vacation the students should compulsorily undergo Internship for a continuous period of 4 weeks and submit an internship report along with internship certificate. This will be evaluated by the Internship Faculty Guide.

The student may choose to intern under any one the following:

- Trial Advocate
- Appellate Advocate
- Law Firms
- Non-Governmental Organization
- Police Stations
- Banks
- Non Banking Financial Institutions
- Companies
- Registration Department
- Judiciary
- Legal Regulatory Authorities
- Legislatures
- Market Institutions
- Local Self-Government
- Other Legal Functionaries
- Dispute resolution Bodies
- Legal Services Authority

On completion of successful internship training every student will be awarded 2 credits

Third Year - Fifth Semester	*Subject Code: U18PLBL313*	*Subject Credits: 03*

INTERNATIONAL BUSINESS

Objective: To understand the important linkages between domestic economy and its external sector and to gain the conceptual clarity of the theoretical aspects of international trade and finance. To examine the broad pattern of changes in the international economic policy and to examine the business implications of international economic environment. To identify the basic macroeconomic relationships as they affect the behavior of firm and to incorporate international issues in designing corporate strategies in a fast changing environment.

COURSE OUTLINE

UNIT – I: INTRODUCTION TO INTERNATIONAL BUSINESS
Meaning and Definition of International Business – Theories of International Trade – Economic Theories – Forms of International Business – Nature of International Business

UNIT – II: MODES OF ENTRY INTO INTERNATIONAL BUSINESS
Mode of Entry – Exporting – Licensing – Franchising – Contract Manufacturing – Turn Key Projects – Foreign Direct Investment – Mergers, Acquisitions and Joint Ventures – Comparison of different modes of Entry

UNIT – III: GLOBALIZATION
Meaning – Features – Stages –Production – Investment and Technology, Globalization – Advantages and Disadvantages – Methods and Essential Conditions for Globalization. MNC's and International Business: Definitions – Distinction between Indian Companies – MNC – Global Companies and TNC – Organizational Transformations – Merits and Demerits of MNC‟s in India

UNIT – IV: INTERNATIONAL MARKETING INTELLIGENCE
Information required – Source of Information – International Marketing Information System and Marketing Research

UNIT – V: EXIM TRADE
Export Trade, Procedure, Steps & Documentation, Direction of India‟s Trade – Export Financing –Documents related to Export Trade – Export Marketing – Import Trade, Procedure, Steps, Documentations and Problems - EXIM Policy - Balance of Payment – Disequilibrium and Measures for Rectification - Institutions connected with EXIM Trade

Books Prescribed:

1. Aseem Kumar; Export and Import Management, Excel Books Publications, New Delhi, 2007.
2. David Stewart; International Supply Chain Management, Cengage publications, 2008.
3. Ram Singh; Export Management, Indian Institute of Foreign Trade, New Delhi, 2008.
4. Helen Deresky; International Management – Managing Across Borders and Cultures, Pearson, 9th Edn, 2016.

Books for Reference:

1. Fred Luthans & Jonathan Doh, International Management – Culture, Strategy &Behavior, Pearson, 9th Edition, 2012.
2. Dirk; Strategic International Management – Text and Cases, Springer, 2009.
3. P.K.Khurana; Export Management, Galgotia Publication, New Delhi, 2010.
4. Jeevanandam C; Foreign Exchange: Practices Concepts and control, Sultan Chand Publications, 2002.

Third Year - Fifth Semester	*Subject Code: U18PLBL314*	*Subject Credits: 03*

LOGISTICS AND SUPPLY CHAIN MANAGEMENT

Objective: To acquaint the students with the basic aspects of Logistics Management. To ponder upon the types of inventory control. To highlight the importance of Distribution Channel Management. To describe the concepts of Supply Chain Management

COURSE OUTLINE

UNIT – I: INTRODUCTION
Logistics Management: Origin and Definition – Customer Service and Logistics Management: A perspective – Concepts in Logistics and Physical Distribution – Distribution Inventory.

UNIT – II: INVENTORY CONTROL
Types of Inventory Control – Demand Forecasting – Warehousing and Stores Management – Routing – Transportation Management – Commercial Aspects in Distribution Management – Codification – Distribution Channel Management – Distribution Resource Planning – Logistics in 21st Century.

UNIT – III: SUPPLY CHAIN MANAGEMENT
Introduction – Nature and Concept - The need for supply chain – Understanding the supply chain management – Participants in supply chain – levels of supply chain.

UNIT – IV: ROLE OF MANAGER IN SUPPLY CHAIN
Role of Manager in Supply Chain – Supply Chain Performance Drivers – Key enablers in supply chain improvement – Inter–relation between enablers and levels of supply chain management- Systems and Values of Supply Chain.

UNIT – V: SUPPLY CHAIN AND BUSINESS STRATEGY
Aligning the supply chain with Business Strategy – Supply Chain Relationships – Conflict Resolution Strategies – Certifications.

Books Prescribed:

1. Douglas M. Lambert, James R. Stock, Lisa M. Ellram,: Fundamentals of Logistics Management, Singapore, Irwin/ McGraw Hill, International edition 1998.
2. John T Mentzer ed.: Supply Chain Management, A South Asian Reprint India, New Delhi, Sage Publication Ltd., 2001.
3. Christopher, M.: Logistics and Supply Chain Management: Strategies for Reducing Costs and Improving Services London, Pitsman, 1992
4. Benjamin S. Blanchard: Logistics Engineering and Management, New Jersey, Prentice - Hall Inc., 3rd ed. 1996.

5. Ron Moore: Making Common Sense Common Practice Models for Manufacturing Excellence, The Indian Print, New Delhi, Prentice Hall of India Pvt. Ltd., 2000.

Books for Reference:

1. D K Agarwal - Textbook of Logistics and Supply Chain Management - MacMillan publishers (Eight impression) - 2009.
2. Dr. L. Natarajan, Logistics and Supply Chain Management, Margham Publications, 2018.
3. G Raghuram& N Rangaraj - Logistics and Supply Chain Management - Cases and Concepts. Mac Millan - 2000.
4. Martin Christopher - Logistics & Supply Chain Management: Creating Value-Adding Networks - FT Press – 4th edition.
5. David J. Bloomberg, Stephen Lemay and Joe B. Hanna: Logistics New Delhi, Prentice Hall of India Pvt. Ltd., 2002.

Third Year - Fifth Semester	*Subject Code: U18PCBL311*	*Subject Credits: 04*

BANKING LAW INCLUDING NEGOTIABLE INSTRUMENTS ACT

Objective: This paper produces an insight to the students about the Banking Law and the emerging trends in the banking sector and various procedural aspects in a simplified manner.

COURSE OUTLINE

UNIT – I: PRELIMINARY

History of Banking - Different types of Banks including Foreign Banks – Nationalisation of Banks - RBI's Control over Commercial Banks - Special status of RBI and State Bank of India - Subsidiary Banks -Emerging trends in Banking -Digital Banking.

UNIT – II: BANKING REGULATION ACT, 1949

Banker and Customer: Definition of Banker and Customer and relationship - Special types of Customers - Banker as Borrower - Different types of accounts - Duties and Rights of the Banker and different types of instrument - Paying Banker and Collecting Banker.

UNIT – III: LAWS RELATING TO LOANS, ADVANCES AND INVESTMENTS BY BANKS

Subsidiary Business Operations of Banker with special reference of Safety Deposit Lockers - Liability of Banker in case of Bank Robberies and Fraud by Bank Employees - Vicarious Liability of the Bank and Bank Employees - Recovery of Loans and Advances - Recovery of Debts due to Banks - Financial Institutions Act, 1993 and SARFAESI Act, 2002.

UNIT – IV: WINDING UP OF BANKING COMPANIES

Effect of Winding Up of Banking Companies - Rights of Customers on Winding Up of Companies - Necessity for reforms in Indian Banking Law to meet Global Challenges - Banking Ombudsman - Various Committee Reports.

UNIT – V: NEGOTIABLE INSTRUMENTS ACT, 1881

Definition and Characteristics - Parties to Negotiable Instruments - Presentation - Discharge and Dishonour - Liability -Various kinds of Crossing of Cheque - Rights of Holder and Holder in due Course against Banker - Civil and Criminal Liability for Dishonour of Cheques under Section 138 to Section 142 of the Amended Negotiable Instruments Act.

Statutory Materials:

1. Banking Regulation Act, 1949
2. Negotiable Instruments Act, 1881
3. SARFAESI Act, 2002

4. Financial Institutions Act, 1993

Books Prescribed:

1. Arun Kumar & Anoop Kumar: Banking Industry and NPA's; New Century Publication; 1st Edn. (2018)
2. Taxmann: Digital Banking; Taxmann Publications, 1st Edn. (2016)
3. Indian Institute of Banking and Finance: Principles and Practices of Banking; McMillan Publications, 3rd Edn. (2015)
4. V.V.K. Subburaj: Rbi, Reserve Bank of India; Sura College of Competition, 2004

Books for Reference:

1. Dr. S. S. Srivastsava: Banking Law and Negotiable Instruments Act; Central Law Agency, 1st (2015)
2. Taxmann: Guide to SARFAESI Act – 2002 and Recovery of Debts and Bankruptcy act – 1993; Taxmann Publications, 2nd Edn. (2017)
3. Bimal N. Patel: Banking Law and Negotiable Instruments Act; 1st Edn. (2015)

Third Year - Fifth Semester	*Subject Code: U18PCBL312*	*Subject Credits: 04*

PROPERTY LAW

Objective: By its very existence, society mandates interaction, exchange or transfer. A property, movable or immovable, is transferred from one person to another under various different situations and circumstances and for different values. This paper details about the property law, the litigation based on that and the recent amendments to the property law.

COURSE OUTLINE

UNIT – I: GENERAL PRINCIPLES OF TRANSFER

Transfer of Property Act, 1882 - Concept of Property - Definition of Transfer of Property - Kinds of Interest-Conditional Transfer - Document of Election - Ostensible Owner – Feeding the Grant - Improvement made by Bonafide Purchase- Lis Pendens - Fraudulent Transfer - Doctrine of Part Performance and other General Principles of Transfer.

UNIT – II: SPECIFIC TRANSFERS -TRANSFER OF ABSOLUTE INTEREST

Sale - Definition of sale - rights and liabilities of seller and buyer - Gift - Definition- Onerous Gift - Universal Donor and Donee - Death Bed Gift - Suspension and Revocation of Gifts – Exchange

UNIT – III: TRANSFER OF LIMITED INTEREST

Mortgage: Different Kinds of Mortgages - Redemption - Clog on Redemption - Partial Redemption - Rights and Liabilities of Mortgagor and Mortgagee including Doctrine of consolidation Marshalling Contribution – Subrogation - Charge

UNIT – IV:LEASE

Rights and Liabilities of Lessor and Lessee - Determination of lease - Doctrine of Holding Over - Forfeiture of Lease - Actionable claims.

UNIT –V: EASEMENT

Definition - Acquisition of Easement - Easement of Necessity and Quasi Easement - Easement by Prescription – Extinction - Suspension and Revival of Easements and License.

Statutory Material:

1. Transfer of Property Act, 1882
2. Indian Easements Act, 1882

Books Prescribed:

1. Avtar Singh: Transfer of Property Act; Universal Law Publishing, 5th Edition (2016)

2. Dr. R.K. Sinha: The Transfer of Property Act; Central Law Agency, 19th Edition (2018)
3. S.N. Shukla: The Transfer of Property Act; Allahabad Law Agency, 29th Edition (2018)
4. Vepa. P. Sarathi: Law of Transfer of Property; Eastern Book Company, 6th Edition(2017)
5. Dr. Poonam Pradhan Saxena: Property Law; Lexis Nexis, 3rd Edition (2017)
6. G.P. Tripathi: Transfer of Property Act; Central Law Publication, 19th Edition (2016)

Books for References:

1. Mulla: The Transfer of Property Act; Lexis Nexis, 13th Edition (2018)
2. Darashaw J. Vakil & HR Jhingta: Commentaries on the Transfer of Property Act; Lexis Nexis, 5th Edition (2017)
3. Goyle: A Commentary on the Transfer of Property Act; Eastern Law House, 2nd Edition (2001)
4. Sandeep Bhalla: Digest of cases on Transfer of Property in India; Eastern Book Company, 2nd Edition (2012)

Third Year - Fifth Semester	*Subject Code: U18PCBL313*	*Subject Credits: 04*

HUMAN RIGHTS

Objective: The understanding of human rights is the foundation for the development of a good citizen and a responsible legal professional. The main objective of this course is to provide an insight into the meaning and significance of various human rights in the contemporary era and the mechanisms developed at the international and national level for protection and promotion of such rights. This course attempts to increase the knowledge of law students with respect to human rights; to focus their attention on the underlying values of human rights and to explore various international and national legal frameworks which embody human rights and promote them in practice.

COURSE OUTLINE

UNIT I: CONCEPT OF HUMAN RIGHTS

Origin and Development of Human Rights- Generations of Human Rights - Civil and Political Rights -Economic, Social and Cultural Rights - Solidarity Rights - U.N Charter - Universal Declaration of Human Rights, International Covenant on Civil and Political Rights and Optional Protocols - International Covenant on Economic and Social Cultural Rights and Optional Protocols.

UNIT II: VULNERABLE GROUPS AND HUMAN RIGHTS

Discrimination against Women, Status of Women in India, Conferences of Women, Rights of Child, Optional Protocols to the Convention on the Rights of the child Labour, Migrant Workers, Rights of the Migrant Workers, Reporting System, Inter - State Communications System, Historical Development of International Refugee Law, United Nations High Commissioner for Refugees (UNRRA), Stateless Persons, Disabled Persons, Indigenous Persons.

UNIT III: HUMAN RIGHTS AND NON-GOVERNMENTAL ORGANIZATIONS

NGO's and United Nations, Human Rights and the NGO's - Amnesty International and Human Rights Watch, India and Human Rights NGO's - People union for Civil Liberties. - international humanitarian law - Application and Historical Development of Humanitarian Law- Treatment of Prisoners of War, Treatment of Alien Enemies, Human Rights and Terrorism.

UNIT IV: IMPLEMENTATION OF HUMAN RIGHTS

UN Commission on Human Rights (Human Rights Council) - The Human Rights Committee (CCPR) under ICCPR- The Committee on Economic, Social and Cultural Rights (CESCR) under ICESCR.

UNIT V: HUMAN RIGHTS PROTECTION IN INDIA

Provisions under the Indian Constitution – Fundamental Rights, Enumerated and Unremunerated Human Rights, Restrictions on Human Rights and Fundamental Rights- Protection of Human Rights Act 1993 - National and State Human Rights Commissions – Establishment, Powers and Functions of NHRC and SHRC - Role of NHRC and SHRC - Application of International Human Rights Law in India- Role of Indian Judiciary in enforcing human rights - Judicial Activism.

Statutory Materials

The Protection of Human Rights Act, 1993.

Books Prescribed

1. Paras Diwan: Human Rights and the Law; Deed & Deep Publications, 1st Edition (1999)
2. Sankarsen: Human Rights; Law Enforcing Concept Publishing Co. , 1st Edition, (2002).
3. Maurice Cransten: What are Human Rights; Taplinger Publishing Co., 1st Edition (1978).
4. Dr.H.O.Agarwal: International Law and Human Rights; Central Law Publications, 20th Edition (2000).

Books for Reference

1. H. Kramer, Simmonds & Steiner: Debate over Rights; Oxford University Press, 1st Edition (2000).
2. John Locke: Civil Government; Wildside Press, Reprint (2008).
3. Dr. U.Chandra: Human Rights; Allahabad Law Agency Publications, 5th Edition (2004).
4. Galius Esejoifer: Protection of Human Rights under the International Law; Laiden Boston, 1st Edition (2007).
5. Raphael D.D, Macmillan: Human Rights Old and New; Rouledge and Kegal Paul, 1st Edition (1981).

Third Year - Sixth Semester	*Subject Code: U18PLCL315*	*Subject Credits: 03*

PRACTICAL AUDITING

Objective: Acquaintance with the format of Auditing and Collection of Evidence. Clear insight into the basics of internal control system. The knowledge of the fundamental Vouching Cash Transaction and verification and valuation of assets and liabilities. Familiarity with the procedure for preparing appointment, recruitment and removable auditors. The knowledge of the fundamental in corporate audit and audit report (CARO 2003).

COURSE OUTLINE

UNIT – I
Meaning of Auditing – Scope & Objectives – Advantages & Limitations – Types of Audit and their applications – An overview of audit as a process – Determination of assertions to be verified – Audit Planning - Collection of audit evidence – Audit documentation.

UNIT – II
Internal Control System — meaning and objectives – role of internal audit & Statutory audit overview of vouchers documents and registers maintained by an organisation. Internal check system for cash, sales and purchases.

UNIT – III
Vouching: Meaning – Vouching of cash transactions – Vouching of trading transactions – Audit of Impersonal ledger; Verification and Valuation of assets & Liabilities.

UNIT – IV
Statutory Audit: Need for statutes on audit – Corporate audit (as per Companies Amendment Bill 2003) – Appointment, remuneration and removal of auditors – Rights duties and liabilities of a corporate auditor – Professional Ethics & Misconduct.

UNIT – V
Scope of Corporate Audit: Audit of Share capital – Debentures – Depreciation, provisions and reserves – Auditors Report (with reference to CARO, 2003)

Books Prescribed:

1. B.N.Tandon : Practical Auditing, S Chand & Company, 1982.
2. B. N. Tandon: A Handbook of Practical Auditing: S Chand & Company Limited, 13rd Edn.2001
3. Venkatamani: Practical Auditing, Margham Publications, Chennai.

Books for Reference:

1. B. N. Tandon & S. Sundharabahu: A Hand Book Of Practical Auditing, S. Chand Limited, 2006
2. B. N. Tandon, S. Sundharabahu: A Hand Book Of Practical Auditing, S. Chand Limited, 14th Edn. 2006

Third Year - Sixth Semester	*Subject Code: U18PLCL316*	*Subject Credits: 03*

HUMAN RESOURCES MANAGEMENT

Objective: To acquaint the students with the importance of Human Resource Management and the qualities of Personnel Managers. To gain knowledge about the importance of Human resource planning. To familiarize with the process of Recruitment, selection, Training and Development. To highlight the importance of performance evaluation and Time management.

COURSE OUTLINE

UNIT I: INTRODUCTION OF HUMAN RESOURCE MANAGEMENT
Definition – Importance of Human Resources – Objectives of Human Resources Management – Functions of Human Resource Management – Qualities of Personnel Managers.

UNIT II: HUMAN RESOURCE PLANNING
Human Resource Planning – Importance and factors influencing HRP – Job Analysis – Job Description and Job Specification.

UNIT III: RECRUITMENT, SELECTION, TRAINING & DEVELOPMENT
Recruitment – Process and Sources of Recruitment – Selection – Purpose and process of Selection – Training and Development – Objectives and Importance of training and Development – Methods / Techniques of training.

UNIT IV: PERFORMANCE EVALUATION AND CONTROL PROCESS
Methods of Performance Evaluation – Promotion, Demotion, Transfer & Separation – Control process.

UNIT V: TIME MANAGEMENT
Introduction to Time Management – Setting goals and priorities – Importance of Time factor – Prioritizing work scheduling – Functions of the Time office – Flexible Work Arrangements.

Books Prescribed:

1. DeCenzo, D.A. and Robbins; S.P., Human Resource Management, Wiley India Pvt. Ltd., 10th Edn. 2011.
2. Ivanecevich, J.M.; Human Resource Management, Tata McGraw-Hill Education Pvt. Ltd., 10th Edn. 2010.
3. Mathis, R.L., Jackson, J. and Johnson, R.; Human Resource Management, South Western, 10th Edn, 2010.
4. Noe, R.A., Hollenbeck, Gerhart and Wright; Fundamentals of Human Resource Management, McGrawHill Education Ltd., 3rd Edn. 2012.
5. Rao, V.S.P., Human Resource Management, Excel Books, 3rd Edn, 2010.

Books for Reference:

1. L.M. Prasad; Human Resource Management, S. Chand &Sons, 2007.
2. Mamoria, C.B. and Gaonkar,S.V.; Personnel Management, Himalaya Publishing House, 2011.

3. Dessler, G.; Human Resource Management, Pearson, 12th Edn, 2011.
4. S.S. Khanka; Human Resource Management, S. Chand Ltd., 2007.
6. Ashwathappa, K.; Human Resource Management, Tata McGraw-Hill Education Pvt. Ltd., 6th Edn, 2010.

Third Year - Sixth Semester	*Subject Code: U18PCCL314*	*Subject Credits: 04*

PUBLIC INTERNATIONAL LAW

Objective: This paper explains about the International Law and its scope and significance, its impact on the states and imparts the students a wider knowledge on the International legislation.

COURSE OUTLINE

UNIT – I: INTRODUCTION

Development of International Law - Definitions - Nature of International law- Legality of International Law - Positive Morality - Theories as to basis of International Law.

UNIT – II: SOURCES AND SUBJECTS OF INTERNATIONAL LAW

Introduction - International Conventions - International Customs - General Principles of Law recognized by Civilized States - Decisions of Judicial or Arbitral Tribunals - Other Sources - Subjects of International Law- Various Theories - Realistic Theory - Fictional Theory- Functional Theory

Concept of State - State and Individual as a subject - Rights and Duties / Responsibilities - State Recognition -Theories - Kinds, Modes and Legal Effects - Nationality - Acquisition and Loss related issues - Asylum – Extradition - Territorial Sovereignty - Modes of Acquisition and Loss of Territory - State - Jurisdiction - State Succession and Liability

UNIT – III: LAW OF SEA

Historical Background- Maritime Belt - Territorial Sea - The Contiguous Zone- Exclusive Economic Zone - Continental shelf - The High Seas - International Sea Bed Area - Law of the Sea Conventions.

UNIT – IV: CONCEPT OF TREATY

Kinds of Treaties - Binding Force of Treaties- Pacta Sunt Servanda- Jus Cogens - Rebus Sic Stantibus - Parties of a Treaty - Formation of a Treaty- Reservations - Invalidity and Termination of Treaties.

UNIT – V: INTERNATIONAL ORGANIZATION

Origin, Nature and Scope of International Organizations - League of Nations, United Nations and it's Organs - International Tribunals.

Books Prescribed:

1. Dr. H.O.Agarwal: International Law & Human Rights; Central Law Publications, 20thEdition (2015)
2. M.P.Tandon: Public International Law; Allahabad Law Agency, 17th Edition (2014)
3. Joseph Gabriel Starke: Strake's International Law; Butterworths, 11thEdition (1994)

4. R.P. Anand: Salient documents in International Law; Banyan publications, 1st Edition (1994)
5. Yosifumi Tanaka: The International Law of the Sea; Cambridge University Press, 2nd Edition

Books for Reference:

1. S.K.Kapoor: A text book of International Law; Central Law Agency, 5th Edition (1982)
2. K.K.Bhattacharya: Public International Law; Central Law Agency, 5th Edition (1976)
3. Malcolm N.Shaw: International Law; Cambridge University Press, 8th Edition (2018)
4. Antonio Cassese: International Law; Oxford University Press, 2nd Edition (2001)
5. Ian Brownlie: Principles of Public International Law; Oxford University Press, 7th Edition (2008)
6. David John Haris: Cases & Materials on International Law; Sweet & Maxwell, 4th Edition (1991)

Third Year - Sixth Semester	*Subject Code: U18PCCL315*	*Subject Credits: 04*

COMPANY LAW

Objective: This paper is imparted in the view of increasing emphasis on adherence to norms of good corporate governance. Company Law assumes an added importance in the corporate legislative milieu, as it deals with structure, management, administration and conduct of affairs of Companies.

COURSE OUTLINE

UNIT – I: INTRODUCTION

Company: - Meaning and definition - characteristics - Kinds of Companies - private and public, government companies - statutory companies - Chartered - Registered - Limited and unlimited - Lifting of the corporate veil.

UNIT – II: COMPANIES ACT, 2013

Types of Companies and their incorporation - Formation of Companies - Procedural Aspects - Memorandum of Association - definition, clauses, provisions and procedures for alteration - - Articles of Association - definition, contents - provisions and procedures for alteration - distinction between Memorandum and Articles of Association • Doctrine of Ultra-Vires, Constructive Notice, Indoor Management - Promoters - Meaning, Position, Duties, Rights, Responsibilities and Liabilities - Prospectus - Contents - Statements in Lieu of Prospectus - Liabilities for misstatement.

UNIT – III: SHARES AND DEBENTURES

Shares - Classes of shares - Preference and equity shares -Public issue of shares - SEBI guidelines - Allotment of shares - Irregular allotment - Issue of shares at premium, par and discount - Listing of shares - Sweat equity shares - Right shares - Bonus shares - Shares with differential rights - Share certificate and share warrant. Calls, forfeiture, lien, surrender of shares - Demat form of shares -Transfer and transmission of shares - Buyback of shares Transfer under depository system - Debentures - Charges and Debenture Holder - Dividends - Borrowings - Lending - Investments - Contracts.

UNIT – IV: CORPORATE GOVERNANCE

Management of Companies: - Directors - Managing Director - Appointment – Qualification - Rights - Responsibilities and liabilities – Disqualification of directors Meetings - Requisites - Statutory, Annual, Extra ordinary and Board Meetings, Resolutions – Types -Accounts and Audits - Internal Auditing - National Financial Reporting Authority - E-filing and Information Technology Act, 2000 - Corporate Social Responsibility - Prevention of Oppression and Mismanagement – Investigation – Powers of Inspectors – Powers of NCLT, Company Law Board - Insider Trading.

UNIT – V: COMPROMISES, ARRANGEMENTS AND WINDING UP

Compromises - Arrangements and Amalgamations - Mergers and Acquisitions - Winding Up - Meaning - modes of winding up - winding up by the tribunal - Members voluntary winding up - creditor's voluntary winding up - winding up under the supervision of the court - Administration of NCLT and CLAT and Special Courts - Powers of Liquidators - Removal of Names of Companies from Register of Companies - Defunct Companies and Restoration - Revival and Rehabilitation of Sick Companies.

Emerging issues in Company Law: Producer Company - Limited liability partnership - Concept and formation of corporate governance - relevance and provisions under listing agreement - Securities and Exchange Board of India act 1992: Introduction - Object - establishment and management of SEBI - Functions and powers of SEBI – Securities Appellate Tribunal.

Statutory Materials:

1. Companies Act, 2013
2. Securities and Exchange Board of India Act, 1992
3. Information Technology Act, 2000

Books Prescribed:

1. Avtar Singh: Company Law; Eastern Book Company, 16th Edition (2015)
2. S.C. Tripathi: New Company Law; Central Law Publication, 1st Edition (2014)
3. Karn Gupta: Introduction to Company Law; Lexis Nexis, 1st Edition (2013)

Books for References:

1. Gower: Principles of Modern Company Law, Sweet & Maxwell, 9th Edition (2012)
2. Plamer: Company Law Manual; Sweet & Maxwell, 25th Edition (1992)
3. C.A. Kamal Garg: Bharat's Corporate & Allied Laws; 2nd Edition (2012)
4. G.K. Kapoor: Company Law and Practice, Taxmann's Publication, 23rd Edition (2018)

Third Year - Sixth Semester	*Subject Code: U18CCCL301*	*Subject Credits: 03*

CLINICAL COURSE – I
MOOT COURT

Objective: Moot court simulate a court hearing, in which students analyze a problem, research the relevant law, prepare written submissions, and present oral argument. Mooting enables students to enhance their argumentative skills, drafting skills and legal research and to demonstrate their interest in advocacy.

COURSE OUTLINE

This course consists of following:

1. Every student will do at least five moot courts in following subjects. The moot court work will be on assigned problems.
    - Constitutional Law
    - Environmental Law
    - International Law
    - Administrative Law
    - Family Law
    - Criminal Law
    - Civil Law

2. **WRITTEN SUBMISSIONS:**
    - The students should mandatorily submit 5memorials on either side based on the discretion of the concern faculty. The maximum mark for each memorial is 10.

3. **ORAL ARGUMENTS:**
    - Every student will be asked to argue on any two moot problems mandatorily i.e. one on petitioner/claimant side and another on Respondent side.

4. **EVALUATION SCHEME**

5 Written Submissions	10 Marks Each	5x10 = 50 Marks
2 Oral Arguments	25 Marks Each	2x25 = 50 Marks
TOTAL		**100 Marks**

Third Year - Sixth Semester	*Subject Code: U18PTCL303*	*Subject Credits: 02*

INTERNSHIP AND PRACTICAL TRAINING - III

Objective: The internship programmes are designed to acquaint the student with the actual practice of law by working under the supervision of legal luminaries. The student gains experience of applying theoretical knowledge from prior classroom training, when exposed to practical environment.

COURSE OUTLINE

During the summer vacation the students should compulsorily undergo Internship for a continuous period of 4 weeks and submit an internship report along with a internship certificate. This will be evaluated by the Internship Faculty Guide.

The student may choose to intern under any one the following category:

- Trial Advocate
- Appellate Advocate
- Law Firms
- Non-Governmental Organization
- Police Stations
- Banks
- Non Banking Financial Institutions
- Companies
- Registration Department
- Judiciary
- Legal Regulatory Authorities
- Legislatures
- Market Institutions
- Local Self-Government
- Other Legal Functionaries
- Dispute resolution Bodies
- Legal Services Authority

On completion of successful internship training every student will be awarded 2 credits

Fourth Year - Seventh Semester	*Subject Code: U18HCCL401*	*Subject Credits: 04*

HONOURS COURSE: I

MEDIA LAW

Objective: This paper seeks to establish a co-relationship of the much-flaunted Constitutional objective of freedom of speech and expression, and existing Rights and Restrictions governing the fourth estate, an essential pillar of Democratic Governance.

COURSE OUTLINE

UNIT - I: MASS MEDIA

Types of Press Films, Radio and Television - Ownership pattern-Press-Private-Public, Films-Private, Ownership patterns Radio & Television, Public - Difference between Visual and non-Visual Media-impact on People's minds - Press-Freedom of Speech and Expression-Article 19 (1) (a) Includes Freedom of the Press - Laws of defamation - obscenity - blasphemy and sedition. Law relating to employees wages and service conditions - Price and Page Schedule Regulation - Newsprint Control Order – Advertisement is it included within freedom of speech and expression? Press and the Monopolies and Restrictive Trade Practices Act.

UNIT – II: FILMS

How far included in freedom of speech and expression? Censorship of films-Constitutionality - The Abbas Case, Bandit queen case, Jolly LLB Case, Innocence of Muslims Case, Dam 999 Case - Difference between films and Press - why pre-censorship valid for films but not for the press? Censorship under the Cinematograph Act.

UNIT – III: RADIO AND TELEVISION

Monopoly of the Government over Radio and Television - Effect of television on people, Report of the Chanda Committee, Vargheese Committee, Government policy on Television and Radio - Commercial advertisement, Internal Scrutiny of serials etc., Judicial Review of Doordarshan decisions - Freedom to telecast.

UNIT – IV: CONSTITUTIONAL RESTRICTIONS RADIO AND TELEVISION

Subject to law of defamation and obscenity - Power to legislate-Article 246 read with the Seventh Schedule - Power to impose tax-licensing and licensing fee.

UNIT – V: MEDIA AND HUMAN RIGHTS

Media and Information, communication technology, Media and RTI, Media and Violation of Human Rights - Media and Right to Privacy.

Statutory materials:

1. Prashar Bharti Act 1990

2. Broadcasting Bill
3. Cinematography Act 1952
4. Cable T.V.Networks (regulation) Act of 1995
5. Advertisement Act of 1954
6. Indecent Representation (Prohibition) Act, 1986

Books Prescribed:

1. H.M. Seervai: Constitutional Law of India; Universal Law Publication, 1st Edn. (1991)
2. M.P. Jain: Constitutional Law of India; Lexis Nexis, 8th Edn. (2018)
3. Myneni: Media Law; Asia Law House, 2nd Edn. (2017)

Books for Reference:

1. S. Kundra: Media Laws and Indian Constitiotion; Anmol Publiccations, 1st Edn. (2005)
2. M. Neelamalar: Media Law and Ethics; Prentice hall, India Learning Ltd., 2nd Edn. (2009)
3. Vanita Kohli Khandekar: Inidan Media Business; Sage Publications, 4th Edn. (2017)

Fourth Year - Seventh Semester	*Subject Code: U18HCCL402*	*Subject Credits: 04*

HONOURS COURSE: II

DISASTER MANAGEMENT LAW

Objective: This paper is imparted to provide basic conceptual understanding of disasters and its relationships with development and to understand Medical and Psycho-Social Response to Disasters and to enhance awareness of Disaster Risk Management institutional processes in India.

COURSE OUTLINE

UNIT-1: INTRODUCTION TO DISASTER

Concepts of Hazard, Vulnerability, Risks, Natural Disasters (earthquake, Cyclone, Floods, Volcanoes) - Man Made Disaster (Armed conflicts and civil strip, Technological disasters, Human Settlement, Slow Disasters (famine, draught, epidemics) - Rapid Onset Disasters (Air Crash, tidal waves, Tsunami) Risks - Difference between Accidents and Disasters, Simple and Complex Disasters – Refugeeproblems, Political, Social, Economic impacts of Disasters, Gender and Social issues during disasters - principles of psychosocial issues and recovery during emergency situations - Equity issues in disasters - Refugee operations during disasters, Human Resettlement and Rehabilitation issues during and after disasters, Inter-sectoral coordination during disasters.

UNIT-II: DISASTER RISK MANAGEMENT IN INDIA:

The Disaster Management Act, 2005 - Definitions - The National Disaster Management Authority- Establishment of National Disaster Management Authority - Meetings of National Authority - Appointment of officers and other employees of the National Authority - Powers and functions of National Authority - Constitution of advisory committee by National Authority - Constitution of National Executive Committee -Constitution of sub-committees - Powers and functions of National Executive Committee - National plan - Guidelines for minimum standards of relief - Relief in loan repayment and others.

UNIT-III: STATE AND DISTRICT DISASTER MANAGEMENT AUTHORITY

Establishment of State and District Disaster Management Authority - Meetings of the State Authority - Appointment of officers and other employees of State Authority - Constitution of advisory committee by the State Authority - Powers and functions of State Authority- Guidelines for minimum standard of relief by State Authority - Constitution of State Executive Committee - Constitution of sub-committees by State Executive Committee - Functions of the State Executive Committee - State Plan - Powers and functions of State Executive Committee in the event of threatening disaster situation.

UNIT IV: OFFENCES AND PENALTIES

Punishment for obstruction - Punishment for false claim - Punishment for misappropriation of money or materials - Punishment for false warning - Offences by Departments of the Government - Failure of officer in duty or his connivance at the contravention of the provisions of this Act - Penalty for contravention of any order regarding requisitioning - Offence by companies - Previous sanction for prosecution - Cognizance of offences - Finance, Accounts And Audit : National Disaster Response Fund - National Disaster Mitigation Fund - Establishment of funds by State Government - Allocation of funds by Ministries and Departments - Emergency procurement and accounting.

UNIT V: PUBLIC HEALTH RESPONSE AND INTERNATIONAL COOPERATION

Principles of Disaster Epidemiology - Rapid Health Assessment - Outbreak Investigation - Environment health hygiene and sanitation issues during disasters - Preventive and prophylactic measures - International cooperation in funding on public health during disaster - International Health Regulation, United Nation International Strategy for Disaster Risk Reduction (UNISDR), United Nation Disaster Management Team, International Search and Rescue Advisory Group, (INSARAG, Global Facility for Disaster Risk Reduction (GFDRR), Asean Region Forum (ARF), Asian disaster Reduction Centre (ADRC), SAARC 277 Disasters Management Centre (SDMC), USAID), UNDAC,UNOCHA, USAR.

Statutory Materials

1. The Disaster Management Act, 2005
2. The Disaster Management (National Disaster Response Force) Rules, 2008
3. Hazardous Wastes (Management and Handling) Rules, 1989

Books Prescribed:

1. R. Subramaniam: Disaster Management; Vikas Publishing House, 1st Edition (2018)
2. Tushar Battacharya: Disaster science and Management, Mc Graw Hill Education, (2017).
3. Harsh K. Gupta: Disaster Management; Universities Press, (2003)

Books for References:

1. Damon P. Coppola: Introduction to International Disaster Management, Butterworth-Heinemann; 3rd Edition (2015)
2. David Townes: Health in Humanitarian Emergencies: Principles and Practice for Public Health and Healthcare Practitioners; Cambridge University Press; 1 edition (31 May 2018)
3. Dr. Amit Awasthy: Disaster Management, Warning Response And Community Relocation, Global India Publications, New Delhi 2009.

Fourth Year - Seventh Semester	*Subject Code: U18PCCL416*	*Subject Credits: 04*

LABOUR LAW – I

Objective: This paper explains about the labour legislations viz Industrial disputes Act, the legislation which governs the factories and the scope and significance of Trade Union in a broader perspective.

COURSE OUTLINE

UNIT – I: EVOLUTION OF LABOUR LEGISLATION

Origin and Development of Labour Legislation - Object and Nature of Labour Legislation- Evolution of concept of Master and Servant Relationship - Theory of Laissez Faire and State Regulation of Labour Legislation and its Special Features- Role of International Labour Organization in Setting Labour Standards.

UNIT – II: TRADE UNION ACT, 1926

Definitions - History of Trade Union Movement - Registration of Trade Unions-Rights and Liabilities of Trade Unions-Immunities and Privileges of a Registered Trade Union - Trade Union Funds - Collective Bargaining - Amalgamation and Dissolution of Trade Unions-Recognition in Trade Unions.

UNIT – III: INDUSTRIAL DISPUTES ACT, 1947

Scope, Applicability and Definitions - Appropriate Government – Workmen – Industry - Industrial Disputes – Award – Settlement - Public Utility Service – Strike - Lock Out - Retrenchment - Lay Off - Closure - Machinery for the Settlement of Industrial Disputes - Works Committee - Conciliation Officers - Board of Conciliation - Court of Inquiry - Labour Court - Industrial Tribunal - Power to the Government for reference - Voluntary Arbitration - Unfair Labour Practices.

UNIT – IV: FACTORIES ACT, 1948

Object and Scope of the Act - Important Definitions - Statutory Agencies and their Powers for Enforcement of the Act - Approval, Licensing and Registration of Factories - Notice by Occupier -General Duties of the Occupier - General Duties of Manufacturers - Measures to be taken by Factories for Health, Safety and Welfare of Workers - Special Provisions relating to hazardous processes - Working hours of Adults - Additional provisions regulating employment of women in a factory - Employment of Children - Annual Leave with Wages - Penalties and Procedures - Compliances Under The Act.

UNIT – V: INDUSTRIAL EMPLOYMENT (STANDING ORDERS) ACT, 1946

Scope and Definitions – Procedure for Certification of Standing Orders – Duration and Modification of Certified Standing Orders – Domestic Enquiry and Disciplinary Procedures.

Statutory Materials

1. Industrial Disputes Act 1947
2. Trade Union Act 1926
3. Industrial Employment (Standing Orders) Act 1946
4. Factories Act 1948

Books Prescribed

1. K.M. Pillai; Labour and Industrial Law; Allahabad Law Agency;16th Edition (2016)
2. S.N. Misra; Labour and Industrial Law; Central Law Agency 28th Edition (2018)
3. Dr.V.G. Goswami; Labour and Industrial Laws; Central Law Agency latest edition (2019)

Books for Reference

1. O.P. Malhotra; The Law of Industrial disputes; Lexis Nexis;7th edition (2015)
2. K.D. Srivastava; Law relating to Trade Unions and Unfair Labour practices in India; Eastern Book Company 4th edition (2002)
3. K.D. Srivastava; Industrial Employment (Standing Orders) Act 1946;Eastern Book Company;4th edition (2000)

Fourth Year - Seventh Semester	*Subject Code: U18PCCL417*	*Subject Credits: 04*

ADMINISTRATIVE LAW

Objective: This paper includes all the major facets of Administrative Law and guides the students to understand the basic concepts and significances it changes according to the social, economic and political changes. It is only in the twentieth century that administrative law developed as a separate branch of legal discipline.

COURSE OUTLINE

UNIT – I: INTRODUCTION

Definition - Nature, Scope and Significance of Administrative Law - Relationship between Constitutional Law and Administrative Law - Evolution and Development of Administrative Law - India, UK, USA and France - Basic Doctrines- Rule of Law and its application in India – Montesquieu's Doctrine of Separation of Powers - Doctrine of Separation of Powers and its relevance in Contemporary Times

UNIT – II: PRINCIPLES OF NATURAL JUSTICE

Concept, Evolution and Importance - Principles of Natural Justice - Rule against Bias and Rule of Fair Hearing - Exceptions to Natural Justice - Violations of Natural Justice - Application of Natural Justice in India.

UNIT – III: DELEGATED LEGISLATION

Meaning of Delegated Legislation and its Growth - Delegated Legislation in USA and UK - Delegated Legislation in India - Comparison with USA & UK - Pre and Post Constitutional Period - Rules and Principles of Administrative Rule making - Delegated legislation - Excessive delegation - Permissible and Non permissible Delegated Legislation - Control Mechanisms of Delegated Legislation - Judicial Control - Parliamentary Control - Procedural Control - Sub-delegation - Conditional Legislation

UNIT – IV: ADMINISTRATIVE ADJUDICATION

Meaning, Needs and Reasons for its growth - Problems of Administrative Adjudication - Mechanism for Administrative Adjudication - Quasi judicial bodies – Tribunals - meaning, difference between tribunals and courts - its types- Statutory and Domestic Tribunals - Administrative Tribunal - Definition - Constitutional Status - Finality of decisions and Judicial Review - Administrative Directions - Meaning, Nature and Need for Administrative Directions - Enforceability of Administrative Directions - Administrative Discretion- Meaning and significance of Administrative Discretion - Judicial Control of Administrative Discretion - Grounds of control

UNIT – V: REVIEW OF ADMINISTRATIVE ACTIONS AND REMEDIES

Writ jurisdiction of Supreme Court and High Court, when the writs can be issued -when the writs cannot be issued - principles of writ jurisdiction - Grounds of review –Illegality, Irrationality, Procedural Impropriety, Proportionality - Doctrines developed by Judiciary - Doctrine of Legitimate Expectation - Doctrine of Proportionality - Doctrine of Reasonableness - Doctrine of Public Accountability - Doctrine of Promissory Estoppel - Equitable Remedies - Emerging Trends In Administration - Good Governance and Administrative Law - Ombudsman - Lok Pal and Lokayukta - Global administrative law

Books prescribed

1. M. P. Jain & S. N. Jain ;Principles of Administrative law; Lexis Nexis;7th edition (2019)
2. I. P. Massey, Administrative Law; Eastern Book Company; 9th edition (2017)
3. C. K. Takwani; Lectures on Administrative Law; Eastern Book Company latest edition (2014)

Books for reference

1. S. P. Sathe ; Administrative Law; Lexis Nexis; 7th edition (2016)
2. M.C Jain Kagzi; The Indian Administrative Law; Universal Law Publishing & Co 53rd edition (2014)
3. H. W. Wade & C.F Forsyth; Administrative Law; Oxford University Press;10th edition (2009)

Fourth Year - Seventh Semester	*Subject Code: U18PCCL418*	*Subject Credits: 04*

ENVIRONMENTAL LAW

Objective: Environmental law is a complex group of laws and regulations which operate to regulate the interaction of human life to the natural environment. This paper will be an eye opener for the students about the growing issues in this arena and need for immediate legislative action.

COURSE OUTLINE

UNIT – I: INTRODUCTION

Environment: Meaning - Environment Pollution: Meaning and Issues - Environmental (Protection) Act, 1986 - Meaning of 'Environment', 'Environment Pollutant', 'Environment Pollution' - Powers and Functions of Central Govt - Important Notifications-Constitutional Guidelines - Right to Wholesome Environment - Evolution and Application - Relevant Provisions: Art. 14, 19 (1) (g), 21, 48-A, 51-A(g) - Environment Protection through Public Interest Litigation - Important doctrines - Doctrine of Strict Liability - Doctrine of Absolute Liability - Public trust doctrine - Polluter pays principle - Precautionary principle - Doctrine of Sustainable development – Agenda 21.

UNIT – II: PREVENTION AND CONTROL OF WATER, AIR, NOISE AND LAND POLLUTION

The Water (Prevention and Control of Pollution) Act, 1974 - Water Pollution: Definition - Central and State Pollution Control Boards: Constitution, Powers and Functions - Water Pollution Control Areas - Sample of effluents: Procedure - Restraint Order - Consent requirement: Procedure, Grant/Refusal, Withdrawal - Citizen Suit Provision

Air (Prevention and Control of Pollution) Act, 1981 - Air Pollution: Definition - Central and State Pollution Control Boards: Constitution, Powers and Functions - Air Pollution Control Areas -. Consent Requirement: Procedure, Grant/Refusal, Withdrawal - Sample of Effluents: Procedure - Restraint Order - Citizen Suit Provision -Environmental Impact Assessment

Noise Pollution Control Order, 2000 & 2002 and Land Pollution

BioMedical Waste Regulation - Plastic Waste (Management and Handling) Rules 2011 - E-Waste (Management) Rules, 2016.

UNIT – III: RESOURCE CONSERVATION & PROTECTION OF FORESTS AND WILD LIFE

Resource Conservation - Chennai Metropolitan Area Groundwater Authority (Regulation) Act 1987 - Rain Water Harvesting - Tamil Nadu Protection of Tanks and Eviction of Encroachment Act, 2007 - Role of Local Bodies.

Forest Act, 1927 - Kinds of forest - Private, Reserved, Protected and Village Forests - Protection of Specified Plants - The Forest (Conservation) Act, 1980 - Biological Diversity Act,2002 - Cartagena Biosafety Protocol- Forest Conservation Vis-a Vis Tribals' Rights

The Wild Life (Protection) Act, 1972 - Authorities to be Appointed and Constituted under the Act - Hunting of Wild Animals -Prevention of Cruelty to Animals Act, 1960 - Protected Area - Trade or Commerce in Wild Animals - Animal Articles and Trophies - Its Prohibition

UNIT – IV: INTERNATIONAL ENVIRONMENT LAWS

Introduction to International Environmental Laws - Human Rights Perspective - Stockholm Declaration: Brief overview - Rio-Declaration: Brief Overview - United Nations Environment Programme- Nairobi Declaration, 1982 - Brundtland Report, 1987 - UNEP - National Green Tribunal - Constitution - Functions and Powers

UNIT – V: CURRENT TRENDS

Global Climate Change and Energy Policy - United Nations Environmental Programme (UNEP) - The United Nations' Framework Convention on Climate Change (UNFCC) - Kyoto Protocol - Human Rights and the Environment.

Statutory Materials

1. The Water (Prevention and Control of Pollution) Act, 1974
2. The Air (Prevention and Control of Pollution) Act, 1981
3. The Indian Forest Act, 1927 4. The Forest (Conservation) Act, 1980
4. The Wild Life Protection Act, 1972 6. The Environment (Protection) Act, 1986
5. The Public Liability Insurance Act, 1991
6. The National Environment Tribunal Act, 1995
7. The National Environment Appellate Authority Act, 1997
8. Biological Diversity Act,2002
9. Noise Pollution Control Order, 2000 & 2002
10. E-Waste (Management) Rules, 2016.

Books Prescribed:

1. S. Shanthakumar: Environmental Law-An Introduction: Lexis Nexis: 2nd Edition(2008)
2. P.Leelakrishnan: Environmental Law in India: Lexis Nexis: 5th Edition(2018)
3. Dr. S.C. Shastri: Environmental Law: Eastern Book Company: 6th Edition(2018)

Books for Reference:

1. Justice T.S. Doabia: Environmental and Pollution Laws in India(Vol 1&2): Lexis Nexis: 3rd Edition(2017)

2. Shyam Divan & Armin Rosencranz: Environmental Law and Policy in India: Oxford University Press: 2nd Edition(2002)
3. P.Leelakrishnan: Environmental Law case book: Lexis Nexis: 2nd Edition(2010)

Fourth Year - Seventh Semester	*Subject Code: U18CCCL402*	*Subject Credits: 03*

CLINICAL COURSE: II

PROFESSIONAL ETHICS, ACCOUNTANCY FOR LAWYERS &BAR BENCH RELATIONS

Objective: Every profession has rules of ethics to which its members are bound and the one who violates them will be imposed with liability in various forms. Likewise, a lawyer who does not follow ethical and other rules of professional conduct can be censured and can also be suspended from law practice or even disbarred. This paper will introduce students to the rules of professional ethics which applies to lawyers in India. This paper is designed with a main purpose of making law students [on the verge of completing their law course] to get acquainted with, analyze and critically examine such rules of professional ethics.

COURSE OUTLINE

UNIT-I: DEVELOPMENT OF LEGAL PROFESSION IN INDIA

The Advocates Act, 1961 - Right to Practice - a right or privilege? - Constitutional guarantee under Article 19(1) (g) and its scope - Enrolment and Practice - Regulation governing enrolment and practice - Practice of Law - Solicitors firm - Elements of Advocacy

UNIT-II: SEVEN LAMPS OF ADVOCACY

Advocates duties towards public, clients, court, and other advocates and legal aid - Bar Council Code of Ethics.

UNIT-III: DISCIPLINARY PROCEEDINGS

Professional misconduct - Disqualifications - Functions of Bar Council of India/State Bar Councils in dealing with the disciplinary proceedings - Disciplinary Committees - Powers and functions - Disqualification and removal from rolls.

UNIT-IV: ACCOUNTANCY FOR LAWYERS

Nature and functions of accounting - Important branches of accounting - Accounting and Law - Bar Bench Relations.

ALLOCATION OF MARKS

The written examination of this paper will be for 50 marks and the remaining 50 marks for record and viva voce

MARKS ALLOCATION

External Examination	**50 Marks**
Project work	**30 Marks**
Viva-Voce	**20 Marks**
TOTAL	**100 Marks**

Record (30 marks): Each student shall write 50 selected opinions of the Disciplinary Committees of Bar Councils and 10 major judgments of the Supreme Court of India in the Record. The Record shall be evaluated for 30marks by the teacher concerned.

Viva- voce (20marks): There shall be viva-voce examination on the above components

Note: All the three components of the paper (written examination, submission of record and attendance in viva) shall be compulsory.

Statutory Material

1. Advocates Act, 1961

Books Prescribed:

1. J.P.S.Sirohi: Professional Ethics, Accountancy for Lawyers and Bench Bar Relations, Allahabadh Law Agency, (2015)
2. Dr.S.R.Myneni: Professional Ethics, Accountancy for Lawyers and Bench Bar Relations, Asia Law House, First Edition, (2018)
3. Kailash Rai: Professional Ethics, Accountancy for Lawyers and Bench Bar Relation, Allahabad Law agency, First Edition, (2015)

Books for Reference:

2. Ram Chandra Jha, (Advocate), Girish D Bhatt, B S Chauhan, and India - Supreme Court; Bar Council of India Trust: Selected Judgments on Professional Ethics, Bar Council of India Trust, 2002.
3. G.B.Reddy: Practical Advocacy of Law, Gogia Law Agency, Hyderabad, 2nd Edition, 2005.
4. S.P.Gupta: Professional Ethics, Accountancy for Lawyers and Bench bar Relations, Asia Law House, and Hyderabad.

Fourth Year - Eighth Semester	*Subject Code: U18HCCL403*	*Subject Credits: 04*

HONOURS COURSE: III

LAND LAWS INCLUDING TENURE AND TENANCY SYSTEM

Objective: This paper focuses on land reforms in Tamil Nadu. Besides, it deals with land acquisition procedures and the rent laws which inculcate the students to be familiar with Central & State Land Laws.

UNIT – I: CONCEPTUAL AND HISTORICAL BACKGROUND ON LAND REFORMS AND LAND LAWS

Origin of land rights - Different kind of land rights - Ownership of land - Constitutional Perspective – Article 31- A, Article 31-B, Article 31-C, Read With Ninth Schedule, Article 300 A - Doctrine of Eminent Domain - Doctrine of Escheat - Early Revenue Administration in Tamil Nadu – Grants, Zamindari, Ryotwari and Inamdhari Systems - The Zamindari System: Rights and Obligations of Zamindars – Abolition of Zamindari System - Inamdhari System: Major and Minor Inams – Abolition of Inams - Permanent settlement – Ryotwari System: Rights and liabilities of Ryotwari Pattadar – Tamil Nadu Estates (Abolition and Conversion into Ryotwari) Act, 1948 - Laws relating to abolition of Intermediaries.

UNIT – II: LANDS ACQUISITION

Laws relating to acquisition of property and Governmental control and use of land Land Acquisition Act, 1894 (repealed) – Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 (LARR Act, 2013) – Need for new land acquisition law – Definitions: affected family land, landowner, holding of land etc., Safeguards against indiscriminate land acquisition – Compensation, Rehabilitation and Resettlement – LARR Authority – Apportionment of compensation – Payment of Compensation – Temporary Occupation of Land – Amendment Ordinance 2014 – Time to time amendments.

UNIT – III: ENACTMENTS ON CULTIVATING TENANTS

Tamil Nadu Cultivating Tenants Protection Act, 1955: Definitions – landlord not entitled to evict the tenant – Right to restoration of Possession-Special provision for member of armed forces-Bar of Jurisdiction of Civil Courts Revision by High Courts – Tamil Nadu Cultivating Tenants Arrears of Rent Relief Act, 1972, 1980 - Tamil Nadu Cultivating Tenants Protection from Eviction Act, 1983, 1989

Tamil Nadu Cultivating Tenants (Payment of Fair Rent) Act, 1956: Definitions – Interpretations - Right and liabilities of cultivating tenants and land owner - Fair rent - Alteration or Revision of Fair Rent – Rent Court and Rent Tribunals – Exception - Powers of High Court

The Tamil Nadu Cultivating Tenants Special Provisions Act, 1968: Payment of Installment – Land Lord may evict a Cultivating Tenant for default in payment of installments

Tamil Nadu Agricultural Land Record of Tenancy Right Act, 1969: Definition - Preparation of Records of Tenancy Rights - Record Officer - Advisory Committee - Modification of entries in the draft and approved record of tenancy rights - Appeals – Revision – Penalty for failure to furnish information cognizance of offence

Tamil Nadu Occupants of Kudiyiruppu and Conferment of Ownership Act, 1971: Definitions – Occupant - Conferment of Ownership - Alternative Site - Prohibition of alienation-authorised Officer-compensation – Offences by companies

UNIT- IV: LAWS ON LAND CEILING

Land Ceiling: Urban Land Ceiling and Agrarian Land Ceiling - Tamil Nadu Land Reforms Fixation of Ceiling o

n Land Act, 1961 and Amended Act 1971: Preliminary – Definitions: Ceiling area, Family, Stridhana Property, Standard Acre, etc., Fixation of Ceiling on land holdings - Land BoardIndustrial undertakings – Publication of statement - Land Tribunal-Authorised officer - Determination of Compensation –Exemptions - Special Appellate Tribunal - Courts - Penal Provisions.

UNIT V: TAMIL NADU BUILDINGS AND TENANCY LAW

Tamil Nadu Buildings (Lease and Rent Control) Act, 1960: Introduction – Definitions – Fixation of Fair rent-Changes in Fair Rent-Agreed rent-Procedure for avoid default in

payment of rent-Grounds for eviction of tenant-Jurisdiction of the Rent Controller – Execution Proceedings by Legal representatives or against Legal representatives- Appeal.

Tamil Nadu Apartment Ownership Act, 1994: Definition- Ownership, Heritability and transferability of Apartment – Deeds of Apartment and its Registration-Societies or Association of Apartment Owners, its bye-laws and Functions

Statutory Materials

1. The Right to Fair Compensation and Transparency in land Acquisition, Rehabilitation & Resettlement Act, 2013. (Land Acquisition Act, 2013)
2. The Tamil Nadu Buildings (Lease & Rent Control) Act, 1960.
3. Urban Land (Ceiling &Regulation) Act, 1976.

Books Prescribed:

1. Judith Anne Mackenzie & Mary Phillips: Land Law; Oxford University Press, 14th Edition (2012).
2. V.G.Ramachandran: Law of Land Acquisition and Compensation; Law Publication in Komm. (1983)
3. Pro. A. Chandrasekaran: Land Laws of Tamil Nadu; C. Sitharaman & Co. Pvt Ltd, Edition (2013).
4. P.K.Agrawal: Land Reforms in India; M.D.Publication Pvt.Ltd, 1st Edition (1993).

Books for Reference:

1. Avtar Singh: Law of Carriage; Eastern Book Co., 4th Edition (2005).
2. K.P.Palaniappan: Law of Land Acquisition and Compensation, (1963)
3. Durga Das Basu: Indian Constitutional Law; Kamal Law House, 3rd Edition (2011).
4. Dr. N. Maheshwara Swamy: Land Laws under the Constitution of India,; Asia Law House, Hyderabad, 1st Edition 2006.
5. Hemant Goel: Land Laws; New Era Law Publication

Fourth Year - Eighth Semester	*Subject Code: U18PCCL419*	*Subject Credits: 04*

LABOUR LAW – II

Objective: This paper will provide extensive knowledge and guidance to the student about social security legislations in India and how far it has been implemented to attain welfare state which is described in the Directive Principles of State Policy.

COURSE OUTLINE

UNIT – I: THE PAYMENT OF WAGES ACT, 1936

Object, Scope and Application of the Act -Definition of Wage, Responsibility for Payment of Wages, Fixation of Wage Period, Time of Payment of Wage Deductions which may be made from Wages, Maximum Amount of Deduction.

The Minimum Wages Act, 1948: Concept of Minimum Wage, Fair Wage, Living Wage and Need Based Minimum Constitutional Validity of the Minimum Wages Act, 1948, Procedure for Fixation and Revision of Minimum Wages, Fixation of Minimum Rates of Wage by Time Rate or by Piece Rate, Procedure for Hearing and Deciding Claims

UNIT – II: THE EMPLOYEE'S COMPENSATION ACT, 1923

Definition of Dependant, Workman, Partial Disablement and Total Disablement - Employer's Liability for Compensation - Doctrine of Notional Extension, When Employer is not liable Employer's Liability when Contract or is engaged, Amount of Compensation, Distribution of Compensation - Procedure in Proceedings before Commissioner , Appeals Retirement Benefits. Employee's Provident fund and miscellaneous provisions Act, 1952 - Employees Pension Scheme, 1995 and Family Pension Scheme - Social Security for the unorganized Sector

Employees Provident Funds And Miscellaneous Provisions Act, 1952:Introduction : Application of the Act - Important Definitions - Schemes Under the Act - Employees Provident Fund Scheme - Page Employees' Pension Scheme - Employees' Deposit-Linked Insurance Scheme - Determination of Moneys Due from Employers - Transfer of Accounts - Protection against Attachment - Power to Exempt

UNIT – III: PAYMENT OF BONUS ACT, 1965

Object and Scope of the Act - Application of the Act, Act not to Apply to Certain Classes of Employees - Important Definitions - Calculation of Amount Payable as Bonus - Computation of gross profits - Deductions from gross profits - Calculation of direct tax payable by the employer - Computation of available surplus - Eligibility for Bonus and its Payment - Bonus Linked with Production or Productivity - Power of Exemption - Penalties - Offences by Companies

Payment of Gratuity Act, 1972: Introduction - Who is an Employee - Important Definitions - When, is Gratuity Payable - To Whom is Gratuity Payable - Exemptions - Rights and Obligations of Employees - Rights and Obligations of the Employer - Recovery of Gratuity - Protection of Gratuity –

Maternity Benefit Act, 1961 :Introduction - Definition - Employment of or work by women prohibited during certain periods - Right to payment of maternity benefits - Notice of claim for maternity benefit -Nursing -Registers - Penalty for contravention of Act by employer

UNIT – IV: CONTRACT LABOUR (REGULATION AND ABOLITION) ACT, 1970

Scope and Application -Act not to Apply to Certain Establishments - Important Definitions - The Advisory Boards - Registration of Establishments Employing Contract Labour - Effect of Non-registration - Prohibition of Employment of Contract Labour - Appointment of Licensing Officer and Licensing of Contractors - Welfare and Health of Contact Labour - Rules Framed Under the Act by the Central Government on the Question of Wages -Penalties and Procedure - Inspectors -Maintenance of Records and Registers

UNIT– V: RESOLUTION OF INDUSTRIAL DISPUTE

Industrial Dispute and Individual Dispute Arena of Interaction and Participants: Industry, Workman and Employer - Settlement of Industrial Dispute i) Works Committee ii) Conciliation Machinery iii) Court of Enquiry iv) Voluntary Arbitration - Adjudication: Labour Court, Tribunal and National Tribunal - Powers of the Appropriate Government under the Industrial Disputes Act, 1947 - Unfair Labour Practice

Statutory materials:

1. The payment of Wages Act 1936
2. The Minimum Wages Act 1948
3. The Employees Compensation Act 1923
4. Payment of Bonus Act 1965
5. Employees Provident Funds and Miscellaneous Provisions Act 1952
6. Payment of Gratuity Act 1972
7. Maternity Benefit Act 1961
8. Contract Labour (Regulation and Abolition) Act 1970

Books Prescribed:

1. P.L. Malik: Industrial Law; Eastern Book Company; 25th edition (2017)
2. N.D. Kapoor: Hand book of Industrial Law ;Sultan Chand and sons (2011)
3. H.L. Kumar; Compliances under Labor Laws-A user's guide to adhere with provisions under various employment related Acts; Universal law publishing ;5th edition (2017)

Books for Reference:

1. M.S. Sidhiqui; Labour Law and Industrial relations cases and materials; Indian law Institute, 3rd edition (2007)
2. S. M. Chaturvedi ; Labour and Indistrial Laws ;Jain Book Agency; 12th edition (2001)
3. P.L. Malik; Industrial Law; Eastern Book Company, latest edition (2017)

Fourth Year - Eighth Semester	*Subject Code: U18PCCL420*	*Subject Credits: 04*

LAW OF INSURANCE

Objective : The object of this course is to make students understand the concept of Insurance as it is a wide spread business and the syllabus covers the various aspects of IRDA, Life Insurance, premium, risk, Marine Insurance, Fire Insurance etc.,

COURSE OUTLINE

UNIT – I: NATURE OF INSURANCE

Contract of Insurance- definition, nature and meaning, General principles of Insurance, Insurable Interest and Premium- definition, Mode of payment, forfeiture, return of premium, classifications of contract of insurance, duration of insurable interest and days of grace. Insurance Business –Control by State Agencies, Life Insurance Corporation Act – 1956, Functions and Powers of Corporation, Control Envisaged by the Central Agency, General Insurance Corporation, Powers and Functions.

UNIT – II: RISK

Meaning, scope, elements, alteration of risk, Insurance Policy –classification, commencement, duration of the policy, terms and conditions, effect of breach of conditions ,lapse and revival of the policy, Assignment and Nomination of Policy, Double Insurance, Re-insurance, Assurance, Insurance Regulatory and development Authority.

UNIT – III: LIFE INSURANCE

Definition, nature and scope, kinds of Life Insurance, non-disclosure and misrepresentation, Doctrine of Utmost good faith, circumstances affecting the risk, Amount recoverable under life insurance policy, Automatic extension clause, persons entitled to payment, Assignment and Nomination, settlement of claim and payment of money.

UNIT – IV: FIRE INSURANCE AND MARINE INSURANCE

Definition, nature and scope of fire insurance, Amount recoverable under fire insurance, doctrine of reinstatement, doctrine of subrogation, Doctrine of contribution. Nature and scope of Marine insurance, classification of Marine Policies, voyage- Deviation Perils of the

sea, proximate cause, measure of Indemnity, warranties in marine insurance, loss and kinds of losses.

UNIT – V: MOTOR AND ACCIDENT INSURANCE – Scope and nature, legal parameters, tribunals, Other types of Insurance- burglary and theft Insurance, fidelity Insurance, Public Liability Insurance, Plate-Glass Insurance, Goods in transit Insurance, Insurance covering the risk of storm and tempest.

Books Prescribed:

1. K. S. N. Murthy, K.V. S. Sarma: Modern Law of Insurance In India; Lexis Nexis;1st edition (2013)
2. Gaurav Varshney: Insurance Laws; Lexis Nexis; 1st Edition (2017)
3. Avtar Singh: Law of Insurance; Eastern Book Company (2017)
4. Dr. C.L. Tyagi: Insurance Law and Practice; Atlantic Publication; 2nd Edition (2016)

Books for References:

1. M.N. Srinivasan, K. Kannan: Principles of Insurance Law; Lexis Nexis; Tenth edition (2017)
2. Neelam C. Gulati: Banking and Insurance: Principles & Practices; Excel Books (2011)
3. Taxmann: Insurance Laws Manual; Taxmann's Publication; 20th Edition (2019)

Fourth Year - Eighth Semester	*Subject Code: U18PCCL421*	*Subject Credits: 04*

LAW OF TAXATION

Objective: The objective of this course is to introduce to the students the concept of tax, various kinds of taxes, calculation of Income tax, exemption from taxation, deductions, ceiling limit etc. This course also aims to impart knowledge to the students regarding various taxing statutes and to provide detailed in-depth knowledge in the area of Direct and Indirect Taxation.

COURSE OUTLINE

UNIT – I: CONCEPT OFTAXATION

Definition of Tax - Distinction between Tax and Fee - Mutual relationship between Income Tax Act and Finance Act – Cannons of taxation - Kinds of taxes - Progressive, Proportion, Regressive and Digressive - Direct and Indirect taxes - Tax Avoidance - Tax Evasion - Double Taxation.

UNIT – II: CONSTITUTIONAL BASIS FOR TAXATION

Applicability of doctrine under the constitution to taxation laws – Article 265 – Union & State List entities – Fundamental Rights and taxing Statutes - Interpretation of tax laws.

UNIT – III: THE INDIAN INCOME TAX ACT, 1961

A. **Preliminaries-** Concepts; 'income', 'agricultural income', 'casual income', 'assessee' 'person'- Residential status – Previous year, Assessment year – General charging section and specific charging section – Income – Received – Arising – 'Accrual'- Scope and total income – Exemption from taxation

B. **Taxability** under 'specific heads':

   a) Income from 'salaries'
   b) Income from 'house property'
   c) Income from 'business or profession'
   d) Income from 'capital gains'
   e) Income from 'other sources'

C. **Clubbing of income:** Income of other persons in assessee's total income.

UNIT – IV: COMPUTATION OF TAXABLE INCOME

Procedure for assessment - Computation of total income and tax liability of an individual, H.U.F., and firm - Tax deduction at source - Advance payment of tax - Treatment of losses – set-off-carry forward of loss - Deductions allowed in certain cases – chapter VIA deductions - Assessment of special class of assesses

UNIT – V: GOODS AND SERVICE TAX

A. Overview of GST - Concepts – Limitations of VAT – Need for Tax Reforms - Justification for introduction of GST - Shortcomings and advantages at the Central Level and State Level on introduction of GST- Process of Introduction of GST - Constitutional Amendments.

B. Subsumed under GST - Taxes and Duties outside the purview of GST: Tax on items containing Alcohol – Tax on Petroleum products - Tax on Tobacco products - Taxation of Services

C. Registration Procedure

D. Meaning and Scope of Supply: Taxable Supply - Supply of Goods and Supply of Services - Course or Furtherance of Business - Special Transactions - Time of Supply

E. Assessment: Self-assessment - Provisional assessment –Security of Returns - Assessment of Non-filers of returns - Assessment of Unregistered persons –Audit and Assessment – Other features of Dual GST model.

F. Levy and Exemption of Tax: Chargeability – Collection at Source –E-Commerce - Composition Levy - Tax under Central GST and State GST - Zero-rating of Exports – GST on Imports –Returns under GST –Taxation of Services–Remission of Tax - Adjustment and Refund of GST.

Books Prescribed:

1. B.K.Goyal: Taxation Laws; Singhal Law Publications (2018)
2. Dr. Vinod K. Singhania: Direct Taxes Ready Reckoner; Taxmann Publications Pvt. Ltd.; 41st Edition (2019)
3. Dr. H.C. Mehrotra and Prof. V.P. Agarwal: Goods and Services Tax GST (4th Edition)
4. Dr.Sanjiv Agarwal: Goods and Services Tax - Laws, Concepts & Impact Analysis; Bloomsbury India; First edition (2017)
5. Prof. Jayakumar Sithanandam: Textbook on Goods and Services Tax Laws; White Falcon Publishing; 1 edition (2019)

Books for References:

1. C. A. Atul Kumar Gupta: Goods and Services Tax: Law, Practice & Procedures; OakBridge Publishing (2019)
2. Dr. Girish Ahuja and Dr. Ravi Gupta: Direct Taxes Law & Practice; Wolters Kluwer India Pvt. Ltd.; Tenth edition (2018)
3. U.K. Bhargava: Income Tax Act-as Amended by Taxation Laws (64th Edition 2019)

Fourth Year - Eighth Semester	*Subject Code: U18CCCL403*	*Subject Credits: 03*

CLINICAL COURSE: III

ALTERNATE DISPUTE RESOLUTION

Objective: This paper is imparted to create practical knowledge and awareness in the Arbitration, Conciliation and Mediation proceedings in India and International Arena.

COURSE OUTLINE

UNIT – I: INTRODUCTION

Concept and Essential features - Need of Arbitration in International and Indian Law - Arbitration Law before 1996 - Arbitration Law after 1996 - Arbitration Agreement - Appointment of Arbitrator - Conduct of Arbitration Proceedings - Power of Courts to interfere in Arbitration Proceedings - Place of Arbitration - Law applicable to the Arbitration - Evolution of mediation/conciliation as a mode of settlement of disputes - distinction between arbitration, mediation, conciliation and negotiation – International Commercial Arbitration.

UNIT – II: MEDIATION AND CONCILIATION

Theory of mediation - Role of the mediator - Drafting Mediation and Conciliation clauses and agreements initiating mediation (court annexed and private) -The Mediation/Conciliation process Confidentiality - Mediation /Conciliation Mediation in India, institutions, and their role - Lok Adalats.

UNIT – III: INTERIM MEASURES

Jurisdictional Issues - Arbitral Award - Setting Aside the Arbitral Award - Enforcement of Arbitral Award - Online Dispute Resolution - International Dispute Resolution - Foreign Award - New York Convention -Geneva Convention - Enforcement of Foreign Award -Public Order.

MARKS ALLOCATION

External Examination	**50 Marks**
Project work on Arbitration / Mediation (Practical exercises in the preparation and conduct of arbitration &mediation)	**25 Marks**
Viva-Voce	**25 Marks**
TOTAL	**100 Marks**

Statutory Materials:

1. International Conventions
2. Arbitration and Conciliation Act, 1996

3. Arbitration and conciliation (Amendment) Act, 2015

Books Prescribed:

1. Avtar Singh: The Law of Arbitration and Conciliation; Eastern Book Company, 11th Edition (2018)
2. Mallika Taly: Arbitration Law- A Primer; Eastern Book Company, 1st Edition(2011)
3. K V Satyanarayana: Law of Arbitration and Conciliation in India; Asia Law House, 1st Edition (2017)
4. Dr. N.V. Paranjape: Law Relating to Arbitration and Conciliation in India; Central Law Agency, 7th Edition (2016)
5. Dr. S.C.Tripathi: Arbitration and Conciliation Act, 1996 with Alternate Means of Settlement of Disputes; Central Law Publication, 8th Edition (2017)

Books for References:

1. J.G. Merrills: International Dispute Settlement; Cambridge University Press, 5th Edition (2005)
2. P.C.Markanda: Arbitration Step By Step; Lexis Nexis, 2nd Edition (2017)
3. Nakul Dewa: Enforcing Arbitral Awards in India; Lexis Nexis, 1st Edition (2017)
4. Justice S.B.Malik: Commentary on the Arbitration and Conciliation Act; Universal Law Publications, 8th Edition (2018)
5. Justice R.S.Bachawat: The Law of Arbitration & Conciliation; Lexis Nexis, 6th Edition (2018)
6. Dr. Ashwinie Kumar Bansal: Arbitration Awards - Law on Setting Aside and Execution of Arbitration Awards, Agreements and Appoimtment of Arbitrators; Universal Law Publications, 3rd Edition (2014)

Fourth Year - Eighth Semester	*Subject Code: U18PTCL404*	*Subject Credits: 02*

INTERNSHIP AND PRACTICAL TRAINING - IV

Objective: The internship programmes are designed to acquaint the student with the actual practice of law by working under the supervision of legal luminaries. The student gains experience of applying theoretical knowledge from prior classroom training, when exposed to practical environment.

COURSE OUTLINE

During the summer vacation the students should compulsorily undergo Internship for a continuous period of 4 weeks and submit an internship report along with a internship certificate. This will be evaluated by the Internship Faculty Guide.

The student may choose to intern under any one the following category:

- Trial Advocate
- Appellate Advocate
- Law Firms
- Non-Governmental Organization
- Police Stations
- Banks
- Non Banking Financial Institutions
- Companies
- Registration Department
- Judiciary
- Legal Regulatory Authorities
- Legislatures
- Market Institutions
- Local Self-Government
- Other Legal Functionaries
- Dispute resolution Bodies
- Legal Services Authority

On completion of successful internship training every student will be awarded 2 credits

Fifth Year - Ninth Semester	*Subject Code: U18HCCL504*	*Subject Credits: 04*

HONOURS COURSE: IV

MINORITIES LAW

Objective: To make the students aware of the importance of rights of minorities, to familiarize them with the constitutional provisions related to minorities, to acquaint them with the rights of minority educational institutions and exposition of the subject matter in detail with the help of legislative, judicial and other materials.

COURSE OUTLINE

UNIT – I: INTRODUCTION

Minorities in Indian Society: Concept of Minorities Linguistic Minorities Religious Minorities Secularism

UNIT – II: INTERNATIONAL NORMS FOR PROTECTION OF MINORITIES

Human Rights of Minorities Minority Rights under the International Covenant on Civil and Political Rights Non-discrimination provisions of the United Nations Charter 1945 Declaration on Rights of Minorities

UNIT – III: MINORITY RIGHTS

Right to religion Linguistic rights Right to culture and traditions National Commission for Minority

UNIT – IV: RIGHTS OF MINORITY IN EDUCATIONAL INSTITUTIONS

Educational rights of Minorities Right to administer Minority educational institution Aided and Unaided Minority Educational Institutions and Governmental Controls National Commission for Minority Educational Institutions

UNIT – V: SOCIETAL STATUS OF MINORITIES

Victimistion- Muslim victims over past ten decades, Caste based violence over minorities, linguistic minorities, Minorities in rural areas over the country.

Books Prescribed:

1. M.P. Jain: Constitutional Law of India; Lexis Nexis, 8th Edn. (2018)
2. D.D. Basu: Commentary on the constitution of India; Lexis Nexis, 7th Edn. (2016)
3. A. P. Datar: Commentary on the constitution of India; Lexis Nexis, 1st Edn. (2007)
4. H.M. Seervai: Constitutional Law of India; Universal Law Publication, 1st Edn. (2015)
5. M. P. Singh: Constitution of India; Eastern Book Company, (2016)

Books for Reference:

1. Stephan Mary: Ethnicity, Nationalism & Minority Rights; Cambridge University Press, (2004)
2. Thornberry, Patrick: International Law and the Rightd of the Minorities; Calendor Press, (1993)
3. Sheth D. L. & Gurpreet Mahajan: Internation law and the Nation State; Oxford University Press, 1st Edn. (2000)

Fifth Year - Ninth Semester	*Subject Code: U18HCCL505*	*Subject Credits: 04*

HONOURS COURSE: V

GENDER JUSTICE AND FEMINIST JURISPRUDENCE

Objective: The uneven trajectory of social change may help to inform feminist legal debates and the teaching of feminist jurisprudence among those contemplating the inclusion of such material in their law curriculum. This paper will be an eye-opener for the students in this area of Jurisprudence.

COURSE OUTLINE

UNIT – I: WOMEN EMPOWERMENT AS A SOCIAL CHANGE

- Role of law in empowering women –Feminism and Feminist Jurisprudence – Emergence of feminism and feminist jurisprudence -Different theories of feminism and feminist jurisprudence- Distinction between "sex" (nature) and "gender" (culture)-Concept of gender justice - Gender Discrimination - Gender Equality

UNIT - II: GENDER JUSTICE UNDER THE CONSTITUTION OF INDIA

Social justice and gender justice - interrelationship - Article 14, 15 and 16, Article 21& 23, Directive Principles of State Policy and fundamental duties- Reservation under 73rd &74th Constitutional amendment - Judicial approaches to equality - Formal and Substantive equality – Sameness, Correctionist and Protectionist approaches of Judiciary – Role of Human Rights Commissions, Women's Commissions and judiciary in ensuring Gender Justice.

UNIT- III: PERSONAL LAWS AND GENDER JUSTICE

Marriage and Divorce, Maintenance – guardianship-adoption Inheritance Right, Uniform Personal Code, Concept of Matrimonial property - emancipation of Women - Empowerment of Women and Local Self Government.

UNIT- IV: GENDER JUSTICE AND CRIMINAL LAW

Protection of women's interests under IPC - relevant offences Dowry death -Rape - Bigamy - Adultery - Cruelty to married women - Criminal Law Amendment Act 2013 -Special legislations for Women - Prisons Act 1894, Factories Act 1948, Mines Act 1952, Immoral Traffic (Prevention Act) 1956, Dowry Prohibition Act 1961, Maternity Benefit Act 1961, Medical Termination of Pregnancy Act 1971, Equal Remuneration Act 1976, indecent Representation of Women (Prohibition) Act 1986, Commission of Sati (Prevention) Act 1987, Pre-conception and Prenatal Diagnostics Techniques (Prohibition of sex Selection) Act 1994, Prevention of Women from Domestic Violence Act 2005, Sexual Harassment of women at Workplace (Prevention, Prohibition and Redressal) Act 2013

UNIT - V: GENDER JUSTICE UNDER INTERNATIONAL CONVENTIONS AND DECLARATIONS

Judicial Attitude towards Gender Justice

Books Prescribed:

1. Prof. Dr. G. Rajasekharan Nair: Gender Justice under Criminal Justice System; Eastern Law House; 2nd Edn. (2011)
2. G.B. Reddy: Women and the Law; Gogia Law Agency; 2nd Edn. (2015)
3. S.P. Sathe: Towards Gender Justice; Journal of ILI No. 1-37 & No 12 (Apr – June) 1995

Books for Reference:

1. Dr. Sheetal Konwal: Gender Justice and Feminist Jurisprudence; Amar Law Publications, 2nd Edn. (2015)
2. Dr. Puja Khetraphal: Gender Justice and Feminist Jurisprudence; Puja Law House, 1st Edn. (2019)
3. Dr. Ishita Chatterjee: Gender Justice and Feminist Jurisprudence; Central Law Publications, 1st Edn. (2019)

Fifth Year - Ninth Semester	*Subject Code: U18HCCL506*	*Subject Credits: 04*

HONOURS COURSE: VI

MEDICAL AND HEALTH LAW

Objective: This paper seeks to explore various areas of the law that deal with creating and maintaining and regulating 'health.' The paper aims to give comprehensive and practical approach to the students to make them aware of the developments in medical sciences and to enable them to be equipped to face the recent challenges raised by the modern issues in contemporary era.

COURSE OUTLINE

UNIT – I: INTRODUCTION

Concept of health, public health - Law and health - development of interrelationship - Health Law and Bio Ethics

UNIT – II: LEGAL ASPECTS OF HEALTH CARE

Role of WHO - Constitutional law- regulation of health - Important legislations dealing with law and medicine

UNIT – III: MEDICAL PROFESSIONAL, PATIENT AND THE LAW

Nature and concept of physician - patient relationship - Informed consent and confidentiality - Concept of duty of care - standard of care - Code of ethics in medical profession - Role of judiciary in regulating the medical profession.

UNIT – IV: BIOETHICS - ISSUES AND CHALLENGES

Euthanasia and physician assisted suicide - Reproductive technology - Surrogate Motherhood - Medical termination of pregnancy - Prenatal diagnostic techniques.

UNIT – V: LAW RELATING TO MENTAL HEALTH

Stress management - Mental rehabilitation centers and law -Pschyco analysis and law - its impact over society - Mental Asylums and its governance under the law - International conventions and guidelines regarding psycho-legal law.

Books Prescribed:

1. Satish Tiwar, Mahesh Badwa, Mukul Tiwari & Alka kuthe: Text Book on Medico Legal Issues; Jaypee Brothers Medical Publishers, 1st Edition (2012)
2. Dr. Jaisigh P.Modi: A text book of Medical Jurisprudence and Toxicology; Lexis Nexis, 26th Edition (2018)
3. S.V. Jayarao: Current issues in Criminal Justice and Medical Law; Eastern Law House, 1st Edition (1999)

Books for References:

1. R.K. Bag: Medical Negligence and Compensation, Eastern Law House, (2015)
2. S.K. Singhal: Forensic Medicine and Jurisprudence; NBD, 5th Edition (2015)
3. Jonathan Herring: Medical Law and Ethics; OUP UK, (2014)

Fifth Year - Ninth Semester	*Subject Code: U18PCCL522*	*Subject Credits: 04*

CIVIL PROCEDURE CODE

Objective: The objective of this course is to introduce to the students the procedure to be adopted in filing a civil Suit in a civil court. The Code provides for a fair procedure for redressal of disputes by providing litigants a fair trial. This Course deals in detail the Sections and Orders including the important amendments brought in the Code.

COURSE OUTLINE

UNIT – I: INTRODUCTION

Definitions: Decree, Judgment, Order - Foreign Court - ForeignJudgment - Mesne, Profits – Affidavit – Suit – Plaint - Written Statement –Important Concepts: Res Sub-Judice- Resjudicata – Restitution – Caveat - Inherent powers of courts.

UNIT – II: INITIAL STEPS IN A SUIT

Jurisdiction and place of suing - Institution of suit - Pleadings: General rules - Amendment of pleadings - Plaint and written statement - Discovery - Inspection and production of documents - Appearance and non-appearance of parties - First hearing – Summons - Suits in particular- Suits by or against Government - Suits by Indigent persons -Interpleader Suit - Summary Procedure - Suits relating to public nuisance

UNIT – III: JUDGMENT AND DECREE

Judgment: Definition – Essentials – Pronouncement - Contents and Alteration - Decree: Definition – Essentials -Types, Drawing up of a decree - Contents, and Decree in particular cases - Interest - Costs- Setting Aside Ex Parte decree – Grounds - Temporary Injunctions – Meaning, Grounds and Principles of Injunctions, Inherent Power to grant Injunction, Interlocutory orders - Receiver – Meaning, Powers, Duties and Liabilities of Receivers - Death of Plaintiff or Defendant, Consequences, Suit against dead person, Marriage of a Party, Insolvency of Plaintiff or Defendant - Reference to High Court - Reference, Review and Revision - Appeals

UNIT – IV: EXECUTION

Courts by which decree may be executed - Payment under decree - Application for Execution - Mode of Execution - Stay of Execution - Questions to be determined by executing court – Arrest and detention - Attachment - Sale – Commissions.

UNIT – V: LIMITATION ACT

Definition - Limitation of Suits - Appeals - Computation of Period of Limitation - Acquisition of Ownership by Possession.

Statutory Materials

1. Code of Civil Procedure – 1908
2. Limitation Act – 1963

Books Prescribed:

1. C. K. Takwani: Civil Procedure with Limitation Act 1963; Eastern Book Company; 8th Edition (2018)
2. Dr. Ashok K. Jain: Code of Civil Procedure; ASCENT Publications; 1st edition (2019)
3. Ray Sukumar: The Code of Civil Procedure; Universal Law Publishing, 2008

Books for References:

1. M. P. Jain Dr. Medha Kolhatkar: The Code of Civil Procedure (Vols.1); Lexis Nexis Butterworth India; 2019 edition (2019)
2. Sarkar, Justice M. L. Singhal: Sarkar Code of Civil Procedure; Lexis Nexis; Twelfth edition (2016)
3. Sir Dinshaw Fardunji Mulla: Mulla's the Code of Civil Procedure; Lexis Nexis; Nineteenth edition (2017)

Fifth Year - Ninth Semester	*Subject Code: U18CCCL504*	*Subject Credits: 03*

CLINICAL COURSE-IV

DRAFTING, PLEADING AND CONVEYANCING

Objective: This Paper 'Drafting, Appearances and Pleadings' has been included in the syllabus with a view to equip the students with legal drafting abilities, legal frame work pertaining to the appearances before various tribunals/ quasi judicial bodies and the basic understanding of the principles of pleadings. For this purpose, the course contents of this study material have been so designed as to provide practical orientation and develop necessary acumenship in drafting legal documents

COURSE OUTLINE

Drafting: General principles of Drafting and relevant substantive Rules, drafting of Notices

Pleadings:

a. **Civil**: Plaint, Written Statement, Interlocutory Application, Original Petition, Affidavit, Execution Petition, Memorandum of Appeal and Revision, Petition under Articles 226 and 32 of the Constitution of India.

b. **Criminal**: Complaint, Criminal Miscellaneous Petition, Bail Application, Memorandum of Appeal and Revision.

Conveyancing:

Sale Deed, Mortgage Deeds, Lease Deed, Gift Deed, Promissory Note,

Power of Attorney – General and Special power of Attorney, Will.

Mark allocation:

Record work – 1 15 Exercises in Drafting of Pleadings	**15 Marks**
Record work – 2 15 Exercises in Conveyancing	**15 Marks**
Viva-Voce	**20 Marks**
External Examination	**50 Marks**
Total	**100 Marks**

Fifth Year - Tenth Semester	*Subject Code: U18HCCL507*	*Subject Credits: 04*

HONOURS COURSE: VII

INTERNATIONAL REFUGEE LAW

Objective: This paper provides students a basic knowledge and understanding of the substantive and procedural aspects of International Refugee Law and to improve them the juridical way of thinking, enlarges point of view and common understanding of international legal documents.

COURSE OUTLINE

UNIT-I: INTRODUCTION

The Global Population Movements in Historical Retrospect-The Origin and Development of International Refugee Principles & International Refugee Law - The Evolution of Refugee Status in International Law - The Legal and Institutional Framework for Refugee Protection under the 1951 UN Convention Relating to the Status of Refugees (UNCSR) and its Expansion via 1967 Protocol (UNCSR Protocol) - The Main Features of 1951 UN Convention and the Statute of the UNHCR - The Concept of Migrant, Immigrant - Theories of Migration and Emergence of Forced Displacement and Forced Migration - Inter-Relationship between National and International Protection and Summation.

UNIT-II: SOURCES OF INTERNATIONAL REFUGEE PROTECTION REGIME

The Global Standards of Human Rights-Main Sources of International Refugee Law, UN Charter - IRO,UDHR, IOM, International Bill of Rights - Statute and Role of the UNHCR and ICRC, UNDTA, International Refugee Law and its Relationship with International Human Rights Law (IHRL), International Humanitarian Law (IHL) and Other Disciplines and Summation.

UNIT-III: THE RIGHTS OF REFUGEES AND THE INSTITUTION OF ASYLUM, NON REFOULEMENT, GENDER AND THEIR DIMENSIONS IN INTERNATIONAL LAW OF REFUGEE PROTECTION

Principles and Concepts of Refugee Protection-Protection Gaps-The Rights of Refugees under International Refugee Law - Definition of Asylum in the Context of International Refugee Law - Non-refoulement - Non-discrimination - Gender and Securitization - The Principle of Family Unity and the Right to Family Reunification - Defending Refugee Rights in Administrative and Judicial Institutions - Durable Solutions and International Cooperation and Summation.

UNIT-IV: PROTECTION OF INTERNALLY DISPLACED PERSONS (IDPS), STATELESSNESS ANDTEMPORARY AND OTHER FORMS OF REFUGEE PROTECTION

Internally Displaced Persons (IDPs)- and UN 1998 Guidelines on IDPs - Kampala Convention on IDPs - Rights of Stateless Persons (SLPs) and Problems of Statelessness - The Concept of Temporary Protection - Other Alternatives - Recent Trends in International Refugee Legislation, Litigation and Policy and Summation.

UNIT-V: CONTEMPORARY ISSUES IN INTERNATIONAL REFUGEE LAW AND IT'S FUTURE

International Refugee Law and Strategies Towards Interpretative Harmony, Individual Risk-Armed Conflict and the Standard of Roof in Complementary Protection Claims - Running Scared Since 9/11: Refugees - UNHCR and the Purposive Approach to Treaty Interpretation - Economic Harm as a Basis for Refugee Status and the Application of Human Rights Law to the Interpretation of Economic Persecution, The fragmented Nature of the International Refugee Regime and its Consequences: a Comparative Analysis of the Applications of the 1951 Convention - Refugee Issues: Climate Refugees: New Class of Refugees - Women and Children Refugees - Non-Refoulement: A Peremptory Norm of International Law, Loss and Denial of Refugee Status.

Books Prescribed:

1) Helene Lambert; International refugee law; Ashgate publishing; 1st Edn. 2010
2) Kate Jastram, Inter-parliamentary Union, Marilyn Achiron, Office of the United Nations High Commissioner for Refugees; Refugee protection: a guide to international refugee law; Inter-Parliamentary Union, 2001
3) B S Chimni; International Refugee Law: A Reader; SAGE Publications, 2000
4) Erika Feller, Volker Turk and Frances Nicholson; Refugee Protection in international law; UNHCR's Global Consultations on International protection; Cambridge University Press; 1st published 2003

Books for Reference:

1. M. Rafiqul Islam, Jahid Hossain Bhuiyan; An Introduction to International Refugee Law; Martinus Nijhoff Publishers, 2013
2. Micheller Foster & Helene Lambert; International Refugee law and the Protetcion of Stateless Persons; Oxford University Press; 1st Edn. (2009)
3. James C. Simeon; Critical issues in International Refugee Law; Cambridge University Press; 1st Edn. (2010)
4. Karen Musalo, Jennifer Moore, Richard A. Boswell; Refugee Law and Policy: A Comparative International Approach, 2005 Supplement; Carolina Academic Press, 2nd Edn.(2005)

Reference Cases:

1. Tahir Hussain Khan v Canada, November 18, 1994 [Committee Against Torture]
2. Chahal v UK [extracts European Court of Human Rights]

3. National Legal Services Authority v. Union of India and others, Writ Petition (Civil) No. 400 of 2012, India: Supreme Court, 15 April 2014,
4. Suresh Kumar Koushal and another v. NAZ Foundation and others, Civil Appeal No.10972 of 2013, India: Supreme Court, 11 December 2013,
5. Servai v. State of Tamil Nadu, Criminal Appeal No. 958 of 2011, India: Supreme Court, 19 April 2011
6. Salibian v Minister of Employment and Immigration [1990]
7. Peoples‟ Union For Civil Liberties [PUCL] v. Union Of India and Another, AIR 1997 SC 568
8. Prem Shankar Shukla v. Delhi Administration, 1980 SCC 526
9. Citizens for Democracy v. State of Assam, 1995 SCC 743
10. D.K Basu v. State Of West Bengal, AIR 1997 SC 610

Fifth Year - Tenth Semester	*Subject Code: U18HCCL508*	*Subject Credits: 04*

HONOURS COURSE: VIII

CYBER LAW

Objective: This paper explains about the most needed legislation of the hour and discusses about the cyber space issues and remedial measures.

COURSE OUTLINE

UNIT – I: INTRODUCTION

Cyber Space - Introduction and UNCITRAL Model Law - Information Technology Act, 2000 with Recent Amendments - Jurisdictional Issues - Digital Signatures - Regulation of Certifying Authorities - Cyber Regulation Appellate Tribunal

UNIT – II: CYBER LAW AND E - COMMERCE

Formation of Online Contracts - E-Banking Transactions - Online Payment Options - Online Advertising - Taxation Issues in Cyber Space - Indirect Tax - Tax Evasion - Double Tax - Financial Frauds - International Tax Permanent Establishment

UNIT – III: CYBER CRIMES

Understanding Cyber Crimes - Actus Reus and Mens Rea - Types of Crimes in the Internet - Against Person, Against Property, Against Government - Cyber Forensics Investigation- Introduction - Investigation Tools – E - Discovery - Digital Evidence Collection and Preservation - E-Mail Investigation , Tracking and Recovery - Encryption and Decryption methods - Search and Seizure of Computers - Recovering deleted evidences -Password Cracking - Investigation and Adjudication of Cyber Crimes in India - Cyber Arbitration - Cyber Security - Implementing Hardware Based Security - Software Based Firewalls -Security Standards - Assessing Threat Levels - Forming an Incident Response Team, Reporting Cyber crime - Operating System Attacks - Application Attacks - Reverse Engineering & Cracking Techniques.

UNIT – IV: IPR AND CYBER SPACE

Copyright Issues in the Internet - Protection of Computer Software - Caching - International Regime - OSS - DMCA - Trademark Issues in the Internet - Domain Name Registration - Domain Name Dispute - ICANN – URDP Policy - Linking - Meta tagging - Database issues in the internet.

UNIT – V: CONTEMPORARY ISSUES

Convergence Technologies - Cloud Computing - Online Digital Libraries - Access to Internet: A Human Right Issue - Issue of Censorship - Privacy issues - National Security and Social Security.

Books Prescribed:

1. Harish Channder; Cyber laws and IT Protection; PHI Learning Private Limited; 1st Edn. (2012)
2. Pavan Duggal; Cyber law: the Indian perspective; Saakshar Law Publications, 2002
3. Vakul Sharma; Information Technology Law and Practice; Universal Law Publishing Co.; 3rd Edn. (2011)
4. Rohit Arvind Jain; Cyber Crimes and Law, A Overview on Securing Cyber Space; Evincepub Publishing; 1st Edn. 2018
5. M. Dasgupta, Pranay Chaturvedi, Ankur Dalal; Cyber crime in India: a comparative study; Eastern Law House, 1st Edn. (2009)
6. Aparna Viswanathan; Cyber Law: Indian & International Perspectives on Key Topics Including Data Security, E-commerce, Cloud Computing and Cyber Crimes; LexisNexis Butterworths Wadhwa, 2012

Books for Reference:

1. Talat Fatima; Cyber Law in India; Wolters Kluwer; 1st Edn. 2008
2. Pooja Kiyawat, Manish Yadav; Critical Analysis of Cyber Laws with Respect to Cyber-Crimes in India; SPS, 2016
3. Farooq Ahmad; Cyber Law in India: (law on Internet); Pioneer Books, 2001
4. Susan W. Brenner; CyberCrime and the law Challenges, issues and Outcomes; Noth Eastern University Press; 2012
5. Matthew Richardson: Cyber Crime: Law and Practice; Wildy, Simmonds & Hill Publishing, 2014

Fifth Year - Tenth Semester	*Subject Code: U18PCCL523*	*Subject Credits: 04*

CRIMINAL PROCEDURE CODE

Objectives: This paper aims to familiarize the students with the crucial aspects relating to investigation and trial of offences and to sensitize the students about critical issues in administration of criminal justice.

COURSE OUTLINE

UNIT – I: INTRODUCTION

Definitions - Constitution and powers of Criminal Courts and Offices - Provisions for Investigations - Information to the Police and their powers to investigate

UNIT – II: PRE-TRIAL PROCEEDINGS

Stages of Investigation - Process compelling for the presence of the accused for Investigation and Trial – Arrest - Procedure for Arrest - Rights of Arrested Persons - Consequences of Non-Compliance of Arrest Procedure - Search and Seizure - Process of Investigation by Police - Investigation of Unnatural and Suspicious Death -Local Jurisdiction of the Courts in Inquires and Trials - Cognizance of Offence and Commencement of Proceedings.

UNIT – III: TRIAL PROCEDURE

Principal features of Fair Trial - Charge - Disposal of Criminal Cases without Full Trial - Trial before a Court of Session - Trial of Warrant Cases by Magistrates -Trial ofSummons-Summary Trial - Bail Procedures – Types of Bail - General Provision regarding Bond of Accused and Sureties.

UNIT – IV: APPEAL PROCEDURE

Types of Appeals - Reference and Transfer of Criminal Cases - Execution, Suspension, Remission and Commutation of Sentences - Execution of Sentence - Death Penalty and Imprisonment - Preventive and Precautionary Measures for Keeping Peace and Good Behaviour- Maintenance Procedures - Conditions for Claiming Maintenance - Cancellation of Maintenance - Sec 125 of CrPC.

UNIT – V: JUVENILE JUSTICE CARE AND PROTECTION ACT, 2000, THE CRIMINAL LAW AMENDMENT 2013 AND PROBATION OF OFFENDERS ACT, 1958

Introduction - Object - Definitions - Statutory Bodies- Juveniles under the Act - Nirbhaya case - Reformative Institutions - Juvenile - Special Offences - Probation - Object and Meaning Criminal Court and Probation - Duties of Probation Officers - Report of the Probation Officers - Conditions and Cancellation of Probation.

Statutory Materials:

1. The Code of Criminal Procedure, 1973.
2. The Criminal Law (Amendment) Act, 2005.
3. The Criminal Law (Amendment) Act, 2008.
4. The Criminal Law (Amendment) Act, 2010.
5. The Criminal Law (Amendment) Act, 2013.
6. The Criminal Law (Amendment) Act, 2018.

Books Prescribed:

1. Ratanlal & Dhirajlal: The Code of Criminal Procedure; Lexis Nexis, 22nd Edition (2017).
2. Sarkar: The Code of Criminal Procedure; Lexis Nexis, 10th Edition (2013).
3. R.V.Kelkar: Criminal Procedure Code; Eastern Book Company, 6th Edition (2018).
4. Durga Das Basu: Criminal Procedure Code; Lexis Nexis, 6th Edition (2017).

Books for Reference:

1. K.N.Chandrasekaran Pillai: General Principles of Criminal Law; Eastern Book Co., (2003) Edition, Reprinted (2007).
2. Iyer, Mitter & Anand: Law of Bails; Law Publishers (India) Pvt. Ltd., 4th Edition (2012).
3. P.V. Ramakrishna: Law of Bail, Bonds, Arrest and Custody; Lexis Nexis, 1st Edition (2008).
4. P.K.Majumdar, R.P. Kataria: Law of Bails, Bonds and Arrest; Orient Publication, 2nd Edition (2003).

Fifth Year - Tenth Semester	*Subject Code: U18PCCL524*	*Subject Credits: 04*

SECURITIES AND REGULATORY LAW

Objectives: It is one of the unique courses to the students. It brings in-depth knowledge on various securities laws and the regulatory frameworks which standardize the basic need of the society.

COURSE OUTLINE

UNIT – I: CONCEPT OF SECURITIES:

Arena of Securities: Equity, Debentures, Preference Shares - Sweat Equity, Non-Voting Shares, Share Warrants - Issue and Listing of Securities - Listing of Securities - Issue of Capital and Disclosure Requirements (ICDR) - Procedure for Issue of Various Types of Shares and Debentures - Employee Stock Option Scheme and Employee Stock Purchase Scheme - Delisting of Securities –Securities Market Intermediaries.

UNIT-II: SEBI REGULATIONS

Securities Contracts (Regulation) Act, 1956- SEBI Act, 1992 - Objective, Powers and Functions of SEBI - Securities Appellate Tribunal, -Appeals, Appearance before SAT

UNIT-III: DEPOSITORIES ACT, 1996

Depositories Act, 1996 - Definitions, -Setting up of Depository, its type,- Role and Functions Depository Participants - Admission of Securities - Difference between Dematerialization &Rematerialisation- Depository Process - Inspection and Penalties - Internal Audit and Concurrent Audit of Depository Participants

UNIT-IV: CAPITAL MARKETS & INVESTOR PROTECTION

Primary Market and Secondary Market -Intermediaries: Roles and Functions, -Merchant Bankers, -Stock Brokers, Syndicate Members, -Registrars, -Underwriters, -Bankers to an Issue, Portfolio Managers, Debenture Trustees,- Foreign Institutional Investors,- Custodians,- Credit Rating Agencies, Venture Capitalists - An Overview of Law relating to Insider Trading and Takeovers - Investor Protection -Investors' Rights and Responsibilities,- types of grievances and dealing authority,- Investor Education and Protection Fund (IEPF) under SEBI Regulations and Companies Act, 2013,- Financial Education,- Investor Grievance Redressal Mechanism at SEBI etc.

UNIT-V: OTHER REGULATORY LAWS

The Real Estate (Regulation and Development) Act, 2016 - Salient features – Establishment of Real Estate Regulatory Authority – Powers & functions of the Authority – Registration – Mandatory disclosures – Dispute resolution mechanism – Penalties - Central Advisory

Council. - The Telecom Regulatory Authority of India Act, 1997 –Establishment and incorporation of TRAI – Powers and function of authority – Settlement of dispute – Amendment in 2000 - Electricity Act 2003 – Licensing – National electricity policy and plan – Central electricity authority – Regulatory commissions – Powers – State Commissions – Tamil Nadu Electricity (Reorganization and reforms) Transfer Scheme 2010 - Pension Fund Regulatory and Development Authority Act, 2013 –Powers and functions.

Statutory Material:

1. Securities & Exchange Board of India Act, 1992
2. Telecom Regulatory Authority of India, 1997
3. The Electricity Act, 2003.
4. Pension Fund Regulatory & Development Authority Act, 2013.
5. The Real Estate (Regulation And Development) Act, 2016

Books Prescribed:

1) Kondaiah Jonnalagadda: Securities law; Lexis Nexis,1st Edition(2015)
2) Nicholas L. Georgako poulos: The Logic of Securities law; Cambridge university Press,Reprint edition(2018)
3) Savithri Parekh & Shailashri Bhaskar: Listing obligations and disclosure requirements; Lexis Nexis, 1st Edition (2016)

Books for Reference:

1) Vikram Raghavan: Communications law in India: Legal aspects of telecom, broadcasting & cable services; Lexis Nexis, latest edition(2007)
2) CA Shiva Chaudhari: RERA for everyone; Educreation publishing, 1st edition(2018)
3) S.K. Chatterjee: Commentary on Electricity Laws with state Reforms;Delhi law house, 2nd Edition(2010)

Fifth Year - Tenth Semester	*Subject Code: U18CCCL505*	*Subject Credits: 03*

CLINICAL COURSE – V

PUBLIC INTEREST LAWYERING, LEGAL AID, COURT & CHAMBER VISITS

Objectives: This course brings in-depth practical knowledge on legal and the para-legal services. This motivates the students to work for the welfare of the society.

COURSE OUTLINE

INTERVIEWING TECHNIQUES AND PRE-TRIAL PREPARATIONS - (40marks)

- **Two interviewing sessions of clients: 15 marks**

Each student will observe 2 (two) interviewing sessions of clients at the Lawyers' Office/Legal Aid Office and record the proceedings in a diary which will carry 15 marks.

- **Observation of the preparation of documents and court papers: 15 marks**

Each student will further observe the preparation of documents and court papers by the Advocate and the procedure for the filing of the suit/petition. This will be recorded in the diary which will carry 15 marks.

- **Viva-Voce Examination on above two components: 10 marks**

COURT ATTENDANCE & LOK ADALAT - (40marks)

- **CIVIL PROCEEDING OBSERVATION: 10 Marks**

The students must observe the civil proceedings in the court and record the proceedings in a diary which will carry 15 marks.

- **CRIMINAL PROCEEDING OBSERVATION: 10 Marks**

The students must observe the criminal proceedings in the court and record the proceedings in a diary which will carry 15 marks.

- **LOK ADALAT OBSERVATION: 10 Marks**

The students must attend lokadalats with the help of district legal services authority and submit a project to the faculty in charge. This project report carry of 10 marks

- **Viva-Voce Examination on above two components: 10 marks**

LEGAL AID-COUNSELING AND SERVICES (40 marks)

The students are directed to visit semi-urban and rural areas for providing free counseling and creating awareness among the people relating to socio-legal problems and submit a project to the faculty in-charge. This clinical study will comprise of 10 marks for project work and 10 marks for viva-voce.

Fifth Year - Tenth Semester	*Subject Code: U18PTCL505*	*Subject Credits: 02*

INTERNSHIP AND PRACTICAL TRAINING - V

Objective: The internship programmes are designed to acquaint the student with the actual practice of law by working under the supervision of legal luminaries. The student gains experience of applying theoretical knowledge from prior classroom training, when exposed to practical environment.

COURSE OUTLINE

During this vacation the students should compulsorily undergo Internship for a continuous period of 4 weeks and submit an internship report along with a internship certificate. This will be evaluated by the Internship Faculty Guide.

The student may choose to intern under any one the following category:

- Trial Advocate
- Appellate Advocate
- Law Firms

On completion of successful internship training every student will be awarded 2 credits

B.Com., LLB (Hons.)

SYLLABUS FOR ELECTIVE SUBJECTS

S.No	ELECTIVE SUBJECT CODE	ELECTIVE SUBJECT NAME
V SEMESTER - ELECTIVE – 1		
1.	U18PECL311	Legal Research Methodology
2.	U18PECL312	Legal Methods and Techniques
V SEMESTER - ELECTIVE – 2		
4.	U18PECL321	Intellectual Property Rights
5.	U18PECL322	Maritime Law
VII SEMESTER - ELECTIVE – 3		
6.	U18PECL431	Criminology and Penology
7.	U18PECL432	Law Relating to Women and Children
IX SEMESTER – ELECTIVE – 4		
8.	U18PECL541	Forensic Science
9.	U18PECL542	Medical Jurisprudence
X SEMESTER – ELECTIVE – 5		
10.	U18PECL551	Consumer & Competition Law
11.	U18PECL553	Telecommunication Law
OPEN ELECTIVES		
12.	U18OEAL501	Right to Information and Education
13.	U18OEBL501	International Financial Transactions and Valuation
14.	U18OECL501	Private International Law
15.	U18OEDL501	Environment and International Legal Order

NOTE:

- The Students are free to choose the elective subjects in **V/VI/VIII/IX/X** semester within the list of elective subjects offered in concerned semester.
- One has to choose -
    - One Elective Subject from **V/VI/VIII/IX** Semester group of electives in respective semesters
    - One Elective Subject from X Semester group of electives in X Semester
    - One Elective Subject from open elective group of electives in X Semester
- **University may restrict subjects in a group for offering options based on availability of faculty and other facilities.**

Third Year - Fifth Semester	*Subject Code: U18PECL311*	*Subject Credits: 03*

LEGAL RESEARCH METHODOLOGY

Objectives: When research is undertaken as a part of the process of law reform, the contributions through the research will be indefinite and will help to make concrete law which improves the societal welfare. This paper is a tool and guidance for the legal research carried out by the students and scholars in a simplified manner.

COURSE OUTLINE

UNIT – I: LEGAL RESEARCH

Meaning of Research - Legal Research – Characteristics - Objectives and Types of Legal Research - Qualities of Good Legal Researcher - Nature, Scope and Objectives of Legal Research and Methodology - Methods of Legal Research - Collaborative Research - Doctrinal and Non-Doctrinal

UNIT – II: RESEARCH DESIGN

Identification and Formulation of Research Problem - Hypothesis and Research Design - Database for Legal Research: Legislations - Judicial Decisions - Juristic Writings - Traditional and Online Databases

UNIT – III: RESEARCH TECHNIQUES

Methodology: Tool and Techniques for collection of data - collection of case materials and juristic literature - Use of historical and comparative research material - Use of questionnaire and interview - Census and Survey - Sampling: Types - Merits and Demerits - Observation - Interview - Questionnaire

UNIT – IV: DATA PROCESSING AND REPORT WRITING

Data Analysis and Interpretation - Report Writing - Supervision - Guidelines for researchers - Research Ethics – Meaning – Purpose - Importance of a Research Report - Preparation of the Legal Research Report - Content of Research Report.

UNIT – V: SAMPLING DESIGN FOR LEGAL RESEARCH

Meaning of Sampling - Merits and Demerits of Sampling Method - Size of Sample - Procedure to select a Sample - Types of Sampling - collection of data in socio legal research - sources of data collection - original sources of law - method of legal research for law reforms – analytical research method - historical research method - comparative research method - ethical research method - statistical research method - critical research method.

Books prescribed:

1. S.K. Verma and M. Afzal Wani; Legal Research and Methodology; Indian Law Institute, 2nd Edition (2001).
2. Goode and Hatt; Methods in Social Research; Mc.Graw Hill Book Co., 1985 (reprint), Singapore,
3. Upendra Baxi; Socio-Legal Research in India; A Program Schriff, ICSSR, Occasional Monograph, 1975.

Books for References:

1. Cohen; Legal Research; Morris L, West Publishing Co. Minnesota, 1985.
2. Ghosh; Scientific Method and Social Research; B.N, Sterling Publishers Pvt. Ltd., New Delhi, 1984
3. Johari J.C.; Introduction to the Method of Social Sciences; Sterling Publishers Pvt. Ltd. New Delhi, 1988.
4. Kothari C.K.; Research Methodology: Method and Techniques; Wiley Eastern Ltd., New Delhi, 1980.

Third Year - Fifth Semester	*Subject Code: U18PECL312*	*Subject Credits: 03*

LEGAL METHODS & TECHNIQUES

Objectives: This paper focuses on orientation of students to legal studies from the point of time of view basic concepts of law and legal systems.

COURSE OUTLINE

UNIT -I: **MEANING AND CLASSIFICATION OF LAWS**
Meaning and definition – functions of law – classification of laws – public law and private law, substantive law and procedural law, municipal law and International law.

UNIT - II: SOURCES OF LAW
Custom – Precedent – Legislation.

UNIT-III: BASIC CONCEPTS OF INDIAN LEGAL SYSTEMS:
Common law – constitution as the basic law – Rule of law – Separation of powers – Judicial system in India.

UNIT -IV: **LEGAL WRITING AND RESEARCH:**
Legal materials – case law – statutes – Reports – Journals – Manuals – Digests – Importance of legal research – Techniques of legal research – Legal writings and citations.

UNIT - V: **JUDICIARY AND SOCIAL CHANGES:**
Law as an instrument of social change – Introduction to judicial process – role of judiciary in social change – Independence and accountability of judiciary.

Books prescribed:

1. Ram Ahuja: Research Methods, Rawt Publications, 2001
2. Nomita Aggarwal: Jurisprudence (Legal Theory), Law Book Publishers, 2014.
3. Glanville Williams: Leaning the Law, Universal Law Publishing, An imprint of Lexis Nexis, 2013.

Books for References:

1. Benjamin N. cardozo: The nature of judicial process, Martino Fine Books, 2011.
2. Gregory A. Pasco: Criminal Financial Investigations, the Use of Forensic Accounting, CRC Press, 2012.
3. Daniel Albuquerque: Legal Aspects of Business, OUP India Publishers, 2017.

Third Year - Sixth Semester	*Subject Code: U18PECL321*	*Subject Credits: 03*

INTELLECTUAL PROPERTY RIGHTS

Objective: This paper produces a detailed insight on Intellectual Property Law and gives a wider picture to students about growing trends in IPR connected with International Perspective.

COURSE OUTLINE

UNIT – I: INTELLECTUAL PROPERTY

Meaning and Concept of Intellectual Property - Need for Protection - The World Intellectual Property Organisation (WIPO) Convention - Origin and Functions of World Trade Organisation (WTO) - Trade Related Intellectual Property Rights (TRIPS) - Agreement of WTO and its effects of Intellectual Property Law in India - Dispute Settlement Mechanism - Ethical Issues in IPR - Interface between IPR and Human Rights.

UNIT – II: THE PATENTS ACT, 1970

The Patents Act, 1970 & Patent Amendment Act, 2005: Definition - Salient Features - Patentable and Non - Patentable Inventions - Product and Process Patents – Procedural aspects - Patent Office and Powers of Controller - Right of Patentees - Term of Patent - Remedies for Infringement of Patents - Register of Patents - Surrender and Revocation of Patents - Compulsory Licenses - Exclusive Marketing Rights - Patent Agents - International Agreements - Knowledge Transfer - IPR and Information Technology – Bio tech patents -

UNIT – III: THE COPYRIGHT ACT, 1957 AND RECENT AMENDMENTS

Works in which Copyright Subsists - Meaning of Copyright - Ownership and Rights of the Owner - Term of Copyright – Powers and Functions of the Copyright Board – Registration of Copyright - Compulsory License - Copyright Societies – Fair Use doctrine - Rights and Remedies against Infringement - The Copyright (Amendment) Act 2012 - Rights of Broadcasting Organizational and of Performers - International Copyright Act - Digital Millennium Copyright Act.

UNIT – IV: TRADE OF MARKS, 1999

Object - Definitions - Salient Features - Distinctiveness - Deceptive Similarity - Procedures and Conditions for Registration - Effects of Registration – Powers and Functions of Registrar - Concurrent Registration - Rectification and Correction of Register – Rights of Registered Trade Mark Owner - – Protection of Trade Secrets and Deceptive Trade Practices - Special Provisions Relating To Protection of Trade Marks through International Registration under Madrid Protocol – Collective Marks - Appellate Board -Infringement Action - Passing Off Action.

UNIT – V: Industrial Designs, Geographical Indication and Traditional Knowledge

The Designs Act 2000 - Definition - Registration of Designs - Copyright in Registered Deisigns - Piracy of Registered Designs - Remedies - Powers and Duties of Controller - Semi Conductor Integrated Circuit Layout - Protection of Plant Variety and Farmers Right Act, 2001 (PPVFR Act) - National Law on Conservation of Biological Diversity - Geographical Indication of Goods (Registrations and Protection) Act, 1999 - Object, Definition – Procedure and Conditions for Registration - Prohibition of Registration of Certain Geographical Indications - Effect of Registration - Traditional Knowledge – Rationale and modes of protecting TK – Sui generis protection -Benefit Sharing -Turmeric Patent Case - Neem Oil Case.

Statutory Materials:

1. The Patents Act, 1970
2. Patent Amendment Act, 2005
3. The Trade Marks Act, 1999
4. The Copyright Act, 1957
5. The Copyright (Amendment) Act, 2012
6. The Designs Act, 2000
7. The Geographical Indications Act, 1999

Books Prescribed:

1. P.Narayanan: Intellectual Property Law; Eastern Law House, 3rd Edition (2001)
2. Dr. B.L. Wadehra: Law relating to Patents, Trademarks, Copyright, Designs and Geographical Indications; Universal Law Publishing, 5th Edition (2011)
3. Avtar Singh: Intellectual Property Law; Eastern Book Company, 1st Edition (2013)
4. V.K. Ahuja: Intellectual Property rights in India; Lexis Nexis, 2nd Edition (2015)
5. Dr. Bhandari: Law relating to Intellectual Property Rights; Central Law Publication, 4th Edition (2015)

Books for References:

1. Cornish: Intellectual Property:Patents, Copyright, Trademark and allied rights; Sweet&Maxwell, 7th Edition (2010)
2. Barret, Margreth; Intellectual Property; Aspen Publishers, 3rd Edition (2009)
3. Nard, Craig Allen: Law of Intellectual Property; Aspen Publishers, 2nd Edition (2008)
4. Arora, Manish: Guide to Trademark; Universal Publication, 2nd Edition (2007)
5. Sterling J.L.A.: World Copyright Law; Sweet&Maxwell, 3rd Edition (2008)

Third Year - Sixth Semester	*Subject Code: U18PECL322*	*Subject Credits: 03*

MARITIME LAW

Objective: The law relating to activities at sea is based primarily on Maritime Law and the Law of the Sea. Maritime Law is the law of things, activities and events related with the sea. This paper provides legal knowledge to the students concerning seagoing personnel, ships and other seagoing vessels, charter contracts and ocean transport, ship ownership and sales, maritime safety, incidents at sea and marine insurance.

COURSE OUTLINE

UNIT – I: INTERNATIONAL LAW OF THE SEA

Evolution of Law of the sea – Freedom of the sea – High seas – customary principles - Developments during inter-war period (1930 – 1945) – Delimitation of territorial sea – Internal waters – Hague Conference 1930 – freedom of navigation – freedom of fishing – other freedoms of the sea – Geneva Conference 1958 – Geneva Convention, 1958 –Geneva Conference of 1960 – United Nations Convention on Law of the Sea, 1982 - Territorial waters – contiguous zone – continental shelf – Exclusive Economic Zone - High seas - rights of coastal states – freedom of the sea in diverse zones –Equi-distance method and alternatives – Rights and duties of states in coastal waters of others – rights of Archipelagic states - rights of land locked states – Hot pursuit – Common Heritage of Mankind – Maritime Zones Act

UNIT – II: INDIAN MARITIME LAW

Admiralty Act and Bill of 2005 - Admiralty Jurisdiction of High Courts - International convention for arrest of ships, Wrongful arrest - Release from arrest, - Maritime claims, Limitation of liability, Damage done by or to a ship, Salvage, Loss of life or Personal Injury - Admiralty Bill, 2005, its salient features and present status

UNIT – III: THE MERCHANT SHIPPING ACT, 1958

Structure of the Shipping administration in India - Ministry of Shipping, Director General of Shipping - Mercantile Marine Department, Surveyors, Seamen's welfare officers - Major and Minor Ports – Application of National Laws and State Laws at ports – Registration of Indian Ships – procedure and documentation – certificate of registration – Transfer of ownership – national character and flag - International treaties, Conventions and protocols relevant to Indian maritime law, their objective, applicability and legal status - International Convention on the Prevention of Marine Pollution by Dumping of Waste Convention, 1972 - Maritime Lien - Territorial waters Act, relevant provisions of Customs Act, Merchant Shipping Act - Jurisdictional issues and relevant provisions under Indian Laws - Fisheries Act

UNIT IV: MARITIME LAW & PRACTICES

The Territorial Waters, Continental Shelf, Exclusive Economic Zone and other Maritime Zones Act, 1976 - The Maritime Zones of India (Regulation of Fishing by Foreign Vessels) Act, 1981 - Suppression of Unlawful Acts Against Safety of Maritime Navigation and Fixed Platforms on Continental Shelf Act, 2002 - The Merchant Shipping Act, 1958 – Sec. 69 Proceedings on forfeiture of ship, Sec 334 Unseaworthy ship not to be sent to sea, Sec 336 Power to detain unsafe ship and procedure for detention, Sec 337 Liability of Central Govt. for costs and damage when ship wrongly detained - Part X-B Civil Liability for Oil Pollution Damage. Sec 352 Part XI A Prevention and Containment of Pollution of the sea by Oil - Fishing Boats - Provisions of Environmental issues and provisions - International Convention on the Prevention of Marine Pollution by Dumping of Waste Convention, 1972

UNIT V: DISPUTE RESOLUTION

Conservation and management of living resources under UNCLOS– settlement of disputes relating to living resources in EEZ - Maritime research – rights and duties of researching states – settlement of disputes thereof – protection and preservation of Maritime environment – military uses of the seas – rights of the landlocked states - Settlement of disputes – International Sea Tribunals - International Sea Bed Authority – International Court of Justice - Unit –Alternative Dispute Resolution – Role and significance of ADR–International Arbitration – International and domestic commercial arbitration – Online Dispute Resolution

Books Prescribed:

1. Massimo Lando: Maritime Delimitation as a Judicial Process, Cambridge University Press, 2019
2. Prof. K. R. Singh: Coastal Security Maritime Dimensions of India's Homeland Security, Vij Books India Pvt Ltd, 2012
3. Prof. K. R. Singh: Coastal Security Maritime Dimensions of India's Homeland Security, Vij Books India Pvt Ltd, 2012

Books for Reference:

1. Guidelines on the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1972; IMO Publishing, 2006
2. Ratanlal and Dhirajlal: Law of Evidence; Lexis Nexis; 26th Edn. (18 July 2017)
3. Parvinrai Mulwantrai Bakshi: The Constitution of India, LexisNexis, 2018
4. B. M. Gandhi: Indian Penal Code, Eastern Book Company, 2006

Fourth Year - Eighth Semester	*Subject Code: U18PECL431*	*Subject Credits: 03*

CRIMINOLOGY AND PENOLOGY

Objective: The objective of this paper is to provide depth of understanding of dimensions of crime, crime causation, prevention of crime, penalizing the crime, functioning of penal institutions along with rehabilitation and protection of crime victims.

COURSE OUTLINE

UNIT – I: INTRODUCTION

Meaning and Significance of Crime - Concept of Crime and basis of Criminalization - Definition of Crime - Criminology - Criminological Reminiscence: Global Scenario - Renaissance - Modern Age - Focus on the need for Criminological Study - Ingredients of Crime - Distinction between criminality and non- criminality- Classification of Crimes - Development of Criminal Law - Sources and uses of Crime Data - Crime Reporting - Schools of Criminology.

UNIT – II: CRIME CAUSATION

Individual Centric Causes - Societal Centric Causes - Theories on Crime Causation - Juvenile Delinquency - Legislation - Juvenile Justice (Care and Protection of Children) Act, 2000 - 2013 Amendment Act -Statutory Bodies and Procedure - Reformative Institutions under the Act - Rehabilitation Process - Case Law.

UNIT – III: TYPES OF CRIME

White-Collar Crime and Blue-Collar Crime: Implications of White Collar Crimes - White Collar Crimes in India - Santhanam Committee Report – Wanchoo Committee Report - 47th Law Commission Report - Detection and Investigation - Trial of White-Collar Crimes - Case Law - Crimes and Women: Dowry Prohibition (Amendment) Act, 1986 - Crimes against Women- Crimes of Passion - New Legislation - Prostitution - Immoral Traffic Offender (Prevention) Act - Medical Termination of Pregnancy Act - Pre-Conception and Pre Natal diagnosis Techniques (Regulation) Act - Domestic Violence Act, 2005- Criminal Law Amendment Act, 2013- POSCO – Terrorism: Definition - Nature of Terrorism - Causative Factors - Funds for Terrorism - Kinds of terrorism - Terroristic Spectrum - Punishments and Measures for Coping with TADA-POTA-NSA, 2010-] - Criticism - Anti-Terrorist Measures - Communal Violence - Causes and Cures - Victims of Marginal Crimes - Social Deviance and Marginal Crimes - Kinds of Marginal Crimes - Victimless Crimes - Hidden Victims - Drug and Crime -Depiction of Offences and Punishments under NDPS Act - Modern Crimes and International Crimes: Computer Crime -Cyber crimes - definition -kinds - Information Technology Act, 2000 -Organ Trafficking - International Crimes - Environmental Crimes.

UNIT – IV: THE POLICE AND CRIMINAL JUSTICE SYSTEM

Police: Organisational Structure of Indian Police - Police Bureaucracy - Police Setup - Custodial deaths - Modernization in Police - Crime Records Management - Traditional Vis-à-vis Modern Crime Records Management - Police Community Relations - Thana Level Committee - Police Advisory Committees - Media and Police - Discipline and Lawlessness - Interpol -Criminal Justice System: Objectives of Criminal Justice System - Rights of Accused and Arrested Person - Plea Bargaining - Human Rights and Administration of Criminal Justice.

UNIT – V: CORRECTIONAL INSTITUTION AND CRIME PREVENTION

Probation and Parole: Origin - Salient features of Probation of Offenders Act, 1958 - Parole - Parole Regulations - Parole Recommendations - Prison System in India: Problems of Prisoners -Organized Setup - Prison Discipline - Prison Labour - Prison Education - Open Prison - The Prison Community - Prison Reform in India -Dr. Wreckless Committee Report - International Perspective.Crime Prevention - Theories of Punishment - Kinds of Punishment - Recidivism - Various form of Recidivist -Prevention of Crime and Delinquency.

Books Prescribed

1. Dr. Rajendra K. Sharma: Criminology and Penology; Atlantic Publishers and Distributers, 1st Edtition (1998).
2. Ahamed Siddique: Criminology Problems and Perspectives; Eastern Book Company, 1st Edition (1997)
3. Dr. J.P.S. Sirohi: Criminology and Penology; Allahabad Law Agency, Reprint 2014
4. N.V. Paranjape: Criminology Penology and Victimology; Central Law Publications, 2017 Edition (2017).

Books for Reference

1. Harry Elmer Barnes: New Horizons of Criminology; Bames and Teeters, 3rd Edition (1959)
2. Mark S.Gaylord: The Criminology of Edwin Sutherland; Transaction Publishers, 1st edition (1988).
3. Taft and England: Criminology; Collier & Macmillan, 4th Edition (1964).

Fourth Year - Eighth Semester	*Subject Code: U18PECL432*	*Subject Credits: 03*

LAW RELATING TO WOMEN AND CHILDREN

Objective: The course draws the attention to the feeble condition of women, children and their exploitation. The legal limitation on their capacity and legal rights and protection provided in the Constitution and in various laws are to be studied critically.

UNIT – I: OFFENCES AGAINST WOMEN

Sexual crimes – Rape, Unnatural Offences, Indecent Assault - Matrimonial Offences – Mock Marriage, Bigamy, Adultery, Criminal elopement, Dowry Death, Harassment, Provisions relating to Dowry under IPC and Dowry Prohibition Act 1961. - Offences relating to Miscarriage under IPC - The Medical Termination of Pregnancy Act, 1971 - The Pre-conception and Pre-natal Diagnostic Techniques (Prohibition of sex selection) Act, 1994– Offences relating to trafficking under IPC, Offences under the Immoral Traffic (Prevention) Act, 1956

UNIT – II: GENDER INJUSTICE&WOMEN'S COMMISSION

Gender Injustice - A Global issue, Constitutional provision to protect gender injustice in India, Pre-natal sex-selective – Abortion - Sexual Harassments in work place – Guideline laid down in Vishaka v. State of Rajasthan - Constitution and procedure of Commission, Powers and Function of the Commission.

UNIT – III: LEGISLATIVE EMPOWERMENT OF WOMEN

International perspective - Constitutional provisions for Empowerment of Women - Empowerment of Women under Criminal Law - The Immoral Traffic (Prevention) Act, 1956 - Dowry Prohibition Act, 1961, Labour legislation, The medical Termination of pregnancy Act, 1971 - The Commission of Sati (Prevention) Act, 1987.

UNIT – IV: EXPLOITATION OF CHILDREN

Child Labour – Reason for child Labour - international Framework to eliminate Child Labour, - Constitutional Provision to eliminate child labour - Salient Features of Child Labour (Prohibition and Regulation) Act, 1986 - Child Labour and National Human Rights Commission - Role of Judiciary in Solving Labour Problem - Child Prostitution - Child Pornography - Child Trafficking - Incestuous Sexual Exploitation - Child Marriages.

UNIT – V: PROTECTION OF CHILD RIGHTS

Child Marriage (Restraint) Act,1929 - Problems relating to Adoption In India - UN Convention on the Rights of Child 1989 - Hindu Adoption and Maintenance Act, 1956 - Inter Country Adoptions - Right to Education and Human Rights Instruments - Right to education in India - Art 21-A of the Indian Constitution - Policies of Government on Education, Problems relating to Child Education - Establishment of National and State Commission for protection of Child Rights - Functions and Powers of the Commission - Children's Courts.

Statutory materials

1. Indian Penal Code 1860
2. Dowry prohibition Act 1961
3. The medical termination of Pregnancy Act 1971
4. The pre-conception and Pre-natal Diagnostic Techniques(Prohibition of Sex selection) Act 1994
5. The Immoral Traffic(prevention)Act 1987
6. Child labour (prohibition and regulation) Act 1987
7. Child marriage restraint Act 1929
8. Hindu Adoptions and Maintenance Act 1956

Books Prescribed

1. Mamta Rao; Law relating to women and children; Eastern Book Co ;4th edition (2018)
2. G.S Sharma, Anil Kumar Tandi; Law relating to women &Children; Asia Law House;1st edition (2015)
3. S. C. Tripathi & Vibha Arora; Law relating to women and Children; Central Law Publications; 6th edition (2015)

Books for Reference

1. Manjula Batra; Women & Law with law relating to children in India; Allahabad Law Agency; latest edition (2012)
2. Dr. Anjani Kant; Law relating to women and children; Central law Publications ;1st edition (2003)
3. Dr. S. R. Myneni; women and Law; Asia Law House; 2nd edition (2011)

Fifth Year - Ninth Semester	*Subject Code: U18PECL541*	*Subject Credits: 03*

FORENSIC SCIENCE

Objective: This paper seeks to explore various areas of the law that deal with creating and maintaining and regulating 'health.' The paper aims to give comprehensive and practical approach to the students to make them aware of the developments in medical sciences and to enable them to be equipped to face the recent challenges raised by the modern issues in contemporary era.

COURSE OUTLINE

UNIT – I: CRIME & CRIMINAL BEHAVIOUR

Definition of Crime, Various types of crime, Criminal behavior - cause and theories, Modus Operandi Criminal profiling, Corpus Delicti - Criminal Justice System-Important wings of criminal justice system, Its structure & functioning, Role of Police officers, prosecution & judicial officers, Role of Forensic scientists, medico-legal doctors, Expert Testimony Forensic Science-Basic Principles & Significance, History & Development of Forensic Science, Organizational structure of Forensic Science labs in Central & State. Crime Scene Management-Defining the Scene of crime, Managing a crime scene & its hierarchy, Role of First Responding Officers, Search Patterns of a crime scene, Crime scene Documentation, Collection, Packaging, Labeling & Forwarding of exhibits to forensic laboratories ,Preservation of evidence, Health & Safety Protocols.

UNIT – II: FORENSIC SCIENCE AND ITS APPLICATION IN CRIME INVESTIGATION

Definition, Nature, And Need & Scope of Forensic Science: Crime Scene Evidences, Blood, Semen & other Biological fluids, Viscera, Shoe impressions, Tool marks, Tyre marks, Bite Marks, Hair – Animal & Human, Fibres & Fabrics, Glass, Soil, pollen Paint Establishment of identity of Individuals, DNA, Fingerprints/Foot prints, Anthropology – Skeletal Remains, Odontology, Questioned Document and Their Identification- Identification of objects by shape and size, Handwriting and signature-analysis, identification and examination, Procedure for examination, Types of forgery, Anonymous letter, Charred document, Indented writing, Counterfeit coins and notes, Small coins (offence) Act 1971, Standards of Weight and Measures Act 1976

UNIT – III: FORENSIC MEDICINE AND THE LAWS:

Medical Jurisprudence- Brief History & current scenario at National & International level Forwarding of Biological samples to Forensic Laboratories, Medico legal aspect of Death-Concept of Human Anatomy & Physiology, Time of Death, Causes of Death, Injuries: classification, forms and medico legal aspects, Medico Legal Aspects – PM report, Dying Declaration & Expert Testimony (Evidence Act) Sexual offences – Sexual, Offences - Rape,

DFSA (Drug Facilitated Sexual Assault),Examination of the victim & the accused, Collection of evidence, Infanticide, Abortion, Artificial Insemination, Medical Termination of Pregnancy Act 1971, Prenatal Diagnostic Technique Act 1984, Legal Aspects - Mental Health Act 1987, Prevention of Food Adulteration Act 1954, NDPS Act 1985, Petroleum Act 1934, Prevention of Damage to Public Property Act 1984, Prevention of Illicit Trafficking in NDPS Act 1985, Arms Act 1950, Explosives Act 1984, Explosive Substance Act 1908, The Drugs Act 1940, The Drugs and Cosmetics Act 1945

UNIT – IV: RECENT ADVANCES IN FORENSIC SCIENCE AND THE LAWS

Cyber crime: definition, hacking, virus, obscenity, pornography, software piracy. It Act, 2000 .Intellectual property right-domain name, Trademark. Computer security encryption, decryption and digital signature, Forensic Speaker identification-Introduction inter speaker and intra-speaker variation, forensic Phonetics-acoustic and auditory parameter, vocal tract, speaker recognition identification and verification, spectrograph. Study of extortion threatening calls, hoax calls, drugs transactions and the recorded voice.

UNIT – V: NARCO ANALYSIS AND DNA FINGER PRINTING

Theory, forensic significance of narco-analysis, admissibility in court, future prospect, case study. Brain mapping- introduction, EEG, P-3000 wave, brain mapping in forensic Science, Limitation of technique, admissibility in court, case study. Polygraph: Principle and technique polygraph as forensic investigative tool, NHRC guidelines for polygraph test, case study. Forensic DNA Finger Printing-DNA-Introduction, source of DNA in Forensic case work, Extraction of DNA, Techniques of DNA fingerprinting-RFLP, STR, PCR. DNA fingerprinting in paternity disputes, mass disaster and other forensic case work, legal issues in DNA fingerprinting, case study.

Books Prescribed:

1. Dr. Jaising P. Modi: A Textbook of Medical Jurisprudence and Toxicology; Lexis Nexis, 26th Edition (2018)
2. B.V. Subrahmanyam: Parikh's Textbook of Medical Jurisprudence, Forensic Medicine and Taxicology; CBS Publishers and Distributors Pvt. Ltd; 8th Edition (2019)
3. Sarita Jand, Forensic Science & Law, Allahabad Law Agency; First Edition (2017)

Books for References:

1. R A Witthaus: Medical Jurisprudence, Forensic Medicine and Toxicology. Volume 2 of 4; Gale, Making of Modern Law, (2010)
2. Nabar B.S., Forensic Science in Crime Investigation, Asia Law House; 3 edition (2013)
3. B. R. Sharma : Scientific Criminal Investigation; Universal Law Publishing - An imprint of Lexis Nexis; 2nd Edition (2016)

Fifth Year - Ninth Semester	*Subject Code: U18PECL542*	*Subject Credits: 03*

MEDICAL JURISPRUDENCE

Objectives: This course intense to analyze Medico-Legal Aspects, which helps the students to understand the investigative process involved in medical field.

COURSE OUTLINE

UNIT – I: MEDICAL RELATIONSHIP WITH CRIME

Forensic Science and Crime – Crime Scene Examination – Detection – Role of Investigator – Criminal Trial – Expert Witness – Role of Medical Evidence.

UNIT – II: THE WORK OF POLICE SPECIALISTS AND FORENSIC SCIENTISTS

Personal Identification – Examination of Living and Dead – Cases of Homicide and Suicide – Examination of Wounds and Injuries –Gun Shot – Asphyxia death – Death and Injuries by Burns / Scalds / Cold and Starvation - Virginity and Defloration – Pregnancy through Crime, Legitimacy and Tracing of Inheritance – Rape – Abortion – Infanticide – Unnatural Sexual Offences - Contact Traces – Marks Scratches of Paint, Glass etc.

UNIT – III: IDENTIFICATION FORESICS

Blood Stains and Seminal Stains – Blood and other Body Fluids – Finger Prints – Tracing of Hair, Bone Teeth etc. –Paternity Forensics - Identification of property – Road Accidents – Tracing of hit and run Vehicles - Identification of Photos and Documents –Detection Powders.

UNIT – IV: WORK OF CHEMIST AND BIOLOGIST

Work of Chemist – Methods – Tracing Alcohol - Work of Biologist – Tracing Blood and other Biological Matters.

UNIT –V: TOXICOLOGY

Introduction to Toxicology - Classification and Effect - Corrosive & Irritant Poisons.

Statutory Materials:

1. Code of Criminal Procedure, 1973
2. The Narcotic Drugs and Psychotropic Substances Act, 1985

Books Prescribed:

4. Dr. Jaising P. Modi: A Textbook of Medical Jurisprudence and Toxicology; Lexis Nexis, 26th Edition (2018)

5. B.V. Subrahmanyam: Parikh's Textbook of Medical Jurisprudence, Forensic Medicine and Taxicology; CBS Publishers and Distributors Pvt. Ltd; 8th Edition (2019)
6. B R Sharma : Scientific Criminal Investigation; Universal Law Publishing - An imprint of Lexis Nexis; 2nd Edition (2016)

Books for References:

4. R A Witthaus: Medical Jurisprudence, Forensic Medicine and Toxicology. Volume 2 of 4; Gale, Making of Modern Law, (2010)
5. Alfred Swaine: Taylor The Principles and Practice of Medical Jurisprudence: By Alfred Swaine Taylor; Volume 1; Palala Press, (2018)
6. V.S.R. Avadhani, V. Soubhagya Valli: Criminal Investigation (Law, Practice & Procedure); Asia Law House; 1st Edition (2015)

Fifth Year - Tenth Semester	*Subject Code: U18PECL551*	*Subject Credits: 03*

CONSUMER AND COMPETITION LAW

Objectives: The Process of globalization and liberalization have brought a considerable awareness towards improving the competitive process in developing countries such as India. The course aims to study the developments and analyse the progress of competition law in various legal systems.

COURSE OUTLINE

UNIT – I: **COMPETITION POLICIES**

Evolution – Objective - scope and Nature of Competitive Laws - Concept of perfect competition - Theories on IP and competition - Concept of Open market system - MRTP Act, 1969 - Ragavan Committee Report - Formation and features - Anti – Competitive Practices and its regulation under MRTP Act - Regulatory Authorities – SEBI, TRAI, IRDA, NCDRC, CERC - Competition policy and Consumer Protection - Competition Policy and IPR – Introduction to various IP Assets, Patent Policy and its regulation under the Indian Laws, Abuse of IPR and regulation of Combination, Conflict of Combination Policy and Patent policy, TRIPS and its impact on Competition and Patent – Monopoly.

UNIT – II: COMPETITION ACT 2002

Drawbacks under the MRTP Act and need for the Competition Act - Regulation of Unfair Competition - Anti-competitive agreements - Abuse of dominant position - Combination, Competition Commission of India – Constitution, duties, powers and functions of commission - Competition Advocacy - Competition Appellate Tribunal, Changes brought in by Competition (Amendment) Act 2009.

UNIT – III: INTERNATIONAL PERSPECTIVES

Competition Policy under the EU and USA – Regulation of Unfair Competition in UK - The Competition Act 1989 - Anti – trust policy and Unfair Competition in USA – Federal trade commission Act 1914 - US Enforcement, Treaty on functions of European Union – Art 101, Art 102 - Globalization and Competition Law, WTO and its impact on competition laws with reference to UNTCAD - Competition rules of WTO, International Enforcement and Judicial Assistance.

UNIT – IV: CONSUMER PROTECTION LAW AND POLICIES

Origin and History of the Movement - Salient features of consumer protection act - Objective of the legislation - Consumer Protection Act, 1986 – Procedure – Deficiency of Service – Defect in Goods – Unfair Trade Practice - Consumer Protection Councils – its organization, objects and Procedure - Consumer Disputes Redressal Agencies – Kinds, establishment, composition, and jurisdiction - Complaint – manner in which made, procedure on receipt of appeals, limitation period, dismissal of frivolous or vexatious complaints - Orders of the Consumer Disputes Redressal Agencies – Findings of the

Forum– Finality of orders, Review of orders, enforcement of orders - Penalties and Remedies

UNIT – V: EMERGING TRENDS IN CONSUMERISM

Goods – Case laws on manufacturing defects - Service Sector – Airlines, Banking, Insurance, Housing - Medical negligence - Lawyers negligence - WTO and Consumer Protection - E-Commerce and Consumer Rights - Role of Civil Society in Consumer Protection - Access to justice and Consumer Laws - ADR in resolution of Consumer disputes - Data protection

Books Prescribed:

1. S. M. Dugar; Guide to Competition Law (Containing Commentary On The Competition Act, 2002; Mrtp Act, 1969 & The Consumer Protection Act, 1986), Lexis Nexis; 6th Edn. (2016)
2. Iain Ramsay: Consumer Law and Policy: Text and Materials on Regulating Consumer Markets, Bloomsbury Publishing, 3rd Edn. 2012
3. Dennis Campbell: International Consumer Protection, Springer Science & Business Media, 2013

Books for Reference:

1. Dr. V.K.Agarwal; Competition Act, 2002, Bharat Law House, Delhi; 2019 Edn. (2019)
2. Thomas Wilhelmsson: Consumer Law in the Information Society, Springer Netherlands, 2000
3. D. P. Mittal: Competition Law & Practice, Taxmann Publications Pvt. Limited, 2008

Fifth Year - Tenth Semester	*Subject Code: U18PECL553*	*Subject Credits: 03*

TELECOMMUNICATION LAW

Objectives: The main objective of the paper is to introduce to the students the concepts of Telecommunications Law and its regulation at the International Level. Apart from the above, the paper covers the approaches of privatization in Telecommunications and Issues and challenges related to it. The paper will give theoretical perspective of Telecommunication Laws.

COURSE OUTLINE

UNIT – I: INTRODUCTION

Historical Perspective of Telecommunications Law - Conceptual Analysis - Public Broadcasting, Right to Broadcast - Cable Distribution - Broadcasting Licensing - Telecommunication Laws in India

UNIT – II: TELECOMMUNICATIONS

International Relevance - International regulation related to Telecommunications - ITU reform - Self-governance of the Internet: ICANN - WTO

UNIT – III: PRIVATIZATION

Privatization in telecommunications - Liberalization and deregulation - Privatization of INTELSAT

UNIT – IV: TELECOMMUNICATIONS: ISSUES AND CHALLENGES

Access - Dispute Settlement - Advertisement, consumer protection - Protection of minors (children) - Indecency, piracy - Jurisdictional issues

UNIT – V: TRAI

Framework, rules and regulations- merits and demerits - Case study method-Public awareness over the policies of telecommunication authorities.

Books Prescribed:

1. R.U.S.Prasad: Resolving Disputes in Telecommunications, Oxford University Press, 2010.
2. Law Walden:Telecommunications Law and Regulations, OUP Oxford,2018.
3. Vikram Raghavan: Communications Law in India, Lexis Nexis, 2007.

Books for Reference:

1. Miklos Kengyel:Electronic Technology and CPC, Springer Publications, 2014.
2. Antoni Gobeo: Journal of Cyber Security for Business Information Systems, River Publishers, 2018.

3. Archibald Putt: Putt's Law and Successful Technocrat, Wiley- Blackwell, 2006.

Fifth Year - Tenth Semester	*Subject Code: U18OEAL501*	*Subject Credits: 03*

RIGHT TO INFORMATION AND EDUCATION

Objectives: The right to information and right to education have been recognized as a fundamental human right, which upholds the inherent dignity of all human beings. These statutory rights play a crucial role in democracy - it is essential to ensure education accountability and good governance. Hence, the basic object of this subject is to empower the students to have an in-depth knowledge about Right to Information and Right to Education

COURSE OUTLINE

UNIT – I: INTRODUCTION TO RIGHT TO INFORMATION

The evolution of the Right to Information in India - The important terms and concepts used in the Act - The salient features of the Act Public Authorities and their Obligations under the Act - Public Authority - Public Authorities covered under the Act - Public Authorities are exempted from the ambit of the Act - Obligations of Public Authorities - Role of Public Information Officers: PIOs and APIOs - Accepting an Information Request - Processing and Disposing - The specific Duties & Responsibilities of Information Officers - The liabilities of a PIO for non-compliance with the provisions of the Act - The time limits for disposal of information requests - The fees and costs to be charged for providing information - The grounds on which requests can be rejected and the procedure for such rejection.

UNIT – II: EXEMPTIONS AND DISCLOSURES

Exemptions from Disclosure of Information - Partial Disclosure - Third Party Information - Specific provisions of the Act which exempt certain kinds of information - the classification of such exempted information - Application of public interest test with respect to exempted information - Grounds that allow for partial disclosure of information - The concept of ‘Third Party' and the issues and considerations revolving around its involvement.

UNIT – III: APPEALS

The roles and responsibilities of Appellate Officers within Public Authorities - The process involved in making first appeals to designated Appellate Officers - Timelines for making a first appeal and disposal of the appeal - First Appeals and Appellate Officers - Information Commission: Powers and Functions - The Role and Responsibilities of the Information Commissions - The relevant provisions in the RTI Act dealing with Complaints to the Information Commission and the specifications thereof - The "Second Appeal" process and the Commissions' mandate for the same - The power of Information Commissions with regard to enforcing compliance of public authorities with the provisions of the RTI Act, imposing penalty / recommending disciplinary action against erring PIOs etc.

UNIT – IV: RIGHT TO EDUCATION: INTERNATIONAL PERSPECTIVES

Education as Human Rights - Major intervention of International Declarations - Universal Declaration of Human Rights 1948 - Conventions on Child Rights 1989 - Current status and Challenges

UNIT – V: RIGHT TO EDUCATION: INDIAN PERSPECTIVES

Constitution (Eighty-sixth Amendment) Act, 2002 - Article 21-A in the Constitution of India - Elementary Education in India: Retrospect and Prospect - Historical background of RTE Act 2009 - Major provisions of RTE Act 2009 - Challenges in implementation and current status - Opportunities and Challenges of RTE Act 2009

Books Prescribed:

1. N.V. Paranjapee: Right to Information Law in India: Lexis Nexis: 1st Edition(2014)
2. Sarbjit Sharma & Krishnan Gopal: Right to Information: Authors Press: 1st Edition(2005)
3. Gursharan Singh Kaimth: Right to Education – A Roadmap ahead: Neha Publishers and distributors: 1st Edition(2014)

Books for Reference:

1. Justice Rajesh Tandon: Right to Information – Law and practice : Lexis Nexis: 2nd Edition(2015)
2. S.P. Sathe: Right to information: Lexis Nexis India: Latest Edition(2006)
3. Ajit Mondal & Jayanta Mete: Right to Education in India(Vol 1&2): Gyan Publishing house: 1st Edition(2016)

Fifth Year - Tenth Semester	*Subject Code: U18OEBL501*	*Subject Credits: 03*

INTERNATIONAL FINANCIAL TRANSACTIONS AND VALUATION

Objective: To analyse the concept of international financial environment and balance of payments. To provide knowledge of foreign exchange market, currency derivatives, exchange rate determination and international financial markets. To study about foreign trade finance, foreign exchange exposure and international capital structure.

COURSE OUTLINE

UNIT – I: INTERNATIONAL FINANCIAL ENVIRONMENT:
'Globalization', goals of International Financial Management.
Balance of Payments: concepts and principles of balance of payments and its various components. The Current Account Deficit and Surplus and Capital Account Convertibility.

UNIT – II: FOREIGN EXCHANGE MARKET:
Origin of the concept of foreign exchange, the difference between fixed and floating rates. Foreign exchange transactions and the derivatives instruments traded in foreign exchange market such as forwards, futures, swaps, and options.
Currency Derivatives: forward markets and the different concepts, currency futures markets and currency options markets and functions.

UNIT – III: EXCHANGE RATE DETERMINATION:
Exchange rate movements, factors that influence exchange rates, movements in cross exchange rates, concepts of international arbitrage, interest rate parity, and purchasing power parity and the International Fisher effect.
International Financial Markets: basic concepts of the international money market. International credit markets (loans in various forms) from the creditors/investors.

UNIT – IV: FOREIGN TRADE FINANCE:
Concept of foreign trade finance. concepts of financing exports and financing imports and documentary collections, factoring, forfeiting and countertrade
Nature and Measurement of Foreign Exchange Exposure: nature and measurement of foreign exchange exposure. Types of exposures and the various types of translation methods.

UNIT – V: MANAGEMENT OF FOREIGN EXCHANGE EXPOSURE:
Concept of exposure forward and foreign exchange exposure, various tools and techniques of foreign risk management and the risk management products.

International Capital Structure: international capital structure, cost of capital, the capital structure of MNCs, cost of capital in segmented versus integrated markets.

Books Prescribed:

1. Prakash. G. Apte: International Finance: Business Perspective; McGraw Hill Education; 2 Edition (2017)
2. Cheol Eun, International Financial Management; McGraw-Hill Higher Education; 5th Edition (2009)
3. Sharan V: International Financial Management; Prentice Hall India Learning Private Limited; 6th Edition (2010)
4. Paul R. Krugman: International Finance: Theory and Policy, Pearson Education; 10th edition (2017)

Books for References:

1. Julian Walmsley: The Foreign Exchange and Money Markets Guide (Frontiers in Finance Series); John Wiley & Sons; 2nd edition (2000)
2. Vibha Mathur, Foreign Trade, Export-Import Policy & Regional Trade Agreements of India; New Century Publications (2012)
3. Alan C. Shapiro, Peter Moles: International Financial Management; Wiley (2016)

Fifth Year - Tenth Semester	*Subject Code: U18OECL501*	*Subject Credits: 03*

PRIVATE INTERNATIONAL LAW

Objective: This course introduces students to private international law, as to the basic concepts and mechanism of this branch of law, and the legislative rules, judicial interpretations issued by various Authorities, also some representative judicial cases ruled abroad.

COURSE OUTLINE

UNIT – I: INTRODUCTION

Definition - Nature and Scope of Private International Law - THEORIES OF PRIVATE INTERNATIONAL LAW – Development of English Private International Law, Modern Theories and Development – Theory of Acquired Rights, Local Law Theory, American Revolution - Meaning of Classification of the Cause of Action - Basis of Classification, Meaning of Incidental Question, Elements of Incidental Question, Application and Exclusion of Foreign Law.

UNIT – II: RENVOI, DOMICILE AND JURISDICTION

Doctrine of Single Renvoi - Doctrine of Total Renvoi - Scope of the Application of Renvoi - Acquisition of a Domicile of Choice - Domicile of Dependent Persons and Married Women - Concept of Residence - Jurisdiction of English Court and Limitations on Jurisdiction.

UNIT – III: PRIVATE INTERNATIONAL LAW RELATING TO MARRIAGE AND OTHER MATRIMONIAL CAUSES

Meaning and Formalities of Marriage - Capacity to Marry - Polygamous Marriages – Divorce - Nullity and Judicial Separation - Presumption of Death and Dissolution of Marriage - Civil Partnership.

UNIT – IV: PRIVATE INTERNATIONAL LAW RELATING TO ADOPTION

Adoption Proceedings in England – Adoption and Children Act, 2002 - 1993 Hague Convention on Protection on Children and Co-operation in Respect of Inter Country Adoption - Effect of Foreign Adoption.

UNIT – V: PRIVATE INTERNATIONAL LAW RELATING TO PROPERTY AND OBLIGATION

Distinction between Movable Property and Immovable Property - Distinction between Tangible and Intangible Property - Transfer of Movable and Immovable Property – Succession - Matrimonial Property – Contracts - Nature of the Problem and Solutions to the Problem - Rome Convention - Special Contracts and Limitation on the Dominant of the Applicable Law.

Books Prescribed

1. Paras Diwan, Peeyushi Diwan: Private International Law, Deep Deep Publication, 4th Edition (1998).
2. I.A. Shearer: Starke's International Law; Oxford University Press, 11th Edition (1994).
3. Dr. S.R. Myneni: Private International Law; Asia Law House, 1st Edition reprinted (2015).

Books for Reference

1. Dr. H.O. Agarwal: International Law; Central Law Publications, 20th Edition (2014).
2. Govindaraj V.C: Private International Law a case study; OUP India, (2018).
3. Ugljesa Grusic, Christian Heinze: Cheshire, North & Fawcett's Private International Law; OUP Oxford, 15th Edition (2017)

Fifth Year - Tenth Semester	*Subject Code: U18OEDL501*	*Subject Credits: 03*

ENVIRONMENT AND INTERNATIONAL LEGAL ORDER

Objective: The term environmental order is however largely unknown. It is more than peripheral short-term environmental protection effected on a case-by-case basis to ward off risks rather it means blanket, comprehensive and long-term protective care in line with the enduring responsibility we bear for the world around us, for the world we share with others and for the world of the generations to come. This paper is imparted to create legal and social awareness for the students regarding environmental order.

COURSE OUTLINE

UNIT – I: INTRODUCTION

Concept of "Environment"- Definition, Meaning and Scope of the term 'Environment' and 'Pollution'- Meaning of the term 'Population ', 'Biome', 'Biosphere' - Meaning of the term 'Ecosystem: Macro-Ecosystem and Micro- Ecosystem - Relationship between Population, Environment and Development - Population –Vs- Development - Development –Vs- Environment Concept of 'Common Property' and 'State Property' - Notion of Doctrine of Public Trust

UNIT – II: INTERNATIONAL ENVIRONMENT LAW AND GLOBAL ISSUES: International Environmental Campaigns - The United Nations Conference on Human Environment, 1972 (Stockholm Conference) - Framework of the Conference - Aims and Objectives - Concept of Sustainable Development - Polluters Pay's Principle - Precautionary Principle - Concept of Equity - Inter-Generational Equity - Intra-Generational Equity - The United Nations Conference on Environment and Development, (UNCED) (Earth Summit 1992) - Framework of the Conference - Aims and Objectives - Earth Charter or Rio Declaration - Agenda 21 : Blue Print for action in 21st Century - Earth Summit Plus Five - The Johannesburg Declaration on Sustainable Development, - Framework of the Declaration - Aims and - From Stockholm to Rio De Janeiro to Johannesburg -World Charter for Nature 1982

UNIT – III: OTHER MAJOR INTERNATIONAL ENVIRONMENTAL ARRANGEMENTS

Kyoto Conference and Pact on Global Warming, 1997, and onwards -Noordwijk Declaration on Climate change, 1989 - Helsinki Declaration on the Protection of Ozone Layer, 1989 - Basel Convention, 1989 - Nairobi Declaration, 1982 - Environmental Obligations: International Financing Policy - Global Environment Facility - World Environment Fund - United Nations Organisation and Environment - Millennium Development Goals 2000 - Global Environmental Issues and their Impacts: Global Warming - Oil Pollution - Ozone Layer Depletion - Green House Effect - Acid Rain.

UNIT – IV: BIODIVERSITY AND ITS NECESSITY

Definitions - Meaning and Importance - Role of Flora and Fauna in maintaining Biodiversity - Threats to Biodiversity - Need for protection of Biodiversity - Biodiversity and Economic Valuation - Laws, Policies and Measures for Biodiversity: Convention on Biological Diversity, 1992 - The Biological Diversity Act, 2002 - Protection of Plant Varieties and Farmers Right Act, 2001 - The Geographical Indications (Regulation and Protection) Act, 1999

UNIT – V: BIODIVERSITY AND ETHICAL ISSUES

Utilization of flora for Bio-Medical purposes - Cosmetic Plants - Medicinal Plants -Utilization of fauna/animals for Bio-Medical purposes - Genetic Mutation of Seeds - Experimentation on Animals - Genetically Modified Organisms - Genetic Engineering - Biodiversity and Intellectual Property Rights - Biodiversity And Priority Sectors: Sanctuaries - Zoo and Parks - Biosphere Reserves - Protected Forest and Reserved Forests - Conservation of Biodiversity: Role of NGO - Role of Indigenous People - Role of Media and Publications.

Books Prescribed:

1. Dr. S.C. Tripathi: Environmental Law: Central Law publications: Latest Edition(2015)
2. Shashi Kumar: Biodiversity and Food Security: Atlantic: Latest Edition(2002)
3. Alok Pandey: Environmental Law – an emerging issues in India: ABS books: 1st edition(2016)

Books for Reference:

1. V. R. Krishna Iyer: Environmental Pollution and the Law: Vedpal Law House: Edition(1984)
2. Prof. Philippe sands, Prof. Jacqueline Peel, Prof. Adriana Fabra & Dr. Ruth Machenzie: Principles of International Environmental Law: Cambridge university press: 3rd Edition(2012)
3. Jonathan A. Newman, Gary Varner & Stefan Linquist: Defending Biodiversity Environmental science & Ethics: Cambridge University Press: 1st Edition(2017)

BHARATH INSTITUTE OF HIGHER EDUCATION AND RESEARCH

BHARATH INSTITUTE OF LAW

No. 173, Agharam Road, Selaiyur, Chennai - 600 073

LL.B (Hons.)

THREE YEAR DEGREE COURSE

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(2018 Regulation)

Applicable from Academic Year

2018-19

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CREDITS FOR THREE YEAR LL.BHONOURS COURSE

SL. NO.	NATURE OF SUBJECTS	CATEGORY	NUMBER OF SUBJECTS	SUBJECT CREDIT ALLOTTED	TOTAL CREDIT POINTS
1.	Professional Core	PC	20	4	80
2.	Clinical Core	CC	5	3	15
3.	Professional Elective	PE	5	3	15
4.	Open Elective	OE	1	3	03
5.	Honours Course	HC	8	4	32
6.	Mandatory Course	MC	4	0	00
7.	Practical Training	PT	3	2	06
8.	Functional Training	FT	4	0	00
Total			**42**	**--**	**151**

Credits:

Credit defines the quantum of contents/syllabus prescribed for a course and determines the number of hours of instruction required per week. Thus, normally in each of the courses, credits will be assigned on the basis of the number of lectures/ tutorial & Practical works.

Hence, the Credits are assigned on the basis of the Lectures (L) / Tutorials (T) / Practical (P)

- **L - One credit** for **one hour** lecture per week (1 credit course = 15 hours)
- **T - One credit** for **one hour** lecture per week(1 credit course = 15 hours)
- **P - One credit** for every **two hours** of practical (1 credit course = 30 hours)

	Hour	Credit
Lecture (L)	**1**	**1**
Tutorial (T)	**1**	**1**
Practical (P)	**2**	**1**

****Maximum Total Credits per semester is 21 - 29**

LL.B (Hons.)

Three Year Degree Course

SUBJECT CREDITS

FIRST YEAR – I SEMESTER								
S. No.	**Subject Code**	**Category**	**Subject**	**Contact Periods**	**L**	**T**	**P**	**C**
THEORY								
1.	U18PCGL101	PC	Law of Contract – I	4	3	1	0	4
2.	U18PCGL102	PC	Law of Torts	4	3	1	0	4
3.	U18PCGL103	PC	Law of Crimes	4	3	1	0	4
4.	U18PCGL104	PC	Family Law – I	4	3	1	0	4
5.	U18PCGL105	PC	Constitutional Law – I	4	3	1	0	4
6.		PE	Elective – I	3	2	1	0	3
PRACTICAL								
7.	U18FTGL101	FT	Court Observation	4	0	0	4	0
8.	U18FTGL102	FT	Prison Observation	2	0	0	2	0
ACTIVITY BASED COURSES								
9.	U18MCGL101	MC	Physical Health – Sports & Games	2	0	0	2	0
			TOTAL	**31**	**17**	**6**	**8**	**23**

FIRST YEAR – II SEMESTER								
S. No.	**Subject Code**	**Category**	**Subject**	**Contact Periods**	**L**	**T**	**P**	**C**
THEORY								
1.	U18PCGL106	PC	Law of Contract – II	4	3	1	0	4
2.	U18PCGL107	PC	Property Law	4	3	1	0	4
3.	U18PCGL108	PC	Jurisprudence and Interpretation of Statutes	4	3	1	0	4
4.	U18PCGL109	PC	Family Law – II	4	3	1	0	4
5.	U18PCGL110	PC	Constitutional Law – II	4	3	1	0	4
PRACTICAL								
6.	U18CCGL101	CC	CC–I Moot Court	5	1	0	4	3
7.	U18PTGL101	PT	Internship & Practical Training – I	4	0	0	4	2
ACTIVITY BASED COURSES								
8.	U18MCGL102	MC	Yoga	2	0	0	2	0
			TOTAL	**31**	**16**	**5**	**10**	**25**

SECOND YEAR – III SEMESTER								
S. No.	**Subject Code**	**Category**	**Subject**	**Contact Periods**	**L**	**T**	**P**	**C**
THEORY								
1.	U18HCGL201	HC	Hons.I Cyber Law	4	3	1	0	4
2.	U18PCGL211	PC	Labour Law – I	4	3	1	0	4
3.	U18PCGL212	PC	Public International Law	4	3	1	0	4
4.		PE	Elective – II	3	2	1	0	3
5.		PE	Elective – III	3	2	1	0	3
PRACTICAL								
6.	U18CCGL202	CC	CC-II Alternative Dispute Resolution	4	2	0	2	3
7.	U18FTGL103	FT	Legislature Observation	2	0	0	2	0
8.	U18FTGL104	FT	Chamber Observation	4	0	0	4	0
ACTIVITY BASED COURSES								
9.	U18MCGL103	MC	Legal Awareness to General Public	2	0	0	2	0
			TOTAL	**30**	**15**	**5**	**10**	**21**

SECOND YEAR – IV SEMESTER								
S. No.	**Subject Code**	**Category**	**Subject**	**Contact Periods**	**L**	**T**	**P**	**C**
THEORY								
1.	U18HCGL202	HC	Hons.II Media Law	4	3	1	0	4
2.	U18HCGL203	HC	Hons.III Disaster Management Law	4	3	1	0	4
3.	U18HCGL204	HC	Hons.IV Medical & Health Law	4	3	1	0	4
4.	U18PCGL213	PC	Labour Law – II	4	3	1	0	4
5.	U18PCGL214	PC	Company Law	4	3	1	0	4
6.	U18PCGL215	PC	Law of Evidence	4	3	1	0	4
PRACTICAL								
7.	U18CCGL203	CC	CC- III Professional Ethics, Accountancy for Lawyers and Bar Bench Relations	4	2	0	2	3
8.	U18PTGL202	PT	Internship & Practical Training – II	4	0	0	4	2
			TOTAL	**32**	**20**	**6**	**6**	**29**

THIRD YEAR – V SEMESTER								
S. No.	**Subject Code**	**Category**	**Subject**	**Contact Periods**	**L**	**T**	**P**	**C**
THEORY								
1.	U18HCGL305	HC	Hons. V Land Laws including Tenure & Tenancy System	4	3	1	0	4
2.	U18PCGL316	PC	Administrative Law	4	3	1	0	4
3.	U18PCGL317	PC	Civil Procedure Code	4	3	1	0	4
4.	U18PCGL318	PC	Criminal Procedure Code	4	3	1	0	4
5.	U18PCGL319	PC	Environmental Law	4	3	1	0	4
6.	U18PCGL320	PC	Law of Taxation	4	3	1	0	4
PRACTICAL								
7.	U18CCGL304	CC	CC–IV Drafting, Pleading and Conveyance	4	2	0	2	3
ACTIVITY BASED COURSES								
8.	U18MCGL104	MC	Social Service	2	0	0	2	0
			TOTAL	**30**	**20**	**6**	**4**	**27**

THIRD YEAR – VI SEMESTER								
S. No.	**Subject Code**	**Category**	**Subject**	**Contact Periods**	**L**	**T**	**P**	**C**
THEORY								
1.	U18HCGL306	HC	Hon.VI Minorities Law	4	3	1	0	4
2.	U18HCGL307	HC	Hon.VII Gender Justice and Feminist Jurisprudence	4	3	1	0	4
3.	U18HCGL308	HC	Hons.VIII International Refugee Law	4	3	1	0	4
4.		PE	Elective - IV	3	2	1	0	3
5.		PE	Elective – V	3	2	1	0	3
6.		OE	Elective – VI	3	2	1	0	3
PRACTICAL								
7.	U18CCGL305	CC	CC-V Public Interest Lawyering, Legal Aid, Court & Chamber Visits	6	0	0	6	3
8.	U18PTGL303	PT	Internship & Practical Training - III	4	0	0	4	2
			TOTAL	**31**	**15**	**6**	**10**	**26**

First Year – 1st Semester	*Subject Code - U18PCGL101*	*Total Credits: 04*

LAW OF CONTRACT – I

Objective: The Indian Contract Act occupies the most important place in the Commercial Law. The objective of the Contract Act is to ensure rights and that the obligations arising out of a contract are honored and that legal remedies are made available to those who are affected.

COURSE OUTLINE

UNIT – I: BASIC NATURE OF CONTRACT

Indian Contract Act, 1872 - Formation of Contract - Objects of a contract – Essentials of valid contact - Offer - Acceptance - Revocation - lapse of offer and acceptance - Intention to create legal relationship -Terms of contract and Standard form of contracts.

UNIT – II: CONSIDERATION

Past ,Present and Future consideration - Value and adequacy of consideration - Rule in Pinnel's case - Exceptions to consideration - Capacity to contract- Free consent - Factors which vitiate free consent - unlawful and illegal objects or considerations - valid ,voidable and void agreements.

UNIT III: PERFORMANCE OF THE CONTRACT

Privity of contract - time as essence to performance - place and order of performance - Performance of reciprocal promises - Wagering agreement - contingent contracts - joint promises - appropriation of payments.

UNIT IV: DISCHARGE OF CONTRACTS

By impossibility of performance - Discharge by Agreement - Frustration - Novation Recession - Alteration- Discharge by breach -Waiver - Accord and Satisfaction- Material alteration - Damages - types and Measures.

UNIT V: QUASI CONTRACTS

Quantum Meruit - Specific Relief Act 1963 - Recovery of possession - Specific Performance of contracts - Rectification - Cancellation of instruments - Rescission – declaratory decrees - Injunctions.

Statutory Material

1. Indian Contract Act 1872
2. Specific Relief Act 1963

Books Prescribed:

1. Avtar Singh; Contract and Specific Relief Act; Eastern Book Company; 16th Edn. (2010)
2. Dr.S.K. Kapoor; Contract and Specific Relief Act; Central Law Agency; 14th Edn., (2015)
3. Dr. Kailash Rai; Contract and Specific Relief Act; Central Law Agency; 14th Edn., (2014)
4. Prof. G.C.V. Subba Rao's; Law of Contracts; Narender Gogia & Vompany; 11th Edn.; Updated (2015)
5. Dr. R.K. Bangia; Contarct 1; Allahabad Law Agency; Reprint. (2016)
6. R.L. Meena; Textbook on law of Contract; Universal Law Publishing Co. Pvt. Ltd.; Edn. (2008)

Books for Reference:

1. V. Kesava Rao; Contract Cases ad materials; Lexis Nexis; @nd Edn.(2014)
2. Sir Dinshaw Fardunji Mulla; the Inidan Contract Act; Lexis Nexis; 15th Edn. (2016)
3. Nilima Bhadbhade; Contract Law in India; Kluwer Law International; 3rd Edn. (2016)
4. Charles Mitchell & Paul Mitchell; Landmark cases in the Law of Contarct; Hart Publishing; 2008

First Year – 1st Semester	*Subject Code - U18PCGL102*	*Total Credits: 04*

LAW OF TORTS

Objective: This paper is to make students understand the common law and its evolution and the Law of Torts is a fundamental common law with established cases.

COURSE OUTLINE

UNIT-I: INTRODUCTION

Origin and Development of Torts - Definition of Tort - Distinction between Tort and Crime, Tort and Contract, Tort and Breach of Trust – Constituents of Tort*: injuria sine damnum, damnum sine injuria*

UNIT-II: GENERAL DEFENCES

volenti non-fit injuria - Necessity - Plaintiff's default - Act of God - Inevitable accidents – Private Defence – Mistake – Statutory Authority

UNIT – III: SPECIFIC TORTS

Negligence - Essentials of negligence - Standard of care - duty to take care - breach of duty - Doctrine of Contributory Negligence - Damages - *Res Ipsa Loquitur* - Medical and professional negligence – Nuisance – Nervous Shock

UNIT-IV: TORTS AGAINST HUMAN BEING AND PROPERTY

Assault – Battery – Distress – Malicious – False Imprisonment and Malicious Prosecution – Conspiracy – Defamation – Libel and Slander – Trespass to Land – To Goods

UNIT-V: LIABILITY

Vicarious Liability – Doctrine of Sovereign Immunity - No Fault Liability – Strict Liability – Absolute Liability

Books Prescribed:

1. Ratanlal & Dhirajlal: The Law of Torts; Lexis Nexis, 26th Edition (2013)
2. R.K.Bangia: Law of Torts; Allahabad Law Agency, 2017
3. Dr. N.V. Pranjape: Law of Torts Consumer Protection Law and Compensation under other Statutory Law; Central Law Agency, 3rd Edition (2015)
4. P.S.A. Pillai: Law of Torts; Eastern Book Company, 9th Edition (2004)
5. B.M. Gandhi: Law of Torts; Eastern Book Company, 4th Edition (2011)
6. Avtar Singh and Harpreet Kaur: Introduction to the Law of Torts & Consumer Protection; Lexis Nexis, 3rd Edition (2013)
7. M.N. Shukla : The Law of Torts; Central Law Agency, 20th Edition (2013)
8. S.K. Kapoor: Law of Torts and Consumer Protection Act; Central Law Agency, 9th Edition (2015)

Books for References:

1. Ramaswamy Iyer: The Law of Torts, Lexis Nexis, 10th Edition (2007)
2. Winfield: Law of Tort; Sweet & Maxwell, 18th Edition (2010)
3. Salmond: Law of Tort: Sweet & Maxwell, 21st Edition (1996)

First Year – 1st Semester	*Subject Code –U18PCGL103*	*Total Credits: 04*

LAW OF CRIMES

Objective: The criminal justice system is essentially an instrument of social control. Society considers some behaviours so dangerous and destructive that it either strictly controls their occurrence or outlaws them outright. This paper aims to provide a vast knowledge about various crimes, its ingredients and punishments and to equip the students with practical legal knowledge.

COURSE OUTLINE

UNIT – I: NATURE AND SCOPE OF CRIMINAL LAW

History of Indian Penal Code, 1860 – Essentials of Crime - *actus reus* and *mens rea*- Theories of Punishment- Justification of Punishment – General Defences – Excusable Defences – Justifibale Defences – Private Defence – Joint and Constructive Liability – Abetment – Conspiracy – Attempt – Corporate Liability – Jurisdiction – Territorial – Extra Territorial – Personal and Admiralty

UNIT – II: GENERAL OFFENCES

Offences against State - Offences against the public tranquility - Offences relating to election - Offences relating to Religion - Contempt of lawful authority and public servants - False evidence and offences against public trust - Offences relating to coins and Government Stamps - Offences relating to weights and measures.

UNIT – III: OFFENCES AGAINST HUMAN BODY

Offences affecting human life - Causing miscarriage - Injuries to unborn children - Exposure of infants - Concealment of birth – Hurt -grievous hurt - Wrongful restraint - Wrong confinement - Criminal force and Assault - Kidnapping, Abduction - Slavery and forced labour - Rape: custodial rape - marital rape - Prevention of immoral traffic - Prohibition of indecent representation of women - Unnatural offences.

UNIT – IV: OFFENCES AGAINST PROPERTY

Criminal Misappropriation of property- Criminal breach of trust - Receiving of stolen property - Cheating - Fraudulent deeds and disposition of property.

UNIT –V: OFFENCES RELATING TO MARRIAGE AND REPUTATION

Offences relating to marriage - Bigamy - Adultery - Marital Rape - Defamation - Criminal intimidation and annoyance and attempt to commit such offences.

Statutory Materials

1. Indian Penal Code, 1860.
2. The Criminal Law (Amendment) Act, 2013.

Books Prescribed

1. J.W. Cecil Turner, Kennys: Outlines of Criminal Law; Cambridge University Press, 18th Edition, (2013)
2. Ratanlal & Dhirajlal: The Indian Penal Code; Lexis Nexis, 35th Edition (2017)
3. K.D. Gaur: Indian Penal Code; Lexis Nexis, 6th Edition (2016).
4. P. Atchuthan Pillai: Criminal Law; Lexis Nexis, 13th Edition (2017).
5. B.M. Gandhi, K.A.Panday: Indian Penal Code; Eastern Book Co., 4th Edition (2015)

Books for Reference

1. Dennis Baker: Glanville Williams Textbook of Criminal Law; Sweet Maxwell, 4th Edition (2015).
2. Russell: Criminal Law; Sage Publications, 1st Edition (2015).
3. Ejaz Ahmed: Law of Crimes; Rajasthan Law House, 3rd Edition (1987).
4. Ram Chandra Nigam: Law of Crimes in India (Volume 1); Asia Publishing House, 1st Edition (1965).
5. Dr.H.S. Gour: Penal Law of India; Law Publishers, 7th Edition (1961).
6. V.V. Raghavan: Law of Crimes; Orient Law House, 3rd Edition (1984).

First Year – 1st Semester	*Subject Code –U18PCGL104*	*Total Credits: 04*

FAMILY LAW – I

Objective: Every natural and legal person is assigned a personal law defining his or her status and capacity. The connecting factors determining one's personal law vary from one legal system to another. This paper gives a detailed summary about all personal laws and its governance and also will give the students and insight about personal laws.

COURSE OUTLINE

UNIT – I: SOURCES AND SCHOOLS OF PERSONAL LAWS

Application of various personal laws -Traditional and modern sources of Hindu law and Muslim law - Schools of Hindu law and Muslim law - Origin of the school - Main schools and Sub-schools - Effect of migration.

UNIT – II: LAW ON MARRIAGE

Nature of marriage - Various forms of marriage and requirements for a valid marriage on a comparative analysis - Void, voidable and valid marriage in different religious texts and statutes - Law and issues on marriage under the special marriages act - Unisex marriage and question on living together - The demand of dowry and the concept of dower under the relevant personal law - Ceremonies of marriage under various religious system.

UNIT – III: LAW ON DIVORCE AND MAINTENANCE

Restitution of conjugal rights - Judicial separation - Nullity of marriage and Divorce - Law of divorce under various personal laws - Divorce in camera proceedings - Decree on proceedings maintenance under Hindu, Muslim and Christian laws - Permanent alimony -Maintenance under code of criminal procedure - Jurisdiction of family court act.

UNIT – IV: LAW ON LEGITIMACY OF CHILDREN AND ADOPTION

Legitimacy of children born of void and voidable marriages - Their rights and legal issues - Adoption in different religious groups - Requisites and Conditions - Procedure of adoption Effect of adoption - Inter country adoption.

UNIT – V: LAW OF MINORITY AND GUARDIANSHIP

Guardian under the Hindu minority and Guardianship act 1956 - Definition types of guardians - Guardianship under Muslim law - Procedure for appointment and their powers -Guardian under the guardian and wards act 1890.

Statutory Material

1. The Hindu marriage act 1955
2. The adoptions and maintenance act 1956
3. The Hindu Minority and Guardianship act 1956

4. The Special Marriage act,1954
5. The Guardian and Wards act 1890
6. The Dissolution of Muslim Marriage act 1939
7. The Christian marriage act 1872
8. Indian Divorce act ,1869
9. Indian Majority act ,1875
10. The Muslim Women (protection of rights on divorce)act 1986
11. The Family Court act1984
12. The Dowry Prohibition act 1961
13. The Hindu Widows' remarriage act 1856
14. Prohibition of Child Marriage act 2006

Books Prescribed:

1. Prof. G. C. V. Subba Rao: Family Law in India: Narendra Gogia, 10th Edition (2018)
2. Paras Diwan, Peeyushi Diwan: Family Law: Allahabad Law Agency (2018)
3. Dr. Shivani Goswami: Family Law-1: Central Law Publications (2018)
4. H. K. Saharay: Family Law in India; Eastern Law House; 2011 edition (2012)
5. Paras Diwan, Peeyushi Diwan: Modern Hindu Law; Allahabad law agency; 22nd Edition (2013)
6. Dr. Mohammad Nazmi: Mohammadan Law; Central Law Publications (CLP); 1st edition (2012)

Books for References:

1. Paras Diwan: Law of Marriage and Divorce: A Comprehensive treatise on Matrimonial Laws of all the Indian communities including Hindus, Muslims, Christians, Parsis and Jews; Universal Law Publishing - An Imprint of LexisNexis; Seventh edition (2016)
2. Dinshaw Fardunji Mulla: Mulla's Hindu Law; *Lexis Nexis*; Twenty third edition (2018)
3. Sir Dinshaw Fardunji Mulla: Mulla's Principles of Mahomedan Law; Lexis Nexis; Twenty Second edition (2017)

First Year – 1st Semester	*Subject Code –U18PCGL105*	*Total Credits: 04*

CONSTITUTIONAL LAW – I

Objective: Our Constitution is not just a mere set of fundamental laws that form the basis of governance of our country but it embodies and reflects certain basic values, philosophy and objectives. This paper provides a broader perspective for the students about the law of the land and explains the most vital features of a citizen in this country

COURSE OUTLINE

UNIT – I: CLASSIFICATION OF CONSTITUTION AND GOVERNMENTS

Definition and Meaning of Constitution - Kinds of Constitution - Meaning of Constitutionalism – Features of Indian constitution - Parliamentary Supremacy - Theory of Separation of Powers - Doctrine of Checks and Balances - Doctrine of Judicial Review.

UNIT – II: PREAMBLE, UNION AND ITS TERRITORIES AND CITIZENSHIP

Preamble - Meaning - Scope and Importance - Objectives and Values - Union and its Territories – Citizenship - Citizenship at the commencement of the Constitution - Deprivation and Renunciation of the Citizenship – Parliament's Power to regulate Citizenship Act.

UNIT – III: STATE

Definition and Meaning - Article 12 - Article 13 - Constitutional and Post Constitutional Laws - Various Doctrines - Eclipse - Severability – Colourable legislation – Waiver - Judicial Preview under Article 13.

UNIT – IV: FUNDAMENTAL RIGHTS

Rights to Equality: General Equality clause under Article 14 - Judicial Interpretation on Equality - Reasonable Classification - Protective Discrimination Clause - Preservation and Social Justice under Articles 15 – 18 - Rights to Freedom: Freedom of Speech and Expression - Art 19 - Scope and Ambit and 19(1) (a) and (2) - Balance between individual interest and collective interest reasonable restrictions

Rights of the Accused: Article 20 - Ex-post Facto Law - Double Jeopardy - Self-incrimination Art 21 - Judicial Interpretation on Life and Personal Liberty - Article 22 - Preventive Detention - Rights against Preventive Detention - Exceptions – Safeguards against preventive detention.

Freedom of Religion: Articles 25-28 - Secularism - Judicial Interpretation - Restrictions on Freedom of Religion.

Cultural and Educational Rights: Articles 29-30 - Protection for Minorities – Recent trends on Minority Educational Institutions.

Rights to Constitutional Remedies: Article 32 and 226 - Writ Jurisdiction

UNIT – V: DIRECTIVE PRINCIPLES OF STATE POLICY AND FUNDAMENTAL DUTIES

Directive Principles and Directions for Social Change - Social and Economic Charter -Social Security Charter - Community Welfare Charter - Fundamental duties - Nexus between Fundamental Rights and DPSP

Statutory Materials

The constitution of India Bare act with Short comments; Professional Book Publishers (2018)

Books Prescribed

1. V.N. Shukla; Constitution of India; Eastern Book Company;13th Edition; reprint (2019)
2. M.P .Jain; Indian constitutional law; Lexis Nexis; 8th Edition (2018)
3. Dr. J. N. Pandey; Constitutional Law of India; Central Law Agency, Allhabad;51st Edition (2014)

Books for Reference

1. D. D. Basu; Shorter Constitution of India; Lexis Nexis; 15th Edition (2017)
2. M. P. Singh; Constitution of Indi; Eastern Book Company; 12th Edition (2016)
3. H. M. Seervai; Constitutional Law of India; Universal Law Publishing;4th Edition (2015)

First Year – 2nd Semester	*Subject Code –U18PCGL106*	*Total Credits: 04*

LAW OF CONTRACT - II

Objective: This paper is a broader speculative about law of contracts with the addition of Sale of Goods Act for the wider knowledge of the students.

COURSE OUTLINE

UNIT – I: INDEMNITY AND GUARANTEE

Indemnity - Definition - Rights of the Indemnity Holder - Rights of the Indemnifier – Guarantee - Essentials and nature of Guarantee – Continuing Guarantee - Surety's Liability - Kinds of Guarantee - Discharge of Surety - Distinction between Indemnity and Guarantee.

UNIT – II: BAILMENT

Definition - Indian and English Definitions - Essentials of Bailment and classification - Distinction between Bailment and Pledge – Rights and Duties of Bailor and Bailee - Pledge - Definition - Rights of the Pawnor and Pawnee - Lien - Finder of Lost Goods

UNIT – III: AGENCY

Definition of Contract of Agency - Creation of Agency - Kinds of Agency - Distinction between Agent and Servant and Independent Contractor - Who may be an Agent - Kinds of Agent - Different Kinds of Agent - Authority of Agent - Delegation of Authority - Delegates Non Protest Delegare - Sub Agent - Substituted Agent- Essential of Ratification - Effect of Notice to Agent - Necessary Conditions to Bind Principal and Third Parties - Doctrine of Undisclosed Principal and Concealed Principal - Termination of Agency.

UNIT – IV: SALES OF GOODS ACT, 1930

Distinction between Sale and Agreement to sell - Hire Purchase Agreement - Definition - Goods - Specific Goods - Future Goods - Documents of Title of Goods - Conditions and Warranties - Effect of Breach - When condition is treated as Warranty - Implied Conditions and Warranties - Unpaid Vendor - His rights or Lien and Stoppage in Transit - Remedies available to Seller and Buyer.

UNIT – V: PARTNERSHIP

Distinction between Partnership and co-ownership Joint Hindu Family - Kinds of Partners and Duration of Partnership - Mutual Rights and Duties of Partners - Minor as a Partner - Difference in English Law - Rights of Legal Representative and Surviving Partners - Authority of Partner - Liability of the Partner of the Acts of the Firm and for the Wrongful Acts of other partner - Nature of Liability - Goodwill - Retirement of Partners - Dissolution of Firm - Effect of Non-registration of firm.

Statutory Material

1. Indian Contract Act, 1972
2. Sales of Goods Act,1930
3. Indian Partnership Act,1932

Books Prescribed:

1. Dr. S.K. Kapoor; Contact – II along with Sale of Goods Acs and the Partnership Act; Central Law Agency; 14th Edn. (2014)
2. Prof. G.C.V. Subba Rao's; Law of Contract; Central Law Publication; 11th Edn. (2015)
3. R. K. Bangia; Indian Contact Act; Allahabd Law Agency; 14th Edn. (2009)

Books for Reference:

1. Akhileshwar Pathak; Lae Relating to Special Contracts; Lexis Nexis; 1st Edn. (2014)
2. Velandai Gopalayyar; The Law of Contract in India; Eastern Book Company; 1970
3. Smith & Thomas; a Casebook on Contract; Sweets and Maxwell; 11th Edn. (2000)
4. Chechire, Fifoot & Furmston's; Law of Contract; Oxford University Press; 14th Edn. 2007

First Year – 2nd Semester	*Subject Code –U18PCGL107*	*Total Credits: 04*

PROPERTY LAW

Objective: By its very existence, society mandates interaction, exchange or transfer. A property, movable or immovable, is transferred from one person to another under various different situations and circumstances and for different values. This paper details about the property law, the litigation based on that and the recent amendments to the property law.

COURSE OUTLINE

UNIT – I: GENERAL PRINCIPLES OF TRANSFER

Transfer of Property Act, 1882 - Concept of Property - Definition of Transfer of Property - Kinds of Interest-Conditional Transfer - Document of Election - Ostensible Owner – Feeding the Grant - Improvement made by Bonafide Purchase- Lis Pendens - Fraudulent Transfer - Doctrine of Part Performance and other General Principles of Transfer.

UNIT – II: SPECIFIC TRANSFERS -TRANSFER OF ABSOLUTE INTEREST

Sale - Definition of sale - rights and liabilities of seller and buyer - Gift - Definition- Onerous Gift - Universal Donor and Donee - Death Bed Gift - Suspension and Revocation of Gifts – Exchange

UNIT – III: TRANSFER OF LIMITED INTEREST

Mortgage: Different Kinds of Mortgages - Redemption - Clog on Redemption - Partial Redemption - Rights and Liabilities of Mortgagor and Mortgagee including Doctrine of consolidation Marshalling Contribution – Subrogation - Charge

UNIT – IV: LEASE

Rights and Liabilities of Lessor and Lessee - Determination of lease - Doctrine of Holding Over - Forfeiture of Lease - Actionable claims.

UNIT –V: EASEMENT

Definition - Acquisition of Easement - Easement of Necessity and Quasi Easement - Easement by Prescription – Extinction - Suspension and Revival of Easements and License.

Statutory Material:

1. Transfer of Property Act, 1882
2. Indian Easements Act, 1882

Books Prescribed:

1. Avatar Singh: Transfer of Property Act; Universal Law Publishing, 5th Edition (2016)
2. Dr. R.K. Sinha: The Transfer of Property Act; Central Law Agency, 19th Edition (2018)

3. S.N. Shukla: The Transfer of Property Act; Allahabad Law Agency, 29th Edition (2018)
4. Vepa. P. Sarathi: Law of Transfer of Property; Eastern Book Company, 6th Edition(2017)
5. Dr. Poonam Pradhan Saxena: Property Law; Lexis Nexis, 3rd Edition (2017)
6. G.P. Tripathi: Transfer of Property Act; Central Law Publication, 19th Edition (2016)

Books for References:

1. Mulla: The Transfer of Property Act; Lexis Nexis, 13th Edition (2018)
2. Darashaw J. Vakil & HR Jhingta: Commentaries on the Transfer of Property Act; Lexis Nexis, 5th Edition (2017)
3. Goyle: A Commentary on the Transfer of Property Act; Eastern Law House, 2nd Edition (2001)
4. Sandeep Bhalla: Digest of cases on Transfer of Property in India; Eastern Book Company, 2nd Edition (2012)

First Year – 2nd Semester	*Subject Code –U18PCGL108*	*Total Credits: 04*

JURISPRUDENCE AND INTERPRETATION OF STATUTES

Objective: This paper is the documentary and earlier data on law and a guiding element to interpret and understand various statutes through the precedents.

COURSE OUTLINE

UNIT – I: NATURE, DEFINITION AND SCHOOLS OF JURISPRUDENCE

Nature and Definition of Jurisprudence – Analytical Positivism - Natural Law - Historical School - Sociological School - Economic Interpretation of Law - Indian Jurisprudence - Concept of Dharma – PIL - Social Justice and Compensatory Jurisprudence.
Nature and Purpose of Law
Nature and Definition of Law - Feminist Jurisprudence - Administration of Justice.

UNIT – II: SOURCES OF LAW

Legislation – Nature of Legislation - Supreme and Subordinate Legislation - Sources of - Codification and the Interpretation of Enacted Law - Precedents - Authority of Precedents - Circumstances destroying or weakening the binding force of Precedent - Ratio Decidendi and Judicial Reasoning - Custom: Kinds of Custom, Conventional Custom - Local Custom. - General Custom.
Legal Concepts – I :Legal Rights and Duties - Correlation of Right and Duty - Persons -Nature of Personality - Status of Unborn, Minor, Lunatic, Drunken and Dead Persons - Corporate Personality - Possession and Ownership.
Legal Concepts – II: Title - Property, Liability, Obligation and the Procedural Law

UNIT – III: LAW MAKING

Legislature, Executive and the Judiciary - Principle of Utility - Law and Public Opinion - Law and Social Control - Law and Morals - Meaning Objective and Scope of 'Interpretation', 'Construction' and 'Statute' - Public Opinion and Law Making.
Nature and Kinds of Indian Laws: Statutory, Non Statutory, Codified, Uncodified, State made and State Recognized Laws - Parts of a Statute -Commencement, Operation and Repeal and Revival of Statutes - Purpose of Statutory Interpretation - Basic sources of Statutory Interpretation -The General Clauses Act, 1897: Nature, Scope and Relevance – Definition clauses in various Legislation: Nature and Imperative Rule.

UNIT – IV: RULES OF STATUTORY INTERPRETATION

Literal and Logical Rules of Interpretation -Legalism and Creativity - Golden Rule and Mischief Rule - Strict construction of Penal Laws and Taxation Laws - Internal Aids and External Aids of Interpretation.

Interpretation of Constitution : Principles and Theories - Preamble as a Tool - Directive Principles and Fundamental Duties with Fundamental Rights – Interpretation of International Instruments - Presumption against Exceeding Territorial Nexus – Presumption against Ouster of Jurisdiction of Courts – Presumption against changes in Common Law - Presumption against including what is Inconvenient or Unreasonable - Presumption against Retrospective Operation of Law – Presumption against Violation of International Law.

UNIT – V: LEGISLATIVE DRAFTING

Principles and Process of Legislative Drafting - Simplicity, Preciseness, consistency, Alignment with Existing Law - Brevity – Drafting General Laws – Special Laws – Rules – Orders.

Books Prescribed:

1. G.C. Venkata subbaRao; Jurisprudnce and Legal Theoru; Eastern Book Company; 9th Edn.,Reprinted 2012
2. R.W.M. Dias; Jurisprudence; Lexis Nexis; %th Edn., 2013; Reprinted 2014
3. Dr. N.V. Paranjape; Studies in Jurisprudence and Legal Thoery; Central Law agency; 7th Edn. 2013; Reprint (2015)
4. G.W. Paton; A Textbook of Jurisprudence; Oxford University Press; 14th Edn. 1972; 1st Indian Edn. (2004)
5. B.N. Mani Tripathi; Jurisprudence the Legal Theory; Allahabad Law Agency; 19th Ed.(2012); Reprinted (2015)
6. V.D.Mahajan's; Jurisprudence and Legal Theory; Eastern Book Company; Reprinted 2015
7. Prof. T. Bhattacharyya; the Interpretation of Statites; Central Law Agenecy; 9th Edn. (2014)
8. B.M.Gandhi; Interpretation of Statues; Eastern Book Company; 2nd Edn. (2014)
9. Dr. M.P. Tandon; Interpretation of Statutes; Allahabd Law Agency; 11th Edn. (2205)
10. Vepa. P. Sarathi; Interpretation of Statutes; Eastern Book Company; 14th Edn.(2003); Reprinted (2013)
11. P.St. J. Langan; Maxwell on the Interpretation of Statutes; Lexis Nexis; 19th Edn. (2013)

Books for Reference:

1. H.L.A Hart, the Concept of Law; Oxford University Press; 3rd Edn. 2012
2. Edgar Bodenheimer; Jurisprudence; Harvard University Press, 1974; 2nd Edn.
3. Edgar Bodenheiner; Jurisprudence the Philosophy and Method of the Law; Harvard University Press, 1981
4. Thomas Erskine Holland D.C.L; The Elemets of Jurisprudence; the Lawbook Exchange, Ltd.,2nd Edn., 2008

5. G. C. Mathur, Vidya Dhar Mahajan; Jurisprudence and Legal Theory; Eastern Book Company, 1987; 5 Edn., reprint
6. Vepa P. Sarathi; Interpretation of Statutes; State Mutual Book & Periodical Service, Limited, 1986; 3rd Edn.
7. A.B. Kafaltiya; Interprettaion of Statutes; Universal Law Publishing Co.; 2008 Edn. Reprint 2010
8. G. E. Devenish; Interpretation of Statutes; Juta, 1992
9. Peter Benson Maxwell; On the Interpretation of Statutes; Creative Media Partners, LLC, 2015

First Year – 2nd Semester	*Subject Code –U18PCGL109*	*Total Credits: 04*

FAMILY LAW - II

Objective: This paper will provide a broader explanation about the systems, property related litigation and its measures according to their personal laws.

COURSE OUTLINE

UNIT – I: JOINT HINDU FAMILY

Institution of Joint Family - Coparcenery System - Classification of Properties – Kartha-Status, Powers and Duties - Principles of Survivorship and Succession - Partition

UNIT – II: INTESTATE SUCCESSION

General Principles of Succession under Hindu Law, Muslim law and Christian Law -Statutory Conditions Disinheritance and Disentitlement - Comparative analysis of Rights to Property of Women under Different Religion - Statutory Law - Rights of Pre-emption

UNIT – III: TESTAMENTARY SUCCESSION

Testamentary succession under Hindu, Muslim and Christian Law- Limitation under various Religious and Statutory Laws - Will and Administration of Will - Codicil Lapse, Abatement and Ademption of Legacies - Probate, Letters of Administration and Succession Certificate.

UNIT – IV: GIFT UNDER ISLAMIC LAW

Hiba - Nature and Characteristics of Hiba - Subject matter of hiba and hiba-bil-iwaz - Revocation of Gift.

UNIT – V: RELIGIOUS ENDOWMENT AND WAKF

Hindu Religious Endowment - Wakf: Meaning – Creation of Wakf - Formalities - Types and Administration of Wakf - Mutawalli and his powers and duties.

Statutory Material

1. Hindu Succession Act, 1956
2. Indian Succession Act, 1925
3. The Hindu Women's right to property Act, 1937 (repealed)
4. The Wakfs Act, 1954

Books Prescribed:

1. Prof. G. C. V. Subba Rao: Family Law in India: Narendra Gogia, 10th Edition (2018)
2. Paras Diwan, Peeyushi Diwan: Family Law: Allahabad Law Agency (2018)
3. H. K. Saharay: Family Law in India; Eastern Law House; 2011 edition (2012)
4. Paras Diwan, Peeyushi Diwan: Modern Hindu Law; Allahabad law agency; 22nd Edition (2013)

5. Dr. Mohammad Nazmi: Mohammadan Law; Central Law Publications (CLP); 1st edition (2012)

Books for References:

1. Dinshaw Fardunji Mulla: Mulla's Hindu Law; *Lexis Nexis*; Twenty third edition (2018)
2. Sir Dinshaw Fardunji Mulla: Mulla's Principles of Mahomedan Law; Lexis Nexis; Twenty Second edition (2017)
3. Paras Diwan: Law of Intestate and Testamentary Succession; Universal Law Publishing - An imprint of LexisNexis; Fourth edition (2013)

First Year – 2nd Semester	*Subject Code –U18PCGL110*	*Total Credits: 04*

CONSTITUTIONAL LAW – II

Objective: This paper elucidates the parliamentary form of aspects, the role of Executive, Legislative and Judiciary and the role of Election Commission which interprets the current system and gives an overall perspective to students.

COURSE OUTLINE

UNIT – I: THE UNION AND STATE EXECUTIVE

The Union Executive - The President - Election, Term of Office, Powers and Functions, Impeachment - Immunities - Pardoning Power - Ordinance making power - President and Union Council of Ministers - The State Executive -Governor - Appointment, Powers and Functions - Immunities - Pardoning Power - Removal of Governor - Doctrine of Pleasure.

UNIT – II: LEGISLATURE AND JUDICIARY

Composition of Parliament and State Legislatures - Office of the Speaker - Qualification / Disqualification of Members - Legislative Procedure, Legislative Privileges -Judicial Interpretation - Anti Defection Law, X Schedule. Union Judiciary -Supreme Court of India Composition, Appointment and Removal of Judges of Supreme Court - Writ Jurisdiction of Supreme court under Art 32 – Kinds of Jurisdiction - Public Interest Litigation Compensatory Jurisprudence -Independence of Judiciary - State Judiciary - High Courts in the States - Composition, Appointment and Removal of Judges - Writ Jurisdiction of High Courts under Art. 226.

UNIT – III: CENTRE – STATE RELATIONS:

Distribution of Legislative, Administrative and Fiscal Powers and Freedom of Trade and Commerce - Distribution of Legislative Powers - Doctrine of Territorial Nexus - Subject matter of laws made by Parliament and Legislature of States - Doctrine of Harmonious Construction - Doctrine of Pith and Substance - Doctrine of Occupied Field - Colourable Legislation -Parliament's Power to Legislate in State List - Implied and Residuary Power - Doctrine of Repugnancy - Administrative Relations - Centre and Inter-State Conflict Management Financial Relations - Sharing of Tax - Grants-in-Aid -Restriction on the power of State Legislatures - Doctrine of Immunity - Borrowing Powers - Constitution Limitations - Freedom of Trade, Commerce and Intercourse - Power of Parliament - Restrictions - Goods and Service Tax (GST) - Impact of Globalization.

UNIT – IV: OTHER CONSTITUTIONAL FUNCTIONARIES

Organisation - Power and Functions of Election Commission of India - Union Public Service Commission - State Public Commission - Comptroller and Auditor General - Attorney General & Advocate General - Constitutional Safeguards for Civil Servants - Protection against Arbitrary Dismissal - Removal or Reduction in Rank - Exceptions to Art 311 – Role of Finance Commission - Planning Commission - Inter – State Council - National Development Council - Local Self Government (Panchayat Raj).

UNIT – V: EMERGENCY PROVISIONS

Emergency Provisions - National Emergency - Duty of the Union to protect the States against External Aggression and Internal Disturbance - Power of Union Executive to issue directions and the effect of non-compliance.

State Emergency - Imposition of President's Rule in States - Grounds, Limitations, Parliamentary Control, Judicial Review.

Financial Emergency (Article 360) - Emergency and Suspension of Fundamental Rights.

Books Prescribed

1. Dr. J.N. Pandey: Constitutional Law of India; Central Law Agency, 52nd Edition (2015)
2. M.P. Jain: Indian Constitutional Law; Lexis Nexis; 7th Edition (2014)
3. Prof. S.R. Bhansali: The Constitution of India; Universal Law Publishing; 1st Edition (2015)

Books for References:

1. Durga Das Basu: Constitution of India; Lexis Nexis, 23rd Edition (2018)
2. H.M. Seervai: Constitution of India (Vol.1-3) Universal Law Publishing; 4th edition (2015)
3. Dr. V.N. Shukla: Constitution of India, Eastern Book Company, 12th Edition, 2013
4. Justice Sujata V. Manohar, T K Tope Constitutional Law of India, Eastern Book Company, 3rd Edition, 2010

First Year – 2nd Semester	*Subject Code – U18CCGL101*	*Total Credits: 03*

CLINICAL COURSE – I
MOOT COURT

Objective: Moot court simulate a court hearing, in which students analyze a problem, research the relevant law, prepare written submissions, and present oral argument. Mooting enables students to enhance their argumentative skills, drafting skills and legal research andto demonstrate their interest in advocacy.

COURSE OUTLINE

This course consists of following:

1. Every student will do at least five moot courts in following subjects. The moot court work will be on assigned problems.
    - Constitutional Law
    - Environmental Law
    - International Law
    - Administrative Law
    - Family Law
    - Criminal Law
    - Civil Law

2. **WRITTEN SUBMISSIONS:**
    - The students should mandatorily submit 5memorials on either side based on the discretion of the concern faculty. The maximum mark for each memorial is 10.
3. **ORAL ARGUMENTS:**
    - Every student will be asked to argue on any two moot problems mandatorily i.e. one on petitioner/claimant side and another on Respondent side.

4. **EVALUATION SCHEME**

5 Written Submissions	10 Marks Each	5x10 = 50 Marks
2 Oral Arguments	25 Marks Each	2x25 = 50 Marks
TOTAL		**100 Marks**

First Year – 2nd Semester	*Subject Code –U18PTGL101*	*Total Credits: 02*

INTERNSHIP AND PRACTICAL TRAINING – I

Objective: The internship programmes are designed to acquaint the student with the actual practice of law by working under the supervision of legal luminaries. The student gains experience of applying theoretical knowledge from prior classroom training, when exposed to practical environment.

COURSE OUTLINE

During the summer vacation the students should compulsorily undergo Internship for a continuous period of 4 weeks and submit an internship report along with ainternship certificate. This will be evaluated by the Internship Faculty Guide.

The student may choose to intern under any one the following category:

- Trial Advocate
- Appellate Advocate
- Law Firms
- Non-Governmental Organization
- Police Stations
- Banks
- Non Banking Financial Institutions
- Companies
- Registration Department
- Judiciary
- Legal Regulatory Authorities
- Legislatures
- Market Institutions
- Local Self-Government
- Other Legal Functionaries
- Dispute resolution Bodies
- Legal Services Authority

On completion of successful internship training every student will be awarded 2 credits

Second Year – 3rd Semester	*Subject Code –U18HCGL201*	*Total Credits: 04*

HONOURS COURSE: I

CYBER LAW

Objective: This paper explains about the most needed legislation of the hour and discusses about the cyber space issues and remedial measures.

COURSE OUTLINE

UNIT – I: INTRODUCTION

Cyber Space - Introduction and UNCITRAL Model Law - Information Technology Act, 2000 with Recent Amendments - Jurisdictional Issues - Digital Signatures - Regulation of Certifying Authorities - Cyber Regulation Appellate Tribunal

UNIT – II: CYBER LAW AND E - COMMERCE

Formation of Online Contracts - E-Banking Transactions - Online Payment Options - Online Advertising - Taxation Issues in Cyber Space - Indirect Tax - Tax Evasion - Double Tax - Financial Frauds - International Tax Permanent Establishment

UNIT – III: CYBER CRIMES

Understanding Cyber Crimes - Actus Reus and Mens Rea - Types of Crimes in the Internet - Against Person, Against Property, Against Government - Cyber Forensics Investigation- Introduction - Investigation Tools – E - Discovery - Digital Evidence Collection and Preservation - E-Mail Investigation , Tracking and Recovery - Encryption and Decryption methods - Search and Seizure of Computers - Recovering deleted evidences -Password Cracking - Investigation and Adjudication of Cyber Crimes in India - Cyber Arbitration - Cyber Security - Implementing Hardware Based Security - Software Based Firewalls -Security Standards - Assessing Threat Levels - Forming an Incident Response Team, Reporting Cyber crime - Operating System Attacks - Application Attacks - Reverse Engineering & Cracking Techniques.

UNIT – IV: IPR AND CYBER SPACE

Copyright Issues in the Internet - Protection of Computer Software - Caching - International Regime - OSS - DMCA - Trademark Issues in the Internet - Domain Name Registration - Domain Name Dispute - ICANN – URDP Policy - Linking - Meta tagging - Database issues in the internet.

UNIT – V: CONTEMPORARY ISSUES

Convergence Technologies - Cloud Computing - Online Digital Libraries - Access to Internet: A Human Right Issue - Issue of Censorship - Privacy issues - National Security and Social Security.

Books Prescribed:

1. Harish Channder; Cyber laws and IT Protection; PHI Learning Private Limited; 1st Edn. (2012)
2. Pavan Duggal; Cyber law: the Indian perspective; Saakshar Law Publications, 2002
3. Vakul Sharma; Information Technology Law and Practice; Universal Law Publishing Co.; 3rd Edn. (2011)
4. Rohit Arvind Jain; Cyber Crimes and Law, A Overview on Securing Cyber Space; Evincepub Publishing; 1st Edn. 2018
5. M. Dasgupta, Pranay Chaturvedi, Ankur Dalal; Cyber crime in India: a comparative study; Eastern Law House, 1st Edn. (2009)
6. Aparna Viswanathan; Cyber Law: Indian & International Perspectives on Key Topics Including Data Security, E-commerce, Cloud Computing and Cyber Crimes; LexisNexis Butterworths Wadhwa, 2012

Books for Reference:

1. Talat Fatima; Cyber Law in India; Wolters Kluwer; 1st Edn. 2008
2. Pooja Kiyawat, Manish Yadav; Critical Analysis of Cyber Laws with Respect to Cyber-Crimes in India; SPS, 2016
3. Farooq Ahmad; Cyber Law in India: (law on Internet); Pioneer Books, 2001
4. Susan W. Brenner; CyberCrime and the law Challenges, issues and Outcomes; Noth Eastern University Press; 2012
5. Matthew Richardson: Cyber Crime: Law and Practice; Wildy, Simmonds & Hill Publishing, 2014

Second Year – 3rd Semester	*Subject Code –U18PCGL211*	*Total Credits: 04*

LABOUR LAW – I

Objective: This paper explains about the labour legislations viz Industrial disputes Act, the legislation which governs the factories and the scope and significance of Trade Union in a broader perspective.

COURSE OUTLINE

UNIT – I: EVOLUTION OF LABOUR LEGISLATION

Origin and Development of Labour Legislation - Object and Nature of Labour Legislation- Evolution of concept of Master and Servant Relationship - Theory of Laissez Faire and State Regulation of Labour Legislation and its Special Features- Role of International Labour Organization in Setting Labour Standards.

UNIT – II: TRADE UNION ACT, 1926

Definitions - History of Trade Union Movement - Registration of Trade Unions-Rights and Liabilities of Trade Unions-Immunities and Privileges of a Registered Trade Union - Trade Union Funds - Collective Bargaining - Amalgamation and Dissolution of Trade Unions-Recognition in Trade Unions.

UNIT – III: INDUSTRIAL DISPUTES ACT, 1947

Scope, Applicability and Definitions - Appropriate Government – Workmen – Industry - Industrial Disputes – Award – Settlement - Public Utility Service – Strike - Lock Out - Retrenchment - Lay Off - Closure - Machinery for the Settlement of Industrial Disputes - Works Committee - Conciliation Officers - Board of Conciliation - Court of Inquiry - Labour Court - Industrial Tribunal - Power to the Government for reference - Voluntary Arbitration - Unfair Labour Practices.

UNIT – IV: FACTORIES ACT, 1948

Object and Scope of the Act - Important Definitions - Statutory Agencies and their Powers for Enforcement of the Act - Approval, Licensing and Registration of Factories - Notice by Occupier -General Duties of the Occupier - General Duties of Manufacturers - Measures to be taken by Factories for Health, Safety and Welfare of Workers - Special Provisions relating to hazardous processes - Working hours of Adults - Additional provisions regulating employment of women in a factory - Employment of Children - Annual Leave with Wages - Penalties and Procedures - Compliances Under The Act.

UNIT – V: INDUSTRIAL EMPLOYMENT (STANDING ORDERS) ACT, 1946

Scope and Definitions – Procedure for Certification of Standing Orders – Duration and Modification of Certified Standing Orders – Domestic Enquiry and Disciplinary Procedures.

Statutory Materials

1. Industrial Disputes Act 1947
2. Trade Union Act 1926
3. Industrial Employment (Standing Orders) Act 1946
4. Factories Act 1948

Books Prescribed

1. K.M. Pillai; Labour and Industrial Law; Allahabad Law Agency;16th Edition (2016)
2. S.N. Misra; Labour and Industrial Law; Central Law Agency 28th Edition (2018)
3. Dr.V.G. Goswami; Labour and Industrial Laws; Central Law Agency latest edition (2019)

Books for Reference

1. O.P. Malhotra; The Law of Industrial disputes; Lexis Nexis;7th edition (2015)
2. K.D. Srivastava; Law relating to Trade Unions and Unfair Labour practices in India; Eastern Book Company 4th edition (2002)
3. K.D. Srivastava; Industrial Employment (Standing Orders) Act 1946;Eastern Book Company;4th edition (2000)

Second Year – 3rd Semester	*Subject Code –U18PCGL212*	*Total Credits: 04*

PUBLIC INTERNATIONAL LAW

Objective: This paper explains about the International Law and its scope and significance, its impact on the states and imparts the students a wider knowledge on the International legislation.

COURSE OUTLINE

UNIT – I: INTRODUCTION

Development of International Law - Definitions- Nature of International law- Legality of International Law - Positive Morality - Theories as to basis of International Law.

UNIT – II: SOURCES AND SUBJECTS OF INTERNATIONAL LAW

Introduction - International Conventions - International Customs - General Principles of Law recognized by Civilized States - Decisions of Judicial or Arbitral Tribunals - Other Sources - Subjects of International Law- Various Theories - Realistic Theory - Fictional Theory- Functional Theory

Concept of State - State and Individual as a subject - Rights and Duties / Responsibilities - State Recognition -Theories - Kinds, Modes and Legal Effects - Nationality - Acquisition and Loss related issues - Asylum – Extradition - Territorial Sovereignty - Modes of Acquisition and Loss of Territory - State - Jurisdiction - State Succession and Liability

UNIT – III: LAW OF SEA

Historical Background- Maritime Belt - Territorial Sea - The Contiguous Zone- Exclusive Economic Zone - Continental shelf - The High Seas - International Sea Bed Area - Law of the Sea Conventions.

UNIT – IV: CONCEPT OF TREATY

Kinds of Treaties - Binding Force of Treaties- Pacta Sunt Servanda- Jus Cogens - Rebus Sic Stantibus - Parties of a Treaty - Formation of a Treaty- Reservations - Invalidity and Termination of Treaties.

UNIT – V: INTERNATIONAL ORGANIZATION

Origin, Nature and Scope of International Organizations - League of Nations, United Nations and it's Organs - International Tribunals.

Books Prescribed:

1. Dr. H.O.Agarwal: International Law & Human Rights; Central Law Publications, 20th Edition (2015)
2. M.P.Tandon: Public International Law; Allahabad Law Agency, 17th Edition (2014)
3. Joseph Gabriel Starke: Strake's International Law; Butterworths, 11th Edition (1994)

4. R.P. Anand: Salient documents in International Law; Banyan publications, 1st Edition (1994)
5. Yosifumi Tanaka: The International Law of the Sea; Cambridge University Press, 2nd Edition

Books for Reference:

1. S.K.Kapoor: A text book of International Law; Central Law Agency, 5th Edition (1982)
2. K.K.Bhattacharya: Public International Law; Central Law Agency, 5th Edition (1976)
3. Malcolm N.Shaw: International Law; Cambridge University Press, 8th Edition (2018)
4. Antonio Cassese: International Law; Oxford University Press, 2nd Edition (2001)
5. Ian Brownlie: Principles of Public International Law; Oxford University Press, 7th Edition (2008)
6. David John Haris: Cases & Materials on International Law; Sweet & Maxwell, 4th Edition (1991)

Second Year – 3rd Semester	*Subject Code –U18CCGL202*	*Total Credits: 03*

CLINICAL COURSE - II

ALTERNATE DISPUTE RESOLUTION

Objective: This paper is imparted to create practical knowledge and awareness in the Arbitration, Conciliation and Mediation proceedings in India and International Arena.

COURSE OUTLINE

UNIT – I: INTRODUCTION

Concept and Essential features - Need of Arbitration in International and Indian Law - Arbitration Law before 1996 - Arbitration Law after 1996 - Arbitration Agreement - Appointment of Arbitrator - Conduct of Arbitration Proceedings - Power of Courts to interfere in Arbitration Proceedings - Place of Arbitration - Law applicable to the Arbitration - Evolution of mediation/conciliation as a mode of settlement of disputes - distinction between arbitration, mediation, conciliation and negotiation – International Commercial Arbitration.

UNIT – II: MEDIATION AND CONCILIATION

Theory of mediation - Role of the mediator - Drafting Mediation and Conciliation clauses and agreements initiating mediation (court annexed and private) -The Mediation/Conciliation process Confidentiality - Mediation /Conciliation Mediation in India, institutions, and their role - Lok Adalats.

UNIT – III: INTERIM MEASURES

Jurisdictional Issues - Arbitral Award - Setting Aside the Arbitral Award - Enforcement of Arbitral Award - Online Dispute Resolution - International Dispute Resolution - Foreign Award - New York Convention -Geneva Convention - Enforcement of Foreign Award -Public Order.

MARKS ALLOCATION

External Examination	**50 Marks**
Project work on Arbitration / Mediation (Practical exercises in the preparation and conduct of arbitration &mediation)	**25 Marks**
Viva-Voce	**25 Marks**
TOTAL	**100 Marks**

Statutory Materials:

1. International Conventions

2. Arbitration and Conciliation Act, 1996
3. Arbitration and conciliation (Amendment) Act, 2015

Books Prescribed:

1. Avtar Singh: The Law of Arbitration and Conciliation; Eastern Book Company, 11th Edition (2018)
2. Mallika Taly: Arbitration Law- A Primer; Eastern Book Company, 1st Edition(2011)
3. K V Satyanarayana: Law of Arbitration and Conciliation in India; Asia Law House, 1st Edition (2017)
4. Dr. N.V. Paranjape: Law Relating to Arbitration and Conciliation in India; Central Law Agency, 7th Edition (2016)
5. Dr. S.C.Tripathi: Arbitration and Conciliation Act, 1996 with Alternate Means of Settlement of Disputes; Central Law Publication, 8th Edition (2017)

Books for References:

1. J.G. Merrills: International Dispute Settlement; Cambridge University Press, 5th Edition (2005)
2. P.C.Markanda: Arbitration Step By Step; Lexis Nexis, 2nd Edition (2017)
3. Nakul Dewa: Enforcing Arbitral Awards in India; Lexis Nexis, 1st Edition (2017)
4. Justice S.B.Malik: Commentary on the Arbitration and Conciliation Act; Universal Law Publications, 8th Edition (2018)
5. Justice R.S.Bachawat: The Law of Arbitration & Conciliation; Lexis Nexis, 6th Edition (2018)
6. Dr. Ashwinie Kumar Bansal: Arbitration Awards - Law on Setting Aside and Execution of Arbitration Awards, Agreements and Appoimtment of Arbitrators; Universal Law Publications, 3rd Edition (2014)

Second Year – 4th Semester	*Subject Code –U18HCGL202*	*Total Credits: 04*

HONOURS COURSE: II

MEDIA LAW

Objective: This paper seeks to establish a co-relationship of the much-flaunted Constitutional objective of freedom of speech and expression, and existing Rights and Restrictions governing the fourth estate, an essential pillar of Democratic Governance.

COURSE OUTLINE

UNIT - I: MASS MEDIA

Types of Press Films, Radio and Television - Ownership pattern-Press-Private-Public, Films-Private, Ownership patterns Radio & Television, Public - Difference between Visual and non-Visual Media-impact on People's minds - Press-Freedom of Speech and Expression-Article 19 (1) (a) Includes Freedom of the Press - Laws of defamation - obscenity - blasphemy and sedition. Law relating to employees wages and service conditions - Price and Page Schedule Regulation - Newsprint Control Order – Advertisement is it included within freedom of speech and expression? Press and the Monopolies and Restrictive Trade Practices Act.

UNIT – II: FILMS

How far included in freedom of speech and expression? Censorship of films-Constitutionality - The Abbas Case, Bandit queen case, Jolly LLB Case, Innocence of Muslims Case, Dam 999 Case - Difference between films and Press - why pre-censorship valid for films but not for the press? Censorship under the Cinematograph Act.

UNIT – III: RADIO AND TELEVISION

Monopoly of the Government over Radio and Television - Effect of television on people, Report of the Chanda Committee, Vargheese Committee, Government policy on Television and Radio - Commercial advertisement, Internal Scrutiny of serials etc., Judicial Review of Doordarshan decisions - Freedom to telecast.

UNIT – IV: CONSTITUTIONAL RESTRICTIONS RADIO AND TELEVISION

Subject to law of defamation and obscenity - Power to legislate-Article 246 read with the Seventh Schedule - Power to impose tax-licensing and licensing fee.

UNIT – V: MEDIA AND HUMAN RIGHTS

Media and Information, communication technology, Media and RTI, Media and Violation of Human Rights - Media and Right to Privacy.

Statutory materials:

1. Prashar Bharti Act 1990
2. Broadcasting Bill

3. Cinematography Act 1952
4. Cable T.V.Networks (regulation) Act of 1995
5. Advertisement Act of 1954
6. Indecent Representation (Prohibition) Act, 1986

Books Prescribed:

1. H.M. Seervai: Constitutional Law of India; Universal Law Publication, 1st Edn. (1991)
2. M.P. Jain: Constitutional Law of India; Lexis Nexis, 8th Edn. (2018)
3. Myneni: Media Law; Asia Law House, 2nd Edn. (2017)

Books for Reference:

1. S. Kundra: Media Laws and Indian Constitiotion; Anmol Publiccations, 1st Edn. (2005)
2. M. Neelamalar: Media Law and Ethics; Prentice hall, India Learning Ltd., 2nd Edn. (2009)
3. Vanita Kohli Khandekar: Inidan Media Business; Sage Publications, 4th Edn. (2017)

Second Year – 4th **Semester**	*Subject Code –U18HCGL203*	*Total Credits: 04*

HONOURS COURSE: III

DISASTER MANAGEMENT LAW

Objective: This paper is imparted to provide basic conceptual understanding of disasters and its relationships with development and to understand Medical and Psycho-Social Response to Disasters and to enhance awareness of Disaster Risk Management institutional processes in India.

COURSE OUTLINE

UNIT-1: INTRODUCTION TO DISASTER

Concepts of Hazard, Vulnerability, Risks, Natural Disasters (earthquake, Cyclone, Floods, Volcanoes) - Man Made Disaster (Armed conflicts and civil strip, Technological disasters, Human Settlement, Slow Disasters (famine, draught, epidemics) - Rapid Onset Disasters (Air Crash, tidal waves, Tsunami) Risks - Difference between Accidents and Disasters, Simple and Complex Disasters – Refugee problems, Political, Social, Economic impacts of Disasters, Gender and Social issues during disasters - principles of psychosocial issues and recovery during emergency situations - Equity issues in disasters - Refugee operations during disasters, Human Resettlement and Rehabilitation issues during and after disasters, Inter-sectoral coordination during disasters.

UNIT-II: DISASTER RISK MANAGEMENT IN INDIA:

The Disaster Management Act, 2005 - Definitions - The National Disaster Management Authority- Establishment of National Disaster Management Authority - Meetings of National Authority - Appointment of officers and other employees of the National Authority - Powers and functions of National Authority - Constitution of advisory committee by National Authority - Constitution of National Executive Committee -Constitution of sub-committees - Powers and functions of National Executive Committee - National plan - Guidelines for minimum standards of relief - Relief in loan repayment and others.

UNIT-III: STATE AND DISTRICT DISASTER MANAGEMENT AUTHORITY

Establishment of State and District Disaster Management Authority - Meetings of the State Authority - Appointment of officers and other employees of State Authority - Constitution of advisory committee by the State Authority - Powers and functions of State Authority- Guidelines for minimum standard of relief by State Authority - Constitution of State Executive Committee - Constitution of sub-committees by State Executive Committee - Functions of the State Executive Committee - State Plan - Powers and functions of State Executive Committee in the event of threatening disaster situation.

UNIT IV: OFFENCES AND PENALTIES

Punishment for obstruction - Punishment for false claim - Punishment for misappropriation of money or materials - Punishment for false warning - Offences by Departments of the Government - Failure of officer in duty or his connivance at the contravention of the provisions of this Act - Penalty for contravention of any order regarding requisitioning - Offence by companies - Previous sanction for prosecution - Cognizance of offences - Finance, Accounts And Audit : National Disaster Response Fund - National Disaster Mitigation Fund - Establishment of funds by State Government - Allocation of funds by Ministries and Departments - Emergency procurement and accounting.

UNIT V: PUBLIC HEALTH RESPONSE AND INTERNATIONAL COOPERATION

Principles of Disaster Epidemiology - Rapid Health Assessment - Outbreak Investigation - Environment health hygiene and sanitation issues during disasters - Preventive and prophylactic measures - International cooperation in funding on public health during disaster - International Health Regulation, United Nation International Strategy for Disaster Risk Reduction (UNISDR), United Nation Disaster Management Team, International Search and Rescue Advisory Group, (INSARAG, Global Facility for Disaster Risk Reduction (GFDRR), Asean Region Forum (ARF), Asian disaster Reduction Centre (ADRC), SAARC 277 Disasters Management Centre (SDMC), USAID), UNDAC,UNOCHA, USAR.

Statutory Materials

1. The Disaster Management Act, 2005
2. The Disaster Management (National Disaster Response Force) Rules, 2008
3. Hazardous Wastes (Management and Handling) Rules, 1989

Books Prescribed:

1. R. Subramaniam: Disaster Management; Vikas Publishing House, 1st Edition (2018)
2. Tushar Battacharya: Disaster science and Management, Mc Graw Hill Education, (2017).
3. Harsh K. Gupta: Disaster Management; Universities Press, (2003)

Books for References:

1. Damon P. Coppola: Introduction to International Disaster Management, Butterworth-Heinemann; 3rd Edition (2015)
2. David Townes: Health in Humanitarian Emergencies: Principles and Practice for Public Health and Healthcare Practitioners; Cambridge University Press; 1 edition (31 May 2018)
3. Dr. Amit Awasthy: Disaster Management, Warning Response And Community Relocation, Global India Publications, New Delhi 2009.

Second Year – 4th Semester	*Subject Code –U18HCGL204*	*Total Credits: 04*

HONOURS COURSE: IV

MEDICAL AND HEALTH LAW

Objective: This paper seeks to explore various areas of the law that deal with creating and maintaining and regulating 'health.' The paper aims to give comprehensive and practical approach to the students to make them aware of the developments in medical sciences and to enable them to be equipped to face the recent challenges raised by the modern issues in contemporary era.

COURSE OUTLINE

UNIT – I: INTRODUCTION

Concept of health, public health - Law and health - development of interrelationship - Health Law and Bio Ethics

UNIT – II: LEGAL ASPECTS OF HEALTH CARE

Role of WHO - Constitutional law- regulation of health - Important legislations dealing with law and medicine

UNIT – III: MEDICAL PROFESSIONAL, PATIENT AND THE LAW

Nature and concept of physician - patient relationship - Informed consent and confidentiality - Concept of duty of care - standard of care - Code of ethics in medical profession - Role of judiciary in regulating the medical profession.

UNIT – IV: BIOETHICS - ISSUES AND CHALLENGES

Euthanasia and physician assisted suicide - Reproductive technology - Surrogate Motherhood - Medical termination of pregnancy - Prenatal diagnostic techniques.

UNIT – V: LAW RELATING TO MENTAL HEALTH

Stress management - Mental rehabilitation centers and law -Pschyco analysis and law - its impact over society - Mental Asylums and its governance under the law - International conventions and guidelines regarding psycho-legal law.

Books Prescribed:

1. Satish Tiwar, Mahesh Badwa, Mukul Tiwari & Alka kuthe: Text Book on Medico Legal Issues; Jaypee Brothers Medical Publishers, 1st Edition (2012)
2. Dr. Jaisigh P.Modi: A text book of Medical Jurisprudence and Toxicology; Lexis Nexis, 26th Edition (2018)
3. S.V. Jayarao: Current issues in Criminal Justice and Medical Law; Eastern Law House, 1st Edition (1999)

Books for References:

1. R.K. Bag: Medical Negligence and Compensation, Eastern Law House, (2015)
2. S.K. Singhal: Forensic Medicine and Jurisprudence; NBD, 5th Edition (2015)
3. Jonathan Herring: Medical Law and Ethics; OUP UK, (2014)

Second Year – 4th Semester	*Subject Code –U18PCGL213*	*Total Credits: 04*

LABOUR LAW – II

Objective: This paper will provide extensive knowledge and guidance to the student about social security legislations in India and how far it has been implemented to attain welfare state which is described in the Directive Principles of State Policy.

COURSE OUTLINE

UNIT – I: THE PAYMENT OF WAGES ACT, 1936

Object, Scope and Application of the Act -Definition of Wage, Responsibility for Payment of Wages, Fixation of Wage Period, Time of Payment of Wage Deductions which may be made fromWages,MaximumAmountofDeduction.

The Minimum Wages Act, 1948: Concept of Minimum Wage, Fair Wage, Living Wage and Need Based Minimum Constitutional Validity of the Minimum Wages Act, 1948, Procedure for Fixation and Revision of Minimum Wages, Fixation of Minimum Rates of Wage by Time Rate or by Piece Rate, Procedure for Hearing and Deciding Claims

UNIT – II: THE EMPLOYEE'S COMPENSATION ACT, 1923

Definition of Dependant, Workman, Partial Disablement and Total Disablement - Employer's Liability for Compensation - Doctrine of Notional Extension, When Employer is not liable Employer's Liability when Contract or is engaged, Amount of Compensation, Distribution of Compensation - Procedure in Proceedings before Commissioner , Appeals Retirement Benefits. Employee's Provident fund and miscellaneous provisions Act, 1952 - Employees Pension Scheme, 1995 and Family Pension Scheme - Social Security for the unorganized Sector

Employees Provident Funds And Miscellaneous Provisions Act, 1952:Introduction : Application of the Act - Important Definitions - Schemes Under the Act - Employees Provident Fund Scheme - Page Employees' Pension Scheme - Employees' Deposit-Linked Insurance Scheme - Determination of Moneys Due from Employers - Transfer of Accounts - Protection against Attachment - Power to Exempt

UNIT – III: PAYMENT OF BONUS ACT, 1965

Object and Scope of the Act - Application of the Act, Act not to Apply to Certain Classes of Employees - Important Definitions - Calculation of Amount Payable as Bonus - Computation of gross profits - Deductions from gross profits - Calculation of direct tax payable by the employer - Computation of available surplus - Eligibility for Bonus and its Payment - Bonus Linked with Production or Productivity - Power of Exemption - Penalties - Offences by Companies

Payment of Gratuity Act, 1972: Introduction - Who is an Employee - Important Definitions - When, is Gratuity Payable - To Whom is Gratuity Payable - Exemptions - Rights and Obligations of Employees - Rights and Obligations of the Employer - Recovery of Gratuity - Protection of Gratuity –

Maternity Benefit Act, 1961 :Introduction - Definition - Employment of or work by women prohibited during certain periods - Right to payment of maternity benefits - Notice of claim for maternity benefit -Nursing -Registers - Penalty for contravention of Act by employer

UNIT – IV: CONTRACT LABOUR (REGULATION AND ABOLITION) ACT, 1970

Scope and Application -Act not to Apply to Certain Establishments - Important Definitions - The Advisory Boards - Registration of Establishments Employing Contract Labour - Effect of Non-registration - Prohibition of Employment of Contract Labour - Appointment of Licensing Officer and Licensing of Contractors - Welfare and Health of Contact Labour - Rules Framed Under the Act by the Central Government on the Question of Wages -Penalties and Procedure - Inspectors -Maintenance of Records and Registers

UNIT– V: RESOLUTION OF INDUSTRIAL DISPUTE

Industrial Dispute and Individual Dispute Arena of Interaction and Participants: Industry, Workman and Employer - Settlement of Industrial Dispute i) Works Committee ii) Conciliation Machinery iii) Court of Enquiry iv) Voluntary Arbitration - Adjudication: Labour Court, Tribunal and National Tribunal - Powers of the Appropriate Government under the Industrial Disputes Act, 1947 - Unfair Labour Practice

Statutory materials

1. The payment of Wages Act 1936
2. The Minimum Wages Act 1948
3. The Employees Compensation Act 1923
4. Payment of Bonus Act 1965
5. Employees Provident Funds and Miscellaneous Provisions Act 1952
6. Payment of Gratuity Act 1972
7. Maternity Benefit Act 1961
8. Contract Labour (Regulation and Abolition) Act 1970

Books Prescribed

1. P.L. Malik: Industrial Law; Eastern Book Company; 25th edition (2017)
2. N.D. Kapoor: Hand book of Industrial Law ;Sultan Chand and sons (2011)
3. H.L. Kumar; Compliances under Labor Laws-A user's guide to adhere with provisions under various employment related Acts; Universal law publishing ;5th edition (2017)

Books for Reference

1. M.S. Sidhiqui; Labour Law and Industrial relations cases and materials; Indian law Institute, 3rd edition (2007)
2. S. M. Chaturvedi ; Labour and Indistrial Laws ;Jain Book Agency; 12th edition (2001)
3. P.L. Malik; Industrial Law; Eastern Book Company, latest edition (2017)

Second Year – 4th Semester	*Subject Code –U18PCGL214*	*Total Credits: 04*

COMPANY LAW

Objective: This paper is imparted in the view of increasing emphasis on adherence to norms of good corporate governance. Company Law assumes an added importance in the corporate legislative milieu, as it deals with structure, management, administration and conduct of affairs of Companies.

COURSE OUTLINE

UNIT – I: INTRODUCTION

Company: - Meaning and definition - characteristics - Kinds of Companies - private and public, government companies - statutory companies - Chartered - Registered - Limited and unlimited - Lifting of the corporate veil.

UNIT – II: COMPANIES ACT, 2013

Types of Companies and their incorporation - Formation of Companies - Procedural Aspects - Memorandum of Association - definition, clauses, provisions and procedures for alteration - - Articles of Association - definition, contents - provisions and procedures for alteration - distinction between Memorandum and Articles of Association • Doctrine of Ultra-Vires, Constructive Notice, Indoor Management - Promoters - Meaning, Position, Duties, Rights, Responsibilities and Liabilities - Prospectus - Contents - Statements in Lieu of Prospectus - Liabilities for misstatement.

UNIT – III: SHARES AND DEBENTURES

Shares - Classes of shares - Preference and equity shares -Public issue of shares - SEBI guidelines - Allotment of shares - Irregular allotment - Issue of shares at premium, par and discount - Listing of shares - Sweat equity shares - Right shares - Bonus shares - Shares with differential rights - Share certificate and share warrant. Calls, forfeiture, lien, surrender of shares - Demat form of shares -Transfer and transmission of shares - Buyback of shares Transfer under depository system - Debentures - Charges and Debenture Holder - Dividends - Borrowings - Lending - Investments - Contracts.

UNIT – IV: CORPORATE GOVERNANCE

Management of Companies: - Directors - Managing Director - Appointment – Qualification - Rights - Responsibilities and liabilities – Disqualification of directors Meetings - Requisites - Statutory, Annual, Extra ordinary and Board Meetings, Resolutions – Types -Accounts and Audits - Internal Auditing - National Financial Reporting Authority - E-filing and Information Technology Act, 2000 - Corporate Social Responsibility - Prevention of Oppression and Mismanagement – Investigation – Powers of Inspectors – Powers of NCLT, Company Law Board - Insider Trading.

UNIT – V: COMPROMISES, ARRANGEMENTS AND WINDING UP

Compromises - Arrangements and Amalgamations - Mergers and Acquisitions - Winding Up - Meaning - modes of winding up - winding up by the tribunal - Members voluntary winding up - creditor's voluntary winding up - winding up under the supervision of the court - Administration of NCLT and CLAT and Special Courts - Powers of Liquidators - Removal of Names of Companies from Register of Companies - Defunct Companies and Restoration - Revival and Rehabilitation of Sick Companies.

Emerging issues in Company Law: Producer Company - Limited liability partnership - Concept and formation of corporate governance - relevance and provisions under listing agreement - Securities and Exchange Board of India act 1992: Introduction - Object - establishment and management of SEBI - Functions and powers of SEBI – Securities Appellate Tribunal.

Statutory Materials:

1. Companies Act, 2013
2. Securities and Exchange Board of India Act, 1992
3. Information Technology Act, 2000

Books Prescribed:

1. Avtar Singh: Company Law; Eastern Book Company, 16th Edition (2015)
2. S.C. Tripathi: New Company Law; Central Law Publication, 1st Edition (2014)
3. Karn Gupta: Introduction to Company Law; Lexis Nexis, 1st Edition (2013)

Books for References:

1. Gower: Principles of Modern Company Law, Sweet & Maxwell, 9th Edition (2012)
2. Plamer: Company Law Manual; Sweet & Maxwell, 25th Edition (1992)
3. C.A. Kamal Garg: Bharat's Corporate & Allied Laws; 2nd Edition (2012)
4. G.K. Kapoor: Company Law and Practice, Taxmann's Publication, 23rd Edition (2018)

Second Year – 4th Semester	*Subject Code –U18PCGL215*	*Total Credits: 04*

LAW OF EVIDENCE

Objective: The Indian Evidence Act, 1872 is a long piece of legislation that codifies the rules of evidence. However, a detailed discussion of all the leading principles that will be covered will provide the students to have a good theoretical and working knowledge of the Indian Evidence Act, 1872 and will equip them to study the subject on their own.

COURSE OUTLINE

UNIT – I: INDIAN EVIDENCE ACT, 1872

Scope, Object and Applicability of Indian Evidence Act and Exclusion - Statutory Definition - Golden Rule Evidence -Presumption of Law and Fact - Kinds of Evidence.

UNIT – II: RELEVANCY OF FACT

Admissibility of Facts - Res Gestae -Omission - Cause and Effect - Motive, Preparation and Conduct - Explanatory Facts - When facts not otherwise relevant become relevant - Conspiracy - Admission and Confession - Dying Declaration

UNIT – III: RELEVANCY

Relevancy of Statement made by person who cannot be called as Witness - Relevance of Judgments - Relevance of Opinion of Third Persons - Expert Opinion- Scientific Examination and Expert Witness under Section 112A - Relevance of Character in Civil and Criminal Cases.

UNIT – IV: BURDEN OF PROOF

General conception of onus probandi- General and special exceptions to onus probandi- Justification of presumption and of the doctrine of judicial notice - Justification as to presumptions as to certain offences - Presumption as to dowry death - Scope of the doctrine of judicial notice.

Estoppel

The rationale - Estoppel - res judicata and waiver and presumption - Estoppel by deed - Estoppel by conduct - Equitable and promissory estoppel - Questions of corroboration.

UNIT – V: WITNESSES

Examination and Cross Examination - Competency to testify - State privilege - Professional privilege - Approval testimony - General principles of examination and cross examination - Leading questions - Lawful questions in cross-examination - Compulsion to answer questions put to witness - Hostile witness - Impeaching of the standing or credit of witness.

Statutory Material

Indian Evidence Act, 1872

Books Prescribed:

1. Ratanlal and Dhirajlal: Law of Evidence; Lexis Nexis; 26th Edn. (18 July 2017)
2. Avatar Singh: Law of Evidence; Central Law Publication; 20th Edn. (2014)
3. Vepa Sarathi: Law of Evidence; Eastern Book Co. (EBC); 2017 Edn. (2017)
4. V. Krishnamachari: Law of Evidence; Narender Gogia & Company; 2018 Edn. (2018)

Books for References:

1. Sarkar: Law of Evidence; Lexis Nexis India; 17th Edn. (2010)
2. Woodroffe and Amir Ali; Law of Evidence; Lexis Nexis India; 27th Edn. (2017)
3. Batuk Lal; Law of Evidence; Central Law Agency (CLA); 2018 Edn. (2018)

Second Year – 4th **Semester**	*Subject Code –U18CCGL203*	*Total Credits: 03*

CLINICAL COURSE - III

PROFESSIONAL ETHICS, ACCOUNTANCY FOR LAWYERS &BAR BENCH RELATIONS

Objective: Every profession has rules of ethics to which its members are bound and the one who violates them will be imposed with liability in various forms. Likewise, a lawyer who does not follow ethical and other rules of professional conduct can be censured and can also be suspended from law practice or even disbarred. This paper will introduce students to the rules of professional ethics which applies to lawyers in India. This paper is designed with a main purpose of making law students [on the verge of completing their law course] to get acquainted with, analyze and critically examine such rules of professional ethics.

COURSE OUTLINE

UNIT-I: DEVELOPMENT OF LEGAL PROFESSION IN INDIA

The Advocates Act, 1961 - Right to Practice - a right or privilege? - Constitutional guarantee under Article 19(1) (g) and its scope - Enrolment and Practice - Regulation governing enrolment and practice - Practice of Law - Solicitors firm - Elements of Advocacy

UNIT-II: SEVEN LAMPS OF ADVOCACY

Advocates duties towards public, clients, court, and other advocates and legal aid - Bar Council Code of Ethics.

UNIT-III: DISCIPLINARY PROCEEDINGS

Professional misconduct - Disqualifications - Functions of Bar Council of India/State Bar Councils in dealing with the disciplinary proceedings - Disciplinary Committees - Powers and functions - Disqualification and removal from rolls.

UNIT-IV: ACCOUNTANCY FOR LAWYERS

Nature and functions of accounting - Important branches of accounting - Accounting and Law - Bar Bench Relations.

ALLOCATION OF MARKS

The written examination of this paper will be for 50 marks and the remaining 50 marks for record and viva voce

MARKS ALLOCATION

External Examination	**50 Marks**
Project work	**30 Marks**
Viva-Voce	**20 Marks**
TOTAL	**100 Marks**

Record (30 marks): Each student shall write 50 selected opinions of the Disciplinary Committees of Bar Councils and 10 major judgments of the Supreme Court of India in the Record. The Record shall be evaluated for 30marks by the teacher concerned.

Viva- voce (20marks): There shall be viva-voce examination on the above components

Note: All the three components of the paper (written examination, submission of record and attendance in viva) shall be compulsory.

Statutory Material

1. Advocates Act, 1961

Books Prescribed:

1. J.P.S.Sirohi: Professional Ethics, Accountancy for Lawyers and Bench Bar Relations, Allahabadh Law Agency, (2015)
2. Dr.S.R.Myneni: Professional Ethics, Accountancy for Lawyers and Bench Bar Relations, Asia Law House, First Edition, (2018)
3. Kailash Rai: Professional Ethics, Accountancy for Lawyers and Bench Bar Relation, Allahabad Law agency, First Edition, (2015)

Books for Reference:

2. Ram Chandra Jha, (Advocate), Girish D Bhatt, B S Chauhan, and India - Supreme Court; Bar Council of India Trust: Selected Judgments on Professional Ethics, Bar Council of India Trust, 2002.
3. G.B.Reddy: Practical Advocacy of Law, Gogia Law Agency, Hyderabad, 2nd Edition, 2005.
4. S.P.Gupta: Professional Ethics, Accountancy for Lawyers and Bench bar Relations, Asia Law House, and Hyderabad.

Second Year – 4th Semester	*Subject Code –U18PTGL202*	*Total Credits: 02*

INTERNSHIP AND PRACTICAL TRAINING - II

Objective: The internship programmes are designed to acquaint the student with the actual practice of law by working under the supervision of legal luminaries. The student gains experience of applying theoretical knowledge from prior classroom training, when exposed to practical environment.

COURSE OUTLINE

During the summer vacation the students should compulsorily undergo Internship for a continuous period of 4 weeks and submit an internship report along with internship certificate. This will be evaluated by the Internship Faculty Guide.

The student may choose to intern under any one the following:

- Trial Advocate
- Appellate Advocate
- Law Firms
- Non-Governmental Organization
- Police Stations
- Banks
- Non Banking Financial Institutions
- Companies
- Registration Department
- Judiciary
- Legal Regulatory Authorities
- Legislatures
- Market Institutions
- Local Self-Government
- Other Legal Functionaries
- Dispute resolution Bodies
- Legal Services Authority

On completion of successful internship training every student will be awarded 2 credits

Third Year – 5th Semester	*Subject Code –U18HCGL305*	*Total Credits: 04*

HONOURS COURSE: V

LAND LAWS INCLUDING TENURE AND TENANCY SYSTEM

Objective: This paper focuses on land reforms in Tamil Nadu. Besides, it deals with land acquisition procedures and the rent laws which inculcate the students to be familiar with Central & State Land Laws.

COURSE OUTLINE

UNIT – I: CONCEPTUAL AND HISTORICAL BACKGROUND ON LAND REFORMS AND LAND LAWS

Origin of land rights - Different kind of land rights - Ownership of land - Constitutional Perspective – Article 31- A, Article 31-B, Article 31-C, Read With Ninth Schedule, Article 300 A - Doctrine of Eminent Domain - Doctrine of Escheat - Early Revenue Administration in Tamil Nadu – Grants, Zamindari, Ryotwari and Inamdhari Systems - The Zamindari System: Rights and Obligations of Zamindars – Abolition of Zamindari System - Inamdhari System: Major and Minor Inams – Abolition of Inams - Permanent settlement – Ryotwari System: Rights and liabilities of Ryotwari Pattadar – Tamil Nadu Estates (Abolition and Conversion into Ryotwari) Act, 1948 - Laws relating to abolition of Intermediaries.

UNIT – II: LANDS ACQUISITION

Laws relating to acquisition of property and Governmental control and use of land Land Acquisition Act, 1894 (repealed) – Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 (LARR Act, 2013) – Need for new land acquisition law – Definitions: affected family land, landowner, holding of land etc., Safeguards against indiscriminate land acquisition – Compensation, Rehabilitation and Resettlement – LARR Authority – Apportionment of compensation – Payment of Compensation – Temporary Occupation of Land – Amendment Ordinance 2014 – Time to time amendments.

UNIT – III: ENACTMENTS ON CULTIVATING TENANTS

Tamil Nadu Cultivating Tenants Protection Act, 1955: Definitions – landlord not entitled to evict the tenant – Right to restoration of Possession-Special provision for member of armed forces-Bar of Jurisdiction of Civil Courts Revision by High Courts – Tamil Nadu Cultivating Tenants Arrears of Rent Relief Act, 1972, 1980 - Tamil Nadu Cultivating Tenants Protection from Eviction Act, 1983, 1989

Tamil Nadu Cultivating Tenants (Payment of Fair Rent) Act, 1956: Definitions – Interpretations - Right and liabilities of cultivating tenants and land owner - Fair rent - Alteration or Revision of Fair Rent – Rent Court and Rent Tribunals – Exception - Powers of High Court

The Tamil Nadu Cultivating Tenants Special Provisions Act, 1968: Payment of Installment – Land Lord may evict a Cultivating Tenant for default in payment of installments

Tamil Nadu Agricultural Land Record of Tenancy Right Act, 1969: Definition - Preparation of Records of Tenancy Rights - Record Officer - Advisory Committee - Modification of entries in the draft and approved record of tenancy rights - Appeals – Revision – Penalty for failure to furnish information cognizance of offence

Tamil Nadu Occupants of Kudiyiruppu and Conferment of Ownership Act, 1971: Definitions – Occupant - Conferment of Ownership - Alternative Site - Prohibition of alienation-authorised Officer-compensation – Offences by companies

UNIT- IV: LAWS ON LAND CEILING

Land Ceiling: Urban Land Ceiling and Agrarian Land Ceiling - Tamil Nadu Land Reforms Fixation of Ceiling on Land Act, 1961 and Amended Act 1971: Preliminary – Definitions: Ceiling area, Family, Stridhana Property, Standard Acre, etc., Fixation of Ceiling on land holdings - Land BoardIndustrial undertakings – Publication of statement - Land Tribunal-Authorised officer - Determination of Compensation –Exemptions - Special Appellate Tribunal - Courts - Penal Provisions.

UNIT V: TAMIL NADU BUILDINGS AND TENANCY LAW

Tamil Nadu Buildings (Lease and Rent Control) Act, 1960: Introduction – Definitions – Fixation of Fair rent-Changes in Fair Rent-Agreed rent-Procedure for avoid default in payment of rent-Grounds for eviction of tenant-Jurisdiction of the Rent Controller – Execution Proceedings by Legal representatives or against Legal representatives- Appeal.

Tamil Nadu Apartment Ownership Act, 1994: Definition- Ownership, Heritability and transferability of Apartment – Deeds of Apartment and its Registration-Societies or Association of Apartment Owners, its bye-laws and Functions

Statutory Materials

1. The Right to Fair Compensation and Transparency in land Acquisition, Rehabilitation & Resettlement Act, 2013. (Land Acquisition Act, 2013)
2. The Tamil Nadu Buildings (Lease & Rent Control) Act, 1960.
3. Urban Land (Ceiling &Regulation) Act, 1976.

Books Prescribed

1. Judith Anne Mackenzie & Mary Phillips: Land Law; Oxford University Press, 14th Edition (2012).
2. V.G.Ramachandran: Law of Land Acquisition and Compensation; Law Publication in Komm. (1983)

3. Pro. A. Chandrasekaran: Land Laws of Tamil Nadu; C. Sitharaman & Co. Pvt Ltd, Edition (2013).
4. P.K.Agrawal: Land Reforms in India; M.D.Publication Pvt.Ltd, 1st Edition (1993).

Books for Reference

1. Avtar Singh: Law of Carriage; Eastern Book Co., 4th Edition (2005).
2. K.P.Palaniappan: Law of Land Acquisition and Compensation, (1963)
3. Durga Das Basu: Indian Constitutional Law; Kamal Law House, 3rd Edition (2011).
4. Dr. N. Maheshwara Swamy: Land Laws under the Constitution of India,; Asia Law House, Hyderabad, 1st Edition 2006.
5. Hemant Goel: Land Laws; New Era Law Publication

Third Year – 5th Semester	*Subject Code –U18PCGL316*	*Total Credits: 04*

ADMINISTRATIVE LAW

Objective: This paper includes all the major facets of Administrative Law and guides the students to understand the basic concepts and significanceas it changes according to the social, economic and political changes. It is only in the twentieth century that administrative law developed as a separate branch of legal discipline.

COURSE OUTLINE

UNIT – I: INTRODUCTION

Definition - Nature, Scope and Significance of Administrative Law - Relationship between Constitutional Law and Administrative Law - Evolution and Development of Administrative Law - India, UK, USA and France - Basic Doctrines- Rule of Law and its application in India -Montesquieu's Doctrine of Separation of Powers - Doctrine of Separation of Powers and its relevance in Contemporary Times

UNIT – II: PRINCIPLES OF NATURAL JUSTICE

Concept, Evolution and Importance - Principles of Natural Justice - Rule against Bias and Rule of Fair Hearing - Exceptions to Natural Justice - Violations of Natural Justice - Application of Natural Justice in India.

UNIT – III: DELEGATED LEGISLATION

Meaning of Delegated Legislation and its Growth - Delegated Legislation in USA and UK - Delegated Legislation in India - Comparison with USA & UK - Pre and Post Constitutional Period - Rules and Principles of Administrative Rule making - Delegated legislation - Excessive delegation - Permissible and Non permissible Delegated Legislation - Control Mechanisms of Delegated Legislation - Judicial Control - Parliamentary Control - Procedural Control - Sub-delegation - Conditional Legislation

UNIT – IV: ADMINISTRATIVE ADJUDICATION

Meaning, Needs and Reasons for its growth - Problems of Administrative Adjudication - Mechanism for Administrative Adjudication - Quasi judicial bodies – Tribunals - meaning, difference between tribunals and courts - its types- Statutory and DomesticTribunals - Administrative Tribunal - Definition - Constitutional Status - Finality of decisions and Judicial Review - Administrative Directions - Meaning, Nature and Need for Administrative Directions - Enforceability of Administrative Directions - Administrative Discretion- Meaning and significance of Administrative Discretion - Judicial Control of Administrative Discretion - Grounds of control

UNIT – V: REVIEW OF ADMINISTRATIVE ACTIONS AND REMEDIES

Writ jurisdiction of Supreme Court and High Court, when the writs can be issued -when the writs cannot be issued - principles of writ jurisdiction - Grounds of review –Illegality, Irrationality, Procedural Impropriety, Proportionality - Doctrines developed by Judiciary - Doctrine of Legitimate Expectation - Doctrine of Proportionality - Doctrine of Reasonableness - Doctrine of Public Accountability - Doctrine of Promissory Estoppel - Equitable Remedies - Emerging Trends In Administration - Good Governance and Administrative Law - Ombudsman - Lok Pal and Lokayukta - Global administrative law

Books prescribed

1. M. P. Jain & S. N. Jain ;Principles of Administrative law; Lexis Nexis;7th edition (2019)
2. I. P. Massey, Administrative Law; Eastern Book Company; 9th edition (2017)
3. C. K. Takwani; Lectures on Administrative Law; Eastern Book Company latest edition (2014)

Books for reference

1. S. P. Sathe ; Administrative Law; Lexis Nexis; 7th edition (2016)
2. M.C Jain Kagzi; The Indian Administrative Law; Universal Law Publishing & Co 53rd edition (2014)
3. H. W. Wade & C.F Forsyth; Administrative Law; Oxford University Press;10th edition (2009)

Third Year – 5th Semester	*Subject Code –U18PCGL317*	*Total Credits: 04*

CIVIL PROCEDURE CODE

Objective: The objective of this course is to introduce to the students the procedure to be adopted in filing a civil Suit in a civil court. The Code provides for a fair procedure for redressal of disputes by providing litigants a fair trial. This Course deals in detail the Sections and Orders including the important amendments brought in the Code.

COURSE OUTLINE

UNIT – I: INTRODUCTION

Definitions: Decree, Judgment, Order - Foreign Court - Foreign Judgment - Mesne, Profits – Affidavit – Suit – Plaint - Written Statement –Important Concepts: Res Sub-Judice-Resjudicata – Restitution – Caveat - Inherent powers of courts.

UNIT – II: INITIAL STEPS IN A SUIT

Jurisdiction and place of suing - Institution of suit - Pleadings: General rules - Amendment of pleadings - Plaint and written statement - Discovery - Inspection and production of documents - Appearance and non-appearance of parties - First hearing – Summons - Suits in particular-Suits by or against Government - Suits by Indigent persons -Interpleader Suit - Summary Procedure - Suits relating to public nuisance

UNIT – III: JUDGMENT AND DECREE

Judgment: Definition – Essentials – Pronouncement - Contents and Alteration - Decree: Definition – Essentials -Types, Drawing up of a decree - Contents, and Decree in particular cases - Interest - Costs - Setting Aside Ex Parte decree – Grounds - Temporary Injunctions – Meaning, Grounds and Principles of Injunctions, Inherent Power to grant Injunction, Interlocutory orders - Receiver – Meaning, Powers, Duties and Liabilities of Receivers - Death of Plaintiff or Defendant, Consequences, Suit against dead person, Marriage of a Party, Insolvency of Plaintiff or Defendant - Reference to High Court - Reference, Review and Revision - Appeals

UNIT – IV: EXECUTION

Courts by which decree may be executed - Payment under decree - Application for Execution - Mode of Execution - Stay of Execution - Questions to be determined by executing court – Arrest and detention - Attachment - Sale – Commissions.

UNIT – V: LIMITATION ACT

Definition - Limitation of Suits - Appeals - Computation of Period of Limitation - Acquisition of Ownership by Possession.

Statutory Materials

1. Code of Civil Procedure – 1908
2. Limitation Act – 1963

Books Prescribed:

1. C. K. Takwani: Civil Procedure with Limitation Act 1963; Eastern Book Company; 8th Edition (2018)
2. Dr. Ashok K. Jain: Code of Civil Procedure; ASCENT Publications; 1st edition (2019)
3. Ray Sukumar: The Code of Civil Procedure; Universal Law Publishing, 2008

Books for References:

1. M. P. Jain Dr. Medha Kolhatkar: The Code of Civil Procedure (Vols.1); Lexis Nexis Butterworth India; 2019 edition (2019)
2. Sarkar, Justice M. L. Singhal: Sarkar Code of Civil Procedure; Lexis Nexis; Twelfth edition (2016)
3. Sir Dinshaw Fardunji Mulla: Mulla's the Code of Civil Procedure; Lexis Nexis; Nineteenth edition (2017)

Third Year – 5th Semester	*Subject Code –U18PCGL318*	*Total Credits: 04*

CRIMINAL PROCEDURE CODE

Objectives: This paper aims to familiarize the students with the crucial aspects relating to investigation and trial of offences and to sensitize the students about critical issues in administration of criminal justice.

COURSE OUTLINE

UNIT – I: INTRODUCTION

Definitions - Constitution and powers of Criminal Courts and Offices - Provisions for Investigations - Information to the Police and their powers to investigate

UNIT – II: PRE-TRIAL PROCEEDINGS

Stages of Investigation - Process compelling for the presence of the accused for Investigation and Trial – Arrest - Procedure for Arrest - Rights of Arrested Persons - Consequences of Non-Compliance of Arrest Procedure - Search and Seizure - Process of Investigation by Police - Investigation of Unnatural and Suspicious Death -Local Jurisdiction of the Courts in Inquires and Trials - Cognizance of Offence and Commencement of Proceedings.

UNIT – III: TRIAL PROCEDURE

Principal features of Fair Trial - Charge - Disposal of Criminal Cases without Full Trial - Trial before a Court of Session - Trial of Warrant Cases by Magistrates -Trial ofSummons - Summary Trial - Bail Procedures – Types of Bail - General Provision regarding Bond of Accused and Sureties.

UNIT – IV: APPEAL PROCEDURE

Types of Appeals - Reference and Transfer of Criminal Cases - Execution, Suspension, Remission and Commutation of Sentences - Execution of Sentence - Death Penalty and Imprisonment - Preventive and Precautionary Measures for Keeping Peace and Good Behaviour- Maintenance Procedures - Conditions for Claiming Maintenance - Cancellation of Maintenance - Sec 125 of CrPC.

UNIT – V: JUVENILE JUSTICE CARE AND PROTECTION ACT, 2000, THE CRIMINAL LAW AMENDMENT 2013 AND PROBATION OF OFFENDERS ACT, 1958

Introduction - Object - Definitions - Statutory Bodies- Juveniles under the Act - Nirbhaya case - Reformative Institutions - Juvenile - Special Offences - Probation - Object and Meaning Criminal Court and Probation - Duties of Probation Officers - Report of the Probation Officers - Conditions and Cancellation of Probation.

Statutory Materials:

1. The Code of Criminal Procedure, 1973.
2. The Criminal Law (Amendment) Act, 2005.
3. The Criminal Law (Amendment) Act, 2008.
4. The Criminal Law (Amendment) Act, 2010.
5. The Criminal Law (Amendment) Act, 2013.
6. The Criminal Law (Amendment) Act, 2018.

Books Prescribed:

1. Ratanlal & Dhirajlal: The Code of Criminal Procedure; Lexis Nexis, 22nd Edition (2017).
2. Sarkar: The Code of Criminal Procedure; Lexis Nexis, 10th Edition (2013).
3. R.V.Kelkar: Criminal Procedure Code; Eastern Book Company, 6th Edition (2018).
4. Durga Das Basu: Criminal Procedure Code; Lexis Nexis, 6th Edition (2017).

Books for Reference:

1. K.N.Chandrasekaran Pillai: General Principles of Criminal Law; Eastern Book Co., (2003) Edition, Reprinted (2007).
2. Iyer, Mitter & Anand: Law of Bails; Law Publishers (India) Pvt. Ltd., 4th Edition (2012).
3. P.V. Ramakrishna: Law of Bail, Bonds, Arrest and Custody; Lexis Nexis, 1st Edition (2008).
4. P.K.Majumdar, R.P. Kataria: Law of Bails, Bonds and Arrest; Orient Publication, 2nd Edition (2003).

Third Year – 5th Semester	*Subject Code –U18PCGL319*	*Total Credits: 04*

ENVIRONMENTAL LAW

Objective: Environmental law is a complex group of laws and regulations which operate to regulate the interaction of human life to the natural environment. This paper will be an eye opener for the students about the growing issues in this arena and need for immediate legislative action.

COURSE OUTLINE

UNIT – I: INTRODUCTION

Environment: Meaning - Environment Pollution: Meaning and Issues - Environmental (Protection) Act, 1986 - Meaning of 'Environment', 'Environment Pollutant', 'Environment Pollution' - Powers and Functions of Central Govt - Important Notifications-Constitutional Guidelines - Right to Wholesome Environment - Evolution and Application - Relevant Provisions: Art. 14, 19 (1) (g), 21, 48-A, 51-A(g) - Environment Protection through Public Interest Litigation - Important doctrines - Doctrine of Strict Liability - Doctrine of Absolute Liability - Public trust doctrine - Polluter pays principle - Precautionary principle - Doctrine of Sustainable development – Agenda 21.

UNIT – II: PREVENTION AND CONTROL OF WATER, AIR, NOISE AND LAND POLLUTION

The Water (Prevention and Control of Pollution) Act, 1974 - Water Pollution: Definition - Central and State Pollution Control Boards: Constitution, Powers and Functions - Water Pollution Control Areas - Sample of effluents: Procedure - Restraint Order - Consent requirement: Procedure, Grant/Refusal, Withdrawal - Citizen Suit Provision

Air (Prevention and Control of Pollution) Act, 1981 - Air Pollution: Definition - Central and State Pollution Control Boards: Constitution, Powers and Functions - Air Pollution Control Areas -. Consent Requirement: Procedure, Grant/Refusal, Withdrawal - Sample of Effluents: Procedure - Restraint Order - Citizen Suit Provision -Environmental Impact Assessment

Noise Pollution Control Order, 2000 & 2002 and Land Pollution

BioMedical Waste Regulation - Plastic Waste (Management and Handling) Rules 2011 - E-Waste (Management) Rules, 2016.

UNIT – III: RESOURCE CONSERVATION & PROTECTION OF FORESTS AND WILD LIFE

Resource Conservation - Chennai Metropolitan Area Groundwater Authority (Regulation) Act 1987 - Rain Water Harvesting - Tamil Nadu Protection of Tanks and Eviction of Encroachment Act, 2007 - Role of Local Bodies.

Forest Act, 1927 - Kinds of forest - Private, Reserved, Protected and Village Forests - Protection of Specified Plants - The Forest (Conservation) Act, 1980 - Biological Diversity Act,2002 - Cartagena Biosafety Protocol- Forest Conservation Vis-a Vis Tribals' Rights

The Wild Life (Protection) Act, 1972 - Authorities to be Appointed and Constituted under the Act - Hunting of Wild Animals -Prevention of Cruelty to Animals Act, 1960 - Protected Area - Trade or Commerce in Wild Animals - Animal Articles and Trophies - Its Prohibition

UNIT – IV: INTERNATIONAL ENVIRONMENT LAWS

Introduction to International Environmental Laws - Human Rights Perspective - Stockholm Declaration: Brief overview - Rio-Declaration: Brief Overview - United Nations Environment Programme- Nairobi Declaration, 1982 - Brundtland Report, 1987 - UNEP - National Green Tribunal - Constitution - Functions and Powers

UNIT – V: CURRENT TRENDS

Global Climate Change and Energy Policy - United Nations Environmental Programme (UNEP) - The United Nations' Framework Convention on Climate Change (UNFCC) - Kyoto Protocol - Human Rights and the Environment.

Statutory Materials

1. The Water (Prevention and Control of Pollution) Act, 1974
2. The Air (Prevention and Control of Pollution) Act, 1981
3. The Indian Forest Act, 1927 4. The Forest (Conservation) Act, 1980
4. The Wild Life Protection Act, 1972 6. The Environment (Protection) Act, 1986
5. The Public Liability Insurance Act, 1991
6. The National Environment Tribunal Act, 1995
7. The National Environment Appellate Authority Act, 1997
8. Biological Diversity Act,2002
9. Noise Pollution Control Order, 2000 & 2002
10. E-Waste (Management) Rules, 2016.

Books Prescribed:

1. S. Shanthakumar: Environmental Law-An Introduction: Lexis Nexis: 2nd Edition(2008)
2. P.Leelakrishnan: Environmental Law in India: Lexis Nexis: 5th Edition(2018)
3. Dr. S.C. Shastri: Environmental Law: Eastern Book Company: 6th Edition(2018)

Books for Reference:

1. Justice T.S. Doabia: Environmental and Pollution Laws in India(Vol 1&2): Lexis Nexis: 3rd Edition(2017)

2. Shyam Divan & Armin Rosencranz: Environmental Law and Policy in India: Oxford University Press: 2nd Edition(2002)
3. P.Leelakrishnan: Environmental Law case book: Lexis Nexis: 2nd Edition(2010)

Third Year – 5th Semester	*Subject Code –U18PCGL320*	*Total Credits: 04*

LAW OF TAXATION

Objective: The objective of this course is to introduce to the students the concept of tax, various kinds of taxes, calculation of Income tax, exemption from taxation, deductions, ceiling limit etc. This course also aims to impart knowledge to the students regarding various taxing statutes and to provide detailed in-depth knowledge in the area of Direct and Indirect Taxation.

COURSE OUTLINE

UNIT – I: CONCEPT OFTAXATION

Definition of Tax - Distinction between Tax and Fee - Mutual relationship between Income Tax Act and Finance Act – Cannons of taxation - Kinds of taxes - Progressive, Proportion, Regressive and Digressive - Direct and Indirect taxes - Tax Avoidance - Tax Evasion - Double Taxation.

UNIT – II: CONSTITUTIONAL BASIS FOR TAXATION

Applicability of doctrine under the constitution to taxation laws – Article 265 – Union & State List entities – Fundamental Rights and taxing Statutes - Interpretation of tax laws.

UNIT – III: THE INDIAN INCOME TAX ACT, 1961

A. **Preliminaries**- Concepts; 'income', 'agricultural income', 'casual income', 'assessee' 'person'- Residential status – Previous year, Assessment year – General charging section and specific charging section – Income – Received – Arising – 'Accrual'- Scope and total income – Exemption from taxation

B. **Taxability** under 'specific heads':
   b) Income from 'salaries'
   c) Income from 'house property'
   d) Income from 'business or profession'
   e) Income from 'capital gains'
   f) Income from 'other sources'

C. **Clubbing of income:** Income of other persons in assessee's total income.

UNIT – IV: COMPUTATION OF TAXABLE INCOME

Procedure for assessment - Computation of total income and tax liability of an individual, H.U.F., and firm - Tax deduction at source - Advance payment of tax - Treatment of losses – set-off-carry forward of loss - Deductions allowed in certain cases – chapter VIA deductions - Assessment of special class of assesses

UNIT – V: GOODS AND SERVICE TAX

A. Overview of GST - Concepts – Limitations of VAT – Need for Tax Reforms - Justification for introduction of GST - Shortcomings and advantages at the Central Level

and State Level on introduction of GST- Process of Introduction of GST - Constitutional Amendments.

B. Subsumed under GST - Taxes and Duties outside the purview of GST: Tax on items containing Alcohol – Tax on Petroleum products - Tax on Tobacco products - Taxation of Services

C. Registration Procedure

D. Meaning and Scope of Supply: Taxable Supply - Supply of Goods and Supply of Services - Course or Furtherance of Business - Special Transactions - Time of Supply

E. Assessment: Self-assessment - Provisional assessment –Security of Returns - Assessment of Non-filers of returns - Assessment of Unregistered persons –Audit and Assessment – Other features of Dual GST model.

F. Levy and Exemption of Tax: Chargeability – Collection at Source –E-Commerce - Composition Levy - Tax under Central GST and State GST - Zero-rating of Exports – GST on Imports –Returns under GST –Taxation of Services–Remission of Tax - Adjustment and Refund of GST.

Books Prescribed:

1. B.K.Goyal: Taxation Laws; Singhal Law Publications (2018)
2. Dr. Vinod K. Singhania: Direct Taxes Ready Reckoner; Taxmann Publications Pvt. Ltd.; 41st Edition (2019)
3. Dr. H.C. Mehrotra and Prof. V.P. Agarwal: Goods and Services Tax GST (4th Edition)
4. Dr.Sanjiv Agarwal: Goods and Services Tax - Laws, Concepts & Impact Analysis; Bloomsbury India; First edition (2017)
5. Prof. Jayakumar Sithanandam: Textbook on Goods and Services Tax Laws; White Falcon Publishing; 1 edition (2019)

Books for References:

1. C. A. Atul Kumar Gupta: Goods and Services Tax: Law, Practice & Procedures; OakBridge Publishing (2019)
2. Dr. Girish Ahuja and Dr. Ravi Gupta: Direct Taxes Law & Practice; Wolters Kluwer India Pvt. Ltd.; Tenth edition (2018)
3. U.K. Bhargava: Income Tax Act-as Amended by Taxation Laws (64^{th} Edition 2019)

Third Year – 5th Semester	*Subject Code – U18CCGL304*	*Total Credits: 03*

CLINICAL COURSE-IV

DRAFTING, PLEADING AND CONVEYANCING

Objective: This Paper 'Drafting, Appearances and Pleadings' has been included in the syllabus with a view to equip the students with legal drafting abilities, legal frame work pertaining to the appearances before various tribunals/ quasi-judicial bodies and the basic understanding of the principles of pleadings. For this purpose, the course contents of this study material have been so designed as to provide practical orientation and develop necessary acumenship in drafting legal documents

COURSE OUTLINE

Drafting: General principles of Drafting and relevant substantive Rules, drafting of Notices

Pleadings:

a. **Civil**: Plaint, Written Statement, Interlocutory Application, Original Petition, Affidavit, Execution Petition, Memorandum of Appeal and Revision, Petition under Articles 226 and 32 of the Constitution of India.

b. **Criminal**: Complaint, Criminal Miscellaneous Petition, Bail Application, Memorandum of Appeal and Revision.

Conveyancing:

Sale Deed, Mortgage Deeds, Lease Deed, Gift Deed, Promissory Note,

Power of Attorney – General and Special power of Attorney, Will.

Mark allocation:

Record work – 1 15 Exercises in Drafting of Pleadings	**15 Marks**
Record work – 2 15 Exercises in Conveyancing	**15 Marks**
Viva-Voce	**20 Marks**
External Examination	**50 Marks**
Total	**100 Marks**

Third Year – 6th Semester	*Subject Code –U18HCGL306*	*Total Credits: 04*

HONOURS COURSE: VI

MINORITIES LAW

Objective: To make the students aware of the importance of rights of minorities, to familiarize them with the constitutional provisions related to minorities, to acquaint them with the rights of minority educational institutions and exposition of the subject matter in detail with the help of legislative, judicial and other materials.

COURSE OUTLINE

UNIT – I: INTRODUCTION

Minorities in Indian Society: Concept of Minorities Linguistic Minorities Religious Minorities Secularism

UNIT – II: INTERNATIONAL NORMS FOR PROTECTION OF MINORITIES

Human Rights of Minorities Minority Rights under the International Covenant on Civil and Political Rights Non-discrimination provisions of the United Nations Charter 1945 Declaration on Rights of Minorities

UNIT – III: MINORITY RIGHTS

Right to religion Linguistic rights Right to culture and traditions National Commission for Minority

UNIT – IV: RIGHTS OF MINORITY IN EDUCATIONAL INSTITUTIONS

Educational rights of Minorities Right to administer Minority educational institution Aided and Unaided Minority Educational Institutions and Governmental Controls National Commission for Minority Educational Institutions

UNIT – V: SOCIETAL STATUS OF MINORITIES

Victimistion- Muslim victims over past ten decades, Caste based violence over minorities, linguistic minorities, Minorities in rural areas over the country.

Books Prescribed:

1. M.P. Jain: Constitutional Law of India; Lexis Nexis, 8th Edn. (2018)
2. D.D. Basu: Commentary on the constitution of India; Lexis Nexis, 7th Edn. (2016)
3. A. P. Datar: Commentary on the constitution of India; Lexis Nexis, 1st Edn. (2007)
4. H.M. Seervai: Constitutional Law of India; Universal Law Publication, 1st Edn. (2015)
5. M. P. Singh: Constitution of India; Eastern Book Company, (2016)

Books for Reference:

1. Stephan Mary: Ethnicity, Nationalism & Minority Rights; Cambridge University Press, (2004)
2. Thornberry, Patrick: International Law and the Rightd of the Minorities; Calendor Press, (1993)
3. Sheth D. L. & Gurpreet Mahajan: Internation law and the Nation State; Oxford University Press, 1st Edn. (2000)

Third Year – 6th Semester	*Subject Code –U18HCGL307*	*Total Credits: 04*

HONOURS COURSE: VII

GENDER JUSTICE AND FEMINIST JURISPRUDENCE

Objective: The uneven trajectory of social change may help to inform feminist legal debates and the teaching of feminist jurisprudence among those contemplating the inclusion of such material in their law curriculum. This paper will be an eye-opener for the students in this area of Jurisprudence.

COURSE OUTLINE

UNIT – I: WOMEN EMPOWERMENT AS A SOCIAL CHANGE

- Role of law in empowering women –Feminism and Feminist Jurisprudence – Emergence of feminism and feminist jurisprudence -Different theories of feminism and feminist jurisprudence- Distinction between "sex" (nature) and "gender" (culture)-Concept of gender justice - Gender Discrimination - Gender Equality

UNIT - II: GENDER JUSTICE UNDER THE CONSTITUTION OF INDIA

Social justice and gender justice - interrelationship - Article 14, 15 and 16, Article 21& 23, Directive Principles of State Policy and fundamental duties- Reservation under 73rd &74th Constitutional amendment - Judicial approaches to equality - Formal and Substantive equality – Sameness, Correctionist and Protectionist approaches of Judiciary – Role of Human Rights Commissions,Women's Commissions and judiciary in ensuring Gender Justice.

UNIT- III: PERSONAL LAWS AND GENDER JUSTICE

Marriage and Divorce, Maintenance – guardianship-adoption Inheritance Right, Uniform Personal Code, Concept of Matrimonial property - emancipation of Women - Empowerment of Women and Local Self Government.

UNIT- IV: GENDER JUSTICE AND CRIMINAL LAW

Protection of women's interests under IPC - relevant offences Dowry death -Rape - Bigamy - Adultery - Cruelty to married women - Criminal Law Amendment Act 2013 -Special legislations for Women - Prisons Act 1894, Factories Act 1948, Mines Act 1952, Immoral Traffic (Prevention Act) 1956, Dowry Prohibition Act 1961, Maternity Benefit Act 1961, Medical Termination of Pregnancy Act 1971, Equal Remuneration Act 1976, indecent Representation of Women (Prohibition) Act 1986, Commission of Sati (Prevention) Act 1987, Pre-conception and Prenatal Diagnostics Techniques (Prohibition of sex Selection) Act 1994, Prevention of Women from Domestic Violence Act 2005, Sexual Harassment of women at Workplace (Prevention, Prohibition and Redressal) Act 2013

UNIT - V: GENDER JUSTICE UNDER INTERNATIONAL CONVENTIONS AND DECLARATIONS

Judicial Attitude towards Gender Justice

Books Prescribed:

1. Prof. Dr. G. Rajasekharan Nair: Gender Justice under Criminal Justice System; Eastern Law House; 2nd Edn. (2011)
2. G.B. Reddy: Women and the Law; Gogia Law Agency; 2nd Edn. (2015)
3. S.P. Sathe: Towards Gender Justice; Journal of ILI No. 1-37 & No 12 (Apr – June) 1995

Books for Reference:

1. Dr. Sheetal Konwal: Gender Justice and Feminist Jurisprudence; Amar Law Publications, 2nd Edn. (2015)
2. Dr. Puja Khetraphal: Gender Justice and Feminist Jurisprudence; Puja Law House, 1st Edn. (2019)
3. Dr. Ishita Chatterjee: Gender Justice and Feminist Jurisprudence; Central Law Publications, 1st Edn. (2019)

Third Year – 6th Semester	*Subject Code –U18HCGL308*	*Total Credits: 04*

HONOURS COURSE: VIII

INTERNATIONAL REFUGEE LAW

Objective: This paper provides students a basic knowledge and understanding of the substantive and procedural aspects of International Refugee Law and to improve them the juridical way of thinking, enlarges point of view and common understanding of international legal documents.

COURSE OUTLINE

UNIT-I: INTRODUCTION

The Global Population Movements in Historical Retrospect-The Origin and Development of International Refugee Principles & International Refugee Law - The Evolution of Refugee Status in International Law - The Legal and Institutional Framework for Refugee Protection under the 1951 UN Convention Relating to the Status of Refugees (UNCSR) and its Expansion via 1967 Protocol (UNCSR Protocol) - The Main Features of 1951 UN Convention and the Statute of the UNHCR - The Concept of Migrant, Immigrant - Theories of Migration and Emergence of Forced Displacement and Forced Migration - Inter-Relationship between National and International Protection and Summation.

UNIT-II: SOURCES OF INTERNATIONAL REFUGEE PROTECTION REGIME

The Global Standards of Human Rights-Main Sources of International Refugee Law, UN Charter - IRO,UDHR, IOM, International Bill of Rights - Statute and Role of the UNHCR and ICRC, UNDTA, International Refugee Law and its Relationship with International Human Rights Law (IHRL), International Humanitarian Law (IHL) and Other Disciplines and Summation.

UNIT-III: THE RIGHTS OF REFUGEES AND THE INSTITUTION OF ASYLUM, NON REFOULEMENT, GENDER AND THEIR DIMENSIONS IN INTERNATIONAL LAW OF REFUGEE PROTECTION

Principles and Concepts of Refugee Protection-Protection Gaps-The Rights of Refugees under International Refugee Law - Definition of Asylum in the Context of International Refugee Law - Non-refoulement - Non-discrimination - Gender and Securitization - The Principle of Family Unity and the Right to Family Reunification - Defending Refugee Rights in Administrative and Judicial Institutions - Durable Solutions and International Cooperation and Summation.

UNIT-IV: PROTECTION OF INTERNALLY DISPLACED PERSONS (IDPS), STATELESSNESS ANDTEMPORARY AND OTHER FORMS OF REFUGEE PROTECTION

Internally Displaced Persons (IDPs)- and UN 1998 Guidelines on IDPs - Kampala Convention on IDPs - Rights of Stateless Persons (SLPs) and Problems of Statelessness - The Concept of Temporary Protection - Other Alternatives - Recent Trends in International Refugee Legislation, Litigation and Policy and Summation.

UNIT-V: CONTEMPORARY ISSUES IN INTERNATIONAL REFUGEE LAW AND IT'S FUTURE

International Refugee Law and Strategies Towards Interpretative Harmony, Individual Risk-Armed Conflict and the Standard of Roof in Complementary Protection Claims - Running Scared Since 9/11: Refugees - UNHCR and the Purposive Approach to Treaty Interpretation - Economic Harm as a Basis for Refugee Status and the Application of Human Rights Law to the Interpretation of Economic Persecution, The fragmented Nature of the International Refugee Regime and its Consequences: a Comparative Analysis of the Applications of the 1951 Convention - Refugee Issues: Climate Refugees: New Class of Refugees - Women and Children Refugees - Non-Refoulement: A Peremptory Norm of International Law, Loss and Denial of Refugee Status.

Books Prescribed:

1) Helene Lambert; International refugee law; Ashgate publishing; 1st Edn. 2010
2) Kate Jastram, Inter-parliamentary Union, Marilyn Achiron, Office of the United Nations High Commissioner for Refugees; Refugee protection: a guide to international refugee law; Inter-Parliamentary Union, 2001
3) B S Chimni; International Refugee Law: A Reader; SAGE Publications, 2000
4) Erika Feller, Volker Turk and Frances Nicholson; Refugee Protection in international law; UNHCR's Global Consultations on International protection; Cambridge University Press; 1st published 2003

Books for Reference:

1. M. Rafiqul Islam, Jahid Hossain Bhuiyan; An Introduction to International Refugee Law; Martinus Nijhoff Publishers, 2013
2. Micheller Foster & Helene Lambert; International Refugee law and the Protetcion of Stateless Persons; Oxford University Press; 1st Edn. (2009)
3. James C. Simeon; Critical issues in International Refugee Law; Cambridge University Press; 1st Edn. (2010)
4. Karen Musalo, Jennifer Moore, Richard A. Boswell; Refugee Law and Policy: A Comparative International Approach, 2005 Supplement; Carolina Academic Press, 2nd Edn.(2005)

Reference Cases:

1. Tahir Hussain Khan v Canada, November 18, 1994 [Committee Against Torture]
2. Chahal v UK [extracts European Court of Human Rights]
3. National Legal Services Authority v. Union of India and others, Writ Petition (Civil) No. 400 of 2012, India: Supreme Court, 15 April 2014,
4. Suresh Kumar Koushal and another v. NAZ Foundation and others, Civil Appeal No.10972 of 2013, India: Supreme Court, 11 December 2013,
5. Servai v. State of Tamil Nadu, Criminal Appeal No. 958 of 2011, India: Supreme Court, 19 April 2011
6. Salibian v Minister of Employment and Immigration [1990]
7. Peoples‟ Union For Civil Liberties [PUCL] v. Union Of India and Another, AIR 1997 SC 568
8. Prem Shankar Shukla v. Delhi Administration, 1980 SCC 526
9. Citizens for Democracy v. State of Assam, 1995 SCC 743
10. D.K Basu v. State Of West Bengal, AIR 1997 SC 610

Third Year – 6th Semester	*Subject Code –U18CCGL305*	*Total Credits: 03*

CLINICAL COURSE – V

PUBLIC INTEREST LAWYERING, LEGAL AID, COURT & CHAMBER VISITS

Objectives: This course brings in-depth practical knowledge on legal and the para-legal services. This motivates the students to work for the welfare of the society.

COURSE OUTLINE

INTERVIEWING TECHNIQUES AND PRE-TRIAL PREPARATIONS - (40 marks)

- **Two interviewing sessions of clients: 15 marks**

Each student will observe 2 (two) interviewing sessions of clients at the Lawyers' Office/Legal Aid Office and record the proceedings in a diary which will carry 15 marks.

- **Observation of the preparation of documents and court papers: 15 marks**

Each student will further observe the preparation of documents and court papers by the Advocate and the procedure for the filing of the suit/petition. This will be recorded in the diary which will carry 15 marks.

- **Viva-Voce Examination on above two components: 10 marks**

COURT ATTENDANCE & LOK ADALAT - (40 marks)

- **CIVIL PROCEEDING OBSERVATION: 10 Marks**

The students must observe the civil proceedings in the court and record the proceedings in a diary which will carry 15 marks.

- **CRIMINAL PROCEEDING OBSERVATION: 10 Marks**

The students must observe the criminal proceedings in the court and record the proceedings in a diary which will carry 15 marks.

- **LOK ADALAT OBSERVATION: 10 Marks**

The students must attend lokadalats with the help of district legal services authority and submit a project to the faculty in charge. This project report carry of 10 marks

- **Viva-Voce Examination on above two components: 10 marks**

LEGAL AID-COUNSELING AND SERVICES (40 marks)

The students are directed to visit semi-urban and rural areas for providing free counseling and creating awareness among the people relating to socio-legal problems and submit a project to the faculty in-charge. This clinical study will comprise of 10 marks for project work and 10 marks for viva-voce.

Third Year – 5th Semester	*Subject Code – U18PTGL303*	*Total Credits: 02*

INTERNSHIP AND PRACTICAL TRAINING - III

Objective: The internship programmes are designed to acquaint the student with the actual practice of law by working under the supervision of legal luminaries. The student gains experience of applying theoretical knowledge from prior classroom training, when exposed to practical environment.

COURSE OUTLINE

During this vacation the students should compulsorily undergo Internship for a continuous period of 4 weeks and submit an internship report along with a internship certificate. This will be evaluated by the Internship Faculty Guide.

The student may choose to intern under any one the following category:

- Trial Advocate
- Appellate Advocate
- Law Firms

On completion of successful internship training every student will be awarded 2 credits

LL.B (Hons.)

SYLLABUS FOR ELECTIVE SUBJECTS

S.No	ELECTIVE SUBJECT CODE	ELECTIVE SUBJECT NAME
ELECTIVE – I (I SEMESTER)		
1.	U18PEGL111	Legal Research Methodology
2.	U18PEGL112	Law Relating to Women and Children
ELECTIVE – II (III SEMESTER)		
3.	U18PEGL221	Banking Law including Negotiable Instruments Act
4.	U18PEGL222	Telecommunication Law
ELECTIVE – III (III SEMESTER)		
5.	U18PEGL231	Intellectual Property Rights
6.	U18PEGL232	Law of Insurance
ELECTIVE – IV (VI SEMESTER)		
7.	U18PEGL341	Criminology and Penology
8.	U18PEGL342	Consumer & Competition Law
ELECTIVE – V (VI SEMESTER)		
10.	U18PEGL351	Forensic Science
11.	U18PEGL352	Human Rights
OPEN ELECTIVE (VI SEMESTER)		
12.	U18OEGL301	Environment and International Legal Order
13.	U18OEAL501	Right to Information and Education
14.	U18OEBL501	International Financial Transactions and Valuation
4.	U18OECL501	Private International Law

NOTE:

- The Students are free to choose the elective subjects in **I/III/VI** semester within the list of elective subjects offered in concerned semester.
- One has to choose -
    - One Elective Subject from group of electives listed above
- **University may restrict subjects in a group for offering options based on availability of faculty and other facilities.**

First Year – 1st Semester	*Subject Code –U18PEGL111*	*Total Credits: 03*

LEGAL RESEARCH METHODOLOGY

Objectives: When research is undertaken as a part of the process of law reform, the contributions through the research will be indefinite and will help to make concrete law which improves the societal welfare. This paper is a tool and guidance for the legal research carried out by the students and scholars in a simplified manner.

COURSE OUTLINE

UNIT – I: LEGAL RESEARCH

Meaning of Research - Legal Research – Characteristics - Objectives and Types of Legal Research - Qualities of Good Legal Researcher - Nature, Scope and Objectives of Legal Research and Methodology - Methods of Legal Research - Collaborative Research - Doctrinal and Non-Doctrinal

UNIT – II: RESEARCH DESIGN

Identification and Formulation of Research Problem - Hypothesis and Research Design - Database for Legal Research: Legislations - Judicial Decisions - Juristic Writings - Traditional and Online Databases

UNIT – III: RESEARCH TECHNIQUES

Methodology: Tool and Techniques for collection of data - collection of case materials and juristic literature - Use of historical and comparative research material - Use of questionnaire and interview - Census and Survey - Sampling: Types - Merits and Demerits - Observation - Interview - Questionnaire

UNIT – IV: DATA PROCESSING AND REPORT WRITING

Data Analysis and Interpretation - Report Writing - Supervision - Guidelines for researchers - Research Ethics – Meaning – Purpose - Importance of a Research Report - Preparation of the Legal Research Report - Content of Research Report.

UNIT – V: SAMPLING DESIGN FOR LEGAL RESEARCH

Meaning of Sampling - Merits and Demerits of Sampling Method - Size of Sample - Procedure to select a Sample - Types of Sampling - collection of data in socio legal research - sources of data collection - original sources of law - method of legal research for law reforms – analytical research method - historical research method - comparative research method - ethical research method - statistical research method - critical research method.

Books prescribed

1. S.K. Verma and M. Afzal Wani; Legal Research and Methodology; Indian Law Institute, 2nd Edition (2001).
2. Goode and Hatt; Methods in Social Research; Mc.Graw Hill Book Co., 1985 (reprint), Singapore,
3. Upendra Baxi; Socio-Legal Research in India; A Program Schriff, ICSSR, Occasional Monograph, 1975.

Books for References:

1. Cohen; Legal Research; Morris L, West Publishing Co. Minnesota, 1985.
2. Ghosh; Scientific Method and Social Research; B.N, Sterling Publishers Pvt. Ltd., New Delhi, 1984
3. Johari J.C.; Introduction to the Method of Social Sciences; Sterling Publishers Pvt. Ltd. New Delhi, 1988.
4. Kothari C.K.; Research Methodology: Method and Techniques; Wiley Eastern Ltd., New Delhi, 1980.

First Year – 1st Semester	*Subject Code –U18PEGL112*	*Total Credits: 03*

LAW RELATING TO WOMEN AND CHILDREN

Objective: The course draws the attention to the feeble condition of women, children and their exploitation. The legal limitation on their capacity and legal rights and protection provided in the Constitution and in various laws are to be studied critically.

UNIT – I: OFFENCES AGAINST WOMEN

Sexual crimes – Rape, Unnatural Offences, Indecent Assault - Matrimonial Offences – Mock Marriage, Bigamy, Adultery, Criminal elopement, Dowry Death, Harassment, Provisions relating to Dowry under IPC and Dowry Prohibition Act 1961. - Offences relating to Miscarriage under IPC - The Medical Termination of Pregnancy Act, 1971 - The Pre-conception and Pre-natal Diagnostic Techniques (Prohibition of sex selection) Act, 1994– Offences relating to trafficking under IPC, Offences under the Immoral Traffic (Prevention) Act, 1956

UNIT – II: GENDER INJUSTICE&WOMEN'S COMMISSION

Gender Injustice - A Global issue, Constitutional provision to protect gender injustice in India, Pre-natal sex-selective – Abortion - Sexual Harassments in work place – Guideline laid down in Visaka v. State of Rajasthan - Constitution and procedure of Commission, Powers and Function of the Commission.

UNIT – III: LEGISLATIVE EMPOWERMENT OF WOMEN

International perspective - Constitutional provisions for Empowerment of Women - Empowerment of Women under Criminal Law - The Immoral Traffic (Prevention) Act, 1956 - Dowry Prohibition Act, 1961, Labour legislation, The medical Termination of pregnancy Act, 1971 - The Commission of Sati (Prevention) Act, 1987.

UNIT – IV: EXPLOITATION OF CHILDREN

Child Labour – Reason for child Labour - international Framework to eliminate Child Labour, - Constitutional Provision to eliminate child labour - Salient Features of Child Labour (Prohibition and Regulation) Act, 1986 - Child Labour and National Human Rights Commission - Role of Judiciary in Solving Labour Problem - Child Prostitution - Child Pornography - Child Trafficking - Incestuous Sexual Exploitation - Child Marriages.

UNIT – V: PROTECTION OF CHILD RIGHTS

Child Marriage (Restraint) Act,1929 - Problems relating to Adoption In India - UN Convention on the Rights of Child 1989 - Hindu Adoption and Maintenance Act, 1956 - Inter Country Adoptions - Right to Education and Human Rights Instruments - Right to education in India - Art 21-A of the Indian Constitution - Policies of Government on Education, Problems relating to Child Education - Establishment of National and State Commission for protection of Child Rights - Functions and Powers of the Commission - Children's Courts.

Statutory materials

1. Indian Penal Code 1860
2. Dowry prohibition Act 1961
3. The medical termination of Pregnancy Act 1971
4. The pre-conception and Pre-natal Diagnostic Techniques(Prohibition of Sex selection) Act 1994
5. The Immoral Traffic(prevention)Act 1987
6. Child labour (prohibition and regulation) Act 1987
7. Child marriage restraint Act 1929
8. Hindu Adoptions and Maintenance Act 1956

Books Prescribed

1. Mamta Rao; Law relating to women and children; Eastern Book Co ;4th edition (2018)
2. G.S Sharma, Anil Kumar Tandi; Law relating to women &Children; Asia Law House;1st edition (2015)
3. S. C. Tripathi & Vibha Arora; Law relating to women and Children; Central Law Publications; 6th edition (2015)

Books for Reference

1. Manjula Batra; Women & Law with law relating to children in India; Allahabad Law Agency; latest edition (2012)
2. Dr. Anjani Kant; Law relating to women and children; Central law Publications; 1st edition (2003)
3. Dr. S. R. Myneni; women and Law; Asia Law House; 2nd edition (2011)

Second Year – 3rd Semester	*Subject Code –U18PEGL221*	*Total Credits: 03*

BANKING LAW INCLUDING NEGOTIABLE INSTRUMENTS ACT

Objective: This paper produces an insight to the students about the Banking Law and the emerging trends in the banking sector and various procedural aspects in a simplified manner.

COURSE OUTLINE

UNIT – I: PRELIMINARY

History of Banking - Different types of Banks including Foreign Banks - Nationalisationof Banks - RBI's Control over Commercial Banks - Special status of RBI and State Bank of India - Subsidiary Banks -Emerging trends in Banking -Digital Banking.

UNIT – II: BANKING REGULATION ACT, 1949

Banker and Customer: Definition of Banker and Customer and relationship - Special types of Customers - Banker as Borrower - Different types of accounts - Duties and Rights of the Banker and different types of instrument - Paying Banker and Collecting Banker.

UNIT – III: LAWS RELATING TO LOANS, ADVANCES AND INVESTMENTS BY BANKS

Subsidiary Business Operations of Banker with special reference of Safety Deposit Lockers - Liability of Banker in case of Bank Robberies and Fraud by Bank Employees - Vicarious Liability of the Bank and Bank Employees - Recovery of Loans and Advances - Recovery of Debts due to Banks - Financial Institutions Act, 1993 and SARFAESI Act, 2002.

UNIT – IV: WINDING UP OF BANKING COMPANIES

Effect of Winding Up of Banking Companies - Rights of Customers on Winding Up of Companies - Necessity for reforms in Indian Banking Law to meet Global Challenges - Banking Ombudsman - Various Committee Reports.

UNIT – V: NEGOTIABLE INSTRUMENTS ACT, 1881

Definition and Characteristics - Parties to Negotiable Instruments - Presentation - Discharge and Dishonour - Liability -Various kinds of Crossing of Cheque - Rights of Holder and Holder in due Course against Banker - Civil and Criminal Liability for Dishonour of Cheques under Section 138 to Section 142 of the Amended Negotiable Instruments Act.

Statutory Materials:

1. Banking Regulation Act, 1949
2. Negotiable Instruments Act, 1881
3. SARFAESI Act, 2002

4. Financial Institutions Act, 1993

Books Prescribed:

1. Arun Kumar & Anoop Kumar: Banking Industry and NPA's; New Century Publication; 1st Edn. (2018)
2. Taxmann: Digital Banking; Taxmann Publications, 1st Edn. (2016)
3. Indian Institute of Banking and Finance: Principles and Practices of Banking; McMillan Publications, 3rd Edn. (2015)
4. V.V.K. Subburaj: Rbi, Reserve Bank of India; Sura College of Competition, 2004

Books for Reference:

1. Dr. S. S. Srivastsava: Banking Law and Negotiable Instruments Act; Central Law Agency, 1st (2015)
2. Taxmann: Guide to SARFAESI Act – 2002 and Recovery of Debts and Bankruptcy act – 1993; Taxmann Publications, 2nd Edn. (2017)
3. Bimal N. Patel: Banking Law and Negotiable Instruments Act; 1st Edn. (2015)

First Year – 1st Semester	*Subject Code –U18PEGL222*	*Total Credits: 03*

TELECOMMUNICATION LAW

Objectives: The main objective of the paper is to introduce to the students the concepts of Telecommunications Law and its regulation at the International Level. Apart from the above, the paper covers the approaches of privatization in Telecommunications and Issues and challenges related to it. The paper will give theoretical perspective of Telecommunication Laws.

COURSE OUTLINE

UNIT – I: INTRODUCTION

Historical Perspective of Telecommunications Law - Conceptual Analysis - Public Broadcasting, Right to Broadcast - Cable Distribution - Broadcasting Licensing - Telecommunication Laws in India

UNIT – II: TELECOMMUNICATIONS

International Relevance - International regulation related to Telecommunications - ITU reform - Self-governance of the Internet: ICANN - WTO

UNIT – III: PRIVATIZATION

Privatization in telecommunications - Liberalization and deregulation - Privatization of INTELSAT

UNIT – IV: TELECOMMUNICATIONS: ISSUES AND CHALLENGES

Access - Dispute Settlement - Advertisement, consumer protection - Protection of minors (children) - Indecency, piracy - Jurisdictional issues

UNIT – V: TRAI

Framework, rules and regulations- merits and demerits - Case study method-Public awareness over the policies of telecommunication authorities.

Books Prescribed:

1. R.U.S.Prasad: Resolving Disputes in Telecommunications, Oxford University Press, 2010.
2. Law Walden:Telecommunications Law and Regulations, OUP Oxford,2018.
3. Vikram Raghavan: Communications Law in India, Lexis Nexis, 2007.

Books for Reference:

1. Miklos Kengyel:Electronic Technology and CPC, Springer Publications, 2014.
2. Antoni Gobeo: Journal of Cyber Security for Business Information Systems, River Publishers, 2018.
3. Archibald Putt: Putt's Law and Successful Technocrat, Wiley- Blackwell, 2006.

Second Year – 3rd Semester	*Subject Code –U18PEGL231*	*Total Credits: 03*

INTELLECTUAL PROPERTY RIGHTS

Objective: This paper produces a detailed insight on Intellectual Property Law and gives a wider picture to students about growing trends in IPR connected with International Perspective.

COURSE OUTLINE

UNIT – I: INTELLECTUAL PROPERTY

Meaning and Concept of Intellectual Property - Need for Protection - The World Intellectual Property Organisation (WIPO) Convention - Origin and Functions of World Trade Organisation (WTO) - Trade Related Intellectual Property Rights (TRIPS) - Agreement of WTO and its effects of Intellectual Property Law in India - Dispute Settlement Mechanism - Ethical Issues in IPR - Interface between IPR and Human Rights.

UNIT – II: THE PATENTS ACT, 1970

The Patents Act, 1970 & Patent Amendment Act, 2005: Definition - Salient Features - Patentable and Non - Patentable Inventions - Product and Process Patents – Procedural aspects - Patent Office and Powers of Controller - Right of Patentees - Term of Patent - Remedies for Infringement of Patents - Register of Patents - Surrender and Revocation of Patents - Compulsory Licenses - Exclusive Marketing Rights - Patent Agents - International Agreements - Knowledge Transfer - IPR and Information Technology – Bio tech patents -

UNIT – III: THE COPYRIGHT ACT, 1957 AND RECENT AMENDMENTS

Works in which Copyright Subsists - Meaning of Copyright - Ownership and Rights of the Owner - Term of Copyright – Powers and Functions of the Copyright Board – Registration of Copyright - Compulsory License - Copyright Societies – Fair Use doctrine - Rights and Remedies against Infringement - The Copyright (Amendment) Act 2012 - Rights of Broadcasting Organizational and of Performers - International Copyright Act - Digital Millennium Copyright Act.

UNIT – IV: TRADE OF MARKS, 1999

Object - Definitions - Salient Features - Distinctiveness - Deceptive Similarity - Procedures and Conditions for Registration - Effects of Registration – Powers and Functions of Registrar - Concurrent Registration - Rectification and Correction of Register – Rights of Registered Trade Mark Owner - – Protection of Trade Secrets and Deceptive Trade Practices - Special Provisions Relating To Protection of Trade Marks through International Registration under Madrid Protocol – Collective Marks - Appellate Board -Infringement Action - Passing Off Action.

UNIT – V: Industrial Designs, Geographical Indication and Traditional Knowledge

The Designs Act 2000 - Definition - Registration of Designs - Copyright in Registered Deisigns - Piracy of Registered Designs - Remedies - Powers and Duties of Controller - Semi Conductor Integrated Circuit Layout - Protection of Plant Variety and Farmers Right Act, 2001 (PPVFR Act) - National Law on Conservation of Biological Diversity - Geographical Indication of Goods (Registrations and Protection) Act, 1999 - Object, Definition – Procedure and Conditions for Registration - Prohibition of Registration of Certain Geographical Indications - Effect of Registration - Traditional Knowledge – Rationale and modes of protecting TK – Sui generis protection -Benefit Sharing -Turmeric Patent Case - Neem Oil Case.

Statutory Materials:

1. The Patents Act, 1970
2. Patent Amendment Act, 2005
3. The Trade Marks Act, 1999
4. The Copyright Act, 1957
5. The Copyright (Amendment) Act, 2012
6. The Designs Act, 2000
7. The Geographical Indications Act, 1999

Books Prescribed:

1. P.Narayanan: Intellectual Property Law; Eastern Law House, 3rd Edition (2001)
2. Dr. B.L. Wadehra: Law relating to Patents, Trademarks, Copyright, Designs and Geographical Indications; Universal Law Publishing, 5th Edition (2011)
3. Avtar Singh: Intellectual Property Law; Eastern Book Company, 1st Edition (2013)
4. V.K. Ahuja: Intellectual Property rights in India; Lexis Nexis, 2nd Edition (2015)
5. Dr. Bhandari: Law relating to Intellectual Property Rights; Central Law Publication, 4th Edition (2015)

Books for References:

1. Cornish: Intellectual Property:Patents, Copyright, Trademark and allied rights; Sweet&Maxwell, 7th Edition (2010)
2. Barret, Margreth; Intellectual Property; Aspen Publishers, 3rd Edition (2009)
3. Nard, Craig Allen: Law of Intellectual Property; Aspen Publishers, 2nd Edition (2008)
4. Arora, Manish: Guide to Trademark; Universal Publication, 2nd Edition (2007)
5. Sterling J.L.A.: World Copyright Law; Sweet&Maxwell, 3rd Edition (2008)

Second Year – 3rd Semester	*Subject Code –U18PEGL232*	*Total Credits: 03*

LAW OF INSURANCE

Objective: The object of this course is to make students understand the concept of Insurance as it is a wide spread business and the syllabus covers the various aspects of IRDA, Life Insurance, premium, risk, Marine Insurance, Fire Insurance etc.,

COURSE OUTLINE

UNIT – I: NATURE OF INSURANCE

Contract of Insurance- definition, nature and meaning, General principles of Insurance, Insurable Interest and Premium- definition, Mode of payment, forfeiture, return of premium, classifications of contract of insurance, duration of insurable interest and days of grace. Insurance Business –Control by State Agencies, Life Insurance Corporation Act – 1956, Functions and Powers of Corporation, Control Envisaged by the Central Agency, General Insurance Corporation, Powers and Functions.

UNIT – II: RISK

Meaning, scope, elements, alteration of risk, Insurance Policy –classification, commencement, duration of the policy, terms and conditions, effect of breach of conditions ,lapse and revival of the policy, Assignment and Nomination of Policy, Double Insurance, Re-insurance, Assurance, Insurance Regulatory and development Authority.

UNIT – III: LIFE INSURANCE

Definition, nature and scope, kinds of Life Insurance, non-disclosure and misrepresentation, Doctrine of Utmost good faith, circumstances affecting the risk, Amount recoverable under life insurance policy, Automatic extension clause, persons entitled to payment, Assignment and Nomination, settlement of claim and payment of money.

UNIT – IV: FIRE INSURANCE AND MARINE INSURANCE

Definition, nature and scope of fire insurance, Amount recoverable under fire insurance, doctrine of reinstatement, doctrine of subrogation, Doctrine of contribution. Nature and scope of Marine insurance, classification of Marine Policies, voyage- Deviation Perils of the sea, proximate cause, measure of Indemnity, warranties in marine insurance, loss and kinds of losses.

UNIT – V: MOTOR AND ACCIDENT INSURANCE – Scope and nature, legal parameters, tribunals, Other types of Insurance- burglary and theft Insurance, fidelity Insurance, Public Liability Insurance, Plate-Glass Insurance, Goods in transit Insurance, Insurance covering the risk of storm and tempest.

Books Prescribed:

1. K. S. N. Murthy, K.V. S. Sarma: Modern Law of Insurance In India; Lexis Nexis;1st edition (2013)
2. Gaurav Varshney: Insurance Laws; Lexis Nexis; 1st Edition (2017)
3. Avtar Singh: Law of Insurance; Eastern Book Company (2017)
4. Dr. C.L. Tyagi: Insurance Law and Practice; Atlantic Publication; 2nd Edition (2016)

Books for References:

1. M.N. Srinivasan, K. Kannan: Principles of Insurance Law; Lexis Nexis; Tenth edition (2017)
2. Neelam C. Gulati: Banking and Insurance: Principles & Practices; Excel Books (2011)
3. Taxmann: Insurance Laws Manual; Taxmann's Publication; 20th Edition (2019)

Third Year – 6th Semester	*Subject Code –U18PEGL341*	*Total Credits: 03*

CRIMINOLOGY AND PENOLOGY

Objective: The objective of this paper is to provide depth of understanding of dimensions of crime, crime causation, prevention of crime, penalizing the crime, functioning of penal institutions along with rehabilitation and protection of crime victims.

COURSE OUTLINE

UNIT – I: INTRODUCTION

Meaning and Significance of Crime - Concept of Crime and basis of Criminalization - Definition of Crime - Criminology - Criminological Reminiscence: Global Scenario - Renaissance - Modern Age - Focus on the need for Criminological Study - Ingredients of Crime - Distinction between criminality and non- criminality- Classification of Crimes - Development of Criminal Law - Sources and uses of Crime Data - Crime Reporting - Schools of Criminology.

UNIT – II: CRIME CAUSATION

Individual Centric Causes - Societal Centric Causes - Theories on Crime Causation - Juvenile Delinquency - Legislation - Juvenile Justice (Care and Protection of Children) Act, 2000 - 2013 Amendment Act -Statutory Bodies and Procedure - Reformative Institutions under the Act - Rehabilitation Process - Case Law.

UNIT – III: TYPES OF CRIME

White-Collar Crime and Blue-Collar Crime: Implications of White Collar Crimes - White Collar Crimes in India - Santhanam Committee Report – Wanchoo Committee Report - 47th Law Commission Report - Detection and Investigation - Trial of White-Collar Crimes - Case Law - Crimes and Women: Dowry Prohibition (Amendment) Act, 1986 - Crimes against Women- Crimes of Passion - New Legislation - Prostitution - Immoral Traffic Offender (Prevention) Act - Medical Termination of Pregnancy Act - Pre-Conception and Pre Natal diagnosis Techniques (Regulation) Act - Domestic Violence Act, 2005- Criminal Law Amendment Act, 2013- POSCO – Terrorism: Definition - Nature of Terrorism - Causative Factors - Funds for Terrorism - Kinds of terrorism - Terroristic Spectrum - Punishments and Measures for Coping with TADA-POTA-NSA, 2010-] - Criticism - Anti-Terrorist Measures - Communal Violence - Causes and Cures - Victims of Marginal Crimes - Social Deviance and Marginal Crimes - Kinds of Marginal Crimes - Victimless Crimes - Hidden Victims - Drug and Crime -Depiction of Offences and Punishments under NDPS Act - Modern Crimes and International Crimes: Computer Crime -Cyber crimes - definition -kinds - Information Technology Act, 2000 -Organ Trafficking - International Crimes - Environmental Crimes.

UNIT – IV: THE POLICE AND CRIMINAL JUSTICE SYSTEM

Police: Organisational Structure of Indian Police - Police Bureaucracy - Police Setup - Custodial deaths - Modernization in Police - Crime Records Management - Traditional Vis-à-vis Modern Crime Records Management - Police Community Relations - Thana Level Committee - Police Advisory Committees - Media and Police - Discipline and Lawlessness - Interpol -Criminal Justice System: Objectives of Criminal Justice System - Rights of Accused and Arrested Person - Plea Bargaining - Human Rights and Administration of Criminal Justice.

UNIT – V: CORRECTIONAL INSTITUTION AND CRIME PREVENTION

Probation and Parole: Origin - Salient features of Probation of Offenders Act, 1958 - Parole - Parole Regulations - Parole Recommendations - Prison System in India: Problems of Prisoners -Organized Setup - Prison Discipline - Prison Labour - Prison Education - Open Prison - The Prison Community - Prison Reform in India -Dr. Wreckless Committee Report - International Perspective.Crime Prevention - Theories of Punishment - Kinds of Punishment - Recidivism - Various form of Recidivist -Prevention of Crime and Delinquency.

Books Prescribed

1. Dr. Rajendra K. Sharma: Criminology and Penology; Atlantic Publishers and Distributers, 1st Edtition (1998).
2. Ahamed Siddique: Criminology Problems and Perspectives; Eastern Book Company, 1st Edition (1997)
3. Dr. J.P.S. Sirohi: Criminology and Penology; Allahabad Law Agency, Reprint 2014
4. N.V. Paranjape: Criminology Penology and Victimology; Central Law Publications, 2017 Edition (2017).

Books for Reference

1. Harry Elmer Barnes: New Horizons of Criminology; Bames and Teeters, 3rd Edition (1959)
2. Mark S.Gaylord: The Criminology of Edwin Sutherland; Transaction Publishers, 1st edition (1988).
3. Taft and England: Criminology; Collier & Macmillan, 4th Edition (1964).

Second Year – 3rd Semester	*Subject Code –U18PEGL342*	*Total Credits: 03*

CONSUMER AND COMPETITION LAW

Objectives: The Process of globalization and liberalization have brought a considerable awareness towards improving the competitive process in developing countries such as India. The course aims to study the developments and analyse the progress of competition law in various legal systems.

COURSE OUTLINE

UNIT – I: **COMPETITION POLICIES**

Evolution – Objective - scope and Nature of Competitive Laws - Concept of perfect competition - Theories on IP and competition - Concept of Open market system - MRTP Act, 1969 - Ragavan Committee Report - Formation and features - Anti – Competitive Practices and its regulation under MRTP Act - Regulatory Authorities – SEBI, TRAI, IRDA, NCDRC, CERC - Competition policy and Consumer Protection - Competition Policy and IPR – Introduction to various IP Assets, Patent Policy and its regulation under the Indian Laws, Abuse of IPR and regulation of Combination, Conflict of Combination Policy and Patent policy, TRIPS and its impact on Competition and Patent – Monopoly.

UNIT – II: COMPETITION ACT 2002

Drawbacks under the MRTP Act and need for the Competition Act - Regulation of Unfair Competition - Anti-competitive agreements - Abuse of dominant position - Combination, Competition Commission of India – Constitution, duties, powers and functions of commission - Competition Advocacy - Competition Appellate Tribunal, Changes brought in by Competition (Amendment) Act 2009.

UNIT – III: INTERNATIONAL PERSPECTIVES

Competition Policy under the EU and USA – Regulation of Unfair Competition in UK - The Competition Act 1989 - Anti – trust policy and Unfair Competition in USA – Federal trade commission Act 1914 - US Enforcement, Treaty on functions of European Union – Art 101, Art 102 - Globalization and Competition Law, WTO and its impact on competition laws with reference to UNTCAD - Competition rules of WTO, International Enforcement and Judicial Assistance.

UNIT – IV: CONSUMER PROTECTION LAW AND POLICIES

Origin and History of the Movement - Salient features of consumer protection act - Objective of the legislation - Consumer Protection Act, 1986 – Procedure – Deficiency of Service – Defect in Goods – Unfair Trade Practice - Consumer Protection Councils – its organization, objects and Procedure - Consumer Disputes Redressal Agencies – Kinds, establishment, composition, and jurisdiction - Complaint – manner in which made, procedure on receipt of appeals, limitation period, dismissal of frivolous or vexatious

complaints - Orders of the Consumer Disputes Redressal Agencies – Findings of the Forum– Finality of orders, Review of orders, enforcement of orders - Penalties and Remedies

UNIT – V: EMERGING TRENDS IN CONSUMERISM

Goods – Case laws on manufacturing defects - Service Sector – Airlines, Banking, Insurance, Housing - Medical negligence - Lawyers negligence - WTO and Consumer Protection - E-Commerce and Consumer Rights - Role of Civil Society in Consumer Protection - Access to justice and Consumer Laws - ADR in resolution of Consumer disputes - Data protection

Books Prescribed:

1. S. M. Dugar; Guide to Competition Law (Containing Commentary On The Competition Act, 2002; Mrtp Act, 1969 & The Consumer Protection Act, 1986), Lexis Nexis; 6th Edn. (2016)
2. Iain Ramsay: Consumer Law and Policy: Text and Materials on Regulating Consumer Markets, Bloomsbury Publishing, 3rd Edn. 2012
3. Dennis Campbell: International Consumer Protection, Springer Science & Business Media, 2013

Books for Reference:

1. Dr. V.K.Agarwal; Competition Act, 2002, Bharat Law House, Delhi; 2019 Edn. (2019)
2. Thomas Wilhelmsson: Consumer Law in the Information Society, Springer Netherlands, 2000
3. D. P. Mittal: Competition Law & Practice, Taxmann Publications Pvt. Limited, 2008

Third Year – 6th Semester	*Subject Code –U18PEGL351*	*Total Credits: 03*

FORENSIC SCIENCE

Objective: This paper seeks to explore various areas of the law that deal with creating and maintaining and regulating 'health.' The paper aims to give comprehensive and practical approach to the students to make them aware of the developments in medical sciences and to enable them to be equipped to face the recent challenges raised by the modern issues in contemporary era.

COURSE OUTLINE

UNIT – I: CRIME & CRIMINAL BEHAVIOUR

Definition of Crime, Various types of crime, Criminal behaviour-cause and theories, Modus Operandi Criminal profiling, Corpus Delicti - Criminal Justice System-Important wings of criminal justice system, Its structure & functioning, Role of Police officers, prosecution & judicial officers, Role of Forensic scientists, medico-legal doctors, Expert Testimony Forensic Science-Basic Principles & Significance, History & Development of Forensic Science, Organizational structure of Forensic Science labs in Central & State. Crime Scene Management-Defining the Scene of crime, Managing a crime scene & its hierarchy, Role of First Responding Officers, Search Patterns of a crimescene,Crime scene Documentation,Collection, Packaging, Labelling & Forwarding of exhibits to forensic laboratories,Preservation of evidence, Health & Safety Protocols.

UNIT – II: FORENSIC SCIENCE AND ITS APPLICATION IN CRIME INVESTIGATION

Definition, Nature, And Need & Scope of Forensic Science: Crime Scene Evidences, Blood, Semen & other Biological fluids, Viscera, Shoe impressions, Tool marks, Tyre marks, Bite Marks, Hair – Animal & Human, Fibres& Fabrics, Glass, Soil, pollen Paint Establishment of identity of Individuals, DNA, Fingerprints/Foot prints, Anthropology – Skeletal Remains, Odontology, Questioned Document and Their Identification- Identification of objects by shape and size, Handwriting and signature-analysis, identification and examination, Procedure for examination, Types of forgery, Anonymous letter, Charred document, Idented writing, Counterfeit coins and notes, Small coins (offence) Act 1971, Standards of Weight and Measures Act 1976

UNIT – III: FORENSIC MEDICINE AND THE LAWS:

Medical Jurisprudence- Brief History & current scenario at National & International level Forwarding of Biological samples to Forensic Laboratories, Medico legal aspect of Death-Concept of Human Anatomy & Physiology, Time of Death, Causes of Death, Injuries: classification, forms and medico legal aspects, Medico Legal Aspects – PM report, Dying Declaration & Expert Testimony (Evidence Act) Sexual offences – Sexual, Offences - Rape, DFSA (Drug Facilitated Sexual Assault),Examination of the victim & the accused, Collection

of evidence, Infanticide, Abortion, Artificial Insemination, Medical Termination of Pregnancy Act 1971, Prenatal Diagnostic Technique Act 1984, Legal Aspects - Mental Health Act 1987, Prevention of Food Adulteration Act 1954, NDPS Act 1985, Petroleum Act 1934, Prevention of Damage to Public Property Act 1984, Prevention of Illicit Trafficking in NDPS Act 1985, Arms Act 1950, Explosives Act 1984, Explosive Substance Act 1908, The Drugs Act 1940, The Drugs and Cosmetics Act 1945

UNIT – IV: RECENT ADVANCES IN FORENSIC SCIENCE AND THE LAWS

Cyber crime: definition, hacking, virus, obscenity, pornography, software piracy. It Act, 2000 .Intellectual property right-domain name, Trademark. Computer security encryption, decryption and digital signature, Forensic Speaker identification-Introduction inter speaker and intra-speaker variation, forensic Phonetics-acoustic and auditory parameter, vocal tract, speaker recognition identification and verification, spectrograph. Study of extortion threatening calls, hoax calls, drugs transactions and the recorded voice.

UNIT – V: NARCO ANALYSIS AND DNA FINGER PRINTING

Theory, forensic significance of narco-analysis, admissibility in court, future prospect, case study. Brain mapping- introduction, EEG, P-3000 wave, brain mapping in forensic Science, Limitation of technique, admissibility in court, case study. Polygraph: Principle and technique polygraph as forensic investigative tool, NHRC guidelines for polygraph test, case study. Forensic DNA Finger Printing-DNA-Introduction, source of DNA in Forensic case work, Extraction of DNA, Techniques of DNA fingerprinting-RFLP, STR, PCR. DNA fingerprinting in paternity disputes, mass disaster and other forensic case work, legal issues in DNA fingerprinting, case study.

Books Prescribed:

1. Dr. Jaising P. Modi: A Textbook of Medical Jurisprudence and Toxicology; Lexis Nexis, 26th Edition (2018)
2. B.V. Subrahmanyam: Parikh's Textbook of Medical Jurisprudence, Forensic Medicine and Taxicology; CBS Publishers and Distributors Pvt. Ltd; 8th Edition (2019)
3. Sarita Jand, Forensic Science & Law, Allahabad Law Agency; First Edition (2017)

Books for References:

1. R. A. Witthaus: Medical Jurisprudence, Forensic Medicine and Toxicology. Volume 2 of 4; Gale, Making of Modern Law, (2010)
2. Nabar B.S., Forensic Science in Crime Investigation, Asia Law House; 3 edition (2013)
3. B. R. Sharma : Scientific Criminal Investigation; Universal Law Publishing - An imprint of Lexis Nexis; 2nd Edition (2016)

Third Year – 6th Semester	*Subject Code –U18PEGL352*	*Total Credits: 03*

HUMAN RIGHTS

Objective: The understanding of human rights is the foundation for the development of a good citizen and a responsible legal professional. The main objective of this course is to provide an insight into the meaning and significance of various human rights in the contemporary era and the mechanisms developed at the international and national level for protection and promotion of such rights. This course attempts to increase the knowledge of law students with respect to human rights; to focus their attention on the underlying values of human rights and to explore various international and national legal frameworks which embody human rights and promote them in practice.

COURSE OUTLINE

UNIT I: CONCEPT OF HUMAN RIGHTS

Origin and Development of Human Rights- Generations of Human Rights - Civil and Political Rights -Economic, Social and Cultural Rights - Solidarity Rights - U.N Charter - Universal Declaration of Human Rights, International Covenant on Civil and Political Rights and Optional Protocols - International Covenant on Economic and Social Cultural Rights and Optional Protocols.

UNIT II: VULNERABLE GROUPS AND HUMAN RIGHTS

Discrimination against Women, Status of Women in India, Conferences of Women, Rights of Child, Optional Protocols to the Convention on the Rights of the child Labour, Migrant Workers, Rights of the Migrant Workers, Reporting System, Inter - State Communications System, Historical Development of International Refugee Law, United Nations High Commissioner for Refugees (UNRRA), Stateless Persons, Disabled Persons, Indigenous Persons.

UNIT III:HUMAN RIGHTS AND NON-GOVERNMENTAL ORGANIZATIONS

NGO's and United Nations, Human Rights and the NGO's - Amnesty International and Human Rights Watch, India and Human Rights NGO's - People union for Civil Liberties. - international humanitarian law - Application and Historical Development of Humanitarian Law- Treatment of Prisoners of War, Treatment of Alien Enemies, Human Rights and Terrorism.

UNIT IV: IMPLEMENTATION OF HUMAN RIGHTS

UN Commission on Human Rights (Human Rights Council) - The Human Rights Committee (CCPR) under ICCPR- The Committee on Economic, Social and Cultural Rights (CESCR) under ICESCR.

UNIT V: HUMAN RIGHTS PROTECTION IN INDIA

Provisions under the Indian Constitution – Fundamental Rights, Enumerated and Unremunerated Human Rights, Restrictions on Human Rights and Fundamental Rights- Protection of Human Rights Act 1993 - National and State Human Rights Commissions – Establishment, Powers and Functions of NHRC and SHRC - Role of NHRC and SHRC - Application of International Human Rights Law in India- Role of Indian Judiciary in enforcing human rights - Judicial Activism.

Statutory Materials

The Protection of Human Rights Act, 1993.

Books Prescribed

1. Paras Diwan: Human Rights and the Law; Deed & Deep Publications, 1st Edition (1999)
2. Sankarsen: Human Rights; Law Enforcing Concept Publishing Co. , 1st Edition, (2002).
3. Maurice Cransten: What are Human Rights; Taplinger Publishing Co., 1st Edition (1978).
4. Dr.H.O.Agarwal: International Law and Human Rights; Central Law Publications, 20th Edition (2000).

Books for Reference

1. H. Kramer, Simmonds & Steiner: Debate over Rights; Oxford University Press, 1st Edition (2000).
2. John Locke: Civil Government; Wildside Press, Reprint (2008).
3. Dr. U.Chandra: Human Rights; Allahabad Law Agency Publications, 5th Edition (2004).
4. Galius Esejoifer: Protection of Human Rights under the International Law; Laiden Boston, 1st Edition (2007).
5. Raphael D.D, Macmillan: Human Rights Old and New; Rouledge and Kegal Paul, 1st Edition (1981).

Third Year – 6th Semester	*Subject Code –U18OEGL301*	*Total Credits: 03*

ENVIRONMENT AND INTERNATIONAL LEGAL ORDER

Objective: The term environmental order is however largely unknown. It is more than peripheral short-term environmental protection effected on a case-by-case basis to ward off risks rather it means blanket, comprehensive and long-term protective care in line with the enduring responsibility we bear for the world around us, for the world we share with others and for the world of the generations to come. This paper is imparted to create legal and social awareness for the students regarding environmental order.

COURSE OUTLINE

UNIT – I: INTRODUCTION

Concept of "Environment"- Definition, Meaning and Scope of the term 'Environment' and 'Pollution'- Meaning of the term 'Population ', 'Biome', 'Biosphere' - Meaning of the term 'Ecosystem: Macro-Ecosystem and Micro- Ecosystem - Relationship between Population, Environment and Development - Population –Vs- Development - Development –Vs- Environment Concept of 'Common Property' and 'State Property' - Notion of Doctrine of Public Trust

UNIT – II: INTERNATIONAL ENVIRONMENT LAW AND GLOBAL ISSUES: International Environmental Campaigns - The United Nations Conference on Human Environment, 1972 (Stockholm Conference) - Framework of the Conference - Aims and Objectives - Concept of Sustainable Development - Polluters Pay's Principle - Precautionary Principle - Concept of Equity - Inter-Generational Equity - Intra-Generational Equity - The United Nations Conference on Environment and Development, (UNCED) (Earth Summit 1992) - Framework of the Conference - Aims and Objectives - Earth Charter or Rio Declaration - Agenda 21 : Blue Print for action in 21st Century - Earth Summit Plus Five - The Johannesburg Declaration on Sustainable Development, - Framework of the Declaration - Aims and - From Stockholm to Rio De Janeiro to Johannesburg -World Charter for Nature 1982

UNIT – III: OTHER MAJOR INTERNATIONAL ENVIRONMENTAL ARRANGEMENTS

Kyoto Conference and Pact on Global Warming, 1997, and onwards -Noordwijk Declaration on Climate change, 1989 - Helsinki Declaration on the Protection of Ozone Layer, 1989 - Basel Convention, 1989 - Nairobi Declaration, 1982 - Environmental Obligations: International Financing Policy - Global Environment Facility - World Environment Fund - United Nations Organisation and Environment - Millennium Development Goals 2000 - Global Environmental Issues and their Impacts: Global Warming - Oil Pollution - Ozone Layer Depletion - Green House Effect - Acid Rain.

UNIT – IV: BIODIVERSITY AND ITS NECESSITY

Definitions - Meaning and Importance - Role of Flora and Fauna in maintaining Biodiversity - Threats to Biodiversity - Need for protection of Biodiversity - Biodiversity and Economic Valuation - Laws, Policies and Measures for Biodiversity: Convention on Biological Diversity, 1992 - The Biological Diversity Act, 2002 - Protection of Plant Varieties and Farmers Right Act, 2001 - The Geographical Indications (Regulation and Protection) Act, 1999

UNIT – V: BIODIVERSITY AND ETHICAL ISSUES

Utilization of flora for Bio-Medical purposes - Cosmetic Plants - Medicinal Plants -Utilization of fauna/animals for Bio-Medical purposes - Genetic Mutation of Seeds - Experimentation on Animals - Genetically Modified Organisms - Genetic Engineering - Biodiversity and Intellectual Property Rights - Biodiversity And Priority Sectors: Sanctuaries - Zoo and Parks - Biosphere Reserves - Protected Forest and Reserved Forests - Conservation of Biodiversity: Role of NGO - Role of Indigenous People - Role of Media and Publications.

Books Prescribed:

1. Dr. S.C. Tripathi: Environmental Law: Central Law publications: Latest Edition(2015)
2. Shashi Kumar: Biodiversity and Food Security: Atlantic: Latest Edition(2002)
3. Alok Pandey: Environmental Law – an emerging issues in India: ABS books: 1st edition(2016)

Books for Reference:

1. V. R. Krishna Iyer: Environmental Pollution and the Law: Vedpal Law House: Edition(1984)
2. Prof. Philippe sands, Prof. Jacqueline Peel, Prof. Adriana Fabra & Dr. Ruth Machenzie: Principles of International Environmental Law: Cambridge university press: 3rd Edition(2012)
3. Jonathan A. Newman, Gary Varner & Stefan Linquist: Defending Biodiversity Environmental science & Ethics: Cambridge University Press: 1st Edition(2017)

Third Year – 6th Semester	*Subject Code: U18OEAL501*	*Subject Credits: 03*

RIGHT TO INFORMATION AND EDUCATION

Objectives: The right to information and right to education have been recognized as a fundamental human right, which upholds the inherent dignity of all human beings. These statutory rights play a crucial role in democracy - it is essential to ensure education accountability and good governance. Hence, the basic object of this subject is to empower the students to have an in-depth knowledge about Right to Information and Right to Education

COURSE OUTLINE

UNIT – I: INTRODUCTION TO RIGHT TO INFORMATION

The evolution of the Right to Information in India - The important terms and concepts used in the Act - The salient features of the Act Public Authorities and their Obligations under the Act - Public Authority - Public Authorities covered under the Act - Public Authorities are exempted from the ambit of the Act - Obligations of Public Authorities - Role of Public Information Officers: PIOs and APIOs - Accepting an Information Request - Processing and Disposing - The specific Duties & Responsibilities of Information Officers - The liabilities of a PIO for non-compliance with the provisions of the Act - The time limits for disposal of information requests - The fees and costs to be charged for providing information - The grounds on which requests can be rejected and the procedure for such rejection.

UNIT – II: EXEMPTIONS AND DISCLOSURES

Exemptions from Disclosure of Information - Partial Disclosure - Third Party Information - Specific provisions of the Act which exempt certain kinds of information - the classification of such exempted information - Application of public interest test with respect to exempted information - Grounds that allow for partial disclosure of information - The concept of ‘Third Party' and the issues and considerations revolving around its involvement.

UNIT – III: APPEALS

The roles and responsibilities of Appellate Officers within Public Authorities - The process involved in making first appeals to designated Appellate Officers - Timelines for making a first appeal and disposal of the appeal - First Appeals and Appellate Officers - Information Commission: Powers and Functions - The Role and Responsibilities of the Information Commissions - The relevant provisions in the RTI Act dealing with Complaints to the Information Commission and the specifications thereof - The "Second Appeal" process and the Commissions' mandate for the same - The power of Information Commissions with regard to enforcing compliance of public authorities with the provisions of the RTI Act, imposing penalty / recommending disciplinary action against erring PIOs etc.

UNIT – IV: RIGHT TO EDUCATION: INTERNATIONAL PERSPECTIVES

Education as Human Rights - Major intervention of International Declarations - Universal Declaration of Human Rights 1948 - Conventions on Child Rights 1989 - Current status and Challenges

UNIT – V: RIGHT TO EDUCATION: INDIAN PERSPECTIVES

Constitution (Eighty-sixth Amendment) Act, 2002 - Article 21-A in the Constitution of India - Elementary Education in India: Retrospect and Prospect - Historical background of RTE Act 2009 - Major provisions of RTE Act 2009 - Challenges in implementation and current status - Opportunities and Challenges of RTE Act 2009

Books Prescribed:

1. N.V. Paranjapee: Right to Information Law in India: Lexis Nexis: 1st Edition(2014)
2. Sarbjit Sharma & Krishnan Gopal: Right to Information: Authors Press: 1st Edition(2005)
3. Gursharan Singh Kaimth: Right to Education – A Roadmap ahead: Neha Publishers and distributors: 1st Edition(2014)

Books for Reference:

1. Justice Rajesh Tandon: Right to Information – Law and practice : Lexis Nexis: 2nd Edition(2015)
2. S.P. Sathe: Right to information: Lexis Nexis India: Latest Edition(2006)
3. Ajit Mondal & Jayanta Mete: Right to Education in India(Vol 1&2): Gyan Publishing house: 1st Edition(2016)

Third Year – 6th Semester	*Subject Code: U18OEBL501*	*Subject Credits: 03*

INTERNATIONAL FINANCIAL TRANSACTIONS AND VALUATION

Objective: To analyse the concept of international financial environment and balance of payments. To provide knowledge of foreign exchange market, currency derivatives, exchange rate determination and international financial markets. To study about foreign trade finance, foreign exchange exposure and international capital structure.

COURSE OUTLINE

UNIT – I: INTERNATIONAL FINANCIAL ENVIRONMENT:
'Globalization', goals of International Financial Management.
Balance of Payments: concepts and principles of balance of payments and its various components. The Current Account Deficit and Surplus and Capital Account Convertibility.

UNIT – II: FOREIGN EXCHANGE MARKET:
Origin of the concept of foreign exchange, the difference between fixed and floating rates. Foreign exchange transactions and the derivatives instruments traded in foreign exchange market such as forwards, futures, swaps, and options.
Currency Derivatives: forward markets and the different concepts, currency futures markets and currency options markets and functions.

UNIT – III: EXCHANGE RATE DETERMINATION:
Exchange rate movements, factors that influence exchange rates, movements in cross exchange rates, concepts of international arbitrage, interest rate parity, and purchasing power parity and the International Fisher effect.
International Financial Markets: basic concepts of the international money market. International credit markets (loans in various forms) from the creditors/investors.

UNIT – IV: FOREIGN TRADE FINANCE:
Concept of foreign trade finance. concepts of financing exports and financing imports and documentary collections, factoring, forfeiting and countertrade
Nature and Measurement of Foreign Exchange Exposure: nature and measurement of foreign exchange exposure. Types of exposures and the various types of translation methods.

UNIT – V: MANAGEMENT OF FOREIGN EXCHANGE EXPOSURE:
Concept of exposure forward and foreign exchange exposure, various tools and techniques of foreign risk management and the risk management products.

International Capital Structure: international capital structure, cost of capital, the capital structure of MNCs, cost of capital in segmented versus integrated markets.

Books Prescribed:

1. Prakash. G. Apte: International Finance: Business Perspective; McGraw Hill Education; 2 Edition (2017)
2. Cheol Eun, International Financial Management; McGraw-Hill Higher Education; 5th Edition (2009)
3. Sharan V: International Financial Management; Prentice Hall India Learning Private Limited; 6th Edition (2010)
4. Paul R. Krugman: International Finance: Theory and Policy, Pearson Education; 10th edition (2017)

Books for References:

1. Julian Walmsley: The Foreign Exchange and Money Markets Guide (Frontiers in Finance Series); John Wiley & Sons; 2nd edition (2000)
2. Vibha Mathur, Foreign Trade, Export-Import Policy & Regional Trade Agreements of India; New Century Publications (2012)
3. Alan C. Shapiro, Peter Moles: International Financial Management; Wiley (2016)

Third Year – 6th Semester	*Subject Code: U18OECL501*	*Subject Credits: 03*

PRIVATE INTERNATIONAL LAW

Objective: This course introduces students to private international law, as to the basic concepts and mechanism of this branch of law, and the legislative rules, judicial interpretations issued by various Authorities, also some representative judicial cases ruled abroad.

COURSE OUTLINE

UNIT – I: INTRODUCTION

Definition - Nature and Scope of Private International Law - THEORIES OF PRIVATE INTERNATIONAL LAW – Development of English Private International Law, Modern Theories and Development – Theory of Acquired Rights, Local Law Theory, American Revolution - Meaning of Classification of the Cause of Action - Basis of Classification, Meaning of Incidental Question, Elements of Incidental Question, Application and Exclusion of Foreign Law.

UNIT – II: RENVOI, DOMICILE AND JURISDICTION

Doctrine of Single Renvoi - Doctrine of Total Renvoi - Scope of the Application of Renvoi - Acquisition of a Domicile of Choice - Domicile of Dependent Persons and Married Women - Concept of Residence - Jurisdiction of English Court and Limitations on Jurisdiction.

UNIT – III: PRIVATE INTERNATIONAL LAW RELATING TO MARRIAGE AND OTHER MATRIMONIAL CAUSES

Meaning and Formalities of Marriage - Capacity to Marry - Polygamous Marriages – Divorce - Nullity and Judicial Separation - Presumption of Death and Dissolution of Marriage - Civil Partnership.

UNIT – IV: PRIVATE INTERNATIONAL LAW RELATING TO ADOPTION

Adoption Proceedings in England – Adoption and Children Act, 2002 - 1993 Hague Convention on Protection on Children and Co-operation in Respect of Inter Country Adoption - Effect of Foreign Adoption.

UNIT – V: PRIVATE INTERNATIONAL LAW RELATING TO PROPERTY AND OBLIGATION

Distinction between Movable Property and Immovable Property - Distinction between Tangible and Intangible Property - Transfer of Movable and Immovable Property – Succession - Matrimonial Property – Contracts - Nature of the Problem and Solutions to the Problem - Rome Convention - Special Contracts and Limitation on the Dominant of the Applicable Law.

Books Prescribed:

1. Paras Diwan, Peeyushi Diwan: Private International Law, Deep Deep Publication, 4th Edition (1998).
2. I.A. Shearer: Starke's International Law; Oxford University Press, 11th Edition (1994).
3. Dr. S.R. Myneni: Private International Law; Asia Law House, 1st Edition reprinted (2015).

Books for Reference:

1. Dr. H.O. Agarwal: International Law; Central Law Publications, 20th Edition (2014).
2. Govindaraj V.C: Private International Law a case study; OUP India, (2018).
3. Ugljesa Grusic, Christian Heinze: Cheshire, North & Fawcett's Private International Law; OUP Oxford, 15th Edition (2017)

B.Sc EMERGENCY AND TRAUMA CARE TECHNOLOGY

R2019

CURRICULUM

UAH19CT101	**ANATOMY**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Anatomy
OBJECTIVES	An outline of anatomy with special emphasis on applied aspects is provided to the students for better understanding of the technical and diagnostic procedure.

UNIT I: Organization of the human body

1. **Introduction**

- Introduction to human body
- Definition and subdivision of anatomy
- Anatomical position and terminology
- Region and systems of the body
- Cavities of the body and their contents
- Levels of organization of the body

2. Cell and genetics

- Parts of cell – cell membrane, cytoplasm, organelles, inclusion bodies, nucleus
- Structure of chromosome, DNA, RNA.
- Basics & fundamentals of Genetics, Karyotyping, Chromosomal disorders, prenatal diagnosis, genetic counseling and gene therapy.
- Cell division – Definition and main events that occur in different stages of mitosis and meiosis.
- Tissues – Definition, characteristic features and types with example.
- Types of glands with example

UNIT II: Systems of support and movement

1. **Skeletal system**

- Cartilage: Type and basic histological feature.
- Bones: definition, classification based on location, name and number of bones with general features of important bones, function of bone, histological feature of a compact bone.
- Joints – Definition and types with example, Axis and movements. Shoulder, elbow, hip, knee joints – type, bones and ligaments involved, possible movements.

1. Muscular system

- Types of muscle with basic histological features
- Parts of skeletal muscle.
- Definition of origin and insertion
- Origin, insertion, nerve supply, action of sternocleidomastoid, pectoralis major, deltoid, gluteus maximus and diaphragm.

UNIT III: Controls systems of the body

1. Nervous system

- Subdivisions of the nervous system
- Spinal cord-location, extent, external features and blood supply
- Brain-subdivision, location, external features of Medulla oblongata, Pons, Midbrain, Cerebellum, and Cerebrum, Thalamus and Hypothalamus, Location and subdivision of ventricles of brain. Circle of Willis.
- Cranial nerves-name, number, attachment, area of distribution
- Spinal nerves-typical spinal nerves. Name and location of plexuses. Location and distribution of brachial and lumbosacral plexus.
- Autonomic nervous system-sympathetic and parasympathetic nervous system. Location of preganglionic and postganglionic neurons.

2. Sense organs

- Location and features of nose, tongue, eye, ear and skin.

3. Endocrine system

- Names of the endocrine glands. Location and features of pituitary, thyroid, parathyroid, suprarenal, pancreas, ovaries and testes. Names of hormones produced by each gland.
- Microscopic features of thyroid and pancreas.

UNIT IV: Maintenance of the human body

1. Cardiovascular system

- Types and general features of blood vessels. Structure and types of arteries and veins. Shape, size, location, covering, external and internal features of Heart. Conducting system of heart. Blood supply of the heart. Name, location, branches and main distribution of principal arteries and veins

2. Lymphatic system

- General features of Lymph nodes and lymphatic vessels. Name, location, external features, microscopic features of tonsil and spleen.

3. Respiratory system

Name the organs of respiration. Location and features of Nasal cavity, pharynx, larynx, trachea, lung & pleura. Mention the microscopic feature of the lung.

4. Digestive system

- Name the parts of the alimentary canal and accessory organs. Location & features of esophagus, stomach, small and large intestine. Location and feature of tongue, salivary glands, pancreas, liver and gallbladder. Microscopic features of the liver.

5. Urinary system

- Names of urinary organs. Location and features of kidney, ureter, urinary bladder & urethra. Microscopic features of the kidney.

6. Reproductive system

- Names of male and female organs of reproduction. Location and features of testis, epididymis, vas deferens, prostate gland and spermatic cord. Location & features of uterus, uterine tube, ovary and breast.

7. Embryology

- Structure of gametes & gametogenesis. Fertilization to development of embryo till 3rd week. Derivatives of germ layers. Teratogens, Structure and Functions of placenta.

UNIT V: Anatomical regions

- Simple ideas about scalp, triangles of neck, axilla, cubital fossa, carpal tunnel, mediastinum, umbilicus, inguinal canal, femoral triangle
- sub sartorial canal popliteal fossa

PRACTICALS/DEMONSTRATIONS

1. Demonstrations of dissected specimens.

2. Viewing of projection of microscopic slides of muscle, bone, cartilage, spleen, tonsil, lung, liver, kidney, thyroid and pancreas

REFERENCE BOOKS

1. Manipal manual for AHS by Dr. Sampath Madhyastha, (Second Edition) Published by CBS Publishers.

2. Handbook of anatomy for nurses by Dr. P. Saraswathi

3. Ross and Wilson, Anatomy and physiology in health & illness

COURSE OUTCOMES	
CO1	The student will be able to gain knowledge of general anatomy and locomotion.
CO2	The student will be able to gain knowledge of basic human anatomy and histology of CVS and Respiratory systems.
CO3	The student will be able to gain knowledge of basic human anatomy and histology of CNS, GI, excretotry and reproductive systems.
CO4	The student will be able to gain of knowledge basic human anatomy and histology of endocrine system and special senses.

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S					
2		**M**				
3			**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH19CT102	**PHYSIOLOGY**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Physiology
OBJECTIVES	To know the basic functioning of the human body, and the various organ systems.

Unit-I

1. **General Physiology:**

- Concept of Homeostasis
- Cell structure and functions
- Transport across membranes

Body and body fluids:

- Body fluid volumes, compartments and composition
- Blood composition and functions
- Plasma proteins – Types and functions
- Erythrocytes – functions, Erythropoiesis, anemia's
- Leucocytes – classification and functions
- Platelets – morphology and functions
- Blood coagulation – Mechanism and name of anticoagulants
- Blood groups – Basis of ABO & Rh grouping, Erythroblastosis Foetalis

2. Muscle physiology:

- Muscles – Classification & structure of striated, nonstriated & cardiac muscle
- Neuromuscular junction
- Mechanism of skeletal muscle contraction

3. Digestive system:

- Salivary glands, functions of saliva
- Parts of stomach, composition & functions of gastric juice
- Pancreatic Juice – composition & functions
- Bile – composition & functions of bile & bile salts
- Functions of Small intestine & large intestine

Unit-II

1. Skin

● Structure & Functions

2. Excretory system:

- Kidney: Basic physiological anatomy (Including JGA)
- Formation of urine – GFR
- Formation of urine – Reabsorption & secretion
- Micturition Reflex
- Dialysis – Principle, types
- Renal function tests

Unit-III

1. Endocrine system:

- Hypothalamo hypophyseal inter relationship
- Posterior pituitary hormones and its actions
- Anterior pituitary hormones, Growth hormone – Actions
- Dwarfism, gigantism, acromegaly
- Thyroid hormones – Actions
- Cretinism, Myxoedema, Grave‟s disease (clinical features)
- Parathyroid hormones – Functions, Tetany
- Insulin, Glucagon‟s – Actions, Diabetes mellitus
- Adrenal medullary hormones & their actions
- Adrenal cortex hormones & their actions

2. Reproductive system:

- Male reproductive organs – Spermatogenesis, Testosterone actions
- Female reproductive organs – menstrual cycle (endometrial and ovarian cycles) and its hormonal control
- Contraceptive methods in male and female

Unit-IV

1. Respiratory system:

- Basic physiological anatomy
- Surfactant
- Mechanics of respiration
- Lung volumes and capacities
- Oxygen transport, Carbon-di-oxide transport
- Nervous and chemical regulation
- Pulmonary function tests.

2. Cardiovascular system:

- Basic physiological anatomy, innervations of heart
- ECG – normal waves, intervals and their significance

- Cardiac cycle – mechanical events, Heart sounds
- Blood pressure – Definition, measurement, normal values, factors maintaining BP Regulation

Unit-V

1. Nervous system:

- Structure of neuron, neuroglial cells, synapse and transmission across it
- Reflex – Components of reflex arc, examples.
- Functions of ascending tracts – anterior, lateral spinothalamic tracts, Dorsal column
- Functions of Corticospinal (Pyramidal) tract-Descending tract
- Functional areas of cerebral cortex
- Functions of basal ganglia, thalamus, hypothalamus, limbic system and cerebellum

2. Special senses:

● Receptors for various special senses

Practical Demonstration

Hematology:

1. Enumeration of RBC count.
2. Enumeration of WBC count.
3. Differential Count.
4. Estimation of Hemoglobin.
5. Determination of blood group.
6. Determination of bleeding time and clotting time.

Clinical physiology:

1. Measurement of blood pressure.
2. Determination of Radial pulse

Reference Book

1. Human Physiology for BDS by A.K.Jain, 4th Edition, Avichal publishing co

COURSE OUTCOMES	
CO1	The student will be able to gain knowledge of general physiology, nerve-muscle physiology and haematology.
CO2	The student will be able to gain knowledge of basic human physiology with respect to CVS, Respiratory system and GI system.

CO3	The student will be able to gain knowledge of basic human physiology of excretion and CNS.
CO4	The student will be able to gain knowledge of basic human physiology of special senses and endocrine system.

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES

COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S					
2		**M**				
3			**S**			
4	s			**S**		**M**

Category	Basic Medical Science
Approval	46th Meeting of Academic Council held in Aug, 2017

UAH19CT103	**BIOCHEMISTRY**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Biochemistry
OBJECTIVES	To know the basic Biochemical reactions within the human body, and the various organ systems. .

UNIT I – Cell and its molecules

Cell – Cell organelles, Fluid Mosaic Model, functions of cell membrane, Brief description of transport across the cell membrane.

Carbohydrates – Definition, Classification with examples, Sources, physiological significance and HbA1c.

Lipids – Definition, Classification with examples, Sources, Types of lipids present in the body, storage form, storage site, free cholesterol structure, functions of lipids, lipoprotein structure and its functions.

Nucleic acids – Nucleotide, Nucleoside, types of nucleic acids, secondary structure of DNA & Its functions; Types of RNA & its functions.

UNIT II – Proteins and Enzymes

Proteins – Definition, Classification, functions of proteins, Plasma proteins; Classification of Amino acids with examples
Hemoglobin structure, Functions of hemoglobin, hemoglobin derivatives, abnormal hemoglobin

Enzymes: Definition, Classification, coenzymes, Metalloenzymes, Factors affecting enzyme activity, Regulation of enzymes, overview of Mechanism of enzyme action, Isoenzymes and Clinical importance of enzymes

UNIT III-Vitamins, Minerals, Nutrition

Vitamins: Definition, Classification of Vitamins
Sources, RDA, Function & Deficiency symptoms of

- Fat Soluble Vitamins (A, D, E & K);
- Water Soluble Vitamins (Thiamine, Riboflavin, Niacin, Biotin, Pantothenic acid, Pyridoxine, Folic acid, Cobalamin) and Vitamin C

Minerals: Definition, Classification of Minerals

Sources, RDA, Function, Reference levels & Deficiency Symptoms of

- Calcium, Phosphorus, Iron Copper, Zinc, Sodium, Chloride, Iodine, Potassium, Fluorine and Selenium.

Nutrition: BMR, SDA, Dietary fibres, protein Energy Malnutrition and Obesity 24

UNIT IV – Bioenergetics and Metabolism
Bioenergetics: Electron Transport chain and Oxidative Phosphorylation
Metabolism

Carbohydrates: Digestion and absorption, Glycolysis, TCA cycle, Metabolism of Fructose and Galactose.

Lipids: Digestion and absorption, Beta oxidation of fatty acids, Regulation of Cholesterol level in the cell and outline of lipid transport.

Proteins: Digestion and Absorption, Formation and Disposal of Ammonia, Urea Cycle, Special Products of Glycine, Tyrosine and Tryptophan.

UNIT V – Miscellaneous
Outlines of DNA organization, Replication, Transcription, Genetic code and Translation
Organ function Tests: Liver, Renal and Bone.

PRACTICAL

- Spotters

COURSE OUTCOMES	
CO1	The student will be able to gain knowledge of biochemistry of cell structure, functions, digestion, enzymes and proteins.
CO2	The student will be able to gain knowledge of biochemistry of carbohydrates, minerals and vitamins
CO3	The student will be able to gain knowledge of liver and renal function tests, specialized laboratory investigations and lipids.
CO4	The student will be able to gain knowledge of biochemistry of metabolism, homeostasis, nucleic acids and cancer

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S				s	
2		**M**		s		
3	M		**S**			
4	s			**S**		**M**

Category	Basic Medical Science
Approval	46th Meeting of Academic Council held in Aug, 2017

UAH19CT104	**BASICS IN MEDICAL PHYSICS AND ELECTRONICS**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Radiology
OBJECTIVES	To know the basics in Medical Physics, Bio electric potential and the functioning of Medical equipment.

Unit I: Laser

Nature of Light-Reflection-Refraction-Total internal reflection-Optical fibers-Applications in Medicine – Laser-Principles-Action-Types of laser, Basic principles of laser in Medical Application – Argon-Ion laser photocoagulator-Photo thermal-Photochemical application-Applications of laser in Medicine-Laser hazards and safety measures.

Unit II: Radiation Physics

Introduction to nuclear physics and radioactivity, Radioactive radiations – X-ray, production of x-ray, Properties of x-ray radiations – Biological effects of radiation, Radiation damage in matter, Radiation protection principles, radiation detection and measurement – Ultrasound and generation of ultrasound.

Unit III: Introduction to Imaging Technique

Principles of Microscope: Simple microscope and compound microscope-Radiography: Making and X-ray image-Fluoroscopy. CT Scans, MRI – Ultrasonography: Ultrasound picture of Body-A-Scan-M-Scan-Ultrasound diathermy-Phonocardiography – Radio isotopes: Uses of Radio isotopes – 99mTc Generator – Scintillation detectors – Application of scintillation detectors – Gamma Camera – Positron Camera

Unit IV: Semiconductor devices

Principles of diodes and Transistors – Integrated circuits – Amplifiers – Basic configuration and types – differential and operational amplifiers – Waveform generators – Timer – A/D and D/A converters – Active filters – Transducers – Basic configuration and types.

Unit V: Bio potential Recording Systems

Introduction to bioelectric potential – Electrodes and surfaces – Bio potential amplifier – Frequency ranges of various biopotential signals – Working principles of bio potential recording systems – Electrocardiography – Electroencephalograph –Electromyography.

Reference Books:

1. New Understanding physics for advanced level – Jim Breithauput.

2. Advanced Physics for you by Keith Johnson, Simmons Hewett, Sue holt, John miller

3. Christensen‟s Physics of diagnostic Radiology by Thomas S. Curry III, M.D., Robert C Murry, Jr. PhD, Dow Dey, PhD.

4. Applied Electronics, A. Subramanyam, The National Publishing co., Madras (1996).

5. Design and Development of Medical Electronic Instrumentation, David Prutchi and Michael Norris, John Wiley & Sons (2005).

COURSE OUTCOMES	
CO1	The student will be able to know the functioning of radiological devices
CO2	The student will be able to understand the mechanism of functioning of medical equipment
CO3	The student will be able to know the functioning of Lab instruments
CO4	The student will be able to understand the functioning of radiation devices

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH19CT105	**ENGLISH**
	Total Contact Periods – 60
	Total credits -4
	Course Designed by – Department of English
OBJECTIVES	To enable students to enhance their ability to comprehend spoken and written English required for effective communication in their professional work. Students will practice their skills in verbal and written.

Unit I: Spoken Communication

Learning to read the phonetic symbols
Stress
Intonation
Rhythm
Commonly mispronounced words
Correct pronunciation of important commonly used
Words in hospital practice

Unit II: Vocabulary and Reading

Special features of English vocabulary
Common errors in choice of word
Semi technical vocabulary
Collecting material from library on scientific topics
Comprehensive exercises

Unit III: Writing

Writing letters regarding permission, leave, opening bank account etc.
Taking notes from lecture / reading materials
Writing reports on patient care
Summarizing scientific passages

Unit IV: Grammatical and Idiomatic Usage

Correction of errors
Types of interrogative sentences
Active-Passive voice
Tense
Principles of procession, clarity and specificity

Reference Books:

1. Effective English Communication by Krishna Mohan and Meenakshi Raman, Tata McGraw-Hill publishing Company Limited, New Delhi. (Approx. Cost Rs.200.
2. English for colleges and competitive Exams by Dr. R. Dyvadatham, Emerald Publishers (Approx. cost Rs. 150)

COURSE OUTCOMES	
CO1	The student will be able to develop their intellectual, personal and professional abilities.
CO2	The student will be able to acquire basic language skills, listening, speaking, reading and writing.
CO3	The student will be able to acquire the linguistic competence necessarily required in various life situations
CO4	The student will be able to communicate with speakers of English language

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES

COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**

Category	Language
Approval	46th Meeting of Academic Council held in Aug, 2017

UAH19CT106	**BASIC OF COMPUTERS**
	Total Contact Periods – 30
	Total credits -4
	Course Designed by – Department of English
OBJECTIVES	This course is designed for students to develop basic understanding of used of computer and its applications in Clinical Departments

UNIT I: INTRODUCTION

Computer basics – Types of computers – hardware components – input devices – output devices – storage devices – memory – units and sizes – factors affecting performance – operating systems – applications software – networking – LAN and WAN – Accessories – backup – computer virus – software copyright.

UNIT II: WORD PROCESSING

Windows – Office automation – WORD processor – open a new document – toolbars – menus – font dialog box – enter text – scroll – spelling checker – Autocorrect – undo and redo – bullets and numbered lists – indenting – moving and copying – find and replace – auto shapes – saving document – preview and print.

UNT III: ELECTRONIC SPREADSHEET AND DATA PRESENTATION

EXCEL spreadsheet – grid of rows and columns – active cell – selecting range – entering data – editing data – row and column labels – adjusting width – creating and copying formulae – relative – logical functions – lookup function – creating chart – bar chart – pit chart – print and save.

POWERPOINT presentation – creating slideshows- building outline – switching levels in outline – adding pictures – slide designs – design templates – formatting – color scheme – customized backgrounds – inserting content – hyperlink – revolution in education.

UNIT IV: DATABASE MANAGEMENT SYSTEM

ACCESS database – concept – template –primary key – records and fields – Student roster database – input mask – adding records – viewing data – updating entries – searching and querying – sorting – Table, forms and reports.

UNIT V: APPLICATIONS IN HEALTHCARE AND MEDICINE

INTERNET – e-governance – access to information – communication facility – mechanics of E-mail – social transformation – electronic billing – drug information –information flow

in lab and radiology – storage of medical records – networking the organization – patient care – intelligent monitoring – scholarly information – health informatics – robotic assisted surgery – Clinical decision support systems – Telemedicine.

COURSE OUTCOMES						
CO1	The student will be able to develop basic under-standing of computer use.					
CO2	The student will be able to acquire knowledge on Applications of computers in clinical departments.					
CO3	The student will be able to have the detailed knowledge on how to use hospital information systems.					
CO4	The student will be able to communicate with speakers of English language					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Soft Skills					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH19CT107	**MICROBIOLOGY**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Microbiology
OBJECTIVES	This course is designed to enable students to acquire understanding of fundamentals of microbiology and identification of various microorganisms. It also provides opportunities for practicing infection control measures in hospital and community settings.

UNIT – I: General Bacteriology

Introduction & History of Microbiology, Classification & Morphology of Bacteria, Growth & nutrition, Culture Media & Methods, Sterilization & Disinfection, Fundamental aspects of antibacterial agents and antimicrobial susceptibility testing.

UNIT – II: Immunology

Infection, Immunity, Immunization schedule, applications of antigen antibody reactions, Hypersensitivity, Tumor & Transplantation Immunology.

UNIT – III: Virology

Introduction to virology, viral hepatitis, poliomyelitis, Rabies, Human immunodeficiency virus.

UNIT – IV Mycology & Parasitology

Introduction to mycology, pathogenic yeasts & fungi, Introduction to parasitology, Amoebiasis, Malaria, Helminthic infections.

UNIT – V: Applied Microbiology

Outline of common bacterial diseases, treatment & Prevention-Respiratory tract infections (upper & lower), Meningitis (septic & aseptic), Enteric infections (food poisoning & gastro enteritis), Anaerobic infections, Skin & soft tissue infections, Urinary tract infections, sexually transmitted diseases, Tuberculosis & Leprosy, Hospital acquired infections, Biomedical waste management.

PRACTICAL EXERCISES: Spotters, Gram staining.

Reference Books

1. Textbook of Microbiology by Ananthanarayan & Panicker‟s, 8th edition-Universities Press (India) PVT LTD.

2. Textbook of Microbiology by C. P. Baveja, 4th edition, Arya Publications.

3. Textbook of Medical Parasitology, CK Jayaram Paniker, 5th edition, Jaypee Publications.

4. Medical Parasitology by C. P. Baveja & V. Baveja, 2nd edition, Arya

5. Publications.

COURSE OUTCOMES	
CO1	The student will be able to understand the morphological characters of bacteria.
CO2	The student will be able to master the preparation of smear, fixation and staining of bacterial smears and its quality control methods
CO3	The student will be able to learn to use microscope, autoclave, hot air oven, water bath, steamer, filters
CO4	The student will be able to differentiate between innate and adaptive immunity, and explain the main defences lines as well as biological barrier to the infections.

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**

Category	Basic Medical Science
Approval	46th Meeting of Academic Council held in Aug, 2017

UAH19CT108	**PATHOLOGY**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Pathology
OBJECTIVES	This course is designed for students to develop an understanding of general and systemic pathology. It helps them to know pathophysiology of common diseases

UNIT-I: General Pathology I: Cellular Pathology, Acute and Chronic Inflammation, Tissue Renewal Regeneration and Repair, Hemodynamic Disorders Thromboembolic Disease and Shock

Introduction to Pathology, Adaptations Of Cellular Growth And Differentiation, Causes Of Cell Injury, Mechanisms Of Cell Injury, Necrosis, Apoptosis, Pathologic Calcification, Cellular Aging, Acute Inflammation – Mediators Of Inflammation Outcomes Of Acute Inflammation, Morphologic Patterns Of Acute Inflammation, Chronic Inflammation – Causes Of Chronic Inflammation, Granulomatous Inflammation, Healing By Repair, Scar formation And Fibrosis, Cutaneous Wound Healing, Healing By First Intention, Healing By Second Intention, Edema, Hemostasis and Thrombosis, Infarction, Shock

UNIT-II: General Pathology II: Diseases of the Immune System, Neoplasia, Environmental And Nutritional Disease, Diseases Of Infancy And Childhood

Innate Immunity, Adaptive Immunity, Components Of The Immune System, Mechanisms Of Hypersensitivity Reactions, Acquired Immunodeficiency Syndrome (AIDS), Neoplasia – Definition and Nomenclature, Characteristics Of Benign And Malignant Neoplasm‟s, Molecular Basis Of Cancer, Essential Alterations For Malignant Transformation, Clinical Aspects Of Neoplasia, Laboratory Diagnosis Of Cancer, Common Environmental And Nutritional Pathology, Nutritional Diseases, Tumors And Tumor-Like Lesions Of Infancy And Childhood

UNIT-III: Systemic Pathology I: Blood Vessels, the Heart, Red Blood Cell and Bleeding Disorders, Diseases Of White Blood Cells

Arteriosclerosis, Atherosclerosis, Hypertensive Vascular Disease, Ischemic Heart Disease, Hypertensive Heart Disease, Valvular Heart Disease, Infective Endocarditic, Rheumatic Fever And Rheumatic Heart Disease, Cardiomyopathies, Leucopenia, Anemia‟s, Polycythemia, Bleeding Disorders, Reactive Proliferations Of White Cells, Definitions And Classifications of Lymphoid Neoplasm‟s and Myeloid Neoplasm‟s, Splenomegaly.

UNIT-IV: Systemic Pathology II: The Lung, The Gastrointestinal Tract, Liver And Biliary Tract

Acute Respiratory Distress Syndrome, Obstructive Pulmonary Diseases, Pulmonary Infections, Gastritis, Peptic Ulcer Disease, Inflammatory Bowel Diseases, Liver Function Tests, Hepatic Failure, Cirrhosis, Portal Hypertension, Jaundice, Cholelithiasis

UNIT-V: Systemic Pathology III: The Urogenital System, the Breast, the Endocrine System, Bones Joints and Soft-Tissue, Peripheral Nerve and Skeletal Muscle, the Central Nervous System

Renal Function Tests, Nephrotic Syndrome, Nephritic Syndrome, Urolithiasis, Pap Smear, Carcinoma Of The Breast-Types And Classification, Thyroid Gland – Hyperthyroidism, Hypothyroidism, Thyroiditis, Graves‟ Disease, Diffuse And Multinodular Goiters, Parathyroid Glands – Hyperparathyroidism, Hyperparathyroidism, Diabetes Mellitus, Fractures, Osteomyelitis, Arthritis, Osteoarthritis, Rheumatoid Arthritis, Infectious Arthritis, Diseases of Peripheral Nerve, Diseases of Skeletal Muscle, Infections of CNS – CSF Find

REFERENCE BOOKS

1. Pocket companion to Pathologic Basis of Disease by Robbins and Cotran, 7th edition, Saunders.
2. Pathology Quick Review and MCQs by Harsh Mohan, 2nd edition, Jaypee Publications.

COURSE OUTCOMES						
CO1	The student will be able to gain knowledge of general pathology.					
CO2	The student will be able to gain knowledge pathology of neoplasms					
CO3	The student will be able to gain knowledge of basics of community health.					
CO4	The student will be able to gain knowledge of systemic pathology.					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH19CT109	**PHARMACOLOGY**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Pathology
OBJECTIVES	This course is designed to help the students to develop an understanding of basic knowledge of pharmacology and knowledge of common drugs/group of drugs

UNIT-I: General Pharmacology

Introduction to pharmacology-various terminologies-sources & routes of drug administration – Absorption & Factors modifying drug absorption – Distribution of drugs – Metabolism: Phase II, - Excretion: routes, modes & kinetics of elimination – Excretion – Mechanism of drug action in brief, synergism & antagonism and Factors modifying drug action – Adverse drug reactions – ADR reporting & monitoring – Drug interactions.

UNIT-II: Central Nervous System & Respiratory System

Introduction to CNS and Neurotransmitters, drugs used in insomnia, Sedatives and hypnotics – diazepam – alprazolam, anti-anxiety drugs, Antiepileptic – phenytoin, carbamazepine, sodium valproate, General Anesthetics – halothane, isoflurane, sevoflurane – Local Anesthetics – lignocaine – list of other drugs, Alcohols – ethyl alcohol – disulfuram, Anti parkinsonians – levodopa – carbidopa, Opioids – morphine – naloxone – tramadol – pentazocine, NSAIDs – aspirin – diclofenac – ibuprofen – paracetamol – Cox 2 inhibitors. Drugs used in bronchial asthma and cough

UNIT-III: Cardio vascular system & blood

Drugs used in Ischemic Heart Disease-nitrates-Calcium channel blockers-nifedipine, verapamil-list of other drugs – Beta blockers – propranolol, atenolol – metoprolol and antiplatelets – aspirin, clopidogrel, and names of other drugs-fibrinolysis drugs-streptokinase and other drugs, Drugs used in CCF-digoxin and list of other drugs useful in CCF, Shock. Diuretics: 4 groups – Thiazides, Loop diuretics, Potassium sparing and osmotic diuretics. Hypertension – outline of drugs used in hypertension, Rennin angiotensin system – ACE inhibitors – captopril, ramipril and names of other drugs – Receptor antagonist – losartan and list of other drugs, Antiarrhythmic drugs-classification – Quinidine, Lignocaine and amiodaron – Drugs for Hypercholesterolemia – statins. Drugs for anemia – oral & parenteral iron preparations, folic acid, vit B12 and erythropoietin. Coagulants and anti-coagulants

UNIT-IV: Hormones and GIT

Contraceptives – oral and injectable, Corticosteroids – glucocorticoids – hydrocortisone-prednisolone-dexamethasone and names of topical steroids – Insulin – Oral hypoglycemic – sulphonyl ureas, biguanides and others, Thyroid and Antithyroid drugs, Sex Hormones-Estrogen and anti estrogens, Progestin and Anti progestin‟s, Androgen And anti androgens. Emetics and anti emetics-metoclopromide and domperidone, Drugs used in peptic ulcer, constipation-lactulose & Diarrhea-ORS-Loperamide.

UNIT-V: Chemotherapy and Miscellaneous

Introduction – Beta lactam antibiotics: Penicillin‟s – natural, semi synthetic penicillin‟s – amoxicillin – cloxacillin-clauvulinic acid – sulbactum – Cephalosporin‟s – cephalexin –

cefuroxime – cefixime – ceftrioxone-cefipime, Broad spectrum antibiotics – Doxycycline – chloramphenicol-imipenum-Macrolides – erythromycin, azithromycin and others – Quinolones-ciprofloxacin and list of other drugs and sulfonamides- cotrimoxazole- Amino glycosides-gentamycin, amikacin and names of other drugs Anti TB-first line drugs, Anti leprosy-dapsone and clofazimine Anti-malarial- chloroquine- mefloquine and artemisinins, Anti-fungal-amphotericin B- fluconazole and topical drugs & Anti-viral drugs- acyclovir and anti HIV, Anti protozoals- metronidazole – Anthelmintics- albendazole- praziquantel.
Anti-cancer drugs-Introduction – Anti metabolites- methotrexate- 6 mercapto purine- Alkylating agents- cyclophosphamide- busulphan and cisplatin – Plant products- vinblatin- vincristine-taxanes, antibiotics-actinomycin D- monoclonal antibodies. Immuno modulators- cyclosporine, tacrolimus, azathioprine and steroids. Toxicology-Drugs used in common poisoning, organophosphates, methyl alcohol, Benzodiazepam.

REFERENCE BOOKS:

1. Lippincott‟s Illustrated Reviews: Pharmacology, 5th edition, by Richard A. Harvey and Pamela C. Champe, Lippincott Williams & Wilkins Publisher
2. Essentials of Medical Pharmacology: K.D. Tripathi, 6th edition, Jaypee Publishers.

COURSE OUTCOMES						
CO1	The student will be able to gain basic knowledge in pharmacology. .					
CO2	The student will be able to gain knowledge of detailed systemic pharmacology.					
CO3	The student will be able to gain knowledge of detailed knowledge of drugs and groups of drugs.					
CO4	The student will be able to gain knowledge of action of drugs					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH19CT110	**ENVIRONMENTAL SCIENCE AND COMMUNITY MEDICINE**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Community Medicine
OBJECTIVES	This course is designed for students to practice community health nursing for the individual, family and groups at both urban and rural settings by using concept and principles of health and community health nursing. It also is designed for students to understand the natural resources and environmental pollution

UNIT – I:

Natural Resources: Introduction, Multi-disciplinary nature of environmental studies, Earth Resources and Man, Renewable and Non-Renewable Resources, Water Resources, Mineral Resources: Food Resources: Effect of modern agriculture, Fertilizer/pesticide problems, Water logging, and salinity, Energy Resources.

Ecosystems: Concept of an Ecosystem, Structure and Functions of an Ecosystem, Producers, Consumers and Decomposers, Cycles in the Ecosystem

Biodiversity: Introduction, Definition: Genetic, Species, Ecosystem diversity, India as a Mega Diversity Nation, Hotspots Of Biodiversity Threats to Biodiversity. Poaching of Wildlife, Man-Wildlife Conflicts, Endangered and Endemic Species Of India, Conservation of Biodiversity

UNIT – II:

Pollution: Definition, Causes, Effects and Control Measures of Air Pollution, Water Pollution, Pollution, Marine Pollution, Noise Pollution, Thermal Pollution, Nuclear hazards, Solid Waste Management role of Individuals in Pollution Prevention.

Social Issues Human, Population and Environment: From Unsustainable To Sustainable Development, Urban Problems Related To Energy, Water Conservation, rain Water Harvesting, global warming, acid rain, ozone layer depletion, nuclear accidents and nuclear holocaust. Environment Protection Act.

UNIT – III:

Concept of health & disease: Concept of health, Definition of health, Philosophy of health- Dimension of health – Concept of wellbeing, Spectrum of health, Responsibility of health – Determinates of health & Indicators of health – Concepts of disease & Concepts of cessation – Natural history of disease – Iceberg phenomenon, Concepts of control – Concepts of prevention – Modes of Intervention, Changing pattern of disease.

UNIT – IV:

Epidemiology: Definition & explanation, Aims, Epidemiologic approach, Basic measurements in epidemiology & tools of measurements – Measurements of Mortality & Morbidity, Epidemiologic methods- Descriptive epidemiology-Analytical epidemiology – case control study – analytical epidemiology – Cohort study – Experimental epidemiology – RCT – Association & Causation Uses of epidemiology (Criteria for judging causality) – Infection disease epidemiology Definitions Dynamic of disease transmission & Modes of transmission – Disinfection – Definition Types Agents used Recommended disinfection procedures-Investigation of an epidemic.

Unit – V:

Environment & health: Definition & components (environment sanitation environmental sanitation) Water: Safe & Whole some water Requirements Uses source of water supply (sanitary well)-Purification of water (1). Large scale purification, (2). Small scale purification – Water Quality – Special treatment of water

Air: Composition The air of occupied room discomfort. Air pollution & its effects. Prevention & Control of air pollution

Ventilation: Definition Standards of ventilation Types of ventilation. Light, Noise & Radiation, Metrological environment, Housing, Disposal of waste Excreta disposal

PRACTICALS:

1. Epidemiology Problems
2. Environmental spotters

REFERENCE BOOK

1. Textbook of Preventive and Social medicine by k. Park, 21st edition, published by Banarsidas Bhanot

COURSE OUTCOMES						
CO1	The student will be able to know the concept of health & illness .					
CO2	The student will be able to know epidemiology of common communicable diseases					
CO3	The student will be able to know epidemiology of common non communicable diseases					
CO4	The student will be able to know the effects of pollution on humans.					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH19CT111	**BASICS OF NURSING**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Community Medicine
OBJECTIVES	This course is designed to help the students to develop an understanding of the nursing profession, philosophy, objectives, theories and application of nursing in various clinical settings. It is aimed at helping the students to acquire knowledge, understanding and skills in techniques of nursing and practice them in supervised clinical settings.

Unit I: Introduction of Health

Health care system, major health problems of the country, nature of disease pattern, technological advances and national health programmes, health for all by 2000 AD. Role of health care workers in the health care delivery system, impact of illness of the individual family and community. History of Nursing, Communication Skills -Relationship with patients, process of communication

UNIT II: Concept of Nursing

Nursing Processes- Problems solving approach, assessment, diagnosis, planning, implementation and evaluation.

Unit III: First Aid and Nursing in Emergencies

Definition, basic principles, scope and rules, Wounds, hemorrhages, shock, fracture, dislocation and muscle injuries, respiratory emergencies, resuscitation, unconsciousness, Miscellaneous conditions, burns, scalds, foreign bodies in the skin, eyes, ear, nose, throat and stomach.Frost bite, effects of heart cramps, bites and stings. Poisoning, Transporting injured persons.

Unit IV: **Personal Hygiene and Health**

Care of skin, mouth, eyes, nails, hair, Menstrual hygiene, clothing, mental health, common health problems of poor personal hygiene. Comfort, Rest and Sleep, Hospital Housekeeping

Unit V: Health Education

Introduction to principles and methods of health education. Use of audio visual aids, mass education, role of nurse in health education.

Course outcome:

1) Knowledge on concept of health, health-illness continuum and health care delivery system.
2) Knowledge on scope of nursing practice.
3) Knowledge on concept, theories and models of nursing practice.
4) Desirable attitude to ethics and professional conduct.

COURSE OUTCOMES	
CO1	The student will be able to gain knowledge on concept of health, health-illness continuum and health care delivery system.

CO2	The student will be able to gain knowledge on scope of nursing practice.
CO3	The student will be able to gain knowledge on concept, theories and models of nursing practice.
CO4	The student will be able to gain knowledge on concept, theories and models of nursing practice.

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES

COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAOT17CT201	Total Contact Periods – 80 Total credits -5 Course Designed by – Department of Emergency and trauma care technology
OBJECTIVE	This course will provide an outline of anatomy and physiology to improve the students understanding of the technical and diagnostic procedures used, with special emphasis on applied aspects.

EMERGENCY MEDICINE & EMERGENCY MEDICAL SERVICES I PART-I THEORY

UNIT I
TRIAGE AND GENERAL EMERGENCY CONCEPTS AND PRINCIPLES OF DISASTER NURSING CAUSES AND TYPES OF DISASTER:

- Natural and Manmade Earthquakes, Floods, Epidemics, Cyclones Fire, Explosion, Accidents, Violence, Terrorism; biochemical, War.
- Policies related to emergency/disaster management; International, national, state, institutional

UNIT II
DISASTER PREPAREDNESS:

- Team, Guidelines, protocols, Equipment's, Resources
- Coordination and involvement of; Community, various govt. departments, non-government.
- Organizations and International agencies
- Legal Aspects of Disaster
- Impact on Health and after effects :Post Traumatic Stress Disorder
- Rehabilitation; physical, psychosocial, Financial, Relocation

UNIT III

- Concept, priorities, principles and Scope of emergency care
- Organization of emergency services: physical setup, staffing,
- Equipment and supplies, protocols,
- Concepts of triage and role of triage person
- Coordination and involvement of different departments and facilities

- Principles of emergency management

UNIT IV
LIFE SUPPORT & RESUSCITATION

- Basic life support in perspective
- Cardiopulmonary function and actions for survival
- Adult Basic life support, Advanced Cardiac life support
- Pediatric Basic Life support
- Special resuscitation situations(drowning, hanging, Pregnancy)
- Safety during CPR training and actual rescue

UNIT V
BASIC PRINCIPLES OF TRAUMA CARE (ATLS)

The principles of kinetic energy Mechanism –Basic mechanics of InjuryPattern.

- Primary survey
- Secondary survey as appropriate
- Reassessment
- Identification of Life threatening injuries
- Shock –different types & Categories
- Revised trauma score, Glasgow Coma Score
- Lifting & transporting of injured persons
- Splints and Immobilization

UAOT19CT202	**EMERGENCY MEDICINE & EMERGENCY MEDICAL SERVICES I** **PART-I** –Practical
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Emeregncy and trauma care technology
OBJECTIVE	This course will provide an outline of anatomy and physiology to improve the students understanding of the technical and diagnostic procedures used, with special emphasis on applied aspects.

PRACTICAL:

Exam pattern

1. **Spotters**
2. **Charts/stations**
3. **Viva**

COURSE OUTCOMES						
CO1	To understand structure and function of major functional systems in Human body					
CO2	To learn about body fluids, blood transfusion and complications while induce in human body					
CO3	Awareness of theory knowledge about Vitals science					
CO4	knowledge of basic human knowledge of CVS, CNS, Respiratory system and Reproductive system					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\Pos	**A**	**B**	**c**	**D**	**e**	**F**
1	S		M		S	
2				S	S	
3	S		**S**			
4	S		M			**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2019					

UAOT19CT203	**3. EMERGENCY MEDICINE& EMERGENCY MEDICAL SERVICES I THEORY PART-II**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Emergency and Trauma care technology
OBJECTIVE	To get knowledge about emergency medicine and medical services criteria

UNIT I

MEDICAL EMERGENCIES

- Hypoglycemia
- Hyperglycemia, DKA ,HONK

UNIT II

- Poisoning
- Anaphylaxis

UNIT III

- Hypothermia
- Hyperthermia
- Mental illness

UNIT IV

FLUIDS AND ELECTROLYTES

- Fluid administration (Types of Fluids)
- Formulas (Hypo and Hyper natremia)
- Dehydration
- Over hydration
- Electrolyte imbalance (Sodium, Potassium, Bicarbonate, Chloride)

UNIT V

Acid base emergencies: (Respiratory and metabolic Acidosis/Alkalosis) Interpretation

.

UAOT19CT204	**3. EMERGENCY MEDICINE& EMERGENCY MEDICAL SERVICES II Practical**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Emergency and trauma care technology
OBJECTIVE	To get clinical knowledge in emergency medical services

. EMERGENCY MEDICINE& EMERGENCY MEDICAL SERVICES - Practical

1. SPOTTERS
2. CHARTS

Exam pattern

CHARTS
PBL
INSTRUMENTS/APPARATUS

UAOT19CT206	**Comprensive viva: Emergency Medicine and in medical services**
	Total Contact hours – 180
	Total credits -5
	Course Designed by – Department of Emergency and trauma care technology
OBJECTIVE	To get clinical knowledge in emergency medical services

PRACTICALS:

- 12 Lead ECG and Interpretation of normal ECG
- IV cannulation
- Blood sampling
- Triage

- Transportation of patients (Spime board and Scoop board)
- BLS
- ACLS
- Biomedical waste dispose
- Splinting Immobilization

UAOT19CT205	**BASIC PRINCIPLES OF HOSIPTAL MANAGEMENT**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Emergency and trauma care technology
OBJECTIVE	**To get knowledge about principles of hospital management**

Unit I: Introduction to management & Organization:

The evolution of Management, Definition and importance of Management. Planning – Organizing – staffing – Motivating – Leading – Controlling. Management of health care units (in brief). Individual behavior in organization; organizational functioning (Group/Individual); Perception; Motivation MBO; Organizational Development.

Unit II: Planning and Management of Hospitals & Clinical Services:

Building and physical layout – space required for separate function – Planning of infrastructure facilities, clinical services, equipment & Human resources – Types of Hospitals. Organization and administration of various clinical services; outpatient services. In-patient services, emergency services, operation theatres, ICU's and super specialty services.

Unit.III: Organizing of support clinical services & Hospital management:

Imaging – CSSD – Laboratory – Blood Bank – diet – Medical Records – Mortuary. Housekeeping – Maintenance (Water, Electricity, Civil, Air Conditioning, Lift)-Pest Control-transport-Security. Forecasting-Purchasing & procurement (Sourcing, methods and procedures) – Storing & issuing, Concept of inventory control, Maintenance of

equipment and contracts (with special reference to major biomedical equipment). Trends in financing of Health and Hospital Services – Classification of Hospitals depending on source of financing – roles of financial institutions.

Unit IV: Personnel and quality Management in Hospital & Marketing:

Concepts – Manpower planning – Training & Developments – Team Building – Conflict Management – Performance appraisal – Office rules and regulations Outling of Strategic Planning and Marketing.

Concepts of quality – Professional Audit System – AQ program – Medical Audit – Quality Circle – TQM – Patient Satisfaction – ISO 90000. A brief outline – computerization in hospital departments. Concept, Techniques, Indicators, Evaluation of Efficiency & Effectiveness evaluation of hospital and medical care services.

Unit V: Ethical, current issues and Legal Aspects of Hospitals management services:

Laws related to Hospital – Medico Legal Cases law of Torts – Autopsy – Dying declaration – CPA. – Waste Management – Telemedicine – Organ Transplantation – Rehabilitation Service – Health Insurance.

Operations Research and Quantitative Methods in Hospital Administration & Nursing Services in a Hospital.

COURSE OUTCOMES	
CO1	To Understand basic knowledge about management planning , Organizing , staffing, motivating and controlling management in Health care units
CO2	**To get knowledge about** infrastructure facilities, clinical services, equipment and Human resources
CO3	To understand how to maintain inpatient services, outpatient services, ICUs, Emergency services, Operation theatres and super speciality services
CO4	To know about Manpower planning , training , developing and knowledge about marketing

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES

COs\Pos	**A**	**B**	**C**	**d**	**E**	**F**
1	M		M		S	
2				s		M
3	S		**S**			
4	S			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2019					

UAH19CE2024	**PRINCIPLES AND APPLICATION OF CLINICAL GENETICS**
	TotalContactPeriods– 6
	Total credits -2
	CourseDesignedby–Department of Nephrology
OBJECTIVES	To develop awareness about Genetic testing, Genetic counseling, Philosophy and Ethos of Genetic services

I -Principle and components of genetic testing Lay out of genetic laboratories - Genetic testing, Genetic counseling, Philosophy and Ethos of Genetic services, Types of testing- Cytogenetic testing- Molecular cytogenetic testing- DNA testing.

II - Cytogenetic testing Indications, Type of sample, Sampling and transport conditions, Karyotyping - chromosome identification, merits and demerits of conventional cytogenetic testing

III - Molecular Cytogenetic testing

Indications, Type of sample, Sampling and transport conditions - Fluorescence in-situ hybridization, fluorescence signal enumeration, merits and demerits of FISH.

IV - DNA testing

Organization of human genome, Structure and function of genetic material, Polymerases chainmreaction - Types, principles and testing, Sequencing.

V - Practical:

Case studies

Reference books

1. Practical Genetic counseling, Peter S. Harper, 6th edition, Hodder Headline Group 2004.

2. Medical Genetics, 3rd edition, Lynn B. Jorde, John C. Carey, Michael J. Bamshad, &

Raymond L. White, Mosby, 2006.

3. Genetics in Medicine, Thompson & Thompson, 6th edition, Elsevier 2004.

4. Practical Genetic counseling, Peter S. Harper, 6th edition, Hodder Headline Group 2004.

COURSEOUTCOMES	
CO1	The student will be able to become familiar with and practice genetic tests.
CO2	The student will be able to provide better patient care

CO3	The student will be able to know detailed information about Genetic Counselling					
CO4	The student will be to know about Genetic testing.					
MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council helding Aug, 2019					

UAH19CE2025	**CLINICAL EXAMINATION OF THE HUMANVISUAL SYSTEM**
	TotalContactPeriods–5
	Total credits -2

	Course Designedby–Department of Opthalmology
OBJECTIVES	The core objective of this course is to gain in depth knowledge on the structural and physiological functions of the various parts of the eye and the different examination procedures for the ocular structures.

: **I - History Taking**

Importance of history taking, Demographic data and its importance, Chief presenting symptoms, History of present illness, History of past illness, Family History, Common ocular symptoms and their causes – defective vision, watering eyes, discharge, redness, pain, asthenopia and other symptoms

II - Visual Acuity measurement

Distance visual acuity-charts, methods and measurements; Near visual acuity –charts, methods and measurements; contrast sensitivity testing; colour vision testing

III - External Examination

Examination of head posture, examination of forehead, examination of eye brows, examination of eyelids, examination of Lacrimal apparatus, examination of eyeball on the whole, examination of the cornea, conjunctiva sclera and anterior chamber, eye movements, muscle balance and squint evaluation

IV - Anterior segment Evaluation

Slit lamp examination of the eyelids, cornea, conjunctiva, anterior chamber depth, iris, and lens Intraocular pressure measurements using non contact tonometer

V - Posterior segment Evaluation

Introduction and importance of posterior segment evaluation- direct and indirect ophthalmoscopy

REFERENCE BOOKS:

1. Comprehensive Ophthalmology – A K Khurana, 5th edition, New Age International Publishers,

2012.

2. Clinical Ophthalmology – Jack J Kanski, 7th edition, Butterworths, 2012

1. Borish's Clinical Refraction - William J. Benjamin, Irvin M. Borish, Butterworth-Heinemann, 2006

COURSEOUTCOMES	
CO1	The student will be able to have the skill to perform basic ophthalmic examination
CO2	The student will be able to understand concept of theory and clinical evaluation of disease conditionsgain an in- depth knowledge on disease outline and clinical evaluation of patients
CO3	The student will be able to depth knowledge on the functions of the visual system
CO4	The student will have the skill to perform basic ophthalmic examination
MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES	

COs\POs	a	b	c	d	e	f
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th MeetingofAcademicCouncilheldinAug, 2019					

UAT19CT207	**EMERGENCY MEDICINE AND EMERGENCY MEDICAL SERVICES II** **PART-II– THEORY**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Emergency and Trauma care technology
OBJECTIVE	. Understand the emergency codes used in the hospital for emergency situations

UNIT I
RESPIRATORY EMERGENCIES:

- Foreign body obstruction
- Chronic obstructive pulmonary disease (COPD)
- Asthma
- Pneumonia, Pulmonary edema, ARDS
- Common medication in respiratory problems
- (Meter dose inhaler, nebuliser)
- Mechanical ventilator – General principles, Basic modes of ventilation, NIV

UNIT II

GASTROINTESTINAL EMERGENCIES:

- Abdominal pain
- Peptic ulcer disease
- Cholecystitis
- Hepatitis
- Pancreatitis
- Abdominal aortic aneurysm
- Bowel obstruction
- Hernias
- Gastro intestinal bleeding

UNIT III

1. CARDIOVASCULAR EMERGENCIES:

- Angina pectoris
- Myocardial infarction (MI), Thrombolytic Therapy
- Congestive Cardiac Failure (CCF)
- Aortic Aneurysm
- Hypertensive Emergencies
- 12 lead ECG and Interpretation
- Heart Block and Cardiac Arrhythmias

2. CENTRAL NERVOUS SYSTEM EMERGENCIES:

- Meningitis
- Stroke
- Seizure
- Status epileptics
- Syncope

UNIT IV

1. GENITO URINARY EMERGENCIES:

- Renal failure
- Urolithiasis
- Urinary tract infection
- Haematuria

2. HEMATOLOGICAL DISORDERS:

- Red blood cell disorders:
- Anaemia and Types/Polycythaemia
- White blood disorders
- Platelet abnormalities

UNIT V

ENDOCRINE AND METABOLIC EMERGENCIES:

- Diabetic Ketoacidosis
- Hyperosmolar coma
- Thyroid crisis
- Diabetes insipidus
- Vomiting
- Diarrhea

UAT19CT208	**EMERGENCY MEDICINE AND EMERGENCY MEDICAL SERVICES** **PART-II Practical**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Emergency and Trauma care technology
OBJECTIVE	To get training and clinical programme in emergency medical services

Exam pattern

CHARTS
PBL
INSTRUMENTS/APPARATUS

UAT19CT209	**Patient Care – THEORY**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Emergency and Trauma care Technology
OBJECTIVES	To get trained about assessment of the patient and ethics to be maintained

UNIT I
1. INDIVIDUAL PATIENT CARE

- The Art of History taking
- Physical examination (GPE & different systems)
- Care of Unconscious patient
- Diagnosis of Brain death

UNIT II
PATIENT HYGIENE

- Definition and principles relevant to hygiene
- Factors influencing hygiene
- Care of skin and its appendages, mouth, eyes, ear, nose, perineum and clothing

- Common health problems of poor personal hygiene

UNIT III
VITAL SIGNS
TEMPERATURE
- Definition and normal body temperature
- Factors affecting normal body temperature
- Assessment of normal body temperature

PULSE
- Definition and normal pulse rate
- Characteristics of normal pulse
- Factors influencing pulse
- Alterations in pulse
- Assessment of pulse

RESPIRATION
- Definition and normal respiratory rate
- Characteristics of normal respiration
- Factors influencing respiratory rate
- Alterations in respiration

BLOOD PRESSURE
- Definition and normal blood pressure
- Factors influencing normal blood pressure
- Assessment of blood pressure

UNIT IV
ELECTROLYTE BALANCE
- Factors affecting fluid, electrolyte and acid base balance
- Care of patients with fluid and electrolyte imbalance
- Starting IV infusion

UNIT V
BODY MECHANICS
- Movement of patient lifting and transporting

INFECTION CONTROL
- Infection cycle
- Universal precautions
- Barriers technique

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UAT19CT209	**Biostatistics Theory**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Emergency and Trauma care Technology
OBJECTIVES	To get knowledge about Biostatistics

UNIT – I:
INTRODUCTION

- Meaning, definition, characteristics of statistics.
- Importance of the study of statistics.
- Branches of statistics.
- Statistics and health science including nursing.
- Parameters and estimates.
- Descriptive and inferential statistics.
- Variables and their types.
- Measurement scales

UNIT – II:
TABULATION OF DATA

- Raw data, the array, frequency distribution.
- Basic principles of graphical representation.
- Types of diagrams – histograms, frequency polygons, smooth frequency polygon, cumulative frequency curve, ogive.
- Normal probability curve.

UNIT – III:
MEASURE OF CENTRAL TENDENCY

- Need for measures of central tendency
- Definition and calculation of mean – ungrouped and grouped.
- Meaning, interpretation and calculation of median ungrouped and grouped

- Meaning and calculation of mode.
- Comparison of the mean, and mode.

- Guidelines for the use of various measures of central tendency.

UNIT – IV:
MEASURE OF VARIABILITY

- Need for measure of depression.
- The range, the average deviation.
- The variance and standard deviation.
- Calculation of variance and standard deviation ungrouped and grouped.
- Properties and uses of variance and SO

UNIT – V:
PROBABILITY AND STANDARD DISTRIBUTIONS.

- Meaning of probability of standard distribution.
- The Binominal distribution.
- The normal distribution.
- Divergence from normality – skewness, kurtosis

UAT19CT212	**Comphrensive Viva**
	Total Contact hours– 180
	Total credits -5
	Course Designed by – Department of Trauma care
OBJECTIVES	To get knowledge in clinical knowledge

Exam pattern :

1. Spotters
2. Characteristics/viva
3. practical

COURSE OUTCOMES						
CO1	To get knowledge about emergency criteria					
CO2	Aware of special precautions in handling patients in critical situation					
CO3	knowledge about assessment of the patients					
CO4	To get clinical knowledge about patients handling					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\Pos	**A**	**b**	**c**	**d**	**e**	**F**
1	S		M		S	
2				S		M
3	S					
4		S		**M**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2019					

UAT19CT211	**HEALTH CARE MANAGEMENT**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Emergency and Trauma care technology
OBJECTIVES	To get training knowledge in health care management

UNIT I: Concept of Health Care and Health Policy

Health in Medical Care, Indigenous systems of Health Care & their relevance, Framework for Health Policy Development.

U UNIT – II: Health Organization

Historical development of Health Care System in the third world & India, Organization & Structure of Health Administration in India, Type of Health Organization including International Organizations, Private & Voluntary Health care Provider, Distribution of Health Care Services, Health Care System in Public Sector Organization, Health system of Various Countries.

UNIT – III: Health Policy and National Health Programme

National Health Policy, Drug Policy, National Health Programs (Malaria, T.B., Blindness, AIDS etc.), Evaluation of Health Programs (Developing indicators for evaluation), Medical Education & Health Manpower Development.

UNIT-IV: Health Economics-Fundamentals of Economics

Scope & Coverage, Demand for Health Services, Health as an Investment, Population, Health of Economic Development. **Economics of Health-**

Population based health services, Economics of Communicable and Non Communicable diseases

UNIT-V:Methods & Techniques of Economic Evaluation of Health Program

Cost Benefit & Cost Effective Methods.

Household & Health: Health Expenditure & Outcome, Rationale for Government action, Household capacity, income and schooling

UAT19CT313	**INSTRUMENTATION IN EMERGENCY SERVICES**
	Total Contact Periods PatientTriage based on the defined clinical criteria of severity of illness – 80
	Total credits -5
	Course Designed by – Department of Emergency and Trauma care Technology
OBJECTIVES	To get training and handling of the patients in respiratory procedures

UNIT I

- Introduction to Biomedical engineering (Man – machine relationship)
- ECG
- DC Defibrillator
- Intravenous pumps

- Laryngoscope, ambubag, suction machine
- SPO2 monitoring, Temperature monitoring
- BP apparatus, BP monitoringNIBP,
- IBP
- Ventilators Intensive
- care, portable
- Manual resuscitator
- Radiology equipment &radiation hazards
- Suction machine
- Nebuliser
- Medical gases
- Ambulance and its power supply
- Dialysis machine
- Infant warmer & incubator

CLINICAL PROCEDURES IN EMERGENCY ROOM
VITAL SIGN MEASUREMENT:

- Pulse assessment
- Respiratory assessment
- Temperature assessment
- Blood pressure assessment
- SP02
- Pain score (VAS)

RESPIRATORY PROCEDURES:

- Endotracheal intubation and extubation
- Drugs through ET tube
- Tracheostomy insertion and management
- Suctioning an artificial airway:
- Nasal tracheal suctioning
- Insertion of nasopharyngeal and oropharyngeal airway
- Mechanical ventilation
- Intercostal drain

- Age
- Thoracocentesis

UNIT II
INTERMEDIATE AIRWAYS

- Laryngeal Mask Airway
- Oesophageal – Tracheal Combitube

NON INVASIVE ASSESSMENT AND SUPPORT OF OXYGENATION AND VENTILATION

- Pulse oximetry
- Carbon dioxide Monitoring

 Capnometry

- Oxygen therapy
- Delivery systems for Inhaled Medication

➢ Nebulizers

➢ Metered Dose Inhaler

UNIT III
CARDIOVASCULAR PROCEDURES (OBSERVATION)

- Cardiac Monitoring
- Central venous pressure monitoring
- Insertion of Arterial line:
- Central venous cannulation
- Transcutaneous cardiacpacing
- Transvenous cardiacpacing
- Pericardiocentesis
- Cardioversion
- Defibrillation

UNIT IV
POISON DECONTAMINATION

- Activated charcoal
- Whole bowl irrigation

GENITOURINARY PROCEDURES

- Urethral catheterization
- Peritoneal dialysis
- Placement and Management of external Arteriovenous shunt (Assiting).

- Continuous Arteriovenous hemofiltration (Assiting)

UNIT V
INTRAVENOUS THERAPY

- Insertion of intravenous catheter
- Administration of parenteral nutrition
- Blood and Blood product administration

NEUROLOGIC PROCEDURES
Lumbar Puncture **(Observation/Assiting)**

COURSE OUTCOMES						
CO1	To understand respiratory procedures					
CO2	knowledge about cardiovascular procedures and monitoring					
CO3	Detailed knowledge about assessing injury of the patient in critical situation					
CO4	To get knowledge about survey of the patient, critically ill patients					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\Pos	**A**	**b**	**C**	**D**	**e**	**F**
1	S		S		s	M
2				S		M
3	M		**S**			
4	S			**M**		**S**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2019					

UAT19CT315	**EMERGENCY SURGERY & EMERGENCY SURGICAL SERVICES**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Emergency and trauma care technology
OBJECTIVES	To get training about Emergency surgery and surgurical services programme

UNIT I
PRINCIPLES OF ANAESTHESIA

- General Anaesthesia
- Local Anaesthesia
- Regional Anaesthesia

UNIT II
WOUNDS AND SUTURING

- Types of common wounds
- Treatment
- Cleansing the wound
- Wound healing
- Principles of incision and closure (including suturing)

UNIT III
BURNS

- Skin Anatomy
- Classification of Burn
- Special Burn considerations

FOREIGN BODY OBSTRUCTION

UNIT IV
GASTROINTESTINAL SYSTEM

- Acute Appendicitis
- Acute Pancreatitis
- Intestinal obstruction

- Upper GI Bleed
- Lower GI Bleed
- Duodenal and gastric ulcer
- Renal colic

UNIT V
TRAUMA

- Head injury
- Thoracic injuries
- Blunt trauma, Penetrating trauma

UAT19CT316	**INSTRUMENTATION IN EMERGENCY SERVICES – Practical**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Anesthesia
OBJECTIVES	To get training and manage cardiovascular patients

INSTRUMENTATION IN EMERGENCY SERVICES – Practical

ECG Interpretation

- Spotter identification

- Thermometer
- BP apparatus
- Stethoscope
- Glucometer
- Intraosseous infusion
- LMA - (Laryngeal Mask Airway)
- Combitube
- ET intubation
- Nebuliser
- Ventilator
- Capnography
- Pulse oximeter
- Chest Xray Interpretation
- ABG – Interpretation (Arterial Blood Gas Analysis)
- ACLS - Advanced Cardiovascular Life Support)
- ATLS - Advanced Trauma Life Support

UAT19CT315	**EMERGENCY SURGERY & EMERGENCY SURGICAL SERVICES PRACTICAL**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Emergency and trauma care technology
OBJECTIVES	To get training about instrumentation in emergency services

Assisting in various procedures like:

- Central Venous Access
- Suturing of Wounds
- Tracheostomy
- Intercostal Drainage
- Needle Thoracocentesis
- Cricothyroidotomy Skills of intubation in a Mannequin

UAT19CT318	SOCIOLOGY THEORY
	Total Contact hours – 180
	Total credits -5
	Course Designed by – Department of Emergency and Trauma care technology
OBJECTIVES	To get knowledge about cerebrovascular emergency criteria

INTRODUCTION TO MEDICAL SOCIOLOGY
UNIT – I

- Definition, objectives, principles, scope and its relevance to patient care.
- Difference between sociology of medicine and sociology in medicine.
- Historical development of medical sociology.
- Sociological perspective of health and illness.

UNIT – II

- Health, society and education

UNIT – III
SOCIAL EPIDEMIOLOGY

- Meaning, socio-cultural factors bearing on health in India.
- Common occupational diseases and prevention of occupational diseases.

UNIT – IV
HEALTH PROFESSION AND ORGANIZATION

- Medical social service in a hospital
- Hospital as a social organization
- Professional qualities of a physician.

UNIT V
PRINCIPLES OF SOCIOLOGY

- Definition, objectives
- Nature and scope of sociology
- Origin and Nature of society.
- Social groups – characteristics and functions
- Social control
- Culture and civilization

COURSE OUTCOMES						
CO1	To get knowledge about sociology principles and objectives					
CO2	To understand about historical development and social epidermilogy					
CO3	To understand historical development of social illness					
CO4	To know about scope of sociology					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\Pos	**A**	**B**	**C**	**d**	**E**	**F**
1	S		M		S	
2				s		M
3	S		**M**			
4	S			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2019					

UAT19CT 317	**a) Hospital Products, Promotion, Sales & Public relations (or) Physician's Office Management**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Emergency and trauma care technology
OBJECTIVES	To get training programme about marketing , service marketing and business administration

Unit – I:

- **An introduction to Marketing:** Role of marketing in Business management – Evolution and definition of marketing – Concepts of Marketing – Service vs. Products – Management of Service Management process.
- **Services Marketing:** Classification of services – Characterstics of services and their marketing implication – Selecting appropriate tools for marketing.

Unit – II:

- **Component of Service Marketing:** Product Planning, Market research system – Market segmentation – Targeting – Positioning –Launching new service – Concept of product life cycle, Pricing, Setting the price – Economic Theory – Responding to price change, Physical Distribution, Major Aspects – Channels of distribution – Selection of channel, Promotion, Role of communication – Promotion mix – advertising (Media – budget – Cost effectiveness – (attributing to hospitals a human face – Good will – image building among major public) Sales promotion (techniques – Evaluation), Direct selling (Sales force – Evaluation), Physical Environment, Process, People

Unit –III:

- **Analysing**
- **Markets and Buyer Behaviour:** Model of consumer behavior – Factors influencing buyer behavior – Buying decision process
- **Branding of a Hospital Facility:** Brand name and concept – Positioning hospitals – Developing and USP – Brand image – Image building – long term and short term activities.

Unit IV:

- **Other Marketing routes for Health Care Units:** Interpersonal communication – Print materials institutional marketing – seminars – conference
- **Marketing Strategies for Hospital:** Managing Differentiation – Service Quality – Productivity – Product support service.

Unit V:

- **Evaluating and Controlling Market Performance:** Annual plan control (sales analysis – market share analysis – Marketing expense to sales analysis – Financial analysis), Profitability control, Efficiency control, Strategic control

5. (b) Physician's Office Management

Unit I. Outpatient section: Registration of new cases, Registration of repeat cases, Patient record guide, Laboratory X – Ray reports & reports filing, Alpha index typing & Filing, O.P. Records coding (disease & indexing), O.P. records retrieval, O.P. Statistics

Unit II. Inpatient Section: Admitting office procedure, Inpatient record removal & forwarding, Ward Census,

Unit III. Assembling & deficiency checks I.P. record coding & indexing,

Unit IV. Discharge Analysis: Incomplete record control, Completed record control, Medico legal procedures & issue of Medical certification, Record retention & destruction of O.P. & I. P. records,

Unit V. Miscellaneous: Hospital reception, Secretarial practice, Library (Medical

COURSE OUTCOMES						
CO1	To get basic knowledge about roles of marketing management and service marketing characteristics					
CO2	To know implications of selecting appropriate tools for marketing					
CO3	To know analysis treatment of markets and buyer behaviour					
CO4	To learn performance of evaluating and controlling market programme					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**A**	**B**	**C**	**d**	**e**	**F**
1	S		M		s	
2				s		M
3	S		**M**			
4	S			**M**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2019					

UAOT19CT319	**Toxicology --- Theory**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Emergency and trauma care technology
OBJECTIVES	. To get knowledge about principles of toxicology

TOXICOLOGY:

UNIT I

- Define the term poison
- The four ways in which a poison may enter the body
- General principles of assessment and management of poison and overdose

UNIT II

- Opiates toxicity
- Organophosphates
- Carbon monoxide
- Cyanide

UNIT III

- Caustics
- Copper sulphate
- Digoxin toxicity

UNIT IV

- Hydrocarbons
- Tricyclic antidepressant toxicity
- Metals – Arsenic/Iron

UNIT V

- Acetaminophen overdose
- Poisonous alcohols Methanol
- Poisonous plants **– Oleander, Oduvanthalai**

UAT19CT320	**Comphrensive Viva**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Anesthesia
OBJECTIVES	To get training knowledge and handling emergency medicine services

Thermometer

- BP apparatus
- Stethoscope
- Glucometer
- Intraosseous infusion
- LMA - (Laryngeal Mask Airway)
- Combitube
- ET intubation
- Nebuliser
- Ventilator
- Capnography
- Pulse oximeter
- Chest Xray Interpretation
- ABG – Interpretation (Arterial Blood Gas Analysis)
- ACLS - Advanced Cardiovascular Life Support)
- ATLS - Advanced Trauma Life Support

COURSE OUTCOMES						
CO1	Knowledge about invasive and non-invasive monitoring in operation theatre and ICU					
CO2	knowledge about collecting of pre-op investigations and assessment of Trauma and shock cases					
CO3	practical and theory knowledge about CPR					
CO4	To know basic knowledge handling of BLS and ACLS					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\Pos	**A**	**B**	**C**	**d**	**e**	**F**
1	S		S		S	
2				s		M
3	M		**S**			
4	M			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2019					

UAH19CE3028	**ESSENTIALS OF MEDICAL TRANSCRIPTION**
	TotalContactPeriods– 7
	Total credits -2
	CourseDesignedby–Department of MRD
OBJECTIVES	Provide Hands on training on English Language and listening comprehension and provide foundation to learn medical terminology & learn laboratory report

Unit 1

The Medical Transcriptionist‘s career including Ethical& Legal Responsibilities Introduction to Medical transcription, Job Opportunities,Transcription Skills, Medical records, Certification for Medical Transcriptionists, Ethical and Legal responsibilities

Unit 2

Equipments in Transcription Equipment, Computer Systems, Ergonomics, Dictation Equipments, Hand and Foot control Dictation, Transcription Preparation

Unit 3

Transcription Guidelines Punctuations, Proof reading notations, Formats and styles, SOAP for Chart notes; Discharge Summary

Unit 4 PRACTICAL:

1. Equipments for Medical Transcription,2. Typing for the beginners, 3.Vocabulary, 4. Proof reading Notations , 5. Formats and styles in document preparation , 6. Preparation of chart notes, 7. Listening Comprehension, 8. Transcription check off sheet

References Books:

1. Medical Key boarding, Typing, and Transcribing Techniques and procedures 4th Edition, March
Otis Diehl, Marilyn Takahashi Fordney, W.B. Saunders Company
2. The AAMT Book of Style for Medical Transcription, Claudia J. Tessier
3. CD‘s available for:
a. Stedman‘s Electronic Medical Dictionary 4.0
b. American Drug Index 2003

Text Books:

1. Medical Key boarding, Typing, and Transcribing Techniques and procedures 4th Edition, March
Otis Diehl, Marilyn Takahashi Fordney, W.B. Saunders Company

2. The AAMT Book of Style for Medical Transcription, Claudia J. Tessier

COURSEOUTCOMES	
CO1	Thestudent will be able toDemonstrate their basic skills in the knowledge of Vocabulary, Medical terminology
CO2	Thestudent will be able toDemonstrate their basic skills in the preparation of chart notes. .
CO3	Thestudent will be able to Demonstrate skills in listening comprehension
CO4	• Thestudent will be Be able to identify accurate format for medical document preparation

MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Medical Records					
Approval	46th MeetingofAcademicCouncilheldinAug, 2019					

UAH19CE3029	**COMMUNICATION AND SOFT SKILL**
	TotalContactPeriods– 7
	Total credits -2
	CourseDesignedby–Department of Human Resources
OBJECTIVES	This course is designed to equip the students with essential soft skills needed for workplace and improve personality.

LEARNING OUTCOME:

This course is designed to help the students to

- Foster healthy attitude.
- Develop effective inter and intra personal skills to be an effective team worker.
- Communicate effectively in both academic and professional setup

UNIT: I ASPECTS OF COMMUNICATION

Importance of communication, Process, Barriers, Non verbal Communication

UNIT: II SPEAKING

How to Open and Close conversations, Introductions and Address System, Expressing Courtesy, Giving Compliments and replying to Compliments, Presentation Skills, Telephonic conversation and telephone etiquette

UNIT – III PRESCRIBED READING

Tom Sawyer by Mark Twain, Bacon‘s Essays: - Of Goodness and goodness of nature

UNIT – IV WRITING

Letter writing - Letter of Complaints, Inviting and Declining an invitation, Writing Memos and Emails, Grammar, Spelling & Punctuation, Use of Dictionary & Thesaurus.

UNIT – V SOFT SKILLS

Active Listening Skills, Assertive Skills, Negotiation and Persuasive Skills, Interview Skills

Text Book:

Developing Communication Skills by Krishna Mohan and MeeraBanerji, II edition, Macmillan.

Reference Books:

1. Communication Skills for Engineers and Scientists by Sangeeta Sharma and Binod Mishra, PHI Learning Private Limited, New Delhi.

2. English and soft skills by S.P. Dhanavel, Orient Black Swan

3. Effective English Communication by Krishna Mohan and Meenakshi Raman, Tata McGraw – Hill Publishing Company Limited.

4. Technical Communication – Principles and Practice, by Meenakshi Raman and Sangeetha Sharma, II edition, Oxford University Press.

5. Developing Communication Skills by Krishna Mohan and MeeraBanerji, II edition, Macmillan.

6. The Complete Guide to Functional Writing in English by M. Sarada, Sterling Publishers (P) Ltd., New Delhi.

7. Speaking Naturally: Communication Skills in American English by Bruce Tillitt and Mary Newton Bruder, Cambridge University Press .

COURSEOUTCOMES						
CO1	Thes tudent will be able toFoster healthy attitude					
CO2	The student will be able to develop effective inter and intra personal skills to be an effective team worker					
CO3	The student will be able to Develop effective inter and intra personal skills to be an effective team worker					
CO4	The student will be able to Communicate effectively in both academic and professional setup					
MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\POs	**a**	**B**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th MeetingofAcademicCouncilheldinAug, 2019					

UAT19CT321	Emergency drugs – Paper 1 Theory
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Emergency and Trauma care technology
OBJECTIVES	To get clinical knowledge about emergency drugs

UNIT I

- Adrenaline (Epinephrine)
- Aspirin
- Atropine
- Adenosine
- Amiodarone

UNIT II

- Beta blockersEsmolol/
- Metoprolol/Labetalol
- Calcium channel blockersVerapamil/
- Diltiazem/Nifedipine/
- Amlodipine

UNIT III

- Calcium chloride
- Calcium gluconate
- Chlorpromazine
- Diazepam
- Dexamethasone

UNIT IV

- Dextrose
- Dopamine
- Dobutamine

UNIT V

- Furosemide
- Flumazenil
- Fentanyl

COURSE OUTCOMES						
CO1	To learn class of category about drug agents					
CO2	To know about indications of drugs					
CO3	To learn about contra-indications, indications, Adverse effects , mechanism of action and Route of administration in category of drugs					
CO4	To learn about contraindications of the drugs					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**A**	**B**	**C**	**d**	**e**	**F**
1	M		S		S	
2				s		M
3	M		**M**			
4	S			**S**		**S**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2019					

UAT19CT324	**Emergency Drugs Paper – II Theory**
	Total Contact hours – 180
	Total credits -5
	Course Designed by – Department of Emergency and trauma care technology
OBJECTIVES	To learn about emergency drugs and effects

UNIT I

- Glucagon
- Glyceryltrinitrate
- Hydrocortisone
- Lidocaine
- Lorazepam
- Mannitol

UNIT II

- Morphine Sulphate
- Midazolam
- Naloxone hydrochloride
- Norepinephrine
- Phenytoin
- Paracetamol
- Salbutamol

UNIT III

- Vasopressors
- Drugs in obstetrics – Oxytocin/Methergine/Carboprost

- IV fluids
- Potassium Chloride
- Succinyl choline

UNIT IV

- Atracurium
- Vecuronium
- Propofol

UNIT V

- Ketamine
- Tranexamic acid
- Magnesium Sulphate

COURSE OUTCOMES						
CO1	To know detailed information about composition of IV fluids administration To learn induction agents, reversal agents, opioids , sedatives and Analgesics					
CO2	To learn about Emergency drugs classification and Route of administration					
CO3	To know about class of category drug groups individually					
CO4	To know detailed information about composition of IV fluids administration					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**A**	**B**	**C**	**d**	**e**	**F**
1	M		S		S	
2				s		M
3	M		**M**			
4	S			**S**		**S**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2019					

UAT19CT323	**Trauma & Cardiac Life Support**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Trauma care
OBJECTIVES	To get training BLS, ACLS programme, trauma life, spinal trauma , cardiac life support, and triage

UNIT I. TRAUMA LIFE (Part 1)

- BLS,
- TRIAGE

a. Primary Survey b. Secondary Survey

- Airway & Ventilator management
- Shock
- Central & peripheral venous access
- Thoracic trauma – Tension pneumothorax
- Other thoracic injuries
- Abdominal trauma – Blunt injuries
- Abdominal trauma – Penetrating injuries

UNIT II. TRAUMA LIFE (Part 2)

- Spine and spinal cord trauma
- Head trauma
- Musculoskeletal trauma
- Electrical injuries
- Thermal burns
- Cold injury

UNIT III. TRAUMA LIFE (Part 3)

- Paediatric trauma
- Trauma in pregnant women
- Workshop BLS
- Workshop cervical spine immobilization
- Imaging studies in trauma

UNIT IV. CARDIAC LIFE SUPPORT (Part 1)

- BLS
- The universal algorithm for adult ECC
- Ventricular fibrillation/Pulseless ventricular tachycardia algorithm
- Pulseless electrical activity (PEA) / asystole algorithm
- Bradycardia treatment algorithm
- Tachycardia Treatment algorithm

UNIT V. CARDIAC LIFE SUPPORT (Part 2)

- Hypotension / Shock
- Acute myocardial infarction
- Paediatric Advanced life support

COURSE OUTCOMES						
CO1	Handling and management of Airway ventilator and shock					
CO2	To get knowledge about handling and management of trauma cases like musculoskeletal , head, and thermal burns					
CO3	Knowledge about handling of Pediatric trauma cases					
CO4	To know basic knowledge about trauma in pregnant women cases					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**A**	**B**	**c**	**d**	**E**	**F**
1	S		M		S	
2				s		M
3	M		**M**			
4	S			**S**		**S**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2019					

UAH19CE3030	**PROFESSIONAL SKILLS DEVELOPMENT**
	TotalContactPeriods– 6
	Total credits -2
	CourseDesignedby–Department of Human Resources
OBJECTIVES	To Advance the students' intellectual curiosity, competency and skills in preparation for employment

1. Communication Skills

Importance of Communication skills in Public health; Communication process; Methods of communication; Types of communication: Verbal and Non-verbal; Impediments to effective communication; Feedback

2. Oral Presentation Skills:

Preparation and planning; Structure; Audio-visual aids; Creating interest and establishing a relationship with the audience; Body language; Voice and pronunciation; Review

3. Writing skills:

Writing a scientific paper; Writing a proposal; Structure of an article; References and literature review; Peer-review process-Publication bias; International guidelines for publication in journals; Professional Ethics

4. Leadership in Public health:

Leadership styles and trait; Motivation skills; Interpersonal communication skills; Problem solving skills; Decision making skills; Management skills; Communication Skills

5. Manuscript writing

Writing introduction, objectives, methodologies, major finding, discussion, conclusion and recommendation

6. Seminar presentations

Use of computers present data and information on recent topics

Text Books:

1. Professional Writing Skills, A self paced training programme by Janis Fisher Chan and Diane Lutovich. Advanced Communication Designs Inc, 2003. San Anselmo, CA. ISBN 0963745549

2. Speaking Your Mind: Oral Presentation and Seminar Skills By Rebecca Stott, Tory Young, Cordelia Bryan Contributor Rebecca Stott, Tory Young, Cordelia Bryan Published by Longman, 2001 ISBN 0582382432, 9780582382435

3. Public Health Leadership: Putting Principles into Practice Louis Rowitz, PhD. Jones and Bartlett Publishers, 2003. ISBN-13: 9780763725013 ISBN-10: 0763725013

COURSEOUTCOMES	
CO1	The student will be able to Develop good written and oral communication abilities
CO2	The student will be able to Develop an understanding of team building and leadership skills.

CO3	The student will be able to Develop knowledge regarding capacities needed to work independently within diverse work environments
CO4	The student will be able to know how to maintain Records and Reports and demonstrate the procedure.

MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES

COs\POs	**a**	**B**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th MeetingofAcademicCouncilheldinAug, 2017					

UAH17CE3031	**LIBRARY SCIENCE AND E-RESOURCES**
	TotalContactPeriods– 6
	Total credits -2
	CourseDesignedby–Department of Library science
OBJECTIVES	To gain knowledge about Documentary Sources of Information and Library Automation

Unit 1 BASIC CONCEPTS AND INFORMATION SERVICES

Meaning of Library – Types of Library -– Library layout - Functions of Library – need for Library – Meaning of ISBN and ISSN – Collection management - Library Classification system - Five laws of Library Science – Inter Library Loan (ILL), Communication theories and models.Barriers to communication.Levels of communications – Intrapersonal, interpersonal and mass communication. Information services – literature search Methods of Dissemination of information Current Awareness Service (CAS), Selective Dissemination of Information (SDI), Document delivery service, Alert services, and Internet services.

Unit 2 INFORMATION SOURCES

Documentary Sources of Information, Print, and Non-print including Electronic, Human and Institutional sources: Nature, types, characteristics and utility. Internet as a source of Information. Primary sources of information – Journal, conference volume, patents, research reports, thesis and their electronic format – Secondary sources of information - Bibliography, Encyclopedia Dictionary, Yearbook , Directory, Geographical Source, Textbook, Index and Abstracts.

Unit 3 LIBRARY AUTOMATION

Definition need, Purpose, advantages. Planning for Library automation.Automation of Library operations - Acquisitions, Cataloguing, OPAC, Circulation and Serials control.Evaluation of Library automation systems - Application of Barcode and RFID Technology for Library Functions. Basic concepts: Bibliography, bibliographic coupling, Impact factor.

Unit 4 ELECTRONIC INFORMATION SOURCES

Electronic Information resources: Meaning and definition, Growth and development, Types. EJournals, e-Books, e-Theses, e-newspapers, Blogs, Wikis. Free databases and fee based bibliographical and full text databases, subject related websites, Institutional repositories, Open Archives and digital Libraries. - Resource Sharing and Networks: Consortia- Importance and objectives. Study of Information networks and Digital Library Consortia. Types of computer networks: Local Area Networks – Concept, Topologies - Bus, Star, Mesh, Tree, and Ring). Wide Area Networks and Metropolitan Area Networks- Concepts, Circuit switching and Packet switching.Difference between LAN and WAN. Wireless Networks –Mobile telephones.

Unit 5 DIGITAL LIBRARIES

Digital Libraries: Concepts and issues. Understanding digital Libraries Content creation – Electronic documents, files and file formats.Study of different file formats.Studying PDF in detail-features of PDF.Digitization- scanning, Digital Preservation, Conservation and Archival Management – Problems and prospects. Open Access Movement and Institutional repositories.

TEXTBOOKS

1. Ranganathan, S.R The five Laws of Library Science UBS Publishers, 1988.

2. Ranganathan, S.R. Library Manual SaradaRanganathan endowment for Library Science, 1989.

3. Ranganathan, S.R. Cataloguing Practice SaradaRanganathan endowment for Library Science 1990

COURSEOUTCOMES

CO1	Thestudent will be able toanalyze and understand the query
CO2	Thestudent will be able toIdentify the sources of information
CO3	Thestudent will be able to Find out the information
CO4	Thestudent will be able toknow how to maintain Records and Reports and demonstrate the procedure.

MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES

COs\POs	**a**	**B**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**

Category	Library Science
Approval	46th MeetingofAcademicCouncilheldinAug, 2017

INTERNSHIP PROGRAMME

ALLIED HEALTH SCIENCE

INTERNSHIP

Regulation for Internship

Internship is an important part of training wherein an Allied Health Science Graduate acquires skills, and applies his knowledge gained during his course of study.

Objectives:

1. To Facilitate Reinforcement of Training.
2. To Develop Professionalism, Communication and Team Building skills.
3. To help in understating of ethical Practices like
    - Rights and dignity of patients
    - Ethical Conduct and professional obligations to colleagues, patients, families and community

- The Internship is compulsory for all the candidates. It shall commence after the students have completed and passed all academic and clinical requirements.
- The internship shall be for a duration of one year.
- The degree shall be awarded after satisfactory completion of internship.

EVALUATION OF INTERNEES

Formative and Summative evaluation are carried out. A **Log Book** is maintained by all internees. No Marks are allotted. Satisfactory completion of Log Book is essential for completion of internship.

Day to day assessment of the internees during the internship posting should be done (Log Book). Summative evaluation is based on observation of the supervisors of different departments and their records in the log books. Based on the formative and summative evaluation the head of department shall issue a certificate of satisfactory completion of training, following which the university shall award the degree.

During internship a project is allocated to each intern by the respective Heads of departments. The project work is marked for 100 (including viva).

Six credits are given for the project
30 hours per credit
Total 180 hours
The Project is done for a Maximum duration of 6 months.

Internship credits

The internship is given 15 Credits. (i.e.) 45 hrs/Credit. A Total of 675 hours.

After Undergoing internship for a period of Six months, each Department shall conduct an **internal evaluation** of the student to assess the skills developed and progress of the student before issuing the certificate of completeness.

The duration of the posting and skill acquisition in various technology courses are attached.

Number of Working days for interns:-

All Sundays are holidays.

On Government holidays duties are allotted on turns to the interns. In cases of leave or absence extension of posting shall be given which is done at the discretion of the Head of Department.

INTERNSHIP [VII & VIII SEMESTER]

S.NO	COURSE CODE	COURSE TITLE	SEMESTER VII &VIII				
			HOURS PRESCRIBED	PROJECT EVALUATION	VIVA	TOTAL	CREDITS
1.	UAOT17CL425	Internship	675				15
2.	UAOT17CL426	Project		80	20	100	6
Total Credits - 21							

Duration of Posting – For Internship in various departments

EMERGENCY AND TRAUMA CARE TECHNOLOGY

Duration of Postings

Casualty	-	2 months
ICU	-	2 month
RESPIRATORY ICU	-	1 month
MEDICINE ICU	-	2 months
NEONATAL ICU	-	1 month
CARDIAC ICU	-	2 months
SURGERY ICU	-	2 month

The Intern should maintain a log book.
At the end of the internship the interns should:

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PROGRAMME ELECTIVE							
		COURSE		TEACHING HOURS			
SI NO	SEMESTER	**COURSE CODE**	**COURSE TITLE**	**L**	**T**	**P**	**CREDITS**
1	I	UAH19CE1020	Fundamentals of Biostatistics	4	4		2
2	I	UAH19CE1021	Communication skills for Health Care professionals	5	5		2
3	II	UAH19CE1022	Biomedical Ethics	3	3		2
4	II	UAH19CE1023	Fundamentals of Human Genetics	4	4		2
5	III	UAH19CE2024	Principles and application of Clinical Genetics	6	4	2	2
6	III	UAH19CE2025	Clinical Examination of the Human Visual System	5	3	2	2
7	IV	UAH19CE2026	Personality Development and Stress Management	4	4		2
8	IV	UAH19CE2027	First Aid Management & Splinting Techniques	6	4	2	2
9	V	UAH19CE3028	Essentials of Medical Transcription	7	7		2
10	V	UAH19CE3029	Communication and Soft Skill	7	7		2
11	VI	UAH19CE3030	Professional skills Development	6	6		2
12	VI	UAH19CE3031	Library Science and E-Resources	6	6		2

UAH19CE1020	**FUNDAMENTALS OF BIOSTATISTICS**
	Total Contact Periods–4
	Total credits -2
	Course Designed by–Department of Community Medicine
OBJECTIVES	The course will offer basic knowledge about Biostatistics and to correctly apply a variety of statistical procedures and tests according to objective of study

UNIT I: Introducing the Basics

Introduction, Graphical representation of data, Data collection, Diagrammatic and Graphical Presentation of data, Types of data, limitations.

UNIT II: Measures of Central Tendency & Dispersion

Measures of Central Tendency; Mean, Median, Mode, Geometric mean, Harmonic mean for raw data. Measures of dispersion; Quartile deviation, Mean Deviation - Standard Deviation - Coefficient of variation- Range

UNIT III: Probability

Introduction to Probability, Theorems of probability; Bayer‘s Theorem, Probability Distributions; Discrete & Continuous distributions, Binomial Distribution, Poisson Distribution, Normal Distribution.

UNIT IV: Correlation & Regression Analysis

Correlation Analysis, Types of correlation; Rank Correlation Coefficient. Regression analysis, Types of Regression, Assumptions; Comparison to Correlation.

UNIT V: Hypothesis Testing

Introduction; Types of sampling, Hypothesis testing; Type of errors, Parametric & Non-parametric tests; Mann Whitney’s U test, Chi-square, t-tests, ANOVA.

REFERENCES

1. Don. Mc Neil - Epidemiological Research Methods - Oxford University Press, London.

2. Biostatistics –Principle & Practice – McGraw Hill Education.

3. http://www.ats.ucla.edu/stat/

4. Ahttp://www.statsoft.com/textbook/basic-statistics/

COURSEOUTCOMES	
CO1	The student will be able to understand and apply the Biostatistics.
CO2	The student will be able to use the software independently for the data analysis.
CO3	The student will be able determine the correct procedures to use in a given situation
CO4	The student will be able to interpret the results of hypothesis tests

MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	S			**S**		**M**
Category	Management					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH19CE1021	**COMMUNICATION SKILLS FOR HEALTH CARE PROFESSIONALS**
	TotalContactPeriods–5
	Total credits -2
	Course Designed by–Department of Community Medicine
OBJECTIVES	This course deals with essential functional English aspects of the of communication skills essential for the health care professionals.

UNIT: I APPLIED GRAMMAR

Identifying common errors in sentences, Transformation of sentences, Usage of either …or…, Neither… nor…, So… that…, Such… that…, Not only… but also…, unless…

UNIT: II VOCABULARY

Abbreviations used in healthcare, Medical idioms & Phrases

UNIT: III WRITING

Letter writing, Curriculum Vitae writing, covering letter, Creative writing – invite, posters, Essay writing, summary writing, note taking, report writing.

UNIT: IV SPOKEN COMMUNICATION

Telephone etiquette, Importance of Stress, Intonation and rhythm, speaking; describing simple process, Filling a form etc., - Asking and answering questions; Debate/Oral Reporting

UNIT: V LISTENING AND READING SKILLS:

Listening and reading comprehension exercises.

Textbook Recommended:

1. Effective English Communication by Krishna Mohan and Meenakshi Raman, Tata McGraw –Hill Publishing Company Limited, New Delhi.

2. English for Colleges and Competitive Exams by Dr. R. Dyvadatham, Emerald Publishers.

COURSEOUTCOMES						
CO1	The student will be able to express better.					
CO2	The student will be able to get knowledge about MOA, adverse effects					
CO3	The student will Grow personally and professionally					
CO4	The student will Develop confidence in every field					
MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**		S	
4	S			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH19CE1022	**BIOMEDICAL ETHICS**
	TotalContactPeriods–3
	Total credits -2
	Course Designed by–Department of Community Medicine
OBJECTIVES	To provide basic skills in: A) Approaching ethical issues. B) Analysis and statement of issues. C) Understanding the relevant ethical principles invoked..

Introduction to Bioethics

Bioethical issues related to Healthcare &Medicine 5

2Anatomy - Cadaver ethics, Human dignity, PNDT, Disposal of cadaver, Genetic Counseling 7

Physiology - Animal ethics, Health policy privacy 7

Biochemistry & Pathology - Prudence of investigation confidentiality, Patients bill of rights, Disposal of investigative material, Integrity, Blood transfusion 5

Pharmacology - Rational drug prescribing, Clinical trials, Risk minimization, Animal ethics

Microbiology - Hand wash, Drug resistance minimization, Prudence of investigation confidentiality, Sterilization procedure, Bio safety and bio hazard 5

Medicolegal aspects of medical records

Introduction to Intellectual Property:

Concept of Intellectual Property Kinds of Intellectual Property

Patents, Copyrights Designs, Trademarks,Geographical Indication, Infringement of IPR, Its protection and

Remedies Licensing and its types

REFERENCE BOOKS

1. Contemporary issues in bioethics – Beauchamp & walters (B&W) 4th edition.

2. Classic philosophical questions by Gloud (8th Edition)

3. Case book series and booklets by UNESCO Bioethics Core curriculum 2008

4. Encyclopedia of Bioethics 5 vol set, (2003) ISBN-10: 0028657748

5. Intellectual property rights- Ganguli-Tat McGrawhill. (2001) ISBN-10: 0074638602,

6. Intellectual Property Right- Wattal- Oxford Publications House.(1997) ISBN:0195905024.

COURSEOUTCOMES						
CO1	The students will be able to: Recognize what constitutes an ethical concern in health care					
CO2	The student will be able to understand the clinical evaluations of Disease Condition					
CO3	The student will be able to Understand better the complexity and multi-dimensionality of medical ethical concerns and uniqueness of each problem.					
CO4	The student will get the knowledge of plagiarism in their innovations which can be questioned legally					
MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**d**	**E**	**f**
1	S		M		S	S
2				s		
3			**S**			
4	S		M			**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH19CE1023	**FUNDAMENTALS OF HUMAN GENETICS**
	Total Contact Periods– 4
	Total credits -2
	Course Designed by–Department of Genetics
OBJECTIVES	To Comprehend the Chromosomal basis of inheritance

I -Introduction to cellular components

Structure and morphology of various types of cells - Biochemical composition - Cellular organelles -Composition and components of nucleus - Chromosomes - Cell division and Mechanics of cell division and regulation.

II - Structure and functions of nucleic acids

Functions, Structure and characteristics of nucleic acids - Types of mutations -Genetic variations and polymorphisms

III - Chromosomal basis of inheritance

Chromosome behavior and inheritance pattern in man - Single gene Mendelian disorders: autosomal dominant, recessive, sex linked dominant and recessive - Polygeneic and mitochondrial inheritance.

III - Origin and detection of genetic disorders

Mutation - Non-disjunction - Chromosomal abnormalities and clinical phenotypes of common genetic syndromes (Down's syndrome, Patua‘s syndrome, Edward syndrome, Turner syndrome and Klinefelter's syndrome, Cri-du-caht syndrome)- Karyotyping, Neural tube defects, Carcinogenesis.

IV–Biochemical basis for the inborn errors of metabolism

General characteristics of inborn errors of metabolism – Incidence - etiology - Folic acid metabolism - triple markers - New born screening, prevention and management. False positive and false negative -Ethical principles of Genetic counseling for prenatal diagnosis - Fetal rights – Regulation and prevention of misuse act 1994.

Reference books

1. A guide to genetic counseling, 2nd edition, D.L. Baker, J.L. Schuette and W.R. Uhlmann, Wiley –Leiss Publications 2002.

2. Emery Elements of Medical Genetics, 9th edition, Robert F. Mueller & Ian D. young, Churchill Livingstone, 1995.

3. Medical Genetics, 3rd edition, Lynn B. Jorde, John C. Carey, Michael J. Bamshad, & Raymond L. White, Mosby, 2003.

COURSEOUTCOMES						
CO1	The student will be able to Be able to describe the chromosomal basis of inheritance and how alterations in chromosome number or structure. . .					
CO2	The student will be able to understand of the differences and similarities between diagnostic, predictive and carrier genetic testing.					
CO3	The student will be able to know detailed information of Chromosome behavior and inheritance pattern in man					
CO4	The student will be to understand the phenotype and genotype .					
MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**d**	**E**	**f**
1	S		M		S	
2				s		M
3			**M**			
4	S			**S**		**S**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH19CE2024	**PRINCIPLES AND APPLICATION OF CLINICAL GENETICS**
	Total Contact Periods– 6
	Total credits -2
	Course Designed by–Department of Nephrology
OBJECTIVES	To develop awareness about Genetic testing, Genetic counseling, Philosophy and Ethos of Genetic services

I -Principle and components of genetic testing Lay out of genetic laboratories - Genetic testing, Genetic counseling, Philosophy and Ethos of Genetic services, Types of testing- Cytogenetic testing- Molecular cytogenetic testing- DNA testing.

II - Cytogenetic testing Indications, Type of sample, Sampling and transport conditions, Karyotyping - chromosome identification, merits and demerits of conventional cytogenetic testing

III - Molecular Cytogenetic testing

Indications, Type of sample, Sampling and transport conditions - Fluorescence in-situ hybridization, fluorescence signal enumeration, merits and demerits of FISH.

IV - DNA testing

Organization of human genome, Structure and function of genetic material, Polymerases chainmreaction - Types, principles and testing, Sequencing.

V - Practical:

Case studies

Reference books

1. Practical Genetic counseling, Peter S. Harper, 6th edition, Holder Headline Group 2004.

2. Medical Genetics, 3rd edition, Lynn B. Jorde, John C. Carey, Michael J. Bamshad, &

Raymond L. White, Mosby, 2006.

3. Genetics in Medicine, Thompson & Thompson, 6th edition, Elsevier 2004.

4. Practical Genetic counseling, Peter S. Harper, 6th edition, Holder Headline Group 2004.

COURSEOUTCOMES						
CO1	The student will be able to become familiar with and practice genetic tests.					
CO2	The student will be able to provide better patient care					
CO3	The student will be able to know detailed information about Genetic Counselling					
CO4	The student will be to know about Genetic testing.					
MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3			**M**			
4	S				S	**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH19CE2025	**CLINICAL EXAMINATION OF THE HUMANVISUAL SYSTEM**
	TotalContactPeriods–5
	Total credits -2
	Course Designed by–Department of Opthalmology
OBJECTIVES	The core objective of this course is to gain in depth knowledge on the structural and physiological functions of the various parts of the eye and the different examination procedures for the ocular structures.

: **I - History Taking**

Importance of history taking, Demographic data and its importance, Chief presenting symptoms, History of present illness, History of past illness, Family History, Common ocular symptoms and their causes – defective vision, watering eyes, discharge, redness, pain, asthenopia and other symptoms

II - Visual Acuity measurement

Distance visual acuity-charts, methods and measurements; Near visual acuity –charts, methods and measurements; contrast sensitivity testing; colour vision testing

III - External Examination

Examination of head posture, examination of forehead, examination of eye brows, examination of eyelids, examination of Lacrimal apparatus, examination of eyeball on the whole, examination of the cornea, conjunctiva sclera and anterior chamber, eye movements, muscle balance and squint evaluation

IV - Anterior segment Evaluation

Slit lamp examination of the eyelids, cornea, conjunctiva, anterior chamber depth, iris, and lens Intraocular pressure measurements using non contact tonometer

V - Posterior segment Evaluation

Introduction and importance of posterior segment evaluation- direct and indirect ophthalmoscopy

REFERENCE BOOKS:

1. Comprehensive Ophthalmology – A K Khurana, 5th edition, New Age International Publishers,

2012.

2. Clinical Ophthalmology – Jack J Kanski, 7th edition, Butterworths, 2012

1. Borish's Clinical Refraction - William J. Benjamin, Irvin M. Borish, Butterworth-Heinemann, 2006

COURSEOUTCOMES						
CO1	The student will be able to have the skill to perform basic ophthalmic examination					
CO2	The student will be able to understand concept of theory and clinical evaluation of disease conditions gain an in- depth knowledge on disease outline and clinical evaluation of patients					
CO3	The student will be able to depth knowledge on the functions of the visual system					
CO4	The student will have the skill to perform basic ophthalmic examination					
MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**D**	**e**	**f**
1	S		M		s	
2				S		M
3	M		**S**			
4	M			**C**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH19CE2026	**PERSONALITY DEVELOPMENT AND STRESS MANAGEMENT**
	Total Contact Periods– 4
	Total credits -2
	Course Designed by–Department of HR
OBJECTIVES	• To Explain the effect of personality, attitudes, perceptions and attributions on Health stress, coping and relaxation.

Unit 1

Introduction to Personality Development, Different Stages of Development, Types of personalities, personality perspectives and theories

Unit 2

How needs impact personality, Maslow's hierarchy of need, Basic Personality Traits; Values, Beliefs, Interactions, Experiences, Environmental influences, the big five dimensions.

Unit 3

Stress; causes, effect and types, Stress resistant personalities, Relaxation; training aspects importance and Body works.

Unit 4

Health stress and coping, Understanding and communicating our health needs, Behavioral and psychological correlates of illness.

Unit 5

Soft skill; need and importance, Personality development and soft skills. Effective communication, listening, speaking, writing, interpretation part of soft skills and personality

Learning Outcome:

By successfully completing this course, students will be able to Describe how a personality develops.

- Define the stages of personality development.
- Define personality types.
- Describe basic personality traits.
- Personality and stress.
- Health stress, coping and relaxation.
- Soft skills and personality.

Text Books:

1. Hurlock (1976). Personality development.Tata McGraw Hill.

2. Baron R A, Psychology 5th edition, Pearsons publication.

3. Abraham A, General Psychology, Tata McGraw hill Education private limited.

Reference Books:

1. Lazarus J Stress Relief and Relaxation Techniques, Viva Book Private limited.

2. Shelly E. Taylor, Health psychology, 7th edition, TATA McGrawHil, New Delhi.

COURSEOUTCOMES						
CO1	The student will be able to Define the stages of personality development.					
CO2	• The student will be able to Describe basic personality traits.					
CO3	The student will be able to Describe how a personality develops-Personality and stress.					
CO4	The student will be able to Develop the Soft skills and personality.					
MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**D**	**e**	**f**
1	S		M		s	
2				S		M
3	M		**S**			
4	S			**S**		**M**
Category	Management					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH19CE2027	**FIRST AID MANAGEMENT & SPLINTING TECHNIQUES**
	TotalContactPeriods–6
	Total credits -2
	Course Designed by–Department of Medicine
OBJECTIVES	Students will gain additional skills in interventional procedures and Differentiate between emergency situation and other use.

Unit-I BACKGROUND INFORMATION

- The importance of first Aid
- First aid supplies
- First aid and the law
- Prevention practices

Unit-II ACTION AT AN EMERGENCY

- Recognizing Emergencies
- Deciding to act
- Seeking medical care
- Disease transmission
- Rescuer reactions

Unit –III BLEEDING AND WOUNDS

- External bleeding
- Wound infection
- Amputations
- Impaled objects
- Wound that require medical care
- Internal Bleeding
- Dressing and Bandages

Unit-IV BONE, JOINT AND MUSCLE INJURIES

- Bone injuries
- Splinting
- Joint injuries
- RICE injuries
- Muscle injuries
- Splints – Introduction, Types, Uses, Splinting guidelines, Slings, Procedure,Complications

UNIT-V RESCUING AND MOVING INJURIES

- Water rescue
- Ice rescue
- Electrical Emergency Rescue Hazardous materials incidents
- Motor Vehicle crashes
- Fires
- Confined spaces

- Triage – what to do with multiple victims
- Moving victims

Text books:

1 .First Aid CPR and AED standard (sixth edition)

2. First aid book-St Johns Ambulance services

3. Text book of Orthopaedics – Natarajan

4. Text book of Orthopaedics – John Ebenezer Reference books: First Aid and Management of Minor Injuries by Jon Dallimore First Aid and Beyond by Dan Wolfe - Smashwords , 2014 International Trauma Life Support Provider Manual Essentials Orthpaedics Mark D Mille

COURSEOUTCOMES	
CO1	The student will be able to Differentiate between emergency situation and other use.
CO2	The student will be able to know about the basics of concepts of disease & outlines of clinical evaluation.
CO3	The student will be able to List management, assessment, and care steps for upper extremity and lower extremity fractures.
CO4	The student will be to know Splinting techniques of lower extremities – Thomas splint, sam splint, etc

MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**D**	**e**	**f**
1	S		M		s	
2				S		M
3	M		**S**			
4	S			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH19CE3028	**ESSENTIALS OF MEDICAL TRANSCRIPTION**
	Total Contact Periods– 7
	Total credits -2
	Course Designed by–Department of MRD
OBJECTIVES	Provide Hands on training on English Language and listening comprehension and provide foundation to learn medical terminology & learn laboratory report

Unit 1

The Medical Transcriptionist‘s career including Ethical& Legal Responsibilities Introduction to Medical transcription, Job Opportunities, Transcription Skills, Medical records, Certification for Medical Transcriptionists, Ethical and Legal responsibilities

Unit 2

Equipments in Transcription Equipment, Computer Systems, Ergonomics, Dictation Equipments, Hand and Foot control Dictation, Transcription Preparation

Unit 3

Transcription Guidelines Punctuations, Proof reading notations, Formats and styles, SOAP for Chart notes; Discharge Summary

Unit 4 PRACTICAL:

1. Equipments for Medical Transcription,2. Typing for the beginners, 3.Vocabulary, 4. Proof reading Notations , 5. Formats and styles in document preparation , 6. Preparation of chart notes, 7. Listening Comprehension, 8. Transcription check off sheet **References Book**1. Medical Key boarding, Typing, and Transcribing Techniques and procedures 4th Edition, March

Otis Diehl, Marilyn Takahashi Fordney, W.B. Saunders Company

2. The AAMT Book of Style for Medical Transcription, Claudia J. Tessier

3. CD‘s available for:

a. Stedman‘s Electronic Medical Dictionary 4.0

b. American Drug Index 2003

Text Books:

1. Medical Key boarding, Typing, and Transcribing Techniques and procedures 4th Edition, March

Otis Diehl, Marilyn Takahashi Fordney, W.B. Saunders Company

2. The AAMT Book of Style for Medical Transcription, Claudia J. Tessie

COURSEOUTCOMES						
CO1	The student will be able to Demonstrate their basic skills in the knowledge of Vocabulary, Medical terminology					
CO2	The student will be able to Demonstrate their basic skills in the preparation of chart notes. .					
CO3	The student will be able to Demonstrate skills in listening comprehension					
CO4	• The student will be be able to identify accurate format for medical document preparation					
MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**d**	**E**	**f**
1	S		M		S	
2				s		M
3	M		**S**			
4	S			**S**		**M**
Category	Medical Records					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH19CE3029	**COMMUNICATION AND SOFT SKILL**
	Total Contact Periods– 7
	Total credits -2
	Course Designed by–Department of Human Resources
OBJECTIVES	This course is designed to equip the students with essential soft skills needed for workplace and improve personality.

LEARNING OUTCOME:

This course is designed to help the students to

- Foster healthy attitude.
- Develop effective inter and intra personal skills to be an effective team worker.
- Communicate effectively in both academic and professional setup

UNIT: I ASPECTS OF COMMUNICATION

Importance of communication, Process, Barriers, Non verbal Communication

UNIT: II SPEAKING

How to Open and Close conversations, Introductions and Address System, Expressing Courtesy, Giving Compliments and replying to Compliments, Presentation Skills, Telephonic conversation and telephone etiquette

UNIT – III PRESCRIBED READING

Tom Sawyer by Mark Twain, Bacon‘s Essays: - Of Goodness and goodness of nature

UNIT – IV WRITING

Letter writing - Letter of Complaints, Inviting and Declining an invitation, Writing Memos and Emails, Grammar, Spelling & Punctuation, Use of Dictionary & Thesaurus.

UNIT – V SOFT SKILLS

Active Listening Skills, Assertive Skills, Negotiation and Persuasive Skills, Interview Skills

Text Book:

Developing Communication Skills by Krishna Mohan and Meera Banerji, II edition, Macmillan.

Reference Books:

1. Communication Skills for Engineers and Scientists by Sangeeta Sharma and Binod Mishra, PHI Learning Private Limited, New Delhi.

2. English and soft skills by S.P. Dhanavel, Orient Black Swan

3. Effective English Communication by Krishna Mohan and Meenakshi Raman, Tata McGraw –Hill Publishing Company Limited.

4. Technical Communication – Principles and Practice, by Meenakshi Raman and Sangeetha Sharma, II edition, Oxford University Press.

5. Developing Communication Skills by Krishna Mohan and MeeraBanerji, II edition, Macmillan.

6. The Complete Guide to Functional Writing in English by M. Sarada, Sterling Publishers (P) Ltd., New Delhi.

7. Speaking Naturally: Communication Skills in American English by Bruce Tillitt and Mary Newton Bruder, Cambridge University

COURSEOUTCOMES	
CO1	The student will be able to Foster healthy attitude
CO2	The student will be able to develop effective inter and intra personal skills to be an effective team worker
CO3	The student will be able to Develop effective inter and intra personal skills to be an effective team worker
CO4	The student will be able to Communicate effectively in both academic and professional setup

MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**a**	**B**	**C**	**d**	**e**	**F**
1	S		M		s	

2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH19CE3030	**PROFESSIONAL SKILLS DEVELOPMENT**
	Total Contact Periods– 6
	Total credits -2
	Course Designed by–Department of Human Resources
OBJECTIVES	To Advance the students' intellectual curiosity, competency and skills in preparation for employment

1. Communication Skills

Importance of Communication skills in Public health; Communication process; Methods of communication; Types of communication: Verbal and Non-verbal; Impediments to effective communication; Feedback

2. Oral Presentation Skills:

Preparation and planning; Structure; Audio-visual aids; Creating interest and establishing a relationship with the audience; Body language; Voice and pronunciation; Review

3. Writing skills:

Writing a scientific paper; Writing a proposal; Structure of an article; References and literature review; Peer-review process-Publication bias; International guidelines for publication in journals; Professional Ethics

4. Leadership in Public health:

Leadership styles and trait; Motivation skills; Interpersonal communication skills; Problem solving skills; Decision making skills; Management skills; Communication Skills

5. Manuscript writing

Writing introduction, objectives, methodologies, major finding, discussion, conclusion and recommendation**6. Seminar presentations**Use of computers present data and information on recent topics

Text Books:

1. Professional Writing Skills, A self paced training programme by Janis Fisher Chan and Diane Lutovich. Advanced Communication Designs Inc, 2003. San Anselmo, CA. ISBN 0963745549

2. Speaking Your Mind: Oral Presentation and Seminar Skills By Rebecca Stott, Tory Young, Cordelia Bryan Contributor Rebecca Stott, Tory Young, Cordelia Bryan Published by Longman, 2001 ISBN 0582382432, 9780582382435

3. Public Health Leadership: Putting Principles into Practice Louis Rowitz, PhD. Jones and Bartlett Publishers, 2003. ISBN-13: 9780763725013 ISBN-10: 07637250

COURSEOUTCOMES						
CO1	The student will be able to Develop good written and oral communication abilities					
CO2	The student will be able to Develop an understanding of team building and leadership skills.					
CO3	The student will be able to Develop knowledge regarding capacities needed to work independently within diverse work environments					
CO4	The student will be able to know how to maintain Records and Reports and demonstrate the procedure.					
MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**D**	**e**	**f**
1	S		M		s	
2				S		M
3	M		**S**			
4	S			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting Of Academic Council held in Aug, 2017					

UAH19CE3031	**LIBRARY SCIENCE AND E-RESOURCES**
	Total Contact Periods– 6
	Total credits -2
	Course Designed by–Department of Library science
OBJECTIVES	To gain knowledge about Documentary Sources of Information and Library Automation

Unit 1 BASIC CONCEPTS AND INFORMATION SERVICES

Meaning of Library – Types of Library -– Library layout - Functions of Library – need for Library – Meaning of ISBN and ISSN – Collection management - Library Classification system - Five laws of Library Science – Inter Library Loan (ILL), Communication theories and models.Barriers to communication.Levels of communications – Intrapersonal, interpersonal and mass communication. Information services – literature search Methods of Dissemination of information Current Awareness Service (CAS), Selective Dissemination of Information (SDI), Document delivery service, Alert services, and Internet services.

Unit 2 INFORMATION SOURCES

Documentary Sources of Information, Print, and Non-print including Electronic, Human and Institutional sources: Nature, types, characteristics and utility. Internet as a source of Information. Primary sources of information – Journal, conference volume, patents, research reports, thesis and their electronic format – Secondary sources of information - Bibliography, Encyclopedia Dictionary, Yearbook , Directory, Geographical Source, Textbook, Index and Abstracts.

Unit 3 LIBRARY AUTOMATION

Definition need, Purpose, advantages. Planning for Library automation. Automation of Library operations - Acquisitions, Cataloguing, OPAC, Circulation and Serials control. Evaluation of Library automation systems - Application of Barcode and RFID Technology for Library Functions. Basic concepts: Bibliography, bibliographic coupling, Impact factor.

Unit 4 ELECTRONIC INFORMATION SOURCES

Electronic Information resources: Meaning and definition, Growth and development, Types. Journals, e-Books, e-Theses, e-newspapers, Blogs, Wikis. Free databases and fee based bibliographical and full text databases, subject related websites, Institutional repositories, Open Archives and digital Libraries. - Resource Sharing and Networks: Consortia- Importance and objectives. Study of Information networks and Digital Library Consortia. Types of computer networks: Local Area Networks – Concept, Topologies - Bus, Star, Mesh, Tree, and Ring). Wide Area Networks and Metropolitan Area Networks- Concepts, Circuit switching and Packet switching. Difference between LAN and WAN. Wireless Networks –Mobile telephones.

Unit 5 DIGITAL LIBRARIES

Digital Libraries: Concepts and issues. Understanding digital Libraries Content creation – Electronic documents, files and file formats. Study of different file formats.Studying PDF in detail- features of PDF.Digitization- scanning, Digital Preservation, Conservation and Archival Management – Problems and prospects. Open Access Movement and Institutional repositories.

TEXTBOOKS

1. Ranganathan, S.R The five Laws of Library Science UBS Publishers, 1988.

2. Ranganathan, S.R. Library Manual SaradaRanganathan endowment for Library Science, 1989.

3. Ranganathan, S.R. Cataloguing Practice SaradaRanganathan endowment for Library Science 1990

COURSEOUTCOMES						
CO1	The student will be able to analyze and understand the query					
CO2	The student will be able to Identify the sources of information					
CO3	The student will be able to Find out the information					
CO4	The student will be able to know how to maintain Records and Reports and demonstrate the procedure.					
MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**d**	**e**	**F**
1	S		M		s	
2				s		M
3	M		**S**			
4	S			**S**		**M**
Category	Library Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

B.Sc. PHYSICIAN ASSISTANCE

R2019

CURRICULUM

UAH19CT101	**ANATOMY**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Anatomy
OBJECTIVES	An outline of anatomy with special emphasis on applied aspects is provided to the students for better understanding of the technical and diagnostic procedure.

UNIT I: Organization of the human body

1. **Introduction**

- Introduction to human body
- Definition and subdivision of anatomy
- Anatomical position and terminology
- Region and systems of the body
- Cavities of the body and their contents
- Levels of organization of the body

2. Cell and genetics

- Parts of cell – cell membrane, cytoplasm, organelles, inclusion bodies, nucleus
- Structure of chromosome, DNA, RNA.
- Basics & fundamentals of Genetics, Karyotyping, Chromosomal disorders, prenatal diagnosis, genetic counseling and gene therapy.
- Cell division – Definition and main events that occur in different stages of mitosis and meiosis.
- Tissues – Definition, characteristic features and types with example.
- Types of glands with example

UNIT II: Systems of support and movement

1. **Skeletal system**

- Cartilage: Type and basic histological feature.

- Bones: definition, classification based on location, name and number of bones with general features of important bones, function of bone, histological feature of a compact bone.
- Joints – Definition and types with example, Axis and movements. Shoulder, elbow, hip, knee joints – type, bones and ligaments involved, possible movements.

1. Muscular system

- Types of muscle with basic histological features
- Parts of skeletal muscle.
- Definition of origin and insertion
- Origin, insertion, nerve supply, action of sternocleidomastoid, pectoralis major, deltoid, gluteus maximus and diaphragm.

UNIT III: Controls systems of the body

1. Nervous system

- Subdivisions of the nervous system
- Spinal cord-location, extent, external features and blood supply
- Brain-subdivision, location, external features of Medulla oblongata, Pons, Midbrain, Cerebellum, and Cerebrum, Thalamus and Hypothalamus, Location and subdivision of ventricles of brain. Circle of Willis.
- Cranial nerves-name, number, attachment, area of distribution
- Spinal nerves-typical spinal nerves. Name and location of plexuses. Location and distribution of brachial and lumbosacral plexus.
- Autonomic nervous system-sympathetic and parasympathetic nervous system. Location of preganglionic and postganglionic neurons.

2. Sense organs

- Location and features of nose, tongue, eye, ear and skin.

3. Endocrine system

- Names of the endocrine glands. Location and features of pituitary, thyroid, parathyroid, suprarenal, pancreas, ovaries and testes. Names of hormones produced by each gland.
- Microscopic features of thyroid and pancreas.

UNIT IV: Maintenance of the human body

1. Cardiovascular system

- Types and general features of blood vessels. Structure and types of arteries and veins. Shape, size, location, covering, external and internal features of Heart. Conducting system of heart. Blood supply of the heart. Name, location, branches and main distribution of principal arteries and veins

2. Lymphatic system

- General features of Lymph nodes and lymphatic vessels. Name, location, external features, microscopic features of tonsil and spleen.

3. Respiratory system

Name the organs of respiration. Location and features of Nasal cavity, pharynx, larynx, trachea, lung & pleura.

Mention the microscopic feature of the lung.

4. Digestive system

- Name the parts of the alimentary canal and accessory organs. Location & features of esophagus, stomach, small and large intestine. Location and feature of tongue, salivary glands, pancreas, liver and gallbladder. Microscopic features of the liver.

5. Urinary system

- Names of urinary organs. Location and features of kidney, ureter, urinary bladder & urethra. Microscopic features of the kidney.

6. Reproductive system

- Names of male and female organs of reproduction. Location and features of testis, epididymis, vas deferens, prostate gland and spermatic cord. Location & features of uterus, uterine tube, ovary and breast.

7. Embryology

- Structure of gametes & gametogenesis. Fertilization to development of embryo till 3rd week. Derivatives of germ layers. Teratogens, Structure and Functions of placenta.

UNIT V: Anatomical regions

- Simple ideas about scalp, triangles of neck, axilla, cubital fossa, carpal tunnel, mediastinum, umbilicus, inguinal canal, femoral triangle
- sub sartorial canal popliteal fossa

PRACTICALS/DEMONSTRATIONS

1. Demonstrations of dissected specimens.
2. Viewing of projection of microscopic slides of muscle, bone, cartilage, spleen, tonsil, lung, liver, kidney, thyroid and pancreas

REFERENCE BOOKS

1. Manipal manual for AHS by Dr. Sampath Madhyastha, (Second Edition) Published by CBS Publishers.
2. Handbook of anatomy for nurses by Dr. P. Saraswathi
3. Ross and Wilson, Anatomy and physiology in health & illness

COURSE OUTCOMES	
CO1	The student will be able to gain knowledge of general anatomy and locomotion.
CO2	The student will be able to gain knowledge of basic human anatomy and histology of CVS and Respiratory systems.
CO3	The student will be able to gain knowledge of basic human anatomy and histology of CNS, GI, excretotry and reproductive systems.
CO4	The student will be able to gain of knowledge basic human anatomy and histology of endocrine system and special senses.
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES	

COs\POs	a	b	c	d	e	f
1	S					
2		**M**				
3			**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH19CT102	**PHYSIOLOGY**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Physiology
OBJECTIVES	To know the basic functioning of the human body, and the various organ systems.

Unit-I

1. **General Physiology:**

- Concept of Homeostasis
- Cell structure and functions
- Transport across membranes

Body and body fluids:

- Body fluid volumes, compartments and composition
- Blood composition and functions
- Plasma proteins – Types and functions
- Erythrocytes – functions, Erythropoiesis, anemia's
- Leucocytes – classification and functions
- Platelets – morphology and functions
- Blood coagulation – Mechanism and name of anticoagulants
- Blood groups – Basis of ABO & Rh grouping, Erythroblastosis Foetalis

2. Muscle physiology:

- Muscles – Classification & structure of striated, nonstriated & cardiac muscle
- Neuromuscular junction
- Mechanism of skeletal muscle contraction

3. Digestive system:

- Salivary glands, functions of saliva
- Parts of stomach, composition & functions of gastric juice
- Pancreatic Juice – composition & functions
- Bile – composition & functions of bile & bile salts
- Functions of Small intestine & large intestine

Unit-II

1. Skin

● Structure & Functions

2. Excretory system:

- Kidney: Basic physiological anatomy (Including JGA)
- Formation of urine – GFR
- Formation of urine – Reabsorption & secretion
- Micturition Reflex

- Dialysis – Principle, types
- Renal function tests

Unit-III

1. Endocrine system:

- Hypothalamo hypophyseal inter relationship
- Posterior pituitary hormones and its actions
- Anterior pituitary hormones, Growth hormone – Actions
- Dwarfism, gigantism, acromegaly
- Thyroid hormones – Actions
- Cretinism, Myxoedema, Grave‟s disease (clinical features)
- Parathyroid hormones – Functions, Tetany
- Insulin, Glucagon‟s – Actions, Diabetes mellitus
- Adrenal medullary hormones & their actions
- Adrenal cortex hormones & their actions

2. Reproductive system:

- Male reproductive organs – Spermatogenesis, Testosterone actions
- Female reproductive organs – menstrual cycle (endometrial and ovarian cycles) and its hormonal control
- Contraceptive methods in male and female

Unit-IV

1. Respiratory system:

- Basic physiological anatomy
- Surfactant
- Mechanics of respiration
- Lung volumes and capacities
- Oxygen transport, Carbon-di-oxide transport
- Nervous and chemical regulation
- Pulmonary function tests.

2. Cardiovascular system:

- Basic physiological anatomy, innervations of heart
- ECG – normal waves, intervals and their significance
- Cardiac cycle – mechanical events, Heart sounds
- Blood pressure – Definition, measurement, normal values, factors maintaining BP Regulation

Unit-V

1. Nervous system:

- Structure of neuron, neuroglial cells, synapse and transmission across it
- Reflex – Components of reflex arc, examples.

- Functions of ascending tracts – anterior, lateral spinothalamic tracts, Dorsal column
- Functions of Corticospinal (Pyramidal) tract-Descending tract
- Functional areas of cerebral cortex
- Functions of basal ganglia, thalamus, hypothalamus, limbic system and cerebellum

2. Special senses:

● Receptors for various special senses

Practical Demonstration

Hematology:

1. Enumeration of RBC count.
2. Enumeration of WBC count.
3. Differential Count.
4. Estimation of Hemoglobin.
5. Determination of blood group.
6. Determination of bleeding time and clotting time.

Clinical physiology:

1. Measurement of blood pressure.
2. Determination of Radial pulse

Reference Book

1. Human Physiology for BDS by A.K.Jain, 4th Edition, Avichal publishing co

COURSE OUTCOMES	
CO1	The student will be able to gain knowledge of general physiology, nerve-muscle physiology and haematology.
CO2	The student will be able to gain knowledge of basic human physiology with respect to CVS, Respiratory system and GI system.
CO3	The student will be able to gain knowledge of basic human physiology of excretion and CNS.
CO4	The student will be able to gain knowledge of basic human physiology of special senses and endocrine system.

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES

COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S					

2		**M**				
3			**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH19CT103	**BIOCHEMISTRY**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Biochemistry
OBJECTIVES	To know the basic Biochemical reactions within the human body, and the various organ systems. .

UNIT I – Cell and its molecules

Cell – Cell organelles, Fluid Mosaic Model, functions of cell membrane, Brief description of transport across the cell membrane.

Carbohydrates – Definition, Classification with examples, Sources, physiological significance and HbA1c.

Lipids – Definition, Classification with examples, Sources, Types of lipids present in the body, storage form, storage site, free cholesterol structure, functions of lipids, lipoprotein structure and its functions.

Nucleic acids – Nucleotide, Nucleoside, types of nucleic acids, secondary structure of DNA & Its functions; Types of RNA & its functions.

UNIT II – Proteins and Enzymes

Proteins – Definition, Classification, functions of proteins, Plasma proteins; Classification of Amino acids with examples
Hemoglobin structure, Functions of hemoglobin, hemoglobin derivatives, abnormal hemoglobin

Enzymes: Definition, Classification, coenzymes, Metalloenzymes, Factors affecting enzyme activity, Regulation of enzymes, overview of Mechanism of enzyme action, Isoenzymes and Clinical importance of enzymes

UNIT III-Vitamins, Minerals, Nutrition

Vitamins: Definition, Classification of Vitamins
Sources, RDA, Function & Deficiency symptoms of

- Fat Soluble Vitamins (A, D, E & K);
- Water Soluble Vitamins (Thiamine, Riboflavin, Niacin, Biotin, Pantothenic acid, Pyridoxine, Folic acid, Cobalamin) and Vitamin C

Minerals: Definition, Classification of Minerals

Sources, RDA, Function, Reference levels & Deficiency Symptoms of

- Calcium, Phosphorus, Iron Copper, Zinc, Sodium, Chloride, Iodine, Potassium, Fluorine and Selenium.

Nutrition: BMR, SDA, Dietary fibres, protein Energy Malnutrition and Obesity 24

UNIT IV – Bioenergetics and Metabolism
Bioenergetics: Electron Transport chain and Oxidative Phosphorylation
Metabolism

Carbohydrates: Digestion and absorption, Glycolysis, TCA cycle, Metabolism of Fructose and Galactose.

Lipids: Digestion and absorption, Beta oxidation of fatty acids, Regulation of Cholesterol level in the cell and outline of lipid transport.

Proteins: Digestion and Absorption, Formation and Disposal of Ammonia, Urea Cycle, Special Products of Glycine, Tyrosine and Tryptophan.

UNIT V – Miscellaneous
Outlines of DNA organization, Replication, Transcription, Genetic code and Translation
Organ function Tests: Liver, Renal and Bone.

PRACTICAL

- Spotters

COURSE OUTCOMES						
CO1	The student will be able to gain knowledge of biochemistry of cell structure, functions, digestion, enzymes and proteins.					
CO2	The student will be able to gain knowledge of biochemistry of carbohydrates, minerals and vitamins					
CO3	The student will be able to gain knowledge of liver and renal function tests, specialized laboratory investigations and lipids.					
CO4	The student will be able to gain knowledge of biochemistry of metabolism, homeostasis, nucleic acids and cancer					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S				s	
2		**M**		s		
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH19CT104	**BASICS IN MEDICAL PHYSICS AND ELECTRONICS**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Radiology
OBJECTIVES	To know the basics in Medical Physics, Bio electric potential and the functioning of Medical equipment.

Unit I: Laser

Nature of Light-Reflection-Refraction-Total internal reflection-Optical fibers-Applications in Medicine – Laser-Principles-Action-Types of laser, Basic principles of laser in Medical Application – Argon-Ion laser photocoagulator-Photo thermal-Photochemical application-Applications of laser in Medicine-Laser hazards and safety measures.

Unit II: Radiation Physics

Introduction to nuclear physics and radioactivity, Radioactive radiations – X-ray, production of x-ray, Properties of x-ray radiations – Biological effects of radiation, Radiation damage in matter, Radiation protection principles, radiation detection and measurement – Ultrasound and generation of ultrasound.

Unit III: Introduction to Imaging Technique

Principles of Microscope: Simple microscope and compound microscope-Radiography: Making and X-ray image-Fluoroscopy. CT Scans, MRI – Ultrasonography: Ultrasound picture of Body-A-Scan-M-Scan-Ultrasound diathermy-Phonocardiography – Radio isotopes: Uses of Radio isotopes – 99mTc Generator – Scintillation detectors – Application of scintillation detectors – Gamma Camera – Positron Camera

Unit IV: Semiconductor devices

Principles of diodes and Transistors – Integrated circuits – Amplifiers – Basic configuration and types – differential and operational amplifiers – Waveform generators – Timer – A/D and D/A converters – Active filters – Transducers – Basic configuration and types.

Unit V: Bio potential Recording Systems

Introduction to bioelectric potential – Electrodes and surfaces – Bio potential amplifier – Frequency ranges of various biopotential signals – Working principles of bio potential recording systems – Electrocardiography – Electroencephalograph –Electromyography.

Reference Books:

1. New Understanding physics for advanced level – Jim Breithauput.

2. Advanced Physics for you by Keith Johnson, Simmons Hewett, Sue holt, John miller

3. Christensen‟s Physics of diagnostic Radiology by Thomas S. Curry III, M.D., Robert C Murry, Jr. PhD, Dow Dey, PhD.

4. Applied Electronics, A. Subramanyam, The National Publishing co., Madras (1996).

5. Design and Development of Medical Electronic Instrumentation, David Prutchi and Michael Norris, John Wiley & Sons (2005).

COURSE OUTCOMES	
CO1	The student will be able to know the functioning of radiological devices
CO2	The student will be able to understand the mechanism of functioning of medical equipment
CO3	The student will be able to know the functioning of Lab instruments
CO4	The student will be able to understand the functioning of radiation devices

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES

COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**

Category	Medical Science
Approval	46th Meeting of Academic Council held in Aug, 2017

UAH19CT105	**ENGLISH**
	Total Contact Periods – 60
	Total credits -4
	Course Designed by – Department of English
OBJECTIVES	To enable students to enhance their ability to comprehend spoken and written English required for effective communication in their professional work. Students will practice their skills in verbal and written.

Unit I: Spoken Communication

Learning to read the phonetic symbols
Stress
Intonation
Rhythm
Commonly mispronounced words
Correct pronunciation of important commonly used
Words in hospital practice

Unit II: Vocabulary and Reading

Special features of English vocabulary
Common errors in choice of word
Semi technical vocabulary
Collecting material from library on scientific topics
Comprehensive exercises

Unit III: Writing

Writing letters regarding permission, leave, opening bank account etc.
Taking notes from lecture / reading materials
Writing reports on patient care
Summarizing scientific passages

Unit IV: Grammatical and Idiomatic Usage

Correction of errors
Types of interrogative sentences
Active-Passive voice
Tense
Principles of procession, clarity and specificity

Reference Books:

1. Effective English Communication by Krishna Mohan and Meenakshi Raman, Tata McGraw-Hill publishing Company Limited, New Delhi. (Approx. Cost Rs.200.
2. English for colleges and competitive Exams by Dr. R. Dyvadatham, Emerald Publishers (Approx. cost Rs. 150)

COURSE OUTCOMES	
CO1	The student will be able to develop their intellectual, personal and professional abilities.
CO2	The student will be able to acquire basic language skills, listening, speaking, reading and writing.
CO3	The student will be able to acquire the linguistic competence necessarily required in various life situations
CO4	The student will be able to communicate with speakers of English language

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES

COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**

Category	Language
Approval	46th Meeting of Academic Council held in Aug, 2017

UAH19CT106	**BASIC OF COMPUTERS**
	Total Contact Periods – 30
	Total credits -4
	Course Designed by – Department of English
OBJECTIVES	This course is designed for students to develop basic understanding of used of computer and its applications in Clinical Departments

UNIT I: INTRODUCTION

Computer basics – Types of computers – hardware components – input devices – output devices – storage devices – memory – units and sizes – factors affecting performance – operating systems – applications software – networking – LAN and WAN – Accessories – backup – computer virus – software copyright.

UNIT II: WORD PROCESSING

Windows – Office automation – WORD processor – open a new document – toolbars – menus – font dialog box – enter text – scroll – spelling checker – Autocorrect – undo and redo – bullets and numbered lists – indenting – moving and copying – find and replace – auto shapes – saving document – preview and print.

UNT III: ELECTRONIC SPREADSHEET AND DATA PRESENTATION

EXCEL spreadsheet – grid of rows and columns – active cell – selecting range – entering data – editing data – row and column labels – adjusting width – creating and copying formulae – relative – logical functions – lookup function – creating chart – bar chart – pit chart – print and save.

POWERPOINT presentation – creating slideshows- building outline – switching levels in outline – adding pictures – slide designs – design templates – formatting – color scheme – customized backgrounds – inserting content – hyperlink – revolution in education.

UNIT IV: DATABASE MANAGEMENT SYSTEM

ACCESS database – concept – template –primary key – records and fields – Student roster database – input mask – adding records – viewing data – updating entries – searching and querying – sorting – Table, forms and reports.

UNIT V: APPLICATIONS IN HEALTHCARE AND MEDICINE

INTERNET – e-governance – access to information – communication facility – mechanics of E-mail – social transformation – electronic billing – drug information –information flow in lab and radiology – storage of medical records – networking the organization – patient care – intelligent monitoring – scholarly information – health informatics – robotic assisted surgery – Clinical decision support systems – Telemedicine.

COURSE OUTCOMES	
CO1	The student will be able to develop basic under-standing of computer use.
CO2	The student will be able to acquire knowledge on Applications of computers in clinical departments.
CO3	The student will be able to have the detailed knowledge on how to use hospital information systems.
CO4	The student will be able to communicate with speakers of English language

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES

COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**

Category	Soft Skills
Approval	46th Meeting of Academic Council held in Aug, 2017

UAH19CT107	**MICROBIOLOGY**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Microbiology
OBJECTIVES	This course is designed to enable students to acquire understanding of fundamentals of microbiology and identification of various microorganisms. It also provides opportunities for practicing infection control measures in hospital and community settings.

UNIT – I: General Bacteriology

Introduction & History of Microbiology, Classification & Morphology of Bacteria, Growth & nutrition, Culture Media & Methods, Sterilization & Disinfection, Fundamental aspects of antibacterial agents and antimicrobial susceptibility testing.

UNIT – II: Immunology

Infection, Immunity, Immunization schedule, applications of antigen antibody reactions, Hypersensitivity, Tumor & Transplantation Immunology.

UNIT – III: Virology

Introduction to virology, viral hepatitis, poliomyelitis, Rabies, Human immunodeficiency virus.

UNIT – IV Mycology & Parasitology

Introduction to mycology, pathogenic yeasts & fungi, Introduction to parasitology, Amoebiasis, Malaria, Helminthic infections.

UNIT – V: Applied Microbiology

Outline of common bacterial diseases, treatment & Prevention-Respiratory tract infections (upper & lower), Meningitis (septic & aseptic), Enteric infections (food poisoning & gastro enteritis), Anaerobic infections, Skin & soft tissue infections, Urinary tract infections, sexually transmitted diseases, Tuberculosis & Leprosy, Hospital acquired infections, Biomedical waste management.

PRACTICAL EXERCISES: Spotters, Gram staining.

Reference Books

1. Textbook of Microbiology by Ananthanarayan & Panicker"s, 8th edition-Universities Press (India) PVT LTD.
2. Textbook of Microbiology by C. P. Baveja, 4th edition, Arya Publications.
3. Textbook of Medical Parasitology, CK Jayaram Paniker, 5th edition, Jaypee Publications.
4. Medical Parasitology by C. P. Baveja & V. Baveja, 2nd edition, Arya
5. Publications.

COURSE OUTCOMES	
CO1	The student will be able to understand the morphological characters of bacteria.
CO2	The student will be able to master the preparation of smear, fixation and staining of bacterial smears and its quality control methods
CO3	The student will be able to learn to use microscope, autoclave, hot air oven, water bath, steamer, filters

CO4	The student will be able to differentiate between innate and adaptive immunity, and explain the main defences lines as well as biological barrier to the infections.

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES

COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**

Category	Basic Medical Science
Approval	46th Meeting of Academic Council held in Aug, 2017

UAH19CT108	**PATHOLOGY**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Pathology
OBJECTIVES	This course is designed for students to develop an understanding of general and systemic pathology. It helps them to know pathophysiology of common diseases

UNIT-I: General Pathology I: Cellular Pathology, Acute and Chronic Inflammation, Tissue Renewal Regeneration and Repair, Hemodynamic Disorders Thromboembolic Disease and Shock

Introduction to Pathology, Adaptations Of Cellular Growth And Differentiation, Causes Of Cell Injury, Mechanisms Of Cell Injury, Necrosis, Apoptosis, Pathologic Calcification, Cellular Aging, Acute Inflammation – Mediators Of Inflammation Outcomes Of Acute Inflammation, Morphologic Patterns Of Acute Inflammation, Chronic Inflammation – Causes Of Chronic Inflammation, Granulomatous Inflammation, Healing By Repair, Scar formation And Fibrosis, Cutaneous Wound Healing, Healing By First Intention, Healing By Second Intention, Edema, Hemostasis and Thrombosis, Infarction, Shock

UNIT-II: General Pathology II: Diseases of the Immune System, Neoplasia, Environmental And Nutritional Disease, Diseases Of Infancy And Childhood

Innate Immunity, Adaptive Immunity, Components Of The Immune System, Mechanisms Of Hypersensitivity Reactions, Acquired Immunodeficiency Syndrome (AIDS), Neoplasia – Definition and Nomenclature, Characteristics Of Benign And Malignant Neoplasm‟s, Molecular Basis Of Cancer, Essential Alterations For Malignant Transformation, Clinical Aspects Of Neoplasia, Laboratory Diagnosis Of Cancer, Common Environmental And Nutritional Pathology, Nutritional Diseases, Tumors And Tumor-Like Lesions Of Infancy And Childhood

UNIT-III: Systemic Pathology I: Blood Vessels, the Heart, Red Blood Cell and Bleeding Disorders, Diseases Of White Blood Cells

Arteriosclerosis, Atherosclerosis, Hypertensive Vascular Disease, Ischemic Heart Disease, Hypertensive Heart Disease, Valvular Heart Disease, Infective Endocarditic, Rheumatic Fever And Rheumatic Heart Disease, Cardiomyopathies, Leucopenia, Anemia‟s, Polycythemia, Bleeding Disorders, Reactive Proliferations Of White Cells, Definitions And Classifications of Lymphoid Neoplasm‟s and Myeloid Neoplasm‟s, Splenomegaly.

UNIT-IV: Systemic Pathology II: The Lung, The Gastrointestinal Tract, Liver And Biliary Tract

Acute Respiratory Distress Syndrome, Obstructive Pulmonary Diseases, Pulmonary Infections, Gastritis, Peptic Ulcer Disease, Inflammatory Bowel Diseases, Liver Function Tests, Hepatic Failure, Cirrhosis, Portal Hypertension, Jaundice, Cholelithiasis

UNIT-V: Systemic Pathology III: The Urogenital System, the Breast, the Endocrine System, Bones Joints and Soft-Tissue, Peripheral Nerve and Skeletal Muscle, the Central Nervous System

Renal Function Tests, Nephrotic Syndrome, Nephritic Syndrome, Urolithiasis, Pap Smear, Carcinoma Of The Breast-Types And Classification, Thyroid Gland – Hyperthyroidism, Hypothyroidism, Thyroiditis, Graves" Disease, Diffuse And Multinodular Goiters, Parathyroid Glands – Hyperparathyroidism, Hyperparathyroidism, Diabetes Mellitus, Fractures, Osteomyelitis, Arthritis, Osteoarthritis, Rheumatoid Arthritis, Infectious Arthritis, Diseases of Peripheral Nerve, Diseases of Skeletal Muscle, Infections of CNS – CSF Find

REFERENCE BOOKS

1. Pocket companion to Pathologic Basis of Disease by Robbins and Cotran, 7th edition, Saunders.
2. Pathology Quick Review and MCQs by Harsh Mohan, 2nd edition, Jaypee Publications.

COURSE OUTCOMES	
CO1	The student will be able to gain knowledge of general pathology.
CO2	The student will be able to gain knowledge pathology of neoplasms
CO3	The student will be able to gain knowledge of basics of community health.
CO4	The student will be able to gain knowledge of systemic pathology.

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES

COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**

Category	Basic Medical Science
Approval	46th Meeting of Academic Council held in Aug, 2017

UAH19CT109	**PHARMACOLOGY**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Pathology
OBJECTIVES	This course is designed to help the students to develop an understanding of basic knowledge of pharmacology and knowledge of common drugs/group of drugs

UNIT-I: General Pharmacology

Introduction to pharmacology-various terminologies-sources & routes of drug administration – Absorption & Factors modifying drug absorption – Distribution of drugs – Metabolism: Phase II, - Excretion: routes, modes & kinetics of elimination – Excretion – Mechanism of drug action in brief, synergism & antagonism and Factors modifying drug action – Adverse drug reactions – ADR reporting & monitoring – Drug interactions.

UNIT-II: Central Nervous System & Respiratory System

Introduction to CNS and Neurotransmitters, drugs used in insomnia, Sedatives and hypnotics – diazepam – alprazolam, anti-anxiety drugs, Antiepileptic – phenytoin, carbamazepine, sodium valproate, General Anesthetics – halothane, isoflurane, sevoflurane – Local Anesthetics – lignocaine – list of other drugs, Alcohols – ethyl alcohol – disulfuram, Anti parkinsonians – levodopa – carbidopa, Opioids – morphine – naloxone – tramadol – pentazocine, NSAIDs – aspirin – diclofenac – ibuprofen – paracetamol – Cox 2 inhibitors. Drugs used in bronchial asthma and cough

UNIT-III: Cardio vascular system & blood

Drugs used in Ischemic Heart Disease-nitrates-Calcium channel blockers-nifedipine, verapamil-list of other drugs – Beta blockers – propranolol, atenolol – metoprolol and antiplatelets – aspirin, clopidogrel, and names of other drugs-fibrinolysis drugs-streptokinase and other drugs, Drugs used in CCF-digoxin and list of other drugs useful in CCF, Shock. Diuretics: 4 groups – Thiazides, Loop diuretics, Potassium sparing and osmotic diuretics. Hypertension – outline of drugs used in hypertension, Rennin angiotensin system – ACE inhibitors – captopril, ramipril and names of other drugs – Receptor antagonist – losartan and list of other drugs, Antiarrhythmic drugs-classification – Quinidine, Lignocaine and amiodaron – Drugs for Hypercholesterolemia – statins. Drugs for anemia – oral & parenteral iron preparations, folic acid, vit B12 and erythropoietin. Coagulants and anti-coagulants

UNIT-IV: Hormones and GIT

Contraceptives – oral and injectable, Corticosteroids – glucocorticoids – hydrocortisone-prednisolone-dexamethasone and names of topical steroids – Insulin – Oral hypoglycemic – sulphonyl ureas, biguanides and others, Thyroid and Antithyroid drugs, Sex Hormones-Estrogen and anti estrogens, Progestin and Anti progestin‟s, Androgen And anti androgens. Emetics and anti emetics-metoclopromide and domperidone, Drugs used in peptic ulcer, constipation-lactulose & Diarrhea-ORS-Loperamide.

UNIT-V: Chemotherapy and Miscellaneous

Introduction – Beta lactam antibiotics: Penicillin‟s – natural, semi synthetic penicillin‟s – amoxicillin – cloxacillin-clauvulinic acid – sulbactum – Cephalosporin‟s – cephalexin – cefuroxime – cefixime – ceftrioxone-cefipime, Broad spectrum antibiotics – Doxycycline – chloramphenicol-imipenum-Macrolides – erythromycin, azithromycin and others – Quinolones- ciprofloxacin and list of other drugs and sulfonamides- cotrimoxazole-Amino glycosides-gentamycin, amikacin and names of other drugs Anti TB-first line drugs, Anti leprosy-dapsone and clofazimine Anti-malarial- chloroquine- mefloquine and artemisinins, Anti-fungal- amphotericin B- fluconazole and topical drugs & Anti-viral drugs- acyclovir and anti HIV, Anti protozoals- metronidazole – Anthelmintics- albendazole- praziquantel.

Anti-cancer drugs-Introduction – Anti metabolites- methotrexate- 6 mercapto purine- Alkylating agents-

cyclophosphamide- busulphan and cisplatin – Plant products- vinblatin- vincristine- taxanes, antibiotics- actinomycin D- monoclonal antibodies. Immuno modulators- cyclosporine, tacrolimus, azathioprine and steroids. Toxicology-Drugs used in common poisoning, organophosphates, methyl alcohol, Benzodiazepam.

REFERENCE BOOKS:

1. Lippincott‟s Illustrated Reviews: Pharmacology, 5th edition, by Richard A. Harvey and Pamela C. Champe, Lippincott Williams & Wilkins Publisher
2. Essentials of Medical Pharmacology: K.D. Tripathi, 6th edition, Jaypee Publishers.

COURSE OUTCOMES						
CO1	The student will be able to gain basic knowledge in pharmacology. .					
CO2	The student will be able to gain knowledge of detailed systemic pharmacology.					
CO3	The student will be able to gain knowledge of detailed knowledge of drugs and groups of drugs.					
CO4	The student will be able to gain knowledge of action of drugs					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH19CT110	**ENVIRONMENTAL SCIENCE AND COMMUNITY MEDICINE**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Community Medicine
OBJECTIVES	This course is designed for students to practice community health nursing for the individual, family and groups at both urban and rural settings by using concept and principles of health and community health nursing. It also is designed for students to understand the natural resources and environmental pollution

UNIT – I:

Natural Resources: Introduction, Multi-disciplinary nature of environmental studies, Earth Resources and Man, Renewable and Non-Renewable Resources, Water Resources, Mineral Resources: Food Resources: Effect of modern agriculture, Fertilizer/pesticide problems, Water logging, and salinity, Energy Resources.

Ecosystems: Concept of an Ecosystem, Structure and Functions of an Ecosystem, Producers, Consumers and Decomposers, Cycles in the Ecosystem

Biodiversity: Introduction, Definition: Genetic, Species, Ecosystem diversity, India as a Mega Diversity Nation, Hotspots Of Biodiversity Threats to Biodiversity. Poaching of Wildlife, Man-Wildlife Conflicts, Endangered and Endemic Species Of India, Conservation of Biodiversity

UNIT – II:

Pollution: Definition, Causes, Effects and Control Measures of Air Pollution, Water Pollution, Pollution, Marine Pollution, Noise Pollution, Thermal Pollution, Nuclear hazards, Solid Waste Management role of Individuals in Pollution Prevention.

Social Issues Human, Population and Environment: From Unsustainable To Sustainable Development, Urban Problems Related To Energy, Water Conservation, rain Water Harvesting, global warming, acid rain, ozone layer depletion, nuclear accidents and nuclear holocaust. Environment Protection Act.

UNIT – III:

Concept of health & disease: Concept of health, Definition of health, Philosophy of health- Dimension of health – Concept of wellbeing, Spectrum of health, Responsibility of health – Determinates of health & Indicators of health – Concepts of disease & Concepts of cessation – Natural history of disease – Iceberg phenomenon, Concepts of control – Concepts of prevention – Modes of Intervention, Changing pattern of disease.

UNIT – IV:

Epidemiology: Definition & explanation, Aims, Epidemiologic approach, Basic measurements in epidemiology & tools of measurements – Measurements of Mortality & Morbidity, Epidemiologic methods- Descriptive epidemiology-Analytical epidemiology – case control study – analytical epidemiology – Cohort study – Experimental epidemiology – RCT – Association & Causation Uses of epidemiology (Criteria for judging causality) – Infection disease epidemiology Definitions Dynamic of disease transmission & Modes of transmission – Disinfection – Definition Types Agents used Recommended disinfection procedures-Investigation of an epidemic.

Unit – V:

Environment & health: Definition & components (environment sanitation environmental sanitation) Water: Safe & Whole some water Requirements Uses source of water supply (sanitary well)-Purification of water (1). Large scale purification, (2). Small scale purification – Water Quality – Special treatment of water

Air: Composition The air of occupied room discomfort. Air pollution & its effects. Prevention & Control of air pollution

Ventilation: Definition Standards of ventilation Types of ventilation. Light, Noise & Radiation, Metrological environment, Housing, Disposal of waste Excreta disposal

PRACTICALS:

1. Epidemiology Problems
2. Environmental spotters

REFERENCE BOOK

1. Textbook of Preventive and Social medicine by k. Park, 21st edition, published by Banarsidas Bhanot

COURSE OUTCOMES						
CO1	The student will be able to know the concept of health & illness .					
CO2	The student will be able to know epidemiology of common communicable diseases					
CO3	The student will be able to know epidemiology of common non communicable diseases					
CO4	The student will be able to know the effects of pollution on humans.					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH19CT111	**BASICS OF NURSING**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Community Medicine
OBJECTIVES	This course is designed to help the students to develop an understanding of the nursing profession, philosophy, objectives, theories and application of nursing in various clinical settings. It is aimed at helping the students to acquire knowledge, understanding and skills in techniques of nursing and practice them in supervised clinical settings.

Unit I: Introduction of Health

Health care system, major health problems of the country, nature of disease pattern, technological advances and national health programmes, health for all by 2000 AD. Role of health care workers in the health care delivery system, impact of illness of the individual family and community. History of Nursing, Communication Skills -Relationship with patients, process of communication

UNIT II: Concept of Nursing

Nursing Processes- Problems solving approach, assessment, diagnosis, planning, implementation and evaluation.

Unit III: First Aid and Nursing in Emergencies

Definition, basic principles, scope and rules, Wounds, hemorrhages, shock, fracture, dislocation and muscle injuries, respiratory emergencies, resuscitation, unconsciousness, Miscellaneous conditions, burns, scalds, foreign bodies in the skin, eyes, ear, nose, throat and stomach.Frost bite, effects of heart cramps, bites and stings. Poisoning, Transporting injured persons.

Unit IV: **Personal Hygiene and Health**

Care of skin, mouth, eyes, nails, hair, Menstrual hygiene, clothing, mental health, common health problems of poor personal hygiene. Comfort, Rest and Sleep, Hospital Housekeeping

Unit V: Health Education

Introduction to principles and methods of health education. Use of audio visual aids, mass education, role of nurse in health education.

Course outcome:

1) Knowledge on concept of health, health-illness continuum and health care delivery system.
2) Knowledge on scope of nursing practice.
3) Knowledge on concept, theories and models of nursing practice.
4) Desirable attitude to ethics and professional conduct.

COURSE OUTCOMES	
CO1	The student will be able to gain knowledge on concept of health, health-illness continuum and health care delivery system.
CO2	The student will be able to gain knowledge on scope of nursing practice.
CO3	The student will be able to gain knowledge on concept, theories and models of nursing practice.

CO4	The student will be able to gain knowledge on concept, theories and models of nursing practice.

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES

COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAPH17CT201	**MEDICINE & PHARMACOLOGY THEORY**
	Total Contact Periods – 80
	Total credits -4
	Course Designed by – Department of Pharmacology
OBJECTIVES	This course is designed to help the students to develop an understanding of basic knowledge of pharmacology and knowledge of common drugs/group of drugs

Unit I

Introduction to Medical terminology-roots, prefixes, and suffixes, Vocabulary problems-genetics, aging, infection, injury Skeletal System-Bones and Ligaments-disorders, diagnosis and treatment Muscular system-skeletal, smooth and cardiac muscles-disorders, diagnosis and treatment

Unit 2

Nervous system – brain, spinal cord, peripheral nerves, sense organs-disorders, diagnosis and treatment

Endocrine system-disorders, diagnosis and treatment

Diagnosis includes-blood work, X-ray and imaging

Treatment includes-medical and surgical

Unit 3

Cardiovascular system-heart, blood and blood vessels-disorders, diagnosis and treatment

Respiratory system-air passages, lungs, diaphragm-disorders, diagnosis and treatment

Integumentary system-skin, hair and nails-disorders, diagnosis and treatment

Immune and lymphatic system-disorders, diagnosis and treatment

Diagnosis-blood and imaging

Treatment-Medical and Surgical

Unit 4

Digestive system-mouth, throat, stomach, intestine, liver, gallbladder, pancreas-disorders,

Diagnosis and treatment

Urinary system-kidneys, ureters, bladder, urethra-disorders, diagnosis and

Treatment Reproductive system- male and Female-disorders, diagnosis and treatment

Emergency medicine/Medical ethics

Unit 5 (Pharmacology)

Basic drug effect, classification of drugs acting on nervous, heart, blood pressure, respiratory system, gastrointestinal system, kidneys, hormones, musculoskeletal system and analgesics etc.,

Common drugs – effects and side effects and drug interactions.

Narcotics and scheduled drugs.

REFERENCE BOOKS

1. Principles and Practice of Medicine Davidson Churchill Livingstone, London 23rd edition.
2. Text Book of Medicine API API, Mumbai 11th edition.
3. Clinical Medicine Kumar and Clerk Saunders
4. Manual of Practical Medicine Allagappan Jaypee Brothers
5. Clinical Methods Hutchison W.B Saunders
6. Clinical Examination ISE Macleod's Churchill Livingstone
7. Essentials of Medical Pharmacology K.D Tripathi Jaypee Brothers

COURSE OUTCOMES						
CO1	To understand the basic medical terminology.					
CO2	To learn about different kind of medicine in each body parts (cardiovascular, Digestive System)					
CO3	To learn about basic classification of drugs acting on nervous system,					
CO4	The student will be able to gain knowledge on common drugs, side effects & drug interactions.					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**A**	**B**	**C**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	S			**S**		**M**
Category	Basic Medical Science					
Approval	47th Meeting of Academic Council held in Aug, 2018					

UAPH17CL202	**MEDICINE & PHARMACOLOGY PRACTICAL**
	Total Contact Periods – 80
	Total credits -4
	Course Designed by – Department of Pharmacology
OBJECTIVES	This course is designed to help the students to develop an understanding of basic knowledge of pharmacology and knowledge of common drugs/group of drugs.

1 Case sheet writing
2 Assessment of Communication to the patient
3 BLS (demonstration of basic life support)
4 Ryle's tube, Foley`s colostomy, drains care
5 Anesthesiology-assisting the anesthetist and different techniques of anesthesia
6 Giving a common drug strip and asking questions
7 Giving an ECG strip and asking basic questions
8 ECG taking and interpretation-common cases only

Exam pattern (UE) total marks-60

1. Spotters 10 (10x2=20)
2. Charts/stations-5 (5x4=20)
3. Viva-20

REFERENCE BOOKS

1 Clinical Medicine Kumar and Clerk Saunders
2 Manual of Practical Medicine Allagappan Jaypee Brothers
3 Clinical Methods Hutchison W.B Saunders
4 Clinical Examination ISE Macleod’s Churchill Livingstone

COURSE OUTCOMES						
CO1	To Demonstrate the Basic Life Support.					
CO2	To demonstrate the ECG strip & Interpretation in common cases.					
CO3	To demonstrate the assisting, the anesthetist & different techniques of anesthesia.					
CO4	The student will be able to gain knowledge of different between in different ECG					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	47th Meeting of Academic Council held in Aug, 2018					

UAPH17CT203	**SURGERY / EQUIPMENT‟S THEORY**
	Total Contact Periods – 80
	Total credits -4
	Course Designed by – Department of Surgery
OBJECTIVES	This course is designed to help the students to develop an understanding of basic knowledge of surgical conditions and knowledge of common equipment.

Unit 1

History of Surgery, role of surgeon, importance of teamwork, stresses arising during operative procedure, surgical terminology, types of incision and their indications, internal and external hemorrhage-signs and symptoms, management, tourniquets-use and duration of application and dangers of use.

Sutures and surgical instruments

Unit 2

Pathogenesis, causes, epidemiology, clinical presentation, investigations and management of diseases of the following systems: -

Skin-ulcers, wounds, burns, skin infections (boil, carbuncle, abscess, cysts (epidermoid, dermoid) tumors (basal cell squamous cell carcinoma and melanoma)

Unit 3

Head and neck region-congenital anomalies (cleft lip, cleft palate, bronchial cyst and fistula, thyroglossal cyst) parotid and submandibular glands, oral ulcers, leukoplakia

Jaw tumours, squamous carcinoma of oral cavity, pharynx and larynx

Thyroid and lymph nodes swelling

Arteries-limb ischemia, non-invasive vascular diagnostic tests, atheromatous disease, aneurysm

Raynaud's syndrome, emboli

Veins-Varicose veins, deep vein thrombosis and pulmonary embolism

Unit 4

Breast –mastalgia, fibroadenoma, cyst, breast abscess, cancer

Oesophagus-dysphagia, reflux, hiatus hernia, benign and malignant tumours

Stomach and duodenum-peptic ulcer, carcinoma, pyloric stenosis

Small intestine-small bowel obstruction, intestinal tuberculosis Colon and rectum-amoebic colitis, ulcerative colitis colorectal cancer

Appendix-acute appendicitis, acute abdomen

Anus-Hemorrhoids, pruritus ani, fissure and fistula-in-ano, anorectal abscesses, cancer

Unit 5

Peritoneum and intraperitoneal abscesses, liver – trauma, abscess, cancer

Biliary tract-gallstone disease and carcinoma, pancreas-pancreatitis carcinoma

Hernias of abdominal Wall-Inguinal, femoral, umbilical and epigastric

Urology-diagnostic studies, urinary calculi urinary infection, prostatic hyperplasia, tumors Epididymis Orchitis, hydrocele, carcinoma of testicle and penis

Neurology-diagnosis, treatment and rehabilitation of disorders of entire nervous system

Various procedures like micro discectomy and laminectomy etc.

REFERENCE BOOK

1 Bailey and Love's Short Practice of Surger. Ruseel RCG, Wiliams NS. Arnold Heinemann Publishers.

2 Das K. A Manual on clinical surgery.

3 Hai AA. ASI Text book of Surgery. Tata Mcgraw. Publishers.

4 Manual of Surgical Equipment, Rajendra Singh Sewta

5 Principles and Interpretation of Chest X-rays, P. A. Mahesh, B. Vidyasagar, B. S. Jayaraj

COURSE OUTCOMES	
CO1	To understand the importance of surgical team management
CO2	To understand the major surgical management of each part

CO3	To learn about the list of equipment in each surgical treatment.
CO4	To understand the disease condition in head & abdominal region

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**D**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	47th Meeting of Academic Council held in Aug, 2018					

UAPH17CL204	**SURGERY / EQUIPMENT'S PRACTICAL**
	Total Contact Periods – 80
	Total credits -4
	Course Designed by – Department of Surgery
OBJECTIVES	This course is designed to help the students to develop an understanding of basic knowledge of surgical conditions and knowledge of common equipment.

1 LP /Pleural tapping/ascitic fluid tapping and other common procedures-providing a scenario and asking questions

2 Normal chest X ray presentation/common abnormal pattern

Exam pattern (UE) total marks-60
1. Spotters 10 (10x2=20)

2. Charts/stations-5 (5x4=20)
3. Viva-20

REFERANCE BOOK

1 Das K. A Manual on clinical surgery.

2 Hai AA. ASI Text book of Surgery. Tata Mcgraw. Publishers.

3 Manual of Surgical Equipment, Rajendra Singh Sewta

4 Principles and Interpretation of Chest X-rays, P. A. Mahesh, B. Vidyasagar, B. S. Jayaraj

COURSE OUTCOMES	
CO1	The student will be able to gain knowledge about to understand and practice to do pleural tapping
CO2	The student will be able to gain knowledge about to understand about how to do Ascitic Fluid tapping
CO3	To students will be able to understand about difference between X rays
CO4	The student will be able to gain knowledge about to demonstrate the normal & abnormal pattern chest X Ray

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**A**	**b**	**C**	**D**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	S			**S**		**M**
Category	Surgical					
Approval	47th Meeting of Academic Council held in Aug, 2018					

UAH17CT205	**BASIC PRINCIPLES OF HOSPITAL MANAGEMENT**

	Total Contact Periods – 60
	Total credits -4
	Course Designed by – Department of Hospital Administration
OBJECTIVES	The course will offer basic knowledge about management planning, Organizing, staffing, motivating and controlling management in Health care units

Unit I: Introduction to management & Organization:

The evolution of Management, Definition and Importance of Management. Planning – Organizing – staffing – Motivating – Leading – Controlling. Management of health care units (in brief). Individual behavior in organization; organizational functioning (Group/Individual); Perception; Motivation MBO; Organizational Development.

Unit II: Planning and Management of Hospitals & Clinical Services:

Building and physical layout – space required for separate function – Planning of infrastructure facilities, clinical services, equipment & Human resources – Types of Hospitals. Organization and administration of various clinical services; outpatient services. In-patient services, emergency services, operation theatres, ICU's and super specialty services.

Unit III: Organizing of support clinical services & Hospital management:

Imaging – CSSD – Laboratory – Blood Bank – diet – Medical Records – Mortuary. Housekeeping – Maintenance (Water, Electricity, Civil, Air Conditioning, Lift) – Pest Control – transport – Security. Forecasting – Purchasing & procurement (Sourcing, methods and procedures) – storing & issuing, Concept of inventory control, Maintenance of equipment and contracts (with special reference to major biomedical equipment). Trends in financing of Health and Hospital Services – Classification of Hospitals depending on source of financing – roles of financial institutions.

Unit IV: Personnel and quality Management in Hospital & Marketing:

Concepts – Manpower planning – Training & Developments – Team Building – Conflict Management – Performance appraisal – Office rules and regulations Outline of Strategic Planning and Marketing.

Concepts of quality – Professional Audit System – QA program – Medical Audit – Quality Circle – TOM – Patient Satisfaction – ISO 9000. A brief outline – computerization in hospital departments. Concept, Techniques, Indicators, Evaluation of Efficiency & Effectiveness evaluation of hospital and medical care

services.

Unit V: Ethical, current issues and Legal Aspects of Hospitals management services:

Laws related to Hospital – Medico Legal Cases law of Torts – Autopsy – Dying delaration – CPA. – Waste Management – Telemedicine – Organ Transplantation – Rehabilitation Service – Health Insurance.

Operations Research and Quantitative Methods in Hospital Administration & Nursing Services in a Hospital.

COURSE OUTCOMES						
CO1	The student will be able to gain knowledge about infrastructure facilities, clinical services, equipment and Human resources					
CO2	The student will be able to understand how to maintain inpatient services, outpatient services, ICUs, Emergency services, Operation theatres and super speciality services					
CO3	The student will be able know about Manpower planning, training, developing and knowledge about marketing					
CO4	The student will be able to learn developing and knowledge about marketing					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Management					
Approval	47th Meeting of Academic Council held in Aug, 2018					

UAH17CT205	**IN SERVICE TRAINING CLINICAL DEPARTMENTS ROTATION PRACTICAL**
	Total Contact Periods –180

	Total credits -5
	Course Designed by – Department of Hospital Administration
OBJECTIVES	The course will offer basic knowledge about discharge summaries, biochemical values into the patient's file, develop to communication skill and management of patient's file.

1 Preparing the discharge summaries

2 Entry of biochemical values into the patient's file

3 Assess the communication skills by giving a scenario

4 Medical ward

5 Surgical ward

Exam pattern (UE) total marks-75

1. Spotters 10 (10x3=30)

2. Charts/stations-5 (5x5=25)

3. Viva-20

REFERANCE BOOK

1 Bailey and Love's Short Practice of Surger. Ruseel RCG, Wiliams NS. Arnold Heinemann Publishers.

2 Das K. A Manual on clinical surgery.

3 Hai AA. ASI Text book of Surgery. Tata Mcgraw. Publishers

COURSE OUTCOMES	
CO1	To introduce how to preparing the discharge summaries
CO2	To get know about how to enter biochemical values in patient's file

CO3	To get know about patient details in medical & surgical ward
CO4	To student will be able to understand how to maintain patient's file.

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Management					
Approval	47th Meeting of Academic Council held in Aug, 2018					

UAPH17CT207	**PULMONOLOGY THEORY**
	Total Contact Periods – 80
	Total credits -4
	Course Designed by – Department of Pulmonology
OBJECTIVES	This course is designed to help the students to develop an understanding of basic knowledge of pulmonology related disease conditions..

Unit 1

Upper airway diseases-basic respiratory mechanics, causes and pathophysiology of hypoxia and hypercapnia

Unit 2

Respiratory failure-acute, chronic mechanism and management

Allergy and bronchial asthma, chronic obstructive lung diseases

Unit 3

Restrictive / interstitial lung diseases, pulmonary tuberculosis, occupational lung diseases

Unit 4

Lung Cancer-Primary and secondary, hemoptysis, pneumonia

Pleural diseases-pneumothorax, Pleural effusion

Unit 5

Cardiogenic and noncardiogenic pulmonary edema

Diseases of the Diaphragm and chest wall

REFERANCE BOOK

1 Harrison's Principles of Internal Medicine

2 Davidson's Book of Medicine

3 Macleod's Text Book of clinical examination

4 Hutchison's Clinical Examination

COURSE OUTCOMES						
CO1	To understand the upper respiratory tract mechanism & Lower respiratory tract mechanism.					
CO2	To knowledge in basic pulmonology system					
CO3	The student will be able know about basic of pulmonology related disease conditions.					
CO4	The student will be understanding about respiratory failure, cardiogenic & non cardiogenic conditions					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Pulmonology					
Approval	47th Meeting of Academic Council held in Aug, 2018					

	PULMONOLOGY PRACTICAL

UAPH17CL208	
	Total Contact Periods – 80
	Total credits -4
	Course Designed by – Department of Pulmonology
OBJECTIVES	This course is designed to help the students to develop an understanding of basic knowledge of pulmonology related disease conditions..

1 Phlebotomy, collection of blood samples and storage

2 Urine Collection/analysis/normal and abnormal values significance

3 Biochemical parameters and their normal and abnormal values/significance

3 Viral markers and their significance

4 Culture methods/techniques/swab etc.

5 CSF / Pleural fluid / Ascitic fluid analysis and their significance

6 Mantoux test and its significance

7 Viral markers / HIV testing – interpretation

8 Sterile technique / sterilization of lab

9 P.F.T. (Pulmonology function test)

REFERANCE BOOK

1. Harrison's Principles of Internal Medicine
2. Davidson's Book of Medicine
3. Macleod's Text Book of clinical examination
4. Hutchison's Clinical Examination

COURSE OUTCOMES

CO1	To understand how to collect blood samples & storage
CO2	To get knowledge about urine collection/analysis of urine & Interpretations
CO3	The student will be able know about biochemical parameters & their normal and abnormal values
CO4	To understand the viral markers/P.F.T, Montoux test and significance

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES

COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Pulmonology					
Approval	47th Meeting of Academic Council held in Aug, 2018					

	PAEDIATRICS & GERIATRICS THEORY

UAPH17CT209	
	Total Contact Periods – 80
	Total credits -4
	Course Designed by – Department of Pediatrics
OBJECTIVES	This course is designed to help the students to develop an understanding of basic knowledge of pediatric growth and development, Nutritional requirements and physiological and psychological fundamentals of aging process.

Unit 1

Definition, population, morbidity and mortality in children, maternal, perinatal, neonatal, infant and preschool mortality rates, current National programmes like ICDS, RCH, vitamin A prophylaxis, UIP, IMCI, pulse Polio, AFP, ARI Diarrhoea control programmes

Growth and Development-Anthropometry-Measurement and interpretation of weight, length/height, head circumference, mid-arm circumference. Use of weighing machines, infant meter, interpretation of growth charts: Road to health card and percentile growth curves, abnormal growth patterns-failure to thrive, short stature, growth pattern of different organ systems like lymphoid, brain and sex organs, normal pattern of teeth eruption.

Important milestones in infancy and early childhood in areas of gross motor, fine motor, language and personal-social development psychological and behavioral problems

Measurement and interpretation of sitting height, US: LS ratio and arm span

Age-independent anthropometric measurement principles and application

Unit 2

Nutrition – normal requirements of carbohydrates, protein, fats, minerals and vitamins for newborn, children, pregnant and lactating mothers. Common food sources.

Breast feeding-colostrum and composition of breast milk, initiation and technique of feeding, hazards and demerits of prelacteal feed, top milk and bottle- feeding. Feeding of LBW babies. Infant feeding weaning foods, methods of weaning. Assessment of nutritional status of child based on history and physical examination

Characteristics of transitional and mature milk (foremilk and Hindmilk)

Protein energy malnutrition-definition, classification, features, causes and management.

Vitamins-etio pathogenesis, clinical feature, biochemical and radiological findings, differential diagnosis and management of nutritional disorders

Definition, causes and management of obesity

Immunization: - National immunization programme, vaccine preservation and cold-chain

Vaccination types, contents, efficacy, storage, dose, site, route, contraindications and adverse reactions BCG, DPT, OPV, Measles, MMR and Typhoid.

Pulse Polio Immunization, AFP (Acute flaccid paralysis) surveillance

Special vaccines- Hepatitis B, H influenza B, Pneumococcal, Hepatitis A, chicken pox, Meningococcal and Rabies

Unit 3

Disorders of respiratory system, gastrointestinal tract, central nervous system, cardiovascular system, genitor-urinary system and hematological disorder

Infectious disease – epidemiology, basic pathology, symptoms, signs, complications investigations, differential diagnosis, management and prevention of common bacterial, viral and parasitic infection

Special reference to vaccine-preventable disease-Diarrhoea, LRTI, TB, Polio meningitis, diphtheria, whooping cough, tetanus, measles, mumps, rubella, typhoid, viral hepatitis, Cholera, chicken pox,giardiasis, Amoebiasis, intestinal helminthiasis, malaria, dengue fever, AIDS, Kala azar, leprosy, Chlamydia infection.

Unit 4

Paediatric emergencies –status epilepticus, status asthmaticus / acute severe asthma, shock and anaphylaxis, burns, hypertensive emergencies, gastrointestinal bleed, comatose child, congestive cardiac failure, acute renal failure.

Genetics- principles of inheritance and diagnosis of genetic Disorders-Down`s syndrome

Unit 5

Geriatrics-physiological and psychological fundamentals of aging process

Diet for the aged and management of nutritional disorders

Disorders of major geriatric ailments and management-

Medical-infections, dehydration acute confusional state, osteoporosis,

Degenerative joint diseases, effects of immobility-prevention of contracture and bedsores. Economic and psychosocial needs of the aged. Role of various health care providers including family

REFERANCE BOOK

1. Textbook of Paediatrics – Indian Academy of Paediatrics (IAP)
2. Essential Pediatrics- OP Ghai, CBS Publishers
3. Principles of Paediatrics and Neonatal emergencies – Jaypee Publications

4. Care of Newborn- Meharbaan Singh- Sagar Publications.

5. Hutchison's Clinical Methods- Swash Publications

6. Textbook of Geriatric Medicine by Pratap Sanchetee

COURSE OUTCOMES	
CO1	To understand the fundamentals of physiological & psychological aging process in geriatrics
CO2	To learn about the growth & development of pediatric
CO3	To get learn about normal nutritional requirement in each stages of human being
CO4	To understand the basic disorders involved in respiratory system, gastrointestinal tract, central nervous system, cardiovascular system, genitor-urinary system and hematological disorder

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES

COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Pediatrics and Geriatrics					
Approval	47th Meeting of Academic Council held in Aug, 2018					

UAPH17CL210	**PAEDIATRICS & GERIATRICS PRACTICAL**
	Total Contact Periods – 80
	Total credits -4
	Course Designed by – Department of Pediatrics
OBJECTIVES	This course is designed to help the students to develop an understanding of basic knowledge of pediatric growth and development, Nutritional requirements and physiological and psychological fundamentals of aging process.

1. Life style modifications and their importance-giving some examples and asking questions
2. Dealing with an unconscious patient
3. Care of terminally ill patient
4. Bedsore and its care
5. Neonatal care and resuscitation

Exam pattern (UE) total marks-60

Spotters 10 (10x2=20)

1. Charts/stations-5 (5x4=20)
2. Viva-20

REFERANCE BOOK

1. Textbook of Paediatrics – Indian Academy of Paediatrics (IAP)
2. Essential Pediatrics- OP Ghai, CBS Publishers
3. Principles of Paediatrics and Neonatal emergencies – Jaypee Publications
4. Care of Newborn- Meharbaan Singh- Sagar Publications.
5. Hutchison's Clinical Methods- Swash Publications
6. Textbook of Geriatric Medicine by Pratap Sanchetee

COURSE OUTCOMES	
CO1	To get learn about life style modifications & their importance
CO2	To understand the how to deal with unconscious patient and how to care of terminally ill patient
CO3	The student will be understanding about to understand the how to care bedsore patients
CO4	The student will be able to understand about neonatal care & resuscitation

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Pediatrics and Geriatrics					
Approval	47th Meeting of Academic Council held in Aug, 2018					

UAH17CT206	**HEALTH CARE MANAGEMENT**
	Total Contact Periods – 60
	Total credits -4
	Course Designed by – Department of Hospital Administration
OBJECTIVES	To Explain the effect of personality, attitudes, perceptions and attributions on their own and other's behaviors in team and organizational settings.

UNIT I: Concept of Health Care and Health Policy

Health in Medical Care, Indigenous systems of Health Care & their relevance, Framework for Health

Policy Development.

UNIT II: Health Organisation

Historical development of Health Care System in the third world & India, Organization & Structure of Health administration in India, Type of Health Organization including International Organizations, Private & Voluntary Health care provider, Distribution of Health Care Services, Health Care System in Public Sector Organization, Health systems of Various Countries.

UNIT III: Health Policy and National Health Programme

National Health Policy, Drug Policy, National Health Programs (Malaria, T.B., Blindness, AIDS etc.,) Evaluation of Health Programs (Developing indicators for evaluation), Medical Education & Health Manpower Development.

UNIT IV: Health Economics – Fundamentals of Economics

Scope & Coverage, Demand for Health Services, Health as an Investment, Population, health of Economic Development. **Economics of Health-**

Population based health services, Economics of Communicable and Non Communicable diseases

UNIT V: Methods & Techniques of Economic Evaluation of Health Program

Cost Benefit & Cost Effective Methods

- **Household & Health**

Health Expenditure & Outcome, Rationale for Government action, Household capacity, income and schooling

- **Health Insurance.**

COURSE OUTCOMES	
CO1	The student will be able to Develop skills in using materials tools and/or technology central to health care management
CO2	The student will be able to understand perspectives and values of health care management;
CO3	The student will be able to Integrate health care management theory with real world situations
CO4	The student will be to Develop the ability to work productively with others in diverse teams

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	47th Meeting of Academic Council held in Aug, 2018					

UAPH17CL212	**IN SERVICE TRAINING CLINICAL DEPARTMENTS ON ROTATION**
	Total Contact Periods –180
	Total credits -5
	Course Designed by – Department of Pediatrics
OBJECTIVES	This course is designed to help the students to develop an understanding of basic knowledge of blood test and slide preparation/ staining

1 Pulmonology Department

2 Blood counts and ESR

2 Malarial Parasite identification and its test

4 Disposing lab waste materials

5 Slide preparation / staining

6 Pediatric ward

Exam pattern (UE) total marks-75

1. Spotters 10 (10x3=30)
2. Charts/stations-5 (5x5=25)
3. Viva-20

REFERANCE BOOK

1. Practical Pathology P. Chakraborty Gargi Chakraborty New Central Book Agency, Kolkotta
2. Text Book of Haematology Dr. Tejinder Singh Arya Publications, Sirmour (H.P)

3. Ramanik Sood, Laboratory Technology (Methods and Interpretations) J.P. Bros, New Delhi,
4. Wedling Medical Laboratory Procedures,J.P. Bros, New Delhi.
5. Sachdev K N, Clinical Pathology & Bacteriology, J.P. Bros, New Delhi
6. Chatterjee K.D. Parasitology – in relation to clinical medicine, Chatterjee Medical publication, Calcutta.
7. Ananthnarayan & Panikar, Text book of Medical Microbiology,
8. Basic Laboratory Procedures in Clinical Bacteriology, J.P. Brothers, New Delhi.

COURSE OUTCOMES						
CO1	To understand about blood counts, ESR & slide preparation & staining techniques					
CO2	To get knowledge about malarial parasite identification & test					
CO3	The student will be able to understand about disposing lab waste materials					
CO4	The student will be able to understand about pediatric condition.					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	47th Meeting of Academic Council held in Aug, 2018					

UAPH17CT313	**OBSTETRICS & GYNAECOLOGY THEORY [UE}**
	Total Contact Periods –60
	Total credits -4
	Course Designed by – Department of Obstetrics & Gynecology
OBJECTIVES	This course is designed to enable students to acquire understanding of basic of obstetrics & Gynecological related health condition and identification of various microorganisms.

Unit 1

Bony pelvis-important landmarks of obstetrics significance, fetal skull

Physiological changes in pregnancy/menopause

Conception, abortions, gestational trophoblastic diseases

Vulva-cyst, inflammation, neoplastic

Uterus-endometriosis, adenomyosis, hyperplasia, atrophy, carcinoma

Cervix-erosion, infections, malignancy

Infections-STD, Genital TB, HIV, Torch, vertical transmission of HIV

Unit 2

Obstetrics-Diagnosis of pregnancy, antenatal care and fetal surveillance, first trimester bleeding, normal and abnormal presentations and positions, dystocia due to bony pelvis, soft tissue, high risk of pregnancies, ICGR, IUD, preterm labour, premature rupture of membranes poly and oligohydramnios, postdated delivery

Unit 3

Prolonged labour, obstructed labour, ruptured uterus, previous LSCS third trimester bleeding, preeclampsia and eclampsia, medical disorders complicating pregnancy, surgical emergencies in obstetrics, Rh iso immunization, partogram, ultrasound in obstetrics, fetal monitoring, active management of labour, neonatal resuscitation, analgesia and anesthesia in obstetrics, instrumental deliveries, LSCS, third stage of complications normal and abnormal puerperium, morbidity and mortality, medical auditing in obstetrics.

Unit 4

Gynaecology: -Maldevelopment, injuries, infections, cysts, tumours of female genital tract

Vulva- inflammation, ulcers, atrophy, dystrophies, cysts, neoplasm

Vagina- leucorrhoea, infections, carcinoma

Cervix-erosion, ulcer, dysplasia, carcinoma

Uterus-prolapse, displacements (inversion and retroversion) endometriosis

Abnormal uterine bleeding/post menopause bleeding, endometrial hyperplasia benign and malignant tumors

Primary and secondary amenorrhea, infertility, PCOD, assisted reproductive techniques, choriocarcinoma

Unit 5

Urinary system-stress incontinence, pelvic pain, low back

Ache cancer screening for genital malignancy and breast /Pap

Smear radiography outline and chemotherapy

Neonatology: - Neonatal resuscitation, meconium aspiration syndrome, preterm care, RDS, neonatal jaundice, congenital anomalies, birth injuries

REFERANCE BOOK

1. John DiBaise. Gastroenterology and Hepatology Board Review: Pearls of Wisdom, Third Edition

2. Isidor Segal, C Pitchumoni, Joseph Sung. Gastroenterology and Hepatology Manual.A Clinician's Guide to a Global Phenomenon

COURSE OUTCOMES						
CO1	To understand what are the physiological changes that happen during the maternity period.					
CO2	To get knowledge about antenatal care, pregnancy diagnosis and fetal surveillance.					
CO3	To get knowledge about high risk pregnancy & Labour complication					
CO4	The student will be able to understand about gynecological related conditions and health care management					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**

1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Obstetrics & Gynaecology					
Approval	47th Meeting of Academic Council held in Aug, 2018					

UAPH17CT314	**OBSTETRICS & GYNAECOLOGY THEORY**
	Total Contact Periods –120
	Total credits -5
	Course Designed by – Department of Obstetrics & Gynecology
OBJECTIVES	This course is designed to help the students to develop an understanding of basic knowledge obstetrics & Gynecological related health condition.

1 Obstetrics 7 Gynecology instruments / sterile techniques / instruments (forceps)

2 Pregnancy test

3 Normal Delivery

4 Importance of PAP smear / terminal case

Exam pattern (UE) total marks-60

1. Spotters 10 (10x2=20)
2. Charts/stations-5 (5x4=20)
3. Viva-20

COURSE OUTCOMES	
CO1	To demonstrate the gynecology instruments/ sterile techniques
CO2	To get knowledge about importance of pregnancy test & PAP smear test

CO3	The students will be able to understand normal delivery and labour complication.
CO4	The student will be able to understand about Obstetrics 7 Gynaecology instruments / sterile techniques

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Obstetrics & Gynaecology					
Approval	47th Meeting of Academic Council held in Aug, 2018					

UAPH17CT315	**CARDIOLOGY & CARDIAC SURGERY THEORY**
	Total Contact Periods –60
	Total credits -4
	Course Designed by – Department of Cardiology
OBJECTIVES	This course is designed to help the students to develop an understanding of basic knowledge about cardiovascular diagnostic tools & cardiovascular disease

Unit 1

Basics structural basis of cardiovascular disease, embryology, chambers, heart valves, surface marking, great vessels, blood, cardiac cycle, heart sounds, circulation of blood, cardiovascular responses to exercise, heart failure and compensatory mechanism, cardiac muscle action, coronary perfusion

Unit 2

Cardiovascular diseases-symptoms and signs, pulse, BP, JVP Congenital heart disease-cyanotic and acyanotic heart diseases Hypertension- essential, malignant, systemic and pulmonary hypertension Arterial diseases-atherosclerosis-risk factors, Burger`s disease

Coronary, Rheumatic heart disease, heart failure, cardiac arrhythmias, cardiomyopathies

Peripheral vascular disease, pulmonary thromboembolism,

Systemic diseases affecting the heart, pregnancy and heart disease

Pericardial diseases, Cardiac trauma. Tumors of heart

Unit 3

Prevention of diseases-diagnostic tools-ECG, Chest X-ray, ECHO, TMT, Holter

24 hour ambulatory BP monitoring blood analysis etc.,

Unit 4

Cardiac catheterization and coronary angiography-preparation of patients physically and mentally. Pre and post-operative care and rehabilitation programme. PPI

Importance of lifestyle modification measures.

Unit 5

Cardiac surgery: - Basics-Cardiopulmonary bypass-closed and open heart operation, PDA ligation, closed mitral valvotomy, pulmonary artery banding, block trussing shunt, pericardiectomy, shunt operations, ASD and VSD closure, Tetralogy of Fallot correction, valvular disease surgeries, surgery for transpositions, other corrective surgeries and coronary surgeries.

REFERANCE BOOK

1. Drugs for heart Lionel H. Opie, Bernard J. Gersh 6th Edition Elsevier Saunders
2. Clinical Recognition of Congenital Heart Disease Joseph K. Perloff MD, Ariane Marelli Perloff's 6th Edition Saunders
3. Text book of Cardio vascular Medicine – Heart Disease Braunwald 9th Edition Saunders
4. Text book of Cardiac Surgery Kirklin / Barrat- Boyes 4th edition Saunders

COURSE OUTCOMES	
CO1	To understand the basic structure of cardiovascular system
CO2	To get knowledge about cardiovascular disease
CO3	To understand the diagnostic tools related to cardiovascular system
CO4	To get knowledge about coronary angiography & cardiac surgeries

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	47th Meeting of Academic Council held in Aug, 2018					

UAPH17CL316	**CARDIOLOGY & CARDIAC SURGERY PRACTICAL**
	Total Contact Periods –60
	Total credits -4
	Course Designed by – Department of Cardiology
OBJECTIVES	This course is designed to help the students to develop an understanding of basic knowledge about Surgical instruments and their sterilization procedures

1 Cardiac enzyme – significance

2 Viral markers and their significance

3 Surgical instruments and their sterilization procedures

4 Shifting of trauma patient

5 Assisting Surgeons

Exam pattern (UE) total marks-60

1. Spotters 10 (10x2=20)
2. Charts/stations-5 (5x4=20)
3. Viva-20

REFERANCE BOOK

1. Drugs for heart Lionel H. Opie, Bernard J. Gersh 6th Edition Elsevier Saunders
2. Clinical Recognition of Congenital Heart Disease Joseph K. Perloff MD, Ariane Marelli Perloff's 6th Edition Saunders
3. Text book of Cardio vascular Medicine – Heart Disease Braunwald 9th Edition Saunders
4. Text book of Cardiac Surgery Kirklin / Barrat- Boyes 4th edition Saunders

COURSE OUTCOMES						
CO1	To get knowledge about viral markers & significance of patients					
CO2	To get knowledge about cardiovascular disease & diagnostic tools					
CO3	To get knowledge about how to assisting with surgeons					
CO4	To understand about cardiac enzymes & significance					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Cardiology & Cardiac surgery					
Approval	47th Meeting of Academic Council held in Aug, 2018					

UAH17CT207	**PHYSICIANS OFFICE MANAGEMENT**
	Total Contact Periods – 60
	Total credits -4
	Course Designed by – Department of Nephrology
OBJECTIVES	•To promote scientific management of hospital and advancement of health care systems so as to make it rational, responsive and cost efficient

UNIT I. Outpatient Section

Registration of new cases, Registration of repeat cases, Patient record guide, Laboratory X-Ray reports & reports & reports filing, Alpha index typing & Filing, O.P. Records coding (disease & indexing), O.P. records retrieval, O.P. Statistics

UNIT II. Inpatient Section

Admitting office procedure, Inpatient record removal & forwarding, Ward Census,

UNIT III. Assembling & deficiency checks, I.P. record coding & indexing,

UNIT IV. Discharge Analysis

Incomplete record control, Completed record control, Medico legal procedures & issue of Medical certification, Record retention & destruction of O.P. & I.P. records,

UNIT V. Miscellaneous

Hospital reception, Secretarial practice, Library (Medical)

REFERENCE BOOKS

- Financial Management of the Medical Practice ,J. Max Reiboldt, American Medical Association

- Saunders Medical Office Management,Alice Anne Andress CCS-P CCP

COURSE OUTCOMES	
CO1	The student will be able to Understand and apply resource management concepts (personnel, finance, and material resources) and the processes and strategies needed in specific hospital sectors
CO2	The student will be able to Communicate effectively and develop their leadership and teambuilding abilities

CO3	Apply modern change management and innovation management concepts to optimize structures
CO4	The student will be to Analyze existing hospital service policies and enhance their alignment within the local and national context

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES

COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	47th Meeting of Academic Council held in Aug, 2018					

UAPH17CL318	**IN SERVICE TRAINING CLINICAL DEPARTMENTS ON ROTATION**
	Total Contact Periods –120
	Total credits -5
	Course Designed by – Department of Obstetrics & Gynecology
OBJECTIVES	This course is designed to help the students to develop an understanding of basic knowledge cardiology & Gynecological related health condition

1 Entering the biochemical values and their interpretation

2 Angio report typing

3 I.C.U. Protocols

4 OBG / Gynae ward

`5 Blood Transfusion

Exam pattern (UE) total marks-75

1. Spotters 10 (10x3=30)

2. Charts/stations-5 (5x5=25)

3. Viva-20

REFERENCE BOOK

1. Drugs for heart Lionel H. Opie, Bernard J. Gersh 6th Edition Elsevier Saunders
2. Clinical Recognition of Congenital Heart Disease Joseph K. Perloff MD, Ariane Marelli Perloff's 6th Edition Saunders
3. Text book of Cardio vascular Medicine – Heart Disease Braunwald 9th Edition Saunders

Text book of Cardiac Surgery Kirklin / Barrat- Boyes 4th edition Saunders

COURSE OUTCOMES						
CO1	To understand how to enter biochemical values & interpretation in a patient's file					
CO2	To understand how to write/ type in an angio report in the patient's file					
CO3	To get knowledge about how to maintain I.C.U protocols & OBG/ Gynae ward.					
CO4	To demonstrate about blood transfusion					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Cardiology & Cardiac surgery					
Approval	47th Meeting of Academic Council held in Aug, 2018					

UAPH17CT319	**NEUROLOGY THEORY**
	Total Contact Periods –60
	Total credits -4
	Course Designed by – Department of Neurology
OBJECTIVES	This course is designed to help the students to develop an understanding of basic knowledge about neurological disease condition

Unit 1

Nervous system – basics Neurotransmitters – general principles and common transmitters

Cell membrane – Physicochemical properties, permeability and support, bioelectricity

Genesis of resting membrane potential, action potential, properties of nerve-fibres

Neuromuscular junction

Muscle proteins, excitation – contraction coupling, injury and repair of nervous and muscles, work physiology

Unit 2

Sensory system – Functional organization of sensory system, perception of sensory stimuli, coding, physiology of pain.

Motor system – Functional organization of Motor system, properties of reflexes, brain stem stretch, tendon reflexes, basal ganglia cerebellum and vestibular neck reflexes, maintenance of equilibrium localizing the level of lesion in neurological diseases

Visceral and motivational system - autonomic nervous system, hypothalamus, limbic system, emotions, EEG, sleep and wakefulness, learning, memory and speech

Unit 3

Neuropathology trauma

Inflammatory disorders – pyogenic and tuberculous meningitis, brain abscess, tuberculoma

CSF and its disturbances – cerebral edema, raised intracranial pressure

Cerebrovascular disease – atherosclerosis, thrombosis, embolism, aneurysm, hypoxia, Infarction and hemorrhage

Unit 4

Neurological diseases- clinical examination of nervous system, investigations

Major manifestations – headache, facial pain, raised intracranial tension, faintness, dizziness, syncope, vertigo Disorders of sleep and movement

Unit 5

Sensory disturbances (numbness, tingling and sensory loss) acute confusional state, coma and brain death Aphasia and focal cerebral disorders, disturbances of brain stem, vision and sphincter

Headaches – migraine, cluster and seizures

Cerebrovascular disease – Dementia, meningitis, encephalitis, cranial nerve diseases, spinal cord diseases tumours (primary and secondary) Peripheral neuropathies and demyelinating disorders, multiple sclerosis, Parkinson's disease, extrapyramidal disorders, cerebellar disorders

Motor neuron disease, diseases of muscles, neurological manifestations of systemic diseases, nutritional and metabolic diseases of the nervous system

REFERENCE BOOK

1. Gelb DJ. Introduction to Clinical Neurology, 2 nd ed, Butterworth Heineman 1999.
2. Simon RP, Aminoff MJ, Greenberg DA. Clinical Neurology, 4 th ed. Lange. 1999. "An approach to neurology based on the presenting symptoms or signs, developed while teaching in the clinics and wards of the University of California, San Francisco."
3. Weiner WJ, Goetz CG. Neurology for the Non-neurologist, 4 th ed. Lippincott, Williams & Wilkins. 1999.
4. Preston DC., Shapiro BE. Electromyography and Neuromuscular Disorders. Elsevier
5. Kimura, J. Electrodiagnosis in Diseases of Nerve and Muscle: Principles and Practice.

COURSE OUTCOMES	
CO1	To understand the basic structure and functions of nervous system
CO2	To get knowledge about neurological disease related to clinical examination & investigations
CO3	To get knowledge about sensory disturbance and cerebrovascular disease.
CO4	The student able to understand about motor and sensory system

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	

2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Neurology					
Approval	47th Meeting of Academic Council held in Aug, 2018					

UAPH17CT320	**NEUROLOGY PRACTICAL**
	Total Contact Periods –120
	Total credits -4
	Course Designed by – Department of Neurology
OBJECTIVES	This course is designed to help the students to develop an understanding of basic knowledge about neurological disease condition

1 CT Scan / MRI

Exam pattern (UE) total marks-60

1. Spotters 10 (10x2=20)

2. Charts/stations-5 (5x4=20)

3. Viva-20

REFERENCE BOOK

1. Gelb DJ. Introduction to Clinical Neurology, 2 nd ed, Butterworth Heineman 1999.

2. Simon RP, Aminoff MJ, Greenberg DA. Clinical Neurology, 4 th ed. Lange. 1999. “An approach to neurology based on the presenting symptoms or signs, developed while teaching in the clinics and wards of the University of California, San Francisco.”

3. Weiner WJ, Goetz CG. Neurology for the Non-neurologist, 4 th ed. Lippincott, Williams & Wilkins. 1999.

4. Preston DC., Shapiro BE. Electromyography and Neuromuscular Disorders. Elsevier

5. Kimura, J. Electrodiagnosis in Diseases of Nerve and Muscle: Principles and Practice.

COURSE OUTCOMES						
CO1	To understand the basic clinical condition about neurological condition.					
CO2	To get knowledge about neurological disease related to clinical examination & investigations					
CO3	To get knowledge about diagnostic tool related neurological condition					
CO4	To demonstrate the report in CT scan & MRI scan					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Neurology					
Approval	47th Meeting of Academic Council held in Aug, 2018					
UAPH17CT321	**NEPHROLOGY THEORY**					
	Total Contact Periods –60					
	Total credits -4					
	Course Designed by – Department of Nephrology					
OBJECTIVES	This course is designed to help the students to develop an understanding of basic knowledge about nephrological disease condition					

Unit 1

Genito-Urinary system – basics, innervations of urinary bladder in detail, microscopic structure of the kidney, Juxtaglomerular apparatus, microcirculation of kidney, Histopathology of kidney, ureters, urinary bladder and urethra

Renal haemodynamics and glomerular filtration-renal function, renal function tests micturition urine analysis

Unit 2

Glomerulonephritis – classification primary (proliferative and non – proliferative

Secondary glomerulonephritis- (SLE, purpura, polyarteritis, amyloidosis, diabetes, nephritic syndrome) Acute renal failure, progressive renal failure and end stage renal disease

Pyelonephritis, reflux nephropathy, interstitial nephritis

Unit 3

Renal and genitourinary tract tumours- renal cell carcinoma and nephroblastoma

Renal vascular disorders, kidney changes in hypertension

Unit 4

Urinary bladder-cystitis, carcinoma, urinary tract tuberculosis, urolithiasis and obstructive uropathy

Congenital abnormalities of kidneys and urinary system

Unit 5

Clinical examination of kidney and genitourinary system-symptoms, signs and investigations

Major manifestations-dysuria, pyuria, urethral symptoms

Disorders of urine volume, haematuria, proteinuria, edema

Obstruction of urinary tract, incontinence, renal involvement in systemic disorders Drugs and kidney, renal replacement therapy

REFERENCE BOOKS

1. Renal Physiology.Mc Graw-Hill John Pooler, Douglas Eaton. Vanders.

2. The Renal System.Elsevier Health Sciences Michael J. Field , Carol Pollock , David Harris .

COURSE OUTCOMES	
CO1	To understand the basic structure and function related to the kidney.

CO2	Understand the function of important physiological systems.
CO3	To learn about regulatory function & excretory system
CO4	To understand the concepts of disease conditions & treatment & clinical examination of kidney & genitourinary system

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES

COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Nephrology					
Approval	47th Meeting of Academic Council held in Aug, 2018					

UAPH17CT322	**NEPHROLOGY PRACTICAL**
	Total Contact Periods –120
	Total credits -4
	Course Designed by – Department of Nephrology
OBJECTIVES	This course is designed to help the students to develop an understanding of basic knowledge about nephrological disease condition

1 Ultrasonogram

2 Dialysis

Exam pattern (UE) total marks-60

1. Spotters 10 (10x2=20)

2. Charts/stations-5 (5x4=20)

3. Viva-20

REFERENCE BOOKS

1. Renal Physiology.Mc Graw-Hill John Pooler, Douglas Eaton. Vanders.

2. The Renal System.Elsevier Health Sciences Michael J. Field , Carol Pollock , David Harris .

COURSE OUTCOMES						
CO1	To demonstrate the procedure in ultrasound					
CO2	To get knowledge about basic dialysis techniques.					
CO3	To learn about regulatory function & excretory system					
CO4	The student will able to understand the complication in dialysis patients.					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Nephrology					
Approval	47th Meeting of Academic Council held in Aug, 2018					

UAPH17CT323	**GASTROENTEROLOGY/ORTHOPAEDICS (I.E)**
	Total Contact Periods –60
	Total credits -4
	Course Designed by – Department of Gastrology & Orthopaedics
OBJECTIVES	This course is designed to help the students to develop an understanding of basic knowledge about Gastro and Ortho related disease condition.

Unit 1

Clinical Gastroenterology – basics, functions and physiology of defecation

Preventive gastroenterology- obesity, GI disorders, constipation, diarrhea and dysentery

Unit 2

Surgical asepsis and hygienic endoscopy room – preparation of sterile field – preparation of tables, equipments, instruments for the procedure, giving oral anesthetic agent, transfer and positioning of the patient, care of the room before, during and after the endoscopy procedure, special precautions in handling patients with sepsis, blood borne infection- Hepatitis B, HCV, HIV etc, cleaning and disinfection and terminal disinfection

Basic endoscopy unit- forward viewing, single channel and double channel endoscopy and specific instruments used in endoscopic and colonoscopy procedures

Unit 3

Ortho: -Basics, classification of bones of the limbs for age determination, X-rays of bones, process of repair of bone Infections-osteomyelitis, tuberculosis, mycetoma

Metabolic diseases rickets/osteomalacia, osteoporosis, hyperparathyroidism

Tumors-Primary-Osteosarcoma, osteoclastoma, Ewing's sarcoma chondrosarcoma and secondary tumours

Arthritis-Rheumatoid, osteo arthritis/ankylosing spondylitis

Unit 4

Fracture-definition, classification management, fracture clavicle, shaft of humerus and dislocation of shoulder

Classification of injuries around elbow and management of supracondylar fracture and dislocation of elbow, Monteggia fracture dislocation and fracture of both bones of forearm, Volkamann`s ischemic contracture, fracture lower end of radius, scaphoid and metacarpal fracture

Fracture of pelvis and dislocation of hip, fracture of neck of femur, trochanter, shaft of femur tibia, fibula and metatarsal

Unit 5

Internal derangements of knee, injuries of ankle and foot, amputations

Congenital malformations-CTEV, torticollis, CDH, pseudoarthrosis Disorders of Hip-Coxa vara, Perthes Blood transfusion

REFERENCE BOOKS

1. John DiBaise. Gastroenterology and Hepatology Board Review: Pearls of Wisdom, Third Edition

2. Isidor Segal, C Pitchumoni, Joseph Sung. Gastroenterology and Hepatology Manual.A Clinician's Guide to a Global Phenomenon

COURSE OUTCOMES						
CO1	To understand the basic functions & physiology of defecation					
CO2	To get knowledge about surgical aspect of hygiene					
CO3	To understand the different types of fracture					
CO4	The student will be able to understand about diagnostic tool.					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Gastroenterology:					
Approval	47th Meeting of Academic Council held in Aug, 2018					

UAPH17CT324	**IN SERVICE TRAINING CLINICAL DEPARTMENTS ON ROTATION**
	Total Contact Periods –180
	Total credits -5
	Course Designed by – Department of Gastrology & Orthopaedics
OBJECTIVES	This course is designed to help the students to develop an understanding of basic knowledge about how to manage emergency related condition and ICU patients.

1 Orthopaedic Department

2 Emergency and ICU

3 Medical Department

Exam pattern (UE) total marks-75

1. Spotters 10 (10x3=30)

2. Charts/stations-5 (5x5=25)

3. Viva-20

REFERENCE BOOKS

1. John DiBaise. Gastroenterology and Hepatology Board Review: Pearls of Wisdom, Third Edition

2. Isidor Segal, C Pitchumoni, Joseph Sung. Gastroenterology and Hepatology Manual.A Clinician's Guide to a Global Phenomenon

COURSE OUTCOMES	
CO1	To demonstrate the emergency drugs and use in causality and I.C.U
CO2	To demonstrate the fracture cases in orthopaedic department
CO3	To understand about ortho related clinical conditions
CO4	The student will be able to understand about medical conditions.

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M

3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	47th Meeting of Academic Council held in Aug, 2018					

UAPH17CL425	**INTERNSHIP**
	Total Contact Periods –675
	Total credits -15
	Course Designed by – Department of Gastrology & Orthopaedics
OBJECTIVES	This course is designed to help the students to develop an understanding of basic knowledge about Facilitate Reinforcement of Training & Develop Professionalism, Communication and Team Building skills

REGULATION FOR INTERNSHIP

Internship is an important part of training wherein an Allied Health Science Graduate acquires skills, and applies his knowledge gained during his course of study.

Objectives:

1. To Facilitate Reinforcement of Training.
2. To Develop Professionalism, Communication and Team Building skills.
3. To help in understating of ethical Practices like
   - Rights and dignity of patients
   - Ethical Conduct and professional obligations to colleagues, patients, families and community

❖ The Internship is compulsory for all the candidates. It shall commence after the students have completed and passed all academic and clinical requirements.

❖ The internship shall be for a duration of one year.

❖ The degree shall be awarded after satisfactory completion of internship.

EVALUATION OF INTERNEES

Formative and Summative evaluation are carried out. A **Log Book** is maintained by all internees. No Marks are allotted. Satisfactory completion of Log Book is essential for completion of internship.

Day to day assessment of the internees during the internship posting should be done (Log Book). Summative evaluation is based on observation of the supervisors of different departments and their records in the log books. Based on the formative and summative evaluation the head of department shall issue a certificate of satisfactory completion of training, following which the university shall award the degree.

During internship a project is allocated to each intern by the respective Heads of departments. The project work is marked for 100 (including viva).

Six credits are given for the project

30 hours per credit

Total 180 hours

The Project is done for a Maximum duration of 6 months

Internship credits

The internship is given 15 Credits. (i.e) 45 hrs / Credit. A Total of 675 hours.

After Undergoing internship for a period of Six months, each Department shall conduct an **internal evaluation** of the student to assess the skills developed and progress of the student before issuing the certificate of completeness.

The duration of the posting and skill acquisition in various technology courses are attached.

Number of Working days for interns: -

All Sundays are holidays.

On Government holidays duties are allotted on turns to the interns. In cases of leave or absence extension of posting shall be given which is done at the discretion of the Head of Department.

COMMON TO ALL BRANCHES

INTERNSHIP [VII & VIII SEMESTER]

Sl. No.	Programme	Hours Prescribed	University Examination			
			Project Evaluation	Viva	Total	Credits
1	Internship	675	-	-	-	15
2	Project	180	80	20	100	6
	No Minimum for Passing		Total Credits			2

PHYSICIAN ASSISTANT

Duration of Postings General Surgery OT - 1 month

Obstetrics & Gynaecology OT - 1 month
ENT OT - 15days
Orthopaedics OT - 1 months
Urology OT - 15days
Cardiac OT - 15days
Neuro OT - 15days
ICU - 1 month

COURSE OUTCOMES						
CO1	The student will be able to understand practice speciality					
CO2	The student will be able to develop knowledge about surgical instrument					
CO3	To understand about ortho related clinical conditions					
CO4	The student will be able to understand about medical conditions.					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	47th Meeting of Academic Council held in Aug, 2018					

PROGRAMME ELECTIVE							
		COURSE		TEACHING HOURS			
SI NO	SEMESTER	**COURSE CODE**	**COURSE TITLE**	**L**	**T**	**P**	**CREDITS**
1	I	UAH17CE1020	Fundamentals of Biostatistics	4	4		2
2	I	UAH17CE1021	Communication skills for Health Care professionals	5	5		2
3	II	UAH17CE1022	Biomedical Ethics	3	3		2
4	II	UAH17CE1023	Fundamentals of Human Genetics	4	4		2
5	III	UAH17CE2024	Principles and application of Clinical Genetics	6	4	2	2
6	III	UAH17CE2025	Clinical Examination of the HumanVisual System	5	3	2	2
7	IV	UAH17CE2026	Personality Development and Stress Management	4	4		2
8	IV	UAH17CE2027	First Aid Management & Splinting Techniques	6	4	2	2
9	V	UAH17CE3028	Essentials of Medical Transcription	7	7		2
10	V	UAH17CE3029	Communication and Soft Skill	7	7		2
11	VI	UAH17CE3030	Professional skills Development	6	6		2
12	VI	UAH17CE3031	Library Science and E-Resources	6	6		2

UAH17CE1020	**FUNDAMENTALS OF BIOSTATISTICS**
	Total Contact Periods – 4
	Total credits -2
	Course Designed by – Department of Community Medicine
OBJECTIVES	The course will offer basic knowledge about Biostatistics and to correctly apply a variety of statistical procedures and tests according to objective of study

UNIT I: Introducing the Basics

Introduction, Graphical representation of data, Data collection, Diagrammatic and Graphical Presentation of data, Types of data, limitations.

UNIT II: Measures of Central Tendency & Dispersion

Measures of Central Tendency; Mean, Median, Mode, Geometric mean, Harmonic mean for raw data. Measures of dispersion; Quartile deviation, Mean Deviation - Standard Deviation - Coefficient of variation- Range

UNIT III: Probability

Introduction to Probability, Theorems of probability; Bayer‘s Theorem, Probability Distributions; Discrete & Continuous distributions, Binomial Distribution, Poisson Distribution, Normal Distribution.

UNIT IV: Correlation & Regression Analysis

Correlation Analysis, Types of correlation; Rank Correlation Coefficient. Regression analysis, Types of Regression, Assumptions; Comparison to Correlation.

UNIT V: Hypothesis Testing

Introduction; Types of sampling, Hypothesis testing; Type of errors, Parametric & Non-parametric tests; Mann Whitney’s U test, Chi-square, t-tests, ANOVA.

REFERENCES

1. Don. Mc Neil - Epidemiological Research Methods - Oxford University Press, London.

2. Biostatistics –Principle & Practice – McGraw Hill Education.

3. http://www.ats.ucla.edu/stat/

4. Ahttp://www.statsoft.com/textbook/basic-statistics/

COURSE OUTCOMES						
CO1	The student will be able to understand and apply the Biostatistics.					
CO2	The student will be able to use the software independently for the data analysis.					
CO3	The student will be able determine the correct procedures to use in a given situation					
CO4	The student will be able to interpret the results of hypothesis tests					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Management					
Approval	47th Meeting of Academic Council held in Aug, 2018					

UAH17CE1021	**COMMUNICATION SKILLS FOR HEALTH CARE PROFESSIONALS**
	Total Contact Periods – 5
	Total credits -2
	Course Designed by – Department of Community Medicine
OBJECTIVES	This course deals with essential functional English aspects of the of communication skills essential for the health care professionals.

UNIT: I APPLIED GRAMMAR

Identifying common errors in sentences, Transformation of sentences, Usage of either …or…, Neither… nor…, So… that…, Such… that…, Not only… but also…, unless…

UNIT: II VOCABULARY

Abbreviations used in healthcare, Medical idioms & Phrases

UNIT: III WRITING

Letter writing, Curriculum Vitae writing, covering letter, Creative writing – invite, posters, Essay writing, summary writing, note taking, report writing.

UNIT: IV SPOKEN COMMUNICATION

Telephone etiquette, Importance of Stress, Intonation and rhythm, speaking; describing simple process, Filling a form etc., - Asking and answering questions; Debate/Oral Reporting

UNIT: V LISTENING AND READING SKILLS:

Listening and reading comprehension exercises.

Textbook Recommended:

1. Effective English Communication by Krishna Mohan and Meenakshi Raman, Tata Mc Graw –Hill Publishing Company Limited, New Delhi.

2. English for Colleges and Competitive Exams by Dr. R. Dyvadatham, Emerald Publishers.

COURSE OUTCOMES						
CO1	The student will be able to express better.					
CO2	The student will be able to get knowledge about MOA, adverse effects					
CO3	The student will Grow personally and professionally					
CO4	The student will Develop confidence in every field					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	47th Meeting of Academic Council held in Aug, 2018					

UAH17CE1022	**BIOMEDICAL ETHICS**
	Total Contact Periods – 3
	Total credits -2
	Course Designed by – Department of Community Medicine
OBJECTIVES	To provide basic skills in: A) Approaching ethical issues. B) Analysis and statement of issues. C) Understanding the relevant ethical principles invoked..

Introduction to Bioethics

Bioethical issues related to Healthcare &Medicine 5

2Anatomy - Cadaver ethics, Human dignity, PNDT, Disposal of cadaver, Genetic Counseling 7

Physiology - Animal ethics, Health policy privacy 7

Biochemistry & Pathology - Prudence of investigation confidentiality, Patients bill of rights,

Disposal of investigative material, Integrity, Blood transfusion 5

Pharmacology - Rational drug prescribing, Clinical trials, Risk minimization, Animal ethics

Microbiology - Hand wash, Drug resistance minimization, Prudence of investigation confidentiality, Sterilization procedure, Biosafety and bio hazard 5

Medicolegal aspects of medical records

Introduction to Intellectual Property:

Concept of Intellectual Property Kinds of Intellectual Property

Patents, CopyrightsDesigns, Trademarks,Geographical Indication, Infringement of IPR, Its protection and Remedies Licensing and its types

REFERENCE BOOKS

1. Contemporary issues in bioethics – Beauchamp &walters (B&W) 4th edition.
2. Classic philosophical questions by Gloud (8th Edition)
3. Case book series and booklets by UNESCO Bioethics Core curriculum 2008
4. Encyclopedia of Bioethics 5 vol set, (2003) ISBN-10: 0028657748
5. Intellectual property rights- Ganguli-Tat McGrawhill. (2001) ISBN-10: 0074638602,
6. Intellectual Property Right- Wattal- Oxford Publicatiopn House.(1997) ISBN:0195905024

COURSE OUTCOMES	
CO1	The students will be able to: Recognize what constitutes an ethical concern in health care
CO2	The student will be able to understand the clinical evaluations of Disease Condition
CO3	The student will be able to Understand better the complexity and multi-dimensionality of medical ethical concerns and uniqueness of each problem.

CO4	The student will get the knowledge of plagiarism in their innovations which can be questioned legally

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	47th Meeting of Academic Council held in Aug, 2018					

UAH17CE1023	**FUNDAMENTALS OF HUMAN GENETICS**
	Total Contact Periods – 4
	Total credits -2
	Course Designed by – Department of Genetics
OBJECTIVES	To Comprehend the Chromosomal basis of inheritance

I - Introduction to cellular components

Structure and morphology of various types of cells - Biochemical composition - Cellular organelles - Composition and components of nucleus - Chromosomes - Cell division and Mechanics of cell division and regulation.

II - Structure and functions of nucleic acids

Functions, Structure and characteristics of nucleic acids - Types of mutations -Genetic variations and polymorphisms

III - Chromosomal basis of inheritance

Chromosome behavior and inheritance pattern in man - Single gene Mendelian disorders: autosomal dominant, recessive, sex linked dominant and recessive - Polygeneic and mitochondrial inheritance.

III - Origin and detection of genetic disorders

Mutation - Non-disjunction - Chromosomal abnormalities and clinical phenotypes of common genetic syndromes (Down's syndrome, Patua‘s syndrome, Edward syndrome, Turner syndrome and Klinefelter's syndrome, Cri-du-caht syndrome)- Karyotyping, Neural tube defects, Carcinogenesis.

IV–Biochemical basis for the inborn errors of metabolism

General characteristics of inborn errors of metabolism – Incidence - etiology - Folic acid metabolism - triple markers - New born screening, prevention and management. False positive and false negative -Ethical principles of Genetic counseling for prenatal diagnosis - Fetal rights – Regulation and prevention of misuse act 1994.

REFERENCE BOOKS

1. A guide to genetic counseling, 2nd edition, D.L. Baker, J.L. Schuette and W.R. Uhlmann, Wiley –Leiss Publications 2002.

2. Emery Elements of Medical Genetics, 9th edition, Robert F. Mueller & Ian D. young, Churchill Livingstone, 1995.

3. Medical Genetics, 3rd edition, Lynn B. Jorde, John C. Carey, Michael J. Bamshad, & Raymond L. White, Mosby, 2003.

COURSE OUTCOMES	
CO1	The student will be able to Be able to describe the chromosomal basis of inheritance and how alterations in chromosome number or structure..
CO2	The student will be able to understand of the differences and similarities between diagnostic, predictive and carrier genetic testing.

CO3	The student will be able to know detailed information of Chromosome behavior and inheritance pattern in man
CO4	The student will be to understand the phenotype and genotype.

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	47th Meeting of Academic Council held in Aug, 2018					

UAH17CE2024	**PRINCIPLES AND APPLICATION OF CLINICAL GENETICS**
	Total Contact Periods – 6
	Total credits -2
	Course Designed by – Department of Nephrology
OBJECTIVES	To develop awareness about Genetic testing, Genetic counseling, Philosophy and Ethos of Genetic services

I -Principle and components of genetic testing Lay out of genetic laboratories - Genetic testing, Genetic counseling, Philosophy and Ethos of Genetic services, Types of testing- Cytogenetic testing- Molecular cytogenetic testing- DNA testing.

II - Cytogenetic Testing Indications, Type of sample, Sampling and transport conditions, Karyotyping - chromosome identification, merits and demerits of conventional cytogenetic testing

III - Molecular Cytogenetic testing

Indications, Type of sample, Sampling and transport conditions - Fluorescence in-situ hybridization, fluorescence signal enumeration, merits and demerits of FISH.

IV - DNA testing

Organization of human genome, Structure and function of genetic material, Polymerases chainmreaction - Types, principles and testing, Sequencing.

V - Practical:

Case studies

Reference books

1. Practical Genetic counseling, Peter S. Harper, 6th edition, Hodder Headline Group 2004.

2. Medical Genetics, 3rd edition, Lynn B. Jorde, John C. Carey, Michael J. Bamshad, &

Raymond L. White, Mosby, 2006.

3. Genetics in Medicine, Thompson & Thompson, 6th edition, Elsevier 2004.

4. Practical Genetic counseling, Peter S. Harper, 6th edition, Hodder Headline Group 2004.

COURSE OUTCOMES						
CO1	The student will be able to become familiar with and practice genetic tests.					
CO2	The student will be able to provide better patient care					
CO3	The student will be able to know detailed information about Genetic Counselling					
CO4	The student will be to know about Genetic testing.					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	47th Meeting of Academic Council held in Aug, 2018					

UAH17CE2025	**CLINICAL EXAMINATION OF THE HUMANVISUAL SYSTEM**
	Total Contact Periods – 5
	Total credits -2
	Course Designed by – Department of Ophthalmology
OBJECTIVES	The core objective of this course is to gain in depth knowledge on the structural and physiological functions of the various parts of the eye and the different examination procedures for the ocular structures.

: **I - History Taking**

Importance of history taking, Demographic data and its importance, Chief presenting symptoms, History of present illness, History of past illness, Family History, Common ocular symptoms and their causes – defective vision, watering eyes, discharge, redness, pain, asthenopia and other symptoms

II - Visual Acuity measurement

Distance visual acuity-charts, methods and measurements; Near visual acuity –charts, methods and measurements; contrast sensitivity testing; colour vision testing

III - External Examination

Examination of head posture, examination of forehead, examination of eye brows, examination of eyelids, examination of Lacrimal apparatus, examination of eyeball on the whole, examination of the cornea, conjunctiva sclera and anterior chamber, eye movements, muscle balance and squint evaluation

IV - Anterior segment Evaluation

Slit lamp examination of the eyelids, cornea, conjunctiva, anterior chamber depth, iris, and lens Intraocular pressure measurements using non contact tonometer

V - Posterior segment Evaluation

Introduction and importance of posterior segment evaluation- direct and indirect ophthalmoscopy

REFERENCE BOOKS:

1. Comprehensive Ophthalmology – A K Khurana, 5th edition, New Age International Publishers,

2012.

2. Clinical Ophthalmology – Jack J Kanski, 7th edition, Butterworths, 2012

1. Borish's Clinical Refraction - William J. Benjamin, Irvin M. Borish, Butterworth-Heinemann, 2006

COURSE OUTCOMES						
CO1	The student will be able to have the skill to perform basic ophthalmic examination					
CO2	The student will be able to understand concept of theory and clinical evaluation of disease conditions gain an in- depth knowledge on disease outline and clinical evaluation of patients					
CO3	The student will be able to depth knowledge on the functions of the visual system					
CO4	The student will have the skill to perform basic ophthalmic examination					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	47th Meeting of Academic Council held in Aug, 2018					

UAH17CE2026	**PERSONALITY DEVELOPMENT AND STRESS MANAGEMENT**
	Total Contact Periods – 4
	Total credits -2
	Course Designed by – Department of HR
OBJECTIVES	To Explain the effect of personality, attitudes, perceptions and attributions on Health stress, coping and relaxation.

Unit 1

Introduction to Personality Development, Different Stages of Development, Types of personalities, personality perspectives and theories

Unit 2

How needs impact personality, Maslow‘s hierarchy of need, Basic Personality Traits; Values, Beliefs, Interactions, Experiences, Environmental influences, the big five dimensions.

Unit 3

Stress; causes, effect and types, Stress resistant personalities, Relaxation; training aspects importance and Body works.

Unit 4

Health stress and coping, Understanding and communicating our health needs, Behavioral and psychological correlates of illness.

Unit 5

Soft skill; need and importance, Personality development and soft skills. Effective communication, listening, speaking, writing, interpretation part of soft skills and personality

Learning Outcome:

By successfully completing this course, students will be able to Describe how a personality develops.

- Define the stages of personality development.
- Define personality types.

- Describe basic personality traits.
- Personality and stress.
- Health stress, coping and relaxation.
- Soft skills and personality.

Text Books:

1. Hurlock (1976). Personality development. Tata McGraw Hill.

2. Baron R A, Psychology 5th edition, Pearsons publication.

3. Abraham A, General Psychology, Tata Mc Graw hill Education private limited.

Reference Books:

1. Lazarus J Stress Relief and Relaxation Techniques, Viva Book Private limited.

2. Shelly E. Taylor, Health psychology, 7th edition, TATA McGrawHil, New Delhi.

COURSE OUTCOMES						
CO1	The student will be able to Define the stages of personality development.					
CO2	The student will be able to Describe basic personality traits.					
CO3	The student will be able to Describe how a personality develops- Personality and stress.					
CO4	The student will be able to Develop the Soft skills and personality.					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Management					
Approval	47th Meeting of Academic Council held in Aug, 2018					

UAH17CE2027	**FIRST AID MANAGEMENT & SPLINTING TECHNIQUES**
	Total Contact Periods – 6
	Total credits -2
	Course Designed by – Department of Medicine
OBJECTIVES	Students will gain additional skills in interventional procedures and Differentiate between emergency situation and other use.

Unit-I BACKGROUND INFORMATION

- The importance of first Aid
- First aid supplies
- First aid and the law
- Prevention practices

Unit-II ACTION AT AN EMERGENCY

- Recognizing Emergencies
- Deciding to act
- Seeking medical care
- Disease transmission
- Rescuer reactions

Unit –III BLEEDING AND WOUNDS

- External bleeding
- Wound infection
- Amputations
- Impaled objects
- Wound that require medical care
- Internal Bleeding
- Dressing and Bandages

Unit-IV BONE, JOINT AND MUSCLE INJURIES

- Bone injuries
- Splinting
- Joint injuries
- RICE injuries
- Muscle injuries
- Splints – Introduction, Types, Uses, Splinting guidelines, Slings, Procedure,Complications

UNIT-V RESCUING AND MOVING INJURIES

- Water rescue
- Ice rescue
- Electrical Emergency Rescue
- Hazardous materials incidents
- Motor Vehicle crashes
- Fires
- Confined spaces
- Triage – what to do with multiple victims
- Moving victims

Text books:

1. First Aid CPR and AED standard (sixth edition)

2. First aid book-St Johns Ambulance services

3. Text book of Orthopaedics – Natarajan

4. Text book of Orthopaedics – John Ebenezer Reference books: First Aid and Management of Minor Injuries by Jon Dallimore First Aid and Beyond by Dan Wolfe - Smashwords , 2014 International Trauma Life Support Provider Manual Essentials Orthpaedics Mark D Mille

COURSE OUTCOMES	
CO1	The student will be able to Differentiate between emergency situation and other use.
CO2	The student will be able to know about the basics of concepts of disease & outlines of clinical evaluation.
CO3	The student will be able to List management, assessment, and care steps for upper extremity and lower extremity fractures.
CO4	The student will be to know Splinting techniques of lower extremities –Thomas splint, sam splint, etc

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	47th Meeting of Academic Council held in Aug, 2018					

UAH17CE3028	**ESSENTIALS OF MEDICAL TRANSCRIPTION**
	Total Contact Periods – 7
	Total credits -2
	Course Designed by – Department of MRD
OBJECTIVES	Provide Hands on training on English Language and listening comprehension and provide foundation to learn medical terminology & learn laboratory report

Unit 1

The Medical Transcriptionist ‘s career including Ethical& Legal Responsibilities Introduction to Medical transcription, Job Opportunities, Transcription Skills, Medical records, Certification for Medical Transcriptionists, Ethical and Legal responsibilities

Unit 2

Equipments in Transcription Equipment, Computer Systems, Ergonomics, Dictation Equipments, Hand and Foot Control Dictation, Transcription Preparation

Unit 3

Transcription Guidelines Punctuations, Proof reading notations, Formats and styles, SOAP for Chart notes; Discharge Summary

Unit 4 PRACTICAL:

1. Equipments for Medical Transcription,2. Typing for the beginners, 3. Vocabulary, 4. Proof reading Notations , 5. Formats and styles in document preparation , 6. Preparation of chart notes, 7. Listening Comprehension, 8. Transcription check off sheet

REFERENCES BOOKS:

1. Medical Key boarding, Typing, and Transcribing Techniques and procedures 4th Edition, March Otis Diehl, Marilyn Takahashi Fordney, W.B. Saunders Company
2. The AAMT Book of Style for Medical Transcription, Claudia J. Tessier
3. CD‘s available for:
a. Stedman‘s Electronic Medical Dictionary 4.0
b. American Drug Index 2003

Text Books:

1. Medical Key boarding, Typing, and Transcribing Techniques and procedures 4th Edition, March Otis Diehl, Marilyn Takahashi Fordney, W.B. Saunders Company
2. The AAMT Book of Style for Medical Transcription, Claudia J. Tessier

COURSE OUTCOMES	
CO1	The student will be able to Demonstrate their basic skills in the knowledge of Vocabulary, Medical terminology
CO2	The student will be able to Demonstrate their basic skills in the preparation of chart notes. .

CO3	The student will be able to Demonstrate skills in listening comprehension
CO4	The student will be Be able to identify accurate format for medical document preparation

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES

COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Medical Records					
Approval	47th Meeting of Academic Council held in Aug, 2018					

UAH17CE3029	**COMMUNICATION AND SOFT SKILL**
	Total Contact Periods – 7
	Total credits -2
	Course Designed by – Department of Human Resources
OBJECTIVES	This course is designed to equip the students with essential soft skills needed for workplace and improve personality.

LEARNING OUTCOME:

This course is designed to help the students to

- Foster healthy attitude.
- Develop effective inter and intra personal skills to be an effective team worker.
- Communicate effectively in both academic and professional setup

UNIT: I ASPECTS OF COMMUNICATION

Importance of communication, Process, Barriers, Non verbal Communication

UNIT: II SPEAKING

How to Open and Close conversations, Introductions and Address System, Expressing Courtesy, Giving Compliments and replying to Compliments, Presentation Skills, Telephonic conversation and telephone etiquette

UNIT – III PRESCRIBED READING

Tom Sawyer by Mark Twain, Bacon‘s Essays: - Of Goodness and goodness of nature

UNIT – IV WRITING

Letter writing - Letter of Complaints, Inviting and Declining an invitation, Writing Memos and Emails, Grammar, Spelling & Punctuation, Use of Dictionary & Thesaurus.

UNIT – V SOFT SKILLS

Active Listening Skills, Assertive Skills, Negotiation and Persuasive Skills, Interview Skills

Text Book:

Developing Communication Skills by Krishna Mohan and Meera Banerji, II edition, Macmillan.

Reference Books:

1. Communication Skills for Engineers and Scientists by Sangeeta Sharma and Binod Mishra, PHI Learning Private Limited, New Delhi.

2. English and soft skills by S.P. Dhanavel, Orient Black Swan

3. Effective English Communication by Krishna Mohan and Meenakshi Raman, Tata McGraw –Hill Publishing Company Limited.

4. Technical Communication – Principles and Practice, by Meenakshi Raman and Sangeetha Sharma, II edition, Oxford University Press.

5. Developing Communication Skills by Krishna Mohan and Meera Banerji, II edition, Macmillan.

6. The Complete Guide to Functional Writing in English by M. Sarada, Sterling Publishers (P) Ltd., New Delhi.

7. Speaking Naturally: Communication Skills in American English by Bruce Tillitt and Mary Newton Bruder, Cambridge University Press .

COURSE OUTCOMES	
CO1	The student will be able to Foster healthy attitude
CO2	The student will be able to develop effective inter and intra personal skills to be an effective team worker
CO3	The student will be able to Develop effective inter and intra personal skills to be an effective team worker
CO4	The student will be able to Communicate effectively in both academic and professional setup

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	47th Meeting of Academic Council held in Aug, 2018					

UAH17CE3030	**PROFESSIONAL SKILLS DEVELOPMENT**
	Total Contact Periods – 6
	Total credits -2
	Course Designed by – Department of Human Resources
OBJECTIVES	To Advance the students' intellectual curiosity, competency and skills in preparation for employment

1. Communication Skills

Importance of Communication skills in Public health; Communication process; Methods of communication; Types of communication: Verbal and Non-verbal; Impediments to effective communication; Feedback

2. Oral Presentation Skills:

Preparation and planning; Structure; Audio-visual aids; Creating interest and establishing a relationship with the audience; Body language; Voice and pronunciation; Review

3. Writing skills:

Writing a scientific paper; Writing a proposal; Structure of an article; References and literature review; Peer-review process-Publication bias; International guidelines for publication in journals; Professional Ethics

4. Leadership in Public health:

Leadership styles and trait; Motivation skills; Interpersonal communication skills; Problem solving skills; Decision making skills; Management skills; Communication Skills

5. Manuscript writing

Writing introduction, objectives, methodologies, major finding, discussion, conclusion and recommendation

6. Seminar presentations

Use of computers present data and information on recent topics

Text Books:

1. Professional Writing Skills, A self paced training programme by Janis Fisher Chan and Diane Lutovich. Advanced Communication Designs Inc, 2003. San Anselmo, CA. ISBN 0963745549

2. Speaking Your Mind: Oral Presentation and Seminar Skills By Rebecca Stott, Tory Young, Cordelia Bryan Contributor Rebecca Stott, Tory Young, Cordelia Bryan Published by Longman, 2001 ISBN 0582382432, 9780582382435

3. Public Health Leadership: Putting Principles into Practice Louis Rowitz, PhD. Jones and Bartlett Publishers, 2003. ISBN-13: 9780763725013 ISBN-10: 0763725013

COURSE OUTCOMES						
CO1	The student will be able to Develop good written and oral communication abilities					
CO2	The student will be able to Develop an understanding of team building and leadership skills.					
CO3	The student will be able to Develop knowledge regarding capacities needed to work independently within diverse work environments					
CO4	The student will be able to know how to maintain Records and Reports and demonstrate the procedure.					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	47th Meeting of Academic Council held in Aug, 2018					

UAH17CE3031	**LIBRARY SCIENCE AND E-RESOURCES**
	Total Contact Periods – 6
	Total credits -2
	Course Designed by – Department of Library science
OBJECTIVES	To gain knowledge about Documentary Sources of Information and Library Automation

Unit 1 BASIC CONCEPTS AND INFORMATION SERVICES

Meaning of Library – Types of Library -– Library layout - Functions of Library – need for Library – Meaning of ISBN and ISSN – Collection management - Library Classification system - Five laws of Library Science – Inter Library Loan (ILL), Communication theories and models. Barriers to communication. Levels of

communications – Intrapersonal, interpersonal and mass communication. Information services – literature search Methods of Dissemination of information Current Awareness Service (CAS), Selective Dissemination of Information (SDI), Document delivery service, Alert services, and Internet services.

Unit 2 INFORMATION SOURCES

Documentary Sources of Information, Print, and Non-print including Electronic, Human and Institutional sources: Nature, types, characteristics and utility. Internet as a source of Information. Primary sources of information – Journal, conference volume, patents, research reports, thesis and their electronic format – Secondary sources of information - Bibliography, Encyclopedia Dictionary, Yearbook, Directory, Geographical Source, Textbook, Index and Abstracts.

Unit 3 LIBRARY AUTOMATION

Definition need, Purpose, advantages. Planning for Library automation. Automation of Library operations - Acquisitions, Cataloguing, OPAC, Circulation and Serials control. Evaluation of Library automation systems - Application of Barcode and RFID Technology for Library Functions. Basic concepts: Bibliography, bibliographic coupling, Impact factor.

Unit 4 ELECTRONIC INFORMATION SOURCES

Electronic Information resources: Meaning and definition, Growth and development, Types. EJournals, e-Books, e-Theses, e-newspapers, Blogs, Wikis. Free databases and fee based bibliographical and full text databases, subject related websites, Institutional repositories, Open Archives and digital Libraries. - Resource Sharing and Networks: Consortia- Importance and objectives. Study of Information networks and Digital Library Consortia. Types of computer networks: Local Area Networks – Concept, Topologies - Bus, Star, Mesh, Tree, and Ring). Wide Area Networks and Metropolitan Area Networks- Concepts, Circuit switching and Packet switching. Difference between LAN and WAN. Wireless Networks –Mobile telephones.

Unit 5 DIGITAL LIBRARIES

Digital Libraries: Concepts and issues. Understanding digital Libraries Content creation –Electronic documents, files and file formats. Study of different file formats. Studying PDF in detail- features of PDF. Digitization-scanning, Digital Preservation, Conservation and Archival Management – Problems and prospects. Open Access Movement and Institutional repositories.

TEXTBOOKS

1. Ranganathan, S.R The five Laws of Library Science UBS Publishers, 1988.

2. Ranganathan, S.R. Library Manual Sarada Ranganathan endowment for Library Science, 1989.

3. Ranganathan, S.R. Cataloguing Practice Sarada Ranganathan endowment for Library Science 1990

COURSE OUTCOMES						
CO1	The student will be able to analyze and understand the query					
CO2	The student will be able to Identify the sources of information					
CO3	The student will be able to Find out the information					
CO4	The student will be able to know how to maintain Records and Reports and demonstrate the procedure.					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Library Science					
Approval	47th Meeting of Academic Council held in Aug, 2018					

PROGRAMME ELECTIVE							
		COURSE		TEACHING HOURS			
SI NO	SEMESTER	**COURSE CODE**	**COURSE TITLE**	**L**	**T**	**P**	**CREDITS**
1	I	UAH19CE1020	Fundamentals of Biostatistics	4	4		2
2	I	UAH19CE1021	Communication skills for Health Care professionals	5	5		2
3	II	UAH19CE1022	Biomedical Ethics	3	3		2
4	II	UAH19CE1023	Fundamentals of Human Genetics	4	4		2
5	III	UAH19CE2024	Principles and application of Clinical Genetics	6	4	2	2
6	III	UAH19CE2025	Clinical Examination of the Human Visual System	5	3	2	2
7	IV	UAH19CE2026	Personality Development and Stress Management	4	4		2
8	IV	UAH19CE2027	First Aid Management & Splinting Techniques	6	4	2	2
9	V	UAH19CE3028	Essentials of Medical Transcription	7	7		2
10	V	UAH19CE3029	Communication and Soft Skill	7	7		2
11	VI	UAH19CE3030	Professional skills Development	6	6		2
12	VI	UAH19CE3031	Library Science and E-Resources	6	6		2

UAH19CE1020	**FUNDAMENTALS OF BIOSTATISTICS**
	Total Contact Periods–4
	Total credits -2
	Course Designed by–Department of Community Medicine
OBJECTIVES	The course will offer basic knowledge about Biostatistics and to correctly apply a variety of statistical procedures and tests according to objective of study

UNIT I: Introducing the Basics

Introduction, Graphical representation of data, Data collection, Diagrammatic and Graphical Presentation of data, Types of data, limitations.

UNIT II: Measures of Central Tendency & Dispersion

Measures of Central Tendency; Mean, Median, Mode, Geometric mean, Harmonic mean for raw data. Measures of dispersion; Quartile deviation, Mean Deviation - Standard Deviation - Coefficient of variation- Range

UNIT III: Probability

Introduction to Probability, Theorems of probability; Bayer‘s Theorem, Probability Distributions; Discrete & Continuous distributions, Binomial Distribution, Poisson Distribution, Normal Distribution.

UNIT IV: Correlation & Regression Analysis

Correlation Analysis, Types of correlation; Rank Correlation Coefficient. Regression analysis, Types of Regression, Assumptions; Comparison to Correlation.

UNIT V: Hypothesis Testing

Introduction; Types of sampling, Hypothesis testing; Type of errors, Parametric & Non-parametric tests; Mann Whitney’s U test, Chi-square, t-tests, ANOVA.

REFERENCES

1. Don. Mc Neil - Epidemiological Research Methods - Oxford University Press, London.

2. Biostatistics –Principle & Practice – McGraw Hill Education.

3. http://www.ats.ucla.edu/stat/

4. Ahttp://www.statsoft.com/textbook/basic-statistics/

COURSEOUTCOMES	
CO1	The student will be able to understand and apply the Biostatistics.
CO2	The student will be able to use the software independently for the data analysis.
CO3	The student will be able determine the correct procedures to use in a given situation
CO4	The student will be able to interpret the results of hypothesis tests

MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	S			**S**		**M**
Category	Management					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH19CE1021	**COMMUNICATION SKILLS FOR HEALTH CARE PROFESSIONALS**
	TotalContactPeriods–5
	Total credits -2
	Course Designed by–Department of Community Medicine
OBJECTIVES	This course deals with essential functional English aspects of the of communication skills essential for the health care professionals.

UNIT: I APPLIED GRAMMAR

Identifying common errors in sentences, Transformation of sentences, Usage of either …or…, Neither… nor…, So… that…, Such… that…, Not only… but also…, unless…

UNIT: II VOCABULARY

Abbreviations used in healthcare, Medical idioms & Phrases

UNIT: III WRITING

Letter writing, Curriculum Vitae writing, covering letter, Creative writing – invite, posters, Essay writing, summary writing, note taking, report writing.

UNIT: IV SPOKEN COMMUNICATION

Telephone etiquette, Importance of Stress, Intonation and rhythm, speaking; describing simple process, Filling a form etc., - Asking and answering questions; Debate/Oral Reporting

UNIT: V LISTENING AND READING SKILLS:

Listening and reading comprehension exercises.

Textbook Recommended:

1. Effective English Communication by Krishna Mohan and Meenakshi Raman, Tata McGraw –Hill Publishing Company Limited, New Delhi.

2. English for Colleges and Competitive Exams by Dr. R. Dyvadatham, Emerald Publishers.

COURSEOUTCOMES						
CO1	The student will be able to express better.					
CO2	The student will be able to get knowledge about MOA, adverse effects					
CO3	The student will Grow personally and professionally					
CO4	The student will Develop confidence in every field					
MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**		S	
4	S			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH19CE1022	**BIOMEDICAL ETHICS**
	TotalContactPeriods–3
	Total credits -2
	Course Designed by–Department of Community Medicine
OBJECTIVES	To provide basic skills in: A) Approaching ethical issues. B) Analysis and statement of issues. C) Understanding the relevant ethical principles invoked..

Introduction to Bioethics

Bioethical issues related to Healthcare &Medicine 5

2Anatomy - Cadaver ethics, Human dignity, PNDT, Disposal of cadaver, Genetic Counseling 7

Physiology - Animal ethics, Health policy privacy 7

Biochemistry & Pathology - Prudence of investigation confidentiality, Patients bill of rights, Disposal of investigative material, Integrity, Blood transfusion 5

Pharmacology - Rational drug prescribing, Clinical trials, Risk minimization, Animal ethics

Microbiology - Hand wash, Drug resistance minimization, Prudence of investigation confidentiality, Sterilization procedure, Bio safety and bio hazard 5

Medicolegal aspects of medical records

Introduction to Intellectual Property:

Concept of Intellectual Property Kinds of Intellectual Property

Patents, Copyrights Designs, Trademarks,Geographical Indication, Infringement of IPR, Its protection and

Remedies Licensing and its types

REFERENCE BOOKS

1. Contemporary issues in bioethics – Beauchamp & walters (B&W) 4th edition.

2. Classic philosophical questions by Gloud (8th Edition)

3. Case book series and booklets by UNESCO Bioethics Core curriculum 2008

4. Encyclopedia of Bioethics 5 vol set, (2003) ISBN-10: 0028657748

5. Intellectual property rights- Ganguli-Tat McGrawhill. (2001) ISBN-10: 0074638602,

6. Intellectual Property Right- Wattal- Oxford Publications House.(1997) ISBN:0195905024.

COURSEOUTCOMES						
CO1	The students will be able to: Recognize what constitutes an ethical concern in health care					
CO2	The student will be able to understand the clinical evaluations of Disease Condition					
CO3	The student will be able to Understand better the complexity and multi-dimensionality of medical ethical concerns and uniqueness of each problem.					
CO4	The student will get the knowledge of plagiarism in their innovations which can be questioned legally					
MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**d**	**E**	**f**
1	S		M		S	S
2				s		
3			**S**			
4	S		M			**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH19CE1023	**FUNDAMENTALS OF HUMAN GENETICS**
	Total Contact Periods– 4
	Total credits -2
	Course Designed by–Department of Genetics
OBJECTIVES	To Comprehend the Chromosomal basis of inheritance

I -Introduction to cellular components

Structure and morphology of various types of cells - Biochemical composition - Cellular organelles -Composition and components of nucleus - Chromosomes - Cell division and Mechanics of cell division and regulation.

II - Structure and functions of nucleic acids

Functions, Structure and characteristics of nucleic acids - Types of mutations -Genetic variations and polymorphisms

III - Chromosomal basis of inheritance

Chromosome behavior and inheritance pattern in man - Single gene Mendelian disorders: autosomal dominant, recessive, sex linked dominant and recessive - Polygeneic and mitochondrial inheritance.

III - Origin and detection of genetic disorders

Mutation - Non-disjunction - Chromosomal abnormalities and clinical phenotypes of common genetic syndromes (Down's syndrome, Patua‘s syndrome, Edward syndrome, Turner syndrome and Klinefelter's syndrome, Cri-du-caht syndrome)- Karyotyping, Neural tube defects, Carcinogenesis.

IV–Biochemical basis for the inborn errors of metabolism

General characteristics of inborn errors of metabolism – Incidence - etiology - Folic acid metabolism - triple markers - New born screening, prevention and management. False positive and false negative -Ethical principles of Genetic counseling for prenatal diagnosis - Fetal rights – Regulation and prevention of misuse act 1994.

Reference books

1. A guide to genetic counseling, 2nd edition, D.L. Baker, J.L. Schuette and W.R. Uhlmann, Wiley –Leiss Publications 2002.

2. Emery Elements of Medical Genetics, 9th edition, Robert F. Mueller & Ian D. young, Churchill Livingstone, 1995.

3. Medical Genetics, 3rd edition, Lynn B. Jorde, John C. Carey, Michael J. Bamshad, & Raymond L. White, Mosby, 2003.

COURSEOUTCOMES						
CO1	The student will be able to Be able to describe the chromosomal basis of inheritance and how alterations in chromosome number or structure. . .					
CO2	The student will be able to understand of the differences and similarities between diagnostic, predictive and carrier genetic testing.					
CO3	The student will be able to know detailed information of Chromosome behavior and inheritance pattern in man					
CO4	The student will be to understand the phenotype and genotype .					
MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**d**	**E**	**f**
1	S		M		S	
2				s		M
3			**M**			
4	S			**S**		**S**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH19CE2024	**PRINCIPLES AND APPLICATION OF CLINICAL GENETICS**
	Total Contact Periods– 6
	Total credits -2
	Course Designed by–Department of Nephrology
OBJECTIVES	To develop awareness about Genetic testing, Genetic counseling, Philosophy and Ethos of Genetic services

I -Principle and components of genetic testing Lay out of genetic laboratories - Genetic testing, Genetic counseling, Philosophy and Ethos of Genetic services, Types of testing- Cytogenetic testing- Molecular cytogenetic testing- DNA testing.

II - Cytogenetic testing Indications, Type of sample, Sampling and transport conditions, Karyotyping - chromosome identification, merits and demerits of conventional cytogenetic testing

III - Molecular Cytogenetic testing

Indications, Type of sample, Sampling and transport conditions - Fluorescence in-situ hybridization, fluorescence signal enumeration, merits and demerits of FISH.

IV - DNA testing

Organization of human genome, Structure and function of genetic material, Polymerases chainmreaction - Types, principles and testing, Sequencing.

V - Practical:

Case studies

Reference books

1. Practical Genetic counseling, Peter S. Harper, 6th edition, Holder Headline Group 2004.

2. Medical Genetics, 3rd edition, Lynn B. Jorde, John C. Carey, Michael J. Bamshad, &

Raymond L. White, Mosby, 2006.

3. Genetics in Medicine, Thompson & Thompson, 6th edition, Elsevier 2004.

4. Practical Genetic counseling, Peter S. Harper, 6th edition, Holder Headline Group 2004.

COURSEOUTCOMES						
CO1	The student will be able to become familiar with and practice genetic tests.					
CO2	The student will be able to provide better patient care					
CO3	The student will be able to know detailed information about Genetic Counselling					
CO4	The student will be to know about Genetic testing.					
MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3			**M**			
4	S				S	**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH19CE2025	**CLINICAL EXAMINATION OF THE HUMANVISUAL SYSTEM**
	TotalContactPeriods–5
	Total credits -2
	Course Designed by–Department of Opthalmology
OBJECTIVES	The core objective of this course is to gain in depth knowledge on the structural and physiological functions of the various parts of the eye and the different examination procedures for the ocular structures.

: **I - History Taking**

Importance of history taking, Demographic data and its importance, Chief presenting symptoms, History of present illness, History of past illness, Family History, Common ocular symptoms and their causes – defective vision, watering eyes, discharge, redness, pain, asthenopia and other symptoms

II - Visual Acuity measurement

Distance visual acuity-charts, methods and measurements; Near visual acuity –charts, methods and measurements; contrast sensitivity testing; colour vision testing

III - External Examination

Examination of head posture, examination of forehead, examination of eye brows, examination of eyelids, examination of Lacrimal apparatus, examination of eyeball on the whole, examination of the cornea, conjunctiva sclera and anterior chamber, eye movements, muscle balance and squint evaluation

IV - Anterior segment Evaluation

Slit lamp examination of the eyelids, cornea, conjunctiva, anterior chamber depth, iris, and lens Intraocular pressure measurements using non contact tonometer

V - Posterior segment Evaluation

Introduction and importance of posterior segment evaluation- direct and indirect ophthalmoscopy

REFERENCE BOOKS:

1. Comprehensive Ophthalmology – A K Khurana, 5th edition, New Age International Publishers,

2012.

2. Clinical Ophthalmology – Jack J Kanski, 7th edition, Butterworths, 2012

1. Borish's Clinical Refraction - William J. Benjamin, Irvin M. Borish, Butterworth-Heinemann, 2006

COURSEOUTCOMES						
CO1	The student will be able to have the skill to perform basic ophthalmic examination					
CO2	The student will be able to understand concept of theory and clinical evaluation of disease conditions gain an in- depth knowledge on disease outline and clinical evaluation of patients					
CO3	The student will be able to depth knowledge on the functions of the visual system					
CO4	The student will have the skill to perform basic ophthalmic examination					
MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**D**	**e**	**f**
1	S		M		s	
2				S		M
3	M		**S**			
4	M			**C**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH19CE2026	**PERSONALITY DEVELOPMENT AND STRESS MANAGEMENT**
	Total Contact Periods– 4
	Total credits -2
	Course Designed by–Department of HR
OBJECTIVES	• To Explain the effect of personality, attitudes, perceptions and attributions on Health stress, coping and relaxation.

Unit 1

Introduction to Personality Development, Different Stages of Development, Types of personalities, personality perspectives and theories

Unit 2

How needs impact personality, Maslow's hierarchy of need, Basic Personality Traits; Values, Beliefs, Interactions, Experiences, Environmental influences, the big five dimensions.

Unit 3

Stress; causes, effect and types, Stress resistant personalities, Relaxation; training aspects importance and Body works.

Unit 4

Health stress and coping, Understanding and communicating our health needs, Behavioral and psychological correlates of illness.

Unit 5

Soft skill; need and importance, Personality development and soft skills. Effective communication, listening, speaking, writing, interpretation part of soft skills and personality

Learning Outcome:

By successfully completing this course, students will be able to Describe how a personality develops.

- Define the stages of personality development.
- Define personality types.
- Describe basic personality traits.
- Personality and stress.
- Health stress, coping and relaxation.
- Soft skills and personality.

Text Books:

1. Hurlock (1976). Personality development.Tata McGraw Hill.

2. Baron R A, Psychology 5th edition, Pearsons publication.

3. Abraham A, General Psychology, Tata McGraw hill Education private limited.

Reference Books:

1. Lazarus J Stress Relief and Relaxation Techniques, Viva Book Private limited.

2. Shelly E. Taylor, Health psychology, 7th edition, TATA McGrawHil, New Delhi.

COURSEOUTCOMES						
CO1	The student will be able to Define the stages of personality development.					
CO2	• The student will be able to Describe basic personality traits.					
CO3	The student will be able to Describe how a personality develops-Personality and stress.					
CO4	The student will be able to Develop the Soft skills and personality.					
MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**D**	**e**	**f**
1	S		M		s	
2				S		M
3	M		**S**			
4	S			**S**		**M**
Category	Management					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH19CE2027	**FIRST AID MANAGEMENT & SPLINTING TECHNIQUES**
	TotalContactPeriods–6
	Total credits -2
	Course Designed by–Department of Medicine
OBJECTIVES	Students will gain additional skills in interventional procedures and Differentiate between emergency situation and other use.

Unit-I BACKGROUND INFORMATION

- The importance of first Aid
- First aid supplies
- First aid and the law
- Prevention practices

Unit-II ACTION AT AN EMERGENCY

- Recognizing Emergencies
- Deciding to act
- Seeking medical care
- Disease transmission
- Rescuer reactions

Unit –III BLEEDING AND WOUNDS

- External bleeding
- Wound infection
- Amputations
- Impaled objects
- Wound that require medical care
- Internal Bleeding
- Dressing and Bandages

Unit-IV BONE, JOINT AND MUSCLE INJURIES

- Bone injuries
- Splinting
- Joint injuries
- RICE injuries
- Muscle injuries
- Splints – Introduction, Types, Uses, Splinting guidelines, Slings, Procedure,Complications

UNIT-V RESCUING AND MOVING INJURIES

- Water rescue
- Ice rescue
- Electrical Emergency Rescue Hazardous materials incidents
- Motor Vehicle crashes
- Fires
- Confined spaces

- Triage – what to do with multiple victims
- Moving victims

Text books:

1 .First Aid CPR and AED standard (sixth edition)

2. First aid book-St Johns Ambulance services

3. Text book of Orthopaedics – Natarajan

4. Text book of Orthopaedics – John Ebenezer Reference books: First Aid and Management of Minor Injuries by Jon Dallimore First Aid and Beyond by Dan Wolfe - Smashwords , 2014 International Trauma Life Support Provider Manual Essentials Orthpaedics Mark D Mille

COURSEOUTCOMES	
CO1	The student will be able to Differentiate between emergency situation and other use.
CO2	The student will be able to know about the basics of concepts of disease & outlines of clinical evaluation.
CO3	The student will be able to List management, assessment, and care steps for upper extremity and lower extremity fractures.
CO4	The student will be to know Splinting techniques of lower extremities – Thomas splint, sam splint, etc

MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**D**	**e**	**f**
1	S		M		s	
2				S		M
3	M		**S**			
4	S			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH19CE3028	**ESSENTIALS OF MEDICAL TRANSCRIPTION**
	Total Contact Periods– 7
	Total credits -2
	Course Designed by–Department of MRD
OBJECTIVES	Provide Hands on training on English Language and listening comprehension and provide foundation to learn medical terminology & learn laboratory report

Unit 1

The Medical Transcriptionist‘s career including Ethical& Legal Responsibilities Introduction to Medical transcription, Job Opportunities, Transcription Skills, Medical records, Certification for Medical Transcriptionists, Ethical and Legal responsibilities

Unit 2

Equipments in Transcription Equipment, Computer Systems, Ergonomics, Dictation Equipments, Hand and Foot control Dictation, Transcription Preparation

Unit 3

Transcription Guidelines Punctuations, Proof reading notations, Formats and styles, SOAP for Chart notes; Discharge Summary

Unit 4 PRACTICAL:

1. Equipments for Medical Transcription,2. Typing for the beginners, 3.Vocabulary, 4. Proof reading Notations , 5. Formats and styles in document preparation , 6. Preparation of chart notes, 7. Listening Comprehension, 8. Transcription check off sheet **References Book**1. Medical Key boarding, Typing, and Transcribing Techniques and procedures 4th Edition, March

Otis Diehl, Marilyn Takahashi Fordney, W.B. Saunders Company

2. The AAMT Book of Style for Medical Transcription, Claudia J. Tessier

3. CD‘s available for:

a. Stedman‘s Electronic Medical Dictionary 4.0

b. American Drug Index 2003

Text Books:

1. Medical Key boarding, Typing, and Transcribing Techniques and procedures 4th Edition, March

Otis Diehl, Marilyn Takahashi Fordney, W.B. Saunders Company

2. The AAMT Book of Style for Medical Transcription, Claudia J. Tessie

COURSEOUTCOMES						
CO1	The student will be able to Demonstrate their basic skills in the knowledge of Vocabulary, Medical terminology					
CO2	The student will be able to Demonstrate their basic skills in the preparation of chart notes. .					
CO3	The student will be able to Demonstrate skills in listening comprehension					
CO4	• The student will be be able to identify accurate format for medical document preparation					
MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**d**	**E**	**f**
1	S		M		S	
2				s		M
3	M		**S**			
4	S			**S**		**M**
Category	Medical Records					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH19CE3029	**COMMUNICATION AND SOFT SKILL**
	Total Contact Periods– 7
	Total credits -2
	Course Designed by–Department of Human Resources
OBJECTIVES	This course is designed to equip the students with essential soft skills needed for workplace and improve personality.

LEARNING OUTCOME:

This course is designed to help the students to

- Foster healthy attitude.
- Develop effective inter and intra personal skills to be an effective team worker.
- Communicate effectively in both academic and professional setup

UNIT: I ASPECTS OF COMMUNICATION

Importance of communication, Process, Barriers, Non verbal Communication

UNIT: II SPEAKING

How to Open and Close conversations, Introductions and Address System, Expressing Courtesy, Giving Compliments and replying to Compliments, Presentation Skills, Telephonic conversation and telephone etiquette

UNIT – III PRESCRIBED READING

Tom Sawyer by Mark Twain, Bacon‘s Essays: - Of Goodness and goodness of nature

UNIT – IV WRITING

Letter writing - Letter of Complaints, Inviting and Declining an invitation, Writing Memos and Emails, Grammar, Spelling & Punctuation, Use of Dictionary & Thesaurus.

UNIT – V SOFT SKILLS

Active Listening Skills, Assertive Skills, Negotiation and Persuasive Skills, Interview Skills

Text Book:

Developing Communication Skills by Krishna Mohan and Meera Banerji, II edition, Macmillan.

Reference Books:

1. Communication Skills for Engineers and Scientists by Sangeeta Sharma and Binod Mishra, PHI Learning Private Limited, New Delhi.

2. English and soft skills by S.P. Dhanavel, Orient Black Swan

3. Effective English Communication by Krishna Mohan and Meenakshi Raman, Tata McGraw –Hill Publishing Company Limited.

4. Technical Communication – Principles and Practice, by Meenakshi Raman and Sangeetha Sharma, II edition, Oxford University Press.

5. Developing Communication Skills by Krishna Mohan and MeeraBanerji, II edition, Macmillan.

6. The Complete Guide to Functional Writing in English by M. Sarada, Sterling Publishers (P) Ltd., New Delhi.

7. Speaking Naturally: Communication Skills in American English by Bruce Tillitt and Mary Newton Bruder, Cambridge University

COURSEOUTCOMES	
CO1	The student will be able to Foster healthy attitude
CO2	The student will be able to develop effective inter and intra personal skills to be an effective team worker
CO3	The student will be able to Develop effective inter and intra personal skills to be an effective team worker
CO4	The student will be able to Communicate effectively in both academic and professional setup

MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**a**	**B**	**C**	**d**	**e**	**F**
1	S		M		s	

2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH19CE3030	**PROFESSIONAL SKILLS DEVELOPMENT**
	Total Contact Periods– 6
	Total credits -2
	Course Designed by–Department of Human Resources
OBJECTIVES	To Advance the students' intellectual curiosity, competency and skills in preparation for employment

1. Communication Skills

Importance of Communication skills in Public health; Communication process; Methods of communication; Types of communication: Verbal and Non-verbal; Impediments to effective communication; Feedback

2. Oral Presentation Skills:

Preparation and planning; Structure; Audio-visual aids; Creating interest and establishing a relationship with the audience; Body language; Voice and pronunciation; Review

3. Writing skills:

Writing a scientific paper; Writing a proposal; Structure of an article; References and literature review; Peer-review process-Publication bias; International guidelines for publication in journals; Professional Ethics

4. Leadership in Public health:

Leadership styles and trait; Motivation skills; Interpersonal communication skills; Problem solving skills; Decision making skills; Management skills; Communication Skills

5. Manuscript writing

Writing introduction, objectives, methodologies, major finding, discussion, conclusion and recommendation**6. Seminar presentations**Use of computers present data and information on recent topics

Text Books:

1. Professional Writing Skills, A self paced training programme by Janis Fisher Chan and Diane Lutovich. Advanced Communication Designs Inc, 2003. San Anselmo, CA. ISBN 0963745549

2. Speaking Your Mind: Oral Presentation and Seminar Skills By Rebecca Stott, Tory Young, Cordelia Bryan Contributor Rebecca Stott, Tory Young, Cordelia Bryan Published by Longman, 2001 ISBN 0582382432, 9780582382435

3. Public Health Leadership: Putting Principles into Practice Louis Rowitz, PhD. Jones and Bartlett Publishers, 2003. ISBN-13: 9780763725013 ISBN-10: 07637250

COURSEOUTCOMES						
CO1	The student will be able to Develop good written and oral communication abilities					
CO2	The student will be able to Develop an understanding of team building and leadership skills.					
CO3	The student will be able to Develop knowledge regarding capacities needed to work independently within diverse work environments					
CO4	The student will be able to know how to maintain Records and Reports and demonstrate the procedure.					
MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**D**	**e**	**f**
1	S		M		s	
2				S		M
3	M		**S**			
4	S			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting Of Academic Council held in Aug, 2017					

UAH19CE3031	**LIBRARY SCIENCE AND E-RESOURCES**
	Total Contact Periods– 6
	Total credits -2
	Course Designed by–Department of Library science
OBJECTIVES	To gain knowledge about Documentary Sources of Information and Library Automation

Unit 1 BASIC CONCEPTS AND INFORMATION SERVICES

Meaning of Library – Types of Library -– Library layout - Functions of Library – need for Library – Meaning of ISBN and ISSN – Collection management - Library Classification system - Five laws of Library Science – Inter Library Loan (ILL), Communication theories and models.Barriers to communication.Levels of communications – Intrapersonal, interpersonal and mass communication. Information services – literature search Methods of Dissemination of information Current Awareness Service (CAS), Selective Dissemination of Information (SDI), Document delivery service, Alert services, and Internet services.

Unit 2 INFORMATION SOURCES

Documentary Sources of Information, Print, and Non-print including Electronic, Human and Institutional sources: Nature, types, characteristics and utility. Internet as a source of Information. Primary sources of information – Journal, conference volume, patents, research reports, thesis and their electronic format – Secondary sources of information - Bibliography, Encyclopedia Dictionary, Yearbook , Directory, Geographical Source, Textbook, Index and Abstracts.

Unit 3 LIBRARY AUTOMATION

Definition need, Purpose, advantages. Planning for Library automation. Automation of Library operations - Acquisitions, Cataloguing, OPAC, Circulation and Serials control. Evaluation of Library automation systems - Application of Barcode and RFID Technology for Library Functions. Basic concepts: Bibliography, bibliographic coupling, Impact factor.

Unit 4 ELECTRONIC INFORMATION SOURCES

Electronic Information resources: Meaning and definition, Growth and development, Types. Journals, e-Books, e-Theses, e-newspapers, Blogs, Wikis. Free databases and fee based bibliographical and full text databases, subject related websites, Institutional repositories, Open Archives and digital Libraries. - Resource Sharing and Networks: Consortia- Importance and objectives. Study of Information networks and Digital Library Consortia. Types of computer networks: Local Area Networks – Concept, Topologies - Bus, Star, Mesh, Tree, and Ring). Wide Area Networks and Metropolitan Area Networks- Concepts, Circuit switching and Packet switching. Difference between LAN and WAN. Wireless Networks –Mobile telephones.

Unit 5 DIGITAL LIBRARIES

Digital Libraries: Concepts and issues. Understanding digital Libraries Content creation – Electronic documents, files and file formats. Study of different file formats.Studying PDF in detail- features of PDF.Digitization- scanning, Digital Preservation, Conservation and Archival Management – Problems and prospects. Open Access Movement and Institutional repositories.

TEXTBOOKS

1. Ranganathan, S.R The five Laws of Library Science UBS Publishers, 1988.

2. Ranganathan, S.R. Library Manual SaradaRanganathan endowment for Library Science, 1989.

3. Ranganathan, S.R. Cataloguing Practice SaradaRanganathan endowment for Library Science 1990

COURSEOUTCOMES						
CO1	The student will be able to analyze and understand the query					
CO2	The student will be able to Identify the sources of information					
CO3	The student will be able to Find out the information					
CO4	The student will be able to know how to maintain Records and Reports and demonstrate the procedure.					
MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**d**	**e**	**F**
1	S		M		s	
2				s		M
3	M		**S**			
4	S			**S**		**M**
Category	Library Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

B.Sc. OPERATION THEATRE AND ANESTHESIA TECHNOLOGY

R2017

CURRICULUM

	ANATOMY
	Total Contact Periods – 80
	Total credits -5
UAH17CT101	Course Designed by – Department of Anatomy
OBJECTIVES	An outline of anatomy with special emphasis on applied aspects is provided to the students for better understanding of the technical and diagnostic procedure.

UNIT I: Organization of the human body

1. **Introduction**

- Introduction to human body
- Definition and subdivision of anatomy
- Anatomical position and terminology
- Region and systems of the body
- Cavities of the body and their contents
- Levels of organization of the body

2. Cell and genetics

- Parts of cell – cell membrane, cytoplasm, organelles, inclusion bodies, nucleus
- Structure of chromosome, DNA, RNA.
- Basics & fundamentals of Genetics, Karyotyping, Chromosomal disorders, prenatal diagnosis, genetic counseling and gene therapy.
- Cell division – Definition and main events that occur in different stages of mitosis and meiosis.

- Tissues – Definition, characteristic features and types with example.
- Types of glands with example

UNIT II: Systems of support and movement

1. **Skeletal system**

- Cartilage: Type and basic histological feature.
- Bones: definition, classification based on location, name and number of bones with general features of important bones, function of bone, histological feature of a compact bone.
- Joints – Definition and types with example, Axis and movements. Shoulder, elbow, hip, knee joints – type, bones and ligaments involved, possible movements.

1. **Muscular system**

- Types of muscle with basic histological features
- Parts of skeletal muscle.
- Definition of origin and insertion
- Origin, insertion, nerve supply, action of sternocleidomastoid, pectoralis major, deltoid, gluteus maximus and diaphragm.

UNIT III: Controls systems of the body

1. **Nervous system**

- Subdivisions of the nervous system
- Spinal cord-location, extent, external features and blood supply
- Brain-subdivision, location, external features of Medulla oblongata, Pons, Midbrain, Cerebellum, and Cerebrum, Thalamus and Hypothalamus, Location and subdivision of ventricles of brain. Circle of Willis.
- Cranial nerves-name, number, attachment, area of distribution

- Spinal nerves-typical spinal nerves. Name and location of plexuses. Location and distribution of brachial and lumbo sacral plexus.
- Autonomic nervous system-sympathetic and parasympathetic nervous system. Location of preganglionic and postganglionic neurons.

2. Sense organs

- Location and features of nose, tongue, eye, ear and skin.

3. Endocrine system

- Names of the endocrine glands. Location and features of pituitary, thyroid, parathyroid, suprarenal, pancreas, ovaries and testes. Names of hormones produced by each gland.
- Microscopic features of thyroid and pancreas.

UNIT IV: Maintenance of the human body

1. Cardiovascular system

- Types and general features of blood vessels. Structure and types of arteries and veins. Shape, size, location, covering, external and internal features of Heart. Conducting system of heart. Blood supply of the heart. Name, location, branches and main distribution of principal arteries and veins

2. Lymphatic system

- General features of Lymph nodes and lymphatic vessels. Name, location, external features, microscopic features of tonsil and spleen.

3. Respiratory system

Name the organs of respiration. Location and features of Nasal cavity, pharynx, larynx, trachea, lung & pleura. Mention the microscopic feature of the lung.

4. Digestive system

- Name the parts of the alimentary canal and accessory organs. Location & features of esophagus, stomach, small and large intestine. Location and feature of tongue, salivary glands, pancreas, liver and gallbladder. Microscopic features of the liver.

5. Urinary system

- Names of urinary organs. Location and features of kidney, ureter, urinary bladder & urethra. Microscopic features of the kidney.

6. Reproductive system

- Names of male and female organs of reproduction. Location and features of testis, epididymis, vas deferens, prostate gland and spermatic cord. Location & features of uterus, uterine tube, ovary and breast.

7. Embryology

- Structure of gametes & gametogenesis. Fertilization to development of embryo till 3rd week. Derivatives of germ layers. Teratogens, Structure and Functions of placenta.

UNIT V: Anatomical regions

- Simple ideas about scalp, triangles of neck, axilla, cubital fossa, carpal tunnel, mediastinum, umbilicus, inguinal canal, femoral triangle
- sub sartorial canal popliteal fossa

PRACTICALS/DEMONSTRATIONS

1. Demonstrations of dissected specimens.

2. Viewing of projection of microscopic slides of muscle, bone, cartilage, spleen, tonsil, lung, liver, kidney, thyroid and pancreas

REFERENCE BOOKS

1. Manipal manual for AHS by Dr. Sampath Madhyastha, (Second Edition) Published by CBS Publishers.

2. Handbook of anatomy for nurses by Dr. P. Saraswathi

3. Ross and Wilson, Anatomy and physiology in health & illness

COURSE OUTCOMES	
CO 1	The student will be able to gain knowledge of general anatomy and locomotion.
CO 2	The student will be able to gain knowledge of basic human anatomy and histology of CVS and Respiratory systems.
CO 3	The student will be able to gain knowledge of basic human anatomy and histology of CNS, GI, excretory and reproductive systems.
CO 4	The student will be able to gain of knowledge basic human anatomy and histology of endocrine system and special senses.

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES

COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S					
2		**M**				
3			**S**			
4	s			**S**		**M**

Category	Basic Medical Science
Approval	46th Meeting of Academic Council held in Aug, 2017

UAH17CT102	**PHYSIOLOGY**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Physiology
OBJECTIVES	To know the basic functioning of the human body, and the various organ systems. .

Unit-I

1. **General Physiology:**

- Concept of Homeostasis
- Cell structure and functions
- Transport across membranes

Body and body fluids:

- Body fluid volumes, compartments and composition
- Blood composition and functions
- Plasma proteins – Types and functions
- Erythrocytes – functions, Erythropoiesis, anemia‟s
- Leucocytes – classification and functions
- Platelets – morphology and functions
- Blood coagulation – Mechanism and name of anticoagulants
- Blood groups – Basis of ABO & Rh grouping, Erythroblastosis Foetalis

2. Muscle physiology:

- Muscles – Classification & structure of striated, nonstriated & cardiac muscle

- Neuromuscular junction
- Mechanism of skeletal muscle contraction

3. Digestive system:

- Salivary glands, functions of saliva
- Parts of stomach, composition & functions of gastric juice
- Pancreatic Juice – composition & functions
- Bile – composition & functions of bile & bile salts
- Functions of Small intestine & large intestine

Unit-II

1. Skin

● Structure & Functions

2. Excretory system:

- Kidney: Basic physiological anatomy (Including JGA)
- Formation of urine – GFR
- Formation of urine – Re-absorption & secretion
- Maturation Reflex
- Dialysis – Principle, types
- Renal function tests

Unit-III

1. Endocrine system:

- Hypothalamo hypophyseal inter relationship
- Posterior pituitary hormones and its actions
- Anterior pituitary hormones, Growth hormone – Actions

- Dwarfism, gigantism, acromegaly
- Thyroid hormones – Actions
- Cretinism, Myxoedema, Grave‟s disease (clinical features)
- Parathyroid hormones – Functions, Tetany
- Insulin, Glucagon‟s – Actions, Diabetes mellitus
- Adrenal medullar hormones & their actions
- Adrenal cortex hormones & their actions

2. Reproductive system:

- Male reproductive organs – Spermatogenesis, Testosterone actions
- Female reproductive organs – menstrual cycle (endometrial and ovarian cycles) and its hormonal control
- Contraceptive methods in male and female

Unit-IV

1. Respiratory system:

- Basic physiological anatomy
- Surfactant
- Mechanics of respiration
- Lung volumes and capacities
- Oxygen transport, Carbon-di-oxide transport
- Nervous and chemical regulation
- Pulmonary function tests.

2. Cardiovascular system:

- Basic physiological anatomy, innervations of heart
- ECG – normal waves, intervals and their significance
- Cardiac cycle – mechanical events, Heart sounds

* Blood pressure – Definition, measurement, normal values, factors maintaining BP Regulation

Unit-V

1. Nervous system:

- Structure of neuron, neuroglial cells, synapse and transmission across it
- Reflex – Components of reflex arc, examples.
- Functions of ascending tracts – anterior, lateral spinothalamic tracts, Dorsal column
- Functions of Corticospinal (Pyramidal) tract-Descending tract
- Functional areas of cerebral cortex
- Functions of basal ganglia, thalamus, hypothalamus, limbic system and cerebellum

2. Special senses:

● Receptors for various special senses

Practical Demonstration

Hematology:

1. Enumeration of RBC count.
2. Enumeration of WBC count.
3. Differential Count.
4. Estimation of Hemoglobin.
5. Determination of blood group.
6. Determination of bleeding time and clotting time.

Clinical physiology:

1. Measurement of blood pressure.
2. Determination of Radial pulse

Reference Book

1. Human Physiology for BDS by A.K.Jain, 4th Edition, Avichal publishing co

COURSE OUTCOMES	
CO 1	The student will be able to gain knowledge of general physiology, nerve-muscle physiology and haematology.
CO 2	The student will be able to gain knowledge of basic human physiology with respect to CVS, Respiratory system and GI system.
CO 3	The student will be able to gain knowledge of basic human physiology of excretion and CNS.
CO 4	The student will be able to gain knowledge of basic human physiology of special senses and endocrine system.

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES

COs\POs	A	b	c	D	e	f
1	S					
2		**S**				
3			**S**			
4	S			**S**		**M**

Category	Basic Medical Science
Approval	46th Meeting of Academic Council held in Aug, 2017

UAH17CT103	**BIOCHEMISTRY**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Biochemistry
OBJECTIVES	To know the basic Biochemical reactions within the human body, and the various organ systems. .

UNIT I – Cell and its molecules

Cell – Cell organelles, Fluid Mosaic Model, functions of cell membrane, Brief description of transport across the cell membrane.

Carbohydrates – Definition, Classification with examples, Sources, physiological significance and HbA1c.

Lipids – Definition, Classification with examples, Sources, Types of lipids present in the body, storage form, storage site, free cholesterol structure, functions of lipids, lipoprotein structure and its functions.

Nucleic acids – Nucleotide, Nucleoside, types of nucleic acids, secondary structure of DNA & Its functions; Types of RNA & its functions.

UNIT II – Proteins and Enzymes

Proteins – Definition, Classification, functions of proteins, Plasma proteins; Classification of Amino acids with examples
Hemoglobin structure, Functions of hemoglobin, hemoglobin derivatives, abnormal hemoglobin

Enzymes: Definition, Classification, coenzymes, Metalloenzymes, Factors affecting enzyme activity, Regulation of enzymes, overview of Mechanism of enzyme action, Isoenzymes and

Clinical importance of enzymes

UNIT III-Vitamins, Minerals, Nutrition

Vitamins: Definition, Classification of Vitamins
Sources, RDA, Function & Deficiency symptoms of

- Fat Soluble Vitamins (A, D, E & K);
- Water Soluble Vitamins (Thiamine, Riboflavin, Niacin, Biotin, Pantothenic acid, Pyridoxine, Folic acid, Cobalamin) and Vitamin C

Minerals: Definition, Classification of Minerals

Sources, RDA, Function, Reference levels & Deficiency Symptoms of

- Calcium, Phosphorus, Iron Copper, Zinc, Sodium, Chloride, Iodine, Potassium, Fluorine and Selenium.

Nutrition: BMR, SDA, Dietary fibres, protein Energy Malnutrition and Obesity 24

UNIT IV – Bioenergetics and Metabolism
Bioenergetics: Electron Transport chain and Oxidative Phosphorylation
Metabolism

Carbohydrates: Digestion and absorption, Glycolysis, TCA cycle, Metabolism of Fructose and Galactose.

Lipids: Digestion and absorption, Beta oxidation of fatty acids, Regulation of Cholesterol level in the cell and outline of lipid transport.

Proteins: Digestion and Absorption, Formation and Disposal of Ammonia, Urea Cycle, Special Products of Glycine, Tyrosine and Tryptophan.

UNIT V – Miscellaneous

Outlines of DNA organization, Replication, Transcription, Genetic code and Translation

Organ function Tests: Liver, Renal and Bone.

PRACTICAL

- Spotters

COURSE OUTCOMES	
CO 1	The student will be able to gain knowledge of biochemistry of cell structure, functions, digestion, enzymes and proteins.
CO 2	The student will be able to gain knowledge of biochemistry of carbohydrates, minerals and vitamins
CO 3	The student will be able to gain knowledge of liver and renal function tests, specialized laboratory investigations and lipids.
CO 4	The student will be able to gain knowledge of biochemistry of metabolism, homeostasis, nucleic acids and cancer

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES

COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S			S	s	
2		**M**		s		
3	S		**S**			
4	S			**M**		**M**

Category	Basic Medical Science
Approval	46th Meeting of Academic Council held in Aug, 2017

UAH17CT104	**BASICS IN MEDICAL PHYSICS AND ELECTRONICS**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Radiology
OBJECTIVES	To know the basics in Medical Physics, Bio electric potential and the functioning of Medical equipments. .

Unit I: Laser

Nature of light-Reflection-Refraction-Total internal reflection-Optical fibers-Applications in Medicine – Laser-Principles-Action-Types of laser, Basic principles of laser in Medical Application – Argon-Ion laser photocoagulator-Photo thermal-Photochemical application-Applications of laser in Medicine-Laser hazards and safety measures.

Unit II: Radiation Physics

Introduction to nuclear physics and radioactivity, Radioactive radiations – X-ray, production of x-ray, Properties of x-ray radiations – Biological effects of radiation, Radiation damage in matter, Radiation protection principles, radiation detection and measurement – Ultrasound and generation of ultrasound.

Unit III: Introduction to Imaging Technique

Principles of Microscope: Simple microscope and compound microscope-Radiography: Making and X-ray image-Fluoroscopy. CT Scans, MRI – Ultrasonography: Ultrasound picture of Body-A-Scan-M-Scan-Ultrasound diathermy-Phonocardiography – Radio isotopes: Uses of Radio isotopes – 99mTc Generator – Scintillation detectors – Application of scintillation detectors – Gamma Camera – Positron Camera

Unit IV: Semiconductor devices

Principles of diodes and Transistors – Integrated circuits – Amplifiers – Basic configuration and types – differential and operational amplifiers – Waveform generators – Timer – A/D and D/A

converters – Active filters – Transducers – Basic configuration and types.

Unit V: Bio potential Recording Systems

Introduction to bioelectric potential – Electrodes and surfaces – Bio potential amplifier – Frequency ranges of various biopotential signals – Working principles of bio potential recording systems – Electrocardiography – Electroencephalograph –Electromyography.

Reference Books:

1. New Understanding physics for advanced level – Jim Breithauput.

2. Advanced Physics for you by Keith Johnson, Simmons Hewett, Sue holt, John miller

3. Christensen‟s Physics of diagnostic Radiology by Thomas S. Curry III, M.D., Robert C Murry, Jr. PhD, Dow Dey, PhD.

4. Applied Electronics, A. Subramanyam, The National Publishing co., Madras (1996).

5. Design and Development of Medical Electronic Instrumentation, David Prutchi and Michael Norris, John Wiley & Sons (2005).

COURSE OUTCOMES	
CO1	The student will be able to know the functioning of radiological devices
CO2	The student will be able to understand the mechanism of functioning of medical equipments
CO3	The student will be able to know the functioning of Lab instruments
CO4	The student will be able to understand the functioning of radiation devices

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES

COs\POs	A	b	c	d	e	f
1	M		S		s	
2				S		M
3	S		**M**			
4	S			**S**		**M**

Category	Medical Science
Approval	46th Meeting of Academic Council held in Aug, 2017

UAH17CT105	**ENGLISH**
	Total Contact Periods – 60
	Total credits -4
	Course Designed by – Department of English
OBJECTIVES	To enable students to enhance their ability to comprehend spoken and written English required for effective communication in their professional work. Students will practice their skills in verbal and written.

Unit I: Spoken Communication

Learning to read the phonetic symbols

Stress

Intonation

Rhythm

Commonly mispronounced words

Correct pronunciation of important commonly used

Words in hospital practice

Unit II: Vocabulary and Reading

Special features of English vocabulary

Common errors in choice of word

Semi technical vocabulary

Collecting material from library on scientific topics

Comprehensive exercises

Unit III: Writing

Writing letters regarding permission, leave, opening bank account etc.

Taking notes from lecture / reading materials

Writing reports on patient care

Summarizing scientific passages

Unit IV: Grammatical and Idiomatic Usage

Correction of errors

Types of interrogative sentences

Active-Passive voice

Tense

Principles of procession, clarity and specificity

Reference Books:

1. Effective English Communication by Krishna Mohan and Meenakshi raman, Tata McGraw – Hill Publishing Company Limited, New Delhi (Approx. cost Rs 200)
2. English for colleges and competitive Exams by Dr. R..Dyvadatham, Emerald Publishers (Approx cost Rs. 150)

COURSE OUTCOMES	
CO1	The student will be able to develop their intellectual, personal and professional abilities.
CO2	The student will be able to acquire basic language skills, listening, speaking, reading and writing.
CO3	The student will be able to acquire the linguistic competence necessarily required in various life situations
CO4	The student will be able to communicate with speakers of English language

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES

COs\POs	**A**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	S			**S**		**M**

Category	Language
Approval	46th Meeting of Academic Council held in Aug, 2017

UAH17CT106	**BASIC OF COMPUTERS**
	Total Contact Periods – 30
	Total credits -4
	Course Designed by – Department of English
OBJECTIVES	This course is designed for students to develop basic understanding of used of computer and its applications in Clinical Departments

UNIT I: INTRODUCTION

Computer basics – Types of computers – hardware components – input devices – output devices – storage devices – memory – units and sizes – factors affecting performance – operating systems – applications software – networking – LAN and WAN – Accessories – backup – computer virus – software copyright.

UNIT II: WORD PROCESSING

Windows – Office automation – WORD processor – open a new document – toolbars – menus – font dialog box – enter text – scroll – spelling checker – Autocorrect – undo and redo – bullets and numbered lists – indenting – moving and copying – find and replace – auto shapes – saving document – preview and print.

UNT III: ELECTRONIC SPREADSHEET AND DATA PRESENTATION

EXCEL spreadsheet – grid of rows and columns – active cell – selecting range – entering data – editing data – row and column labels – adjusting width – creating and copying formulae – relative – logical functions – lookup function – creating chart – bar chart – pit chart – print and save.

POWERPOINT presentation – creating slideshows- building outline – switching levels in outline – adding pictures – slide designs – design templates – formatting – color scheme – customized backgrounds – inserting content – hyperlink – revolution in education.

UNIT IV: DATABASE MANAGEMENT SYSTEM

ACCESS database – concept – template –primary key – records and fields – Student roster database – input mask – adding records – viewing data – updating entries – searching and querying – sorting – Table, forms and reports.

UNIT V: APPLICATIONS IN HEALTHCARE AND MEDICINE

INTERNET – e-governance – access to information – communication facility – mechanics of E-mail – social transformation – electronic billing – drug information –information flow in lab and radiology – storage of medical records – networking the organization – patient care – intelligent monitoring – scholarly information – health informatics – robotic assisted surgery – Clinical decision support systems – Telemedicine.

COURSE OUTCOMES	
CO1	The student will be able to develop basic under-standing of computer use.
CO2	The student will be able to acquire knowledge on Applications of computers in clinical departments.
CO3	The student will be able to have the detailed knowledge on how to use hospital information systems.
CO4	The student will be able to communicate with speakers of English language

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES

COs\POs	A	B	c	D	e	f
1	S		M		s	
2				S		S
3	M		**S**			
4	S			**S**		**M**

Category	Soft Skills
Approval	46th Meeting of Academic Council held in Aug, 2017

UAH17CT107	**MICROBIOLOGY**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Microbiology
OBJECTIVES	This course is designed to enable students to acquire understanding of fundamentals of microbiology and identification of various microorganisms. It also provides opportunities for practicing infection control measures in hospital and community settings.

UNIT – I: General Bacteriology

Introduction & History of Microbiology, Classification & Morphology of Bacteria, Growth & nutrition, Culture Media & Methods, Sterilization & Disinfection, Fundamental aspects of antibacterial agents and antimicrobial susceptibility testing.

UNIT – II: Immunology

Infection, Immunity, Immunization schedule, applications of antigen antibody reactions, Hypersensitivity, Tumor & Transplantation Immunology.

UNIT – III: Virology

Introduction to virology, viral hepatitis, poliomyelitis, Rabies, Human immunodeficiency virus.

UNIT – IV Mycology & Parasitology

Introduction to mycology, pathogenic yeasts & fungi, Introduction to parasitology, Amoebiasis, Malaria, Helminthic infections.

UNIT – V: Applied Microbiology

Outline of common bacterial diseases, treatment & prevention-Respiratory tract infections (upper & lower), Meningitis (septic & aseptic), Enteric infections (food poisoning & gastro enteritis), Anaerobic infections, Skin & soft tissue infections, Urinary tract infections, Sexually transmitted diseases, Tuberculosis & Leprosy, Hospital acquired infections, Biomedical waste management.

PRACTICAL EXERCISES: Spotters, Gram staining.

Reference Books

1. Textbook of Microbiology by Ananthanarayan & Panicker‟s, 8th edition-Universities

Press (India) PVT LTD.

2. Textbook of Microbiology by C. P. Baveja, 4th edition, Arya Publications.

3. Textbook of Medical Parasitology, CK Jayaram Paniker, 5th edition, Jaypee Publications.

4. Medical Parasitology by C. P. Baveja & V. Baveja, 2nd edition, Arya

5. Publications.

COURSE OUTCOMES	
CO 1	The student will be able to understand the morphological characters of bacteria.
CO 2	The student will be able to master the preparation of smear, fixation and staining of bacterial smears and its quality control methods
CO 3	The student will be able to learn to use microscope , autoclave, hot air oven, water bath, steamer, filters
CO 4	The student will be able to differentiate between innate and adaptive immunity, and explain the main defenses lines as well as biological barrier to the infections.

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES

COs\POs	**A**	**b**	**c**	**d**	**e**	**F**
1	S		M		s	
2				S		M
3	M		**S**			
4	M			**S**		**M**

Category	Basic Medical Science
Approval	46th Meeting of Academic Council held in Aug, 2017

UAH17CT108	**PATHOLOGY**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Pathology
OBJECTIVES	This course is designed for students to develop an understanding of general and systemic pathology. It helps them to know patho physiology of common diseases

UNIT-I: General Pathology I: Cellular Pathology, Acute and Chronic Inflammation, Tissue Renewal Regeneration and Repair, Hemodynamic Disorders Thromboembolic Disease and Shock

Introduction to Pathology, Adaptations Of Cellular Growth And Differentiation, Causes Of Cell Injury, Mechanisms Of Cell Injury, Necrosis, Apoptosis, Pathologic Calcification, Cellular Aging, Acute Inflammation – Mediators Of Inflammation Outcomes Of Acute Inflammation, Morphologic Patterns Of Acute Inflammation, Chronic Inflammation – Causes Of Chronic Inflammation, Granulomatous Inflammation, Healing By Repair, Scar formation And Fibrosis, Cutaneous Wound Healing, Healing By First Intention, Healing By Second Intention, Edema, Hemostasis and Thrombosis, Infarction, Shock

UNIT-II: General Pathology II: Diseases of the Immune System, Neoplasia, Environmental And Nutritional Disease, Diseases Of Infancy And Childhood

Innate Immunity, Adaptive Immunity, Components Of The Immune System, Mechanisms Of Hypersensitivity Reactions, Acquired Immunodeficiency Syndrome (AIDS), Neoplasia – Definition and Nomenclature, Characteristics Of Benign And Malignant Neoplasm‟s, Molecular Basis Of Cancer, Essential Alterations For Malignant Transformation, Clinical Aspects Of Neoplasia, Laboratory Diagnosis Of Cancer, Common Environmental And Nutritional Pathology, Nutritional Diseases, Tumors And Tumor-Like Lesions Of Infancy And Childhood **UNIT-III: Systemic Pathology I: Blood Vessels, the Heart, Red Blood Cell and Bleeding Disorders, Diseases Of White Blood Cells**

Arteriosclerosis, Atherosclerosis, Hypertensive Vascular Disease, Ischemic Heart Disease, Hypertensive Heart Disease, Valvular Heart Disease, Infective Endocarditic, Rheumatic Fever And Rheumatic Heart Disease, Cardiomyopathies, Leucopenia, Anemia‟s, Polycythemia, Bleeding Disorders, Reactive Proliferations Of White Cells, Definitions And Classifications of Lymphoid Neoplasm‟s and Myeloid Neoplasm‟s, Splenomegaly.

UNIT-IV: Systemic Pathology II: The Lung, The Gastrointestinal Tract, Liver And Biliary Tract

Acute Respiratory Distress Syndrome, Obstructive Pulmonary Diseases, Pulmonary Infections, Gastritis, Peptic Ulcer Disease, Inflammatory Bowel Diseases, Liver Function Tests, Hepatic Failure, Cirrhosis, Portal Hypertension, Jaundice, Cholelithiasis

UNIT-V: Systemic Pathology III: The Urogenital System, the Breast, the Endocrine System, Bones Joints and Soft-Tissue, Peripheral Nerve and Skeletal Muscle, the Central Nervous System

Renal Function Tests, Nephrotic Syndrome, Nephritic Syndrome, Urolithiasis, Pap Smear, Carcinoma Of The Breast-Types And Classification, Thyroid Gland – Hyperthyroidism, Hypothyroidism, Thyroiditis, Graves‟ Disease, Diffuse And Multinodular Goiters, Parathyroid Glands – Hyperparathyroidism, Hyperparathyroidism, Diabetes Mellitus, Fractures, Osteomyelitis, Arthritis, Osteoarthritis, Rheumatoid Arthritis, Infectious Arthritis, Diseases of Peripheral Nerve, Diseases of Skeletal Muscle, Infections of CNS – CSF Find

REFERENCE BOOKS

1. Pocket companion to Pathologic Basis of Disease by Robbins and Cotran, 7th edition, Saunders.
2. Pathology Quick Review and MCQs by Harsh Mohan, 2nd edition, Jaypee Publications.

COURSE OUTCOMES	
CO 1	The student will be able to gain knowledge of general pathology.
CO 2	The student will be able to gain knowledge pathology of neoplasms.
CO 3	The student will be able to gain knowledge of basics of community health.
CO 4	The student will be able to gain knowledge of systemic pathology.

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES

COs\POs	a	b	c	d	E	f
1	S		M		S	
2				s		M
3	S		**S**			
4	M			**S**		**M**

Category	Basic Medical Science
Approval	46th Meeting of Academic Council held in Aug, 2017

UAH17CT109	**PHARMACOLOGY**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Pathology
OBJECTIVES	This course is designed to help the students to develop an understanding of basic knowledge of pharmacology and knowledge of common drugs/group of drugs

UNIT-I: General Pharmacology

Introduction to pharmacology-various terminologies-sources & routes of drug administration – Absorption & Factors modifying drug absorption – Distribution of drugs – Metabolism: Phase II, - Excretion: routes, modes & kinetics of elimination – Excretion – Mechanism of drug action in brief, synergism & antagonism and Factors modifying drug action – Adverse drug reactions – ADR reporting & monitoring – Drug interactions.

UNIT-II: Central Nervous System & Respiratory System

Introduction to CNS and Neurotransmitters, drugs used in insomnia, Sedatives and hypnotics – diazepam – alprazolam, anti-anxiety drugs, Antiepileptic – phenytoin, carbamazepine, sodium valproate, General Anesthetics – halothane, isoflurane, sevoflurane – Local Anesthetics – lignocaine – list of other drugs, Alcohols – ethyl alcohol – disulfuram, Anti parkinsonians – levodopa – carbidopa, Opioids – morphine – naloxone – tramadol – pentazocine, NSAIDs – aspirin – diclofenac – ibuprofen – paracetamol – Cox 2 inhibitors. Drugs used in bronchial asthma and cough

UNIT-III: Cardio vascular system & blood

Drugs used in Ischemic Heart Disease-nitrates-Calcium channel blockers-nifedipine, verapamil-list of other drugs – Beta blockers – propranolol, atenolol – metoprolol and antiplatelets – aspirin, clopidogrel, and names of other drugs-fibrinolysis drugs-streptokinase and other drugs, Drugs used in CCF-digoxin and list of other drugs useful in CCF, Shock. Diuretics: 4 groups – Thiazides, Loop diuretics, Potassium sparing and osmotic diuretics. Hypertension – outline of drugs used in hypertension, Rennin angiotensin system – ACE inhibitors – captopril, ramipril and names of other drugs – Receptor antagonist – losartan and list of other drugs, Antiarrhythmic drugs-classification

– Quinidine, Lignocaine and amiodaron – Drugs for Hypercholesterolemia – statins. Drugs for anemia – oral & parenteral iron preparations, folic acid, vit B12 and erythropoietin. Coagulants and anti-coagulants

UNIT-IV: Hormones and GIT

Contraceptives – oral and injectable, Corticosteroids – glucocorticoids – hydrocortisone-prednisolone-dexamethasone and names of topical steroids – Insulin – Oral hypoglycemic – sulphonyl ureas, biguanides and others, Thyroid and Antithyroid drugs, Sex Hormones-Estrogen and anti estrogens, Progestin and Anti progestin‟s, Androgen And anti androgens. Emetics and anti emetics-metoclopromide and domperidone, Drugs used in peptic ulcer, constipation-lactulose & Diarrhea-ORS-Loperamide.

UNIT-V: Chemotherapy and Miscellaneous

Introduction – Beta lactam antibiotics: Penicillin‟s – natural, semi synthetic penicillin‟s – amoxicillin – cloxacillin-clauvulinic acid – sulbactum – Cephalosporin‟s – cephalexin – cefuroxime – cefixime – ceftrioxone-cefipime, Broad spectrum antibiotics – Doxycycline – chloramphenicol-imipenum-Macrolides – erythromycin, azithromycin and others – Quinolones-ciprofloxacin and list of other drugs and sulfonamides- cotrimoxazole- Amino glycosides-gentamycin, amikacin and names of other drugs Anti TB-first line drugs, Anti leprosy-dapsone and clofazimine Anti-malarial- chloroquine- mefloquine and artemisinins, Anti-fungal-amphotericin B- fluconazole and topical drugs & Anti-viral drugs- acyclovir and anti HIV, Anti protozoals- metronidazole – Anthelmintics- albendazole- praziquantel.

Anti-cancer drugs-Introduction – Anti metabolites- methotrexate- 6 mercapto purine- Alkylating agents- cyclophosphamide- busulphan and cisplatin – Plant products- vinblatin- vincristine-taxanes, antibiotics-actinomycin D- monoclonal antibodies. Immuno modulators- cyclosporine, tacrolimus, azathioprine and steroids. Toxicology-Drugs used in common poisoning, organophosphates, methyl alcohol, Benzodiazepam.

REFERENCE BOOKS:

1. Lippincott‟s Illustrated Reviews: Pharmacology, 5th edition, by Richard A. Harvey and Pamela C. Champe, Lippincott Williams & Wilkins Publisher

2. Essentials of Medical Pharmacology: K.D. Tripathi, 6th edition, Jaypee Publishers.

COURSE OUTCOMES						
CO1	The student will be able to gain basic knowledge in pharmacology.					
CO2	The student will be able to gain knowledge of detailed systemic pharmacology.					
CO3	The student will be able to gain knowledge of detailed knowledge of drugs and groups of drugs.					
CO4	The student will be able to gain knowledge of action of drugs					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\Pos	**a**	**B**	**C**	**D**	**e**	**f**
1	S		M		s	
2		**S**		S		M
3	M		**S**			
4	S			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CT110	**ENVIRONMENTAL SCIENCE AND COMMUNITY MEDICINE**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Community Medicine
OBJECTIVES	This course is designed for students to practice community health nursing for the individual, family and groups at both urban and rural settings by using concept and principles of health and community health nursing. It also is designed for students to understand the natural resources and environmental pollution

UNIT – I:

Natural Resources: Introduction, Multi-disciplinary nature of environmental studies, Earth Resources and Man, Renewable and Non-Renewable Resources, Water Resources, Mineral Resources: Food Resources: Effect of modern agriculture, Fertilizer/pesticide problems, Water logging, and salinity, Energy Resources.

Ecosystems: Concept of an Ecosystem, Structure and Functions of an Ecosystem, Producers, Consumers and Decomposers, Cycles in the Ecosystem

Biodiversity: Introduction, Definition: Genetic, Species, Ecosystem diversity, India as a Mega Diversity Nation, Hotspots Of Biodiversity Threats to Biodiversity. Poaching of Wildlife, Man-Wildlife Conflicts, Endangered and Endemic Species Of India, Conservation of Biodiversity

UNIT – II:

Pollution: Definition, Causes, Effects and Control Measures of Air Pollution, Water Pollution, Pollution, Marine Pollution, Noise Pollution, Thermal Pollution, Nuclear hazards, Solid Waste Management role of Individuals in Pollution Prevention.

Social Issues Human, Population and Environment: From Unsustainable To Sustainable Development, Urban Problems Related To Energy, Water Conservation, rain Water Harvesting, global warming, acid rain, ozone layer depletion, nuclear accidents and nuclear holocaust. Environment Protection Act.

UNIT – III:

Concept of health & disease: Concept of health, Definition of health, Philosophy of health-Dimension of health – Concept of wellbeing, Spectrum of health, Responsibility of health –

Determinates of health & Indicators of health – Concepts of disease & Concepts of cessation – Natural history of disease – Iceberg phenomenon, Concepts of control – Concepts of prevention – Modes of Intervention, Changing pattern of disease.

UNIT – IV:

Epidemiology: Definition & explanation, Aims, Epidemiologic approach, Basic measurements in epidemiology & tools of measurements – Measurements of Mortality & Morbidity, Epidemiologic methods- Descriptive epidemiology-Analytical epidemiology – case control study – analytical epidemiology – Cohort study – Experimental epidemiology – RCT – Association & Causation Uses of epidemiology (Criteria for judging causality) – Infection disease epidemiology Definitions Dynamic of disease transmission & Modes of transmission – Disinfection – Definition Types Agents used Recommended disinfection procedures-Investigation of an epidemic.

Unit – V:

Environment & health: Definition & components (environment sanitation environmental sanitation) Water: Safe & Whole some water Requirements Uses source of water supply (sanitary well)-Purification of water (1). Large scale purification, (2). Small scale purification – Water Quality – Special treatment of water

Air: Composition The air of occupied room discomfort. Air pollution & its effects. Prevention & Control of air pollution

Ventilation: Definition Standards of ventilation Types of ventilation. Light, Noise & Radiation, Metrological environment, Housing, Disposal of waste Excreta disposal

PRACTICALS:

1. Epidemiology Problems
2. Environmental spotters

REFERENCE BOOK

1. Textbook of Preventive and Social medicine by k. Park, 21st edition, published by Banarsidas Bhanot

COURSE OUTCOMES						
CO1	The student will be able to know the concept of health & illness					
CO2	The student will be able to know epidemiology of common communicable diseases					
CO3	The student will be able to know epidemiology of common non communicable diseases					
CO4	The student will be able to know the effects of pollution on humans.					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\Pos	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2		**M**		s		
3	M		**S**			
4	S			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CT111	**BASICS OF NURSING**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Community Medicine
OBJECTIVES	This course is designed to help the students to develop an understanding of the nursing profession, philosophy, objectives, theories and application of nursing in various clinical settings. It is aimed at helping the students to acquire knowledge, understanding and skills in techniques of nursing and practice them in supervised clinical settings.

Unit I: Introduction of Health

Health care system, major health problems of the country, nature of disease pattern, technological advances and national health programmes, health for all by 2000 AD. Role of health care workers in the health care delivery system, impact of illness of the individual family and community. History of Nursing, Communication Skills -Relationship with patients, process of communication

UNIT II: Concept of Nursing

Nursing Processes- Problems solving approach, assessment, diagnosis, planning, implementation and evaluation.

Unit III: First Aid and Nursing in Emergencies

Definition, basic principles, scope and rules, Wounds, hemorrhages, shock, fracture, dislocation and muscle injuries, respiratory emergencies, resuscitation, unconsciousness, Miscellaneous conditions, burns, scalds, foreign bodies in the skin, eyes, ear, nose, throat and stomach.Frost bite, effects of heart cramps, bites and stings. Poisoning, Transporting injured persons.

Unit IV: **Personal Hygiene and Health**

Care of skin, mouth, eyes, nails, hair, Menstrual hygiene, clothing, mental health, common health problems of poor personal hygiene. Comfort, Rest and Sleep, Hospital Housekeeping

Unit V: Health Education

Introduction to principles and methods of health education. Use of audio visual aids, mass education, role of nurse in health education.

Course outcome:

1) Knowledge on concept of health, health-illness continuum and health care delivery system.
2) Knowledge on scope of nursing practice.
3) Knowledge on concept, theories and models of nursing practice.
4) Desirable attitude to ethics and professional conduct.

COURSE OUTCOMES						
CO1	The student will be able to gain knowledge on concept of health, health-illness continuum and health care delivery system.					
CO2	The student will be able to gain knowledge on scope of nursing practice.					
CO3	The student will be able to gain knowledge on concept, theories and models of nursing practice.					
CO4	The student will be able to gain knowledge on concept, theories and models of nursing practice.					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\Pos	**a**	**b**	**c**	**d**	**E**	**f**
1	S		S		S	
2				s		M
3	M		**M**			
4	s			**S**		**S**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17OTAT201	**APPLIED ANATOMY & PHYSIOLOGY RELATED TO ANESTHESIA TECHNOLOGY –THEORY**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Anesthesia
OBJECTIVE	This course will provide an outline of anatomy and physiology to improve the students understanding of the technical and diagnostic procedures used, with special emphasis on applied aspects.

Unit I. Respiratory System

A. Structure and function of the respiratory tract in relation to Anaesthesia – Nose, Pharynx, Larynx, Trachea & Bronchial tree – vessels, nerve supply, respiratory tract.

B. Respiratory Physiology-Respiratory muscles – diaphragm, intercostals, Lung volumes-dead space, vital capacity, FRC.

C. Oxygen: properties, storage, supply, hypoxia

Unit II. Cardiovascular System

Anatomy – Chambers of the heart, circulation, ECG, Blood Pressure. How to measure? Hypotension & Hypertension.

Unit III. Fluids And Electrolytes/Blood Transfusion-

Body Fluids – Composition, I.V Fluids – composition & administration, I.V Cannulation, Blood grouping, Cross matching, Transfusion indications, hazards.

Unit IV: Nervous System-

Parts of Central & Peripheral Nervous System, Cerebrospinal fluid

Unit V: Reproductive System:

Physiological changes in pregnancy and labour

UAH17OTAL201	**APPLIED ANATOMY & PHYSIOLOGY RELATED TO ANESTHESIA TECHNOLOGY –PRACTICAL**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Anesthesia
OBJECTIVE	This course will provide an outline of anatomy and physiology to improve the students understanding of the technical and diagnostic procedures used, with special emphasis on applied aspects.

PRACTICAL:

1. Model of respiratory tract
2. Spotters-pictures in anatomy and physiology of various systems
3. How to measure blood pressure
4. How to set up things for IV cannulation

Exam pattern

1. **Spotters**
2. **Charts/stations**
3. **Viva**

COURSE OUTCOMES						
CO1	To understand structure and function of major functional systems in Human body					
CO2	To learn about body fluids, blood transfusion and complications while induce in human body					
CO3	Awareness of theory knowledge about Vitals science					
CO4	knowledge of basic human knowledge of CVS, CNS, Respiratory system and Reproductive system					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\Pos	**A**	**B**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s	S	
3	S		**S**			
4	S		M			**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17OTAT202	**. PHARMACOLOGY RELATED TO ANAESTHESIA TECHNOLOGY – THEORY**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Anesthesia
OBJECTIVE	The course will provide training in general pharmacology with special emphasis on common drugs used, routes of administration, types of formulations, dose and frequency of administration, side effects and toxicity, management of toxic effects, drug interactions, knowledge of chemical and trade name, importance of manufacturing and expiry dates and instructions for handling of drugs.

UNIT I-

- **Antisialogogues-Atropine**, Glycopyrrolate
- **Sedatives / Anxiolytics**-Diazepam, Phenergan, Lorazepam.
- **Narcotics**-Morphine, Pethidine, Metoclopramide, Ondanseteron
- **Induction Agents**-Barbiturates-Thiopental, Benzodiazepines-Diazepam, Midazolam, Phencyclidine-Ketamine, Propofol

UNIT II – Antacids-

- Na Citrate. Gelusil, H2 **Blockers-**Ranitidine

UNIT III – Muscle relaxants & Anaesthetics

- **Muscle Relaxants**-Depolarizing – Suxamethonium, Non Depolarizing – Vecuronium, Atracurium, Narcotics – Morphine, Pethidine, Fentanyl, Fortwin, Tramadol
- **Inhalational Gases**-Gases-O2, N2o, Inhalation Agents – Halothane, Isoflurano, Sevoflurane
- **Reversal Agents**-Neostigmine, Atropine, Glycopyrrolate, Naloxone, Flumazenil (Diazepam)
- **Local Anaesthetics**-Xylocaine, Bupivacaine – Topical, EMLA – Ointment.

UNIT IV – Emergency Drugs-

- **Adrenaline:** Mode of administration, dilution, dosage, effects, bicarbonate, calcium, ephedrine, xylocard,
- **Other inotropes:** dopamine, dobutamine.
- **Cardiovascular Drugs-Antihypertensives**, Antiarrhythmics, Beta - Blockers, Ca – Channel blockers, Vasodilators – (nitroglycerin & sodium nitroprusside) Nitrates, sorbitrates, digoxin.
- **Respiratory system**-(Bronchodilators, respiratory stimulants), Renal system-(Diuretics, furosemide, mannitol)
- **Obstetrics**-(Oxytocin, methergine)

UNIT V- Miscellaneous

- **IV fluids-** various preparations NaCI, RL, haemaccel, hetastarch heparin.
- **NSAID-** Ibuprofen, ketorolac, paracetamol, diclofenac.

UAH17OTAL202	**PHARMACOLOGY RELATED TO ANAESTHESIA TECHNOLOGY – PRACTICAL**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Anesthesia
OBJECTIVE	The course will provide training in general pharmacology with special emphasis on common drugs used, routes of administration, types of formulations, dose and frequency of administration, side effects and toxicity, management of toxic effects, drug interactions, knowledge of chemical and trade name, importance of manufacturing and expiry dates and instructions for handling of drugs.

PHARMACOLOGY RELATED TO ANESTHESIA TECHNOLOGY – PRACTICAL

1. SPOTTERS
2. CHARTS
3. ANAESTHETIC INDUCTION AGENTS
4. INHALATION AGENTS

Exam pattern

1. **SPOTTERS**
2. **CHARTS/STATIONS**
3. **VIVA**

UAH17OTA203	**COMPRENSIVE VIVA: APPLIED ANATOMY , PHYSIOLOGY, PHARMACOLOGY RELATED TO ANESTHESIA TECHNOLOGY**
	Total Contact hours – 180
	Total credits -5
	Course Designed by – Department of Anesthesia
OBJECTIVE	The course will provide training in general pharmacology with special emphasis on common drugs used, routes of administration, types of formulations, dose and frequency of administration, side effects and toxicity, management of toxic effects, drug interactions, knowledge of chemical and trade name, importance of manufacturing and expiry dates and instructions for handling of drugs.

Unit I. Respiratory System

A. Structure and function of the respiratory tract in relation to Anaesthesia – Nose, Pharynx, Larynx, Trachea & Bronchial tree – vessels, nerve supply, respiratory tract.

B. Respiratory Physiology-Respiratory muscles – diaphragm, intercostals, Lung volumes-dead space, vital capacity, FRC.

C. Oxygen: properties, storage, supply, hypoxia

Unit II. Cardiovascular System

Anatomy – Chambers of the heart, circulation, ECG, Blood Pressure. How to measure? Hypotension & Hypertension.

Unit III. Fluids And Electrolytes/Blood Transfusion-

Body Fluids – Composition, I.V Fluids – composition & administration, I.V Cannulation, Blood grouping, Cross matching, Transfusion indications, hazards.

Unit IV: Nervous System-

Parts of Central & Peripheral Nervous System, Cerebrospinal fluid

Unit V: Reproductive System:

UAH17OTA204	**BASIC PRINCIPLES OF HOSIPTAL MANAGEMENT**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Anesthesia
OBJECTIVE	(Common to all specialties – Anesthesia Technology, Cardiac Technology, Clinical Laboratory Technology, Renal Dialysis Technology, Radiology & Imaging Science Technology, Perfusion Technology, Cath Lab Technology & Blood Banking Technology)

Unit I: Introduction to management & Organization:

The evolution of Management, Definition and importance of Management. Planning – Organizing – staffing – Motivating – Leading – Controlling. Management of health care units (in brief). Individual behavior in organization; organizational functioning (Group/Individual); Perception; Motivation MBO; Organizational Development.

Unit II: Planning and Management of Hospitals & Clinical Services:

Building and physical layout – space required for separate function – Planning of infrastructure facilities, clinical services, equipment & Human resources – Types of Hospitals. Organization and administration of various clinical services; outpatient services. In-patient services, emergency services, operation theatres, ICU's and super specialty services.

Unit III: Organizing of support clinical services & Hospital management:

Imaging – CSSD – Laboratory – Blood Bank – diet – Medical Records – Mortuary. Housekeeping – Maintenance (Water, Electricity, Civil, Air Conditioning, Lift)-Pest Control-transport-Security. Forecasting-Purchasing & procurement (Sourcing, methods and procedures) – Storing & issuing, Concept of inventory control, Maintenance of equipment and contracts (with special reference to major biomedical equipment). Trends in financing of Health and Hospital Services – Classification of Hospitals depending on source of financing – roles of financial institutions.

Unit IV: Personnel and quality Management in Hospital & Marketing:

Concepts – Manpower planning – Training & Developments – Team Building – Conflict Management – Performance appraisal – Office rules and regulations Outling of Strategic Planning and Marketing.

Concepts of quality – Professional Audit System – AQ program – Medical Audit – Quality Circle – TQM – Patient Satisfaction – ISO 90000. A brief outline – computerization in hospital departments. Concept, Techniques, Indicators, Evaluation of Efficiency & Effectiveness evaluation of hospital and medical care services.

Unit V: Ethical, current issues and Legal Aspects of Hospitals management services:

Laws related to Hospital – Medico Legal Cases law of Torts – Autopsy – Dying declaration – CPA. – Waste Management – Telemedicine – Organ Transplantation – Rehabilitation Service – Health Insurance.

Operations Research and Quantitative Methods in Hospital Administration & Nursing Services in a Hospital.

COURSE OUTCOMES	
CO1	To Understand basic knowledge about management planning , Organizing , staffing, motivating and controlling management in Health care units
CO2	**To get knowledge about** infrastructure facilities, clinical services, equipment and Human resources
CO3	To understand how to maintain inpatient services, outpatient services, ICUs, Emergency services, Operation theatres and super speciality services
CO4	To know about Manpower planning , training , developing and knowledge about marketing

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\Pos	**A**	**B**	**c**	**d**	**E**	**F**
1	M		M		S	
2				s		M
3	S		**S**			
4	S			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17OTAT205	**PRINCIPLES AND EQUIPMENTS RELATED TO ANESTHESIA TECHNOLOGY – THEORY**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Anesthesia
OBJECTIVE	To get training programme in principles and equipments handling related to Anesthesia technology

Unit I: Medical Gas Supply

Compressed gas cylinders, Colour coding, Cylinder valves, pin index, Gas piping system, Alarms & safety devices.

Unit II: Face Masks & Airway Laryngoscopes

- Endotracheal tubes – Types, sizes, (RAE Tube, Flexo metallic). Complications – Use care and maintenance of anaesthesia equipment
- Laryngoscopes in Anaesthesia

Unit III: Machine breathing system

1. **Anaesthesia Machine**

Hanger and yoke system, Cylinder pressure gauge, Pressure regulator, Flow meter assembly, Vapourizers-types, hazards, maintenance, filling & draining, etc.

2. **Breathing System**

a. General considerations: humidity & heat

b. Common components – connectors, adaptors, reservoir bags, Capnography; Pulse oximetry, Methods of humidification, Classification of breathing system, Mapleson system – a b c d e f, Jackson Rees System, Bain circuit, Non rebreathing valves – AMBU valves, The circle system, Components, Soda lime, indicators

Unit IV: Familiarization of OT and OT techniques

Unit V: CSSD, Instrumentation, store and inventory

UAH17OTAL205	**PRINCIPLES AND EQUIPMENTS RELATED TO ANESTHESIA TECHNOLOGY – PRACTICAL**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Anesthesia
OBJECTIVE	To get training programme in principles and equipments handling related to Anesthesia technology

1. Cylinders, suction apparatus, endotracheal tubes, laryngoscopes, Imo, Oropharyngeal airway.
2. Anesthesia machine – description, parts, safety features

Exam pattern

1. Spotters
2. Charts/stations
3. Viva

COURSE OUTCOMES						
CO1	To get knowledge about medical gas supply, color coding, gas piping system , Alarms and safety devices					
CO2	Detailed knowledge about handling of anesthesia equipments should be trained					
CO3	To get knowledge about maintaining and checking of anaesthesia work station machine in regular basis					
CO4	To get knowledge about maintaining of instrumentation , store and inventory					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\Pos	**A**	**b**	**C**	**D**	**E**	**F**
1	S		M		s	
2				S		M
3	M		**M**			
4	S			**M**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17OTAT206	**PRINCIPLES OF STERILIZATION TECHNIQUES – THEORY**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Anesthesia
OBJECTIVES	Knowledge about methods in principles of sterilization and techniques

Unit I: Layout of OT and Lighting of OT

Unit II: Cleanliness and sterilization of OT and Anaesthesia

Carbolization, fumigation, principles of sterilization – autoclaving, pressure sterilization, boiling, dry heat, gas chemical sterilization, gamma rays sterilization

Unit III: OT preparation

1. Preparation of spinal / epidural / nerve block tray.
2. Preparation of patients for various types of anaesthesia including laying out of trolleys, preparation of Boyle's apparatus for administration of anaesthesia, precaution to reduce antistatic friction hazards, preparation of sterile field, special precautions in handling patients with sepsis, blood borne infections – Hepatitis B, HCV, HIV, etc.,
3. Cleaning and Disinfection of articles and OT
4. Various positions during surgeries – lithotomy/kidney/beach chair/lateral/prone

Unit IV: Electrical and fire hazards

Prevention of physical, electrical, chemical injuries and hazards to patients Ot pollution and scavenging

Unit V: Care and Maintenance of Operation records of OT

1. Maintenance of septic OT, Use and maintenance of defibrillator, cautery, OT light, suction, emergency light ect.,
2. Admission and transfer procedures

UAH17OTAL206	**PRINCIPLES OF STERILIZATION TECHNIQUES – PRACTICAL**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Anesthesia
OBJECTIVES	Knowledge about methods in principles of sterilization and techniques

. PRINCIPLES OF STERILIZATION TECHNIQUES – PRACTICAL

1. Disinfectants
2. Methods of sterilization
3. various positions in surgery

Exam pattern

1. **SPOTTERS**
2. **CHARTS/STATIONS**
3. **VIVA**

UAH17OTA207	**CLINICAL IN STERILIZATION TECHNIQUES AND EQUIPMENTS RELATED TO ANESTHESIA TECHNOLOGY**
	Total Contact hours– 180
	Total credits -5
	Course Designed by – Department of Anesthesia
OBJECTIVES	Knowledge about methods in principles of sterilization and techniques

Unit I: Layout of OT and Lighting of OT

Unit II: Cleanliness and sterilization of OT and Anaesthesia

Carbolization, fumigation, principles of sterilization – autoclaving, pressure sterilization, boiling, dry heat, gas chemical sterilization, gamma rays sterilization

Unit III: OT preparation

5. Preparation of spinal / epidural / nerve block tray.
6. Preparation of patients for various types of anaesthesia including laying out of trolleys, preparation of Boyle's apparatus for administration of anaesthesia, precaution to reduce antistatic friction hazards, preparation of sterile field, special precautions in handling patients with sepsis, blood borne infections – Hepatitis B, HCV, HIV, etc.,
7. Cleaning and Disinfection of articles and OT
8. Various positions during surgeries – lithotomy/kidney/beach chair/lateral/prone

Unit IV: Electrical and fire hazards

Prevention of physical, electrical, chemical injuries and hazards to patients Operation theartre pollution and scavenging

Unit V: Care and Maintenance of Operation records of OT

3. Maintenance of septic OT, Use and maintenance of defibrillator, cautery, OT light, suction, emergency light ect.,
4. Admission and transfer procedures

COURSE OUTCOMES						
CO1	To get knowledge about Cleanliness and Sterilization of Operation theatre					
CO2	Aware of special precautions in handling patients with sepsis, blood bone infections , Hepatitis B , HCV, HIV etc..,					
CO3	knowledge about positioning in patient during surgeries (lateral/prone/beach chair, lithotomy)					
CO4	To understand maintenance of operational records of OT and care of the patient					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\Pos	**A**	**b**	**c**	**d**	**e**	**F**
1	S		M		S	
2				s		M
3	S					
4		S		**M**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17OTA208	**HEALTH CARE MANAGEMENT**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Anesthesia
OBJECTIVES	To get training knowledge in health care management

UNIT I: Concept of Health Care and Health Policy

Health in Medical Care, Indigenous systems of Health Care & their relevance, Framework for Health Policy Development.

UNIT – II:Health Organisation

Historical development of Health Care System in the third world & India, Organization & Structure of Health Administration in India, Type of Health Organization including International Organizations, Private & Voluntary Health care Provider, Distribution of Health Care Services, Health Care System in Public Sector Organization, Health system of Various Countries.

UNIT – III: Health Policy and National Health Programme

National Health Policy, Drug Policy, National Health Programs (Malaria, T.B., Blindness, AIDS etc.), Evaluation of Health Programs (Developing indicators for evaluation), Medical Education & Health Manpower Development.

UNIT-IV: Health Economics-Fundamentals of Economics

Scope & Coverage, Demand for Health Services, Health as an Investment, Population, Health of Economic Development. **Economics of Health-**

Population based health services, Economics of Communicable and Non Communicable diseases

UNIT-V:Methods & Techniques of Economic Evaluation of Health Program

Cost Benefit & Cost Effective Methods.

Household & Health: Health Expenditure & Outcome, Rationale for Government action, Household capacity, income and schooling

COURSE OUTCOMES	
CO1	To understand about concepts health in medical care and health policy development
CO2	To gain knowledge about historical development of health care system, organization and structure of health administration
CO3	To get knowledge about health economics, demand for health services , investment and popular health of economic development
CO4	To learn about detailed information in household, health expenditure ,household capacity , income and schooling

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES

COs\Pos	**A**	**b**	**c**	**D**	**e**	**F**
1	S		M		s	
2				S		S
3	S		**M**			S
4	M			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17OTAT301	**CONCEPTS OF DISEASES AND TECHNIQUES IN REGIONAL & GENERAL ANESTHESIA INCLUDING COMPLICATIONS - THEORY**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Anesthesia
OBJECTIVES	To get training about concept of diseases and techniques in regional and general anaesthesia including complications

UNIT -1: History of Anesthesia

1. First successful clinical demonstration: Modern anaesthetic era – Balanced anaesthesia, Minimum standard of anaesthesia, Who should give anaesthesia?, Ten golden rules of anaesthesia, Assess & prepare, starve, check the drugs and equipment suction, keep the airway clear, be ready to control ventilation have a vein open, monitor pulse & BP, have someone in the room to apply cricoids pressure – if needed.
2. Pre-op preparation: Pre anaesthetic assessment, History – HOPI, Pase history – disease / surgery / anaesth, Personal history – smoking / alcohol, General physical assessment, Systemic examination – CVS, RS, CNS, PA Local examination.

Unit II: Investigations and Pre-anaesthetic orders

1. Routine – Urine, E.C.G, Chest x-ray
2. Patient – Informed consent, NPO
3. Premedication – advantages, drugs used, Special instructions – if any, Machine – Checking the machine, o2, N2O, suction apparatus, Laryngoscopes, ET tubes, airways, Things for IV accessibility, Other monitoring systems
4. Drugs – Emergency drugs, Anaesthetic drugs

Unit – III: Intraoperative management and Postoperative complications & management

1. Confirm the identification of the patient, Monitoring – Non Invasive & invasive monitoring, Induction – drugs used, Endotracheal intubation, Maintenance of anaesthesia, Positioning of the Patient, Blood / Fluid & electrolyte balance, Reversal from anaesthesia – drugs used, transferring the patient.
2. Recovery room – Set up, Things needed, Problems
3. Complications, Obesity, Anaemia

Unit – IV: Minor sequelae and Major catastrophes

1. Nausea & vomiting, Sorethroat, Laryngeal Granuloma, Neurological Complications, Awareness, Vascular
2. Mortality, Causes of death, Cerebral damage, Prevention

Unit V: Anaesthetic consideration in

a. Cardiac disease – CAD, Valvular heart disease, congenital heart disease, Hypertension
b. Respiratory disease – COPD, Bronchial Asthma
c. Endocrine disease – DM, Thyroid dysfunction
d. Renal disease – CRF
e. Obesity

UAH17OTAL301	**CONCEPTS OF DISEASES AND TECHNIQUES IN REGIONAL & GENERAL ANESTHESIA INCLUDING COMPLICATIONS – PRACTICAL**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Anesthesia
OBJECTIVES	To get training about concept of diseases and techniques in regional and general anaesthesia including complications

. Concepts of diseases and techniques in regional & general anesthesia including complications Practical

1. Pre-anaesthetic check, intra-operative monitoring
2. Historical figures, instruments for endotracheal intubation, spinal and epidural anaesthesia.
3. Basic anaesthetic consideration in patients with cardiac, respiratory and renal diseases

Exam pattern :

1. **SPOTTERS**
2. **CHARTS/STATIONS**
3. **VIVA**

COURSE OUTCOMES						
CO1	To understand theory knowledge in history of anaesthesia and balanced anaesthesia					
CO2	knowledge about golden rules of anaesthesia in assess and preparation					
CO3	Detailed knowledge about Pre-op assessment and pre - anaesthetic management					
CO4	To get knowledge about general, physical and local examination related to anaesthesia technology					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\Pos	**A**	**b**	**C**	**D**	**e**	**F**
1	S		S		s	M
2				S		M
3	M		**S**			
4	S			**M**		**S**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17OTAT302	**Anesthesia Techniques including complication**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Anesthesia
OBJECTIVES	To get training programme about monitoring and diagnostic procedures

Unit I: To set up the required equipment for general anaesthesia, spinal, epidural, nerve block.

Unit-II : Monitoring during anaesthesia and complications

Unit III: Monitoring and diagnostic procedures in ICU - Central venous access, ECG monitoring, Invasive hemodynamic monitoring

Unit IV: General care of patient in ICU-Eye, GI tract, Bladder, skin, Case of mechanically ventilated patient, Tracheostomy, humidification, Vascular lines – arterial, venous line, Radiography, Physiotherapy – chest physiotherapy

Unit V: Regional anaesthesia – Introduction, Indication, Contraindication, Check list, Procedure, Complications, Management, Spinal, Epidural, Nerve Block

UAH17OTAL302	**ANESTHESIA TECHNIQUES INCLUDING COMPLICATION – PRACTICAL**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Anesthesia
OBJECTIVES	To get training programme about monitoring and diagnostic procedures

Anesthesia Techniques including complications-Practical

1. How to assist anaesthetist?
2. Monitoring during anaesthesia and post operative period
3. General care of patient in ICU
4. How to assist anaesthetist for central venous cannulation

Exam pattern :

1. **SPOTTER**
2. **CHARTS/STATIONS**
3. **VIVA**

UAH17OTA303	**CLINICAL TECHNIQUES IN REGIONAL AND GENERAL ANESTHESIA: COMPHRENSIVE VIVA**
	Total Contact hours – 180
	Total credits -5
	Course Designed by – Department of Anesthesia
OBJECTIVES	To get training programme about monitoring and diagnostic procedures

UNIT1: History of Anesthesia

1. First successful clinical demonstration: Modern anaesthetic era – Balanced anaesthesia, Minimum standard of anaesthesia, Who should give anaesthesia?, Ten golden rules of anaesthesia, Assess & prepare, starve, check the drugs and equipment suction, keep the airway clear, be ready to control ventilation have a vein open, monitor pulse & BP, have someone in the room to apply cricoids pressure – if needed.
2. Pre-op preparation: Pre anaesthetic assessment, History – HOPI, Pase history – disease / surgery / anaesth, Personal history – smoking / alcohol, General physical assessment, Systemic examination – CVS, RS, CNS, PA Local examination.

Unit II: Investigations and Pre-Anaesthetic orders

1. Routine – Urine, E.C.G, Chest x-ray
2. Patient – Informed consent, NPO
3. Premedication – advantages, drugs used, Special instructions – if any, Machine Checking the machine, o2, N2O, suction apparatus, Laryngoscopes, ET tubes, airways, Things for IV accessibility, Other monitoring systems
4. Drugs – Emergency drugs, Anaesthetic drugs

Unit – III: Intra operative management and Postoperative complications & management

1. Confirm the identification of the patient, Monitoring – Non Invasive & invasive monitoring, Induction – drugs used, Endotracheal intubation, Maintenance of anaesthesia, Positioning of the Patient, Blood / Fluid & electrolyte balance, Reversal from anaesthesia – drugs used, transferring the patient.
2. Recovery room – Set up, Things needed, Problems
3. Complications, Obesity, Anaemia

Unit – IV: Minor sequelae and Major catastrophes

1. Nausea & vomiting, Sorethroat, Laryngeal Granuloma, Neurological Complications, Awareness, Vascular
2. Mortality, Causes of death, Cerebral damage, Prevention

Unit V: Anaesthetic consideration in

1. Cardiac disease – CAD, Valvular heart disease, congenital heart disease, Hypertension
2. Respiratory disease – COPD, Bronchial Asthma
3. Endocrine disease – DM, Thyroid dysfunction
4. Renal disease – CRF
5. Obesity

COURSE OUTCOMES	
CO1	To get knowledge of handling anaesthesia equipment for general anaesthesia, spinal, epidural and nerve block in Operation theatres
CO2	Knowledge of monitoring patients vitals in operation theatres and ICU
CO3	Assess to procedure of CVP and Arterial line
CO4	Handling Patient complications of regional anaesthesia in operation theatres

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES

COs\Pos	**A**	**B**	**c**	**d**	**e**	**F**
1	S		M		s	
2				s		M
3	S		**M**			
4	S			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17OTA304	**HOSPITAL PRODUCTS, PROMOTION, SALES & PUBLIC RELATIONS (OR) PHYSICIAN'S OFFICE MANAGEMENT**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Anesthesia
OBJECTIVES	To get training programme about marketing , service marketing and business administration

Unit – I:

- **An introduction to Marketing:** Role of marketing in Business management – Evolution and definition of marketing – Concepts of Marketing – Service vs. Products – Management of Service Management process.
- **Services Marketing:** Classification of services – Characterstics of services and their marketing implication – Selecting appropriate tools for marketing.

Unit – II:

- **Component of Service Marketing:** Product Planning, Market research system – Market segmentation – Targeting – Positioning –Launching new service – Concept of product life cycle, Pricing, Setting the price – Economic Theory – Responding to price change, Physical Distribution, Major Aspects – Channels of distribution – Selection of channel, Promotion, Role of communication – Promotion mix – advertising (Media – budget – Cost effectiveness – (attributing to hospitals a human face – Good will – image building among major public) Sales promotion (techniques – Evaluation), Direct selling (Sales force – Evaluation), Physical Environment, Process, People

Unit –III:

- **Analysing Markets and Buyer Behaviour:** Model of consumer behavior – Factors influencing buyer behavior – Buying decision process
- **Branding of a Hospital Facility:** Brand name and concept – Positioning hospitals – Developing and USP – Brand image – Image building – long term and short term activities.

Unit IV:

- **Other Marketing routes for Health Care Units:** Interpersonal communication – Print materials institutional marketing – seminars – conference
- **Marketing Strategies for Hospital:** Managing Differentiation – Service Quality – Productivity – Product support service.

Unit V:

- **Evaluating and Controlling Market Performance:** Annual plan control (sales analysis – market share analysis – Marketing expense to sales analysis – Financial analysis), Profitability control, Efficiency control, Strategic control

5. (b) Physician's Office Management

Unit I. Outpatient section: Registration of new cases, Registration of repeat cases, Patient record guide, Laboratory X – Ray reports & reports filing, Alpha index typing & Filing, O.P. Records coding (disease & indexing), O.P. records retrieval, O.P. Statistics

Unit II. Inpatient Section: Admitting office procedure, Inpatient record removal & forwarding, Ward Census,

Unit III. Assembling & deficiency checks I.P. record coding & indexing,

Unit IV. Discharge Analysis: Incomplete record control, Completed record control, Medico legal procedures & issue of Medical certification, Record retention & destruction of O.P. & I. P. records,

Unit V. Miscellaneous: Hospital reception, Secretarial practice, Library (Medical

COURSE OUTCOMES						
CO1	To get basic knowledge about roles of marketing management and service marketing characteristics					
CO2	To know implications of selecting appropriate tools for marketing					
CO3	To know analysis treatment of markets and buyer behaviour					
CO4	To learn performance of evaluating and controlling market programme					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**A**	**B**	**C**	**d**	**e**	**F**
1	S		M		s	
2				s		M
3	S		**M**			
4	S			**M**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17OTAT305	**ANESTHESIA FOR SPECIALTIES (INCLUDING CRITICAL CARE ASSISTANCE AND VENTILATION) PAPER-I THEORY**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Anesthesia
OBJECTIVES	This course will cover anaesthetic techniques for various specialities including cardiac anaesthesia, neuroanaesthesia, obstetric anaesthesia, thoracic anaesthesia, paediatric anaesthesia and anaesthesia for shock and trauma. Upon completion of this course the students will be able to assist the anaesthetist in administration of anaesthesia required in various specialities.

Unit I: Cardiac anaesthesia – PART 1: NYHA classification, Arrhythmias, Angina, Dyspnoea, Premedication, Setting up of monitoring system, Monitoring – invasive and non-invasive,

Unit II: Cardiac anaesthesia – PART 2: Getting ready for the case, Induction of cardiac patient, precautions to be taken, Transferring the patient to ICU, Care to be taken, ICU management

Unit III: Neuro Anaesthesia: Glasgow coma scale, Signs of raised ICP, Premedication, Check list, Induction of a patient Positioning in neurosurgery, I.C.P. monitoring, Air embolism, Transferring to I.C.U.Ward

Unit IV: Anaesthesia for Trauma & Shock: Resuscitation, Preop Investigation/assessment, Circulatory management, Management of anaesthesia, Rapid sequence induction, Other problems

Unit V: CPR: BLS, ACLS

UAH17OTAL305	**ANESTHESIA FOR SPECIALTIES (INCLUDING CRITICAL CARE ASSISTANCE AND VENTILATION) PAPER-I PRACTICAL**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Anesthesia
OBJECTIVES	This course will cover anaesthetic techniques for various specialities including cardiac anaesthesia, neuro anaesthesia, obstetric anaesthesia, thoracic anaesthesia, paediatric anaesthesia and anaesthesia for shock and trauma. Upon completion of this course the students will be able to assist the anaesthetist in administration of anaesthesia required in various specialities.

Anesthesia for specialties (Including Critical Care Assistance and Ventilation) Paper – I Practical

1. Spotters-basic anaesthetic considerations in cardiac and neurosurgery
2. Charts-BLS chain of survival
3. Demonstration-transferring of post operative patient to ICU

Exam pattern

1. **SPOTTERS**
2. **CHARTS/STATIONS**
3. **VIVA**

COURSE OUTCOMES						
CO1	Knowledge about invasive and non-invasive monitoring in operation theatre and ICU					
CO2	knowledge about collecting of pre-op investigations and assessment of Trauma and shock cases					
CO3	practical and theory knowledge about CPR					
CO4	To know basic knowledge handling of BLS and ACLS					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**A**	**B**	**C**	**d**	**e**	**F**
1	S		S		s	
2				s		M
3	M		**S**			
4	M			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17OTAT306	**ANESTHESIA FOR SPECIALTIES (INCLUDING CRITICAL CARE ASSISTANCE AND VENTILATION) PAPER-II - THEORY**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Anesthesia
OBJECTIVES	To get knowledge about obstetric anaesthesia, Paediatric anesthesia , day care anaesthesia

Unit I:Obstetric Anesthesia (PART1): Differences between a pregnant and a normal lady, Risks for anaesthesia, Precautions to be taken Checklist, regional vs general anaesthesia, Induction / maintenance.

Unit II: Obstetric Anesthesia (PART2): Resuscitation of the newborn, APGAR score, Reversal and extubation, Emergencies – Manual removal of placenta, A.P.H,-P.P.H., Ruptured uterus, Ectopic pregnancy, Labour, Epidural analgesia,

Unit III: Paediatric Anesthesia: Theatre setting, Check list, Premedication, Induction, Intubations-securing the ETT, Monitoring, Reversal & extubation – problems, Transferring / IC management, Pain management.

Unit IV: Day Care Anesthesia: Special features, Set up, Advantages, Disadvantages, Complications, Future

Unit V: Anesthesia Outside the O.R.: Situations, Cath lab, radiology and imaging Science Technology natural calamities, E.C.T., Features, Shortcomings, Complications

UAH17OTAL306	**ANESTHESIA FOR SPECIALTIES (INCLUDING CRITICAL CARE ASSISTANCE AND VENTILATION) PAPER-II- PRACTICAL**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Anesthesia
OBJECTIVES	To get knowledge about obstetric anaesthesia, Paediatric anesthesia , day care anaesthesia

Anesthesia for specialties (Including Critical Care Assistance and Ventilation) Paper-II Practical(UE)

1. Spotters-common obstetric emergencies
2. Charts-situations requiring anaesthesia outside operation theatre
3. Demonstration-how is pediatric anaesthesia different from adult

Exam Pattern:

1. **SPOTTERS**
2. **CHARTS/STATIONS**
3. **VIVA**

COURSE OUTCOMES						
CO1	To understand difference between pregnant lady and normal lady					
CO2	To learn about risk of anesthesia and precautions in check list of regional and general anesthesia					
CO3	Handling knowledge about cases of ectopic pregnancy , labour anesthesia and epidural anesthesia					
CO4	Knowledge about handling and preparation of Paediatric cases in operation theatre					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**A**	**B**	**C**	**d**	**E**	**F**
1	S		M		S	
2				s		M
3	S		**M**			
4	S			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17OTA307	**CLINICALS IN ANESTHESIA FOR SPECIALTIES (INCLUDING CRITICAL CARE ASSISTANCE AND VENTILATION: COMPREHENSIVE VIVA**
	Total Contact hours – 180
	Total credits -5
	Course Designed by – Department of Anesthesia
OBJECTIVES	To get training about spotters, charts and clinical based techniques

Unit I:Obstetric Anesthesia (PART1): Differences between a pregnant and a normal lady, Risks for anaesthesia, Precautions to be taken Checklist, regional vs general anaesthesia, Induction / maintenance.

Unit II: Obstetric Anesthesia (PART2): Resuscitation of the newborn, APGAR score, Reversal and extubation, Emergencies – Manual removal of placenta, A.P.H,-P.P.H., Ruptured uterus, Ectopic pregnancy, Labour, Epidural analgesia,

Unit III: Paediatric Anesthesia: Theatre setting, Check list, Premedication, Induction, Intubations-securing the ETT, Monitoring, Reversal & extubation – problems, Transferring / IC management, Pain management.

Unit IV: Day Care Anesthesia: Special features, Set up, Advantages, Disadvantages, Complications, Future

Unit V: Anesthesia Outside the O.R.: Situations, Cath lab, radiology and imaging Science Technology natural calamities, E.C.T., Features, Shortcomings, Complications

COURSE OUTCOMES						
CO1	To get clinical knowledge of handling equipments					
CO2	To get knowledge about handling of specialities cases					
CO3	Knowledge in trained programme					
CO4	Experience in clinical management					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**A**	**B**	**c**	**d**	**e**	**F**
1	M		S		s	
2				s		M
3	M		**M**			
4	S			**S**		**S**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17OTA308	**TRAUMA & CARDIAC LIFE SUPPORT**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Anesthesia
OBJECTIVES	To get training BLS, ACLS programme, trauma life, spinal trauma , cardiac life support, and triage

UNIT I. TRAUMA LIFE (Part 1)

- BLS,
- TRIAGE

a. Primary Survey b. Secondary Survey

- Airway & Ventilatory management
- Shock
- Central & peripheral venous access
- Thoracic trauma – Tension pneumothorax
- Other thoracic injuries
- Abdominal trauma – Blunt injuries
- Abdominal trauma – Penetrating injuries

UNIT II. TRAUMA LIFE (Part 2)

- Spine and spinal cord trauma
- Head trauma
- Musculoskeletal trauma
- Electrical injuries
- Thermal burns
- Cold injury

UNIT III. TRAUMA LIFE (Part 3)

- Paediatric trauma
- Trauma in pregnant women
- Workshop BLS
- Workshop cervical spine immobilization
- Imaging studies in trauma

UNIT IV. CARDIAC LIFE SUPPORT (Part 1)

- BLS
- The universal algorithm for adult ECC
- Ventricular fibrillation/Pulseless ventricular tachycardia algorithm
- Pulseless electrical activity (PEA) / asystole algorithm
- Bradycardia treatment algorithm
- Tachycardia Treatment algorithm

UNIT V. CARDIAC LIFE SUPPORT (Part 2)

- Hypotension / Shock
- Acute myocardial infarction
- Paediatric Advanced life support
- Airway management
- Defibrillation
- Drugs used in ACLS
- Emergency Cardiac pacing
- AED
- Techniques for oxygenation and ventilation

COURSE OUTCOMES						
CO1	Handling and management of Airway ventilatory and shock					
CO2	To get knowledge about handling and management of trauma cases like musculoskeletal , head, and thermal burns					
CO3	Knowledge about handling of Paediatric trauma cases					
CO4	To know basic knowledge about trauma in pregnant women cases					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**A**	**B**	**c**	**d**	**E**	**F**
1	S		M		S	
2				s		M
3	M		**M**			
4	S			**S**		**S**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

PROGRAMME ELECTIVE

		COURSE		TEACHING HOURS			
SI NO	SEMESTER	**COURSE CODE**	**COURSE TITLE**	**L**	**T**	**P**	**CREDITS**
1	I	UAH17CE1020	Fundamentals of Biostatistics	4	4		2
2	I	UAH17CE1021	Communication skills for Health Care professionals	5	5		2
3	II	UAH17CE1022	Biomedical Ethics	3	3		2
4	II	UAH17CE1023	Fundamentals of Human Genetics	4	4		2
5	III	UAH17CE2024	Principles and application of Clinical Genetics	6	4	2	2
6	III	UAH17CE2025	Clinical Examination of the Human Visual System	5	3	2	2
7	IV	UAH17CE2026	Personality Development and Stress Management	4	4		2
8	IV	UAH17CE2027	First Aid Management & Splinting Techniques	6	4	2	2
9	V	UAH17CE3028	Essentials of Medical Transcription	7	7		2
10	V	UAH17CE3029	Communication and Soft Skill	7	7		2
11	VI	UAH17CE3030	Professional skills Development	6	6		2
12	VI	UAH17CE3031	Library Science and E-Resources	6	6		2

UAH17CE1020	**FUNDAMENTALS OF BIOSTATISTICS**
	TotalContactPeriods–4
	Total credits -2
	Course Designed by–Department of Community Medicine
OBJECTIVES	The course will offer basic knowledge about Biostatistics and to correctly apply a variety of statistical procedures and tests according to objective of study

UNIT I: Introducing the Basics

Introduction, Graphical representation of data, Data collection, Diagrammatic and Graphical Presentation of data, Types of data, limitations.

UNIT II: Measures of Central Tendency & Dispersion

Measures of Central Tendency; Mean, Median, Mode, Geometric mean, Harmonic mean for raw data. Measures of dispersion; Quartile deviation, Mean Deviation - Standard Deviation - Coefficient of variation- Range

UNIT III: Probability

Introduction to Probability, Theorems of probability; Bayer‘s Theorem, Probability Distributions; Discrete & Continuous distributions, Binomial Distribution, Poisson Distribution, Normal Distribution.

UNIT IV: Correlation & Regression Analysis

Correlation Analysis, Types of correlation; Rank Correlation Coefficient. Regression analysis, Types of Regression, Assumptions; Comparison to Correlation.

UNIT V: Hypothesis Testing

Introduction; Types of sampling, Hypothesis testing; Type of errors, Parametric & Non-parametric tests; Mann Whitney’s U test, Chi-square, t-tests, ANOVA.

REFERENCES

1. Don. Mc Neil - Epidemiological Research Methods - Oxford University Press, London.

2. Biostatistics –Principle & Practice – McGraw Hill Education.

3. http://www.ats.ucla.edu/stat/

4. Ahttp://www.statsoft.com/textbook/basic-statistics/

COURSEOUTCOMES	
CO1	The student will be able to understand and apply the Biostatistics.
CO2	The student will be able to use the software independently for the data analysis.
CO3	The student will be able determine the correct procedures to use in a given situation
CO4	The student will be able to interpret the results of hypothesis tests

MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	S			**S**		**M**
Category	Management					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE1021	**COMMUNICATION SKILLS FOR HEALTH CARE PROFESSIONALS**
	TotalContactPeriods–5
	Total credits -2
	Course Designed by–Department of Community Medicine
OBJECTIVES	This course deals with essential functional English aspects of the of communication skills essential for the health care professionals.

UNIT: I APPLIED GRAMMAR

Identifying common errors in sentences, Transformation of sentences, Usage of either …or…, Neither… nor…, So… that…, Such… that…, Not only… but also…, unless…

UNIT: II VOCABULARY

Abbreviations used in healthcare, Medical idioms & Phrases

UNIT: III WRITING

Letter writing, Curriculum Vitae writing, covering letter, Creative writing – invite, posters, Essay writing, summary writing, note taking, report writing.

UNIT: IV SPOKEN COMMUNICATION

Telephone etiquette, Importance of Stress, Intonation and rhythm, speaking; describing simple process, Filling a form etc., - Asking and answering questions; Debate/Oral Reporting

UNIT: V LISTENING AND READING SKILLS:

Listening and reading comprehension exercises.

Textbook Recommended:

1. Effective English Communication by Krishna Mohan and Meenakshi Raman, Tata McGraw – Hill Publishing Company Limited, New Delhi.

2. English for Colleges and Competitive Exams by Dr. R. Dyvadatham, Emerald Publishers.

COURSEOUTCOMES						
CO1	The student will be able to express better.					
CO2	The student will be able to get knowledge about MOA, adverse effects					
CO3	The student will Grow personally and professionally					
CO4	The student will Develop confidence in every field					
MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**		S	
4	S			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE1022	**BIOMEDICAL ETHICS**
	TotalContactPeriods–3
	Total credits -2
	Course Designed by–Department of Community Medicine
OBJECTIVES	To provide basic skills in: A) Approaching ethical issues. B) Analysis and statement of issues. C) Understanding the relevant ethical principles invoked..

Introduction to Bioethics

Bioethical issues related to Healthcare &Medicine 5

2Anatomy - Cadaver ethics, Human dignity, PNDT, Disposal of cadaver, Genetic Counseling 7

Physiology - Animal ethics, Health policy privacy 7

Biochemistry & Pathology - Prudence of investigation confidentiality, Patients bill of rights, Disposal of investigative material, Integrity, Blood transfusion 5

Pharmacology - Rational drug prescribing, Clinical trials, Risk minimization, Animal ethics

Microbiology - Hand wash, Drug resistance minimization, Prudence of investigation confidentiality, Sterilization procedure, Bio safety and bio hazard 5

Medicolegal aspects of medical records

Introduction to Intellectual Property:

Concept of Intellectual Property Kinds of Intellectual Property

Patents, Copyrights Designs, Trademarks,Geographical Indication, Infringement of IPR, Its protection and

Remedies Licensing and its types

REFERENCE BOOKS

1. Contemporary issues in bioethics – Beauchamp & walters (B&W) 4th edition.

2. Classic philosophical questions by Gloud (8th Edition)

3. Case book series and booklets by UNESCO Bioethics Core curriculum 2008

4. Encyclopedia of Bioethics 5 vol set, (2003) ISBN-10: 0028657748

5. Intellectual property rights- Ganguli-Tat McGrawhill. (2001) ISBN-10: 0074638602,

6. Intellectual Property Right- Wattal- Oxford Publications House.(1997) ISBN:0195905024.

COURSEOUTCOMES	
CO1	The students will be able to: Recognize what constitutes an ethical concern in health care
CO2	The student will be able to understand the clinical evaluations of Disease Condition
CO3	The student will be able to Understand better the complexity and multi-dimensionality of medical ethical concerns and uniqueness of each problem.
CO4	The student will get the knowledge of plagiarism in their innovations which can be questioned legally

MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**d**	**E**	**f**
1	S		M		S	S
2				s		
3			**S**			
4	S		M			**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE1023	**FUNDAMENTALS OF HUMAN GENETICS**
	Total Contact Periods– 4
	Total credits -2
	Course Designed by–Department of Genetics
OBJECTIVES	To Comprehend the Chromosomal basis of inheritance

I -Introduction to cellular components

Structure and morphology of various types of cells - Biochemical composition - Cellular organelles -Composition and components of nucleus - Chromosomes - Cell division and Mechanics of cell division and regulation.

II - Structure and functions of nucleic acids

Functions, Structure and characteristics of nucleic acids - Types of mutations -Genetic variations and polymorphisms

III - Chromosomal basis of inheritance

Chromosome behavior and inheritance pattern in man - Single gene Mendelian disorders: autosomal dominant, recessive, sex linked dominant and recessive - Polygeneic and mitochondrial inheritance.

III - Origin and detection of genetic disorders

Mutation - Non-disjunction - Chromosomal abnormalities and clinical phenotypes of common genetic syndromes (Down's syndrome, Patua‘s syndrome, Edward syndrome, Turner syndrome and Klinefelter's syndrome, Cri-du-caht syndrome)- Karyotyping, Neural tube defects, Carcinogenesis.

IV–Biochemical basis for the inborn errors of metabolism

General characteristics of inborn errors of metabolism – Incidence - etiology - Folic acid metabolism - triple markers - New born screening, prevention and management. False positive and false negative -Ethical principles of Genetic counseling for prenatal diagnosis - Fetal rights – Regulation and prevention of misuse act 1994.

Reference books

1. A guide to genetic counseling, 2nd edition, D.L. Baker, J.L. Schuette and W.R. Uhlmann, Wiley –Leiss Publications 2002.

2. Emery Elements of Medical Genetics, 9th edition, Robert F. Mueller & Ian D. young, Churchill Livingstone, 1995.

3. Medical Genetics, 3rd edition, Lynn B. Jorde, John C. Carey, Michael J. Bamshad, & Raymond L. White, Mosby, 2003.

COURSEOUTCOMES						
CO1	The student will be able to Be able to describe the chromosomal basis of inheritance and how alterations in chromosome number or structure. . .					
CO2	The student will be able to understand of the differences and similarities between diagnostic, predictive and carrier genetic testing.					
CO3	The student will be able to know detailed information of Chromosome behavior and inheritance pattern in man					
CO4	The student will be to understand the phenotype and genotype .					
MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**d**	**E**	**f**
1	S		M		S	
2				s		M
3			**M**			
4	S			**S**		**S**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE2024	**PRINCIPLES AND APPLICATION OF CLINICAL GENETICS**
	Total Contact Periods– 6
	Total credits -2
	Course Designed by–Department of Nephrology
OBJECTIVES	To develop awareness about Genetic testing, Genetic counseling, Philosophy and Ethos of Genetic services

I -Principle and components of genetic testing Lay out of genetic laboratories - Genetic testing, Genetic counseling, Philosophy and Ethos of Genetic services, Types of testing- Cytogenetic testing- Molecular cytogenetic testing- DNA testing.

II - Cytogenetic testing Indications, Type of sample, Sampling and transport conditions, Karyotyping - chromosome identification, merits and demerits of conventional cytogenetic testing

III - Molecular Cytogenetic testing

Indications, Type of sample, Sampling and transport conditions - Fluorescence in-situ hybridization, fluorescence signal enumeration, merits and demerits of FISH.

IV - DNA testing

Organization of human genome, Structure and function of genetic material, Polymerases chainmreaction - Types, principles and testing, Sequencing.

V - Practical:

Case studies

Reference books

1. Practical Genetic counseling, Peter S. Harper, 6th edition, Holder Headline Group 2004.

2. Medical Genetics, 3rd edition, Lynn B. Jorde, John C. Carey, Michael J. Bamshad, &

Raymond L. White, Mosby, 2006.

3. Genetics in Medicine, Thompson & Thompson, 6th edition, Elsevier 2004.

4. Practical Genetic counseling, Peter S. Harper, 6th edition, Holder Headline Group 2004.

COURSEOUTCOMES						
CO1	The student will be able to become familiar with and practice genetic tests.					
CO2	The student will be able to provide better patient care					
CO3	The student will be able to know detailed information about Genetic Counselling					
CO4	The student will be to know about Genetic testing.					
MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3			**M**			
4	S				S	**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE2025	**CLINICAL EXAMINATION OF THE HUMANVISUAL SYSTEM**
	TotalContactPeriods–5
	Total credits -2
	Course Designed by–Department of Opthalmology
OBJECTIVES	The core objective of this course is to gain in depth knowledge on the structural and physiological functions of the various parts of the eye and the different examination procedures for the ocular structures.

: **I - History Taking**

Importance of history taking, Demographic data and its importance, Chief presenting symptoms, History of present illness, History of past illness, Family History, Common ocular symptoms and their causes – defective vision, watering eyes, discharge, redness, pain, asthenopia and other symptoms

II - Visual Acuity measurement

Distance visual acuity-charts, methods and measurements; Near visual acuity –charts, methods and measurements; contrast sensitivity testing; colour vision testing

III - External Examination

Examination of head posture, examination of forehead, examination of eye brows, examination of eyelids, examination of Lacrimal apparatus, examination of eyeball on the whole, examination of the cornea, conjunctiva sclera and anterior chamber, eye movements, muscle balance and squint evaluation

IV - Anterior segment Evaluation

Slit lamp examination of the eyelids, cornea, conjunctiva, anterior chamber depth, iris, and lens Intraocular pressure measurements using non contact tonometer

V - Posterior segment Evaluation

Introduction and importance of posterior segment evaluation- direct and indirect ophthalmoscopy

REFERENCE BOOKS:

1. Comprehensive Ophthalmology – A K Khurana, 5th edition, New Age International Publishers,

2012.

2. Clinical Ophthalmology – Jack J Kanski, 7th edition, Butterworths, 2012

1. Borish's Clinical Refraction - William J. Benjamin, Irvin M. Borish, Butterworth-Heinemann, 2006

COURSEOUTCOMES						
CO1	The student will be able to have the skill to perform basic ophthalmic examination					
CO2	The student will be able to understand concept of theory and clinical evaluation of disease conditions gain an in- depth knowledge on disease outline and clinical evaluation of patients					
CO3	The student will be able to depth knowledge on the functions of the visual system					
CO4	The student will have the skill to perform basic ophthalmic examination					
MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**D**	**e**	**f**
1	S		M		s	
2				S		M
3	M		**S**			
4	M			**C**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE2026	**PERSONALITY DEVELOPMENT AND STRESS MANAGEMENT**
	Total Contact Periods– 4
	Total credits -2
	Course Designed by–Department of HR
OBJECTIVES	• To Explain the effect of personality, attitudes, perceptions and attributions on Health stress, coping and relaxation.

Unit 1

Introduction to Personality Development, Different Stages of Development, Types of personalities, personality perspectives and theories

Unit 2

How needs impact personality, Maslow's hierarchy of need, Basic Personality Traits; Values, Beliefs, Interactions, Experiences, Environmental influences, the big five dimensions.

Unit 3

Stress; causes, effect and types, Stress resistant personalities, Relaxation; training aspects importance and Body works.

Unit 4

Health stress and coping, Understanding and communicating our health needs, Behavioral and psychological correlates of illness.

Unit 5

Soft skill; need and importance, Personality development and soft skills. Effective communication, listening, speaking, writing, interpretation part of soft skills and personality

Learning Outcome:

By successfully completing this course, students will be able to Describe how a personality develops.

- Define the stages of personality development.
- Define personality types.
- Describe basic personality traits.
- Personality and stress.
- Health stress, coping and relaxation.
- Soft skills and personality.

Text Books:

1. Hurlock (1976). Personality development.Tata McGraw Hill.

2. Baron R A, Psychology 5th edition, Pearsons publication.

3. Abraham A, General Psychology, Tata McGraw hill Education private limited.

Reference Books:

1. Lazarus J Stress Relief and Relaxation Techniques, Viva Book Private limited.

2. Shelly E. Taylor, Health psychology, 7th edition, TATA McGrawHil, New Delhi.

COURSEOUTCOMES	
CO1	The student will be able to Define the stages of personality development.
CO2	• The student will be able to Describe basic personality traits.
CO3	The student will be able to Describe how a personality develops-Personality and stress.
CO4	The student will be able to Develop the Soft skills and personality.

MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**D**	**e**	**f**
1	S		M		s	
2				S		M
3	M		**S**			
4	S			**S**		**M**
Category	Management					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE2027	**FIRST AID MANAGEMENT & SPLINTING TECHNIQUES**
	TotalContactPeriods–6
	Total credits -2
	Course Designed by–Department of Medicine
OBJECTIVES	Students will gain additional skills in interventional procedures and Differentiate between emergency situation and other use.

Unit-I BACKGROUND INFORMATION

- The importance of first Aid
- First aid supplies
- First aid and the law
- Prevention practices

Unit-II ACTION AT AN EMERGENCY

- Recognizing Emergencies
- Deciding to act
- Seeking medical care
- Disease transmission
- Rescuer reactions

Unit –III BLEEDING AND WOUNDS

- External bleeding
- Wound infection
- Amputations
- Impaled objects
- Wound that require medical care
- Internal Bleeding
- Dressing and Bandages

Unit-IV BONE, JOINT AND MUSCLE INJURIES

- Bone injuries
- Splinting
- Joint injuries
- RICE injuries
- Muscle injuries
- Splints – Introduction, Types, Uses, Splinting guidelines, Slings, Procedure,Complications

UNIT-V RESCUING AND MOVING INJURIES

- Water rescue
- Ice rescue
- Electrical Emergency Rescue Hazardous materials incidents

- Motor Vehicle crashes
- Fires
- Confined spaces
- Triage – what to do with multiple victims
- Moving victims

Text books:

1 .First Aid CPR and AED standard (sixth edition)

2. First aid book-St Johns Ambulance services

3. Text book of Orthopaedics – Natarajan

4. Text book of Orthopaedics – John Ebenezer Reference books: First Aid and Management of Minor Injuries by Jon Dallimore First Aid and Beyond by Dan Wolfe - Smashwords , 2014 International Trauma Life Support Provider Manual Essentials Orthpaedics Mark D Mille

COURSEOUTCOMES	
CO1	The student will be able to Differentiate between emergency situation and other use.
CO2	The student will be able to know about the basics of concepts of disease & outlines of clinical evaluation.
CO3	The student will be able to List management, assessment, and care steps for upper extremity and lower extremity fractures.
CO4	The student will be to know Splinting techniques of lower extremities – Thomas splint, sam splint, etc

MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES

COs\Pos	**A**	**B**	**c**	**D**	**e**	**f**
1	S		M		s	
2				S		M
3	M		**S**			
4	S			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE3028	**ESSENTIALS OF MEDICAL TRANSCRIPTION**
	Total Contact Periods– 7
	Total credits -2
	Course Designed by–Department of MRD
OBJECTIVES	Provide Hands on training on English Language and listening comprehension and provide foundation to learn medical terminology & learn laboratory report

Unit 1

The Medical Transcriptionist‘s career including Ethical& Legal Responsibilities Introduction to Medical transcription, Job Opportunities, Transcription Skills, Medical records, Certification for Medical Transcriptionists, Ethical and Legal responsibilities

Unit 2

Equipments in Transcription Equipment, Computer Systems, Ergonomics, Dictation Equipments, Hand and Foot control Dictation, Transcription Preparation

Unit 3

Transcription Guidelines Punctuations, Proof reading notations, Formats and styles, SOAP for Chart notes; Discharge Summary

Unit 4 PRACTICAL:

1. Equipments for Medical Transcription,2. Typing for the beginners, 3.Vocabulary, 4. Proof reading Notations , 5. Formats and styles in document preparation , 6. Preparation of chart notes, 7. Listening Comprehension, 8. Transcription check off sheet **References Book**1. Medical Key boarding, Typing, and Transcribing Techniques and procedures 4th Edition, March

Otis Diehl, Marilyn Takahashi Fordney, W.B. Saunders Company

2. The AAMT Book of Style for Medical Transcription, Claudia J. Tessier

3. CD‘s available for:

a. Stedman‘s Electronic Medical Dictionary 4.0

b. American Drug Index 2003

Text Books:

1. Medical Key boarding, Typing, and Transcribing Techniques and procedures 4th Edition, March

Otis Diehl, Marilyn Takahashi Fordney, W.B. Saunders Company

2. The AAMT Book of Style for Medical Transcription, Claudia J. Tessie

COURSEOUTCOMES						
CO1	The student will be able to Demonstrate their basic skills in the knowledge of Vocabulary, Medical terminology					
CO2	The student will be able to Demonstrate their basic skills in the preparation of chart notes. .					
CO3	The student will be able to Demonstrate skills in listening comprehension					
CO4	• The student will be be able to identify accurate format for medical document preparation					
MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**d**	**E**	**f**
1	S		M		S	
2				s		M
3	M		**S**			
4	S			**S**		**M**
Category	Medical Records					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE3029	**COMMUNICATION AND SOFT SKILL**
	Total Contact Periods– 7
	Total credits -2
	Course Designed by–Department of Human Resources
OBJECTIVES	This course is designed to equip the students with essential soft skills needed for workplace and improve personality.

LEARNING OUTCOME:

This course is designed to help the students to

- Foster healthy attitude.
- Develop effective inter and intra personal skills to be an effective team worker.
- Communicate effectively in both academic and professional setup

UNIT: I ASPECTS OF COMMUNICATION

Importance of communication, Process, Barriers, Non verbal Communication

UNIT: II SPEAKING

How to Open and Close conversations, Introductions and Address System, Expressing Courtesy, Giving Compliments and replying to Compliments, Presentation Skills, Telephonic conversation and telephone etiquette

UNIT – III PRESCRIBED READING

Tom Sawyer by Mark Twain, Bacon‘s Essays: - Of Goodness and goodness of nature

UNIT – IV WRITING

Letter writing - Letter of Complaints, Inviting and Declining an invitation, Writing Memos and Emails, Grammar, Spelling & Punctuation, Use of Dictionary & Thesaurus.

UNIT – V SOFT SKILLS

Active Listening Skills, Assertive Skills, Negotiation and Persuasive Skills, Interview Skills

Text Book:

Developing Communication Skills by Krishna Mohan and Meera Banerji, II edition, Macmillan.

Reference Books:

1. Communication Skills for Engineers and Scientists by Sangeeta Sharma and Binod Mishra, PHI Learning Private Limited, New Delhi.

2. English and soft skills by S.P. Dhanavel, Orient Black Swan

3. Effective English Communication by Krishna Mohan and Meenakshi Raman, Tata McGraw – Hill Publishing Company Limited.

4. Technical Communication – Principles and Practice, by Meenakshi Raman and Sangeetha Sharma, II edition, Oxford University Press.

5. Developing Communication Skills by Krishna Mohan and MeeraBanerji, II edition, Macmillan.

6. The Complete Guide to Functional Writing in English by M. Sarada, Sterling Publishers (P) Ltd., New Delhi.

7. Speaking Naturally: Communication Skills in American English by Bruce Tillitt and Mary Newton Bruder, Cambridge University

COURSEOUTCOMES	
CO1	The student will be able to Foster healthy attitude
CO2	The student will be able to develop effective inter and intra personal skills to be an effective team worker
CO3	The student will be able to Develop effective inter and intra personal skills to be an effective team worker
CO4	The student will be able to Communicate effectively in both academic and professional setup

MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**a**	**B**	**C**	**d**	**e**	**F**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE3030	**PROFESSIONAL SKILLS DEVELOPMENT**
	Total Contact Periods– 6
	Total credits -2
	Course Designed by–Department of Human Resources
OBJECTIVES	To Advance the students' intellectual curiosity, competency and skills in preparation for employment

1. Communication Skills

Importance of Communication skills in Public health; Communication process; Methods of communication; Types of communication: Verbal and Non-verbal; Impediments to effective communication; Feedback

2. Oral Presentation Skills:

Preparation and planning; Structure; Audio-visual aids; Creating interest and establishing a relationship with the audience; Body language; Voice and pronunciation; Review

3. Writing skills:

Writing a scientific paper; Writing a proposal; Structure of an article; References and literature review; Peer-review process-Publication bias; International guidelines for publication in journals; Professional Ethics

4. Leadership in Public health:

Leadership styles and trait; Motivation skills; Interpersonal communication skills; Problem solving skills; Decision making skills; Management skills; Communication Skills

5. Manuscript writing

Writing introduction, objectives, methodologies, major finding, discussion, conclusion and recommendation**6. Seminar presentations**Use of computers present data and information on recent topics

Text Books:

1. Professional Writing Skills, A self paced training programme by Janis Fisher Chan and Diane Lutovich. Advanced Communication Designs Inc, 2003. San Anselmo, CA. ISBN 0963745549

2. Speaking Your Mind: Oral Presentation and Seminar Skills By Rebecca Stott, Tory Young, Cordelia Bryan Contributor Rebecca Stott, Tory Young, Cordelia Bryan Published by Longman, 2001 ISBN 0582382432, 9780582382435

3. Public Health Leadership: Putting Principles into Practice Louis Rowitz, PhD. Jones and Bartlett Publishers, 2003. ISBN-13: 9780763725013 ISBN-10: 07637250

COURSEOUTCOMES						
CO1	The student will be able to Develop good written and oral communication abilities					
CO2	The student will be able to Develop an understanding of team building and leadership skills.					
CO3	The student will be able to Develop knowledge regarding capacities needed to work independently within diverse work environments					
CO4	The student will be able to know how to maintain Records and Reports and demonstrate the procedure.					
MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**D**	**e**	**f**
1	S		M		s	
2				S		M
3	M		**S**			
4	S			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting Of Academic Council held in Aug, 2017					

UAH17CE3031	**LIBRARY SCIENCE AND E-RESOURCES**
	Total Contact Periods– 6
	Total credits -2
	Course Designed by–Department of Library science
OBJECTIVES	To gain knowledge about Documentary Sources of Information and Library Automation

Unit 1 BASIC CONCEPTS AND INFORMATION SERVICES

Meaning of Library – Types of Library -– Library layout - Functions of Library – need for Library – Meaning of ISBN and ISSN – Collection management - Library Classification system - Five laws of Library Science – Inter Library Loan (ILL), Communication theories and models.Barriers to communication.Levels of communications – Intrapersonal, interpersonal and mass communication. Information services – literature search Methods of Dissemination of information Current Awareness Service (CAS), Selective Dissemination of Information (SDI), Document delivery service, Alert services, and Internet services.

Unit 2 INFORMATION SOURCES

Documentary Sources of Information, Print, and Non-print including Electronic, Human and Institutional sources: Nature, types, characteristics and utility. Internet as a source of Information. Primary sources of information – Journal, conference volume, patents, research reports, thesis and their electronic format – Secondary sources of information - Bibliography, Encyclopedia Dictionary, Yearbook , Directory, Geographical Source, Textbook, Index and Abstracts.

Unit 3 LIBRARY AUTOMATION

Definition need, Purpose, advantages. Planning for Library automation. Automation of Library operations - Acquisitions, Cataloguing, OPAC, Circulation and Serials control. Evaluation of Library automation systems - Application of Barcode and RFID Technology for Library Functions. Basic concepts: Bibliography, bibliographic coupling, Impact factor.

Unit 4 ELECTRONIC INFORMATION SOURCES

Electronic Information resources: Meaning and definition, Growth and development, Types. Journals, e-Books, e-Theses, e-newspapers, Blogs, Wikis. Free databases and fee based bibliographical and full text databases, subject related websites, Institutional repositories, Open Archives and digital Libraries. - Resource Sharing and Networks: Consortia- Importance and objectives. Study of Information networks and Digital Library Consortia. Types of computer networks: Local Area Networks – Concept, Topologies - Bus, Star, Mesh, Tree, and Ring). Wide Area Networks and Metropolitan Area Networks- Concepts, Circuit switching and Packet switching. Difference between LAN and WAN. Wireless Networks –Mobile telephones.

Unit 5 DIGITAL LIBRARIES

Digital Libraries: Concepts and issues. Understanding digital Libraries Content creation – Electronic documents, files and file formats. Study of different file formats.Studying PDF in detail-features of PDF.Digitization- scanning, Digital Preservation, Conservation and Archival Management – Problems and prospects. Open Access Movement and Institutional repositories.

TEXTBOOKS

1. Ranganathan, S.R The five Laws of Library Science UBS Publishers, 1988.

2. Ranganathan, S.R. Library Manual SaradaRanganathan endowment for Library Science, 1989.

3. Ranganathan, S.R. Cataloguing Practice SaradaRanganathan endowment for Library Science 1990

COURSEOUTCOMES						
CO1	The student will be able to analyze and understand the query					
CO2	The student will be able to Identify the sources of information					
CO3	The student will be able to Find out the information					
CO4	The student will be able to know how to maintain Records and Reports and demonstrate the procedure.					
MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**d**	**e**	**F**
1	S		M		s	
2				s		M
3	M		**S**			
4	S			**S**		**M**
Category	Library Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

INTERNSHIP PROGRAMME

ALLIED HEALTH SCIENCE

INTERNSHIP

Regulation for Internship

Internship is an important part of training wherein an Allied Health Science Graduate acquires skills, and applies his knowledge gained during his course of study.

Objectives:

1. To Facilitate Reinforcement of Training.
2. To Develop Professionalism, Communication and Team Building skills.
3. To help in understating of ethical Practices like
    - Rights and dignity of patients
    - Ethical Conduct and professional obligations to colleagues, patients, families and community

- The Internship is compulsory for all the candidates. It shall commence after the students have completed and passed all academic and clinical requirements.
- The internship shall be for a duration of one year.
- The degree shall be awarded after satisfactory completion of internship.

EVALUATION OF INTERNEES

Formative and Summative evaluation are carried out. A **Log Book** is maintained by all internees. No Marks are allotted. Satisfactory completion of Log Book is essential for completion of internship.

Day to day assessment of the internees during the internship posting should be done (Log Book). Summative evaluation is based on observation of the supervisors of different departments and their records in the log books. Based on the formative and summative evaluation the head of department shall issue a certificate of satisfactory completion of training, following which the university shall award the degree.

During internship a project is allocated to each intern by the respective Heads of departments. The project work is marked for 100 (including viva).

Six credits are given for the project
30 hours per credit
Total 180 hours
The Project is done for a Maximum duration of 6 months.

Internship credits

The internship is given 15 Credits. (i.e.) 45 hrs/Credit. A Total of 675 hours.

After Undergoing internship for a period of Six months, each Department shall conduct an **internal evaluation** of the student to assess the skills developed and progress of the student before issuing the certificate of completeness.

The duration of the posting and skill acquisition in various technology courses are attached.

Number of Working days for interns:-

All Sundays are holidays.

On Government holidays duties are allotted on turns to the interns. In cases of leave or absence extension of posting shall be given which is done at the discretion of the Head of Department.

INTERNSHIP [VII & VIII SEMESTER]

S.NO	COURSE CODE	COURSE TITLE	SEMESTER VII &VIII				
			HOURS PRESCRIBED	PROJECT EVALUATION	VIVA	TOTAL	CREDITS
1.	UAOT17CL425	Internship	675				15
2.	UAOT17CL426	Project		80	20	100	6
							Total Credits - 21

Duration of Posting – For Internship in various Technologies

ANAESTHESIA TECHNOLOGY

Duration of Postings

General Surgery OT	-	2 months
Obstetric & Gynaecology OT	-	1 month
ENT OT	-	1 month
Orthopaedics OT	-	2 months
Urology OT	-	1 month
Cardiac OT	-	2 months
Neuro OT	-	1 month
ICU	-	2 months

The Intern should maintain a log book.
At the end of the internship the interns should:

1. Check the anaesthesia machine, resuscitation equipment and monitors
2. Assess the patient preoperatively
3. Have knowledge of the suitable pre-medication
4. Load & Label anaesthesia drugs and emergency drugs
5. Know to check and operate a defibrillator
6. Have skill to keep drugs and equipment necessary for spinal/epidural/plexus block and general anaesthesia
7. Have knowledge of complication of various positions under anaesthesia and ways to prevent them
8. Know to operate syringe pump
9. Get ready with necessary disposables and drugs for setting up arterial/central venous cannulation
10. Help the Anesthesia in Temperature and Neuromuscular monitoring
11. Know the various adjustment in a ventilator
12. Know to take an ABG, Venous blood for investigations and interpretation of various lab reports
13. Know how to check the blood bag before transfusion

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B.Sc. CARDIAC TECHNOLOGY

R2016

CURRICULUM

UAH17CT101	**ANATOMY**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Anatomy
OBJECTIVES	An outline of anatomy with special emphasis on applied aspects is provided to the students for better understanding of the technical and diagnostic procedure.

UNIT I: Organization of the human body

1. Introduction

- Introduction to human body
- Definition and subdivision of anatomy
- Anatomical position and terminology
- Region and systems of the body
- Cavities of the body and their contents
- Levels of organization of the body

2. Cell and genetics

- Parts of cell – cell membrane, cytoplasm, organelles, inclusion bodies, nucleus
- Structure of chromosome, DNA, RNA.
- Basics & fundamentals of Genetics, Karyotyping, Chromosomal disorders, prenatal diagnosis, genetic counseling and gene therapy.
- Cell division – Definition and main events that occur in different stages of mitosis and meiosis.
- Tissues – Definition, characteristic features and types with example.
- Types of glands with example

UNIT II: Systems of support and movement

1. **Skeletal system**

- Cartilage: Type and basic histological feature.
- Bones: definition, classification based on location, name and number of bones with general features of important bones, function of bone, histological feature of a compact bone.
- Joints – Definition and types with example, Axis and movements. Shoulder, elbow, hip, knee joints – type, bones and ligaments involved, possible movements.

1. **Muscular system**

- Types of muscle with basic histological features
- Parts of skeletal muscle.
- Definition of origin and insertion
- Origin, insertion, nerve supply, action of sternocleidomastoid, pectoralis major, deltoid, gluteus maximus and diaphragm.

UNIT III: Controls systems of the body

1. **Nervous system**

- Subdivisions of the nervous system
- Spinal cord-location, extent, external features and blood supply
- Brain-subdivision, location, external features of Medulla oblongata, Pons, Midbrain, Cerebellum, and Cerebrum, Thalamus and Hypothalamus, Location and subdivision of ventricles of brain. Circle of Willis.
- Cranial nerves-name, number, attachment, area of distribution
- Spinal nerves-typical spinal nerves. Name and location of plexuses. Location and distribution of brachial and lumbo sacral plexus.

- Autonomic nervous system-sympathetic and parasympathetic nervous system. Location of preganglionic and postganglionic neurons.

2. Sense organs

- Location and features of nose, tongue, eye, ear and skin.

3. Endocrine system

- Names of the endocrine glands. Location and features of pituitary, thyroid, parathyroid, suprarenal, pancreas, ovaries and testes. Names of hormones produced by each gland.
- Microscopic features of thyroid and pancreas.

UNIT IV: Maintenance of the human body

1. **Cardiovascular system**

- Types and general features of blood vessels. Structure and types of arteries and veins. Shape, size, location, covering, external and internal features of Heart. Conducting system of heart. Blood supply of the heart. Name, location, branches and main distribution of principal arteries and veins

2. Lymphatic system

- General features of Lymph nodes and lymphatic vessels. Name, location, external features, microscopic features of tonsil and spleen.

3. Respiratory system

Name the organs of respiration. Location and features of Nasal cavity, pharynx, larynx, trachea, lung & pleura. Mention the microscopic feature of the lung.

4. Digestive system

- Name the parts of the alimentary canal and accessory organs. Location & features of esophagus, stomach, small and large intestine. Location and feature of tongue, salivary glands, pancreas, liver and gallbladder. Microscopic features of the liver.

5. Urinary system

- Names of urinary organs. Location and features of kidney, ureter, urinary bladder & urethra. Microscopic features of the kidney.

6. Reproductive system

- Names of male and female organs of reproduction. Location and features of testis, epididymis, vas deferens, prostate gland and spermatic cord. Location & features of uterus, uterine tube, ovary and breast.

7. Embryology

- Structure of gametes & gametogenesis. Fertilization to development of embryo till 3rd week. Derivatives of germ layers. Teratogens, Structure and Functions of placenta.

UNIT V: Anatomical regions

- Simple ideas about scalp, triangles of neck, axilla, cubital fossa, carpal tunnel, mediastinum, umbilicus, inguinal canal, femoral triangle
- sub sartorial canal popliteal fossa

PRACTICALS/DEMONSTRATIONS

1. Demonstrations of dissected specimens.

2. Viewing of projection of microscopic slides of muscle, bone, cartilage, spleen, tonsil, lung, liver, kidney, thyroid and pancreas

REFERENCE BOOKS

1. Manipal manual for AHS by Dr. Sampath Madhyastha, (Second Edition) Published by CBS Publishers.

2. Handbook of anatomy for nurses by Dr. P. Saraswathi

3. Ross and Wilson, Anatomy and physiology in health & illness

COURSE OUTCOMES	
CO 1	The student will be able to gain knowledge of general anatomy and locomotion.
CO 2	The student will be able to gain knowledge of basic human anatomy and histology of CVS and Respiratory systems.
CO 3	The student will be able to gain knowledge of basic human anatomy and histology of CNS, GI, excretory and reproductive systems.
CO 4	The student will be able to gain of knowledge basic human anatomy and histology of endocrine system and special senses.

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES

COs\POs	a	b	c	d	e	f
1	S					
2		**M**				
3			**S**			
4	s			**S**		**M**

Category	Basic Medical Science
Approval	46th Meeting of Academic Council held in Aug, 2017

UAH17CT102	**PHYSIOLOGY**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Physiology
OBJECTIVES	To know the basic functioning of the human body, and the various organ systems. .

Unit-I

1. **General Physiology:**

- Concept of Homeostasis
- Cell structure and functions
- Transport across membranes

Body and body fluids:

- Body fluid volumes, compartments and composition
- Blood composition and functions
- Plasma proteins – Types and functions
- Erythrocytes – functions, Erythropoiesis, anemia‟s
- Leucocytes – classification and functions
- Platelets – morphology and functions
- Blood coagulation – Mechanism and name of anticoagulants
- Blood groups – Basis of ABO & Rh grouping, Erythroblastosis Foetalis

2. Muscle physiology:

- Muscles – Classification & structure of striated, nonstriated & cardiac muscle
- Neuromuscular junction

- Mechanism of skeletal muscle contraction

3. Digestive system:

- Salivary glands, functions of saliva
- Parts of stomach, composition & functions of gastric juice
- Pancreatic Juice – composition & functions
- Bile – composition & functions of bile & bile salts
- Functions of Small intestine & large intestine

Unit-II

1. Skin

● Structure & Functions

2. Excretory system:

- Kidney: Basic physiological anatomy (Including JGA)
- Formation of urine – GFR
- Formation of urine – Re-absorption & secretion
- Maturation Reflex
- Dialysis – Principle, types
- Renal function tests

Unit-III

1. Endocrine system:

- Hypothalamo hypophyseal inter relationship
- Posterior pituitary hormones and its actions
- Anterior pituitary hormones, Growth hormone – Actions
- Dwarfism, gigantism, acromegaly

- Thyroid hormones – Actions
- Cretinism, Myxoedema, Grave‟s disease (clinical features)
- Parathyroid hormones – Functions, Tetany
- Insulin, Glucagon‟s – Actions, Diabetes mellitus
- Adrenal medullar hormones & their actions
- Adrenal cortex hormones & their actions

2. Reproductive system:

- Male reproductive organs – Spermatogenesis, Testosterone actions
- Female reproductive organs – menstrual cycle (endometrial and ovarian cycles) and its hormonal control
- Contraceptive methods in male and female

Unit-IV

1. Respiratory system:

- Basic physiological anatomy
- Surfactant
- Mechanics of respiration
- Lung volumes and capacities
- Oxygen transport, Carbon-di-oxide transport
- Nervous and chemical regulation
- Pulmonary function tests.

2. Cardiovascular system:

- Basic physiological anatomy, innervations of heart
- ECG – normal waves, intervals and their significance
- Cardiac cycle – mechanical events, Heart sounds

* Blood pressure – Definition, measurement, normal values, factors maintaining BP Regulation

Unit-V

1. Nervous system:

- Structure of neuron, neuroglial cells, synapse and transmission across it
- Reflex – Components of reflex arc, examples.
- Functions of ascending tracts – anterior, lateral spinothalamic tracts, Dorsal column
- Functions of Corticospinal (Pyramidal) tract-Descending tract
- Functional areas of cerebral cortex
- Functions of basal ganglia, thalamus, hypothalamus, limbic system and cerebellum

2. Special senses:

● Receptors for various special senses

Practical Demonstration

Hematology:

1. Enumeration of RBC count.
2. Enumeration of WBC count.
3. Differential Count.
4. Estimation of Hemoglobin.
5. Determination of blood group.
6. Determination of bleeding time and clotting time.

Clinical physiology:

1. Measurement of blood pressure.
2. Determination of Radial pulse

Reference Book

1. Human Physiology for BDS by A.K.Jain, 4th Edition, Avichal publishing co

COURSE OUTCOMES	
CO 1	The student will be able to gain knowledge of general physiology, nerve-muscle physiology and haematology.
CO 2	The student will be able to gain knowledge of basic human physiology with respect to CVS, Respiratory system and GI system.
CO 3	The student will be able to gain knowledge of basic human physiology of excretion and CNS.
CO 4	The student will be able to gain knowledge of basic human physiology of special senses and endocrine system.

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES

COs\POs	A	b	c	D	e	f
1	S					
2		**S**				
3			**S**			
4	S			**S**		**M**

Category	Basic Medical Science
Approval	46th Meeting of Academic Council held in Aug, 2017

UAH17CT103	**BIOCHEMISTRY**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Biochemistry
OBJECTIVES	To know the basic Biochemical reactions within the human body, and the various organ systems. .

UNIT I – Cell and its molecules

Cell – Cell organelles, Fluid Mosaic Model, functions of cell membrane, Brief description of transport across the cell membrane.

Carbohydrates – Definition, Classification with examples, Sources, physiological significance and HbA1c.

Lipids – Definition, Classification with examples, Sources, Types of lipids present in the body, storage form, storage site, free cholesterol structure, functions of lipids, lipoprotein structure and its functions.

Nucleic acids – Nucleotide, Nucleoside, types of nucleic acids, secondary structure of DNA & Its functions; Types of RNA & its functions.

UNIT II – Proteins and Enzymes

Proteins – Definition, Classification, functions of proteins, Plasma proteins; Classification of Amino acids with examples
Hemoglobin structure, Functions of hemoglobin, hemoglobin derivatives, abnormal hemoglobin

Enzymes: Definition, Classification, coenzymes, Metalloenzymes, Factors affecting enzyme activity, Regulation of enzymes, overview of Mechanism of enzyme action, Isoenzymes and Clinical importance of enzymes

UNIT III-Vitamins, Minerals, Nutrition

Vitamins: Definition, Classification of Vitamins
Sources, RDA, Function & Deficiency symptoms of

- Fat Soluble Vitamins (A, D, E & K);
- Water Soluble Vitamins (Thiamine, Riboflavin, Niacin, Biotin, Pantothenic acid, Pyridoxine, Folic acid, Cobalamin) and Vitamin C

Minerals: Definition, Classification of Minerals

Sources, RDA, Function, Reference levels & Deficiency Symptoms of

- Calcium, Phosphorus, Iron Copper, Zinc, Sodium, Chloride, Iodine, Potassium, Fluorine and Selenium.

Nutrition: BMR, SDA, Dietary fibres, protein Energy Malnutrition and Obesity 24

UNIT IV – Bioenergetics and Metabolism
Bioenergetics: Electron Transport chain and Oxidative Phosphorylation
Metabolism

Carbohydrates: Digestion and absorption, Glycolysis, TCA cycle, Metabolism of Fructose and Galactose.

Lipids: Digestion and absorption, Beta oxidation of fatty acids, Regulation of Cholesterol level in the cell and outline of lipid transport.

Proteins: Digestion and Absorption, Formation and Disposal of Ammonia, Urea Cycle, Special Products of Glycine, Tyrosine and Tryptophan.

UNIT V – Miscellaneous
Outlines of DNA organization, Replication, Transcription, Genetic code and Translation

Organ function Tests: Liver, Renal and Bone.

PRACTICAL

- Spotters

COURSE OUTCOMES	
CO 1	The student will be able to gain knowledge of biochemistry of cell structure, functions, digestion, enzymes and proteins.
CO 2	The student will be able to gain knowledge of biochemistry of carbohydrates, minerals and vitamins
CO 3	The student will be able to gain knowledge of liver and renal function tests, specialized laboratory investigations and lipids.
CO 4	The student will be able to gain knowledge of biochemistry of metabolism, homeostasis, nucleic acids and cancer

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S			S	s	
2		**M**		s		
3	S		**S**			
4	S			**M**		**M**

Category	Basic Medical Science
Approval	46th Meeting of Academic Council held in Aug, 2017

UAH17CT104	**BASICS IN MEDICAL PHYSICS AND ELECTRONICS**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Radiology
OBJECTIVES	To know the basics in Medical Physics, Bio electric potential and the functioning of Medical equipments. .

Unit I: Laser

Nature of light-Reflection-Refraction-Total internal reflection-Optical fibers-Applications in Medicine – Laser-Principles-Action-Types of laser, Basic principles of laser in Medical Application – Argon-Ion laser photocoagulator-Photo thermal-Photochemical application-Applications of laser in Medicine-Laser hazards and safety measures.

Unit II: Radiation Physics

Introduction to nuclear physics and radioactivity, Radioactive radiations – X-ray, production of x-ray, Properties of x-ray radiations – Biological effects of radiation, Radiation damage in matter, Radiation protection principles, radiation detection and measurement – Ultrasound and generation of ultrasound.

Unit III: Introduction to Imaging Technique

Principles of Microscope: Simple microscope and compound microscope-Radiography: Making and X-ray image-Fluoroscopy. CT Scans, MRI – Ultrasonography: Ultrasound picture of Body-A-Scan-M-Scan-Ultrasound diathermy-Phonocardiography – Radio isotopes: Uses of Radio isotopes – 99mTc Generator – Scintillation detectors – Application of scintillation detectors – Gamma Camera – Positron Camera

Unit IV: Semiconductor devices

Principles of diodes and Transistors – Integrated circuits – Amplifiers – Basic configuration and types – differential and operational amplifiers – Waveform generators – Timer – A/D and D/A converters – Active filters – Transducers – Basic configuration and types.

Unit V: Bio potential Recording Systems

Introduction to bioelectric potential – Electrodes and surfaces – Bio potential amplifier – Frequency ranges of various biopotential signals – Working principles of bio potential recording systems – Electrocardiography – Electroencephalograph –Electromyography.

Reference Books:

1. New Understanding physics for advanced level – Jim Breithauput.

2. Advanced Physics for you by Keith Johnson, Simmons Hewett, Sue holt, John miller

3. Christensen‟s Physics of diagnostic Radiology by Thomas S. Curry III, M.D., Robert C Murry, Jr. PhD, Dow Dey, PhD.

4. Applied Electronics, A. Subramanyam, The National Publishing co., Madras (1996).

5. Design and Development of Medical Electronic Instrumentation, David Prutchi and Michael Norris, John Wiley & Sons (2005).

COURSE OUTCOMES	
CO1	The student will be able to know the functioning of radiological devices
CO2	The student will be able to understand the mechanism of functioning of medical equipments
CO3	The student will be able to know the functioning of Lab instruments
CO4	The student will be able to understand the functioning of radiation devices

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES

COs\POs	**A**	**b**	**c**	**d**	**e**	**f**
1	M		S		s	
2				S		M
3	S		**M**			
4	S			**S**		**M**

Category	Medical Science
Approval	46th Meeting of Academic Council held in Aug, 2017

UAH17CT105	**ENGLISH**
	Total Contact Periods – 60
	Total credits -4
	Course Designed by – Department of English
OBJECTIVES	To enable students to enhance their ability to comprehend spoken and written English required for effective communication in their professional work. Students will practice their skills in verbal and written.

Unit I: Spoken Communication

Learning to read the phonetic symbols

Stress

Intonation

Rhythm

Commonly mispronounced words

Correct pronunciation of important commonly used

Words in hospital practice

Unit II: Vocabulary and Reading

Special features of English vocabulary

Common errors in choice of word

Semi technical vocabulary

Collecting material from library on scientific topics

Comprehensive exercises

Unit III: Writing

Writing letters regarding permission, leave, opening bank account etc.

Taking notes from lecture / reading materials

Writing reports on patient care

Summarizing scientific passages

Unit IV: Grammatical and Idiomatic Usage

Correction of errors

Types of interrogative sentences

Active-Passive voice

Tense

Principles of procession, clarity and specificity

Reference Books:

1. Effective English Communication by Krishna Mohan and Meenakshi raman, Tata McGraw – Hill Publishing Company Limited, New Delhi (Approx. cost Rs 200)
2. English for colleges and competitive Exams by Dr. R..Dyvadatham, Emerald Publishers (Approx cost Rs. 150)

COURSE OUTCOMES	
CO1	The student will be able to develop their intellectual, personal and professional abilities.
CO2	The student will be able to acquire basic language skills, listening, speaking, reading and writing.
CO3	The student will be able to acquire the linguistic competence necessarily required in various life situations
CO4	The student will be able to communicate with speakers of English language

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES

COs\POs	**A**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	S			**S**		**M**

Category	Language
Approval	46th Meeting of Academic Council held in Aug, 2017

UAH17CT106	**BASIC OF COMPUTERS**
	Total Contact Periods – 30
	Total credits -4
	Course Designed by – Department of English
OBJECTIVES	This course is designed for students to develop basic understanding of used of computer and its applications in Clinical Departments

UNIT I: INTRODUCTION

Computer basics – Types of computers – hardware components – input devices – output devices – storage devices – memory – units and sizes – factors affecting performance – operating systems – applications software – networking – LAN and WAN – Accessories – backup – computer virus – software copyright.

UNIT II: WORD PROCESSING

Windows – Office automation – WORD processor – open a new document – toolbars – menus – font dialog box – enter text – scroll – spelling checker – Autocorrect – undo and redo – bullets and numbered lists – indenting – moving and copying – find and replace – auto shapes – saving document – preview and print.

UNT III: ELECTRONIC SPREADSHEET AND DATA PRESENTATION

EXCEL spreadsheet – grid of rows and columns – active cell – selecting range – entering data – editing data – row and column labels – adjusting width – creating and copying formulae – relative – logical functions – lookup function – creating chart – bar chart – pit chart – print and save.

POWERPOINT presentation – creating slideshows- building outline – switching levels in outline – adding pictures – slide designs – design templates – formatting – color scheme – customized backgrounds – inserting content – hyperlink – revolution in education.

UNIT IV: DATABASE MANAGEMENT SYSTEM

ACCESS database – concept – template –primary key – records and fields – Student roster database – input mask – adding records – viewing data – updating entries – searching and querying – sorting – Table, forms and reports.

UNIT V: APPLICATIONS IN HEALTHCARE AND MEDICINE

INTERNET – e-governance – access to information – communication facility – mechanics of E-mail – social transformation – electronic billing – drug information –information flow in lab and radiology – storage of medical records – networking the organization – patient care – intelligent monitoring – scholarly information – health informatics – robotic assisted surgery – Clinical decision support systems – Telemedicine.

UAH17CT107	**MICROBIOLOGY**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Microbiology
OBJECTIVES	This course is designed to enable students to acquire understanding of fundamentals of microbiology and identification of various microorganisms. It also provides opportunities for practicing infection control measures in hospital and community settings.

COURSE OUTCOMES	
CO 1	The student will be able to develop basic under-standing of computer use.
CO 2	The student will be able to acquire knowledge on Applications of computers in clinical departments.
CO 3	The student will be able to have the detailed knowledge on how to use hospital information systems.
CO 4	The student will be able to communicate with speakers of English language

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES

COs\POs	**A**	**B**	**c**	**D**	**e**	**f**
1	S		M		s	
2				S		S
3	M		**S**			
4	S			**S**		**M**

Category	Soft Skills
Approval	46th Meeting of Academic Council held in Aug, 2017

UNIT – I: General Bacteriology

Introduction & History of Microbiology, Classification & Morphology of Bacteria, Growth & nutrition, Culture Media & Methods, Sterilization & Disinfection, Fundamental aspects of antibacterial agents and antimicrobial susceptibility testing.

UNIT – II: Immunology

Infection, Immunity, Immunization schedule, applications of antigen antibody reactions, Hypersensitivity, Tumor & Transplantation Immunology.

UNIT – III: Virology

Introduction to virology, viral hepatitis, poliomyelitis, Rabies, Human immunodeficiency virus.

UNIT – IV Mycology & Parasitology

Introduction to mycology, pathogenic yeasts & fungi, Introduction to parasitology, Amoebiasis, Malaria, Helminthic infections.

UNIT – V: Applied Microbiology

Outline of common bacterial diseases, treatment & prevention-Respiratory tract infections (upper & lower), Meningitis (septic & aseptic), Enteric infections (food poisoning & gastro enteritis), Anaerobic infections, Skin & soft tissue infections, Urinary tract infections, Sexually transmitted diseases, Tuberculosis & Leprosy, Hospital acquired infections, Biomedical waste management.

PRACTICAL EXERCISES: Spotters, Gram staining.

Reference Books

1. Textbook of Microbiology by Ananthanarayan & Panicker‟s, 8th edition-Universities Press (India) PVT LTD.

2. Textbook of Microbiology by C. P. Baveja, 4th edition, Arya Publications.

3. Textbook of Medical Parasitology, CK Jayaram Paniker, 5th edition, Jaypee Publications.

4. Medical Parasitology by C. P. Baveja & V. Baveja, 2nd edition, Arya

5. Publications.

COURSE OUTCOMES	
CO 1	The student will be able to understand the morphological characters of bacteria.
CO 2	The student will be able to master the preparation of smear, fixation and staining of bacterial smears and its quality control methods
CO 3	The student will be able to learn to use microscope , autoclave, hot air oven, water bath, steamer, filters
CO 4	The student will be able to differentiate between innate and adaptive immunity, and explain the main defenses lines as well as biological barrier to the infections.

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES

COs\POs	**A**	**b**	**c**	**d**	**e**	**F**
1	S		M		s	
2				S		M
3	M		**S**			
4	M			**S**		**M**

Category	Basic Medical Science
Approval	46th Meeting of Academic Council held in Aug, 2017

UAH17CT108	**PATHOLOGY**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Pathology
OBJECTIVES	This course is designed for students to develop an understanding of general and systemic pathology. It helps them to know patho physiology of common diseases

UNIT-I: General Pathology I: Cellular Pathology, Acute and Chronic Inflammation, Tissue Renewal Regeneration and Repair, Hemodynamic Disorders Thromboembolic Disease and Shock

Introduction to Pathology, Adaptations Of Cellular Growth And Differentiation, Causes Of Cell Injury, Mechanisms Of Cell Injury, Necrosis, Apoptosis, Pathologic Calcification, Cellular Aging, Acute Inflammation – Mediators Of Inflammation Outcomes Of Acute Inflammation, Morphologic Patterns Of Acute Inflammation, Chronic Inflammation – Causes Of Chronic Inflammation, Granulomatous Inflammation, Healing By Repair, Scar formation And Fibrosis, Cutaneous Wound Healing, Healing By First Intention, Healing By Second Intention, Edema, Hemostasis and Thrombosis, Infarction, Shock

UNIT-II: General Pathology II: Diseases of the Immune System, Neoplasia, Environmental And Nutritional Disease, Diseases Of Infancy And Childhood

Innate Immunity, Adaptive Immunity, Components Of The Immune System, Mechanisms Of Hypersensitivity Reactions, Acquired Immunodeficiency Syndrome (AIDS), Neoplasia – Definition and Nomenclature, Characteristics Of Benign And Malignant Neoplasm‟s, Molecular Basis Of Cancer, Essential Alterations For Malignant Transformation, Clinical Aspects Of Neoplasia, Laboratory Diagnosis Of Cancer, Common Environmental And Nutritional Pathology, Nutritional Diseases, Tumors And Tumor-Like Lesions Of Infancy And Childhood **UNIT-III: Systemic Pathology I: Blood Vessels, the Heart, Red Blood Cell and Bleeding Disorders, Diseases Of White Blood Cells**

Arteriosclerosis, Atherosclerosis, Hypertensive Vascular Disease, Ischemic Heart Disease, Hypertensive Heart Disease, Valvular Heart Disease, Infective Endocarditic, Rheumatic Fever And Rheumatic Heart Disease, Cardiomyopathies, Leucopenia, Anemia‟s, Polycythemia, Bleeding Disorders, Reactive Proliferations Of White Cells, Definitions And Classifications of Lymphoid Neoplasm‟s and Myeloid Neoplasm‟s, Splenomegaly.

UNIT-IV: Systemic Pathology II: The Lung, The Gastrointestinal Tract, Liver And Biliary Tract

Acute Respiratory Distress Syndrome, Obstructive Pulmonary Diseases, Pulmonary Infections, Gastritis, Peptic Ulcer Disease, Inflammatory Bowel Diseases, Liver Function Tests, Hepatic Failure, Cirrhosis, Portal Hypertension, Jaundice, Cholelithiasis

UNIT-V: Systemic Pathology III: The Urogenital System, the Breast, the Endocrine System, Bones Joints and Soft-Tissue, Peripheral Nerve and Skeletal Muscle, the Central Nervous System

Renal Function Tests, Nephrotic Syndrome, Nephritic Syndrome, Urolithiasis, Pap Smear, Carcinoma Of The Breast-Types And Classification, Thyroid Gland – Hyperthyroidism, Hypothyroidism, Thyroiditis, Graves‟ Disease, Diffuse And Multinodular Goiters, Parathyroid Glands – Hyperparathyroidism, Hyperparathyroidism, Diabetes Mellitus, Fractures, Osteomyelitis, Arthritis, Osteoarthritis, Rheumatoid Arthritis, Infectious Arthritis, Diseases of Peripheral Nerve, Diseases of Skeletal Muscle, Infections of CNS – CSF Find

REFERENCE BOOKS

1. Pocket companion to Pathologic Basis of Disease by Robbins and Cotran, 7th edition, Saunders.
2. Pathology Quick Review and MCQs by Harsh Mohan, 2nd edition, Jaypee Publications.

COURSE OUTCOMES	
CO 1	The student will be able to gain knowledge of general pathology.
CO 2	The student will be able to gain knowledge pathology of neoplasms.
CO 3	The student will be able to gain knowledge of basics of community health.
CO 4	The student will be able to gain knowledge of systemic pathology.

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES

COs\POs	**a**	**b**	**c**	**d**	**E**	**f**
1	S		M		S	
2				s		M
3	S		**S**			
4	M			**S**		**M**

Category	Basic Medical Science
Approval	46th Meeting of Academic Council held in Aug, 2017

UAH17CT109	**PHARMACOLOGY**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Pathology
OBJECTIVES	This course is designed to help the students to develop an understanding of basic knowledge of pharmacology and knowledge of common drugs/group of drugs

UNIT-I: General Pharmacology

Introduction to pharmacology-various terminologies-sources & routes of drug administration – Absorption & Factors modifying drug absorption – Distribution of drugs – Metabolism: Phase II, - Excretion: routes, modes & kinetics of elimination – Excretion – Mechanism of drug action in brief, synergism & antagonism and Factors modifying drug action – Adverse drug reactions – ADR reporting & monitoring – Drug interactions.

UNIT-II: Central Nervous System & Respiratory System

Introduction to CNS and Neurotransmitters, drugs used in insomnia, Sedatives and hypnotics – diazepam – alprazolam, anti-anxiety drugs, Antiepileptic – phenytoin, carbamazepine, sodium valproate, General Anesthetics – halothane, isoflurane, sevoflurane – Local Anesthetics – lignocaine – list of other drugs, Alcohols – ethyl alcohol – disulfuram, Anti parkinsonians – levodopa – carbidopa, Opioids – morphine – naloxone – tramadol – pentazocine, NSAIDs – aspirin – diclofenac – ibuprofen – paracetamol – Cox 2 inhibitors. Drugs used in bronchial asthma and cough

UNIT-III: Cardio vascular system & blood

Drugs used in Ischemic Heart Disease-nitrates-Calcium channel blockers-nifedipine, verapamil-list of other drugs – Beta blockers – propranolol, atenolol – metoprolol and antiplatelets – aspirin, clopidogrel, and names of other drugs-fibrinolysis drugs-streptokinase and other drugs, Drugs used in CCF-digoxin and list of other drugs useful in CCF, Shock. Diuretics: 4 groups – Thiazides, Loop diuretics, Potassium sparing and osmotic diuretics. Hypertension – outline of drugs used in hypertension, Rennin angiotensin system – ACE inhibitors – captopril, ramipril and names of other drugs – Receptor antagonist – losartan and list of other drugs, Antiarrhythmic drugs-classification – Quinidine, Lignocaine and amiodaron – Drugs for Hypercholesterolemia – statins. Drugs for anemia – oral & parenteral iron preparations, folic acid, vit B12 and erythropoietin. Coagulants and anti-coagulants

UNIT-IV: Hormones and GIT

Contraceptives – oral and injectable, Corticosteroids – glucocorticoids – hydrocortisone-prednisolone-dexamethasone and names of topical steroids – Insulin – Oral hypoglycemic – sulphonyl ureas, biguanides and others, Thyroid and Antithyroid drugs, Sex Hormones-Estrogen and anti estrogens, Progestin and Anti progestin‟s, Androgen And anti androgens. Emetics and anti emetics-metoclopromide and domperidone, Drugs used in peptic ulcer, constipation-lactulose & Diarrhea-ORS-Loperamide.

UNIT-V: Chemotherapy and Miscellaneous

Introduction – Beta lactam antibiotics: Penicillin‟s – natural, semi synthetic penicillin‟s – amoxicillin – cloxacillin-clauvulinic acid – sulbactum – Cephalosporin‟s – cephalexin – cefuroxime – cefixime – ceftrioxone-cefipime, Broad spectrum antibiotics – Doxycycline – chloramphenicol-imipenum-Macrolides – erythromycin, azithromycin and others – Quinolones- ciprofloxacin and list of other drugs and sulfonamides- cotrimoxazole- Amino glycosides-gentamycin, amikacin and names of other drugs Anti TB-first line drugs, Anti leprosy-dapsone and clofazimine Anti-malarial- chloroquine- mefloquine and artemisinins, Anti-fungal- amphotericin B- fluconazole and topical drugs & Anti-viral drugs-acyclovir and anti HIV, Anti protozoals- metronidazole – Anthelmintics- albendazole- praziquantel.

Anti-cancer drugs-Introduction – Anti metabolites- methotrexate- 6 mercapto purine- Alkylating agents-cyclophosphamide- busulphan and cisplatin – Plant products- vinblatin- vincristine- taxanes, antibiotics-actinomycin D- monoclonal antibodies. Immuno modulators- cyclosporine, tacrolimus, azathioprine and steroids. Toxicology-Drugs used in common poisoning, organophosphates, methyl alcohol, Benzodiazepam.

REFERENCE BOOKS:

1. Lippincott‟s Illustrated Reviews: Pharmacology, 5th edition, by Richard A. Harvey and Pamela C. Champe, Lippincott Williams & Wilkins Publisher

2. Essentials of Medical Pharmacology: K.D. Tripathi, 6th edition, Jaypee Publishers.

COURSE OUTCOMES						
CO1	The student will be able to gain basic knowledge in pharmacology. .					
CO2	The student will be able to gain knowledge of detailed systemic pharmacology.					
CO3	The student will be able to gain knowledge of detailed knowledge of drugs and groups of drugs.					
CO4	The student will be able to gain knowledge of action of drugs					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\Pos	**a**	**B**	**C**	**D**	**e**	**f**
1	S		M		s	
2		**S**		S		M
3	M		**S**			
4	S			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CT110	**ENVIRONMENTAL SCIENCE AND COMMUNITY MEDICINE**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Community Medicine
OBJECTIVES	This course is designed for students to practice community health nursing for the individual, family and groups at both urban and rural settings by using concept and principles of health and community health nursing. It also is designed for students to understand the natural resources and environmental pollution

UNIT – I:

Natural Resources: Introduction, Multi-disciplinary nature of environmental studies, Earth Resources and Man, Renewable and Non-Renewable Resources, Water Resources, Mineral Resources: Food Resources: Effect of modern agriculture, Fertilizer/pesticide problems, Water logging, and salinity, Energy Resources.

Ecosystems: Concept of an Ecosystem, Structure and Functions of an Ecosystem, Producers, Consumers and Decomposers, Cycles in the Ecosystem

Biodiversity: Introduction, Definition: Genetic, Species, Ecosystem diversity, India as a Mega Diversity Nation, Hotspots Of Biodiversity Threats to Biodiversity. Poaching of Wildlife, Man-Wildlife Conflicts, Endangered and Endemic Species Of India, Conservation of Biodiversity

UNIT – II:

Pollution: Definition, Causes, Effects and Control Measures of Air Pollution, Water Pollution, Pollution, Marine Pollution, Noise Pollution, Thermal Pollution, Nuclear hazards, Solid Waste Management role of Individuals in Pollution Prevention.

Social Issues Human, Population and Environment: From Unsustainable To Sustainable Development, Urban Problems Related To Energy, Water Conservation, rain Water Harvesting, global warming, acid rain, ozone layer depletion, nuclear accidents and nuclear holocaust. Environment Protection Act.

UNIT – III:

Concept of health & disease: Concept of health, Definition of health, Philosophy of health-Dimension of health – Concept of wellbeing, Spectrum of health, Responsibility of health – Determinates of health & Indicators of health – Concepts of disease & Concepts of cessation – Natural history of disease – Iceberg phenomenon, Concepts of control – Concepts of prevention –

Modes of Intervention, Changing pattern of disease.

UNIT – IV:

Epidemiology: Definition & explanation, Aims, Epidemiologic approach, Basic measurements in epidemiology & tools of measurements – Measurements of Mortality & Morbidity, Epidemiologic methods- Descriptive epidemiology-Analytical epidemiology – case control study – analytical epidemiology – Cohort study – Experimental epidemiology – RCT – Association & Causation Uses of epidemiology (Criteria for judging causality) – Infection disease epidemiology Definitions Dynamic of disease transmission & Modes of transmission – Disinfection – Definition Types Agents used Recommended disinfection procedures-Investigation of an epidemic.

Unit – V:

Environment & health: Definition & components (environment sanitation environmental sanitation) Water: Safe & Whole some water Requirements Uses source of water supply (sanitary well)-Purification of water (1). Large scale purification, (2). Small scale purification – Water Quality – Special treatment of water

Air: Composition The air of occupied room discomfort. Air pollution & its effects. Prevention & Control of air pollution

Ventilation: Definition Standards of ventilation Types of ventilation. Light, Noise & Radiation, Metrological environment, Housing, Disposal of waste Excreta disposal

PRACTICALS:

1. Epidemiology Problems
2. Environmental spotters

REFERENCE BOOK

1. Textbook of Preventive and Social medicine by k. Park, 21st edition, published by Banarsidas Bhanot

CO1	The student will be able to know the concept of health & illness .
CO2	The student will be able to know epidemiology of common communicable diseases
CO3	The student will be able to know epidemiology of common non communicable diseases
CO4	The student will be able to know the effects of pollution on humans.

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES

COs\Pos	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2		**M**		s		
3	M		**S**			
4	S			**S**		**M**

Category	Basic Medical Science
Approval	46th Meeting of Academic Council held in Aug, 2017

UAH17CT111	**BASICS OF NURSING**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Community Medicine
OBJECTIVES	This course is designed to help the students to develop an understanding of the nursing profession, philosophy, objectives, theories and application of nursing in various clinical settings. It is aimed at helping the students to acquire knowledge, understanding and skills in techniques of nursing and practice them in supervised clinical settings.

Unit I: Introduction of Health

Health care system, major health problems of the country, nature of disease pattern, technological advances and national health programmes, health for all by 2000 AD. Role of health care workers in the health care delivery system, impact of illness of the individual family and community. History of Nursing, Communication Skills -Relationship with patients, process of communication

UNIT II: Concept of Nursing

Nursing Processes- Problems solving approach, assessment, diagnosis, planning, implementation and evaluation.

Unit III: First Aid and Nursing in Emergencies

Definition, basic principles, scope and rules, Wounds, hemorrhages, shock, fracture, dislocation and muscle injuries, respiratory emergencies, resuscitation, unconsciousness, Miscellaneous conditions, burns, scalds, foreign bodies in the skin, eyes, ear, nose, throat and stomach.Frost bite, effects of heart cramps, bites and stings. Poisoning, Transporting injured persons.

Unit IV: **Personal Hygiene and Health**

Care of skin, mouth, eyes, nails, hair, Menstrual hygiene, clothing, mental health, common health problems of poor personal hygiene. Comfort, Rest and Sleep, Hospital Housekeeping

Unit V: Health Education

Introduction to principles and methods of health education. Use of audio visual aids, mass education, role of nurse in health education.

Course outcome:

1) Knowledge on concept of health, health-illness continuum and health care delivery system.

2) Knowledge on scope of nursing practice.

3) Knowledge on concept, theories and models of nursing practice.

4) Desirable attitude to ethics and professional conduct.

COURSE OUTCOMES						
CO1	The student will be able to gain knowledge on concept of health, health-illness continuum and health care delivery system.					
CO2	The student will be able to gain knowledge on scope of nursing practice.					
CO3	The student will be able to gain knowledge on concept, theories and models of nursing practice.					
CO4	The student will be able to gain knowledge on concept, theories and models of nursing practice.					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\Pos	**a**	**b**	**c**	**d**	**E**	**F**
1	S		S		S	
2				s		M
3	M		**M**			
4	s			**S**		**S**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAOT17CT201	**APPLIED ANATOMY & PHYSIOLOGY AS APPLIED TO CARDIOLOGY - TECHNOLOGY** –THEORY
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Cardiology
OBJECTIVE	This course will provide an outline of anatomy and physiology to improve the students understanding of the technical and diagnostic procedures used, with special emphasis on applied aspects.

Unit I: Anatomy (Part – 1)

- Anatomy of the heart and great vessels
- Gross anatomy and structural features of cardiac chambers Atrium, Ventricle, AV junction, Heart valves, Specialized conduction tissues, Sinus node, Inter nodal tracts, AV node, Bundles
- Innervations of the heart – Sympathetic, Parasympathetic, Sensory.
- Anatomy of respiratory system

Unit II: Anatomy (Part – 2)

- Coronary vascular system-Coronary arteries, Myocardial capillary bed, Venous drainage, Lymphatic drainage,
- Systemic circulation-Arterial system, Venous system, Lymphatic system, Tissue perfusion and microcirculation
- Pulmonary Circulation-Pulmonary artery, Pulmonary veins, Bronchial artery
- Cerebral circulation
- Renal circulation

Unit III: Physiology (Part – 1)

- Over view of the cardiovascular system – Function of CVS, Circulation of blood, Central control of cardio vascular system
- Cardiac cycle-Mechanical events, Arterial cycle and central venous pressure cycle, Clinical aspects of human cardiac cycle
- Cardiac excitation and contraction, Nervous control of the heart rate
- Mechanism of contraction, Pacemaker of conduction system.

Unit IV: Physiology (Part – 2)

- Assessment of Cardiac output-Fick‟s principle, Thermal dilution and indicator dilution methods, Pulse Doppler methods, Miscellaneous methods
- Control of stroke volume and cardiac output

- Hemodynamics – Relationship between pressure, flow and resistance, Solute transport between blood and tissues, Circulation of fluid between plasma, interstitium and lymph

Unit V: Physiology (Part – 3)

- Vascular smooth muscle

- Mechanism of contraction, Pharmacomechanical coupling, automaticity

- Control of blood vessels

- Local control mechanisms, Nervous control, Hormonal control

- Specialization in individual circulation

- Coronary circulation, Cerebral circulation, Pulmonary circulation, Cutaneous circulation

- Cardiovascular receptors, reflexes and central control, Coordinated cardiovascular responses, Posture, Valsalva manoeuvre, Exercise, Diving reflex, cardiovascular responses in pathological situations, Shock and haemorrhage, Syncope, Essential hypertension, Chronic cardiac failure

- Respiratory physiology
    - Mechanics of respiration, Principles of gas exchange regulation of respiration

Hematology and coagulation physiology blood components

- Blood groups, Blood transfusion, Hemostasis

UAOT17CL202	**APPLIED ANATOMY & PHYSIOLOGY AS APPLIED TO CARDIAC TECHNOLOGY - PRACTICAL**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Cardiology
OBJECTIVE	This course will provide an outline of anatomy and physiology to improve the students understanding of the technical and diagnostic procedures used, with special emphasis on applied aspects.

APPILED ANATOMY AND PHYSIOLOGY - PRACTICAL

- **Chart:** Anatomy of heart muscles, vessels, conduction system, entire structure of heart, anatomy of circle of villus, charts and Images related to renal circulation.
- **Spotters:** Model of The Heart And Coronary Arteries

2. **Physiology**

- **Charts**: Cardiac cycle
- **Spotters**: Pulse oximeter, CPR, Stethoscope, placement of electrodes, CPR BP apparatus, Defibrillator, stethoscope

CHARTS:

- Cardiac excitation and contraction
- Normal ECG, Cardiac cycle chart
- Pacemaker of conduction system
- Normal & abnormal intracardiac pressures
- Hemostasis, Blood transfusion, grouping & typing

Exam pattern - Total marks-60
1. SPOTTERS – 10 (10X2=20)

2. CHARTS/STATIONS – 5 (5X4=20)

3. **VIVA – 20**

COURSE OUTCOMES						
CO1	Students should learn Anatomy of human heart and great vessels To learn about physiological functions of human heart					
CO2	To learn about physiological functions of human heart					
CO3	To learn about anatomy and physiology of respiratory system					
CO4	To know about systemic circulation, renal circulation, pulmonary and cerebral circulation					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\Pos	**A**	**B**	**C**	**d**	**e**	**f**
1	S		M		s	
2				s	S	
3	S		**S**			
4	S		M			**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAOT17CT203	**PHARMACOLOGY RELATED TO CARDIAC TECHNOLOGY – THEORY**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Cardiology
OBJECTIVE	The course will provide training in general pharmacology with special emphasis on common drugs used, routes of administration, types of formulations, dose and frequency of administration, side effects and toxicity, management of toxic effects, drug interactions, knowledge of chemical and trade name, importance of manufacturing and expiry dates and instructions for handling of drugs.

Unit I: Anti Anginal Agents

a) Beta Blocking agents – Propranolol, Atenolol, Metoprolol, Labetolo, Pindolol.

b) Nitrates – Nitroglycerine, Isosorbide dinitrate, Isosorbide mononitrate, transdermal nitrate patches.

c) Calcium channel blockers – Nifedipine, verapamil, dilitazem, new calcium channel blockers.

Unit II: Anti Failure Agents & Anti arrhythmic agents

a) Diuretics – Furosemide, Thiazide diuretics, other thiazide like agents, Potassium sparing diuretics, Combination diuretics, Special diuretic problems.

b) Angiotensin converting enzyme (ACE) inhibitors. Types of ace inhibitors – Captopril, Enalapril, Ace inhibitors for diabetics and hypertensive renal disease.

c) Digitalis and acute ionotropes – Digoxin, Digitoxin, Doubutamine, Dopamine, Adrenaline, Nonadrenaline, Isoprenaline, Mixed inotropic vasodilators amrinone.

d) Quinidine and related compounds, Procainamide, Lidocaine, Mixilitine, Phenytoin, Flecainide, amiodarone, Benetylium, Combination therapy

Unit III: Anti-Hypertensive drugs

a) Diuretics, Beta Blockers, Ace inhibitors, Calcium antagonists, Direct vasodilators, Centrally active and peripherally active vasodilators.

Unit IV: Antithrombotic agents

a) Platelet inhibitors – Aspirin, Persantine

b) Anticoagulants – Heparin, Warfarin

c) Fibrinolysis – Streptokinase, Urokinase, Combination therapy

Unit V: Lipid lowering and anti atherosclerotic drugs

UAOT17CL204	**PHARMACOLOGY RELATED TO CARDIAC TECHNOLOGY - PRACTICAL**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Cardiology
OBJECTIVE	The course will provide training in general pharmacology with special emphasis on common drugs used, routes of administration, types of formulations, dose and frequency of administration, side effects and toxicity, management of toxic effects, drug interactions, knowledge of chemical and trade name, importance of manufacturing and expiry dates and instructions for handling of drugs.

PHARMACOLOGY:

- **SPOTTERS:** Ambu bag, venture mask, streptokinase, Infusion pump, Dobutamine Calculation chart, Riles tube, ET tube, O2 mask
- **CHARTS:** Indication, dosage, contraindications effects of all cardiac drugs

Exam pattern :Total marks – 60
1. SPOTTERS – 10 (10X2=20)

2. CHARTS / STATIONS – 5(5X4=20)

3. VIVA – 20

COURSE OUTCOMES						
CO1	To learn about class of category drug agents including Indications, contra-indications , adverse effects and route of administration					
CO2	To understand about lipid lowering stage and anti-atherosclerotic drugs					
CO3	To know about Anti-hypertensive and Antithrombotic drugs					
CO4	To get Knowledge about Anti-failure and Anti-Arrhythmic agents					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\Pos	**A**	**B**	**c**	**d**	**e**	**F**
1	S		M		s	
2				s	S	
3	S		**S**			
4	S		M			**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAOT17CT205	**Comprensive viva: Applied anatomy , physiology, pharmacology related to Cardiology technology**
	Total Contact hours – 180
	Total credits -5
	Course Designed by – Department of Cardiology
OBJECTIVE	To get knowledge about anatomy and pharmacology related to Cardiology technology

Unit I: Anatomy (Part – 1)

- Anatomy of the heart and great vessels
- Gross anatomy and structural features of cardiac chambers Atrium, Ventricle, AV junction, Heart valves, Specialized conduction tissues, Sinus node, Inter nodal tracts, AV node, Bundles
- Innervations of the heart – Sympathetic, Parasympathetic, Sensory.
- Anatomy of respiratory system

Unit II: Anatomy (Part – 2)

- Coronary vascular system-Coronary arteries, Myocardial capillary bed, Venous drainage, Lymphatic drainage,
- Systemic circulation-Arterial system, Venous system, Lymphatic system, Tissue perfusion and microcirculation
- Pulmonary Circulation-Pulmonary artery, Pulmonary veins, Bronchial artery
- Cerebral circulation
- Renal circulation

Unit III: Physiology (Part – 1)

- Over view of the cardiovascular system – Function of CVS, Circulation of blood, Central control of cardio vascular system
- Cardiac cycle-Mechanical events, Arterial cycle and central venous pressure cycle, Clinical aspects of human cardiac cycle
- Cardiac excitation and contraction, Nervous control of the heart rate
- Mechanism of contraction, Pacemaker of conduction system.

Unit IV: Physiology (Part – 2)

- Assessment of Cardiac output-Fick‟s principle, Thermal dilution and indicator dilution methods, Pulse Doppler methods, Miscellaneous methods
- Control of stroke volume and cardiac output
- Hemodynamics – Relationship between pressure, flow and resistance, Solute transport between blood and tissues, Circulation of fluid between plasma, interstitium and lymph

Unit V: Physiology (Part – 3)

- Vascular smooth muscle

- Mechanism of contraction, Pharmacomechanical coupling, automaticity

- Control of blood vessels

- Local control mechanisms, Nervous control, Hormonal control

- Specialization in individual circulation

- Coronary circulation, Cerebral circulation, Pulmonary circulation, Cutaneous circulation

- Cardiovascular receptors, reflexes and central control, Coordinated cardiovascular responses, Posture, Valsalva manoeuvre, Exercise, Diving reflex, cardiovascular responses in pathological situations, Shock and haemorrhage, Syncope, Essential hypertension, Chronic cardiac failure

- Respiratory physiology
    - Mechanics of respiration, Principles of gas exchange regulation of respiration

Hematology and coagulation physiology blood components

- - Blood groups, Blood transfusion, Hemostasis

Unit I: Anti Anginal Agents

a) Beta Blocking agents – Propranolol, Atenolol, Metoprolol, Labetolo, Pindolol.

b) Nitrates – Nitroglycerine, Isosorbide dinitrate, Isosorbide mononitrate, transdermal nitrate patches.

c) Calcium channel blockers – Nifedipine, verapamil, dilitazem, new calcium channel blockers.

Unit II: Anti Failure Agents & Anti arrhythmic agents

a) Diuretics – Furosemide, Thiazide diuretics, other thiazide like agents, Potassium sparing diuretics, Combination diuretics, Special diuretic problems.

b) Angiotensin converting enzyme (ACE) inhibitors. Types of ace inhibitors – Captopril, Enalapril, Ace inhibitors for diabetics and hypertensive renal disease.

c) Digitalis and acute ionotropes – Digoxin, Digitoxin, Doubutamine, Dopamine, Adrenaline, Nonadrenaline, Isoprenaline, Mixed inotropic vasodilators amrinone.

d) Quinidine and related compounds, Procainamide, Lidocaine, Mixilitine, Phenytoin, Flecainide, amiodarone, Benetylium, Combination therapy

Unit III: Anti-Hypertensive drugs

a) Diuretics, Beta Blockers, Ace inhibitors, Calcium antagonists, Direct vasodilators, Centrally active and peripherally active vasodilators.

Unit IV: Antithrombotic agents

a) Platelet inhibitors – Aspirin, Persantine

b) Anticoagulants – Heparin, Warfarin

c) Fibrinolysis – Streptokinase, Urokinase, Combination therapy

Unit V: Lipid lowering and anti atherosclerotic drugs

UAOT17CT206	**BASIC PRINCIPLES OF HOSIPTAL MANAGEMENT**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Cardiology
OBJECTIVE	**(Common to all specialties – Anesthesia Technology, Cardiac Technology, Clinical Laboratory Technology, Renal Dialysis Technology, Radiology & Imaging Science Technology, Perfusion Technology, Cath Lab Technology & Blood Banking Technology)**

Unit I: Introduction to management & Organization:

The evolution of Management, Definition and importance of Management. Planning – Organizing – staffing – Motivating – Leading – Controlling. Management of health care units (in brief). Individual behavior in organization; organizational functioning (Group/Individual); Perception; Motivation MBO; Organizational Development.

Unit II: Planning and Management of Hospitals & Clinical Services:

Building and physical layout – space required for separate function – Planning of infrastructure facilities, clinical services, equipment & Human resources – Types of Hospitals. Organization and administration of various clinical services; outpatient services. In-patient services, emergency services, operation theatres, ICU's and super specialty services.

Unit.III: Organizing of support clinical services & Hospital management:

Imaging – CSSD – Laboratory – Blood Bank – diet – Medical Records – Mortuary. Housekeeping – Maintenance (Water, Electricity, Civil, Air Conditioning, Lift)-Pest Control-transport-Security. Forecasting-Purchasing & procurement (Sourcing, methods and procedures) – Storing & issuing, Concept of inventory control, Maintenance of equipment and contracts (with special reference to major biomedical equipment). Trends in financing of Health and Hospital Services – Classification of Hospitals depending on source of financing – roles of financial institutions.

Unit IV: Personnel and quality Management in Hospital & Marketing:

Concepts – Manpower planning – Training & Developments – Team Building – Conflict Management – Performance appraisal – Office rules and regulations Outling of Strategic Planning and Marketing.

Concepts of quality – Professional Audit System – AQ program – Medical Audit – Quality Circle – TQM – Patient Satisfaction – ISO 90000. A brief outline – computerization in hospital departments. Concept, Techniques, Indicators, Evaluation of Efficiency & Effectiveness evaluation of hospital and medical care services.

Unit V: Ethical, current issues and Legal Aspects of Hospitals management services:

Laws related to Hospital – Medico Legal Cases law of Torts – Autopsy – Dying declaration – CPA. – Waste Management – Telemedicine – Organ Transplantation – Rehabilitation Service – Health Insurance.

Operations Research and Quantitative Methods in Hospital Administration & Nursing Services in a Hospital.

COURSE OUTCOMES	
CO1	To Understand basic knowledge about management planning , Organizing , staffing, motivating and controlling management in Health care units
CO2	**To get knowledge about** infrastructure facilities, clinical services, equipment and Human resources
CO3	To understand how to maintain inpatient services, outpatient services, ICUs, Emergency services, Operation theatres and super speciality services
CO4	To know about Manpower planning , training , developing and knowledge about marketing

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES

COs\Pos	**A**	**B**	**c**	**d**	**E**	**F**
1	M		M		S	
2				s		M
3	S		**S**			
4	S			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAOT17CT207	**CARDIAC TECHNOLOGY APPILED 1– THEORY**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Cardiology
OBJECTIVE	The course learn about ECG techniques, procedures and echocardiogram applied to the patients

Unit – I

1. ECG in myocardial infarction- definition of myocardial infarction, diagnosis of myocardial infarction, ECG criteria for myocardial infarction, ECG in anterior wall, true posterior wall and sub endocardial infarction and RV infarction

2. ECG in rheumatic heart disease – definition of rheumatic heart disease, valvular involvement in rheumatic heart disease, ECG in mitral stenosis, mitral incompetence, aortic stenosis and aortic incompetenance

3. ECG in hypertension- definition of hypertension, how to record blood pressure, ECG in hypertension

4. ECG in congenital heart disease- common congenital heart disease ASD, VSD, PDA, pulmonary stenosis, aortic stenosis, coarctation of aorta, TOF, definition of all these conditions, ECG changes in all these conditions

Unit – II

5. ECG in other conditions – ECG in various types of cardiomyopathy, myxoedema, pericardial effusion, acute pericarditis and other vascular diseases. Bundle branch block, WPW syndrome, dextrocardia

6. Trans oesophageal echocardiogram – indications, procedure, usefulness and complications one may encounter and its management

7. Stress Echo- procedure and indications

8. Peripheral Doppler – Procedure and usefulness of peripheral Doppler

9. Coronary angioplasty-procedure, materials used, complication one may encounter and how to manage it

Unit – III

10. Peripheral angioplasty – materials used and procedure. Angioplasty of coarctation of aorta
11. Foetal echocardiogram – Procedure, basic interpretation
12. Contrast echocardiogram – procedure and usefulness of contrast echocardiogram

UAOT17CT208	**CARDIAC TECHNOLOGY APPLIED - I PRACTICAL**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Cardiology
OBJECTIVE	To get training programme in cardiac technology applied to the patients

Exam pattern

1. **Spotters**
2. **Charts/stations**
3. **Viva**

COURSE OUTCOMES	
CO1	To know theory knowledge about definition and diagnosis of myocardial infarction To learn about ECG criteria for myocardial infarction
CO2	To know about stress echo procedure
CO3	To get knowledge about ECG in hypertension and ECG in congenital heart disease
CO4	To know about peripheral doppler (procedure and usefulness)

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES

COs\Pos	**A**	**b**	**C**	**D**	**e**	**F**
1	S		M		s	
2				S		M
3	M		**M**			
4	S			**M**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAOT17CT209	**CARDIAC TECHNOLOGY APPLIED PART II– THEORY**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Cardiology
OBJECTIVES	Knowledge about methods in principles of sterilization and techniques

Unit – I

13. Myocardial contrast echo- Basic knowledge
14. Cardiac monitoring – definition, purpose of cardiac monitoring, how to Recognise various arrhythmias how to set up an intensive coronary care unit and usefulness of ICCU
15. Interpretation of TMT, report – criteria for TMT positive test contraindication for TMT conditions where TMT is not useful, complications that may occur in TMT room and its management
16. Use of defibrillator- indications, how to use the defibrillator,
17. Complications during the procedure and its management

Management of cardiac arrest – definition, causes external cardiac massage, artificial respiration and other drugs and procedures used in the management of Cardiac arrest

Myocardial perfusion scan – procedures and usefulness of myocardial perfusion scan

Cardiac arrhythmias – Brady arrhythmia and tachy arrhythmias and ECG diagnosis of all rhythm disturbances. Sinus arrhythmia, complete heart block Electrolyte disturbances – ECG in hypokalaemia, hyperkalaemia etc.,Holter monitoring procedure and usefulness Valvoplasties – procedure, indications, complications and treatment Of ballons, mitral valvuloplasty, ballon aortic valvuloplasty ballonpulmonary valvuloplasty and balloon tricuspid valvuloplasty.

Unit – II

10. Coil closure and device closure of PDA – procedure, indications and materials used for coil and device closure of PDA
11. Device closure of ASD – procedure, indications and materials used for device closure of ASD
12. Device closure of VSD – procedure, indications and materials used For device closure of VSD

Unit – III

13. Electrophysiological studies – basic knowledge of EP studies mapping and ablation
14. Oximetry – handling of the instrument and usefulness of the instrument, normal and abnormal values.
15. Pressure recording – handling of the instrument and pressures in various chambers, normal and abnormal values

Unit – IV

16. Temporary and permanent pacing – materials used, procedure, complications one may encounter and management. Implantable Cardioverter defibrillator devices
17. CD recording and storage- recording and storage of all the procedures over CD
18. Procedure during pregnancy- precautions to be followed.
19. Nuclear Cardiology – instrumentation, radiopharmaceuticals, patient imaging techniques.
20. Intravascular ultrasound.
21. O.C.T.

UAOT17CT210	**CARDIAC TECHNOLOGY APPLIED PART II – PRACTICAL**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Cradiology
OBJECTIVES	Knowledge about methods in principles of sterilization and techniques

Exam pattern

1. **SPOTTERS**
2. **CHARTS/STATIONS**
3. **VIVA**

COURSE OUTCOMES	
CO1	To get knowledge about cardiac monitoring
CO2	To know about setup of Intensive care unit sector
CO3	Knowledge about handling ECG, TMT and defibrillator devices To learn theory about Cardiac arrest and management of cardiac arrest patients
CO4	To understand and management of complications during procedures

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\Pos	**A**	**b**	**c**	**d**	**e**	**F**
1	S		M		S	
2				s		M
3	S					
4		S		**M**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAOT17CT211	**HEALTH CARE MANAGEMENT**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Anesthesia
OBJECTIVES	To get training knowledge in health care management

UNIT I: Concept of Health Care and Health Policy

Health in Medical Care, Indigenous systems of Health Care & their relevance, Framework for Health Policy Development.

UNIT – II:Health Organisation

Historical development of Health Care System in the third world & India, Organization & Structure of Health Administration in India, Type of Health Organization including International Organizations, Private & Voluntary Health care Provider, Distribution of Health Care Services, Health Care System in Public Sector Organization, Health system of Various Countries.

UNIT – III: Health Policy and National Health Programme

National Health Policy, Drug Policy, National Health Programs (Malaria, T.B., Blindness, AIDS etc.), Evaluation of Health Programs (Developing indicators for evaluation), Medical Education & Health Manpower Development.

UNIT-IV: Health Economics-Fundamentals of Economics

Scope & Coverage, Demand for Health Services, Health as an Investment, Population, Health of Economic Development. **Economics of Health-**

Population based health services, Economics of Communicable and Non Communicable diseases

UNIT-V:Methods & Techniques of Economic Evaluation of Health Program

Cost Benefit & Cost Effective Methods.

Household & Health: Health Expenditure & Outcome, Rationale for Government action, Household capacity, income and schooling

Heal

COURSE OUTCOMES						
CO1	To understand about concepts health in medical care and health policy development					
CO2	To gain knowledge about historical development of health care system, organization and structure of health administration					
CO3	To get knowledge about health economics, demand for health services , investment and popular health of economic development					
CO4	To learn about detailed information in household, health expenditure ,household capacity , income and schooling					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\Pos	**A**	**B**	**c**	**D**	**e**	**F**
1	S		M		s	
2				S		S
3	S		**M**			S
4	M			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAOT17CT212	**CLINICAL IN CARDIAC TECHNOLOGY – COMPHRENSIVE VIVA**
	Total Contact hours– 180
	Total credits -5
	Course Designed by – Department of Cardiology
OBJECTIVES	Knowledge about methods in principles of sterilization and techniques

(Cardiac Care Technology – Advanced)

1. Cardiac monitoring – definition, purpose of cardiac monitoring, how to Recognise various arrhythmias how to set up a intensive coronary care unit and usefulness of ICCU

2. Interpretation of TMT, report – criteria for TMT positive test contraindication for TMT conditions where TMT is not useful, complications that may occur in TMT room and its management

3. Use of defibrillator – indications, how to use the defibrillator, complications during the procedure and its management

4. Management of cardiac arrest – definition, causes external cardiac massage, artificial respiration and other drugs and procedures used in the management of Cardiac arrest

5. Myocardial perfusion scan – procedures and usefulness of myocardial perfusion scan

6. Cardiac arrhythmias – Brady arrhythmia and tachy arrhythmias and ECG diagnosis of all rhythm disturbances. Sinus arrhythmia, complete heart block

7. Electrolyte disturbances – ECG in hypokalaemia, hyperkalaemia etc.

8. Holter monitoring – procedure and usefulness

9. Valvoplasties- procedure, indications, complications and treatment of ballons, mitral valvuloplasty, ballon aortic valvuloplasty ballon pulmonary valvuloplasty and balloon tricuspid valvuloplasty.

10. Coil closure and device closure of PDA – procedure, indications and materials used for coil and device closure of PDA
11. Device closure of ASD – procedure, indications and materials used for device closure of ASD
12. Device closure of VSD – procedure, indications and materials used for device closure of VSD
13. Electrophysiological studies – basic knowledge of EP studies mapping and ablation
14. Oxymetry – handling of the instrument and usefulness of the instrument, normal and abnormal values
15. Pressure recording- handling of the instrument and pressures in various chambers, normal and abnormal values
16. Temporary and permanent pacing – materials used, procedure, complications one may encounter and management. Implantable Cardioverter defibrillator devices
17. CD recording and storage- recording and storage of all procedures over CD
18. Procedure during pregnancy- precautions to be followed.
19. Nuclear Cardiology – instrumentation, radiopharmaceuticals, patient imaging

UAOT17CT313	CARDIAC TECHNOLOGY CLINICAL I THEORY
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Cardiology
OBJECTIVES	To get clinical knowledge and training related to cardiac technology

Unit – I

1. Interpretation of Normal **ECG** and Basic abnormalities of ECG in RHD, IHD & CHD

2. Echo in rheumatic heart disease – Echo in mitral stenosis, mitral incompetence, aortic stenosis, aortic incompetence, pulmonary hypertension. Post AVR, post MVR. Prosthetic valve malfunction, LA clot.

3. Echo in congenital heart disease – Echo in ASD, VSD, PDA pulmonary stenosis, aortic stenosis, coarctation of aorta, TOF. Dextrocardia.

4. Echo in ischemic heart disease – Echo in acute myocardial infarction, old myocardial infarction and other ischemic heart disease related conditions, LV aneurysm

Unit – II

5. Echo in other cardiovascular diseases – Echo in various types of cardiomyopathy infective endocarditis diseases of aorta, mitral valve prolapse, myxoma and other cardiovascular diseases.

6. Assessment of Cardiac function – measurements of all cardiac chambers and assessment of cardiac function

7. Echo in pericardial disease – pericardial effusion, cardiac tamponade, constrictive pericarditis

UAOT17CT314	CARDIAC TECHNOLOGY CLINICAL I PRACTICAL
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Anesthesia
OBJECTIVES	To get training about concept of diseases and techniques in regional and general anaesthesia including complications

Exam pattern :

1. **SPOTTERS**
2. **CHARTS/STATIONS**
3. **VIVA**

COURSE OUTCOMES						
CO1	To study about Interpretation of ECG and abnormalities of ECG					
CO2	To learn about techniques of cardiac catheterization laboratory					
CO3	Knowledge about Assessment of cardiac function and measurements of all cardiac chambers					
CO4	To learn detailed information about Echo					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\Pos	**A**	**B**	**C**	**D**	**e**	**F**
1	S		S		s	M
2				S		M
3	M		**S**			
4	S			**M**		**S**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAOT17CT315	**CARDIAC TECHNOLOGY CLINICAL II**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Cardiology
OBJECTIVES	To get training programme about monitoring and diagnostic procedures

Unit – I

8. **Cardiac catheterisation laboratory –** general details of cardiac catheterisation equipment, how to handle the machine, common problems one may come across and how to overcome it, radiation hazards

9. **Materials used in the cath lab** – all catheters, balloons, guide wires, pacemakers contrast material and other material used in the cardiac catheterisation laboratory an sterilization of all these materials

10. **Right heart catheterisation** – procedure, cath position, oximetry at various levels, angios done and its interpretation

11. **Left heart catheterisation** – procedure, cath position, oximetry at various levels, angios done and its interpretation

Unit – II

12. Coronary angiogram

– Procedure, materials used, type and amount dye used, indications and contraindications, various pictures recorded in various angles and gross interpretation.

Unit – III

13. Peripheral angiogram – Procedure, indication and contraindication

UAOT17CT316	**CARDIAC TECHNOLOGY CLINICAL II– PRACTICAL**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Cardiology
OBJECTIVES	To get training programme about monitoring and diagnostic procedures

Exam pattern :

1. **SPOTTER**
2. **CHARTS/STATIONS**
3. **VIVA**

COURSE OUTCOMES						
CO1	To study about Interpretation of ECG and abnormalities of ECG					
CO2	To learn about techniques of cardiac catheterization laboratory					
CO3	Knowledge about Assessment of cardiac function and measurements of all cardiac chambers					
CO4	To learn detailed information about Echo					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\Pos	**A**	**B**	**C**	**D**	**e**	**F**
1	S		S		s	M
2				S		M
3	M		**S**			
4	S			**M**		**S**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAOT17CT317	**a) Hospital Products, Promotion, Sales & Public relations (or) Physician's Office Management**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Anesthesia
OBJECTIVES	To get training programme about marketing , service marketing and business administration

Unit – I:

- **An introduction to Marketing:** Role of marketing in Business management – Evolution and definition of marketing – Concepts of Marketing – Service vs. Products – Management of Service Management process.
- **Services Marketing:** Classification of services – Characterstics of services and their marketing implication – Selecting appropriate tools for marketing.

Unit – II:

- **Component of Service Marketing:** Product Planning, Market research system – Market segmentation – Targeting – Positioning –Launching new service – Concept of product life cycle, Pricing, Setting the price – Economic Theory – Responding to price change, Physical Distribution, Major Aspects – Channels of distribution – Selection of channel, Promotion, Role of communication – Promotion mix – advertising (Media – budget – Cost effectiveness – (attributing to hospitals a human face – Good will – image building among major public) Sales promotion (techniques – Evaluation), Direct selling (Sales force – Evaluation), Physical Environment, Process, People

Unit –III:

- **Analysing Markets and Buyer Behaviour:** Model of consumer behavior – Factors influencing buyer behavior – Buying decision process
- **Branding of a Hospital Facility:** Brand name and concept – Positioning hospitals – Developing and USP – Brand image – Image building – long term and short term activities.

Unit IV:

- **Other Marketing routes for Health Care Units:** Interpersonal communication – Print materials institutional marketing – seminars – conference
- **Marketing Strategies for Hospital:** Managing Differentiation – Service Quality – Productivity – Product support service.

Unit V:

- **Evaluating and Controlling Market Performance:** Annual plan control (sales analysis – market share analysis – Marketing expense to sales analysis – Financial analysis), Profitability control, Efficiency control, Strategic control

5. (b) Physician's Office Management

Unit I. Outpatient section: Registration of new cases, Registration of repeat cases, Patient record guide, Laboratory X – Ray reports & reports filing, Alpha index typing & Filing, O.P. Records coding (disease & indexing), O.P. records retrieval, O.P. Statistics

Unit II. Inpatient Section: Admitting office procedure, Inpatient record removal & forwarding, Ward Census,

Unit III. Assembling & deficiency checks I.P. record coding & indexing,

Unit IV. Discharge Analysis: Incomplete record control, Completed record control, Medico legal procedures & issue of Medical certification, Record retention & destruction of O.P. & I. P. records,

Unit V. Miscellaneous: Hospital reception, Secretarial practice, Library (Medical

COURSE OUTCOMES						
CO1	To get basic knowledge about roles of marketing management and service marketing characteristics					
CO2	To know implications of selecting appropriate tools for marketing					
CO3	To know analysis treatment of markets and buyer behaviour					
CO4	To learn performance of evaluating and controlling market programme					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**A**	**B**	**C**	**d**	**e**	**F**
1	S		M		s	
2				s		M
3	S		**M**			
4	S			**M**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAOT17CT318	**Clinical in cardiac technology : Comprehensive viva**
	Total Contact hours – 180
	Total credits -5
	Course Designed by – Department of Cardiology
OBJECTIVES	To get training programme about monitoring and diagnostic procedures

UNIT Unit – I

1. Interpretation of Normal **ECG** and Basic abnormalities of ECG in RHD, IHD & CHD

2. Echo in rheumatic heart disease – Echo in mitral stenosis, mitral incompetence, aortic stenosis, aortic incompetence, pulmonary hypertension. Post AVR, post MVR. Prosthetic valve malfunction, LA clot.

3. Echo in congenital heart disease – Echo in ASD, VSD, PDA pulmonary stenosis, aortic stenosis, coarctation of aorta, TOF. Dextrocardia.

4. Echo in ischemic heart disease – Echo in acute myocardial infarction, old myocardial infarction and other ischemic heart disease related conditions, LV aneurysm

Unit – II

5. Echo in other cardiovascular diseases – Echo in various types of cardiomyopathy infective endocarditis diseases of aorta, mitral valve prolapse, myxoma and other cardiovascular diseases.

6. Assessment of Cardiac function – measurements of all cardiac chambers and assessment of cardiac function

7. Echo in pericardial disease – pericardial effusion, cardiac tamponade, constrictive pericarditis

Unit – III

8. **Cardiac catheterisation laboratory –** general details of cardiac catheterisation equipment, how to handle the machine, common problems one may come across and how to overcome it, radiation hazards

9. **Materials used in the cath lab** – all catheters, balloons, guide wires, pacemakers contrast material and other material used in the cardiac catheterisation laboratory an sterilization of all these materials

10. **Right heart catheterisation** – procedure, cath position, oximetry at various levels, angios done and its interpretation

11. **Left heart catheterisation** – procedure, cath position, oximetry at various levels, angios done and its interpretation

Unit – IV

12. Coronary angiogram

– Procedure, materials used, type and amount dye used, indications and contraindications, various pictures recorded in various angles and gross interpretation.

Unit – V

13. Peripheral angiogram – Procedure, indication and contraindication

UAOT17CT319	**INTRODUCTION TO CARDIAC TECHNOLOGY PAPER 1 THEORY**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Cardiology
OBJECTIVES	This course will cover introduction to cardiac technology , ECG, Echocardiography

Unit I: I. Electrocardiography (ECG)

1. Basic Principles

- The Electrocardiographic paper
- The Electrocardiograph
- The Electrical field of Heart
- The leads: Standard limb, Precordial lead, „V" lead & „AV" lead
- Basic ECG deflections
- Basic action of electrocardiograph

2. Normal ECG

- The „P" wave
- The „qrs" complex
- The genesis of „qrs" complex
- T wave; the S-T segment
- The „U" wave
- Rate & rhythm
- So called rotation of the heart – The Q-T interval

3. The Electrical axis

4. Precordial pattern of ECG

5. Chamber enlargement – atrial enlargement, LV hypertrophy & RV hypertrophy

6. Bundle branch block

General principle
Right Bundle branch block
Left bundle branch block
The Hemi blocks (Fascicular block)

Unit II: I. Exercise stress Testing

1. Exercise Physiology
2. Exercise protocols

3. Electrocardiography measurements

4. Exercise testing – Indication, techniques & complications.

Unit III: I. Echocardiography

1. Principles of Echocardiography
    - Basic principles of ultrasound
    - M-Mode of Echocardiography

Two dimensional Echocardiography

- Doppler Echocardiography; color flow
- Transesophageal Echocardiography
- Stress Echocardiography

2. Instrumentation
    - Basic pulse Echo system
    - Transducers
    - Pulse generation
    - Echo detection
    - A mode, B-Mode, M-Mode
    - Display & recording

3. Echocardiographic Examination
    - Selecting transducers
    - Position of the patient
    - Placement of the transducer
    - Setting control
    - M-Mode labelling
    - 2 D Echo
    - Normal variants
    - Terminology
    - Identification of segments

4. Doppler Echocardiography

a. Introduction to Doppler color Echocardiography

The Doppler principles
Doppler ultrasound techniques
Color Doppler flow imaging
Clinical application of Doppler Echocardiography

b. Physical principles & instrumentation in spectral & color

Doppler flow imaging

c. Physical principles and Doppler effect. The Doppler

Echocardiography system display

d. Blood flow pattern – Laminar & non- laminar flow

e. Doppler Echocardiography modes

- Continuous wave Doppler system
- Pulsed Doppler system
- High pulse repetition frequency
- Problem of colour imaging

5. Contrast echo
6. Echo measurement

UAOT17CL320	**INTRODUCTION TO CARDIAC TECHNOLOGY PAPER I PRACTICAL**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Cardiology
OBJECTIVES	To get clinical knowledge and training programme related to cardiac technology

Exam pattern

1. **SPOTTERS**
2. **CHARTS/STATIONS**
3. **VIVA**

COURSE OUTCOMES	
CO1	To get knowledge about basic principles of Electrocardiography
CO2	To learn about basic principles of Echocardiography
CO3	To study about Exercise stress testing including indications, techniques and complications
CO4	To know instrumentation of Echocardiography

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES

COs\POs	**A**	**B**	**C**	**d**	**e**	**F**
1	S		S		s	
2				s		M
3	M		**S**			
4	M			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAOT17CT321	**MEDICAL REVELANT TO CARDIAC TECHNOLOGY PAPER II THEORY**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Cardiology
OBJECTIVES	To get knowledge about cardiac diseases, respiratory diseases, hematology medical relevant to cardiac technology

Unit: I Cardiovascular System

- Ischemic heart diseases
- Rheumatic heart disease
- Congenital heart disease
- Hypertension
- Aortic Aneurysms
- Cardiomyopathy
- Peripheral vascular disease
- Pulmonary edema and LV failure

Unit: II Hematology

- Anemia
- Bleeding disorders
- Laboratory tests used to diagnose bleeding disorders (in brief)

Unit: III Respiratory System

- Chronic obstructive airway diseases (COPD)
- Concept of obstructive versus restrictive pulmonary disease
- PFT and its interpretation

Unit: IV Others

- DM
- Obesity
- Pregnancy
- Pediatric Patient (neonate/Infant)
- Elderly patien

UAOT17CL322	**MMEDICAL REVELANT TO CARDIAC TECHNOLOGY PAPER PRACTICAL II**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Cardiology
OBJECTIVES	To get clinical knowledge related to medical relevant to cardiac technology

Exam Pattern:

1. **SPOTTERS**
2. **CHARTS/STATIONS**
3. **VIVA**

COURSE OUTCOMES	
CO1	To learn about Cardiovascular diseases To understand and get knowledge about Anaemia and bleeding disorders
CO2	To learn theory knowledge about Respiratory diseases like COPD concepts and PFT interpretation
CO3	To understand about factors and complications of obesity To get knowledge about Paediatric patients and Elderly type of patients
CO4	To know about endocrine diseases like Diabetes mellitus

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES

COs\POs	**A**	**B**	**C**	**d**	**E**	**F**
1	S		M		S	
2				s		M
3	S		**M**			
4	S			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAOT17CT323	**Trauma & Cardiac Life Support**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Anesthesia
OBJECTIVES	To get training BLS, ACLS programme, trauma life, spinal trauma , cardiac life support, and triage

UNIT I. TRAUMA LIFE (Part 1)

- BLS,
- TRIAGE

a. Primary Survey b. Secondary Survey

- Airway & Ventilatory management
- Shock
- Central & peripheral venous access
- Thoracic trauma – Tension pneumothorax
- Other thoracic injuries
- Abdominal trauma – Blunt injuries
- Abdominal trauma – Penetrating injuries

UNIT II. TRAUMA LIFE (Part 2)

- Spine and spinal cord trauma
- Head trauma
- Musculoskeletal trauma
- Electrical injuries
- Thermal burns
- Cold injury

UNIT III. TRAUMA LIFE (Part 3)

- Paediatric trauma
- Trauma in pregnant women
- Workshop BLS
- Workshop cervical spine immobilization
- Imaging studies in trauma

UNIT IV. CARDIAC LIFE SUPPORT (Part 1)

- BLS
- The universal algorithm for adult ECC
- Ventricular fibrillation/Pulseless ventricular tachycardia algorithm
- Pulseless electrical activity (PEA) / asystole algorithm
- Bradycardia treatment algorithm
- Tachycardia Treatment algorithm

UNIT V. CARDIAC LIFE SUPPORT (Part 2)

- Hypotension / Shock
- Acute myocardial infarction
- Paediatric Advanced life support
- Airway management
- Defibrillation
- Drugs used in ACLS
- Emergency Cardiac pacing
- AED
- Techniques for oxygenation and ventilation

COURSE OUTCOMES						
CO1	Handling and management of Airway ventilatory and shock					
CO2	To get knowledge about handling and management of trauma cases like musculoskeletal , head, and thermal burns					
CO3	Knowledge about handling of Paediatric trauma cases					
CO4	To know basic knowledge about trauma in pregnant women cases					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**A**	**B**	**c**	**d**	**E**	**F**
1	S		M		S	
2				s		M
3	M		**M**			
4	S			**S**		**S**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAOT17CL324	**Clinical in Cardiac technology Comprehensive viva**
	Total Contact hours – 180
	Total credits -5
	Course Designed by – Department of Cardiology
OBJECTIVES	To get training about spotters, charts and clinical based techniques

PROGRAMME ELECTIVE							
		COURSE		TEACHING HOURS			
SI NO	SEMESTER	**COURSE CODE**	**COURSE TITLE**	**L**	**T**	**P**	**CREDITS**
1	I	UAH17CE1020	Fundamentals of Biostatistics	4	4		2
2	I	UAH17CE1021	Communication skills for Health Care professionals	5	5		2
3	II	UAH17CE1022	Biomedical Ethics	3	3		2
4	II	UAH17CE1023	Fundamentals of Human Genetics	4	4		2
5	III	UAH17CE2024	Principles and application of Clinical Genetics	6	4	2	2
6	III	UAH17CE2025	Clinical Examination of the Human Visual System	5	3	2	2
7	IV	UAH17CE2026	Personality Development and Stress Management	4	4		2
8	IV	UAH17CE2027	First Aid Management & Splinting Techniques	6	4	2	2
9	V	UAH17CE3028	Essentials of Medical Transcription	7	7		2
10	V	UAH17CE3029	Communication and Soft Skill	7	7		2
11	VI	UAH17CE3030	Professional skills Development	6	6		2
12	VI	UAH17CE3031	Library Science and E-Resources	6	6		2

UAH17CE1020	**FUNDAMENTALS OF BIOSTATISTICS**
	TotalContactPeriods–4
	Total credits -2
	Course Designed by–Department of Community Medicine
OBJECTIVES	The course will offer basic knowledge about Biostatistics and to correctly apply a variety of statistical procedures and tests according to objective of study

UNIT I: Introducing the Basics

Introduction, Graphical representation of data, Data collection, Diagrammatic and Graphical Presentation of data, Types of data, limitations.

UNIT II: Measures of Central Tendency & Dispersion

Measures of Central Tendency; Mean, Median, Mode, Geometric mean, Harmonic mean for raw data. Measures of dispersion; Quartile deviation, Mean Deviation - Standard Deviation - Coefficient of variation- Range

UNIT III: Probability

Introduction to Probability, Theorems of probability; Bayer‘s Theorem, Probability Distributions; Discrete & Continuous distributions, Binomial Distribution, Poisson Distribution, Normal Distribution.

UNIT IV: Correlation & Regression Analysis

Correlation Analysis, Types of correlation; Rank Correlation Coefficient. Regression analysis, Types of Regression, Assumptions; Comparison to Correlation.

UNIT V: Hypothesis Testing

Introduction; Types of sampling, Hypothesis testing; Type of errors, Parametric & Non-parametric tests; Mann Whitney’s U test, Chi-square, t-tests, ANOVA.

REFERENCES

1. Don. Mc Neil - Epidemiological Research Methods - Oxford University Press, London.

2. Biostatistics –Principle & Practice – McGraw Hill Education.

3. http://www.ats.ucla.edu/stat/

4. Ahttp://www.statsoft.com/textbook/basic-statistics/

COURSEOUTCOMES	
CO1	The student will be able to understand and apply the Biostatistics.
CO2	The student will be able to use the software independently for the data analysis.
CO3	The student will be able determine the correct procedures to use in a given situation
CO4	The student will be able to interpret the results of hypothesis tests

MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	S			**S**		**M**
Category	Management					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE1021	**COMMUNICATION SKILLS FOR HEALTH CARE PROFESSIONALS**
	TotalContactPeriods–5
	Total credits -2
	Course Designed by–Department of Community Medicine
OBJECTIVES	This course deals with essential functional English aspects of the of communication skills essential for the health care professionals.

UNIT: I APPLIED GRAMMAR

Identifying common errors in sentences, Transformation of sentences, Usage of either …or…, Neither… nor…, So… that…, Such… that…, Not only… but also…, unless…

UNIT: II VOCABULARY

Abbreviations used in healthcare, Medical idioms & Phrases

UNIT: III WRITING

Letter writing, Curriculum Vitae writing, covering letter, Creative writing – invite, posters, Essay writing, summary writing, note taking, report writing.

UNIT: IV SPOKEN COMMUNICATION

Telephone etiquette, Importance of Stress, Intonation and rhythm, speaking; describing simple process, Filling a form etc., - Asking and answering questions; Debate/Oral Reporting

UNIT: V LISTENING AND READING SKILLS:

Listening and reading comprehension exercises.

Textbook Recommended:

1. Effective English Communication by Krishna Mohan and Meenakshi Raman, Tata McGraw –Hill Publishing Company Limited, New Delhi.

2. English for Colleges and Competitive Exams by Dr. R. Dyvadatham, Emerald Publishers.

COURSEOUTCOMES						
CO1	The student will be able to express better.					
CO2	The student will be able to get knowledge about MOA, adverse effects					
CO3	The student will Grow personally and professionally					
CO4	The student will Develop confidence in every field					
MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**		S	
4	S			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE1022	**BIOMEDICAL ETHICS**
	TotalContactPeriods–3
	Total credits -2
	Course Designed by–Department of Community Medicine
OBJECTIVES	To provide basic skills in: A) Approaching ethical issues. B) Analysis and statement of issues. C) Understanding the relevant ethical principles invoked..

Introduction to Bioethics

Bioethical issues related to Healthcare &Medicine 5

2Anatomy - Cadaver ethics, Human dignity, PNDT, Disposal of cadaver, Genetic Counseling 7

Physiology - Animal ethics, Health policy privacy 7

Biochemistry & Pathology - Prudence of investigation confidentiality, Patients bill of rights, Disposal of investigative material, Integrity, Blood transfusion 5

Pharmacology - Rational drug prescribing, Clinical trials, Risk minimization, Animal ethics

Microbiology - Hand wash, Drug resistance minimization, Prudence of investigation confidentiality, Sterilization procedure, Bio safety and bio hazard 5

Medicolegal aspects of medical records

Introduction to Intellectual Property:

Concept of Intellectual Property Kinds of Intellectual Property

Patents, Copyrights Designs, Trademarks,Geographical Indication, Infringement of IPR, Its protection and

Remedies Licensing and its types

REFERENCE BOOKS

1. Contemporary issues in bioethics – Beauchamp & walters (B&W) 4th edition.

2. Classic philosophical questions by Gloud (8th Edition)

3. Case book series and booklets by UNESCO Bioethics Core curriculum 2008

4. Encyclopedia of Bioethics 5 vol set, (2003) ISBN-10: 0028657748

5. Intellectual property rights- Ganguli-Tat McGrawhill. (2001) ISBN-10: 0074638602,

6. Intellectual Property Right- Wattal- Oxford Publications House.(1997) ISBN:0195905024.

COURSEOUTCOMES	
CO1	The students will be able to: Recognize what constitutes an ethical concern in health care
CO2	The student will be able to understand the clinical evaluations of Disease Condition
CO3	The student will be able to Understand better the complexity and multi-dimensionality of medical ethical concerns and uniqueness of each problem.
CO4	The student will get the knowledge of plagiarism in their innovations which can be questioned legally

MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**d**	**E**	**f**
1	S		M		S	S
2				s		
3			**S**			
4	S		M			**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE1023	**FUNDAMENTALS OF HUMAN GENETICS**
	Total Contact Periods– 4
	Total credits -2
	Course Designed by–Department of Genetics
OBJECTIVES	To Comprehend the Chromosomal basis of inheritance

I -Introduction to cellular components

Structure and morphology of various types of cells - Biochemical composition - Cellular organelles - Composition and components of nucleus - Chromosomes - Cell division and Mechanics of cell division and regulation.

II - Structure and functions of nucleic acids

Functions, Structure and characteristics of nucleic acids - Types of mutations -Genetic variations and polymorphisms

III - Chromosomal basis of inheritance

Chromosome behavior and inheritance pattern in man - Single gene Mendelian disorders: autosomal dominant, recessive, sex linked dominant and recessive - Polygeneic and mitochondrial inheritance.

III - Origin and detection of genetic disorders

Mutation - Non-disjunction - Chromosomal abnormalities and clinical phenotypes of common genetic syndromes (Down's syndrome, Patua‘s syndrome, Edward syndrome, Turner syndrome and Klinefelter's syndrome, Cri-du-caht syndrome)- Karyotyping, Neural tube defects, Carcinogenesis.

IV–Biochemical basis for the inborn errors of metabolism

General characteristics of inborn errors of metabolism – Incidence - etiology - Folic acid metabolism - triple markers - New born screening, prevention and management. False positive and false negative - Ethical principles of Genetic counseling for prenatal diagnosis - Fetal rights – Regulation and prevention of misuse act 1994.

Reference books

1. A guide to genetic counseling, 2nd edition, D.L. Baker, J.L. Schuette and W.R. Uhlmann, Wiley – Leiss Publications 2002.

2. Emery Elements of Medical Genetics, 9th edition, Robert F. Mueller & Ian D. young, Churchill Livingstone, 1995.

3. Medical Genetics, 3rd edition, Lynn B. Jorde, John C. Carey, Michael J. Bamshad, & Raymond L. White, Mosby, 2003.

COURSEOUTCOMES						
CO1	The student will be able to Be able to describe the chromosomal basis of inheritance and how alterations in chromosome number or structure. . .					
CO2	The student will be able to understand of the differences and similarities between diagnostic, predictive and carrier genetic testing.					
CO3	The student will be able to know detailed information of Chromosome behavior and inheritance pattern in man					
CO4	The student will be to understand the phenotype and genotype .					
MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**d**	**E**	**f**
1	S		M		S	
2				s		M
3			**M**			
4	S			**S**		**S**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE2024	**PRINCIPLES AND APPLICATION OF CLINICAL GENETICS**
	Total Contact Periods– 6
	Total credits -2
	Course Designed by–Department of Nephrology
OBJECTIVES	To develop awareness about Genetic testing, Genetic counseling, Philosophy and Ethos of Genetic services

I -Principle and components of genetic testing Lay out of genetic laboratories - Genetic testing, Genetic counseling, Philosophy and Ethos of Genetic services, Types of testing- Cytogenetic testing- Molecular cytogenetic testing- DNA testing.

II - Cytogenetic testing Indications, Type of sample, Sampling and transport conditions, Karyotyping - chromosome identification, merits and demerits of conventional cytogenetic testing

III - Molecular Cytogenetic testing

Indications, Type of sample, Sampling and transport conditions - Fluorescence in-situ hybridization, fluorescence signal enumeration, merits and demerits of FISH.

IV - DNA testing

Organization of human genome, Structure and function of genetic material, Polymerases chainmreaction - Types, principles and testing, Sequencing.

V - Practical:

Case studies

Reference books

1. Practical Genetic counseling, Peter S. Harper, 6th edition, Holder Headline Group 2004.

2. Medical Genetics, 3rd edition, Lynn B. Jorde, John C. Carey, Michael J. Bamshad, &

Raymond L. White, Mosby, 2006.

3. Genetics in Medicine, Thompson & Thompson, 6th edition, Elsevier 2004.

4. Practical Genetic counseling, Peter S. Harper, 6th edition, Holder Headline Group 2004.

COURSEOUTCOMES						
CO1	The student will be able to become familiar with and practice genetic tests.					
CO2	The student will be able to provide better patient care					
CO3	The student will be able to know detailed information about Genetic Counselling					
CO4	The student will be to know about Genetic testing.					
MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3			**M**			
4	S				S	**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE2025	**CLINICAL EXAMINATION OF THE HUMANVISUAL SYSTEM**
	TotalContactPeriods–5
	Total credits -2
	Course Designed by–Department of Opthalmology
OBJECTIVES	The core objective of this course is to gain in depth knowledge on the structural and physiological functions of the various parts of the eye and the different examination procedures for the ocular structures.

: **I - History Taking**

Importance of history taking, Demographic data and its importance, Chief presenting symptoms, History of present illness, History of past illness, Family History, Common ocular symptoms and their causes – defective vision, watering eyes, discharge, redness, pain, asthenopia and other symptoms

II - Visual Acuity measurement

Distance visual acuity-charts, methods and measurements; Near visual acuity –charts, methods and measurements; contrast sensitivity testing; colour vision testing

III - External Examination

Examination of head posture, examination of forehead, examination of eye brows, examination of eyelids, examination of Lacrimal apparatus, examination of eyeball on the whole, examination of the cornea, conjunctiva sclera and anterior chamber, eye movements, muscle balance and squint evaluation

IV - Anterior segment Evaluation

Slit lamp examination of the eyelids, cornea, conjunctiva, anterior chamber depth, iris, and lens Intraocular pressure measurements using non contact tonometer

V - Posterior segment Evaluation

Introduction and importance of posterior segment evaluation- direct and indirect ophthalmoscopy

REFERENCE BOOKS:

1. Comprehensive Ophthalmology – A K Khurana, 5th edition, New Age International Publishers, 2012.

2. Clinical Ophthalmology – Jack J Kanski, 7th edition, Butterworths, 2012

1. Borish's Clinical Refraction - William J. Benjamin, Irvin M. Borish, Butterworth-Heinemann, 2006

COURSEOUTCOMES						
CO1	The student will be able to have the skill to perform basic ophthalmic examination					
CO2	The student will be able to understand concept of theory and clinical evaluation of disease conditions gain an in- depth knowledge on disease outline and clinical evaluation of patients					
CO3	The student will be able to depth knowledge on the functions of the visual system					
CO4	The student will have the skill to perform basic ophthalmic examination					
MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**D**	**e**	**f**
1	S		M		s	
2				S		M
3	M		**S**			
4	M			**C**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE2026	**PERSONALITY DEVELOPMENT AND STRESS MANAGEMENT**
	Total Contact Periods– 4
	Total credits -2
	Course Designed by–Department of HR
OBJECTIVES	• To Explain the effect of personality, attitudes, perceptions and attributions on Health stress, coping and relaxation.

Unit 1

Introduction to Personality Development, Different Stages of Development, Types of personalities, personality perspectives and theories

Unit 2

How needs impact personality, Maslow's hierarchy of need, Basic Personality Traits; Values, Beliefs, Interactions, Experiences, Environmental influences, the big five dimensions.

Unit 3

Stress; causes, effect and types, Stress resistant personalities, Relaxation; training aspects importance and Body works.

Unit 4

Health stress and coping, Understanding and communicating our health needs, Behavioral and psychological correlates of illness.

Unit 5

Soft skill; need and importance, Personality development and soft skills. Effective communication, listening, speaking, writing, interpretation part of soft skills and personality

Learning Outcome:

By successfully completing this course, students will be able to Describe how a personality develops.

- Define the stages of personality development.
- Define personality types.
- Describe basic personality traits.
- Personality and stress.
- Health stress, coping and relaxation.
- Soft skills and personality.

Text Books:

1. Hurlock (1976). Personality development.Tata McGraw Hill.

2. Baron R A, Psychology 5th edition, Pearsons publication.

3. Abraham A, General Psychology, Tata McGraw hill Education private limited.

Reference Books:

1. Lazarus J Stress Relief and Relaxation Techniques, Viva Book Private limited.

2. Shelly E. Taylor, Health psychology, 7th edition, TATA McGrawHil, New Delhi.

COURSEOUTCOMES						
CO1	The student will be able to Define the stages of personality development.					
CO2	• The student will be able to Describe basic personality traits.					
CO3	The student will be able to Describe how a personality develops-Personality and stress.					
CO4	The student will be able to Develop the Soft skills and personality.					
MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**D**	**e**	**f**
1	S		M		s	
2				S		M
3	M		**S**			
4	S			**S**		**M**
Category	Management					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE2027	**FIRST AID MANAGEMENT & SPLINTING TECHNIQUES**
	TotalContactPeriods–6
	Total credits -2
	Course Designed by–Department of Medicine
OBJECTIVES	Students will gain additional skills in interventional procedures and Differentiate between emergency situation and other use.

Unit-I BACKGROUND INFORMATION

- The importance of first Aid
- First aid supplies
- First aid and the law
- Prevention practices

Unit-II ACTION AT AN EMERGENCY

- Recognizing Emergencies
- Deciding to act
- Seeking medical care
- Disease transmission
- Rescuer reactions

Unit –III BLEEDING AND WOUNDS

- External bleeding
- Wound infection
- Amputations
- Impaled objects
- Wound that require medical care
- Internal Bleeding
- Dressing and Bandages

Unit-IV BONE, JOINT AND MUSCLE INJURIES

- Bone injuries
- Splinting
- Joint injuries
- RICE injuries
- Muscle injuries
- Splints – Introduction, Types, Uses, Splinting guidelines, Slings, Procedure,Complications

UNIT-V RESCUING AND MOVING INJURIES

- Water rescue
- Ice rescue
- Electrical Emergency Rescue Hazardous materials incidents
- Motor Vehicle crashes

- Fires
- Confined spaces
- Triage – what to do with multiple victims
- Moving victims

Text books:

1 .First Aid CPR and AED standard (sixth edition)

2. First aid book-St Johns Ambulance services

3. Text book of Orthopaedics – Natarajan

4. Text book of Orthopaedics – John Ebenezer Reference books: First Aid and Management of Minor Injuries by Jon Dallimore First Aid and Beyond by Dan Wolfe - Smashwords , 2014 International Trauma Life Support Provider Manual Essentials Orthpaedics Mark D Mille

COURSEOUTCOMES	
CO1	The student will be able to Differentiate between emergency situation and other use.
CO2	The student will be able to know about the basics of concepts of disease & outlines of clinical evaluation.
CO3	The student will be able to List management, assessment, and care steps for upper extremity and lower extremity fractures.
CO4	The student will be to know Splinting techniques of lower extremities –Thomas splint, sam splint, etc

MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**D**	**e**	**f**
1	S		M		s	
2				S		M
3	M		**S**			
4	S			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE3028	**ESSENTIALS OF MEDICAL TRANSCRIPTION**
	Total Contact Periods– 7
	Total credits -2
	Course Designed by–Department of MRD
OBJECTIVES	Provide Hands on training on English Language and listening comprehension and provide foundation to learn medical terminology & learn laboratory report

Unit 1

The Medical Transcriptionist‘s career including Ethical& Legal Responsibilities Introduction to Medical transcription, Job Opportunities, Transcription Skills, Medical records, Certification for Medical Transcriptionists, Ethical and Legal responsibilities

Unit 2

Equipments in Transcription Equipment, Computer Systems, Ergonomics, Dictation Equipments, Hand and Foot control Dictation, Transcription Preparation

Unit 3

Transcription Guidelines Punctuations, Proof reading notations, Formats and styles, SOAP for Chart notes; Discharge Summary

Unit 4 PRACTICAL:

1. Equipments for Medical Transcription,2. Typing for the beginners, 3.Vocabulary, 4. Proof reading Notations , 5. Formats and styles in document preparation , 6. Preparation of chart notes, 7. Listening Comprehension, 8. Transcription check off sheet **References Book**1. Medical Key boarding, Typing, and Transcribing Techniques and procedures 4th Edition, March

Otis Diehl, Marilyn Takahashi Fordney, W.B. Saunders Company

2. The AAMT Book of Style for Medical Transcription, Claudia J. Tessier

3. CD‘s available for:

a. Stedman‘s Electronic Medical Dictionary 4.0

b. American Drug Index 2003

Text Books:

1. Medical Key boarding, Typing, and Transcribing Techniques and procedures 4th Edition, March

Otis Diehl, Marilyn Takahashi Fordney, W.B. Saunders Company

2. The AAMT Book of Style for Medical Transcription, Claudia J. Tessie

COURSEOUTCOMES						
CO1	The student will be able to Demonstrate their basic skills in the knowledge of Vocabulary, Medical terminology					
CO2	The student will be able to Demonstrate their basic skills in the preparation of chart notes. .					
CO3	The student will be able to Demonstrate skills in listening comprehension					
CO4	• The student will be be able to identify accurate format for medical document preparation					
MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**d**	**E**	**f**
1	S		M		S	
2				s		M
3	M		**S**			
4	S			**S**		**M**
Category	Medical Records					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE3029	**COMMUNICATION AND SOFT SKILL**
	Total Contact Periods– 7
	Total credits -2
	Course Designed by–Department of Human Resources
OBJECTIVES	This course is designed to equip the students with essential soft skills needed for workplace and improve personality.

LEARNING OUTCOME:

This course is designed to help the students to

- Foster healthy attitude.
- Develop effective inter and intra personal skills to be an effective team worker.
- Communicate effectively in both academic and professional setup

UNIT: I ASPECTS OF COMMUNICATION

Importance of communication, Process, Barriers, Non verbal Communication

UNIT: II SPEAKING

How to Open and Close conversations, Introductions and Address System, Expressing Courtesy, Giving Compliments and replying to Compliments, Presentation Skills, Telephonic conversation and telephone etiquette

UNIT – III PRESCRIBED READING

Tom Sawyer by Mark Twain, Bacon‘s Essays: - Of Goodness and goodness of nature

UNIT – IV WRITING

Letter writing - Letter of Complaints, Inviting and Declining an invitation, Writing Memos and Emails, Grammar, Spelling & Punctuation, Use of Dictionary & Thesaurus.

UNIT – V SOFT SKILLS

Active Listening Skills, Assertive Skills, Negotiation and Persuasive Skills, Interview Skills

Text Book:

Developing Communication Skills by Krishna Mohan and Meera Banerji, II edition, Macmillan.

Reference Books:

1. Communication Skills for Engineers and Scientists by Sangeeta Sharma and Binod Mishra, PHI Learning Private Limited, New Delhi.

2. English and soft skills by S.P. Dhanavel, Orient Black Swan

3. Effective English Communication by Krishna Mohan and Meenakshi Raman, Tata McGraw –Hill Publishing Company Limited.

4. Technical Communication – Principles and Practice, by Meenakshi Raman and Sangeetha Sharma, II edition, Oxford University Press.

5. Developing Communication Skills by Krishna Mohan and MeeraBanerji, II edition, Macmillan.

6. The Complete Guide to Functional Writing in English by M. Sarada, Sterling Publishers (P) Ltd., New Delhi.

7. Speaking Naturally: Communication Skills in American English by Bruce Tillitt and Mary Newton Bruder, Cambridge University

COURSEOUTCOMES						
CO1	The student will be able to Foster healthy attitude					
CO2	The student will be able to develop effective inter and intra personal skills to be an effective team worker					
CO3	The student will be able to Develop effective inter and intra personal skills to be an effective team worker					
CO4	The student will be able to Communicate effectively in both academic and professional setup					
MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**a**	**B**	**C**	**d**	**e**	**F**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE3030	**PROFESSIONAL SKILLS DEVELOPMENT**
	Total Contact Periods– 6
	Total credits -2
	Course Designed by–Department of Human Resources
OBJECTIVES	To Advance the students' intellectual curiosity, competency and skills in preparation for employment

1. Communication Skills

Importance of Communication skills in Public health; Communication process; Methods of communication; Types of communication: Verbal and Non-verbal; Impediments to effective communication; Feedback

2. Oral Presentation Skills:

Preparation and planning; Structure; Audio-visual aids; Creating interest and establishing a relationship with the audience; Body language; Voice and pronunciation; Review

3. Writing skills:

Writing a scientific paper; Writing a proposal; Structure of an article; References and literature review; Peer-review process-Publication bias; International guidelines for publication in journals; Professional Ethics

4. Leadership in Public health:

Leadership styles and trait; Motivation skills; Interpersonal communication skills; Problem solving skills; Decision making skills; Management skills; Communication Skills

5. Manuscript writing

Writing introduction, objectives, methodologies, major finding, discussion, conclusion and recommendation**6. Seminar presentations**Use of computers present data and information on recent topics

Text Books:

1. Professional Writing Skills, A self paced training programme by Janis Fisher Chan and Diane Lutovich. Advanced Communication Designs Inc, 2003. San Anselmo, CA. ISBN 0963745549

2. Speaking Your Mind: Oral Presentation and Seminar Skills By Rebecca Stott, Tory Young, Cordelia Bryan Contributor Rebecca Stott, Tory Young, Cordelia Bryan Published by Longman, 2001 ISBN 0582382432, 9780582382435

3. Public Health Leadership: Putting Principles into Practice Louis Rowitz, PhD. Jones and Bartlett Publishers, 2003. ISBN-13: 9780763725013 ISBN-10: 07637250

COURSEOUTCOMES						
CO1	The student will be able to Develop good written and oral communication abilities					
CO2	The student will be able to Develop an understanding of team building and leadership skills.					
CO3	The student will be able to Develop knowledge regarding capacities needed to work independently within diverse work environments					
CO4	The student will be able to know how to maintain Records and Reports and demonstrate the procedure.					
MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**D**	**e**	**f**
1	S		M		s	
2				S		M
3	M		**S**			
4	S			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting Of Academic Council held in Aug, 2017					

UAH17CE3031	**LIBRARY SCIENCE AND E-RESOURCES**
	Total Contact Periods– 6
	Total credits -2
	Course Designed by–Department of Library science
OBJECTIVES	To gain knowledge about Documentary Sources of Information and Library Automation

Unit 1 BASIC CONCEPTS AND INFORMATION SERVICES

Meaning of Library – Types of Library -– Library layout - Functions of Library – need for Library – Meaning of ISBN and ISSN – Collection management - Library Classification system - Five laws of Library Science – Inter Library Loan (ILL), Communication theories and models.Barriers to communication.Levels of communications – Intrapersonal, interpersonal and mass communication. Information services – literature search Methods of Dissemination of information Current Awareness Service (CAS), Selective Dissemination of Information (SDI), Document delivery service, Alert services, and Internet services.

Unit 2 INFORMATION SOURCES

Documentary Sources of Information, Print, and Non-print including Electronic, Human and Institutional sources: Nature, types, characteristics and utility. Internet as a source of Information. Primary sources of information – Journal, conference volume, patents, research reports, thesis and their electronic format – Secondary sources of information - Bibliography, Encyclopedia Dictionary, Yearbook , Directory, Geographical Source, Textbook, Index and Abstracts.

Unit 3 LIBRARY AUTOMATION

Definition need, Purpose, advantages. Planning for Library automation. Automation of Library operations - Acquisitions, Cataloguing, OPAC, Circulation and Serials control. Evaluation of Library automation systems - Application of Barcode and RFID Technology for Library Functions. Basic concepts: Bibliography, bibliographic coupling, Impact factor.

Unit 4 ELECTRONIC INFORMATION SOURCES

Electronic Information resources: Meaning and definition, Growth and development, Types. Journals, e-Books, e-Theses, e-newspapers, Blogs, Wikis. Free databases and fee based bibliographical and full text databases, subject related websites, Institutional repositories, Open Archives and digital Libraries. - Resource Sharing and Networks: Consortia- Importance and objectives. Study of Information networks and Digital Library Consortia. Types of computer networks: Local Area Networks – Concept, Topologies - Bus, Star, Mesh, Tree, and Ring). Wide Area Networks and Metropolitan Area Networks- Concepts, Circuit switching and Packet switching. Difference between LAN and WAN. Wireless Networks –Mobile telephones.

Unit 5 DIGITAL LIBRARIES

Digital Libraries: Concepts and issues. Understanding digital Libraries Content creation –Electronic documents, files and file formats. Study of different file formats.Studying PDF in detail- features of PDF.Digitization- scanning, Digital Preservation, Conservation and Archival Management – Problems and prospects. Open Access Movement and Institutional repositories.

TEXTBOOKS

1. Ranganathan, S.R The five Laws of Library Science UBS Publishers, 1988.

2. Ranganathan, S.R. Library Manual SaradaRanganathan endowment for Library Science, 1989.

3. Ranganathan, S.R. Cataloguing Practice SaradaRanganathan endowment for Library Science 1990

COURSEOUTCOMES	
CO1	The student will be able to analyze and understand the query
CO2	The student will be able to Identify the sources of information
CO3	The student will be able to Find out the information

CO4	The student will be able to know how to maintain Records and Reports and demonstrate the procedure.					
MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**d**	**e**	**F**
1	S		M		s	
2				s		M
3	M		**S**			
4	S			**S**		**M**
Category	Library Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

INTERNSHIP PROGRAMME

ALLIED HEALTH SCIENCE

CARDIAC TECHNOLOGY

INTERNSHIP

Regulation for Internship

Internship is an important part of training wherein an Allied Health Science Graduate acquires skills, and applies his knowledge gained during his course of study.

Objectives:

1. To Facilitate Reinforcement of Training.
2. To Develop Professionalism, Communication and Team Building skills.
3. To help in understating of ethical Practices like
    - Rights and dignity of patients
    - Ethical Conduct and professional obligations to colleagues, patients, families and community

- The Internship is compulsory for all the candidates. It shall commence after the students have completed and passed all academic and clinical requirements.
- The internship shall be for a duration of one year.
- The degree shall be awarded after satisfactory completion of internship.

EVALUATION OF INTERNEES

Formative and Summative evaluation are carried out. A **Log Book** is maintained by all internees. No Marks are allotted. Satisfactory completion of Log Book is essential for completion of internship.

Day to day assessment of the internees during the internship posting should be done (Log Book). Summative evaluation is based on observation of the supervisors of different departments and their records in the log books. Based on the formative and summative evaluation the head of department shall issue a certificate of satisfactory completion of training, following which the university shall award the degree.

During internship a project is allocated to each intern by the respective Heads of departments. The project work is marked for 100 (including viva).

Six credits are given for the project
30 hours per credit
Total 180 hours
The Project is done for a Maximum duration of 6 months.

Internship credits

The internship is given 15 Credits. (i.e.) 45 hrs/Credit. A Total of 675 hours.

After Undergoing internship for a period of Six months, each Department shall conduct an **internal evaluation** of the student to assess the skills developed and progress of the student before issuing the certificate of completeness.

The duration of the posting and skill acquisition in various technology courses are attached.

Number of Working days for interns:-

All Sundays are holidays.

On Government holidays duties are allotted on turns to the interns. In cases of leave or absence extension of posting shall be given which is done at the discretion of the Head of Department.

INTERNSHIP [VII & VIII SEMESTER]

S.NO	COURSE CODE	COURSE TITLE	SEMESTER VII &VIII				
			HOURS PRESCRIBED	PROJECT EVALUATION	VIVA	TOTAL	CREDITS
1.	UAOT17CL425	Internship	675				15
2.	UAOT17CL426	Project		80	20	100	6
Total Credits - 21							

Duration of Posting – For Internship in various Technologies

CARDIAC TECHNOLOGY

Duration of Postings

Cardiac OT	-	1 months
Cardiac OP	-	1 month
Cath lab	-	1 month
Cardiac ICU	-	2 months
Echo room	-	2 month
ECG	-	2 months
Cardiac treadmill	-	1 month

The Intern should maintain a log book.
At the end of the internship the interns should:

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UAH17CE1020	**FUNDAMENTALS OF BIOSTATISTICS**
	TotalContactPeriods–4
	Total credits -2
	Course Designed by–Department of Community Medicine
OBJECTIVES	The course will offer basic knowledge about Biostatistics and to correctly apply a variety of statistical procedures and tests according to objective of study

UNIT I: Introducing the Basics

Introduction, Graphical representation of data, Data collection, Diagrammatic and Graphical Presentation of data, Types of data, limitations.

UNIT II: Measures of Central Tendency & Dispersion

Measures of Central Tendency; Mean, Median, Mode, Geometric mean, Harmonic mean for raw data. Measures of dispersion; Quartile deviation, Mean Deviation - Standard Deviation - Coefficient of variation- Range

UNIT III: Probability

Introduction to Probability, Theorems of probability; Bayer‘s Theorem, Probability Distributions; Discrete & Continuous distributions, Binomial Distribution, Poisson Distribution, Normal Distribution.

UNIT IV: Correlation & Regression Analysis

Correlation Analysis, Types of correlation; Rank Correlation Coefficient. Regression analysis, Types of Regression, Assumptions; Comparison to Correlation.

UNIT V: Hypothesis Testing

Introduction; Types of sampling, Hypothesis testing; Type of errors, Parametric & Non-parametric tests; Mann Whitney’s U test, Chi-square, t-tests, ANOVA.

REFERENCES

1. Don. Mc Neil - Epidemiological Research Methods - Oxford University Press, London.

2. Biostatistics –Principle & Practice – McGraw Hill Education.

3. http://www.ats.ucla.edu/stat/

4. Ahttp://www.statsoft.com/textbook/basic-statistics/

COURSEOUTCOMES	
CO1	The student will be able to understand and apply the Biostatistics.
CO2	The student will be able to use the software independently for the data analysis.
CO3	The student will be able determine the correct procedures to use in a given situation
CO4	The student will be able to interpret the results of hypothesis tests

MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	S			**S**		**M**
Category	Management					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE1021	**COMMUNICATION SKILLS FOR HEALTH CARE PROFESSIONALS**
	TotalContactPeriods–5
	Total credits -2
	Course Designed by–Department of Community Medicine
OBJECTIVES	This course deals with essential functional English aspects of the of communication skills essential for the health care professionals.

UNIT: I APPLIED GRAMMAR

Identifying common errors in sentences, Transformation of sentences, Usage of either …or…, Neither… nor…, So… that…, Such… that…, Not only… but also…, unless…

UNIT: II VOCABULARY

Abbreviations used in healthcare, Medical idioms & Phrases

UNIT: III WRITING

Letter writing, Curriculum Vitae writing, covering letter, Creative writing – invite, posters, Essay writing, summary writing, note taking, report writing.

UNIT: IV SPOKEN COMMUNICATION

Telephone etiquette, Importance of Stress, Intonation and rhythm, speaking; describing simple process, Filling a form etc., - Asking and answering questions; Debate/Oral Reporting

UNIT: V LISTENING AND READING SKILLS:

Listening and reading comprehension exercises.

Textbook Recommended:

1. Effective English Communication by Krishna Mohan and Meenakshi Raman, Tata McGraw – Hill Publishing Company Limited, New Delhi.

2. English for Colleges and Competitive Exams by Dr. R. Dyvadatham, Emerald Publishers.

COURSEOUTCOMES						
CO1	The student will be able to express better.					
CO2	The student will be able to get knowledge about MOA, adverse effects					
CO3	The student will Grow personally and professionally					
CO4	The student will Develop confidence in every field					
MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**		S	
4	S			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE1022	**BIOMEDICAL ETHICS**
	TotalContactPeriods–3
	Total credits -2
	Course Designed by–Department of Community Medicine
OBJECTIVES	To provide basic skills in: A) Approaching ethical issues. B) Analysis and statement of issues. C) Understanding the relevant ethical principles invoked..

Introduction to Bioethics

Bioethical issues related to Healthcare &Medicine 5

2Anatomy - Cadaver ethics, Human dignity, PNDT, Disposal of cadaver, Genetic Counseling 7

Physiology - Animal ethics, Health policy privacy 7

Biochemistry & Pathology - Prudence of investigation confidentiality, Patients bill of rights, Disposal of investigative material, Integrity, Blood transfusion 5

Pharmacology - Rational drug prescribing, Clinical trials, Risk minimization, Animal ethics

Microbiology - Hand wash, Drug resistance minimization, Prudence of investigation confidentiality, Sterilization procedure, Bio safety and bio hazard 5

Medicolegal aspects of medical records

Introduction to Intellectual Property:

Concept of Intellectual Property Kinds of Intellectual Property

Patents, Copyrights Designs, Trademarks,Geographical Indication, Infringement of IPR, Its protection and

Remedies Licensing and its types

REFERENCE BOOKS

1. Contemporary issues in bioethics – Beauchamp & walters (B&W) 4th edition.

2. Classic philosophical questions by Gloud (8th Edition)

3. Case book series and booklets by UNESCO Bioethics Core curriculum 2008

4. Encyclopedia of Bioethics 5 vol set, (2003) ISBN-10: 0028657748

5. Intellectual property rights- Ganguli-Tat McGrawhill. (2001) ISBN-10: 0074638602,

6. Intellectual Property Right- Wattal- Oxford Publications House.(1997) ISBN:0195905024.

COURSEOUTCOMES	
CO1	The students will be able to: Recognize what constitutes an ethical concern in health care
CO2	The student will be able to understand the clinical evaluations of Disease Condition
CO3	The student will be able to Understand better the complexity and multi-dimensionality of medical ethical concerns and uniqueness of each problem.
CO4	The student will get the knowledge of plagiarism in their innovations which can be questioned legally

MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**d**	**E**	**f**
1	S		M		S	S
2				s		
3			**S**			
4	S		M			**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE1023	**FUNDAMENTALS OF HUMAN GENETICS**
	Total Contact Periods– 4
	Total credits -2
	Course Designed by–Department of Genetics
OBJECTIVES	To Comprehend the Chromosomal basis of inheritance

I -Introduction to cellular components

Structure and morphology of various types of cells - Biochemical composition - Cellular organelles -Composition and components of nucleus - Chromosomes - Cell division and Mechanics of cell division and regulation.

II - Structure and functions of nucleic acids

Functions, Structure and characteristics of nucleic acids - Types of mutations -Genetic variations and polymorphisms

III - Chromosomal basis of inheritance

Chromosome behavior and inheritance pattern in man - Single gene Mendelian disorders: autosomal dominant, recessive, sex linked dominant and recessive - Polygeneic and mitochondrial inheritance.

III - Origin and detection of genetic disorders

Mutation - Non-disjunction - Chromosomal abnormalities and clinical phenotypes of common genetic syndromes (Down's syndrome, Patua‘s syndrome, Edward syndrome, Turner syndrome and Klinefelter's syndrome, Cri-du-caht syndrome)- Karyotyping, Neural tube defects, Carcinogenesis.

IV–Biochemical basis for the inborn errors of metabolism

General characteristics of inborn errors of metabolism – Incidence - etiology - Folic acid metabolism - triple markers - New born screening, prevention and management. False positive and false negative -Ethical principles of Genetic counseling for prenatal diagnosis - Fetal rights – Regulation and prevention of misuse act 1994.

Reference books

1. A guide to genetic counseling, 2nd edition, D.L. Baker, J.L. Schuette and W.R. Uhlmann, Wiley –Leiss Publications 2002.

2. Emery Elements of Medical Genetics, 9th edition, Robert F. Mueller & Ian D. young, Churchill Livingstone, 1995.

3. Medical Genetics, 3rd edition, Lynn B. Jorde, John C. Carey, Michael J. Bamshad, & Raymond L. White, Mosby, 2003.

COURSEOUTCOMES						
CO1	The student will be able to Be able to describe the chromosomal basis of inheritance and how alterations in chromosome number or structure. . .					
CO2	The student will be able to understand of the differences and similarities between diagnostic, predictive and carrier genetic testing.					
CO3	The student will be able to know detailed information of Chromosome behavior and inheritance pattern in man					
CO4	The student will be to understand the phenotype and genotype .					
MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**d**	**E**	**f**
1	S		M		S	
2				s		M
3			**M**			
4	S			**S**		**S**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE2024	**PRINCIPLES AND APPLICATION OF CLINICAL GENETICS**
	Total Contact Periods– 6
	Total credits -2
	Course Designed by–Department of Nephrology
OBJECTIVES	To develop awareness about Genetic testing, Genetic counseling, Philosophy and Ethos of Genetic services

I -Principle and components of genetic testing Lay out of genetic laboratories - Genetic testing, Genetic counseling, Philosophy and Ethos of Genetic services, Types of testing- Cytogenetic testing- Molecular cytogenetic testing- DNA testing.

II - Cytogenetic testing Indications, Type of sample, Sampling and transport conditions, Karyotyping - chromosome identification, merits and demerits of conventional cytogenetic testing

III - Molecular Cytogenetic testing

Indications, Type of sample, Sampling and transport conditions - Fluorescence in-situ hybridization, fluorescence signal enumeration, merits and demerits of FISH.

IV - DNA testing

Organization of human genome, Structure and function of genetic material, Polymerases chainmreaction - Types, principles and testing, Sequencing.

V - Practical:

Case studies

Reference books

1. Practical Genetic counseling, Peter S. Harper, 6th edition, Holder Headline Group 2004.

2. Medical Genetics, 3rd edition, Lynn B. Jorde, John C. Carey, Michael J. Bamshad, &

Raymond L. White, Mosby, 2006.

3. Genetics in Medicine, Thompson & Thompson, 6th edition, Elsevier 2004.

4. Practical Genetic counseling, Peter S. Harper, 6th edition, Holder Headline Group 2004.

COURSEOUTCOMES						
CO1	The student will be able to become familiar with and practice genetic tests.					
CO2	The student will be able to provide better patient care					
CO3	The student will be able to know detailed information about Genetic Counselling					
CO4	The student will be to know about Genetic testing.					
MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3			**M**			
4	S				S	**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE2025	**CLINICAL EXAMINATION OF THE HUMANVISUAL SYSTEM**
	TotalContactPeriods–5
	Total credits -2
	Course Designed by–Department of Opthalmology
OBJECTIVES	The core objective of this course is to gain in depth knowledge on the structural and physiological functions of the various parts of the eye and the different examination procedures for the ocular structures.

: **I - History Taking**

Importance of history taking, Demographic data and its importance, Chief presenting symptoms, History of present illness, History of past illness, Family History, Common ocular symptoms and their causes – defective vision, watering eyes, discharge, redness, pain, asthenopia and other symptoms

II - Visual Acuity measurement

Distance visual acuity-charts, methods and measurements; Near visual acuity –charts, methods and measurements; contrast sensitivity testing; colour vision testing

III - External Examination

Examination of head posture, examination of forehead, examination of eye brows, examination of eyelids, examination of Lacrimal apparatus, examination of eyeball on the whole, examination of the cornea, conjunctiva sclera and anterior chamber, eye movements, muscle balance and squint evaluation

IV - Anterior segment Evaluation

Slit lamp examination of the eyelids, cornea, conjunctiva, anterior chamber depth, iris, and lens Intraocular pressure measurements using non contact tonometer

V - Posterior segment Evaluation

Introduction and importance of posterior segment evaluation- direct and indirect ophthalmoscopy

REFERENCE BOOKS:

1. Comprehensive Ophthalmology – A K Khurana, 5th edition, New Age International Publishers,

2012.

2. Clinical Ophthalmology – Jack J Kanski, 7th edition, Butterworths, 2012

1. Borish's Clinical Refraction - William J. Benjamin, Irvin M. Borish, Butterworth-Heinemann, 2006

COURSEOUTCOMES						
CO1	The student will be able to have the skill to perform basic ophthalmic examination					
CO2	The student will be able to understand concept of theory and clinical evaluation of disease conditions gain an in- depth knowledge on disease outline and clinical evaluation of patients					
CO3	The student will be able to depth knowledge on the functions of the visual system					
CO4	The student will have the skill to perform basic ophthalmic examination					
MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**D**	**e**	**f**
1	S		M		s	
2				S		M
3	M		**S**			
4	M			**C**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE2026	**PERSONALITY DEVELOPMENT AND STRESS MANAGEMENT**
	Total Contact Periods– 4
	Total credits -2
	Course Designed by–Department of HR
OBJECTIVES	• To Explain the effect of personality, attitudes, perceptions and attributions on Health stress, coping and relaxation.

Unit 1

Introduction to Personality Development, Different Stages of Development, Types of personalities, personality perspectives and theories

Unit 2

How needs impact personality, Maslow's hierarchy of need, Basic Personality Traits; Values, Beliefs, Interactions, Experiences, Environmental influences, the big five dimensions.

Unit 3

Stress; causes, effect and types, Stress resistant personalities, Relaxation; training aspects importance and Body works.

Unit 4

Health stress and coping, Understanding and communicating our health needs, Behavioral and psychological correlates of illness.

Unit 5

Soft skill; need and importance, Personality development and soft skills. Effective communication, listening, speaking, writing, interpretation part of soft skills and personality

Learning Outcome:

By successfully completing this course, students will be able to Describe how a personality develops.

- Define the stages of personality development.
- Define personality types.
- Describe basic personality traits.
- Personality and stress.
- Health stress, coping and relaxation.
- Soft skills and personality.

Text Books:

1. Hurlock (1976). Personality development.Tata McGraw Hill.

2. Baron R A, Psychology 5th edition, Pearsons publication.

3. Abraham A, General Psychology, Tata McGraw hill Education private limited.

Reference Books:

1. Lazarus J Stress Relief and Relaxation Techniques, Viva Book Private limited.

2. Shelly E. Taylor, Health psychology, 7th edition, TATA McGrawHil, New Delhi.

COURSEOUTCOMES	
CO1	The student will be able to Define the stages of personality development.
CO2	• The student will be able to Describe basic personality traits.
CO3	The student will be able to Describe how a personality develops-Personality and stress.
CO4	The student will be able to Develop the Soft skills and personality.

MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**D**	**e**	**f**
1	S		M		s	
2				S		M
3	M		**S**			
4	S			**S**		**M**
Category	Management					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE2027	**FIRST AID MANAGEMENT & SPLINTING TECHNIQUES**
	TotalContactPeriods–6
	Total credits -2
	Course Designed by–Department of Medicine
OBJECTIVES	Students will gain additional skills in interventional procedures and Differentiate between emergency situation and other use.

Unit-I BACKGROUND INFORMATION

- The importance of first Aid
- First aid supplies
- First aid and the law
- Prevention practices

Unit-II ACTION AT AN EMERGENCY

- Recognizing Emergencies
- Deciding to act
- Seeking medical care
- Disease transmission
- Rescuer reactions

Unit –III BLEEDING AND WOUNDS

- External bleeding
- Wound infection
- Amputations
- Impaled objects
- Wound that require medical care
- Internal Bleeding
- Dressing and Bandages

Unit-IV BONE, JOINT AND MUSCLE INJURIES

- Bone injuries
- Splinting
- Joint injuries
- RICE injuries
- Muscle injuries
- Splints – Introduction, Types, Uses, Splinting guidelines, Slings, Procedure,Complications

UNIT-V RESCUING AND MOVING INJURIES

- Water rescue
- Ice rescue
- Electrical Emergency Rescue Hazardous materials incidents

- Motor Vehicle crashes
- Fires
- Confined spaces
- Triage – what to do with multiple victims
- Moving victims

Text books:

1 .First Aid CPR and AED standard (sixth edition)

2. First aid book-St Johns Ambulance services

3. Text book of Orthopaedics – Natarajan

4. Text book of Orthopaedics – John Ebenezer Reference books: First Aid and Management of Minor Injuries by Jon Dallimore First Aid and Beyond by Dan Wolfe - Smashwords , 2014 International Trauma Life Support Provider Manual Essentials Orthpaedics Mark D Mille

COURSEOUTCOMES	
CO1	The student will be able to Differentiate between emergency situation and other use.
CO2	The student will be able to know about the basics of concepts of disease & outlines of clinical evaluation.
CO3	The student will be able to List management, assessment, and care steps for upper extremity and lower extremity fractures.
CO4	The student will be to know Splinting techniques of lower extremities – Thomas splint, sam splint, etc

MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES

COs\Pos	**A**	**B**	**c**	**D**	**e**	**f**
1	S		M		s	
2				S		M
3	M		**S**			
4	S			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE3028	**ESSENTIALS OF MEDICAL TRANSCRIPTION**
	Total Contact Periods– 7
	Total credits -2
	Course Designed by–Department of MRD
OBJECTIVES	Provide Hands on training on English Language and listening comprehension and provide foundation to learn medical terminology & learn laboratory report

Unit 1

The Medical Transcriptionist‘s career including Ethical& Legal Responsibilities Introduction to Medical transcription, Job Opportunities, Transcription Skills, Medical records, Certification for Medical Transcriptionists, Ethical and Legal responsibilities

Unit 2

Equipments in Transcription Equipment, Computer Systems, Ergonomics, Dictation Equipments, Hand and Foot control Dictation, Transcription Preparation

Unit 3

Transcription Guidelines Punctuations, Proof reading notations, Formats and styles, SOAP for Chart notes; Discharge Summary

Unit 4 PRACTICAL:

1. Equipments for Medical Transcription,2. Typing for the beginners, 3.Vocabulary, 4. Proof reading Notations , 5. Formats and styles in document preparation , 6. Preparation of chart notes, 7. Listening Comprehension, 8. Transcription check off sheet **References Book**1. Medical Key boarding, Typing, and Transcribing Techniques and procedures 4th Edition, March

Otis Diehl, Marilyn Takahashi Fordney, W.B. Saunders Company

2. The AAMT Book of Style for Medical Transcription, Claudia J. Tessier

3. CD‘s available for:

a. Stedman‘s Electronic Medical Dictionary 4.0

b. American Drug Index 2003

Text Books:

1. Medical Key boarding, Typing, and Transcribing Techniques and procedures 4th Edition, March

Otis Diehl, Marilyn Takahashi Fordney, W.B. Saunders Company

2. The AAMT Book of Style for Medical Transcription, Claudia J. Tessie

COURSEOUTCOMES						
CO1	The student will be able to Demonstrate their basic skills in the knowledge of Vocabulary, Medical terminology					
CO2	The student will be able to Demonstrate their basic skills in the preparation of chart notes. .					
CO3	The student will be able to Demonstrate skills in listening comprehension					
CO4	• The student will be be able to identify accurate format for medical document preparation					
MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**d**	**E**	**f**
1	S		M		S	
2				s		M
3	M		**S**			
4	S			**S**		**M**
Category	Medical Records					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE3029	**COMMUNICATION AND SOFT SKILL**
	Total Contact Periods– 7
	Total credits -2
	Course Designed by–Department of Human Resources
OBJECTIVES	This course is designed to equip the students with essential soft skills needed for workplace and improve personality.

LEARNING OUTCOME:

This course is designed to help the students to

- Foster healthy attitude.
- Develop effective inter and intra personal skills to be an effective team worker.
- Communicate effectively in both academic and professional setup

UNIT: I ASPECTS OF COMMUNICATION

Importance of communication, Process, Barriers, Non verbal Communication

UNIT: II SPEAKING

How to Open and Close conversations, Introductions and Address System, Expressing Courtesy, Giving Compliments and replying to Compliments, Presentation Skills, Telephonic conversation and telephone etiquette

UNIT – III PRESCRIBED READING

Tom Sawyer by Mark Twain, Bacon‘s Essays: - Of Goodness and goodness of nature

UNIT – IV WRITING

Letter writing - Letter of Complaints, Inviting and Declining an invitation, Writing Memos and Emails, Grammar, Spelling & Punctuation, Use of Dictionary & Thesaurus.

UNIT – V SOFT SKILLS

Active Listening Skills, Assertive Skills, Negotiation and Persuasive Skills, Interview Skills

Text Book:

Developing Communication Skills by Krishna Mohan and Meera Banerji, II edition, Macmillan.

Reference Books:

1. Communication Skills for Engineers and Scientists by Sangeeta Sharma and Binod Mishra, PHI Learning Private Limited, New Delhi.

2. English and soft skills by S.P. Dhanavel, Orient Black Swan

3. Effective English Communication by Krishna Mohan and Meenakshi Raman, Tata McGraw – Hill Publishing Company Limited.

4. Technical Communication – Principles and Practice, by Meenakshi Raman and Sangeetha Sharma, II edition, Oxford University Press.

5. Developing Communication Skills by Krishna Mohan and MeeraBanerji, II edition, Macmillan.

6. The Complete Guide to Functional Writing in English by M. Sarada, Sterling Publishers (P) Ltd., New Delhi.

7. Speaking Naturally: Communication Skills in American English by Bruce Tillitt and Mary Newton Bruder, Cambridge University

COURSEOUTCOMES	
CO1	The student will be able to Foster healthy attitude
CO2	The student will be able to develop effective inter and intra personal skills to be an effective team worker
CO3	The student will be able to Develop effective inter and intra personal skills to be an effective team worker
CO4	The student will be able to Communicate effectively in both academic and professional setup

MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**a**	**B**	**C**	**d**	**e**	**F**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE3030	**PROFESSIONAL SKILLS DEVELOPMENT**
	Total Contact Periods– 6
	Total credits -2
	Course Designed by–Department of Human Resources
OBJECTIVES	To Advance the students' intellectual curiosity, competency and skills in preparation for employment

1. Communication Skills

Importance of Communication skills in Public health; Communication process; Methods of communication; Types of communication: Verbal and Non-verbal; Impediments to effective communication; Feedback

2. Oral Presentation Skills:

Preparation and planning; Structure; Audio-visual aids; Creating interest and establishing a relationship with the audience; Body language; Voice and pronunciation; Review

3. Writing skills:

Writing a scientific paper; Writing a proposal; Structure of an article; References and literature review; Peer-review process-Publication bias; International guidelines for publication in journals; Professional Ethics

4. Leadership in Public health:

Leadership styles and trait; Motivation skills; Interpersonal communication skills; Problem solving skills; Decision making skills; Management skills; Communication Skills

5. Manuscript writing

Writing introduction, objectives, methodologies, major finding, discussion, conclusion and recommendation**6. Seminar presentations**Use of computers present data and information on recent topics

Text Books:

1. Professional Writing Skills, A self paced training programme by Janis Fisher Chan and Diane Lutovich. Advanced Communication Designs Inc, 2003. San Anselmo, CA. ISBN 0963745549

2. Speaking Your Mind: Oral Presentation and Seminar Skills By Rebecca Stott, Tory Young, Cordelia Bryan Contributor Rebecca Stott, Tory Young, Cordelia Bryan Published by Longman, 2001 ISBN 0582382432, 9780582382435

3. Public Health Leadership: Putting Principles into Practice Louis Rowitz, PhD. Jones and Bartlett Publishers, 2003. ISBN-13: 9780763725013 ISBN-10: 07637250

COURSEOUTCOMES						
CO1	The student will be able to Develop good written and oral communication abilities					
CO2	The student will be able to Develop an understanding of team building and leadership skills.					
CO3	The student will be able to Develop knowledge regarding capacities needed to work independently within diverse work environments					
CO4	The student will be able to know how to maintain Records and Reports and demonstrate the procedure.					
MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**D**	**e**	**f**
1	S		M		s	
2				S		M
3	M		**S**			
4	S			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting Of Academic Council held in Aug, 2017					

UAH17CE3031	**LIBRARY SCIENCE AND E-RESOURCES**
	Total Contact Periods– 6
	Total credits -2
	Course Designed by–Department of Library science
OBJECTIVES	To gain knowledge about Documentary Sources of Information and Library Automation

Unit 1 BASIC CONCEPTS AND INFORMATION SERVICES

Meaning of Library – Types of Library -– Library layout - Functions of Library – need for Library – Meaning of ISBN and ISSN – Collection management - Library Classification system - Five laws of Library Science – Inter Library Loan (ILL), Communication theories and models.Barriers to communication.Levels of communications – Intrapersonal, interpersonal and mass communication. Information services – literature search Methods of Dissemination of information Current Awareness Service (CAS), Selective Dissemination of Information (SDI), Document delivery service, Alert services, and Internet services.

Unit 2 INFORMATION SOURCES

Documentary Sources of Information, Print, and Non-print including Electronic, Human and Institutional sources: Nature, types, characteristics and utility. Internet as a source of Information. Primary sources of information – Journal, conference volume, patents, research reports, thesis and their electronic format – Secondary sources of information - Bibliography, Encyclopedia Dictionary, Yearbook , Directory, Geographical Source, Textbook, Index and Abstracts.

Unit 3 LIBRARY AUTOMATION

Definition need, Purpose, advantages. Planning for Library automation. Automation of Library operations - Acquisitions, Cataloguing, OPAC, Circulation and Serials control. Evaluation of Library automation systems - Application of Barcode and RFID Technology for Library Functions. Basic concepts: Bibliography, bibliographic coupling, Impact factor.

Unit 4 ELECTRONIC INFORMATION SOURCES

Electronic Information resources: Meaning and definition, Growth and development, Types. Journals, e-Books, e-Theses, e-newspapers, Blogs, Wikis. Free databases and fee based bibliographical and full text databases, subject related websites, Institutional repositories, Open Archives and digital Libraries. - Resource Sharing and Networks: Consortia- Importance and objectives. Study of Information networks and Digital Library Consortia. Types of computer networks: Local Area Networks – Concept, Topologies - Bus, Star, Mesh, Tree, and Ring). Wide Area Networks and Metropolitan Area Networks- Concepts, Circuit switching and Packet switching. Difference between LAN and WAN. Wireless Networks –Mobile telephones.

Unit 5 DIGITAL LIBRARIES

Digital Libraries: Concepts and issues. Understanding digital Libraries Content creation – Electronic documents, files and file formats. Study of different file formats.Studying PDF in detail-features of PDF.Digitization- scanning, Digital Preservation, Conservation and Archival Management – Problems and prospects. Open Access Movement and Institutional repositories.

TEXTBOOKS

1. Ranganathan, S.R The five Laws of Library Science UBS Publishers, 1988.

2. Ranganathan, S.R. Library Manual SaradaRanganathan endowment for Library Science, 1989.

3. Ranganathan, S.R. Cataloguing Practice SaradaRanganathan endowment for Library Science 1990

COURSEOUTCOMES						
CO1	The student will be able to analyze and understand the query					
CO2	The student will be able to Identify the sources of information					
CO3	The student will be able to Find out the information					
CO4	The student will be able to know how to maintain Records and Reports and demonstrate the procedure.					
MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**d**	**e**	**F**
1	S		M		s	
2				s		M
3	M		**S**			
4	S			**S**		**M**
Category	Library Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

B.SC. CARDIO PERFUSION TECHNOLOGY

R 2017

CURRICULUM

UAH17CT101	**ANATOMY**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Anatomy
OBJECTIVES	An outline of anatomy with special emphasis on applied aspects is provided to the students for better understanding of the technical and diagnostic procedure.

UNIT I: Organization of the human body

1. Introduction

- Introduction to human body
- Definition and subdivision of anatomy
- Anatomical position and terminology
- Region and systems of the body
- Cavities of the body and their contents
- Levels of organization of the body

2. Cell and genetics

- Parts of cell – cell membrane, cytoplasm, organelles, inclusion bodies, nucleus
- Structure of chromosome, DNA, RNA.
- Basics & fundamentals of Genetics, Karyotyping, Chromosomal disorders, prenatal diagnosis, genetic counseling and gene therapy.
- Cell division – Definition and main events that occur in different stages of mitosis and meiosis.
- Tissues – Definition, characteristic features and types with example.
- Types of glands with example

UNIT II: Systems of support and movement

1. **Skeletal system**

- Cartilage: Type and basic histological feature.
- Bones: definition, classification based on location, name and number of bones with general features of important bones, function of bone, histological feature of a compact bone.
- Joints – Definition and types with example, Axis and movements. Shoulder, elbow, hip, knee joints – type, bones and ligaments involved, possible movements.

1. **Muscular system**

- Types of muscle with basic histological features
- Parts of skeletal muscle.
- Definition of origin and insertion
- Origin, insertion, nerve supply, action of sternocleidomastoid, pectoralis major, deltoid, gluteus maximus and diaphragm.

UNIT III: Controls systems of the body

1. **Nervous system**

- Subdivisions of the nervous system
- Spinal cord-location, extent, external features and blood supply
- Brain-subdivision, location, external features of Medulla oblongata, Pons, Midbrain, Cerebellum, and Cerebrum, Thalamus and Hypothalamus, Location and subdivision of ventricles of brain. Circle of Willis.
- Cranial nerves-name, number, attachment, area of distribution
- Spinal nerves-typical spinal nerves. Name and location of plexuses. Location and distribution of brachial and lumbo sacral plexus.

- Autonomic nervous system-sympathetic and parasympathetic nervous system. Location of preganglionic and postganglionic neurons.

2. Sense organs

- Location and features of nose, tongue, eye, ear and skin.

3. Endocrine system

- Names of the endocrine glands. Location and features of pituitary, thyroid, parathyroid, suprarenal, pancreas, ovaries and testes. Names of hormones produced by each gland.
- Microscopic features of thyroid and pancreas.

UNIT IV: Maintenance of the human body

1. **Cardiovascular system**

- Types and general features of blood vessels. Structure and types of arteries and veins. Shape, size, location, covering, external and internal features of Heart. Conducting system of heart. Blood supply of the heart. Name, location, branches and main distribution of principal arteries and veins

2. Lymphatic system

- General features of Lymph nodes and lymphatic vessels. Name, location, external features, microscopic features of tonsil and spleen.

3. Respiratory system

Name the organs of respiration. Location and features of Nasal cavity, pharynx, larynx, trachea, lung & pleura. Mention the microscopic feature of the lung.

4. Digestive system

- Name the parts of the alimentary canal and accessory organs. Location & features of esophagus, stomach, small and large intestine. Location and feature of tongue, salivary glands, pancreas, liver and gallbladder. Microscopic features of the liver.

5. Urinary system

- Names of urinary organs. Location and features of kidney, ureter, urinary bladder & urethra. Microscopic features of the kidney.

6. Reproductive system

- Names of male and female organs of reproduction. Location and features of testis, epididymis, vas deferens, prostate gland and spermatic cord. Location & features of uterus, uterine tube, ovary and breast.

7. Embryology

- Structure of gametes & gametogenesis. Fertilization to development of embryo till 3rd week. Derivatives of germ layers. Teratogens, Structure and Functions of placenta.

UNIT V: Anatomical regions

- Simple ideas about scalp, triangles of neck, axilla, cubital fossa, carpal tunnel, mediastinum, umbilicus, inguinal canal, femoral triangle
- sub sartorial canal popliteal fossa

PRACTICALS/DEMONSTRATIONS

1. Demonstrations of dissected specimens.

2. Viewing of projection of microscopic slides of muscle, bone, cartilage, spleen, tonsil, lung, liver, kidney, thyroid and pancreas

REFERENCE BOOKS

1. Manipal manual for AHS by Dr. Sampath Madhyastha, (Second Edition) Published by CBS Publishers.

2. Handbook of anatomy for nurses by Dr. P. Saraswathi

3. Ross and Wilson, Anatomy and physiology in health & illness

COURSE OUTCOMES	
CO 1	The student will be able to gain knowledge of general anatomy and locomotion.
CO 2	The student will be able to gain knowledge of basic human anatomy and histology of CVS and Respiratory systems.
CO 3	The student will be able to gain knowledge of basic human anatomy and histology of CNS, GI, excretory and reproductive systems.
CO 4	The student will be able to gain of knowledge basic human anatomy and histology of endocrine system and special senses.

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES

COs\POs	a	b	c	d	e	f
1	S					
2		**M**				
3			**S**			
4	s			**S**		**M**

Category	Basic Medical Science
Approval	46th Meeting of Academic Council held in Aug, 2017

UAH17CT102	**PHYSIOLOGY**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Physiology
OBJECTIVES	To know the basic functioning of the human body, and the various organ systems. .

Unit-I

1. **General Physiology:**

- Concept of Homeostasis
- Cell structure and functions
- Transport across membranes

Body and body fluids:

- Body fluid volumes, compartments and composition
- Blood composition and functions
- Plasma proteins – Types and functions
- Erythrocytes – functions, Erythropoiesis, anemia‟s
- Leucocytes – classification and functions
- Platelets – morphology and functions
- Blood coagulation – Mechanism and name of anticoagulants
- Blood groups – Basis of ABO & Rh grouping, Erythroblastosis Foetalis

2. Muscle physiology:

- Muscles – Classification & structure of striated, nonstriated & cardiac muscle
- Neuromuscular junction

- Mechanism of skeletal muscle contraction

3. Digestive system:

- Salivary glands, functions of saliva
- Parts of stomach, composition & functions of gastric juice
- Pancreatic Juice – composition & functions
- Bile – composition & functions of bile & bile salts
- Functions of Small intestine & large intestine

Unit-II

1. Skin

● Structure & Functions

2. Excretory system:

- Kidney: Basic physiological anatomy (Including JGA)
- Formation of urine – GFR
- Formation of urine – Re-absorption & secretion
- Maturation Reflex
- Dialysis – Principle, types
- Renal function tests

Unit-III

1. Endocrine system:

- Hypothalamo hypophyseal inter relationship
- Posterior pituitary hormones and its actions
- Anterior pituitary hormones, Growth hormone – Actions
- Dwarfism, gigantism, acromegaly

- Thyroid hormones – Actions
- Cretinism, Myxoedema, Grave‟s disease (clinical features)
- Parathyroid hormones – Functions, Tetany
- Insulin, Glucagon‟s – Actions, Diabetes mellitus
- Adrenal medullar hormones & their actions
- Adrenal cortex hormones & their actions

2. Reproductive system:

- Male reproductive organs – Spermatogenesis, Testosterone actions
- Female reproductive organs – menstrual cycle (endometrial and ovarian cycles) and its hormonal control
- Contraceptive methods in male and female

Unit-IV

1. Respiratory system:

- Basic physiological anatomy
- Surfactant
- Mechanics of respiration
- Lung volumes and capacities
- Oxygen transport, Carbon-di-oxide transport
- Nervous and chemical regulation
- Pulmonary function tests.

2. Cardiovascular system:

- Basic physiological anatomy, innervations of heart
- ECG – normal waves, intervals and their significance
- Cardiac cycle – mechanical events, Heart sounds

* Blood pressure – Definition, measurement, normal values, factors maintaining BP Regulation

Unit-V

1. Nervous system:

- Structure of neuron, neuroglial cells, synapse and transmission across it
- Reflex – Components of reflex arc, examples.
- Functions of ascending tracts – anterior, lateral spinothalamic tracts, Dorsal column
- Functions of Corticospinal (Pyramidal) tract-Descending tract
- Functional areas of cerebral cortex
- Functions of basal ganglia, thalamus, hypothalamus, limbic system and cerebellum

2. Special senses:

● Receptors for various special senses

Practical Demonstration

Hematology:

1. Enumeration of RBC count.
2. Enumeration of WBC count.
3. Differential Count.
4. Estimation of Hemoglobin.
5. Determination of blood group.
6. Determination of bleeding time and clotting time.

Clinical physiology:

1. Measurement of blood pressure.
2. Determination of Radial pulse

Reference Book

1. Human Physiology for BDS by A.K.Jain, 4th Edition, Avichal publishing co

COURSE OUTCOMES	
CO 1	The student will be able to gain knowledge of general physiology, nerve-muscle physiology and haematology.
CO 2	The student will be able to gain knowledge of basic human physiology with respect to CVS, Respiratory system and GI system.
CO 3	The student will be able to gain knowledge of basic human physiology of excretion and CNS.
CO 4	The student will be able to gain knowledge of basic human physiology of special senses and endocrine system.

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES

COs\POs	A	b	c	D	e	f
1	S					
2		**S**				
3			**S**			
4	S			**S**		**M**

Category	Basic Medical Science
Approval	46th Meeting of Academic Council held in Aug, 2017

UAH17CT103	**BIOCHEMISTRY**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Biochemistry
OBJECTIVES	To know the basic Biochemical reactions within the human body, and the various organ systems. .

UNIT I – Cell and its molecules

Cell – Cell organelles, Fluid Mosaic Model, functions of cell membrane, Brief description of transport across the cell membrane.

Carbohydrates – Definition, Classification with examples, Sources, physiological significance and HbA1c.

Lipids – Definition, Classification with examples, Sources, Types of lipids present in the body, storage form, storage site, free cholesterol structure, functions of lipids, lipoprotein structure and its functions.

Nucleic acids – Nucleotide, Nucleoside, types of nucleic acids, secondary structure of DNA & Its functions; Types of RNA & its functions.

UNIT II – Proteins and Enzymes

Proteins – Definition, Classification, functions of proteins, Plasma proteins; Classification of Amino acids with examples
Hemoglobin structure, Functions of hemoglobin, hemoglobin derivatives, abnormal hemoglobin

Enzymes: Definition, Classification, coenzymes, Metalloenzymes, Factors affecting enzyme activity, Regulation of enzymes, overview of Mechanism of enzyme action, Isoenzymes and Clinical importance of enzymes

UNIT III-Vitamins, Minerals, Nutrition

Vitamins: Definition, Classification of Vitamins
Sources, RDA, Function & Deficiency symptoms of

- Fat Soluble Vitamins (A, D, E & K);
- Water Soluble Vitamins (Thiamine, Riboflavin, Niacin, Biotin, Pantothenic acid, Pyridoxine, Folic acid, Cobalamin) and Vitamin C

Minerals: Definition, Classification of Minerals

Sources, RDA, Function, Reference levels & Deficiency Symptoms of

- Calcium, Phosphorus, Iron Copper, Zinc, Sodium, Chloride, Iodine, Potassium, Fluorine and Selenium.

Nutrition: BMR, SDA, Dietary fibres, protein Energy Malnutrition and Obesity 24

UNIT IV – Bioenergetics and Metabolism
Bioenergetics: Electron Transport chain and Oxidative Phosphorylation
Metabolism

Carbohydrates: Digestion and absorption, Glycolysis, TCA cycle, Metabolism of Fructose and Galactose.

Lipids: Digestion and absorption, Beta oxidation of fatty acids, Regulation of Cholesterol level in the cell and outline of lipid transport.

Proteins: Digestion and Absorption, Formation and Disposal of Ammonia, Urea Cycle, Special Products of Glycine, Tyrosine and Tryptophan.

UNIT V – Miscellaneous
Outlines of DNA organization, Replication, Transcription, Genetic code and Translation

Organ function Tests: Liver, Renal and Bone.

PRACTICAL

- Spotters

COURSE OUTCOMES	
CO 1	The student will be able to gain knowledge of biochemistry of cell structure, functions, digestion, enzymes and proteins.
CO 2	The student will be able to gain knowledge of biochemistry of carbohydrates, minerals and vitamins
CO 3	The student will be able to gain knowledge of liver and renal function tests, specialized laboratory investigations and lipids.
CO 4	The student will be able to gain knowledge of biochemistry of metabolism, homeostasis, nucleic acids and cancer

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S			S	s	
2		**M**		s		
3	S		**S**			
4	S			**M**		**M**

Category	Basic Medical Science
Approval	46th Meeting of Academic Council held in Aug, 2017

UAH17CT104	**BASICS IN MEDICAL PHYSICS AND ELECTRONICS**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Radiology
OBJECTIVES	To know the basics in Medical Physics, Bio electric potential and the functioning of Medical equipments. .

Unit I: Laser

Nature of light-Reflection-Refraction-Total internal reflection-Optical fibers-Applications in Medicine – Laser-Principles-Action-Types of laser, Basic principles of laser in Medical Application – Argon-Ion laser photocoagulator-Photo thermal-Photochemical application-Applications of laser in Medicine-Laser hazards and safety measures.

Unit II: Radiation Physics

Introduction to nuclear physics and radioactivity, Radioactive radiations – X-ray, production of x-ray, Properties of x-ray radiations – Biological effects of radiation, Radiation damage in matter, Radiation protection principles, radiation detection and measurement – Ultrasound and generation of ultrasound.

Unit III: Introduction to Imaging Technique

Principles of Microscope: Simple microscope and compound microscope-Radiography: Making and X-ray image-Fluoroscopy. CT Scans, MRI – Ultrasonography: Ultrasound picture of Body-A-Scan-M-Scan-Ultrasound diathermy-Phonocardiography – Radio isotopes: Uses of Radio isotopes – 99mTc Generator – Scintillation detectors – Application of scintillation detectors – Gamma Camera – Positron Camera

Unit IV: Semiconductor devices

Principles of diodes and Transistors – Integrated circuits – Amplifiers – Basic configuration and types – differential and operational amplifiers – Waveform generators – Timer – A/D and D/A converters – Active filters – Transducers – Basic configuration and types.

Unit V: Bio potential Recording Systems

Introduction to bioelectric potential – Electrodes and surfaces – Bio potential amplifier – Frequency ranges of various biopotential signals – Working principles of bio potential recording systems – Electrocardiography – Electroencephalograph –Electromyography.

Reference Books:

1. New Understanding physics for advanced level – Jim Breithauput.

2. Advanced Physics for you by Keith Johnson, Simmons Hewett, Sue holt, John miller

3. Christensen‟s Physics of diagnostic Radiology by Thomas S. Curry III, M.D., Robert C Murry, Jr. PhD, Dow Dey, PhD.

4. Applied Electronics, A. Subramanyam, The National Publishing co., Madras (1996).

5. Design and Development of Medical Electronic Instrumentation, David Prutchi and Michael Norris, John Wiley & Sons (2005).

COURSE OUTCOMES	
CO1	The student will be able to know the functioning of radiological devices
CO2	The student will be able to understand the mechanism of functioning of medical equipments
CO3	The student will be able to know the functioning of Lab instruments
CO4	The student will be able to understand the functioning of radiation devices

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES

COs\POs	**A**	**b**	**c**	**d**	**e**	**f**
1	M		S		s	
2				S		M
3	S		**M**			
4	S			**S**		**M**

Category	Medical Science
Approval	46th Meeting of Academic Council held in Aug, 2017

UAH17CT105	**ENGLISH**
	Total Contact Periods – 60
	Total credits -4
	Course Designed by – Department of English
OBJECTIVES	To enable students to enhance their ability to comprehend spoken and written English required for effective communication in their professional work. Students will practice their skills in verbal and written.

Unit I: Spoken Communication

Learning to read the phonetic symbols

Stress

Intonation

Rhythm

Commonly mispronounced words

Correct pronunciation of important commonly used

Words in hospital practice

Unit II: Vocabulary and Reading

Special features of English vocabulary

Common errors in choice of word

Semi technical vocabulary

Collecting material from library on scientific topics

Comprehensive exercises

Unit III: Writing

Writing letters regarding permission, leave, opening bank account etc.

Taking notes from lecture / reading materials

Writing reports on patient care

Summarizing scientific passages

Unit IV: Grammatical and Idiomatic Usage

Correction of errors

Types of interrogative sentences

Active-Passive voice

Tense

Principles of procession, clarity and specificity

Reference Books:

1. Effective English Communication by Krishna Mohan and Meenakshi raman, Tata McGraw – Hill Publishing Company Limited, New Delhi (Approx. cost Rs 200)
2. English for colleges and competitive Exams by Dr. R..Dyvadatham, Emerald Publishers (Approx cost Rs. 150)

COURSE OUTCOMES	
CO1	The student will be able to develop their intellectual, personal and professional abilities.
CO2	The student will be able to acquire basic language skills, listening, speaking, reading and writing.
CO3	The student will be able to acquire the linguistic competence necessarily required in various life situations
CO4	The student will be able to communicate with speakers of English language

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES

COs\POs	**A**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	S			**S**		**M**

Category	Language
Approval	46th Meeting of Academic Council held in Aug, 2017

UAH17CT106	**BASIC OF COMPUTERS**
	Total Contact Periods – 30
	Total credits -4
	Course Designed by – Department of English
OBJECTIVES	This course is designed for students to develop basic understanding of used of computer and its applications in Clinical Departments

UNIT I: INTRODUCTION

Computer basics – Types of computers – hardware components – input devices – output devices – storage devices – memory – units and sizes – factors affecting performance – operating systems – applications software – networking – LAN and WAN – Accessories – backup – computer virus – software copyright.

UNIT II: WORD PROCESSING

Windows – Office automation – WORD processor – open a new document – toolbars – menus – font dialog box – enter text – scroll – spelling checker – Autocorrect – undo and redo – bullets and numbered lists – indenting – moving and copying – find and replace – auto shapes – saving document – preview and print.

UNT III: ELECTRONIC SPREADSHEET AND DATA PRESENTATION

EXCEL spreadsheet – grid of rows and columns – active cell – selecting range – entering data – editing data – row and column labels – adjusting width – creating and copying formulae – relative – logical functions – lookup function – creating chart – bar chart – pit chart – print and save.

POWERPOINT presentation – creating slideshows- building outline – switching levels in outline – adding pictures – slide designs – design templates – formatting – color scheme – customized backgrounds – inserting content – hyperlink – revolution in education.

UNIT IV: DATABASE MANAGEMENT SYSTEM

ACCESS database – concept – template –primary key – records and fields – Student roster database – input mask – adding records – viewing data – updating entries – searching and querying – sorting – Table, forms and reports.

UNIT V: APPLICATIONS IN HEALTHCARE AND MEDICINE

INTERNET – e-governance – access to information – communication facility – mechanics of E-mail – social transformation – electronic billing – drug information –information flow in lab and radiology – storage of medical records – networking the organization – patient care – intelligent monitoring – scholarly information – health informatics – robotic assisted surgery – Clinical decision support systems – Telemedicine.

UAH17CT107	**MICROBIOLOGY**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Microbiology
OBJECTIVES	This course is designed to enable students to acquire understanding of fundamentals of microbiology and identification of various microorganisms. It also provides opportunities for practicing infection control measures in hospital and community settings.

COURSE OUTCOMES	
CO 1	The student will be able to develop basic under-standing of computer use.
CO 2	The student will be able to acquire knowledge on Applications of computers in clinical departments.
CO 3	The student will be able to have the detailed knowledge on how to use hospital information systems.
CO 4	The student will be able to communicate with speakers of English language

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES

COs\POs	**A**	**B**	**c**	**D**	**e**	**f**
1	S		M		s	
2				S		S
3	M		**S**			
4	S			**S**		**M**

Category	Soft Skills
Approval	46th Meeting of Academic Council held in Aug, 2017

UNIT – I: General Bacteriology

Introduction & History of Microbiology, Classification & Morphology of Bacteria, Growth & nutrition, Culture Media & Methods, Sterilization & Disinfection, Fundamental aspects of antibacterial agents and antimicrobial susceptibility testing.

UNIT – II: Immunology

Infection, Immunity, Immunization schedule, applications of antigen antibody reactions, Hypersensitivity, Tumor & Transplantation Immunology.

UNIT – III: Virology

Introduction to virology, viral hepatitis, poliomyelitis, Rabies, Human immunodeficiency virus.

UNIT – IV Mycology & Parasitology

Introduction to mycology, pathogenic yeasts & fungi, Introduction to parasitology, Amoebiasis, Malaria, Helminthic infections.

UNIT – V: Applied Microbiology

Outline of common bacterial diseases, treatment & prevention-Respiratory tract infections (upper & lower), Meningitis (septic & aseptic), Enteric infections (food poisoning & gastro enteritis), Anaerobic infections, Skin & soft tissue infections, Urinary tract infections, Sexually transmitted diseases, Tuberculosis & Leprosy, Hospital acquired infections, Biomedical waste management.

PRACTICAL EXERCISES: Spotters, Gram staining.

Reference Books

1. Textbook of Microbiology by Ananthanarayan & Panicker‟s, 8th edition-Universities Press (India) PVT LTD.

2. Textbook of Microbiology by C. P. Baveja, 4th edition, Arya Publications.

3. Textbook of Medical Parasitology, CK Jayaram Paniker, 5th edition, Jaypee Publications.

4. Medical Parasitology by C. P. Baveja & V. Baveja, 2nd edition, Arya

5. Publications.

COURSE OUTCOMES	
CO 1	The student will be able to understand the morphological characters of bacteria.
CO 2	The student will be able to master the preparation of smear, fixation and staining of bacterial smears and its quality control methods
CO 3	The student will be able to learn to use microscope , autoclave, hot air oven, water bath, steamer, filters
CO 4	The student will be able to differentiate between innate and adaptive immunity, and explain the main defenses lines as well as biological barrier to the infections.

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES

COs\POs	**A**	**b**	**c**	**d**	**e**	**F**
1	S		M		s	
2				S		M
3	M		**S**			
4	M			**S**		**M**

Category	Basic Medical Science
Approval	46th Meeting of Academic Council held in Aug, 2017

UAH17CT108	**PATHOLOGY**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Pathology
OBJECTIVES	This course is designed for students to develop an understanding of general and systemic pathology. It helps them to know patho physiology of common diseases

UNIT-I: General Pathology I: Cellular Pathology, Acute and Chronic Inflammation, Tissue Renewal Regeneration and Repair, Hemodynamic Disorders Thromboembolic Disease and Shock

Introduction to Pathology, Adaptations Of Cellular Growth And Differentiation, Causes Of Cell Injury, Mechanisms Of Cell Injury, Necrosis, Apoptosis, Pathologic Calcification, Cellular Aging, Acute Inflammation – Mediators Of Inflammation Outcomes Of Acute Inflammation, Morphologic Patterns Of Acute Inflammation, Chronic Inflammation – Causes Of Chronic Inflammation, Granulomatous Inflammation, Healing By Repair, Scar formation And Fibrosis, Cutaneous Wound Healing, Healing By First Intention, Healing By Second Intention, Edema, Hemostasis and Thrombosis, Infarction, Shock

UNIT-II: General Pathology II: Diseases of the Immune System, Neoplasia, Environmental And Nutritional Disease, Diseases Of Infancy And Childhood

Innate Immunity, Adaptive Immunity, Components Of The Immune System, Mechanisms Of Hypersensitivity Reactions, Acquired Immunodeficiency Syndrome (AIDS), Neoplasia – Definition and Nomenclature, Characteristics Of Benign And Malignant Neoplasm‟s, Molecular Basis Of Cancer, Essential Alterations For Malignant Transformation, Clinical Aspects Of Neoplasia, Laboratory Diagnosis Of Cancer, Common Environmental And Nutritional Pathology, Nutritional Diseases, Tumors And Tumor-Like Lesions Of Infancy And Childhood **UNIT-III: Systemic Pathology I: Blood Vessels, the Heart, Red Blood Cell and Bleeding Disorders, Diseases Of White Blood Cells**

Arteriosclerosis, Atherosclerosis, Hypertensive Vascular Disease, Ischemic Heart Disease, Hypertensive Heart Disease, Valvular Heart Disease, Infective Endocarditic, Rheumatic Fever And Rheumatic Heart Disease, Cardiomyopathies, Leucopenia, Anemia‟s, Polycythemia, Bleeding Disorders, Reactive Proliferations Of White Cells, Definitions And Classifications of Lymphoid Neoplasm‟s and Myeloid Neoplasm‟s, Splenomegaly.

UNIT-IV: Systemic Pathology II: The Lung, The Gastrointestinal Tract, Liver And Biliary Tract

Acute Respiratory Distress Syndrome, Obstructive Pulmonary Diseases, Pulmonary Infections, Gastritis, Peptic Ulcer Disease, Inflammatory Bowel Diseases, Liver Function Tests, Hepatic Failure, Cirrhosis, Portal Hypertension, Jaundice, Cholelithiasis

UNIT-V: Systemic Pathology III: The Urogenital System, the Breast, the Endocrine System, Bones Joints and Soft-Tissue, Peripheral Nerve and Skeletal Muscle, the Central Nervous System

Renal Function Tests, Nephrotic Syndrome, Nephritic Syndrome, Urolithiasis, Pap Smear, Carcinoma Of The Breast-Types And Classification, Thyroid Gland – Hyperthyroidism, Hypothyroidism, Thyroiditis, Graves‟ Disease, Diffuse And Multinodular Goiters, Parathyroid Glands – Hyperparathyroidism, Hyperparathyroidism, Diabetes Mellitus, Fractures, Osteomyelitis, Arthritis, Osteoarthritis, Rheumatoid Arthritis, Infectious Arthritis, Diseases of Peripheral Nerve, Diseases of Skeletal Muscle, Infections of CNS – CSF Find

REFERENCE BOOKS

1. Pocket companion to Pathologic Basis of Disease by Robbins and Cotran, 7th edition, Saunders.
2. Pathology Quick Review and MCQs by Harsh Mohan, 2nd edition, Jaypee Publications.

COURSE OUTCOMES	
CO 1	The student will be able to gain knowledge of general pathology.
CO 2	The student will be able to gain knowledge pathology of neoplasms.
CO 3	The student will be able to gain knowledge of basics of community health.
CO 4	The student will be able to gain knowledge of systemic pathology.

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES

COs\POs	**a**	**b**	**c**	**d**	**E**	**f**
1	S		M		S	
2				s		M
3	S		**S**			
4	M			**S**		**M**

Category	Basic Medical Science
Approval	46th Meeting of Academic Council held in Aug, 2017

UAH17CT109	**PHARMACOLOGY**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Pathology
OBJECTIVES	This course is designed to help the students to develop an understanding of basic knowledge of pharmacology and knowledge of common drugs/group of drugs

UNIT-I: General Pharmacology

Introduction to pharmacology-various terminologies-sources & routes of drug administration – Absorption & Factors modifying drug absorption – Distribution of drugs – Metabolism: Phase II, - Excretion: routes, modes & kinetics of elimination – Excretion – Mechanism of drug action in brief, synergism & antagonism and Factors modifying drug action – Adverse drug reactions – ADR reporting & monitoring – Drug interactions.

UNIT-II: Central Nervous System & Respiratory System

Introduction to CNS and Neurotransmitters, drugs used in insomnia, Sedatives and hypnotics – diazepam – alprazolam, anti-anxiety drugs, Antiepileptic – phenytoin, carbamazepine, sodium valproate, General Anesthetics – halothane, isoflurane, sevoflurane – Local Anesthetics – lignocaine – list of other drugs, Alcohols – ethyl alcohol – disulfuram, Anti parkinsonians – levodopa – carbidopa, Opioids – morphine – naloxone – tramadol – pentazocine, NSAIDs – aspirin – diclofenac – ibuprofen – paracetamol – Cox 2 inhibitors. Drugs used in bronchial asthma and cough

UNIT-III: Cardio vascular system & blood

Drugs used in Ischemic Heart Disease-nitrates-Calcium channel blockers-nifedipine, verapamil-list of other drugs – Beta blockers – propranolol, atenolol – metoprolol and antiplatelets – aspirin, clopidogrel, and names of other drugs-fibrinolysis drugs-streptokinase and other drugs, Drugs used in CCF-digoxin and list of other drugs useful in CCF, Shock. Diuretics: 4 groups – Thiazides, Loop diuretics, Potassium sparing and osmotic diuretics. Hypertension – outline of drugs used in hypertension, Rennin angiotensin system – ACE inhibitors – captopril, ramipril and names of other drugs – Receptor antagonist – losartan and list of other drugs, Antiarrhythmic drugs-classification – Quinidine, Lignocaine and amiodaron – Drugs for Hypercholesterolemia – statins. Drugs for anemia – oral & parenteral iron preparations, folic acid, vit B12 and erythropoietin. Coagulants and anti-coagulants

UNIT-IV: Hormones and GIT

Contraceptives – oral and injectable, Corticosteroids – glucocorticoids – hydrocortisone-prednisolone-dexamethasone and names of topical steroids – Insulin – Oral hypoglycemic – sulphonyl ureas, biguanides and others, Thyroid and Antithyroid drugs, Sex Hormones-Estrogen and anti estrogens, Progestin and Anti progestin‟s, Androgen And anti androgens. Emetics and anti emetics-metoclopromide and domperidone, Drugs used in peptic ulcer, constipation-lactulose & Diarrhea-ORS-Loperamide.

UNIT-V: Chemotherapy and Miscellaneous

Introduction – Beta lactam antibiotics: Penicillin‟s – natural, semi synthetic penicillin‟s – amoxicillin – cloxacillin-clauvulinic acid – sulbactum – Cephalosporin‟s – cephalexin – cefuroxime – cefixime – ceftrioxone-cefipime, Broad spectrum antibiotics – Doxycycline – chloramphenicol-imipenum-Macrolides – erythromycin, azithromycin and others – Quinolones- ciprofloxacin and list of other drugs and sulfonamides- cotrimoxazole- Amino glycosides-gentamycin, amikacin and names of other drugs Anti TB-first line drugs, Anti leprosy-dapsone and clofazimine Anti-malarial- chloroquine- mefloquine and artemisinins, Anti-fungal- amphotericin B- fluconazole and topical drugs & Anti-viral drugs-acyclovir and anti HIV, Anti protozoals- metronidazole – Anthelmintics- albendazole- praziquantel.

Anti-cancer drugs-Introduction – Anti metabolites- methotrexate- 6 mercapto purine- Alkylating agents-cyclophosphamide- busulphan and cisplatin – Plant products- vinblatin- vincristine- taxanes, antibiotics-actinomycin D- monoclonal antibodies. Immuno modulators- cyclosporine, tacrolimus, azathioprine and steroids. Toxicology-Drugs used in common poisoning, organophosphates, methyl alcohol, Benzodiazepam.

REFERENCE BOOKS:

1. Lippincott‟s Illustrated Reviews: Pharmacology, 5th edition, by Richard A. Harvey and Pamela C. Champe, Lippincott Williams & Wilkins Publisher

2. Essentials of Medical Pharmacology: K.D. Tripathi, 6th edition, Jaypee Publishers.

COURSE OUTCOMES						
CO1	The student will be able to gain basic knowledge in pharmacology. .					
CO2	The student will be able to gain knowledge of detailed systemic pharmacology.					
CO3	The student will be able to gain knowledge of detailed knowledge of drugs and groups of drugs.					
CO4	The student will be able to gain knowledge of action of drugs					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\Pos	**a**	**B**	**C**	**D**	**e**	**f**
1	S		M		s	
2		**S**		S		M
3	M		**S**			
4	S			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CT110	**ENVIRONMENTAL SCIENCE AND COMMUNITY MEDICINE**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Community Medicine
OBJECTIVES	This course is designed for students to practice community health nursing for the individual, family and groups at both urban and rural settings by using concept and principles of health and community health nursing. It also is designed for students to understand the natural resources and environmental pollution

UNIT – I:

Natural Resources: Introduction, Multi-disciplinary nature of environmental studies, Earth Resources and Man, Renewable and Non-Renewable Resources, Water Resources, Mineral Resources: Food Resources: Effect of modern agriculture, Fertilizer/pesticide problems, Water logging, and salinity, Energy Resources.

Ecosystems: Concept of an Ecosystem, Structure and Functions of an Ecosystem, Producers, Consumers and Decomposers, Cycles in the Ecosystem

Biodiversity: Introduction, Definition: Genetic, Species, Ecosystem diversity, India as a Mega Diversity Nation, Hotspots Of Biodiversity Threats to Biodiversity. Poaching of Wildlife, Man-Wildlife Conflicts, Endangered and Endemic Species Of India, Conservation of Biodiversity

UNIT – II:

Pollution: Definition, Causes, Effects and Control Measures of Air Pollution, Water Pollution, Pollution, Marine Pollution, Noise Pollution, Thermal Pollution, Nuclear hazards, Solid Waste Management role of Individuals in Pollution Prevention.

Social Issues Human, Population and Environment: From Unsustainable To Sustainable Development, Urban Problems Related To Energy, Water Conservation, rain Water Harvesting, global warming, acid rain, ozone layer depletion, nuclear accidents and nuclear holocaust. Environment Protection Act.

UNIT – III:

Concept of health & disease: Concept of health, Definition of health, Philosophy of health-Dimension of health – Concept of wellbeing, Spectrum of health, Responsibility of health – Determinates of health & Indicators of health – Concepts of disease & Concepts of cessation – Natural history of disease – Iceberg phenomenon, Concepts of control – Concepts of prevention –

Modes of Intervention, Changing pattern of disease.

UNIT – IV:

Epidemiology: Definition & explanation, Aims, Epidemiologic approach, Basic measurements in epidemiology & tools of measurements – Measurements of Mortality & Morbidity, Epidemiologic methods- Descriptive epidemiology-Analytical epidemiology – case control study – analytical epidemiology – Cohort study – Experimental epidemiology – RCT – Association & Causation Uses of epidemiology (Criteria for judging causality) – Infection disease epidemiology Definitions Dynamic of disease transmission & Modes of transmission – Disinfection – Definition Types Agents used Recommended disinfection procedures-Investigation of an epidemic.

Unit – V:

Environment & health: Definition & components (environment sanitation environmental sanitation) Water: Safe & Whole some water Requirements Uses source of water supply (sanitary well)-Purification of water (1). Large scale purification, (2). Small scale purification – Water Quality – Special treatment of water

Air: Composition The air of occupied room discomfort. Air pollution & its effects. Prevention & Control of air pollution

Ventilation: Definition Standards of ventilation Types of ventilation. Light, Noise & Radiation, Metrological environment, Housing, Disposal of waste Excreta disposal

PRACTICALS:

1. Epidemiology Problems
2. Environmental spotters

REFERENCE BOOK

1. Textbook of Preventive and Social medicine by k. Park, 21st edition, published by Banarsidas Bhanot

CO1	The student will be able to know the concept of health & illness .
CO2	The student will be able to know epidemiology of common communicable diseases
CO3	The student will be able to know epidemiology of common non communicable diseases
CO4	The student will be able to know the effects of pollution on humans.

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES

COs\Pos	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2		**M**		s		
3	M		**S**			
4	S			**S**		**M**

Category	Basic Medical Science
Approval	46th Meeting of Academic Council held in Aug, 2017

UAH17CT111	**BASICS OF NURSING**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Community Medicine
OBJECTIVES	This course is designed to help the students to develop an understanding of the nursing profession, philosophy, objectives, theories and application of nursing in various clinical settings. It is aimed at helping the students to acquire knowledge, understanding and skills in techniques of nursing and practice them in supervised clinical settings.

Unit I: Introduction of Health

Health care system, major health problems of the country, nature of disease pattern, technological advances and national health programmes, health for all by 2000 AD. Role of health care workers in the health care delivery system, impact of illness of the individual family and community. History of Nursing, Communication Skills -Relationship with patients, process of communication

UNIT II: Concept of Nursing

Nursing Processes- Problems solving approach, assessment, diagnosis, planning, implementation and evaluation.

Unit III: First Aid and Nursing in Emergencies

Definition, basic principles, scope and rules, Wounds, hemorrhages, shock, fracture, dislocation and muscle injuries, respiratory emergencies, resuscitation, unconsciousness, Miscellaneous conditions, burns, scalds, foreign bodies in the skin, eyes, ear, nose, throat and stomach.Frost bite, effects of heart cramps, bites and stings. Poisoning, Transporting injured persons.

Unit IV: **Personal Hygiene and Health**

Care of skin, mouth, eyes, nails, hair, Menstrual hygiene, clothing, mental health, common health problems of poor personal hygiene. Comfort, Rest and Sleep, Hospital Housekeeping

Unit V: Health Education

Introduction to principles and methods of health education. Use of audio visual aids, mass education, role of nurse in health education.

Course outcome:

1) Knowledge on concept of health, health-illness continuum and health care delivery system.

2) Knowledge on scope of nursing practice.

3) Knowledge on concept, theories and models of nursing practice.

4) Desirable attitude to ethics and professional conduct.

COURSE OUTCOMES						
CO1	The student will be able to gain knowledge on concept of health, health-illness continuum and health care delivery system.					
CO2	The student will be able to gain knowledge on scope of nursing practice.					
CO3	The student will be able to gain knowledge on concept, theories and models of nursing practice.					
CO4	The student will be able to gain knowledge on concept, theories and models of nursing practice.					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\Pos	**a**	**b**	**c**	**d**	**E**	**F**
1	S		S		S	
2				s		M
3	M		**M**			
4	s			**S**		**S**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CPT101 - APPLIED ANATOMY AND PHYSIOLOGY

1. ANATOMY OF CARDIOVASCULAR SYSTEM

- Gross anatomy and structural features of heart
- GREAT VESSELS: Structure of blood vessels and its organization.

2. ANATOMY OF RESPIRATORY SYSTEM

- Organization of the respiratory system
- Gross structure and features of trachea and bronchial tree
- Gross structure and histology of lungs

Pulmonary circulation – pulmonary arteries, pulmonary veins and bronchial arteries.

3. ANATOMY OF NERVOUS SYSTEM

- Brain – location, gross features, parts, functional areas,

Cerebralblood circulation.

- Spinal cord – gross features, extent, blood supply and coverings.

4. ANATOMY OF RENAL SYSTEM

- Organization of renal system
- Kidneys: location, gross features, structure, blood supply and nerve supply
- Ureters and urinary bladder – location, gross features and structure.

APPLIED PHYSIOLOGY

1 Physiology of cardiovascular system

- INTRODUCTION – Functions of CVS and blood circulation. Tissue

perfusion and microcirculation

- CARDIAC CYCLE – Various phases

- Cardiac output – definition, measurements, regulation and control

- Stroke volume, Arterial pressure and itsregulation

Peripheral resistance, Venous return, Heart rate

- LOCAL

- Vasodilation, Auto regulation (myogenic

theory) Vasodilator metabolites, kinins and
vasoconstriction

o SYSTEMIC

- Circulatory vasoconstrictors
- Neural and hormonal regulatory mechanism
- Cardio inhibitory center
- Baro and chemo receptors
- Movement of fluids and dissolved solutes in the body
- Basics of electro cardio gram – Definition, electrical condition, atrial activation, atrial complex, ventricular activation, ventricular complex andnormal values

2 PHYSIOLOGY OF RESPIRATORY SYSTEM

- Upper airway – nose, pharynx, larynx
- Lower airway – trachea bronchial tree
- The mucus blanket – mucus and cilia
- Lung parenchyma – alveoli, gaseous exchange, alveolar macrophages andsurfactant.
- Physics of ventilation – principles of elasticity compliance and airway resistance.
- Mechanism and regulation of respiration
- Principles of gaseous exchange
- Concept of physiological shunt and its effect Brief concept of artificial ventilation

3 HAEMATOLOGY

- Components of blood – their normal values andfunctions
- Blood groups and briefly procedures involved in blood transfusion
- Briefly coagulation factors and coagulation cascade (Hemostasis)

4 PHYSIOLOGY OF RENAL SYSTEM

- Organization and functions of renal system
- Renal circulation and glomerular filtration rate
- Mechanism of urine formation and excretion
- Renal function tests

UAH17CPT102 – BASIC BIOCHEMISTRY AND PHARMACOLOGY

APPLIED BIOCHEMISTRY

- Proteins I: Composition and Structure
- Proteins II: Structure-Function Relationships in Protein Families
- Enzymes: Classification, Kinetics, and Control
- The Cytochromes P450 and Nitric Oxide Synthases
- Biological Membranes: Structure, Receptors, and Solute Transport
- Fundamentals of Signal Transduction
- Bioenergetics, Mitochondria, and Oxidative Metabolism
- Carbohydrate Metabolism I: Major Metabolic Pathways and Their Control
- Carbohydrate Metabolism II: Special Pathways and Glycoconjugates
- Lipid Metabolism I: Synthesis, Storage, and Utilization of Fatty Acids and Triacylglycerols
- Lipid Metabolism II: Pathways of Metabolism of Special Lipids
- Amino Acid and Heme Metabolism
- Purine and Pyrimidine Nucleotide Metabolism
- Metabolic Interrelationships
- Biochemistry of Hormones

APPLIED BIOPHYSICS

- The Biochemical Structure and Function of the cell membrane
- Transport across cell membrane
- Active Transport Sodium and potassium channels
- Osmotic Pressure of Cells
- *Oncotic pressure and fluid mechenics*
- Solvent Accessible Surface Area
- Ion Channels and Ion Pumps
- Cytochrome Oxidase Enzymes
- A Simplified Model Calculation

- Principal of Fluid mechanics
- Gas liquid interphase
- Unit conversion to SI system.

APPLIED PHARMACOLOGY

1. Cardiovascular drugs

- Antihypertensives
- Beta Adrenergic antagonists
- Alpha Adrenergic antagonists
- Peripheral Vasodilators
- Calcium channel blockers
- Antiarrhythmic drugs
- Cardiac glycosides
- Sympathetic and non sympathetic inotropic agents.
- Coronary vasodilators.
- Antianginal and anti failure agents
- Lipid lowering & anti atherosclerotic drugs.
- Drugs used in Homeostasis – anticoagulants

Thrombolyticsandantithrombolytics, Fibrinolysis inhibitor

- Cardioplegic drugs- History, Principles and types of Cardioplegia.
- Priming solutions – History, principles & types.
- Drugs used in the treatment of shock.

2. Pharmacological protection of organs during CPB

3. Inhalational gases and emergency drugs.

4. Corticosteroids – Classification, mechanism of action, adverse effectsand complications. Preparation, dose and routes of administration.

5. Diuretics

6. Detailed review of drugs and fluids commonly added to the pump by theperfusionist and/or anaesthetist

- Mannitol
- Sodium bicarbonate
- Cardioplegic solutions

- Potassium, magnesium, and calcium ions
- * Heparin
- * Blood and blood products
- * Crystalloid and colloid solutions
- * Vasoactive drugs
- Anaesthetic vapour agents

UAH17CPT103 – PHYSICS FOR PROFUSIONISTS

An introduction to the properties of liquids and gases and the medical application of pressures in fluids and the cardiovascular system, mass and heat transfer as they apply toequipment used in extra- corporeal perfusion.

1. Introduction to thermal sciences, review of calculus
2. Pressure, hydrostatics, and intro concepts in thermodynamics
3. Conservation of mass
4. The first law of thermodynamics and mechanical energy balance
5. Applications of conservation of energy
6. Integral conservation of linear momentum
7. Concepts in cardiovascular fluid

mechanicsFlow through tubes

8. Intro to differential analysis and the continuity equation
9. The Navier-Stokes equations
10. Transport applications in cardiopulmonary bypass: oxygenation andultrafiltration
11. Mass transfer and the differential component mass balance
12. Gas laws, solubility of gases
13. Volume, pressure, flow
14. Mass, density, viscosity
15. Heat units, temperature scales, heat transfer
16. Diffusion/osmosis
17. Molarity, concentrations

- Sterilization and Disinfection
- Cardiac operation Theatre Etiquette

Reference Books:

1. B.D.Chaurasia Human Anatomy
2. Khurana: Human Physiology
3. A. K. Jain Textbook of Physiology
4. U. Satyanarayna : Medical Biochemistry
5. K D Tripathi Pharmacology
6. Gravlee Cardiopulmonary Bypass: Principles and Practice

UAH17CPT104 – APPLIED PATHOLOGY AND HEAMATOLOGY

1 CARDIOVASCULAR SYSTEM

- Atherosclerosis
- lschemic heart disease
- Valvular heart disease
- Cardiac hypertrophy and hypertensive heart disease
- Cor pulmonale and pulmonary hypertension
- Myocarditis
- Cardiomyopathies
- Pericardial disease
- Endocrines and the heart
- Heart tumors
- Arrhythmias and conduction disorders
- Diseases of the aorta: Aneurysms and dissections

2 HAEMATOLOGY

- Anaemia – definition, morphological types and diagnosis of anemiabrief concept about haemolytic anaemia and polycythemia.
- Leukocyte disorders – briefly leukaemia, leukocytosis,agranulocytosis etc.,
- Bleeding disorders – definition, classification, causes and effects ofimportant types of bleeding disorders. Briefly various laboratory tests used to diagnose bleeding disorders.

. Blood Transfusion Techniques

- Blood grouping
- Minor and Major cross matching
- Venous Sample Collection
- Storing Techniques of Blood Products
- Blood collection from Donor

- Separation of the Blood products

3.RESPIRATORY SYSTEM

- Chronic obstructive airway diseases – definition and types
- Briefly concept about obstructive versus restrictive pulmonary diseases
- Pulmonary congestion and edema
- Pleural effusion – causes, effects and diagnosis

4. RENAL SYSTEM

- Clinical manifestation of renal diseases
- Briefly causes, mechanism, effects of acute renal failure and chronic renal failure.

Briefly glomerulonephritis and pyelonephritisBrief concept about obstructive uropathy

UAH17CPT105 – CLINICAL DIAGNOSTICS

1. BASICS OF DIAGNOSTIC TECHNIQUES-

A. Laboratory investigations in relation to perfusion technology

B. Chest of X-ray,

C. ECG,

D. ABG

E. Angiography,

F. 2 D Echo

G. TEE

2. MONITORING AND INSTRUMENTATION-

A. lnstrumentation technology of ECG machine, pressure transducers, syringe and

B. peristaltic pumps, monitors, ventilators, pulse oximeters, temperature probes

C. and thermo regulatory monitoring,defibrillators.

D. Hemodynamic monitoring, Haemostatic monitoring.

E. Maintenance of oxygen, carbon dioxide and acid base status andtheir monitoring

F. Coagulation Monitoring

G. □ Coronary artery and graft flow measurement

H. □ Resuscitation and support

I. □ Catheterisation

J. □ Angiography

K. □ Angioplasty

L. □ EPS Studies

M. □ Valvuloplasty

N. □ lntra-aortic balloon

UAH17CPT106 - PRINCIPLES OF PERFUSION TECHNOLOGY

1.PHYSIOLOGY OF EXTRA-CORPOREAL CIRCULATION

1. Assessment of patients before bypass; going on & coming offbypass.
2. Hemodilution and priming solutions
4. Principles of extracorporeal gas exchange
5. Analyzing & correction of ABG,VBG and other blood investigations

2. PERFUSION EQUIPMENT - HARDWARE:

1. Heart-lung machines/centrifugal pumps
2. Pressure and low level alarm devices
3. Heart-lung heater/coolers
4. Mechanical/electronic flow meters, blenders
5. Perfusion data's recording, store keeping
6. ln-line oxygen saturation devices
7. ln-line blood gas devices
8. Oxygen analyzers
9. Cell savers
10. lntra-aortic balloon pump

3. PATHOPHYSIOLOGY OF CPB

1. Blood cells trauma & Anticoagulation in bypass: its monitoring andcomplications

Blood conservation & Auto transfusion

- Risks of blood transfusion
- Blood conservation techniques

2. Myocardial Protection & Cardioplegia

- History
- Various methods of myocardial protection
- Reperfusion injury, oxygen free radicals ,myocardial edema
- myocardial protection for specific clinical problems
- problems during Cardioplegia delivery
- Hot shot

3 Effects of CPB

- Immune and inflammatory response
- Fluid balance and interstitial fluid accumulation
- Nervous system
- Renal function
- The lungs
- The liver

4 Hypothermia

- Physiology
- Deep Hypothermic Circulatory Arrest
- Alterations with temperature change
- Acid-base
- Organ function

Reference Books:

1. Pathology and Genetics for nurses K. Swaminathan
2. Text Book of pathology Harsh mohan
3. P J Mehta: Practical Medicine
4. Gravlee Cardiopulmonary Bypass:

UAH17CPT107 - CLINICAL APPLICATION OF CPB TECHNIQUES

1. Conduct, Monitoring & Termination of CPB

Check lists

* Flow/pressure
* Hemodilution
* Acid/base balance
* Oxygen and carbon dioxide exchange
* Patient core temperature
* Anticoagulation
* Hypothermia
* Pressure, flow, resistance
* Adequacy of perfusion
* Myocardial preservation

General bypass : Management of Adult cardiac cases

Coronary Artery Bypass Graft Surgery

Valvular Replacement

SurgeryFem-Fem bypass

Emergency

2. Accidents and safeguards

UAH17CPT108 – PERFUSION FOR SPECIAL PROCEDURES

1. Aortic Surgery
2. Management of Unusual Problems & Special Consideration in Perfusion

I. Sickle cell

A. Pathophysiology

B. Considerations for CPB

C. Other blood disorders

II. Methemoglobinemia

A. Pathophysiology

B. Considerations for CPB

III. Thalassemia

IV. Spherocytosis & elliptocytosis

V. Hemosiderosis & hemochromatosis

VI. Erythrobolastosis fetalis

VII. Hereditary coagulation disorders

A. Von Willebrand's disease

a) Type I

b) Type II

c) Type III

B. Hemophilia A

C. Hemophilia B

VIII. Acquired coagulation disorders

A. Disseminated intravascular coagulation (DIC)

B. Primary fibrinolysis

C. Vitamin K dependent deficiency

IX. Platelet disorders

1. Thrombocytopenia

2. Cold Agglutinin

X. Perfusion techniques for Pregnant Patients.

XI. Malignant Hyperthermia.

XII Re-Operations

UAH17CPT109 – ADVANCED PERFUSION TECHNIQUES

1. ECMO
2. Counter pulsation and VENTRICULAR ASSIST DEVICES(VAD)
3. Minimally Invasive Cardiac Surgery(MICS)
4. Perfusion for Non cardiac Procedures
   - Liver transplant
   - Isolated Limb Perfusion
6. Recent advances in Perfusion Techniques

PEDIATRIC PERFUSION

1. Preparation for CPB:

EquipmentPreparation of the

Patient for CPB

2. Blood Flow, ECC component and circuit

selectionCannulation

3. Priming

Conduct of

Bypass

CO2 management & Choice of Acid Base managementFluid Management and Drug management during CPB Myocardial Protection

4. ECMO for Neonates, Infants and Children –

Components Circulatory assist devices for Infants and

children

Blood Conservation Techniques

1. Preparation for CPB:

Equipment Preparation of the Patient for CPB

2. Blood Flow, ECC component and circuitselection Cannulation

3. Priming

Conduct of

Bypass

CO2 management & Choice of Acid Base management

FluidManagement and Drug management during CPB

MyocardialProtection

ECMO for Neonates, Infants and Children – Recent Advances in Cardiac Perfusion Technology IABP and ECMO Medico legal Considerations and Record Keeping

Reference Books:

1. Gravlee Cardiopulmonary Bypass: Principles and Practice
2. Robert Bojar Manual of Perioperative Care in Adult Cardiac Surgery
3. Hensley martin A Practical Approach to Cardiac Anesthesia
4. Principles and PracticeCardiac Surgery In Adults – by LawrenceCohn
5. Pediatric Cardiac Surgery – by Constantine Mauroudi - 4thedition.

UAH17CE1020	**FUNDAMENTALS OF BIOSTATISTICS**
	TotalContactPeriods–4
	Total credits -2
	Course Designed by–Department of Community Medicine
OBJECTIVES	The course will offer basic knowledge about Biostatistics and to correctly apply a variety of statistical procedures and tests according to objective of study

UNIT I: Introducing the Basics

Introduction, Graphical representation of data, Data collection, Diagrammatic and Graphical Presentation of data, Types of data, limitations.

UNIT II: Measures of Central Tendency & Dispersion

Measures of Central Tendency; Mean, Median, Mode, Geometric mean, Harmonic mean for raw data. Measures of dispersion; Quartile deviation, Mean Deviation - Standard Deviation - Coefficient of variation- Range

UNIT III: Probability

Introduction to Probability, Theorems of probability; Bayer‘s Theorem, Probability Distributions; Discrete & Continuous distributions, Binomial Distribution, Poisson Distribution, Normal Distribution.

UNIT IV: Correlation & Regression Analysis

Correlation Analysis, Types of correlation; Rank Correlation Coefficient. Regression analysis, Types of Regression, Assumptions; Comparison to Correlation.

UNIT V: Hypothesis Testing

Introduction; Types of sampling, Hypothesis testing; Type of errors, Parametric & Non-parametric tests; Mann Whitney’s U test, Chi-square, t-tests, ANOVA.

REFERENCES

1. Don. Mc Neil - Epidemiological Research Methods - Oxford University Press, London.

2. Biostatistics –Principle & Practice – McGraw Hill Education.

3. http://www.ats.ucla.edu/stat/

4. Ahttp://www.statsoft.com/textbook/basic-statistics/

COURSEOUTCOMES	
CO1	The student will be able to understand and apply the Biostatistics.
CO2	The student will be able to use the software independently for the data analysis.
CO3	The student will be able determine the correct procedures to use in a given situation
CO4	The student will be able to interpret the results of hypothesis tests

MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	S			**S**		**M**
Category	Management					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE1021	**COMMUNICATION SKILLS FOR HEALTH CARE PROFESSIONALS**
	TotalContactPeriods–5
	Total credits -2
	Course Designed by–Department of Community Medicine
OBJECTIVES	This course deals with essential functional English aspects of the of communication skills essential for the health care professionals.

UNIT: I APPLIED GRAMMAR

Identifying common errors in sentences, Transformation of sentences, Usage of either …or…, Neither… nor…, So… that…, Such… that…, Not only… but also…, unless…

UNIT: II VOCABULARY

Abbreviations used in healthcare, Medical idioms & Phrases

UNIT: III WRITING

Letter writing, Curriculum Vitae writing, covering letter, Creative writing – invite, posters, Essay writing, summary writing, note taking, report writing.

UNIT: IV SPOKEN COMMUNICATION

Telephone etiquette, Importance of Stress, Intonation and rhythm, speaking; describing simple process, Filling a form etc., - Asking and answering questions; Debate/Oral Reporting

UNIT: V LISTENING AND READING SKILLS:

Listening and reading comprehension exercises.

Textbook Recommended:

1. Effective English Communication by Krishna Mohan and Meenakshi Raman, Tata McGraw – Hill Publishing Company Limited, New Delhi.

2. English for Colleges and Competitive Exams by Dr. R. Dyvadatham, Emerald Publishers.

COURSEOUTCOMES						
CO1	The student will be able to express better.					
CO2	The student will be able to get knowledge about MOA, adverse effects					
CO3	The student will Grow personally and professionally					
CO4	The student will Develop confidence in every field					
MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**		S	
4	S			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE1022	**BIOMEDICAL ETHICS**
	TotalContactPeriods–3
	Total credits -2
	Course Designed by–Department of Community Medicine
OBJECTIVES	To provide basic skills in: A) Approaching ethical issues. B) Analysis and statement of issues. C) Understanding the relevant ethical principles invoked..

Introduction to Bioethics

Bioethical issues related to Healthcare &Medicine 5

2Anatomy - Cadaver ethics, Human dignity, PNDT, Disposal of cadaver, Genetic Counseling 7

Physiology - Animal ethics, Health policy privacy 7

Biochemistry & Pathology - Prudence of investigation confidentiality, Patients bill of rights, Disposal of investigative material, Integrity, Blood transfusion 5

Pharmacology - Rational drug prescribing, Clinical trials, Risk minimization, Animal ethics

Microbiology - Hand wash, Drug resistance minimization, Prudence of investigation confidentiality, Sterilization procedure, Bio safety and bio hazard 5

Medicolegal aspects of medical records

Introduction to Intellectual Property:

Concept of Intellectual Property Kinds of Intellectual Property

Patents, Copyrights Designs, Trademarks,Geographical Indication, Infringement of IPR, Its protection and

Remedies Licensing and its types

REFERENCE BOOKS

1. Contemporary issues in bioethics – Beauchamp & walters (B&W) 4th edition.

2. Classic philosophical questions by Gloud (8th Edition)

3. Case book series and booklets by UNESCO Bioethics Core curriculum 2008

4. Encyclopedia of Bioethics 5 vol set, (2003) ISBN-10: 0028657748

5. Intellectual property rights- Ganguli-Tat McGrawhill. (2001) ISBN-10: 0074638602,

6. Intellectual Property Right- Wattal- Oxford Publications House.(1997) ISBN:0195905024.

COURSEOUTCOMES	
CO1	The students will be able to: Recognize what constitutes an ethical concern in health care
CO2	The student will be able to understand the clinical evaluations of Disease Condition
CO3	The student will be able to Understand better the complexity and multi-dimensionality of medical ethical concerns and uniqueness of each problem.
CO4	The student will get the knowledge of plagiarism in their innovations which can be questioned legally

MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**d**	**E**	**f**
1	S		M		S	S
2				s		
3			**S**			
4	S		M			**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE1023	**FUNDAMENTALS OF HUMAN GENETICS**
	Total Contact Periods– 4
	Total credits -2
	Course Designed by–Department of Genetics
OBJECTIVES	To Comprehend the Chromosomal basis of inheritance

I -Introduction to cellular components

Structure and morphology of various types of cells - Biochemical composition - Cellular organelles -Composition and components of nucleus - Chromosomes - Cell division and Mechanics of cell division and regulation.

II - Structure and functions of nucleic acids

Functions, Structure and characteristics of nucleic acids - Types of mutations -Genetic variations and polymorphisms

III - Chromosomal basis of inheritance

Chromosome behavior and inheritance pattern in man - Single gene Mendelian disorders: autosomal dominant, recessive, sex linked dominant and recessive - Polygeneic and mitochondrial inheritance.

III - Origin and detection of genetic disorders

Mutation - Non-disjunction - Chromosomal abnormalities and clinical phenotypes of common genetic syndromes (Down's syndrome, Patua‘s syndrome, Edward syndrome, Turner syndrome and Klinefelter's syndrome, Cri-du-caht syndrome)- Karyotyping, Neural tube defects, Carcinogenesis.

IV–Biochemical basis for the inborn errors of metabolism

General characteristics of inborn errors of metabolism – Incidence - etiology - Folic acid metabolism - triple markers - New born screening, prevention and management. False positive and false negative -Ethical principles of Genetic counseling for prenatal diagnosis - Fetal rights – Regulation and prevention of misuse act 1994.

Reference books

1. A guide to genetic counseling, 2nd edition, D.L. Baker, J.L. Schuette and W.R. Uhlmann, Wiley –Leiss Publications 2002.

2. Emery Elements of Medical Genetics, 9th edition, Robert F. Mueller & Ian D. young, Churchill Livingstone, 1995.

3. Medical Genetics, 3rd edition, Lynn B. Jorde, John C. Carey, Michael J. Bamshad, & Raymond L. White, Mosby, 2003.

COURSEOUTCOMES						
CO1	The student will be able to Be able to describe the chromosomal basis of inheritance and how alterations in chromosome number or structure. . .					
CO2	The student will be able to understand of the differences and similarities between diagnostic, predictive and carrier genetic testing.					
CO3	The student will be able to know detailed information of Chromosome behavior and inheritance pattern in man					
CO4	The student will be to understand the phenotype and genotype .					
MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**d**	**E**	**f**
1	S		M		S	
2				s		M
3			**M**			
4	S			**S**		**S**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE2024	**PRINCIPLES AND APPLICATION OF CLINICAL GENETICS**
	Total Contact Periods– 6
	Total credits -2
	Course Designed by–Department of Nephrology
OBJECTIVES	To develop awareness about Genetic testing, Genetic counseling, Philosophy and Ethos of Genetic services

I -Principle and components of genetic testing Lay out of genetic laboratories - Genetic testing, Genetic counseling, Philosophy and Ethos of Genetic services, Types of testing- Cytogenetic testing- Molecular cytogenetic testing- DNA testing.

II - Cytogenetic testing Indications, Type of sample, Sampling and transport conditions, Karyotyping - chromosome identification, merits and demerits of conventional cytogenetic testing

III - Molecular Cytogenetic testing

Indications, Type of sample, Sampling and transport conditions - Fluorescence in-situ hybridization, fluorescence signal enumeration, merits and demerits of FISH.

IV - DNA testing

Organization of human genome, Structure and function of genetic material, Polymerases chainmreaction - Types, principles and testing, Sequencing.

V - Practical:

Case studies

Reference books

1. Practical Genetic counseling, Peter S. Harper, 6th edition, Holder Headline Group 2004.

2. Medical Genetics, 3rd edition, Lynn B. Jorde, John C. Carey, Michael J. Bamshad, &

Raymond L. White, Mosby, 2006.

3. Genetics in Medicine, Thompson & Thompson, 6th edition, Elsevier 2004.

4. Practical Genetic counseling, Peter S. Harper, 6th edition, Holder Headline Group 2004.

COURSEOUTCOMES						
CO1	The student will be able to become familiar with and practice genetic tests.					
CO2	The student will be able to provide better patient care					
CO3	The student will be able to know detailed information about Genetic Counselling					
CO4	The student will be to know about Genetic testing.					
MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3			**M**			
4	S				S	**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE2025	**CLINICAL EXAMINATION OF THE HUMANVISUAL SYSTEM**
	TotalContactPeriods–5
	Total credits -2
	Course Designed by–Department of Opthalmology
OBJECTIVES	The core objective of this course is to gain in depth knowledge on the structural and physiological functions of the various parts of the eye and the different examination procedures for the ocular structures.

: **I - History Taking**

Importance of history taking, Demographic data and its importance, Chief presenting symptoms, History of present illness, History of past illness, Family History, Common ocular symptoms and their causes – defective vision, watering eyes, discharge, redness, pain, asthenopia and other symptoms

II - Visual Acuity measurement

Distance visual acuity-charts, methods and measurements; Near visual acuity –charts, methods and measurements; contrast sensitivity testing; colour vision testing

III - External Examination

Examination of head posture, examination of forehead, examination of eye brows, examination of eyelids, examination of Lacrimal apparatus, examination of eyeball on the whole, examination of the cornea, conjunctiva sclera and anterior chamber, eye movements, muscle balance and squint evaluation

IV - Anterior segment Evaluation

Slit lamp examination of the eyelids, cornea, conjunctiva, anterior chamber depth, iris, and lens Intraocular pressure measurements using non contact tonometer

V - Posterior segment Evaluation

Introduction and importance of posterior segment evaluation- direct and indirect ophthalmoscopy

REFERENCE BOOKS:

1. Comprehensive Ophthalmology – A K Khurana, 5th edition, New Age International Publishers,

2012.

2. Clinical Ophthalmology – Jack J Kanski, 7th edition, Butterworths, 2012

1. Borish's Clinical Refraction - William J. Benjamin, Irvin M. Borish, Butterworth-Heinemann, 2006

COURSEOUTCOMES						
CO1	The student will be able to have the skill to perform basic ophthalmic examination					
CO2	The student will be able to understand concept of theory and clinical evaluation of disease conditions gain an in- depth knowledge on disease outline and clinical evaluation of patients					
CO3	The student will be able to depth knowledge on the functions of the visual system					
CO4	The student will have the skill to perform basic ophthalmic examination					
MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**D**	**e**	**f**
1	S		M		s	
2				S		M
3	M		**S**			
4	M			**C**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE2026	**PERSONALITY DEVELOPMENT AND STRESS MANAGEMENT**
	Total Contact Periods– 4
	Total credits -2
	Course Designed by–Department of HR
OBJECTIVES	• To Explain the effect of personality, attitudes, perceptions and attributions on Health stress, coping and relaxation.

Unit 1

Introduction to Personality Development, Different Stages of Development, Types of personalities, personality perspectives and theories

Unit 2

How needs impact personality, Maslow's hierarchy of need, Basic Personality Traits; Values, Beliefs, Interactions, Experiences, Environmental influences, the big five dimensions.

Unit 3

Stress; causes, effect and types, Stress resistant personalities, Relaxation; training aspects importance and Body works.

Unit 4

Health stress and coping, Understanding and communicating our health needs, Behavioral and psychological correlates of illness.

Unit 5

Soft skill; need and importance, Personality development and soft skills. Effective communication, listening, speaking, writing, interpretation part of soft skills and personality

Learning Outcome:

By successfully completing this course, students will be able to Describe how a personality develops.

- Define the stages of personality development.
- Define personality types.
- Describe basic personality traits.
- Personality and stress.
- Health stress, coping and relaxation.
- Soft skills and personality.

Text Books:

1. Hurlock (1976). Personality development.Tata McGraw Hill.

2. Baron R A, Psychology 5th edition, Pearsons publication.

3. Abraham A, General Psychology, Tata McGraw hill Education private limited.

Reference Books:

1. Lazarus J Stress Relief and Relaxation Techniques, Viva Book Private limited.

2. Shelly E. Taylor, Health psychology, 7th edition, TATA McGrawHil, New Delhi.

COURSEOUTCOMES	
CO1	The student will be able to Define the stages of personality development.
CO2	• The student will be able to Describe basic personality traits.
CO3	The student will be able to Describe how a personality develops-Personality and stress.
CO4	The student will be able to Develop the Soft skills and personality.

MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**D**	**e**	**f**
1	S		M		s	
2				S		M
3	M		**S**			
4	S			**S**		**M**
Category	Management					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE2027	**FIRST AID MANAGEMENT & SPLINTING TECHNIQUES**
	TotalContactPeriods–6
	Total credits -2
	Course Designed by–Department of Medicine
OBJECTIVES	Students will gain additional skills in interventional procedures and Differentiate between emergency situation and other use.

Unit-I BACKGROUND INFORMATION

- The importance of first Aid
- First aid supplies
- First aid and the law
- Prevention practices

Unit-II ACTION AT AN EMERGENCY

- Recognizing Emergencies
- Deciding to act
- Seeking medical care
- Disease transmission
- Rescuer reactions

Unit –III BLEEDING AND WOUNDS

- External bleeding
- Wound infection
- Amputations
- Impaled objects
- Wound that require medical care
- Internal Bleeding
- Dressing and Bandages

Unit-IV BONE, JOINT AND MUSCLE INJURIES

- Bone injuries
- Splinting
- Joint injuries
- RICE injuries
- Muscle injuries
- Splints – Introduction, Types, Uses, Splinting guidelines, Slings, Procedure,Complications

UNIT-V RESCUING AND MOVING INJURIES

- Water rescue
- Ice rescue
- Electrical Emergency Rescue Hazardous materials incidents

- Motor Vehicle crashes
- Fires
- Confined spaces
- Triage – what to do with multiple victims
- Moving victims

Text books:

1 .First Aid CPR and AED standard (sixth edition)

2. First aid book-St Johns Ambulance services

3. Text book of Orthopaedics – Natarajan

4. Text book of Orthopaedics – John Ebenezer Reference books: First Aid and Management of Minor Injuries by Jon Dallimore First Aid and Beyond by Dan Wolfe - Smashwords , 2014 International Trauma Life Support Provider Manual Essentials Orthpaedics Mark D Mille

COURSEOUTCOMES	
CO1	The student will be able to Differentiate between emergency situation and other use.
CO2	The student will be able to know about the basics of concepts of disease & outlines of clinical evaluation.
CO3	The student will be able to List management, assessment, and care steps for upper extremity and lower extremity fractures.
CO4	The student will be to know Splinting techniques of lower extremities – Thomas splint, sam splint, etc

MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES

COs\Pos	**A**	**B**	**c**	**D**	**e**	**f**
1	S		M		s	
2				S		M
3	M		**S**			
4	S			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE3028	**ESSENTIALS OF MEDICAL TRANSCRIPTION**
	Total Contact Periods– 7
	Total credits -2
	Course Designed by–Department of MRD
OBJECTIVES	Provide Hands on training on English Language and listening comprehension and provide foundation to learn medical terminology & learn laboratory report

Unit 1

The Medical Transcriptionist‘s career including Ethical& Legal Responsibilities Introduction to Medical transcription, Job Opportunities, Transcription Skills, Medical records, Certification for Medical Transcriptionists, Ethical and Legal responsibilities

Unit 2

Equipments in Transcription Equipment, Computer Systems, Ergonomics, Dictation Equipments, Hand and Foot control Dictation, Transcription Preparation

Unit 3

Transcription Guidelines Punctuations, Proof reading notations, Formats and styles, SOAP for Chart notes; Discharge Summary

Unit 4 PRACTICAL:

1. Equipments for Medical Transcription,2. Typing for the beginners, 3.Vocabulary, 4. Proof reading Notations , 5. Formats and styles in document preparation , 6. Preparation of chart notes, 7. Listening Comprehension, 8. Transcription check off sheet **References Book**1. Medical Key boarding, Typing, and Transcribing Techniques and procedures 4th Edition, March

Otis Diehl, Marilyn Takahashi Fordney, W.B. Saunders Company

2. The AAMT Book of Style for Medical Transcription, Claudia J. Tessier

3. CD‘s available for:

a. Stedman‘s Electronic Medical Dictionary 4.0

b. American Drug Index 2003

Text Books:

1. Medical Key boarding, Typing, and Transcribing Techniques and procedures 4th Edition, March

Otis Diehl, Marilyn Takahashi Fordney, W.B. Saunders Company

2. The AAMT Book of Style for Medical Transcription, Claudia J. Tessie

COURSEOUTCOMES						
CO1	The student will be able to Demonstrate their basic skills in the knowledge of Vocabulary, Medical terminology					
CO2	The student will be able to Demonstrate their basic skills in the preparation of chart notes. .					
CO3	The student will be able to Demonstrate skills in listening comprehension					
CO4	• The student will be be able to identify accurate format for medical document preparation					
MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**d**	**E**	**f**
1	S		M		S	
2				s		M
3	M		**S**			
4	S			**S**		**M**
Category	Medical Records					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE3029	**COMMUNICATION AND SOFT SKILL**
	Total Contact Periods– 7
	Total credits -2
	Course Designed by–Department of Human Resources
OBJECTIVES	This course is designed to equip the students with essential soft skills needed for workplace and improve personality.

LEARNING OUTCOME:

This course is designed to help the students to

- Foster healthy attitude.
- Develop effective inter and intra personal skills to be an effective team worker.
- Communicate effectively in both academic and professional setup

UNIT: I ASPECTS OF COMMUNICATION

Importance of communication, Process, Barriers, Non verbal Communication

UNIT: II SPEAKING

How to Open and Close conversations, Introductions and Address System, Expressing Courtesy, Giving Compliments and replying to Compliments, Presentation Skills, Telephonic conversation and telephone etiquette

UNIT – III PRESCRIBED READING

Tom Sawyer by Mark Twain, Bacon‘s Essays: - Of Goodness and goodness of nature

UNIT – IV WRITING

Letter writing - Letter of Complaints, Inviting and Declining an invitation, Writing Memos and Emails, Grammar, Spelling & Punctuation, Use of Dictionary & Thesaurus.

UNIT – V SOFT SKILLS

Active Listening Skills, Assertive Skills, Negotiation and Persuasive Skills, Interview Skills

Text Book:

Developing Communication Skills by Krishna Mohan and Meera Banerji, II edition, Macmillan.

Reference Books:

1. Communication Skills for Engineers and Scientists by Sangeeta Sharma and Binod Mishra, PHI Learning Private Limited, New Delhi.

2. English and soft skills by S.P. Dhanavel, Orient Black Swan

3. Effective English Communication by Krishna Mohan and Meenakshi Raman, Tata McGraw – Hill Publishing Company Limited.

4. Technical Communication – Principles and Practice, by Meenakshi Raman and Sangeetha Sharma, II edition, Oxford University Press.

5. Developing Communication Skills by Krishna Mohan and MeeraBanerji, II edition, Macmillan.

6. The Complete Guide to Functional Writing in English by M. Sarada, Sterling Publishers (P) Ltd., New Delhi.

7. Speaking Naturally: Communication Skills in American English by Bruce Tillitt and Mary Newton Bruder, Cambridge University

COURSEOUTCOMES	
CO1	The student will be able to Foster healthy attitude
CO2	The student will be able to develop effective inter and intra personal skills to be an effective team worker
CO3	The student will be able to Develop effective inter and intra personal skills to be an effective team worker
CO4	The student will be able to Communicate effectively in both academic and professional setup

MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**a**	**B**	**C**	**d**	**e**	**F**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE3030	**PROFESSIONAL SKILLS DEVELOPMENT**
	Total Contact Periods– 6
	Total credits -2
	Course Designed by–Department of Human Resources
OBJECTIVES	To Advance the students' intellectual curiosity, competency and skills in preparation for employment

1. Communication Skills

Importance of Communication skills in Public health; Communication process; Methods of communication; Types of communication: Verbal and Non-verbal; Impediments to effective communication; Feedback

2. Oral Presentation Skills:

Preparation and planning; Structure; Audio-visual aids; Creating interest and establishing a relationship with the audience; Body language; Voice and pronunciation; Review

3. Writing skills:

Writing a scientific paper; Writing a proposal; Structure of an article; References and literature review; Peer-review process-Publication bias; International guidelines for publication in journals; Professional Ethics

4. Leadership in Public health:

Leadership styles and trait; Motivation skills; Interpersonal communication skills; Problem solving skills; Decision making skills; Management skills; Communication Skills

5. Manuscript writing

Writing introduction, objectives, methodologies, major finding, discussion, conclusion and recommendation**6. Seminar presentations**Use of computers present data and information on recent topics

Text Books:

1. Professional Writing Skills, A self paced training programme by Janis Fisher Chan and Diane Lutovich. Advanced Communication Designs Inc, 2003. San Anselmo, CA. ISBN 0963745549

2. Speaking Your Mind: Oral Presentation and Seminar Skills By Rebecca Stott, Tory Young, Cordelia Bryan Contributor Rebecca Stott, Tory Young, Cordelia Bryan Published by Longman, 2001 ISBN 0582382432, 9780582382435

3. Public Health Leadership: Putting Principles into Practice Louis Rowitz, PhD. Jones and Bartlett Publishers, 2003. ISBN-13: 9780763725013 ISBN-10: 07637250

COURSEOUTCOMES						
CO1	The student will be able to Develop good written and oral communication abilities					
CO2	The student will be able to Develop an understanding of team building and leadership skills.					
CO3	The student will be able to Develop knowledge regarding capacities needed to work independently within diverse work environments					
CO4	The student will be able to know how to maintain Records and Reports and demonstrate the procedure.					
MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**D**	**e**	**f**
1	S		M		s	
2				S		M
3	M		**S**			
4	S			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting Of Academic Council held in Aug, 2017					

UAH17CE3031	**LIBRARY SCIENCE AND E-RESOURCES**
	Total Contact Periods– 6
	Total credits -2
	Course Designed by–Department of Library science
OBJECTIVES	To gain knowledge about Documentary Sources of Information and Library Automation

Unit 1 BASIC CONCEPTS AND INFORMATION SERVICES

Meaning of Library – Types of Library -– Library layout - Functions of Library – need for Library – Meaning of ISBN and ISSN – Collection management - Library Classification system - Five laws of Library Science – Inter Library Loan (ILL), Communication theories and models.Barriers to communication.Levels of communications – Intrapersonal, interpersonal and mass communication. Information services – literature search Methods of Dissemination of information Current Awareness Service (CAS), Selective Dissemination of Information (SDI), Document delivery service, Alert services, and Internet services.

Unit 2 INFORMATION SOURCES

Documentary Sources of Information, Print, and Non-print including Electronic, Human and Institutional sources: Nature, types, characteristics and utility. Internet as a source of Information. Primary sources of information – Journal, conference volume, patents, research reports, thesis and their electronic format – Secondary sources of information - Bibliography, Encyclopedia Dictionary, Yearbook , Directory, Geographical Source, Textbook, Index and Abstracts.

Unit 3 LIBRARY AUTOMATION

Definition need, Purpose, advantages. Planning for Library automation. Automation of Library operations - Acquisitions, Cataloguing, OPAC, Circulation and Serials control. Evaluation of Library automation systems - Application of Barcode and RFID Technology for Library Functions. Basic concepts: Bibliography, bibliographic coupling, Impact factor.

Unit 4 ELECTRONIC INFORMATION SOURCES

Electronic Information resources: Meaning and definition, Growth and development, Types. Journals, e-Books, e-Theses, e-newspapers, Blogs, Wikis. Free databases and fee based bibliographical and full text databases, subject related websites, Institutional repositories, Open Archives and digital Libraries. - Resource Sharing and Networks: Consortia- Importance and objectives. Study of Information networks and Digital Library Consortia. Types of computer networks: Local Area Networks – Concept, Topologies - Bus, Star, Mesh, Tree, and Ring). Wide Area Networks and Metropolitan Area Networks- Concepts, Circuit switching and Packet switching. Difference between LAN and WAN. Wireless Networks –Mobile telephones.

Unit 5 DIGITAL LIBRARIES

Digital Libraries: Concepts and issues. Understanding digital Libraries Content creation – Electronic documents, files and file formats. Study of different file formats.Studying PDF in detail-features of PDF.Digitization- scanning, Digital Preservation, Conservation and Archival Management – Problems and prospects. Open Access Movement and Institutional repositories.

TEXTBOOKS

1. Ranganathan, S.R The five Laws of Library Science UBS Publishers, 1988.

2. Ranganathan, S.R. Library Manual SaradaRanganathan endowment for Library Science, 1989.

3. Ranganathan, S.R. Cataloguing Practice SaradaRanganathan endowment for Library Science 1990

COURSEOUTCOMES						
CO1	The student will be able to analyze and understand the query					
CO2	The student will be able to Identify the sources of information					
CO3	The student will be able to Find out the information					
CO4	The student will be able to know how to maintain Records and Reports and demonstrate the procedure.					
MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**d**	**e**	**F**
1	S		M		s	
2				s		M
3	M		**S**			
4	S			**S**		**M**
Category	Library Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

MEDICAL LAB TECHNOLOGY

R2017

CURRICULUM

UAH17CT101	**ANATOMY**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Anatomy
OBJECTIVES	An outline of anatomy with special emphasis on applied aspects is provided to the students for better understanding of the technical and diagnostic procedure.

UNIT I: Organization of the human body

1. Introduction

- Introduction to human body
- Definition and subdivision of anatomy
- Anatomical position and terminology
- Region and systems of the body
- Cavities of the body and their contents
- Levels of organization of the body

2. Cell and genetics

- Parts of cell – cell membrane, cytoplasm, organelles, inclusion bodies, nucleus
- Structure of chromosome, DNA, RNA.
- Basics & fundamentals of Genetics, Karyotyping, Chromosomal disorders, prenatal diagnosis, genetic counseling and gene therapy.
- Cell division – Definition and main events that occur in different stages of mitosis and meiosis.
- Tissues – Definition, characteristic features and types with example.
- Types of glands with example

UNIT II: Systems of support and movement

I. Skeletal system

- Cartilage: Type and basic histological feature.
- Bones: definition, classification based on location, name and number of bones with general features of important bones, function of bone, histological feature of a compact bone.
- Joints – Definition and types with example, Axis and movements. Shoulder, elbow, hip, knee joints – type, bones and ligaments involved, possible movements.

II. Muscular system

- Types of muscle with basic histological features
- Parts of skeletal muscle.
- Definition of origin and insertion
- Origin, insertion, nerve supply, action of sternocleidomastoid, pectoralis major, deltoid, gluteus maximus and diaphragm.

UNIT III: Controls systems of the body

1. **Nervous system**

- Subdivisions of the nervous system
- Spinal cord-location, extent, external features and blood supply
- Brain-subdivision, location, external features of Medulla oblongata, Pons, Midbrain, Cerebellum, and Cerebrum, Thalamus and Hypothalamus, Location and subdivision of ventricles of brain. Circle of Willis.
- Cranial nerves-name, number, attachment, area of distribution
- Spinal nerves-typical spinal nerves. Name and location of plexuses. Location and distribution of brachial and lumbosacral plexus.
- Autonomic nervous system-sympathetic and parasympathetic nervous system. Location of preganglionic and postganglionic neurons.

2. Sense organs

- Location and features of nose, tongue, eye, ear and skin.

3. Endocrine system

- Names of the endocrine glands. Location and features of pituitary, thyroid, parathyroid, suprarenal, pancreas, ovaries and testes. Names of hormones produced by each gland.
- Microscopic features of thyroid and pancreas.

UNIT IV: Maintenance of the human body

1. **Cardiovascular system**

- Types and general features of blood vessels. Structure and types of arteries and veins. Shape, size, location, covering, external and internal features of Heart. Conducting system of heart. Blood supply of the heart. Name, location, branches and main distribution of principal arteries and veins

2. Lymphatic system

- General features of Lymph nodes and lymphatic vessels. Name, location, external features, microscopic features of tonsil and spleen.

3. Respiratory system

Name the organs of respiration. Location and features of Nasal cavity, pharynx, larynx, trachea, lung & pleura. Mention the microscopic feature of the lung.

4. Digestive system

- Name the parts of the alimentary canal and accessory organs. Location & features of esophagus, stomach, small and large intestine. Location and feature of tongue, salivary glands, pancreas, liver and gallbladder. Microscopic features of the liver.

5. Urinary system

- Names of urinary organs. Location and features of kidney, ureter, urinary bladder & urethra. Microscopic features of the kidney.

6. Reproductive system

- Names of male and female organs of reproduction. Location and features of testis, epididymis, vas deferens, prostate gland and spermatic cord. Location & features of uterus, uterine tube, ovary and breast.

7. Embryology

- Structure of gametes & gametogenesis. Fertilization to development of embryo till 3rd week. Derivatives of germ layers. Teratogens, Structure and Functions of placenta.

UNIT V: Anatomical regions

- Simple ideas about scalp, triangles of neck, axilla, cubital fossa, carpal tunnel, mediastinum, umbilicus, inguinal canal, femoral triangle
- sub sartorial canal popliteal fossa

PRACTICALS/DEMONSTRATIONS

1. Demonstrations of dissected specimens.

2. Viewing of projection of microscopic slides of muscle, bone, cartilage, spleen, tonsil, lung, liver, kidney, thyroid and pancreas

REFERENCE BOOKS

1. Manipal manual for AHS by Dr. Sampath Madhyastha, (Second Edition) Published by CBS Publishers.

2. Handbook of anatomy for nurses by Dr. P. Saraswathi

3. Ross and Wilson, Anatomy and physiology in health & illness

COURSE OUTCOMES	
CO1	The student will be able to gain knowledge of general anatomy and locomotion.
CO2	The student will be able to gain knowledge of basic human anatomy and histology of CVS and Respiratory systems.
CO3	The student will be able to gain knowledge of basic human anatomy and histology of CNS, GI, excretotry and reproductive systems.
CO4	The student will be able to gain of knowledge basic human anatomy and histology of endocrine system and special senses.

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES

COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S					
2		**M**				
3			**S**			
4	s			**S**		**M**

Category	Basic Science (Non Clinical)
Approval	46th Meeting of Academic Council held in Aug, 2017

UAH17CT102	**PHYSIOLOGY**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Physiology
OBJECTIVES	To know the basic functioning of the human body, and the various organ systems.

Unit-I

1. General Physiology:

- Concept of Homeostasis
- Cell structure and functions
- Transport across membranes

Body and body fluids:

- Body fluid volumes, compartments and composition
- Blood composition and functions
- Plasma proteins – Types and functions
- Erythrocytes – functions, Erythropoiesis, anemia‟s
- Leucocytes – classification and functions
- Platelets – morphology and functions
- Blood coagulation – Mechanism and name of anticoagulants
- Blood groups – Basis of ABO & Rh grouping, Erythroblastosis Foetalis

2. Muscle physiology:

- Muscles – Classification & structure of striated, nonstriated & cardiac muscle
- Neuromuscular junction
- Mechanism of skeletal muscle contraction

3. Digestive system:

- Salivary glands, functions of saliva
- Parts of stomach, composition & functions of gastric juice

- Pancreatic Juice – composition & functions
- Bile – composition & functions of bile & bile salts
- Functions of Small intestine & large intestine

Unit-II

1. Skin : Structure & Functions

2. Excretory system:
- Kidney: Basic physiological anatomy (Including JGA)
- Formation of urine – GFR
- Formation of urine – Reabsorption & secretion
- Micturition Reflex
- Dialysis – Principle, types
- Renal function tests

Unit-III
1. Endocrine system:
- Hypothalamo hypophyseal inter relationship
- Posterior pituitary hormones and its actions
- Anterior pituitary hormones, Growth hormone – Actions
- Dwarfism, gigantism, acromegaly
- Thyroid hormones – Actions
- Cretinism, Myxoedema, Grave‟s disease (clinical features)
- Parathyroid hormones – Functions, Tetany
- Insulin, Glucagon‟s – Actions, Diabetes mellitus
- Adrenal medullary hormones & their actions
- Adrenal cortex hormones & their actions

2. Reproductive system:
- Male reproductive organs – Spermatogenesis, Testosterone actions
- Female reproductive organs – menstrual cycle (endometrial and ovarian cycles) and its hormonal control
- Contraceptive methods in male and female

Unit-IV
1. Respiratory system:
- Basic physiological anatomy
- Surfactant
- Mechanics of respiration
- Lung volumes and capacities
- Oxygen transport, Carbon-di-oxide transport
- Nervous and chemical regulation

- Pulmonary function tests.

2. Cardiovascular system:

- Basic physiological anatomy, innervations of heart
- ECG – normal waves, intervals and their significance
- Cardiac cycle – mechanical events, Heart sounds
- Blood pressure – Definition, measurement, normal values, factors maintaining BP Regulation

Unit-V

1. Nervous system:

- Structure of neuron, neuroglial cells, synapse and transmission across it
- Reflex – Components of reflex arc, examples.
- Functions of ascending tracts – anterior, lateral spinothalamic tracts, Dorsal column
- Functions of Corticospinal (Pyramidal) tract-Descending tract
- Functional areas of cerebral cortex
- Functions of basal ganglia, thalamus, hypothalamus, limbic system and cerebellum

2. Special senses:

● Receptors for various special senses

Practical Demonstration

Hematology:

1. Enumeration of RBC count.
2. Enumeration of WBC count.
3. Differential Count.
4. Estimation of Hemoglobin.
5. Determination of blood group.
6. Determination of bleeding time and clotting time.

Clinical physiology:

1. Measurement of blood pressure.
2. Determination of Radial pulse

Reference Book

1. Human Physiology for BDS by A.K.Jain, 4th Edition, Avichal publishing co

COURSE OUTCOMES	
CO1	The student will be able to gain knowledge of general physiology, nerve-muscle physiology and haematology.
CO2	The student will be able to gain knowledge of basic human physiology with respect to CVS, Respiratory system and GI system.
CO3	The student will be able to gain knowledge of basic human physiology of excretion and CNS.
CO4	The student will be able to gain knowledge of basic human physiology of special senses and endocrine system

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S					
2		**M**				
3			**S**			
4	s			**S**		**M**
Category	Basic Science (Non Clinical)					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CT103	**BIOCHEMISTRY**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Biochemistry
OBJECTIVES	To know the basic Biochemical reactions within the human body, and the various organ system.

UNIT I – Cell and its molecules

Cell – Cell organelles, Fluid Mosaic Model, functions of cell membrane, Brief description of transport across the cell membrane.

Carbohydrates – Definition, Classification with examples, Sources, physiological significance and HbA1c.

Lipids – Definition, Classification with examples, Sources, Types of lipids present in the body, storage form, storage site, free cholesterol structure, functions of lipids, lipoprotein structure and its functions.

Nucleic acids – Nucleotide, Nucleoside, types of nucleic acids, secondary structure of DNA & Its functions; Types of RNA & its functions.

UNIT II – Proteins and Enzymes

Proteins – Definition, Classification, functions of proteins, Plasma proteins; Classification of Amino acids with examples Hemoglobin structure, Functions of hemoglobin, hemoglobin derivatives, abnormal hemoglobin

Enzymes: Definition, Classification, coenzymes, Metalloenzymes, Factors affecting enzyme activity, Regulation of enzymes, overview of Mechanism of enzyme action, Isoenzymes and Clinical importance of enzymes

UNIT III-Vitamins, Minerals, Nutrition

Vitamins: Definition, Classification of Vitamins

Sources, RDA, Function & Deficiency symptoms of

- Fat Soluble Vitamins (A, D, E & K);
- Water Soluble Vitamins (Thiamine, Riboflavin, Niacin, Biotin, Pantothenic acid, Pyridoxine, Folic acid, Cobalamin) and Vitamin C

Minerals: Definition, Classification of Minerals

Sources, RDA, Function, Reference levels & Deficiency Symptoms of

- Calcium, Phosphorus, Iron Copper, Zinc, Sodium, Chloride, Iodine, Potassium, Fluorine and Selenium.

Nutrition: BMR, SDA, Dietary fibres, protein Energy Malnutrition and Obesity 24

UNIT IV – Bioenergetics and Metabolism

Bioenergetics: Electron Transport chain and Oxidative Phosphorylation

Metabolism

Carbohydrates: Digestion and absorption, Glycolysis, TCA cycle, Metabolism of Fructose and Galactose.

Lipids: Digestion and absorption, Beta oxidation of fatty acids, Regulation of Cholesterol level in the cell and outline of lipid transport.

Proteins: Digestion and Absorption, Formation and Disposal of Ammonia, Urea Cycle, Special Products of Glycine, Tyrosine and Tryptophan.

UNIT V – Miscellaneous

Outlines of DNA organization, Replication, Transcription, Genetic code and Translation

Organ function Tests: Liver, Renal and Bone.

PRACTICAL

- Spotters

COURSE OUTCOMES	
CO1	The student will be able to gain knowledge of biochemistry of cell structure, functions, digestion, enzymes and proteins.
CO2	The student will be able to gain knowledge of biochemistry of carbohydrates, minerals and vitamins
CO3	The student will be able to gain knowledge of liver and renal function tests, specialized laboratory investigations and lipids.
CO4	The student will be able to gain knowledge of biochemistry of metabolism, homeostasis, nucleic acids and cancer

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S				s	
2		**M**		s		
3	M		**S**			
4	s			**S**		**M**
Category	Basic Science (Non Clinical)					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CT104	**BASICS IN MEDICAL PHYSICS AND ELECTRONICS**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Radiology
OBJECTIVES	To know the basics in Medical Physics, Bio electric potential and the functioning of Medical equipment

Unit I: Laser

Nature of light-Reflection-Refraction-Total internal reflection-Optical fibers-Applications in Medicine – Laser-Principles-Action-Types of laser, Basic principles of laser in Medical Application – Argon-Ion laser photocoagulator-Photo thermal-Photochemical application-Applications of laser in Medicine-Laser hazards and safety measures.

Unit II: Radiation Physics

Introduction to nuclear physics and radioactivity, Radioactive radiations – X-ray, production of x-ray, Properties of x-ray radiations – Biological effects of radiation, Radiation damage in matter, Radiation protection principles, radiation detection and measurement – Ultrasound and generation of ultrasound.

Unit III: Introduction to Imaging Technique

Principles of Microscope: Simple microscope and compound microscope-Radiography: Making and X-ray image-Fluoroscopy. CT Scans, MRI – Ultrasonography: Ultrasound picture of Body-A-Scan-M-Scan-Ultrasound diathermy-Phonocardiography – Radio isotopes: Uses of Radio isotopes – 99mTc Generator – Scintillation detectors – Application of scintillation detectors – Gamma Camera – Positron Camera

Unit IV: Semiconductor devices

Principles of diodes and Transistors – Integrated circuits – Amplifiers – Basic configuration and types – differential and operational amplifiers – Waveform generators – Timer – A/D and D/A converters – Active filters – Transducers – Basic configuration and types.

Unit V: Bio potential Recording Systems

Introduction to bioelectric potential – Electrodes and surfaces – Bio potential amplifier – Frequency ranges of various biopotential signals – Working principles of bio potential recording systems – Electrocardiography – Electroencephalograph –Electromyography.

Reference Books:

1. New Understanding physics for advanced level – Jim Breithauput.

2. Advanced Physics for you by Keith Johnson, Simmons Hewett, Sue holt, John miller

3. Christensen‟s Physics of diagnostic Radiology by Thomas S. Curry III, M.D., Robert C Murry, Jr. PhD, Dow Dey, PhD.

4. Applied Electronics, A. Subramanyam, The National Publishing co., Madras (1996).

5. Design and Development of Medical Electronic Instrumentation, David Prutchi and Michael Norris, John Wiley & Sons (2005).

COURSE OUTCOMES	
CO1	The student will be able to know the functioning of radiological devices
CO2	The student will be able to understand the mechanism of functioning of medical equipments
CO3	The student will be able to know the functioning of Lab instruments
CO4	The student will be able to understand the functioning of radiation devices

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CT105	**ENGLISH**
	Total Contact Periods – 60
	Total credits -4
	Course Designed by – Department of English
OBJECTIVES	To enable students to enhance their ability to comprehend spoken and written English required for effective communication in their professional work. Students will practice their skills in verbal and written.

Unit I: Spoken Communication

Learning to read the phonetic symbols

Stress

Intonation

Rhythm

Commonly mispronounced words

Correct pronunciation of important commonly used

Words in hospital practice

Unit II: Vocabulary and Reading

Special features of English vocabulary

Common errors in choice of word

Semi technical vocabulary

Collecting material from library on scientific topics

Comprehensive exercises

Unit III: Writing

Writing letters regarding permission, leave, opening bank account etc.

Taking notes from lecture / reading materials

Writing reports on patient care

Summarizing scientific passages

Unit IV: Grammatical and Idiomatic Usage

Correction of errors

Types of interrogative sentences

Active-Passive voice

Tense

Principles of procession, clarity and specificity

Reference Books:

1.Effective English Communication by Krishna Mohan and Meenakshi Raman, Tata McGraw – Hill Publishing Company Limited, New Delhi. (Approx. Cost Rs. 200)

2. English for colleges and Competitive Exams by Dr. R. Dyvadatham, Emerald Publishers (Approx. cost Rs. 150)

COURSE OUTCOMES	
CO1	The student will be able to develop their intellectual, personal and professional abilities.
CO2	The student will be able to acquire basic language skills, listening, speaking, reading and writing.
CO3	The student will be able to acquire the linguistic competence necessarily required in various life situation
CO4	The student will be able to communicate with speakers of English language

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**

Category	Language
Approval	46th Meeting of Academic Council held in Aug, 2017

UAH17CT106	**BASIC OF COMPUTERS**
	Total Contact Periods – 30
	Total credits -4
	Course Designed by – Department of English
OBJECTIVES	This course is designed for students to develop basic understanding of used of computer and its applications in Clinical Departments

UNIT I: INTRODUCTION

Computer basics – Types of computers – hardware components – input devices – output devices – storage devices – memory – units and sizes – factors affecting performance – operating systems – applications software – networking – LAN and WAN – Accessories – backup – computer virus – software copyright.

UNIT II: WORD PROCESSING

Windows – Office automation – WORD processor – open a new document – toolbars – menus – font dialog box – enter text – scroll – spelling checker – Autocorrect – undo and redo – bullets and numbered lists – indenting – moving and copying – find and replace – auto shapes – saving document – preview and print.

UNT III: ELECTRONIC SPREADSHEET AND DATA PRESENTATION

EXCEL spreadsheet – grid of rows and columns – active cell – selecting range – entering data – editing data – row and column labels – adjusting width – creating and copying formulae – relative – logical functions – lookup function – creating chart – bar chart – pit chart – print and save.

POWERPOINT presentation – creating slideshows- building outline – switching levels in outline – adding pictures – slide designs – design templates – formatting – color scheme – customized backgrounds – inserting content – hyperlink – revolution in education.

UNIT IV: DATABASE MANAGEMENT SYSTEM

ACCESS database – concept – template –primary key – records and fields – Student roster database – input mask – adding records – viewing data – updating entries – searching and querying – sorting – Table, forms and reports.

UNIT V: APPLICATIONS IN HEALTHCARE AND MEDICINE

INTERNET – e-governance – access to information – communication facility – mechanics of E-mail – social transformation – electronic billing – drug information –information flow in lab and radiology – storage of medical records – networking the organization – patient care – intelligent monitoring – scholarly information – health informatics – robotic assisted surgery – Clinical decision support systems – Telemedicine.

COURSE OUTCOMES	
CO1	The student will be able to develop basic under-standing of computer use.
CO2	The student will be able to acquire knowledge on Applications of computers in clinical departments.
CO3	The student will be able to have the detailed knowledge on how to use hospital information systems.
CO4	The student will be able to communicate with speakers of English language

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES

COs\POs	a	b	c	d	e	f
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**

Category	Basic Science
Approval	46th Meeting of Academic Council held in Aug, 2017

UAH17CT107	**MICROBIOLOGY**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Microbiology
OBJECTIVES	This course is designed to enable students to acquire understanding of fundamentals of microbiology and identification of various microorganisms. It also provides opportunities for practicing infection control measures in hospital and community settings.

UNIT – I: General Bacteriology

Introduction & History of Microbiology, Classification & Morphology of Bacteria, Growth & nutrition, Culture Media & Methods, Sterilization & Disinfection, Fundamental aspects of antibacterial agents and antimicrobial susceptibility testing.

UNIT – II: Immunology

Infection, Immunity, Immunization schedule, applications of antigen antibody reactions, Hypersensitivity, Tumor & Transplantation Immunology.

UNIT – III: Virology

Introduction to virology, viral hepatitis, poliomyelitis, Rabies, Human immunodeficiency virus.

UNIT – IV Mycology & Parasitology

Introduction to mycology, pathogenic yeasts & fungi, Introduction to parasitology, Amoebiasis, Malaria, Helminthic infections.

UNIT – V: Applied Microbiology

Outline of common bacterial diseases, treatment & prevention-Respiratory tract infections (upper & lower), Meningitis (septic & aseptic), Enteric infections (food poisoning & gastro enteritis), Anaerobic infections, Skin & soft tissue infections, Urinary tract infections, Sexually transmitted diseases, Tuberculosis & Leprosy, Hospital acquired infections, Biomedical waste management.

PRACTICAL EXERCISES: Spotters, Gram staining.

Reference Books

1. Textbook of Microbiology by Ananthanarayan & Panicker‟s, 8th edition-Universities Press (India) PVT LTD.

2. Textbook of Microbiology by C. P. Baveja, 4th edition, Arya Publications.

3. Textbook of Medical Parasitology, CK Jayaram Paniker, 5th edition, Jaypee Publications.

4. Medical Parasitology by C. P. Baveja & V. Baveja, 2nd edition, Arya

5. Publications.

COURSE OUTCOMES	
CO1	The student will be able to understand the morphological characters of bacteria.
CO2	The student will be able to master the preparation of smear, fixation and staining of bacterial smears and its quality control methods
CO3	The student will be able to learn to use microscope , autoclave, hot air oven, water bath, steamer, filters
CO4	The student will be able to differentiate between innate and adaptive immunity, and explain the main defences lines as well as biological barrier to the infections.

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES

COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**

Category	Basic Science
Approval	46th Meeting of Academic Council held in Aug, 2017

UAH17CT108	**PATHOLOGY**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Pathology
OBJECTIVES	This course is designed to enable students to acquire understanding of fundamentals of microbiology and identification of various microorganisms. It also provides opportunities for practicing infection control measures in hospital and community settings.

UNIT-I: General Pathology I: Cellular Pathology, Acute and Chronic Inflammation, Tissue Renewal Regeneration and Repair, Hemodynamic Disorders Thromboembolic Disease and Shock

Introduction to Pathology, Adaptations Of Cellular Growth And Differentiation, Causes Of Cell Injury, Mechanisms Of Cell Injury, Necrosis, Apoptosis, Pathologic Calcification, Cellular Aging, Acute Inflammation – Mediators Of Inflammation Outcomes Of Acute Inflammation, Morphologic Patterns Of Acute Inflammation, Chronic Inflammation – Causes Of Chronic Inflammation, Granulomatous Inflammation, Healing By Repair, Scar formation And Fibrosis, Cutaneous Wound Healing, Healing By First Intention, Healing By Second Intention, Edema, Hemostasis and Thrombosis, Infarction, Shock

UNIT-II: General Pathology II: Diseases of the Immune System, Neoplasia, Environmental And Nutritional Disease, Diseases Of Infancy And Childhood

Innate Immunity, Adaptive Immunity, Components Of The Immune System, Mechanisms Of Hypersensitivity Reactions, Acquired Immunodeficiency Syndrome (AIDS), Neoplasia – Definition and Nomenclature, Characteristics Of Benign And Malignant Neoplasm‟s, Molecular Basis Of Cancer, Essential Alterations For Malignant Transformation, Clinical Aspects Of Neoplasia, Laboratory Diagnosis Of Cancer, Common Environmental And Nutritional Pathology, Nutritional Diseases, Tumors And Tumor-Like Lesions Of Infancy And Childhood

UNIT-III: Systemic Pathology I: Blood Vessels, the Heart, Red Blood Cell and Bleeding Disorders, Diseases Of White Blood Cells

Arteriosclerosis, Atherosclerosis, Hypertensive Vascular Disease, Ischemic Heart Disease, Hypertensive Heart Disease, Valvular Heart Disease, Infective Endocarditic, Rheumatic Fever And Rheumatic Heart Disease, Cardiomyopathies, Leucopenia, Anemia‟s, Polycythemia, Bleeding Disorders, Reactive Proliferations Of White

Cells, Definitions And Classifications of Lymphoid Neoplasm‟s and Myeloid Neoplasm‟s, Splenomegaly.

UNIT-IV: Systemic Pathology II: The Lung, The Gastrointestinal Tract, Liver And Biliary Tract

Acute Respiratory Distress Syndrome, Obstructive Pulmonary Diseases, Pulmonary Infections, Gastritis, Peptic Ulcer Disease, Inflammatory Bowel Diseases, Liver Function Tests, Hepatic Failure, Cirrhosis, Portal Hypertension, Jaundice, Cholelithiasis

UNIT-V: Systemic Pathology III: The Urogenital System, the Breast, the Endocrine System, Bones Joints and Soft-Tissue, Peripheral Nerve and Skeletal Muscle, the Central Nervous System

Renal Function Tests, Nephrotic Syndrome, Nephritic Syndrome, Urolithiasis, Pap Smear, Carcinoma Of The Breast-Types And Classification, Thyroid Gland – Hyperthyroidism, Hypothyroidism, Thyroiditis, Graves‟ Disease, Diffuse And Multinodular Goiters, Parathyroid Glands – Hyperparathyroidism, Hyperparathyroidism, Diabetes Mellitus, Fractures, Osteomyelitis, Arthritis, Osteoarthritis, Rheumatoid Arthritis, Infectious Arthritis, Diseases of Peripheral Nerve, Diseases of Skeletal Muscle, Infections of CNS – CSF Find

REFERENCE BOOKS

1. Pocket companion to Pathologic Basis of Disease by Robbins and Cotran, 7th edition, Saunders.
2. Pathology Quick Review and MCQs by Harsh Mohan, 2nd edition, Jaypee Publications.

COURSE OUTCOMES	
CO1	The student will be able to gain knowledge of general pathology.
CO2	The student will be able to gain knowledge pathology of neoplasms.
CO3	The student will be able to gain knowledge of basics of community health.
CO4	The student will be able to gain knowledge of systemic pathology.

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES

COs\POs	a	b	c	d	e	f
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**

Category	Basic Medical Science
Approval	46th Meeting of Academic Council held in Aug, 2017

UAH17CT109	**PHARMACOLOGY**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Pharmacology
OBJECTIVES	This course is designed to help the students to develop an understanding of basic knowledge of pharmacology and knowledge of common drugs/group of drugs

UNIT-I: General Pharmacology

Introduction to pharmacology-various terminologies-sources & routes of drug administration – Absorption & Factors modifying drug absorption – Distribution of drugs – Metabolism: Phase II, - Excretion: routes, modes & kinetics of elimination – Excretion – Mechanism of drug action in brief, synergism & antagonism and Factors modifying drug action – Adverse drug reactions – ADR reporting & monitoring – Drug interactions.

UNIT-II: Central Nervous System & Respiratory System

Introduction to CNS and Neurotransmitters, drugs used in insomnia, Sedatives and hypnotics – diazepam – alprazolam, anti-anxiety drugs, Antiepileptic – phenytoin, carbamazepine, sodium valproate,General Anesthetics – halothane, isoflurane, sevoflurane – Local Anesthetics – lignocaine – list of other drugs, Alcohols – ethyl alcohol – disulfuram, Anti parkinsonians – levodopa – carbidopa, Opioids – morphine – naloxone – tramadol – pentazocine, NSAIDs – aspirin – diclofenac – ibuprofen – paracetamol – Cox 2 inhibitors. Drugs used in bronchial asthma and cough

UNIT-III: Cardio vascular system & blood

Drugs used in Ischemic Heart Disease-nitrates-Calcium channel blockers-nifedipine, verapamil-list of other drugs – Beta blockers – propranolol, atenolol – metoprolol and antiplatelets – aspirin, clopidogrel, and names of other drugs-fibrinolysis drugs-streptokinase and other drugs, Drugs used in CCF-digoxin and list of other drugs useful in CCF, Shock. Diuretics: 4 groups – Thiazides, Loop diuretics, Potassium sparing and osmotic diuretics. Hypertension – outline of drugs used in hypertension, Rennin angiotensin system – ACE inhibitors – captopril, ramipril and names of other drugs – Receptor antagonist – losartan and list of other drugs, Antiarrhythmic drugs-classification – Quinidine, Lignocaine and amiodaron – Drugs for Hypercholesterolemia – statins. Drugs for anemia – oral & parenteral iron preparations, folic acid, vit B12 and erythropoietin. Coagulants and anti-coagulants

UNIT-IV: Hormones and GIT

Contraceptives – oral and injectable, Corticosteroids – glucocorticoids – hydrocortisone-prednisolone-dexamethasone and names of topical steroids – Insulin – Oral hypoglycemic – sulphonyl ureas, biguanides and others, Thyroid and Antithyroid drugs, Sex Hormones-Estrogen and anti estrogens,

Progestin and Anti progestin‟s, Androgen And anti androgens. Emetics and anti emetics- metoclopromide and domperidone, Drugs used in peptic ulcer, constipation-lactulose & Diarrhea-ORS- Loperamide.

UNIT-V: Chemotherapy and Miscellaneous

Introduction – Beta lactam antibiotics: Penicillin‟s – natural, semi synthetic penicillin‟s – amoxicillin – cloxacillin-clauvulinic acid – sulbactum – Cephalosporin‟s – cephalexin – cefuroxime – cefixime – ceftrioxone-cefipime, Broad spectrum antibiotics – Doxycycline – chloramphenicol-imipenum-Macrolides – erythromycin, azithromycin and others – Quinolones- ciprofloxacin and list of other drugs and sulfonamides- cotrimoxazole- Amino glycosides-gentamycin, amikacin and names of other drugs Anti TB-first line drugs, Anti leprosy-dapsone and clofazimine Anti-malarial- chloroquine- mefloquine and artemisinins, Anti-fungal- amphotericin B- fluconazole and topical drugs & Anti-viral drugs- acyclovir and anti HIV, Anti protozoals- metronidazole – Anthelmintics- albendazole- praziquantel.

Anti-cancer drugs-Introduction – Anti metabolites- methotrexate- 6 mercapto purine- Alkylating agents-cyclophosphamide- busulphan and cisplatin – Plant products- vinblatin- vincristine- taxanes, antibiotics-actinomycin D- monoclonal antibodies. Immuno modulators- cyclosporine, tacrolimus, azathioprine and steroids. Toxicology-Drugs used in common poisoning, organophosphates, methyl alcohol, Benzodiazepam.

REFERENCE BOOKS:

1. Lippincott‟s Illustrated Reviews: Pharmacology, 5th edition, by Richard A. Harvey and Pamela C. Champe, Lippincott Williams & Wilkins Publisher

2. Essentials of Medical Pharmacology: K.D. Tripathi, 6th edition, Jaypee Publishers.

COURSE OUTCOMES						
CO1	The student will be able to gain basic knowledge in pharmacology.					
CO2	The student will be able to gain knowledge of detailed systemic pharmacology.					
CO3	The student will be able to gain knowledge of detailed knowledge of drugs and groups of drugs.					
CO4	The student will be able to gain knowledge of action of drugs					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CT110	**ENVIRONMENTAL SCIENCE AND COMMUNITY MEDICINE**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Community Medicine
OBJECTIVES	This course is designed for students to practice community health nursing for the individual, family and groups at both urban and rural settings by using concept and principles of health and community health nursing. It also is designed for students to understand the natural resources and environmental pollution

UNIT – I:

Natural Resources: Introduction, Multi-disciplinary nature of environmental studies, Earth Resources and Man, Renewable and Non-Renewable Resources, Water Resources, Mineral Resources: Food Resources: Effect of modern agriculture, Fertilizer/pesticide problems, Water logging, and salinity, Energy Resources.

Ecosystems: Concept of an Ecosystem, Structure and Functions of an Ecosystem, Producers, Consumers and Decomposers, Cycles in the Ecosystem

Biodiversity: Introduction, Definition: Genetic, Species, Ecosystem diversity, India as a Mega Diversity Nation, Hotspots Of Biodiversity Threats to Biodiversity. Poaching of Wildlife, Man-Wildlife Conflicts, Endangered and Endemic Species Of India, Conservation of Biodiversity

UNIT – II:

Pollution: Definition, Causes, Effects and Control Measures of Air Pollution, Water Pollution, Pollution, Marine Pollution, Noise Pollution, Thermal Pollution, Nuclear hazards, Solid Waste Management role of Individuals in Pollution Prevention.

Social Issues Human, Population and Environment: From Unsustainable To Sustainable Development, Urban Problems Related To Energy, Water Conservation, rain Water Harvesting, global warming, acid rain, ozone layer depletion, nuclear accidents and nuclear holocaust. Environment Protection Act.

UNIT – III:

Concept of health & disease: Concept of health, Definition of health, Philosophy of health- Dimension of health – Concept of wellbeing, Spectrum of health, Responsibility of health – Determinates of health & Indicators of health – Concepts of disease & Concepts of cessation – Natural history of disease – Iceberg phenomenon, Concepts of control – Concepts of prevention – Modes of Intervention, Changing pattern of disease.

UNIT – IV:

Epidemiology: Definition & explanation, Aims, Epidemiologic approach, Basic measurements in epidemiology & tools of measurements – Measurements of Mortality & Morbidity, Epidemiologic methods- Descriptive epidemiology-Analytical epidemiology – case control study – analytical epidemiology – Cohort study – Experimental epidemiology – RCT – Association & Causation Uses of epidemiology (Criteria for judging causality) – Infection disease epidemiology Definitions Dynamic of disease transmission & Modes of transmission – Disinfection – Definition Types Agents used Recommended disinfection procedures-Investigation of an epidemic.

Unit – V:

Environment & health: Definition & components (environment sanitation environmental sanitation) Water: Safe & Whole some water Requirements Uses source of water supply (sanitary well)-Purification of water (1). Large scale purification, (2). Small scale purification – Water Quality – Special treatment

of water

Air: Composition The air of occupied room discomfort. Air pollution & its effects. Prevention & Control of air pollution

Ventilation: Definition Standards of ventilation Types of ventilation. Light, Noise & Radiation,

Metrological environment, Housing, Disposal of waste Excreta disposal

PRACTICALS:

1. Epidemiology Problems

2. Environmental spotters

REFERENCE BOOK

1. Textbook of Preventive and Social medicine by k. Park, 21st edition, published by Banarsidas Bhanot

COURSE OUTCOMES						
CO1	The student will be able to know the concept of health & illness					
CO2	The student will be able to know epidemiology of common communicable diseases					
CO3	The student will be able to know epidemiology of common non communicable diseases					
CO4	The student will be able to know the effects of pollution on humans.					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CT111	**BASICS OF NURSING**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Nursing
OBJECTIVES	This course is designed to help the students to develop an understanding of the nursing profession, philosophy, objectives, theories and application of nursing in various clinical settings. It is aimed at helping the students to acquire knowledge, understanding and skills in techniques of nursing and practice them in supervised clinical settings.

Unit I: Introduction of Health

Health care system, major health problems of the country, nature of disease pattern, technological advances and national health programmes, health for all by 2000 AD. Role of health care workers in the health care delivery system, impact of illness of the individual family and community. History of Nursing, Communication Skills -Relationship with patients, process of communication

UNIT II: Concept of Nursing

Nursing Processes- Problems solving approach, assessment, diagnosis, planning, implementation and evaluation.

Unit III: First Aid and Nursing in Emergencies

Definition, basic principles, scope and rules, Wounds, hemorrhages, shock, fracture, dislocation and muscle injuries, respiratory emergencies, resuscitation, unconsciousness, Miscellaneous conditions, burns, scalds, foreign bodies in the skin, eyes, ear, nose, throat and stomach.Frost bite, effects of heart cramps, bites and stings. Poisoning, Transporting injured persons.

Unit IV: **Personal Hygiene and Health**

Care of skin, mouth, eyes, nails, hair, Menstrual hygiene, clothing, mental health, common health problems of poor personal hygiene. Comfort, Rest and Sleep, Hospital Housekeeping

Unit V: Health Education

Introduction to principles and methods of health education. Use of audio visual aids, mass education, role of nurse in health education.

COURSE OUTCOMES						
CO1	The student will be able to gain knowledge on concept of health, health-illness continuum and health care delivery system.					
CO2	The student will be able to gain knowledge on scope of nursing practice.					
CO3	The student will be able to gain knowledge on concept, theories and models of nursing practice.					
CO4	The student will be able to gain knowledge on concept, theories and models of nursing practice.					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAML17CT201	**Histopathology – Theory**
	Total Contact Periods – 80
	Total credits -4
	Course Designed by – Department of Pathology
OBJECTIVES	At the end of the course, the student should be able to be able to identify and describe in detail the microscopic structure of the major organs, tissues and cells of the body. be able to explain the theoretical background to surgical cutup, tissue fixation, tissue processing, microtomy and staining using routine and specialised techniques be able to demonstrate proficiency in the preparation of routine formalin-fixed, paraffin-embedded tissue sections.

Unit I: Introduction – Receipt and despatch of biopsy material Documentation
Unit II: Fixation Grossing, Tissue processing, (Dehydration, clearing, impregnation, embedding) (Decalcification)
Unit III: Microtomy

- Knives & Knife sharpening and Tissue sectioning, mounting etc.

Unit IV: Principles of staining
Staining techniques – Routine & special
Unit V: Filling, indexing & preservation of blocks etc., Frozen section (Cryostat), Museum techniques

COURSE OUTCOMES	
CO1	be able to explain the theoretical background to surgical cutup, tissue fixation, tissue processing, microtomy and staining using routine and specialised techniques
CO2	be able to demonstrate proficiency in the preparation of routine formalin-fixed, paraffin-embedded tissue sections
CO3	be able to demonstrate proficiency in haematoxylin and eosin staining, selected special stains and immunohistochemical methods
CO4	be able to explain the importance of quality assurance and health and safety procedures pertinent to the histopathology laboratory

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES

COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAML17CL202	**Histopathology – Practical**
	Total Contact Periods – 80
	Total credits -4
	Course Designed by – Department of Pathology
OBJECTIVES	At the end of the course student should be able to demonstrate proficiency in the preparation of routine formalin-fixed, paraffin-embedd and proficiency in haematoxylin and eosin staining, selected special stains and immunohistochemical methods

Note: Exercises / Spotters to be chosen by the examiners

EXERCISE: (3X10=30 marks)

- Tissue sectioning and H & E staining (1x10=10 marks)
- Special staining: (Any one of the following) (1x10=10 marks)

  - Perls stain
  - PAS stain
  - Giemsa stain
  - Ziehl – Neelsen stain
  - Reticulin stain
  - van Gieson stain
- Any one of the following: (1x10=10 marks)

  - Embedding
  - Frozen sectioning

SPOTTERS: (5x2=10 marks) (Any five of the following)

- Lab materials – Name & application of each:

  - Tissue cassette
  - Paraffin wax
  - Disposable blade for microtome
  - DPX
  - Waterbath
  - Diamond pencil
  - Cover slip
- Mention two applications of each:

  - Formalin
  - Chloroform
  - Alcohol
  - Xylene
- Charts / photographs:

  - Histokinette
  - Microtome
  - Cryostat
  - Embedding station

COURSE OUTCOMES						
CO1	be able to explain the theoretical background to surgical cutup, tissue fixation, tissue processing, microtomy and staining using routine and specialised techniques					
CO2	be able to demonstrate proficiency in the preparation of routine formalin-fixed, paraffin-embedded tissue sections					
CO3	be able to demonstrate proficiency in haematoxylin and eosin staining, selected special stains and immunohistochemical methods					
CO4	be able to explain the importance of quality assurance and health and safety procedures pertinent to the histopathology laboratory					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAML17CT203	**Cytology – Theory**
	Total Contact Periods – 80
	Total credits -4
	Course Designed by – Department of Pathology
OBJECTIVES	At the end of the course the student will be able to fix, process, embed tissues and make sections for microsection studies. He will also be competent to make routine cytological preparation.

Unit I:

1. Introduction to FNAC & Exfoliative cytology
2. Fixation of smears
3. Coating fixatives
    a) Polyethylene glycol solution
    b) Diaphane solution
4. Rehydration of air dried smears
5. Mailing of unstained smears
6. Preservation of fluid specimens prior to processing – Fresh material
    a) Specimens with a high mucous content
    b) Specimens with a high protein content
    c) Specimens with a low mucous or protein content

a. Specimens with low PH

7. Pre fixation of material

a. Ethyl alcohol (50% solution)
b. Sacromannos fixative
c. Mucolex

8. Preparation of fluid smears for microscopic examination

- Direct or sediment smears on glass slides (fresh / clotted / bloody / prefixed)

Unit II:

1. Processing of fluids
    a) Sputum, bronchial aspirates, bronchial washings, gastric washings
    b) Urine & other watery fluids
    c) Cerebrospinal fluid

Unit III:

1. Cytocentrifuge preparations
    a) Shandon's cytospin
    b) Unloading the machine
    c) Operation
    d) Comments
2. Preparation with membrane filters
    a) Materials needed
    b) Specimen requirements
    c) Method of filtration
3. Preparation of cell blocks
    a) Fixed sediment method
    b) Bacterial agar method

c) Plasma thrombin clot method

Unit IV:

1. Preparations of stains and solutions used in the Papanicolau method
    a) Graded alcohols
    b) Bluing solutions
    c) Preparation of Harris, Mayer, Lillie Mayer and Gill Haematoxylins
    d) EA50, EA36, EA65 and Orange G
2. Stains for hematologic material and air dried smears
    a) Wright stain
    b) Giemsa stain
    c) Wright Giemsa stain
    d) Modified May Grunwald Giemsa stain

Unit V:

1. Important factors influencing staining results
    a. Maintenance of solutions and stains
    b. Dipping slides
    c. Intensity of staining reaction
    d. Contamination control
    e. Important factors influencing the staining results of filters
    f. Destaining slides
    g. Timing
    h. Dye solubility and impurities
    i. Total dye content
    j. Stains with special purpose depending on category, use stain and fixative
2. Mounting the cell sample
    a. Mounting medium
    b. Dissolving nuclear pore filters prior to staining
    c. Dissolving nuclear pore filters after staining
    d. Cover slips
    e. Cover slipping the entire sample
    f. Method of cover slipping glass slides and filters
    g. Cooling slides
3. Stains used in hormonal evaluation
4. Stains used in the identification of sex chromatin

UAML17CT204	**Cytology – Practical**
	Total Contact Periods – 80
	Total credits -4
	Course Designed by – Department of Pathology
OBJECTIVES	At the end of the course the student will be able to fix, process, embed tissues and make sections for microsection studies. He will also be competent to make routine cytological preparation.

Unit I:

9. Introduction to FNAC & Exfoliative cytology

10. Fixation of smears

11. Coating fixatives

a) Polyethylene glycol solution
b) Diaphane solution

12. Rehydration of air dried smears

13. Mailing of unstained smears

14. Preservation of fluid specimens prior to processing – Fresh material

a) Specimens with a high mucous content
b) Specimens with a high protein content
c) Specimens with a low mucous or protein content

a. Specimens with low PH

15. Pre fixation of material

d. Ethyl alcohol (50% solution)
e. Sacromannos fixative
f. Mucolex

16. Preparation of fluid smears for microscopic examination

- Direct or sediment smears on glass slides (fresh / clotted / bloody / prefixed)

Unit II:

2. Processing of fluids

a) Sputum, bronchial aspirates, bronchial washings, gastric washings
b) Urine & other watery fluids
c) Cerebrospinal fluid

Unit III:

4. Cytocentrifuge preparations

a) Shandon's cytospin
b) Unloading the machine
c) Operation
d) Comments

5. Preparation with membrane filters

a) Materials needed
b) Specimen requirements
c) Method of filtration

6. Preparation of cell blocks

a) Fixed sediment method
b) Bacterial agar method

c) Plasma thrombin clot method

Unit IV:

3. Preparations of stains and solutions used in the Papanicolau method
    a) Graded alcohols
    b) Bluing solutions
    c) Preparation of Harris, Mayer, Lillie Mayer and Gill Haematoxylins
    d) EA50, EA36, EA65 and Orange G
4. Stains for hematologic material and air dried smears
    a) Wright stain
    b) Giemsa stain
    c) Wright Giemsa stain
    d) Modified May Grunwald Giemsa stain

Unit V:

5. Important factors influencing staining results
    a. Maintenance of solutions and stains
    b. Dipping slides
    c. Intensity of staining reaction
    d. Contamination control
    e. Important factors influencing the staining results of filters
    f. Destaining slides
    g. Timing
    h. Dye solubility and impurities
    i. Total dye content
    j. Stains with special purpose depending on category, use stain and fixative
6. Mounting the cell sample
    a. Mounting medium
    b. Dissolving nuclear pore filters prior to staining
    c. Dissolving nuclear pore filters after staining
    d. Cover slips
    e. Cover slipping the entire sample
    f. Method of cover slipping glass slides and filters
    g. Cooling slides
7. Stains used in hormonal evaluation
8. Stains used in the identification of sex chromatin

COURSE OUTCOMES						
CO1	The student will be able to fix, process, embed tissues					
CO2	Be able to make sections for microsection studies					
CO3	Be competent to make routine cytological preparation.					
CO4	Be able to explain the importance of quality assurance and health and safety procedures pertinent to the Cytology laboratory					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CT205	**BASIC PRINCIPLES OF HOSPITAL MANAGEMENT**
	Total Contact Periods – 60
	Total credits -4
	Course Designed by – Department of Hospital Administration
OBJECTIVES	The course will offer basic knowledge about management planning , Organizing , staffing, motivating and controlling management in Health care units

Unit I: Introduction to management & Organization:

The evolution of Management, Definition and Importance of Management. Planning – Organizing – staffing – Motivating – Leading – Controlling. Management of health care units (in brief). Individual behavior in organization; organizational functioning (Group/Individual); Perception; Motivation MBO; Organizational Development.

Unit II: Planning and Management of Hospitals & Clinical Services:

Building and physical layout – space required for separate function – Planning of infrastructure facilities, clinical services, equipment & Human resources – Types of Hospitals. Organization and administration of various clinical services; outpatient services. In-patient services, emergency services, operation theatres, ICU's and super specialty services.

Unit III: Organizing of support clinical services & Hospital management:

Imaging – CSSD – Laboratory – Blood Bank – diet – Medical Records – Mortuary. Housekeeping – Maintenance (Water, Electricity, Civil, Air Conditioning, Lift) – Pest Control – transport – Security. Forecasting – Purchasing & procurement (Sourcing, methods and procedures) – storing & issuing, Concept of inventory control, Maintenance of equipment and contracts (with special reference to major biomedical equipment). Trends in financing of Health and Hospital Services – Classification of Hospitals depending on source of financing – roles of financial institutions.

Unit IV: Personnel and quality Management in Hospital & Marketing:

Concepts – Manpower planning – Training & Developments – Team Building – Conflict Management – Performance appraisal – Office rules and regulations Outline of Strategic Planning and Marketing.

Concepts of quality – Professional Audit System – QA program – Medical Audit – Quality Circle – TOM – Patient Satisfaction – ISO 9000. A brief outline – computerization in hospital departments. Concept, Techniques, Indicators, Evaluation of Efficiency & Effectiveness evaluation of hospital and medical care services.

Unit V: Ethical, current issues and Legal Aspects of Hospitals management services:

Laws related to Hospital – Medico Legal Cases law of Torts – Autopsy – Dying delaration – CPA. – Waste Management – Telemedicine – Organ Transplantation – Rehabilitation Service – Health

Insurance. Operations Research and Quantitative Methods in Hospital Administration & Nursing Services in a Hospital.

COURSE OUTCOMES						
CO1	The student will be able to gain knowledge about infrastructure facilities, clinical services, equipment and Human resources					
CO2	The student will be able to understand how to maintain inpatient services, outpatient services, ICUs, Emergency services, Operation theatres and super speciality services					
CO3	The student will be able know about Manpower planning , training , developing and knowledge about marketing.					
CO4	The student will be able to learn developing and knowledge about marketing					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Management					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAML17CL206	**Clinicals In Histopathology And Cytology: Comprehensive Viva**
	Total Contact Periods – 60
	Total credits -4
	Course Designed by – Department of Pathology

UAML17CT207	**Clinical pathology (Hematology & Urine Analysis – Theory**
	Total Contact Periods – 60
	Total credits -4
	Course Designed by – Department of Haematology
OBJECTIVES	The objective of the course is to make the students able to understand the blood disorders, its lab diagnosis and various types of laboratory tests and to learn the differential diagnosis and appropriate diagnostic evaluation of common hematologic abnormalities.

Unit I:

1) Components of blood and their functions
2) Haematopoietic system of the body
3) Specimen collection for haemotological studies
4) Discarding procedures
5) Cleaning of laboratory glassware in hematology
6) Determination of Hb concentration
7) Calculation of blood cell indices – MCA, MCH & MCHC
8) Estimation of erythrocyte sedimentation rate
9) Estimation of packed cell volume

Unit II:

1) Peripheral smear examination-staining, interpretation, normal & abnormal cells, parasites
2) Reticulocyte count
3) Counting on hemocytometer
4) Automated systems in hematology

Unit III:

1) Approach to the diagnosis of anemia
   a. Screening for sickle cell anemia
   b. Estimation of fetal Hb
   c. Hemoglobin electrophoresis
   d. Osmotic fragility test
   e. Heinz body preparation
2) Lupus erythematosus (LE) cell preparation
3) Approach to the diagnosis of leukemias-Cytochemical tests and other investigations
4) Preparation of bone marrow smears for microscopic examination

Unit IV:

1) Haemostasis
2) Mechanism of blood coagulation
3) Fibrinolysis
4) Bleeding time determination

5) Whole blood clotting time
6) Thrombin time
7) Clot retraction and lysis time
8) Preparation of blood samples for coagulation test
9) PT, PTT, APTT, Plasma recalcification time, thrombin time
10) Lab diagnosis of bleeding disorders

Unit V:

- Urine analysis with manual & strip methods
- CSF analysis
- Analysis of serous fluids, synovial fluids, gastric juice
- Semen analysis

COURSE OUTCOMES						
CO1	Will be able to understand the blood disorders.					
CO2	To understand its lab diagnosis of blood disorders					
CO3	The student will be able know about various types of laboratory tests					
CO4	The student will be able to learn developing and knowledge about marketing					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAML17CL208	**Clinical pathology (Hematology & Urine Analysis – Practical**
	Total Contact Periods – 60
	Total credits -4
	Course Designed by – Department of Haematology
OBJECTIVES	The objective of the course is to make the students able to understand the blood disorders, its lab diagnosis and various types of laboratory tests and to learn the differential diagnosis and appropriate diagnostic evaluation of common hematologic abnormalities.

Note: Exercises / Spotters to be chosen by the examiners

EXERCISE: (3x10=30 marks)

- Smearing peripheral blood, staining with Leishman stain and differential counting (1x10=10 marks)
- Any one of the following: (1x10=10 marks)
  - Urine physical & chemical examination for the presence of reducing sugar, protein, blood, ketone – manual method
  - Urine physical & chemical examination for the presence of reducing sugar, protein, blood, ketone – strip method
- Any one of the following: (1x10=10 marks)
  - Hb estimation by colorimeter
  - Estimation of ESR
  - Total count on hemocytometer
  - Staining of reticulocytes
  - Semiautomated PT
  - Semiautomated aPTT
  - Urine microscopic examination
  - Fluid – Physical examination, Total count
  - Fluid – differential count on a stained smear

SPOTTERS: (5X2=10 marks) (Any five of the following)

- Lab materials – Name & application of each:
  - Vacutainer – Lavender / Blue / Green / Grey topped
  - ESR tube
  - Cuvette
  - PCV tube
  - Pasteur pipette
  - Micropipette
  - RBC pipette
  - WBC pipette
  - Neubauer chamber
  - Bone marrow needle
  - Lancet
- Slide identification:
  - Malaria

- Iron deficiency anemia
- Charts:
  - Microfilaria
  - Reticulocyte
  - Sickle cell
  - Chronic myeloid leukemia

EXAM PATTERN:

Exercise = 30 marks

Spotters / Charts = 10 marks

Viva = 20 marks

COURSE OUTCOMES						
CO1	Will be able to understand the blood disorders.					
CO2	To understand its perform tests on lab diagnosis of blood disorders					
CO3	The student will be able know about various types of laboratory tests					
CO4	The student will be able to interpret blood test results					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAML17CT209	**Blood banking and Immunology – Theory**
	Total Contact Periods – 60
	Total credits -4
	Course Designed by – Department of Haematology
OBJECTIVES	At the end of the course students will be able to learn the basic techniques with clotting mechanisms, blood banking techniques and automation. To perform the various type of tests involved in hematology, Imunohematology, coagulation profile and can handle automated instruments.

Unit I – Immunology

- Introduction to immunology
- Cells of Immune System
- Complement pathway
- Cytokines
- Hypersensitivity reactions
- HLA and Tissue typing
- Blood group genetics
- Elisa, Western blot

Unit II-Introduction to immunohematology-

- Introduction to immunohematology
- Characteristics of antigens – antibodies
- Factors influencing antigen – antibody reactions
- Principles of antibody potentiators
- Direct antiglobulin test
- Indirect antiglobulin test
- Sources of error in antiglobulin test
- Blood banking reagents
- Rroutine testing procedures in immunohematology laboratory
- ABO blood group system
- Rh blood group system
- Other blood groups

Unit III- Blood Banking Technology

- Blood donor selection
- Blood donor reactions
- Blood collection
- Blood component preparation and storage
- Blood component uses
- Pretransfusion testing
- Blood administration
- Adverse reactions of blood transfusion

Unit IV-Transfusion Transmitted Diseases and safety precautions

- Transfusion transmitted diseases

- HIV, HBsAg, HCV, Syphilis and Malaria
- Testing for TTI
- Universal precausions

Unit V- Quality Assurance and Regulation of Blood Bank Industry

- Blood bank licensing issues
- Good manufacturing practices
- Blood bank safety programs
  - Sickle cell
  - Chronic myeloid leukemia
  - LE cell

COURSE OUTCOMES						
CO1	Will be able to understand the basic techniques with clotting mechanisms.					
CO2	To understand blood banking techniques and automation					
CO3	The student will be able to perform the various type of tests involved in hematology					
CO4	The student will be proficient in imunohematology, coagulation profile and can handle automated instruments.					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAML17CL210	**Blood banking and Immunology – Practical**
	Total Contact Periods – 60
	Total credits -4
	Course Designed by – Department of Haematology
OBJECTIVES	At the end of the course students will be able to learn the basic techniques with clotting mechanisms, blood banking techniques and automation. To perform the various type of tests involved in hematology, Imunohematology, coagulation profile and can handle automated instruments.

Note: Exercises / Spotters to be chosen by the examiners

Exercise: Any three of the following: (10x3= 30 marks)

1. Blood grouping & Rh typing
2. Cross matching
3. Direct Coombs test
4. Indirect Coombs test
5. TTI rapid tests
6. Antisera affinity & avidity

Spotters: Any five of the following: (2x5 = 10 marks) (1 mark for identification and 1 mark for mentioning the use)

1. Antisera
2. Gel cards
3. Pasteur pipette
4. Elisa plates
5. Antiglobulin reagents
6. TTI rapid test rate
7. Blood bags – single, double, triple
8. Fresh frozen plasma
9. Platelet concentrate
10. Leukodepletion filters

COURSE OUTCOMES						
CO1	Will be able to understand the basic techniques with clotting mechanisms.					
CO2	To understand blood banking techniques and automation					
CO3	The student will be able to perform the various type of tests involved in hematology					
CO4	The student will be proficient in imunohematology, coagulation profile and can handle automated instruments.					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CT206	**HEALTH CARE MANAGEMENT**
	Total Contact Periods – 60
	Total credits -4
	Course Designed by – Department of Hospital Administration
OBJECTIVES	To Explain the effect of personality, attitudes, perceptions and attributions on their own and other's behaviors in team and organizational settings.

UNIT I: Concept of Health Care and Health Policy

Health in Medical Care, Indigenous systems of Health Care & their relevance, Framework for Health Policy Development.

UNIT II: Health Organisation

Historical development of Health Care System in the third world & India, Organization & Structure of Health administration in India, Type of Health Organization including International Organizations, Private & Voluntary Health care provider, Distribution of Health Care Services, Health Care System in Public sector Organization, Health systems of Various Countries.

UNIT III: Health Policy and National Health Programme

National Health Policy, Drug Policy, National Health Programs (Malaria, T.B., Blindness, AIDS etc.,) Evaluation of Health Programs (Developing indicators for evaluation), Medical Education & Health Manpower Development.

UNIT IV: Health Economics – Fundamentals of Economics

Scope & Coverage, Demand for Health Services, Health as an Investment, Population, health of Economic Development. **Economics of Health-**

Population based health services, Economics of Communicable and Non Communicable diseases

UNIT V: Methods & Techniques of Economic Evaluation of Health Program

Cost Benefit & Cost Effective Methods

- **Household & Health:** Health Expenditure & Outcome, Rationale for Government action, Household capacity, income and schooling
- **Health Insurance.**

COURSE OUTCOMES						
CO1	The student will be able to Develop skills in using materials tools and/or technology central to health care mgt;					
CO2	The student will be able to understand perspectives and values of health care management ;					
CO3	The student will be able to Integrate health care management theory with real world situation					
CO4	The student will be to Develop the ability to work productively with others in diverse teams					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAML17CL212	**Clinical in Clinical pathology and Blood banking: comprehensive viva**
	Total Contact Periods – 60
	Total credits -4
	Course Designed by – Department of Haematology

UAML17CL313	**Paper-I General Bacteriology, Immunology and Systematic Bacteriology – Theory**
	Total Contact Periods – 60
	Total credits -4
	Course Designed by – Department of Microbiology
OBJECTIVES	To give students Basic principles of General Bacteriology and Immunology. Fundamental knowledge about bacterial, viral, parasitic and fungal infections.Techniques involved in diagnostic microbiology – preparation of media, sterilization and disinfections procedures, specimen collection, processing of clinical specimens, serological procedures etc.

Unit 1 : General bacteriology

- **Morphological** classification of bacteria
- **Bacterial cell structure –** cell wall, cytoplasmic membrance, cytoplasm, flagella, fimbriae, nucleic acids, capsule, spore (diagram of bacterial cell structure)
- **Definition of sterilization** and disinfection, classification of physical and chemical methods of sterilization, autoclave, hot air oven filtration, chemical agents of sterilization – alcohol, aldehydes, halogens, phenol, gaseous method of sterilization, surface active agents, quality controls for sterilization procedures

Unit 2: Culture media & methods

- **Culture Media** – Types – simple media, enriched media, enrichment media, selective media, indicator media, sugar media, transport media, anaerobic media (suitable examples)
- **Culture methods** – Aerobic culture method – streak culture, lawn culture, stroke culture, stab culture, inoculation in liquid culture, anaerobic culture media and methods Robertson's cooked meat media, thioglycollate medium, anaerobic jar
- **Identification of bacteria** – staining techniques – grams staining, acid fast staining. **Biochemical reactions –** sugar fermentation and IMViC tests.
- **Antibiotic susceptibility testing** – Kirby Bauer disc diffusion test

Unit 3: Immunology

- Sources and spread of infections
- Immunity – definition types of immunity with examples, vaccines, antibodies – types and functions
- Antigen antibody reactions – precipitation, agglutination, ELISA, immunochromatography.
- Hypersensitivity – definition, types, anaphylaxis

Unit 4: Systemic Bacteriology

- Stahphylococcs, Streptococcus, - morphology,culture characteristics, Laboratory diagnosis
- Niessena – Gonococcus and meningococcus – morphology, culture characteristics
- Gram negative bacilli – Escherichia coli, Klebsiella species, Proteus species, Pseudomonas species, Salmonella species, Shigella species, Vibrio species, Acinetobacter species – Morphology, cultural characteristics, laboratory diagnosis

Unit 5 :

- Mycobacterium tuberculosis – morphology, culture characteristics & Laboratory diagnosis
- Hospital acquired infections – definition, types, source and mode of spread of infection, hospital infection control
- Biomedical waste management – definition, segregation, management
- Universal precautions

COURSE OUTCOMES						
CO1	The student will know basic principles of General Bacteriology and Immunology					
CO2	The student will be have fundamental knowledge about bacterial, viral, parasitic and fungal infections					
CO3	The student will be able to perform Techniques involved in diagnostic					
CO4	The student will be able to perform preparation of media, sterilization and disinfections procedures, specimen collection, processing of clinical specimens, serological procedures etc.					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAML17CL314	**Paper-I General Bacteriology, Immunology and Systematic Bacteriology – Practical**
	Total Contact Periods – 60
	Total credits -4
	Course Designed by – Department of Microbiology
OBJECTIVES	To give students Basic principles of General Bacteriology and Immunology. Fundamental knowledge about bacterial, viral, parasitic and fungal infections.Techniques involved in diagnostic microbiology – preparation of media, sterilization and disinfections procedures, specimen collection, processing of clinical specimens, serological procedures etc.

Unit 1: General Bacteriology

- **Microscope –** Structure, operation, maintenance, types.
- **Staining techniques –** simple staining, Gram staining, Acid fast staining
- **Detection of motility by hanging drop.**
- **Sterilization – Autoclave –** Principle, working, maintenance, Hot air oven – Principle, working, maintenance,Chemical disinfectants – sodium hypochlorite, Iysoformin, phenols, gluteraldehyde, chlorhexidine/betadine (Povidine iodine)-uses

Unit 2: Culture Media & Culture methods

- **Culture Media –** Types – simple media, enriched media, enrichment media, selective media, indicator media, sugar media, transport media, anaerobic media – **Preparation, sterilization and uses**
- **Culture methods –** Aerobic and anaerobic culture methods – Techniques
- **Identification of bacteria –** biochemical reactions preparation and inoculation and interpretation
- **Antibiotic susceptibility testing –** Kirby Bauer disc diffusion test

Unit 3: Immunology

- Serological tests – agglutination tests – Latex agglutination, tube agglutination
- Immunochromatography – Rapid card tests.
- ELISA (Enzyme linked immunosorbent assay)
- Mantoux test – Administration (type IV hypersensitivity)

Unit 4: Systemic Bacteriology

- Staphylococcus, Streptococcus – Microscopy, colony morphology, identification
- Neisseria – Gonococcus and meningococcus – Microscopy
- Gram negative bacilli – Escherichia coli, Klebsiella species, Proteus species, Pseudomonas species, Salmonella species, Shigella species, Vibrio species – Microscopy, cology morphology, Identification
- Mycobacterium tuberculosis – Microscopy, colony morphology, identification

Unit 5: Applied Microbiology

- Hospital acquired infections – definition, types, source and mode of spread of infection, hospital infection control – charts

- Biomedical waste management – spotter & charts
- Universal precautions – spotters & charts
- Drinking water analysis / Milk analysis

Allergen testing

COURSE OUTCOMES						
CO1	The student will be able to maintain the aseptic facilities					
CO2	have good knowledge about pathogenic microbes and their related assays					
CO3	Students will be able to maintain good laboratory practice to be followed in a lab					
CO4	The student will be able to perform preparation of media, sterilization and disinfections procedures, specimen collection, processing of clinical specimens, serological procedures etc.					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAML17CT315	**Paper –II Virology, Mycology and Parasitology – Theory**
	Total Contact Periods – 60
	Total credits -4
	Course Designed by – Department of Microbiology
OBJECTIVES	The objective of the course is to instill sound knowledge of pathogenic microbes, laboratory diagnosis, basic understanding of virology, mycology, & advanced serological techniques.

Unit 1 : General virology

- General properties of viruses – Basis structure of the virus, classification of viruses, viral multiplication
- Cultivation of viruses – Animal inoculation, embryonated eggs, tissue cultures
- Laboratory diagnosis of viral infections – Briefly on Microscopy detection of viral antigens and antibodies, isolation of virus, molecular diagnosis.
- Viral vaccines – Live and killed viral vaccine routinely administered

Unit 2: Medically important viruses I

- Mode of transmission, clinical manifestations, and preventive measures.
    1. Herpes simplex viruses (HSV I & II)
    2. Influenza virus
    3. Polio virus
    4. Measles.

Unit 3: Medically important viruses II

- Mode of transmission, clinical manifestations, and preventive measures.
    1. Dengue
    2. Japanese B encephalitis
    3. Chikungunya
    4. Hepatitis
    5. HIV

Unit 4: Medically important fungi

- Morphology & infections caused by – Candida species, Dermatophytes, Aspergillus species, Mucor & Rhizopus.
- Culture media and staining methods used in identification of fungi

Unit 5: Medically important parasites-

- Etiology, mode of transmission, sample to be collected – Ameobiasis, malaria, tape, worms, round worm, hook worm, filarial worm infections, pin worm, strongyliodes & whip worm infections.
- Stool examination, Peripheral blood smear examination

COURSE OUTCOMES						
CO1	The student will be able to maintain the aseptic facilities					
CO2	have good knowledge about pathogenic microbes and their related assays					
CO3	Students will be able to maintain good laboratory practice to be followed in a lab					
CO4	The student will be able to perform preparation of media, sterilization and disinfections procedures, specimen collection, processing of clinical specimens, serological procedures etc.					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAML17CL316	**Paper –II Virology, Mycology and Parasitology – Theory**
	Total Contact Periods – 60
	Total credits -4
	Course Designed by – Department of Microbiology
OBJECTIVES	The objective of the course is to instill sound knowledge of pathogenic microbes, laboratory diagnosis, basic understanding of virology, mycology, & advanced serological techniques.

- Sample collection-blood collection, serum separation, collection of other required specimens
- Rapid card tests & ELISA for detection of antigens and antibodies
- Fungal media preparation and inoculation – Sabouraud's Dextrose Agar, Corn meal agar.
- Staining techniques – LPCB mount, KOH mount
- Stool concentration techniques, identification of ova cyst in stool samples by saline and iodine mount,
- Peripheral blood smear – Preparation, Leishman's staining

COURSE OUTCOMES	
CO1	The student will be able to maintain the aseptic facilities
CO2	have good knowledge about pathogenic microbes and their related assays
CO3	Students will be able to maintain good laboratory practice to be followed in a lab
CO4	The student will be able to perform preparation of media, sterilization and disinfections procedures, specimen collection, processing of clinical specimens, serological procedures etc.

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES

COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CT207	**PHYSICIANS OFFICE MANAGEMENT**
	Total Contact Periods – 60
	Total credits -4
	Course Designed by – Department of Nephrology
OBJECTIVES	•To promote scientific management of hospital and advancement of health care systems so as to make it rational, responsive and cost efficient

UNIT I. Outpatient Section

Registration of new cases, Registration of repeat cases, Patient record guide, Laboratory X-Ray reports & reports & reports filing, Alpha index typing & Filing, O.P. Records coding (disease & indexing), O.P. records retrieval, O.P. Statistics

UNIT II. Inpatient Section

Admitting office procedure, Inpatient record removal & forwarding, Ward Census,

UNIT III. Assembling & deficiency checks, I.P. record coding & indexing,

UNIT IV. Discharge Analysis

Incomplete record control, Completed record control, Medico legal procedures & issue of Medical certification, Record retention & destruction of O.P. & I.P. records,

UNIT V. Miscellaneous

Hospital reception, Secretarial practice, Library (Medical)

REFERENCE BOOKS

- Financial Management of the Medical Practice ,J. Max Reiboldt, American Medical Association
- Saunders Medical Office Management,Alice Anne Andress CCS-P CCP

COURSE OUTCOMES						
CO1	The student will be able to Understand and apply resource management concepts (personnel, finance, and material resources) and the processes and strategies needed in specific hospital sectors					
CO2	The student will be able to Communicate effectively and develop their leadership and teambuilding abilities					
CO3	Apply modern change management and innovation management concepts to optimize structures					
CO4	The student will be to Analyze existing hospital service policies and enhance their alignment within the local and national context					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAML17CL318	**CLINICALS IN GENERAL BACTERIOLOGY, IMMUNOLOGY, VIROLOGY AND MYCOLOGY: COMPREHENSIVE VIVA**
	Total Contact Periods – 60
	Total credits -4
	Course Designed by – Department of Microbiology

UAML17CT319	Clinical Chemistry Paper-I – Theory
	Total Contact Periods – 60
	Total credits -4
	Course Designed by – Department of Biochemistry
OBJECTIVES	This course is designed to equip the students with essential all the laboratory equipment and know how to maintain them.to make them aware of the safety protocols and guidelines to be adhered in a laboratory setup

Unit I

1. Role of a lab technician in Clinical Biochemistry lab.
2. Lab utensils: Beaker, Funnels, graduated cylinders, flasks, Volumetric flasks, Syringes, Pipettes, Micro pipettes, Multi – channel pipettes, Dilutors & dispensers. Quality control of micropipettes, Quality control validation for performance of pipettes.
3. Lab plastic & glass ware composition and cleaning.
4. Laboratory safety: Guidelines of OSHA, general safety (Fire, Electrical safety), Chemical Hygiene plan, Storage of chemicals, Labelling & Handling requirements, Waste generation & disposal

Unit II:Units of measurement

Measurement of mass – basic quantities and units of SI. SI derived units used in medicine. Types of balances – maintenances of balance.

Basic calculations in Laboratory. Normality, Molality, Molarity, Dilutions – per cent concentration (wt/w, v/v, w/v), pH, pk, buffer preparation.

Water as reagent – Reagent grade water – purification process – Grade of water purity – siorage & handling of reagent water – suggested uses of reagent water – Quality control – system documentation & record keeping

Unit III: Instrumentation

Centrifuges – principles of centrifugation – centrifuge types, components, maintenance and quality assurance Water bath, Oven, Incubator – thermometer, calibration and maintenance

Photometry – principles of photometry. Components & applications of colorimeter. Spectrophotometer, Flame photometer, Nephlometer try, turbidimetry & reflectance photometry

Enzymes definition, action, and kinetics

Unit IV

Electrochemistry: Principles and measurements of electrochemistry & electro analytical chemistry. Putenticrnetry, Voltametry coulometry methods – Principles, components, usage, advantages & disorder.

Electrophoresis – Principles, components, procedure, types, clinical application & interpretation of the data

Unit V

1. Chromatography – Principles, components, procedure, types, clinical application
2. Immunochemistry techniques – Principles of immunochemistry, detectors needed sensitivity & specificity – Elisa, Chemiluminscence, fluorescence assays.
3. Semi automatic, Automatic – Overview, Principles and methodologies used.

COURSE OUTCOMES						
CO1	Students will be able to identify all the laboratory equipment and know how to maintain them.					
CO2	They will be aware of the safety protocols and guidelines to be adhered in a laboratory setup					
CO3	Students will be able to maintain good laboratory practice to be followed in a lab					
CO4	The student will be able to perform fundamental assays in clinical chemistry.					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAML17CL320	Clinical Chemistry Paper-I – Practical
	Total Contact Periods – 60
	Total credits -4
	Course Designed by – Department of Biochemistry
OBJECTIVES	This course is designed to equip the students with essential all the laboratory equipment and know how to maintain them.to make them aware of the safety protocols and guidelines to be adhered in a laboratory setup

Unit I – Pipetting & Weights and Measurements: Principles of weighing, usage of pipettes, pipetting

Practice – principles of weight – preparation of solutions, Normality – molality – molarity – Dilution – percentage (V/V, W/V, V/W)

Unit II – pH and Buffers – Preparation of different buffers – measurements of pH (pH paper, pH meter)

Unit III – Standardisation of Biochemical substances – Glucose, Urea, Creatinine

Unit IV – Estimation of Glucose, Urea, Creatinine, total protein, Albumin

Unit V – Charts / Spotters / Case Studies

1. Lab safety
2. Grading of reagent water
3. Conversion of Units
4. Calculation in Biochemistry
5. Waste generation St Disposal
6. PH
7. Buffer
8. Standardisation curve
9. Serum Protein Electrophoresis
10. Instrumentation – Identification

COURSE OUTCOMES						
CO1	Students will be able to identify all the laboratory equipment and know how to maintain them.					
CO2	They will be aware of the safety protocols and guidelines to be adhered in a laboratory setup					
CO3	Students will be able to maintain good laboratory practice to be followed in a lab					
CO4	Students will be able to prepare and standardize various components required for various biochemical assays					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**

1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAML17CL321	Clinical Chemistry Paper-II – Theory(UE)
	Total Contact Periods – 60
	Total credits -4
	Course Designed by – Department of Biochemistry
OBJECTIVES	This course is designed to make Students will be well versed with pre analytical techniques and the protocols involved, well acquainted with various blood parameters and their biological interval significance. Also make them learn the quality control measures adapted for various assays

Unit I: Pre – analytical – Blood Collection – Types of blood sample – Preservatives & anti-coagulants – Errors related to it Vacutainer system procedures to decrease phlebotomy related variables – Patient identification sample collection – Past collection cause – sample transportation – Procedure to minimize sample transportation errors – use of mechanical transporters – sample processing – procedures – Pre analytical variables in urine collections – pre-analytical variables in other body fluids – Blood collection for inborn errors of Metabolism – criteria for rejection of specimens

Unit II: Analytical-

1. Overview of glucose homeostasis, Definition of Diabetes, overview of pathophysiology, Type I, II, GDM, Pre-Diabetes. Methodologies, comparison of methodologies, reference level. Diagnostic guidelines – Glucose, Insulin, C-Peptide, Glucose Tolerance test Determination, usage of HbA1C methodology to estimate.
2. Lipid Profile: Definition of lipid, Over view of types of lipid, distribution, their role in the L6L' – Estimation of Total Cholesterol, triglycerides, HDL Cholesterol, LDL Cholesterol, VLDL Cholesterol – Methodology – Reference level – Diagnostic guidelines.
3. Liver Profile – Overview of Liver damage and the tests to identify it – total protein, Albumin, Bilirubin (Total & Direct), ALT, AST, ALP & GGT – Methodology – Reference level.
4. Renal Profile – Overview about Renal function, GFR, tubular function tests.
5. Minerals: Role of minerals in health – estimation of calcium, phosphorus, Magnesium, Iron, copper – Methodology – Reference level – interpretation of data.

Vitamins: Estimation of Folic acid, Vitamin B12 Vitamin D, Vitamin K, Vitamin B b6-methodology – Reference level – interpretation of data

Unit III: Special Investigations: Hormones

Thyroid Gland Regulation, Test to Identify Thyroid disorder (T3, T4, FT3, FT4, TSH), Methodology and interpretation, Role of PTH in our Body, Tests to identify parathyroid disorder, PTH (free and Intact) Interpretation, Tests for Infertility LH, FSH, Prolactin, Estradiol, Testosterone (Free & total), B HCG interpretation, Methodologies existing, Hormone analysis

Unit IV: Other Special Investigations

- Tumour markers – Investigation for Myocardial Infraction – Investigation for acute Pancreatitis – Acid – base abnormality – Anion Gap
- Nutritional assessment – Negative Nitrogen Balance – Positive Nitrogen Balance

Unit V: Quality Control:
Sensitivity – Specificity – Linearity – Accuracy & Precision, Primary Standard, Secondary standard, Calibration – Internal Quality control indicators, External Qualtiy Control Program, test utilization and turn around time, around time, Regulations for Lab (by Indian Govt Internatior: Guideliness). Hospital management structure – organisation of clinical lab, Communication within the total hospital, communication within the lab, Personal Management, Work Scheduling, Continuous Quality improvement – Continuing education – resource management (Lab staff, reagents, supplies & capital equipment).

COURSE OUTCOMES						
CO1	Students will be well versed with pre analytical techniques and the protocols involved					
CO2	Students will be well acquainted with various blood parameters and their biological interval significance.					
CO3	They will also learn the quality control measures adapted for various assays					
CO4	Students will be able to prepare and standardize various components required for various biochemical assays					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAML17CL322	**Clinical Chemistry Paper-II – Practical**
	Total Contact Periods – 60
	Total credits -4
	Course Designed by – Department of Biochemistry
OBJECTIVES	This course is designed to make to perform various assay to estimate enzymes and other blood parameters

Unit I-Estimation of Bilirubin, Cholesterol, Triglycerides, Uric Acid, Calcium, Phosphorus

Unit II-Estimation of Enzymes amylase, Alkaline Phosphatrase, Lipase

Unit III-Electrophoresis – Agar gel Electrophoresis – serum Protein Electrophoresis Identification and interpretation

Unit IV-Chromatography – Circular paper chromatography – separation of Aminoacids & Sugars and calculation of Rf values

Unit V-Charts/Spotters/Case Studies

- Preservatives
- Anti-coagulants
- Types of Samples
- Vaccutainers
- Blood Collection
- Reference interval
- Glucose Tolerance test graphs
- Interpretation of Routine tests
- QC materials
- Guideline tor regulation of Lab

COURSE OUTCOMES						
CO1	Students will be well versed with pre analytical techniques and the protocols involved					
CO2	Students will be well acquainted with various blood parameters and their biological interval significance.					
CO3	They will also learn the quality control measures adapted for various assays					
CO4	Students will be able to prepare and standardize various components required for various biochemical assays					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAML17CT323	**TRAUMA LIFE & CARDIAC LIFE SUPPORT**
	Total Contact Periods – 60
	Total credits -4
	Course Designed by – Department of Cardiology
OBJECTIVES	To get knowledge about handling and management of trauma cases likemusculoskeletal , head, and thermal burns

UNIT I. TRAUMA LIFE (Part 1)

- BLS
- TRIAGE
  a. Primary Survey
  b. Secondary Survey
- Airway & Ventilatory management
- Shock
- Central & peripheral venous access
- Thoracic trauma – Tension pneumothorax
- Other thoracic injuries
- Abdominal trauma – Blunt injuries
- Abdominal trauma – Penetrating injuries

UNIT II. TRAUMA LIFE (Part 2)

- Spine and spinal cord trauma
- Head trauma
- Musculoskeletal trauma
- Electrical injuries
- Thermal burns
- Cold injury

UNIT III. TRAUMA LIFE (Part 3)

- Paediatric trauma
- Trauma in pregnant women
- Workshop BLS
- Workshop cervical spine immobilization
- Imaging studies in trauma

UNIT IV. CARDIAC LIFE SUPPORT (Part 1)

- BLS
- The universal algorithm for adult ECC
- Ventricular fibrillation/Pulseless ventricular tachycardia algorithm
- Pulseless electrical activity (PEA) / asystole algorithm
- Bradycardia treatment algorithm
- Tachycardia Treatment algorithm

UNIT V. CARDIAC LIFE SUPPORT (Part 2)

- Hypotension / Shock
- Acute myocardial infarction
- Paediatric Advanced life support
- Airway management
- Defibrillation
- Drugs used in ACLS
- Emergency Cardiac pacing
- AED
- Techniques for oxygenation and ventilation

REFERENCE BOOKS:

- ECG Made Easy –AtulLuthra
- Reference by PGDCC – IGNOU Handbooks for ECG, ECHO and Stress Test
- An Introduction to Electrocardiography:Schamroth Colin
- Clinical Electrocardiography: Goldberger. A

COURSE OUTCOMES	
CO1	The student will be able to know basic knowledge about BLS and triage
CO2	The student will be able to understand the Handling and management of Airway ventilator and shock
CO3	The student will be able to Know about handling of Paediatric trauma cases
CO4	The student will be to know about Abdominal trauma in blunt injuries and penetrating injuries

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES

COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAML17CL324	**Clinical in Clinical Chemistry: comprehensive viva**
	Total Contact Periods – 60
	Total credits -4
	Course Designed by – Department of Biochemistry
OBJECTIVES	

PROGRAMME ELECTIVE							
		COURSE		TEACHING HOURS			
SI NO	SEMESTER	**COURSE CODE**	**COURSE TITLE**	**L**	**T**	**P**	**CREDITS**
1	I	UAH17CE1020	Fundamentals of Biostatistics	4	4		2
2	I	UAH17CE1021	Communication skills for Health Care professionals	5	5		2
3	II	UAH17CE1022	Biomedical Ethics	3	3		2
4	II	UAH17CE1023	Fundamentals of Human Genetics	4	4		2
5	III	UAH17CE2024	Principles and application of Clinical Genetics	6	4	2	2
6	III	UAH17CE2025	Clinical Examination of the HumanVisual System	5	3	2	2
7	IV	UAH17CE2026	Personality Development and Stress Management	4	4		2
8	IV	UAH17CE2027	First Aid Management & Splinting Techniques	6	4	2	2
9	V	UAH17CE3028	Essentials of Medical Transcription	7	7		2
10	V	UAH17CE3029	Communication and Soft Skill	7	7		2
11	VI	UAH17CE3030	Professional skills Development	6	6		2
12	VI	UAH17CE3031	Library Science and E-Resources	6	6		2

UAH17CE1020	**FUNDAMENTALS OF BIOSTATISTICS**
	Total Contact Periods – 4
	Total credits -2
	Course Designed by – Department of Community Medicine
OBJECTIVES	The course will offer basic knowledge about Biostatistics and to correctly apply a variety of statistical procedures and tests according to objective of study

UNIT I: Introducing the Basics

Introduction, Graphical representation of data, Data collection, Diagrammatic and Graphical Presentation of data, Types of data, limitations.

UNIT II: Measures of Central Tendency & Dispersion

Measures of Central Tendency; Mean, Median, Mode, Geometric mean, Harmonic mean for raw data. Measures of dispersion; Quartile deviation, Mean Deviation - Standard Deviation - Coefficient of variation- Range

UNIT III: Probability

Introduction to Probability, Theorems of probability; Bayer‘s Theorem, Probability Distributions; Discrete & Continuous distributions, Binomial Distribution, Poisson Distribution, Normal Distribution.

UNIT IV: Correlation & Regression Analysis

Correlation Analysis, Types of correlation; Rank Correlation Coefficient. Regression analysis, Types of Regression, Assumptions; Comparison to Correlation.

UNIT V: Hypothesis Testing

Introduction; Types of sampling, Hypothesis testing; Type of errors, Parametric & Non-parametric tests; Mann Whitney’s U test, Chi-square, t-tests, ANOVA.

REFERENCES

1. Don. Mc Neil - Epidemiological Research Methods - Oxford University Press, London.

2. Biostatistics –Principle & Practice – McGraw Hill Education.

3. http://www.ats.ucla.edu/stat/

4. Ahttp://www.statsoft.com/textbook/basic-statistics/

COURSE OUTCOMES						
CO1	The student will be able to understand and apply the Biostatistics.					
CO2	The student will be able to use the software independently for the data analysis.					
CO3	The student will be able determine the correct procedures to use in a given situation					
CO4	The student will be able to interpret the results of hypothesis tests					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Management					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE1021	**COMMUNICATION SKILLS FOR HEALTH CARE PROFESSIONALS**
	Total Contact Periods – 5
	Total credits -2
	Course Designed by – Department of Community Medicine
OBJECTIVES	This course deals with essential functional English aspects of the of communication skills essential for the health care professionals.

UNIT: I APPLIED GRAMMAR

Identifying common errors in sentences, Transformation of sentences, Usage of either …or…, Neither… nor…, So… that…, Such… that…, Not only… but also…, unless…

UNIT: II VOCABULARY

Abbreviations used in healthcare, Medical idioms & Phrases

UNIT: III WRITING

Letter writing, Curriculum Vitae writing, covering letter, Creative writing – invite, posters, Essay writing, summary writing, note taking, report writing.

UNIT: IV SPOKEN COMMUNICATION

Telephone etiquette, Importance of Stress, Intonation and rhythm, speaking; describing simple process, Filling a form etc., - Asking and answering questions; Debate/Oral Reporting

UNIT: V LISTENING AND READING SKILLS:

Listening and reading comprehension exercises.

Textbook Recommended:

1. Effective English Communication by Krishna Mohan and Meenakshi Raman, Tata Mc Graw –Hill Publishing Company Limited, New Delhi.

2. English for Colleges and Competitive Exams by Dr. R. Dyvadatham, Emerald Publishers.

COURSE OUTCOMES						
CO1	The student will be able to express better.					
CO2	The student will be able to get knowledge about MOA, adverse effects					
CO3	The student will Grow personally and professionally					
CO4	The student will Develop confidence in every field					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE1022	**BIOMEDICAL ETHICS**
	Total Contact Periods – 3
	Total credits -2
	Course Designed by – Department of Community Medicine
OBJECTIVES	To provide basic skills in: A) Approaching ethical issues. B) Analysis and statement of issues. C) Understanding the relevant ethical principles invoked..

Introduction to Bioethics

Bioethical issues related to Healthcare &Medicine 5

2Anatomy - Cadaver ethics, Human dignity, PNDT, Disposal of cadaver, Genetic Counseling 7

Physiology - Animal ethics, Health policy privacy 7

Biochemistry & Pathology - Prudence of investigation confidentiality, Patients bill of rights,

Disposal of investigative material, Integrity, Blood transfusion 5

Pharmacology - Rational drug prescribing, Clinical trials, Risk minimization, Animal

ethics

Microbiology - Hand wash, Drug resistance minimization, Prudence of investigation

confidentiality, Sterilization procedure, Biosafety and bio hazard 5

Medicolegal aspects of medical records

Introduction to Intellectual Property:

Concept of Intellectual Property Kinds of Intellectual Property

Patents, CopyrightsDesigns, Trademarks,Geographical Indication, Infringement of IPR, Its protection and

Remedies Licensing and its types

REFERENCE BOOKS

1. Contemporary issues in bioethics – Beauchamp &walters (B&W) 4th edition.

2. Classic philosophical questions by Gloud (8th Edition)

3. Case book series and booklets by UNESCO Bioethics Core curriculum 2008

4. Encyclopedia of Bioethics 5 vol set, (2003) ISBN-10: 0028657748

5. Intellectual property rights- Ganguli-Tat McGrawhill. (2001) ISBN-10: 0074638602,

6. Intellectual Property Right- Wattal- Oxford Publicatiopn House.(1997) ISBN:0195905024.

COURSE OUTCOMES						
CO1	The students will be able to: Recognize what constitutes an ethical concern in health care					
CO2	The student will be able to understand the clinical evaluations of Disease Condition					
CO3	The student will be able to Understand better the complexity and multi-dimensionality of medical ethical concerns and uniqueness of each problem.					
CO4	The student will get the knowledge of plagiarism in their innovations which can be questioned legally					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE1023	**FUNDAMENTALS OF HUMAN GENETICS**
	Total Contact Periods – 4
	Total credits -2
	Course Designed by – Department of Genetics
OBJECTIVES	To Comprehend the Chromosomal basis of inheritance

I - Introduction to cellular components

Structure and morphology of various types of cells - Biochemical composition - Cellular organelles - Composition and components of nucleus - Chromosomes - Cell division and Mechanics of cell division and regulation.

II - Structure and functions of nucleic acids

Functions, Structure and characteristics of nucleic acids - Types of mutations -Genetic variations and polymorphisms

III - Chromosomal basis of inheritance

Chromosome behavior and inheritance pattern in man - Single gene Mendelian disorders: autosomal dominant, recessive, sex linked dominant and recessive - Polygeneic and mitochondrial inheritance.

III - Origin and detection of genetic disorders

Mutation - Non-disjunction - Chromosomal abnormalities and clinical phenotypes of common genetic syndromes (Down's syndrome, Patua‘s syndrome, Edward syndrome, Turner syndrome and Klinefelter's syndrome, Cri-du-caht syndrome)- Karyotyping, Neural tube defects, Carcinogenesis.

IV–Biochemical basis for the inborn errors of metabolism

General characteristics of inborn errors of metabolism – Incidence - etiology - Folic acid metabolism - triple markers - New born screening, prevention and management. False positive and false negative -Ethical principles of Genetic counseling for prenatal diagnosis - Fetal rights – Regulation and prevention of misuse act 1994.

Reference books

1. A guide to genetic counseling, 2nd edition, D.L. Baker, J.L. Schuette and W.R. Uhlmann, Wiley –Leiss Publications 2002.

2. Emery Elements of Medical Genetics, 9th edition, Robert F. Mueller & Ian D. young, Churchill Livingstone, 1995.

3. Medical Genetics, 3rd edition, Lynn B. Jorde, John C. Carey, Michael J. Bamshad, & Raymond L. White, Mosby, 2003.

COURSE OUTCOMES	
CO1	The student will be able to Be able to describe the chromosomal basis of inheritance and how alterations in chromosome number or structure. . .
CO2	The student will be able to understand of the differences and similarities between diagnostic, predictive and carrier genetic testing.
CO3	The student will be able to know detailed information of Chromosome behavior and inheritance pattern in man
CO4	The student will be to understand the phenotype and genotype .

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE2024	**PRINCIPLES AND APPLICATION OF CLINICAL GENETICS**
	Total Contact Periods – 6
	Total credits -2
	Course Designed by – Department of Nephrology
OBJECTIVES	To develop awareness about Genetic testing, Genetic counseling, Philosophy and Ethos of Genetic services

I -Principle and components of genetic testing Lay out of genetic laboratories - Genetic testing, Genetic counseling, Philosophy and Ethos of Genetic services, Types of testing- Cytogenetic testing- Molecular cytogenetic testing- DNA testing.

II - Cytogenetic testing Indications, Type of sample, Sampling and transport conditions, Karyotyping - chromosome identification, merits and demerits of conventional cytogenetic testing

III - Molecular Cytogenetic testing

Indications, Type of sample, Sampling and transport conditions - Fluorescence in-situ hybridization, fluorescence signal enumeration, merits and demerits of FISH.

IV - DNA testing

Organization of human genome, Structure and function of genetic material, Polymerases chainmreaction - Types, principles and testing, Sequencing.

V - Practical:

Case studies

Reference books

1. Practical Genetic counseling, Peter S. Harper, 6th edition, Hodder Headline Group 2004.

2. Medical Genetics, 3rd edition, Lynn B. Jorde, John C. Carey, Michael J. Bamshad, &

Raymond L. White, Mosby, 2006.

3. Genetics in Medicine, Thompson & Thompson, 6th edition, Elsevier 2004.

4. Practical Genetic counseling, Peter S. Harper, 6th edition, Hodder Headline Group 2004.

COURSE OUTCOMES						
CO1	The student will be able to become familiar with and practice genetic tests.					
CO2	The student will be able to provide better patient care					
CO3	The student will be able to know detailed information about Genetic Counselling					
CO4	The student will be to know about Genetic testing.					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE2025	**CLINICAL EXAMINATION OF THE HUMANVISUAL SYSTEM**
	Total Contact Periods – 5
	Total credits -2
	Course Designed by – Department of Opthalmology
OBJECTIVES	The core objective of this course is to gain in depth knowledge on the structural and physiological functions of the various parts of the eye and the different examination procedures for the ocular structures.

: **I - History Taking**

Importance of history taking, Demographic data and its importance, Chief presenting symptoms, History of present illness, History of past illness, Family History, Common ocular symptoms and their causes – defective vision, watering eyes, discharge, redness, pain, asthenopia and other symptoms

II - Visual Acuity measurement

Distance visual acuity-charts, methods and measurements; Near visual acuity –charts, methods and measurements; contrast sensitivity testing; colour vision testing

III - External Examination

Examination of head posture, examination of forehead, examination of eye brows, examination of eyelids, examination of Lacrimal apparatus, examination of eyeball on the whole, examination of the cornea, conjunctiva sclera and anterior chamber, eye movements, muscle balance and squint evaluation

IV - Anterior segment Evaluation

Slit lamp examination of the eyelids, cornea, conjunctiva, anterior chamber depth, iris, and lens Intraocular pressure measurements using non contact tonometer

V - Posterior segment Evaluation

Introduction and importance of posterior segment evaluation- direct and indirect ophthalmoscopy

REFERENCE BOOKS:

1. Comprehensive Ophthalmology – A K Khurana, 5th edition, New Age International Publishers,

2012.

2. Clinical Ophthalmology – Jack J Kanski, 7th edition, Butterworths, 2012

1. Borish's Clinical Refraction - William J. Benjamin, Irvin M. Borish, Butterworth-Heinemann, 2006

COURSE OUTCOMES						
CO1	The student will be able to have the skill to perform basic ophthalmic examination					
CO2	The student will be able to understand concept of theory and clinical evaluation of disease conditions gain an in- depth knowledge on disease outline and clinical evaluation of patients					
CO3	The student will be able to depth knowledge on the functions of the visual system					
CO4	The student will have the skill to perform basic ophthalmic examination					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE2026	**PERSONALITY DEVELOPMENT AND STRESS MANAGEMENT**
	Total Contact Periods – 4
	Total credits -2
	Course Designed by – Department of HR
OBJECTIVES	• To Explain the effect of personality, attitudes, perceptions and attributions on Health stress, coping and relaxation.

Unit 1

Introduction to Personality Development, Different Stages of Development, Types of personalities, personality perspectives and theories

Unit 2

How needs impact personality, Maslow‘s hierarchy of need, Basic Personality Traits; Values, Beliefs, Interactions, Experiences, Environmental influences, the big five dimensions.

Unit 3

Stress; causes, effect and types, Stress resistant personalities, Relaxation; training aspects importance and Body works.

Unit 4

Health stress and coping, Understanding and communicating our health needs, Behavioral and psychological correlates of illness.

Unit 5

Soft skill; need and importance, Personality development and soft skills. Effective communication, listening, speaking, writing, interpretation part of soft skills and personality

Learning Outcome:

By successfully completing this course, students will be able to Describe how a personality develops.

- Define the stages of personality development.
- Define personality types.
- Describe basic personality traits.
- Personality and stress.
- Health stress, coping and relaxation.
- Soft skills and personality.

Text Books:

1. Hurlock (1976). Personality development. Tata McGraw Hill.

2. Baron R A, Psychology 5th edition, Pearsons publication.

3. Abraham A, General Psychology, Tata Mc Graw hill Education private limited.

Reference Books:

1. Lazarus J Stress Relief and Relaxation Techniques, Viva Book Private limited.

2. Shelly E. Taylor, Health psychology, 7th edition, TATA McGrawHil, New Delhi.

COURSE OUTCOMES						
CO1	The student will be able to Define the stages of personality development.					
CO2	• The student will be able to Describe basic personality traits.					
CO3	The student will be able to Describe how a personality develops- Personality and stress.					
CO4	The student will be able to Develop the Soft skills and personality.					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Management					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE2027	**FIRST AID MANAGEMENT & SPLINTING TECHNIQUES**
	Total Contact Periods – 6
	Total credits -2
	Course Designed by – Department of Medicine
OBJECTIVES	Students will gain additional skills in interventional procedures and Differentiate between emergency situation and other use.

Unit-I BACKGROUND INFORMATION

- The importance of first Aid
- First aid supplies
- First aid and the law
- Prevention practices

Unit-II ACTION AT AN EMERGENCY

- Recognizing Emergencies
- Deciding to act
- Seeking medical care
- Disease transmission
- Rescuer reactions

Unit –III BLEEDING AND WOUNDS

- External bleeding
- Wound infection
- Amputations
- Impaled objects
- Wound that require medical care
- Internal Bleeding
- Dressing and Bandages

Unit-IV BONE, JOINT AND MUSCLE INJURIES

- Bone injuries
- Splinting
- Joint injuries
- RICE injuries
- Muscle injuries
- Splints – Introduction, Types, Uses, Splinting guidelines, Slings, Procedure,Complications

UNIT-V RESCUING AND MOVING INJURIES

- Water rescue

- Ice rescue
- Electrical Emergency Rescue
- Hazardous materials incidents
- Motor Vehicle crashes
- Fires
- Confined spaces
- Triage – what to do with multiple victims
- Moving victims

Text books:

1 .First Aid CPR and AED standard (sixth edition)

2. First aid book-St Johns Ambulance services

3. Text book of Orthopaedics – Natarajan

4. Text book of Orthopaedics – John Ebenezer Reference books: First Aid and Management of Minor Injuries by Jon Dallimore First Aid and Beyond by Dan Wolfe - Smashwords , 2014 International Trauma Life Support Provider Manual Essentials Orthpaedics Mark D Mille

COURSE OUTCOMES	
CO1	The student will be able to Differentiate between emergency situation and other use.
CO2	The student will be able to know about the basics of concepts of disease & outlines of clinical evaluation.
CO3	The student will be able to List management, assessment, and care steps for upper extremity and lower extremity fractures.
CO4	The student will be to know Splinting techniques of lower extremities –Thomas splint, sam splint, etc

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE3028	**ESSENTIALS OF MEDICAL TRANSCRIPTION**
	Total Contact Periods – 7
	Total credits -2
	Course Designed by – Department of MRD
OBJECTIVES	Provide Hands on training on English Language and listening comprehension and provide foundation to learn medical terminology & learn laboratory report

Unit 1

The Medical Transcriptionist‘s career including Ethical& Legal Responsibilities Introduction to Medical transcription, Job Opportunities,Transcription Skills, Medical records, Certification for Medical Transcriptionists, Ethical and Legal responsibilities

Unit 2

Equipments in Transcription Equipment, Computer Systems, Ergonomics, Dictation Equipments, Hand and Foot control Dictation, Transcription Preparation

Unit 3

Transcription Guidelines Punctuations, Proof reading notations, Formats and styles, SOAP for Chart notes; Discharge Summary

Unit 4 PRACTICAL:

1. Equipments for Medical Transcription,2. Typing for the beginners, 3. Vocabulary, 4. Proof reading Notations , 5. Formats and styles in document preparation , 6. Preparation of chart notes, 7. Listening Comprehension, 8. Transcription check off sheet

References Books:

1. Medical Key boarding, Typing, and Transcribing Techniques and procedures 4th Edition, March Otis Diehl, Marilyn Takahashi Fordney, W.B. Saunders Company
2. The AAMT Book of Style for Medical Transcription, Claudia J. Tessier

3. CD‘s available for:

a. Stedman‘s Electronic Medical Dictionary 4.0

b. American Drug Index 2003

Text Books:

1. Medical Key boarding, Typing, and Transcribing Techniques and procedures 4th Edition, March Otis Diehl, Marilyn Takahashi Fordney, W.B. Saunders Company

2. The AAMT Book of Style for Medical Transcription, Claudia J. Tessier

COURSE OUTCOMES	
CO1	The student will be able to Demonstrate their basic skills in the knowledge of Vocabulary, Medical terminology
CO2	The student will be able to Demonstrate their basic skills in the preparation of chart notes. .
CO3	The student will be able to Demonstrate skills in listening comprehension
CO4	• The student will be Be able to identify accurate format for medical document preparation

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Medical Records					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE3029	**COMMUNICATION AND SOFT SKILL**
	Total Contact Periods – 7
	Total credits -2
	Course Designed by – Department of Human Resources
OBJECTIVES	This course is designed to equip the students with essential soft skills needed for workplace and improve personality.

LEARNING OUTCOME:

This course is designed to help the students to

- Foster healthy attitude.
- Develop effective inter and intra personal skills to be an effective team worker.
- Communicate effectively in both academic and professional setup

UNIT: I ASPECTS OF COMMUNICATION

Importance of communication, Process, Barriers, Non verbal Communication

UNIT: II SPEAKING

How to Open and Close conversations, Introductions and Address System, Expressing Courtesy, Giving Compliments and replying to Compliments, Presentation Skills, Telephonic conversation and telephone etiquette

UNIT – III PRESCRIBED READING

Tom Sawyer by Mark Twain, Bacon‘s Essays: - Of Goodness and goodness of nature

UNIT – IV WRITING

Letter writing - Letter of Complaints, Inviting and Declining an invitation, Writing Memos and Emails, Grammar, Spelling & Punctuation, Use of Dictionary & Thesaurus.

UNIT – V SOFT SKILLS

Active Listening Skills, Assertive Skills, Negotiation and Persuasive Skills, Interview Skills

Text Book:

Developing Communication Skills by Krishna Mohan and Meera Banerji, II edition, Macmillan.

Reference Books:

1. Communication Skills for Engineers and Scientists by Sangeeta Sharma and Binod Mishra, PHI Learning Private Limited, New Delhi.

2. English and soft skills by S.P. Dhanavel, Orient Black Swan

3. Effective English Communication by Krishna Mohan and Meenakshi Raman, Tata McGraw –Hill Publishing Company Limited.

4. Technical Communication – Principles and Practice, by Meenakshi Raman and Sangeetha Sharma, II edition, Oxford University Press.

5. Developing Communication Skills by Krishna Mohan and Meera Banerji, II edition, Macmillan.

6. The Complete Guide to Functional Writing in English by M. Sarada, Sterling Publishers (P) Ltd., New Delhi.

7. Speaking Naturally: Communication Skills in American English by Bruce Tillitt and Mary Newton Bruder, Cambridge University Press .

COURSE OUTCOMES						
CO1	The student will be able to Foster healthy attitude					
CO2	The student will be able to develop effective inter and intra personal skills to be an effective team worker					
CO3	The student will be able to Develop effective inter and intra personal skills to be an effective team worker					
CO4	The student will be able to Communicate effectively in both academic and professional setup					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE3030	**PROFESSIONAL SKILLS DEVELOPMENT**
	Total Contact Periods – 6
	Total credits -2
	Course Designed by – Department of Human Resources
OBJECTIVES	To Advance the students' intellectual curiosity, competency and skills in preparation for employment

1. Communication Skills

Importance of Communication skills in Public health; Communication process; Methods of communication; Types of communication: Verbal and Non-verbal; Impediments to effective communication; Feedback

2. Oral Presentation Skills:

Preparation and planning; Structure; Audio-visual aids; Creating interest and establishing a relationship with the audience; Body language; Voice and pronunciation; Review

3. Writing skills:

Writing a scientific paper; Writing a proposal; Structure of an article; References and literature review; Peer-review process-Publication bias; International guidelines for publication in journals; Professional Ethics

4. Leadership in Public health:

Leadership styles and trait; Motivation skills; Interpersonal communication skills; Problem solving skills; Decision making skills; Management skills; Communication Skills

5. Manuscript writing

Writing introduction, objectives, methodologies, major finding, discussion, conclusion and recommendation

6. Seminar presentations

Use of computers present data and information on recent topics

Text Books:

1. Professional Writing Skills, A self paced training programme by Janis Fisher Chan and Diane Lutovich. Advanced Communication Designs Inc, 2003. San Anselmo, CA. ISBN 0963745549

2. Speaking Your Mind: Oral Presentation and Seminar Skills By Rebecca Stott, Tory Young, Cordelia Bryan Contributor Rebecca Stott, Tory Young, Cordelia Bryan Published by Longman, 2001 ISBN 0582382432, 9780582382435

3. Public Health Leadership: Putting Principles into Practice Louis Rowitz, PhD. Jones and Bartlett Publishers, 2003. ISBN-13: 9780763725013 ISBN-10: 0763725013

COURSE OUTCOMES						
CO1	The student will be able to Develop good written and oral communication abilities					
CO2	The student will be able to Develop an understanding of team building and leadership skills.					
CO3	The student will be able to Develop knowledge regarding capacities needed to work independently within diverse work environments					
CO4	The student will be able to know how to maintain Records and Reports and demonstrate the procedure.					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE3031	**LIBRARY SCIENCE AND E-RESOURCES**
	Total Contact Periods – 6
	Total credits -2
	Course Designed by – Department of Library science
OBJECTIVES	To gain knowledge about Documentary Sources of Information and Library Automation

Unit 1 BASIC CONCEPTS AND INFORMATION SERVICES

Meaning of Library – Types of Library -– Library layout - Functions of Library – need for Library – Meaning of ISBN and ISSN – Collection management - Library Classification system - Five laws of Library Science – Inter Library Loan (ILL), Communication theories and models. Barriers to communication. Levels of communications – Intrapersonal, interpersonal and mass communication. Information services – literaturesearch Methods of Dissemination of information Current Awareness Service (CAS), Selective Dissemination of Information (SDI), Document delivery service, Alert services, and Internet services.

Unit 2 INFORMATION SOURCES

Documentary Sources of Information, Print, and Non-print including Electronic, Human and Institutional sources: Nature, types, characteristics and utility. Internet as a source of Information. Primary sources of information – Journal, conference volume, patents, research reports, thesis and their electronic format – Secondary sources of information - Bibliography, Encyclopedia Dictionary, Yearbook , Directory, Geographical Source, Textbook, Index and Abstracts.

Unit 3 LIBRARY AUTOMATION

Definition need, Purpose, advantages. Planning for Library automation. Automation of Library operations - Acquisitions, Cataloguing, OPAC, Circulation and Serials control. Evaluation of Library automation systems - Application of Barcode and RFID Technology for Library Functions. Basic concepts: Bibliography, bibliographic coupling, Impact factor.

Unit 4 ELECTRONIC INFORMATION SOURCES

Electronic Information resources: Meaning and definition, Growth and development, Types. EJournals, e- Books, e-Theses, e-newspapers, Blogs, Wikis. Free databases and fee based bibliographical and full textdatabases, subject related websites, Institutional repositories, Open Archives and digital Libraries. - Resource

Sharing and Networks: Consortia- Importance and objectives. Study of Information networks and DigitalLibrary Consortia. Types of computer networks: Local Area Networks – Concept, Topologies - Bus, Star, Mesh, Tree, and Ring). Wide Area Networks and Metropolitan Area Networks- Concepts, Circuit switching and Packet switching. Difference between LAN and WAN. Wireless Networks –Mobile telephones.

Unit 5 DIGITAL LIBRARIES

Digital Libraries: Concepts and issues. Understanding digital Libraries Content creation –Electronic documents, files and file formats. Study of different file formats. Studying PDF in detail- features of PDF. Digitization-scanning, Digital Preservation, Conservation and Archival Management – Problems and prospects. Open Access Movement and Institutional repositories.

TEXTBOOKS

1. Ranganathan, S.R The five Laws of Library Science UBS Publishers, 1988.

2. Ranganathan, S.R. Library Manual Sarada Ranganathan endowment for Library Science, 1989.

3. Ranganathan, S.R. Cataloguing Practice Sarada Ranganathan endowment for Library Science 1990

COURSE OUTCOMES	
CO1	The student will be able to analyze and understand the query
CO2	The student will be able to Identify the sources of information
CO3	The student will be able to Find out the information
CO4	The student will be able to know how to maintain Records and Reports and demonstrate the procedure.

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Library Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE1020	**FUNDAMENTALS OF BIOSTATISTICS**
	TotalContactPeriods–4
	Total credits -2
	Course Designed by–Department of Community Medicine
OBJECTIVES	The course will offer basic knowledge about Biostatistics and to correctly apply a variety of statistical procedures and tests according to objective of study

UNIT I: Introducing the Basics

Introduction, Graphical representation of data, Data collection, Diagrammatic and Graphical Presentation of data, Types of data, limitations.

UNIT II: Measures of Central Tendency & Dispersion

Measures of Central Tendency; Mean, Median, Mode, Geometric mean, Harmonic mean for raw data. Measures of dispersion; Quartile deviation, Mean Deviation - Standard Deviation - Coefficient of variation- Range

UNIT III: Probability

Introduction to Probability, Theorems of probability; Bayer‘s Theorem, Probability Distributions; Discrete & Continuous distributions, Binomial Distribution, Poisson Distribution, Normal Distribution.

UNIT IV: Correlation & Regression Analysis

Correlation Analysis, Types of correlation; Rank Correlation Coefficient. Regression analysis, Types of Regression, Assumptions; Comparison to Correlation.

UNIT V: Hypothesis Testing

Introduction; Types of sampling, Hypothesis testing; Type of errors, Parametric & Non-parametric tests; Mann Whitney’s U test, Chi-square, t-tests, ANOVA.

REFERENCES

1. Don. Mc Neil - Epidemiological Research Methods - Oxford University Press, London.

2. Biostatistics –Principle & Practice – McGraw Hill Education.

3. http://www.ats.ucla.edu/stat/

4. Ahttp://www.statsoft.com/textbook/basic-statistics/

COURSEOUTCOMES	
CO1	The student will be able to understand and apply the Biostatistics.
CO2	The student will be able to use the software independently for the data analysis.
CO3	The student will be able determine the correct procedures to use in a given situation
CO4	The student will be able to interpret the results of hypothesis tests

MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	S			**S**		**M**
Category	Management					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE1021	**COMMUNICATION SKILLS FOR HEALTH CARE PROFESSIONALS**
	TotalContactPeriods–5
	Total credits -2
	Course Designed by–Department of Community Medicine
OBJECTIVES	This course deals with essential functional English aspects of the of communication skills essential for the health care professionals.

UNIT: I APPLIED GRAMMAR

Identifying common errors in sentences, Transformation of sentences, Usage of either …or…, Neither… nor…, So… that…, Such… that…, Not only… but also…, unless…

UNIT: II VOCABULARY

Abbreviations used in healthcare, Medical idioms & Phrases

UNIT: III WRITING

Letter writing, Curriculum Vitae writing, covering letter, Creative writing – invite, posters, Essay writing, summary writing, note taking, report writing.

UNIT: IV SPOKEN COMMUNICATION

Telephone etiquette, Importance of Stress, Intonation and rhythm, speaking; describing simple process, Filling a form etc., - Asking and answering questions; Debate/Oral Reporting

UNIT: V LISTENING AND READING SKILLS:

Listening and reading comprehension exercises.

Textbook Recommended:

1. Effective English Communication by Krishna Mohan and Meenakshi Raman, Tata McGraw – Hill Publishing Company Limited, New Delhi.

2. English for Colleges and Competitive Exams by Dr. R. Dyvadatham, Emerald Publishers.

COURSEOUTCOMES						
CO1	The student will be able to express better.					
CO2	The student will be able to get knowledge about MOA, adverse effects					
CO3	The student will Grow personally and professionally					
CO4	The student will Develop confidence in every field					
MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**		S	
4	S			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE1022	**BIOMEDICAL ETHICS**
	TotalContactPeriods–3
	Total credits -2
	Course Designed by–Department of Community Medicine
OBJECTIVES	To provide basic skills in: A) Approaching ethical issues. B) Analysis and statement of issues. C) Understanding the relevant ethical principles invoked..

Introduction to Bioethics

Bioethical issues related to Healthcare &Medicine 5

2Anatomy - Cadaver ethics, Human dignity, PNDT, Disposal of cadaver, Genetic Counseling 7

Physiology - Animal ethics, Health policy privacy 7

Biochemistry & Pathology - Prudence of investigation confidentiality, Patients bill of rights, Disposal of investigative material, Integrity, Blood transfusion 5

Pharmacology - Rational drug prescribing, Clinical trials, Risk minimization, Animal ethics

Microbiology - Hand wash, Drug resistance minimization, Prudence of investigation confidentiality, Sterilization procedure, Bio safety and bio hazard 5

Medicolegal aspects of medical records

Introduction to Intellectual Property:

Concept of Intellectual Property Kinds of Intellectual Property

Patents, Copyrights Designs, Trademarks,Geographical Indication, Infringement of IPR, Its protection and

Remedies Licensing and its types

REFERENCE BOOKS

1. Contemporary issues in bioethics – Beauchamp & walters (B&W) 4th edition.

2. Classic philosophical questions by Gloud (8th Edition)

3. Case book series and booklets by UNESCO Bioethics Core curriculum 2008

4. Encyclopedia of Bioethics 5 vol set, (2003) ISBN-10: 0028657748

5. Intellectual property rights- Ganguli-Tat McGrawhill. (2001) ISBN-10: 0074638602,

6. Intellectual Property Right- Wattal- Oxford Publications House.(1997) ISBN:0195905024.

COURSEOUTCOMES	
CO1	The students will be able to: Recognize what constitutes an ethical concern in health care
CO2	The student will be able to understand the clinical evaluations of Disease Condition
CO3	The student will be able to Understand better the complexity and multi-dimensionality of medical ethical concerns and uniqueness of each problem.
CO4	The student will get the knowledge of plagiarism in their innovations which can be questioned legally

MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**d**	**E**	**f**
1	S		M		S	S
2				s		
3			**S**			
4	S		M			**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE1023	**FUNDAMENTALS OF HUMAN GENETICS**
	Total Contact Periods– 4
	Total credits -2
	Course Designed by–Department of Genetics
OBJECTIVES	To Comprehend the Chromosomal basis of inheritance

I -Introduction to cellular components

Structure and morphology of various types of cells - Biochemical composition - Cellular organelles -Composition and components of nucleus - Chromosomes - Cell division and Mechanics of cell division and regulation.

II - Structure and functions of nucleic acids

Functions, Structure and characteristics of nucleic acids - Types of mutations -Genetic variations and polymorphisms

III - Chromosomal basis of inheritance

Chromosome behavior and inheritance pattern in man - Single gene Mendelian disorders: autosomal dominant, recessive, sex linked dominant and recessive - Polygeneic and mitochondrial inheritance.

III - Origin and detection of genetic disorders

Mutation - Non-disjunction - Chromosomal abnormalities and clinical phenotypes of common genetic syndromes (Down's syndrome, Patua‘s syndrome, Edward syndrome, Turner syndrome and Klinefelter's syndrome, Cri-du-caht syndrome)- Karyotyping, Neural tube defects, Carcinogenesis.

IV–Biochemical basis for the inborn errors of metabolism

General characteristics of inborn errors of metabolism – Incidence - etiology - Folic acid metabolism - triple markers - New born screening, prevention and management. False positive and false negative -Ethical principles of Genetic counseling for prenatal diagnosis - Fetal rights – Regulation and prevention of misuse act 1994.

Reference books

1. A guide to genetic counseling, 2nd edition, D.L. Baker, J.L. Schuette and W.R. Uhlmann, Wiley –Leiss Publications 2002.

2. Emery Elements of Medical Genetics, 9th edition, Robert F. Mueller & Ian D. young, Churchill Livingstone, 1995.

3. Medical Genetics, 3rd edition, Lynn B. Jorde, John C. Carey, Michael J. Bamshad, & Raymond L. White, Mosby, 2003.

COURSEOUTCOMES						
CO1	The student will be able to Be able to describe the chromosomal basis of inheritance and how alterations in chromosome number or structure. . .					
CO2	The student will be able to understand of the differences and similarities between diagnostic, predictive and carrier genetic testing.					
CO3	The student will be able to know detailed information of Chromosome behavior and inheritance pattern in man					
CO4	The student will be to understand the phenotype and genotype .					
MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**d**	**E**	**f**
1	S		M		S	
2				s		M
3			**M**			
4	S			**S**		**S**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE2024	**PRINCIPLES AND APPLICATION OF CLINICAL GENETICS**
	Total Contact Periods– 6
	Total credits -2
	Course Designed by–Department of Nephrology
OBJECTIVES	To develop awareness about Genetic testing, Genetic counseling, Philosophy and Ethos of Genetic services

I -Principle and components of genetic testing Lay out of genetic laboratories - Genetic testing, Genetic counseling, Philosophy and Ethos of Genetic services, Types of testing- Cytogenetic testing- Molecular cytogenetic testing- DNA testing.

II - Cytogenetic testing Indications, Type of sample, Sampling and transport conditions, Karyotyping - chromosome identification, merits and demerits of conventional cytogenetic testing

III - Molecular Cytogenetic testing

Indications, Type of sample, Sampling and transport conditions - Fluorescence in-situ hybridization, fluorescence signal enumeration, merits and demerits of FISH.

IV - DNA testing

Organization of human genome, Structure and function of genetic material, Polymerases chainmreaction - Types, principles and testing, Sequencing.

V - Practical:

Case studies

Reference books

1. Practical Genetic counseling, Peter S. Harper, 6th edition, Holder Headline Group 2004.

2. Medical Genetics, 3rd edition, Lynn B. Jorde, John C. Carey, Michael J. Bamshad, &

Raymond L. White, Mosby, 2006.

3. Genetics in Medicine, Thompson & Thompson, 6th edition, Elsevier 2004.

4. Practical Genetic counseling, Peter S. Harper, 6th edition, Holder Headline Group 2004.

COURSEOUTCOMES						
CO1	The student will be able to become familiar with and practice genetic tests.					
CO2	The student will be able to provide better patient care					
CO3	The student will be able to know detailed information about Genetic Counselling					
CO4	The student will be to know about Genetic testing.					
MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3			**M**			
4	S				S	**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE2025	**CLINICAL EXAMINATION OF THE HUMANVISUAL SYSTEM**
	TotalContactPeriods–5
	Total credits -2
	Course Designed by–Department of Opthalmology
OBJECTIVES	The core objective of this course is to gain in depth knowledge on the structural and physiological functions of the various parts of the eye and the different examination procedures for the ocular structures.

: **I - History Taking**

Importance of history taking, Demographic data and its importance, Chief presenting symptoms, History of present illness, History of past illness, Family History, Common ocular symptoms and their causes – defective vision, watering eyes, discharge, redness, pain, asthenopia and other symptoms

II - Visual Acuity measurement

Distance visual acuity-charts, methods and measurements; Near visual acuity –charts, methods and measurements; contrast sensitivity testing; colour vision testing

III - External Examination

Examination of head posture, examination of forehead, examination of eye brows, examination of eyelids, examination of Lacrimal apparatus, examination of eyeball on the whole, examination of the cornea, conjunctiva sclera and anterior chamber, eye movements, muscle balance and squint evaluation

IV - Anterior segment Evaluation

Slit lamp examination of the eyelids, cornea, conjunctiva, anterior chamber depth, iris, and lens Intraocular pressure measurements using non contact tonometer

V - Posterior segment Evaluation

Introduction and importance of posterior segment evaluation- direct and indirect ophthalmoscopy

REFERENCE BOOKS:

1. Comprehensive Ophthalmology – A K Khurana, 5th edition, New Age International Publishers,

2012.

2. Clinical Ophthalmology – Jack J Kanski, 7th edition, Butterworths, 2012

1. Borish's Clinical Refraction - William J. Benjamin, Irvin M. Borish, Butterworth-Heinemann, 2006

COURSEOUTCOMES						
CO1	The student will be able to have the skill to perform basic ophthalmic examination					
CO2	The student will be able to understand concept of theory and clinical evaluation of disease conditions gain an in- depth knowledge on disease outline and clinical evaluation of patients					
CO3	The student will be able to depth knowledge on the functions of the visual system					
CO4	The student will have the skill to perform basic ophthalmic examination					
MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**D**	**e**	**f**
1	S		M		s	
2				S		M
3	M		**S**			
4	M			**C**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE2026	**PERSONALITY DEVELOPMENT AND STRESS MANAGEMENT**
	Total Contact Periods– 4
	Total credits -2
	Course Designed by–Department of HR
OBJECTIVES	• To Explain the effect of personality, attitudes, perceptions and attributions on Health stress, coping and relaxation.

Unit 1

Introduction to Personality Development, Different Stages of Development, Types of personalities, personality perspectives and theories

Unit 2

How needs impact personality, Maslow's hierarchy of need, Basic Personality Traits; Values, Beliefs, Interactions, Experiences, Environmental influences, the big five dimensions.

Unit 3

Stress; causes, effect and types, Stress resistant personalities, Relaxation; training aspects importance and Body works.

Unit 4

Health stress and coping, Understanding and communicating our health needs, Behavioral and psychological correlates of illness.

Unit 5

Soft skill; need and importance, Personality development and soft skills. Effective communication, listening, speaking, writing, interpretation part of soft skills and personality

Learning Outcome:

By successfully completing this course, students will be able to Describe how a personality develops.

- Define the stages of personality development.
- Define personality types.
- Describe basic personality traits.
- Personality and stress.
- Health stress, coping and relaxation.
- Soft skills and personality.

Text Books:

1. Hurlock (1976). Personality development.Tata McGraw Hill.

2. Baron R A, Psychology 5th edition, Pearsons publication.

3. Abraham A, General Psychology, Tata McGraw hill Education private limited.

Reference Books:

1. Lazarus J Stress Relief and Relaxation Techniques, Viva Book Private limited.

2. Shelly E. Taylor, Health psychology, 7th edition, TATA McGrawHil, New Delhi.

COURSEOUTCOMES	
CO1	The student will be able to Define the stages of personality development.
CO2	• The student will be able to Describe basic personality traits.
CO3	The student will be able to Describe how a personality develops-Personality and stress.
CO4	The student will be able to Develop the Soft skills and personality.

MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**D**	**e**	**f**
1	S		M		s	
2				S		M
3	M		**S**			
4	S			**S**		**M**
Category	Management					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE2027	**FIRST AID MANAGEMENT & SPLINTING TECHNIQUES**
	TotalContactPeriods–6
	Total credits -2
	Course Designed by–Department of Medicine
OBJECTIVES	Students will gain additional skills in interventional procedures and Differentiate between emergency situation and other use.

Unit-I BACKGROUND INFORMATION

- The importance of first Aid
- First aid supplies
- First aid and the law
- Prevention practices

Unit-II ACTION AT AN EMERGENCY

- Recognizing Emergencies
- Deciding to act
- Seeking medical care
- Disease transmission
- Rescuer reactions

Unit –III BLEEDING AND WOUNDS

- External bleeding
- Wound infection
- Amputations
- Impaled objects
- Wound that require medical care
- Internal Bleeding
- Dressing and Bandages

Unit-IV BONE, JOINT AND MUSCLE INJURIES

- Bone injuries
- Splinting
- Joint injuries
- RICE injuries
- Muscle injuries
- Splints – Introduction, Types, Uses, Splinting guidelines, Slings, Procedure,Complications

UNIT-V RESCUING AND MOVING INJURIES

- Water rescue
- Ice rescue
- Electrical Emergency Rescue Hazardous materials incidents

- Motor Vehicle crashes
- Fires
- Confined spaces
- Triage – what to do with multiple victims
- Moving victims

Text books:

1 .First Aid CPR and AED standard (sixth edition)

2. First aid book-St Johns Ambulance services

3. Text book of Orthopaedics – Natarajan

4. Text book of Orthopaedics – John Ebenezer Reference books: First Aid and Management of Minor Injuries by Jon Dallimore First Aid and Beyond by Dan Wolfe - Smashwords , 2014 International Trauma Life Support Provider Manual Essentials Orthpaedics Mark D Mille

COURSEOUTCOMES	
CO1	The student will be able to Differentiate between emergency situation and other use.
CO2	The student will be able to know about the basics of concepts of disease & outlines of clinical evaluation.
CO3	The student will be able to List management, assessment, and care steps for upper extremity and lower extremity fractures.
CO4	The student will be to know Splinting techniques of lower extremities – Thomas splint, sam splint, etc

MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES

COs\Pos	**A**	**B**	**c**	**D**	**e**	**f**
1	S		M		s	
2				S		M
3	M		**S**			
4	S			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE3028	**ESSENTIALS OF MEDICAL TRANSCRIPTION**
	Total Contact Periods– 7
	Total credits -2
	Course Designed by–Department of MRD
OBJECTIVES	Provide Hands on training on English Language and listening comprehension and provide foundation to learn medical terminology & learn laboratory report

Unit 1

The Medical Transcriptionist‘s career including Ethical& Legal Responsibilities Introduction to Medical transcription, Job Opportunities, Transcription Skills, Medical records, Certification for Medical Transcriptionists, Ethical and Legal responsibilities

Unit 2

Equipments in Transcription Equipment, Computer Systems, Ergonomics, Dictation Equipments, Hand and Foot control Dictation, Transcription Preparation

Unit 3

Transcription Guidelines Punctuations, Proof reading notations, Formats and styles, SOAP for Chart notes; Discharge Summary

Unit 4 PRACTICAL:

1. Equipments for Medical Transcription,2. Typing for the beginners, 3.Vocabulary, 4. Proof reading Notations , 5. Formats and styles in document preparation , 6. Preparation of chart notes, 7. Listening Comprehension, 8. Transcription check off sheet **References Book**1. Medical Key boarding, Typing, and Transcribing Techniques and procedures 4th Edition, March

Otis Diehl, Marilyn Takahashi Fordney, W.B. Saunders Company

2. The AAMT Book of Style for Medical Transcription, Claudia J. Tessier

3. CD‘s available for:

a. Stedman‘s Electronic Medical Dictionary 4.0

b. American Drug Index 2003

Text Books:

1. Medical Key boarding, Typing, and Transcribing Techniques and procedures 4th Edition, March

Otis Diehl, Marilyn Takahashi Fordney, W.B. Saunders Company

2. The AAMT Book of Style for Medical Transcription, Claudia J. Tessie

COURSEOUTCOMES						
CO1	The student will be able to Demonstrate their basic skills in the knowledge of Vocabulary, Medical terminology					
CO2	The student will be able to Demonstrate their basic skills in the preparation of chart notes. .					
CO3	The student will be able to Demonstrate skills in listening comprehension					
CO4	• The student will be be able to identify accurate format for medical document preparation					
MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**d**	**E**	**f**
1	S		M		S	
2				s		M
3	M		**S**			
4	S			**S**		**M**
Category	Medical Records					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE3029	**COMMUNICATION AND SOFT SKILL**
	Total Contact Periods– 7
	Total credits -2
	Course Designed by–Department of Human Resources
OBJECTIVES	This course is designed to equip the students with essential soft skills needed for workplace and improve personality.

LEARNING OUTCOME:

This course is designed to help the students to

- Foster healthy attitude.
- Develop effective inter and intra personal skills to be an effective team worker.
- Communicate effectively in both academic and professional setup

UNIT: I ASPECTS OF COMMUNICATION

Importance of communication, Process, Barriers, Non verbal Communication

UNIT: II SPEAKING

How to Open and Close conversations, Introductions and Address System, Expressing Courtesy, Giving Compliments and replying to Compliments, Presentation Skills, Telephonic conversation and telephone etiquette

UNIT – III PRESCRIBED READING

Tom Sawyer by Mark Twain, Bacon‘s Essays: - Of Goodness and goodness of nature

UNIT – IV WRITING

Letter writing - Letter of Complaints, Inviting and Declining an invitation, Writing Memos and Emails, Grammar, Spelling & Punctuation, Use of Dictionary & Thesaurus.

UNIT – V SOFT SKILLS

Active Listening Skills, Assertive Skills, Negotiation and Persuasive Skills, Interview Skills

Text Book:

Developing Communication Skills by Krishna Mohan and Meera Banerji, II edition, Macmillan.

Reference Books:

1. Communication Skills for Engineers and Scientists by Sangeeta Sharma and Binod Mishra, PHI Learning Private Limited, New Delhi.

2. English and soft skills by S.P. Dhanavel, Orient Black Swan

3. Effective English Communication by Krishna Mohan and Meenakshi Raman, Tata McGraw – Hill Publishing Company Limited.

4. Technical Communication – Principles and Practice, by Meenakshi Raman and Sangeetha Sharma, II edition, Oxford University Press.

5. Developing Communication Skills by Krishna Mohan and MeeraBanerji, II edition, Macmillan.

6. The Complete Guide to Functional Writing in English by M. Sarada, Sterling Publishers (P) Ltd., New Delhi.

7. Speaking Naturally: Communication Skills in American English by Bruce Tillitt and Mary Newton Bruder, Cambridge University

COURSEOUTCOMES	
CO1	The student will be able to Foster healthy attitude
CO2	The student will be able to develop effective inter and intra personal skills to be an effective team worker
CO3	The student will be able to Develop effective inter and intra personal skills to be an effective team worker
CO4	The student will be able to Communicate effectively in both academic and professional setup

MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**a**	**B**	**C**	**d**	**e**	**F**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE3030	**PROFESSIONAL SKILLS DEVELOPMENT**
	Total Contact Periods– 6
	Total credits -2
	Course Designed by–Department of Human Resources
OBJECTIVES	To Advance the students' intellectual curiosity, competency and skills in preparation for employment

1. Communication Skills

Importance of Communication skills in Public health; Communication process; Methods of communication; Types of communication: Verbal and Non-verbal; Impediments to effective communication; Feedback

2. Oral Presentation Skills:

Preparation and planning; Structure; Audio-visual aids; Creating interest and establishing a relationship with the audience; Body language; Voice and pronunciation; Review

3. Writing skills:

Writing a scientific paper; Writing a proposal; Structure of an article; References and literature review; Peer-review process-Publication bias; International guidelines for publication in journals; Professional Ethics

4. Leadership in Public health:

Leadership styles and trait; Motivation skills; Interpersonal communication skills; Problem solving skills; Decision making skills; Management skills; Communication Skills

5. Manuscript writing

Writing introduction, objectives, methodologies, major finding, discussion, conclusion and recommendation**6. Seminar presentations**Use of computers present data and information on recent topics

Text Books:

1. Professional Writing Skills, A self paced training programme by Janis Fisher Chan and Diane Lutovich. Advanced Communication Designs Inc, 2003. San Anselmo, CA. ISBN 0963745549

2. Speaking Your Mind: Oral Presentation and Seminar Skills By Rebecca Stott, Tory Young, Cordelia Bryan Contributor Rebecca Stott, Tory Young, Cordelia Bryan Published by Longman, 2001 ISBN 0582382432, 9780582382435

3. Public Health Leadership: Putting Principles into Practice Louis Rowitz, PhD. Jones and Bartlett Publishers, 2003. ISBN-13: 9780763725013 ISBN-10: 07637250

COURSEOUTCOMES						
CO1	The student will be able to Develop good written and oral communication abilities					
CO2	The student will be able to Develop an understanding of team building and leadership skills.					
CO3	The student will be able to Develop knowledge regarding capacities needed to work independently within diverse work environments					
CO4	The student will be able to know how to maintain Records and Reports and demonstrate the procedure.					
MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**D**	**e**	**f**
1	S		M		s	
2				S		M
3	M		**S**			
4	S			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting Of Academic Council held in Aug, 2017					

UAH17CE3031	**LIBRARY SCIENCE AND E-RESOURCES**
	Total Contact Periods– 6
	Total credits -2
	Course Designed by–Department of Library science
OBJECTIVES	To gain knowledge about Documentary Sources of Information and Library Automation

Unit 1 BASIC CONCEPTS AND INFORMATION SERVICES

Meaning of Library – Types of Library -– Library layout - Functions of Library – need for Library – Meaning of ISBN and ISSN – Collection management - Library Classification system - Five laws of Library Science – Inter Library Loan (ILL), Communication theories and models.Barriers to communication.Levels of communications – Intrapersonal, interpersonal and mass communication. Information services – literature search Methods of Dissemination of information Current Awareness Service (CAS), Selective Dissemination of Information (SDI), Document delivery service, Alert services, and Internet services.

Unit 2 INFORMATION SOURCES

Documentary Sources of Information, Print, and Non-print including Electronic, Human and Institutional sources: Nature, types, characteristics and utility. Internet as a source of Information. Primary sources of information – Journal, conference volume, patents, research reports, thesis and their electronic format – Secondary sources of information - Bibliography, Encyclopedia Dictionary, Yearbook , Directory, Geographical Source, Textbook, Index and Abstracts.

Unit 3 LIBRARY AUTOMATION

Definition need, Purpose, advantages. Planning for Library automation. Automation of Library operations - Acquisitions, Cataloguing, OPAC, Circulation and Serials control. Evaluation of Library automation systems - Application of Barcode and RFID Technology for Library Functions. Basic concepts: Bibliography, bibliographic coupling, Impact factor.

Unit 4 ELECTRONIC INFORMATION SOURCES

Electronic Information resources: Meaning and definition, Growth and development, Types. Journals, e-Books, e-Theses, e-newspapers, Blogs, Wikis. Free databases and fee based bibliographical and full text databases, subject related websites, Institutional repositories, Open Archives and digital Libraries. - Resource Sharing and Networks: Consortia- Importance and objectives. Study of Information networks and Digital Library Consortia. Types of computer networks: Local Area Networks – Concept, Topologies - Bus, Star, Mesh, Tree, and Ring). Wide Area Networks and Metropolitan Area Networks- Concepts, Circuit switching and Packet switching. Difference between LAN and WAN. Wireless Networks –Mobile telephones.

Unit 5 DIGITAL LIBRARIES

Digital Libraries: Concepts and issues. Understanding digital Libraries Content creation – Electronic documents, files and file formats. Study of different file formats.Studying PDF in detail-features of PDF.Digitization- scanning, Digital Preservation, Conservation and Archival Management – Problems and prospects. Open Access Movement and Institutional repositories.

TEXTBOOKS

1. Ranganathan, S.R The five Laws of Library Science UBS Publishers, 1988.

2. Ranganathan, S.R. Library Manual SaradaRanganathan endowment for Library Science, 1989.

3. Ranganathan, S.R. Cataloguing Practice SaradaRanganathan endowment for Library Science 1990

COURSEOUTCOMES						
CO1	The student will be able to analyze and understand the query					
CO2	The student will be able to Identify the sources of information					
CO3	The student will be able to Find out the information					
CO4	The student will be able to know how to maintain Records and Reports and demonstrate the procedure.					
MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**d**	**e**	**F**
1	S		M		s	
2				s		M
3	M		**S**			
4	S			**S**		**M**
Category	Library Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

B.SC. RADIOLOGY AND IMAGING SCIENCE TECHNOLOGY

R 2017

CURRICULUM

UAH17CT101	**ANATOMY**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Anatomy
OBJECTIVES	An outline of anatomy with special emphasis on applied aspects is provided to the students for better understanding of the technical and diagnostic procedure.

UNIT I: Organization of the human body

1. Introduction

- Introduction to human body
- Definition and subdivision of anatomy
- Anatomical position and terminology
- Region and systems of the body
- Cavities of the body and their contents
- Levels of organization of the body

2. Cell and genetics

- Parts of cell – cell membrane, cytoplasm, organelles, inclusion bodies, nucleus
- Structure of chromosome, DNA, RNA.
- Basics & fundamentals of Genetics, Karyotyping, Chromosomal disorders, prenatal diagnosis, geneticcounseling and gene therapy.
- Cell division – Definition and main events that occur in different stages of mitosis and meiosis.
- Tissues – Definition, characteristic features and types with example.
- Types of glands with example

UNIT II: Systems of support and movement

I. Skeletal system

- Cartilage: Type and basic histological feature.
- Bones: definition, classification based on location, name and number of bones with general

features ofimportant bones, function of bone, histological feature of a compact bone.

- Joints – Definition and types with example, Axis and movements. Shoulder, elbow, hip, knee joints –type, bones and ligaments involved, possible movements.

II. Muscular system

- Types of muscle with basic histological features
- Parts of skeletal muscle.
- Definition of origin and insertion
- Origin, insertion, nerve supply, action of sternocleidomastoid, pectoralis major, deltoid, gluteusmaximus and diaphragm.

UNIT III: Controls systems of the body

1. Nervous system

- Subdivisions of the nervous system
- Spinal cord-location, extent, external features and blood supply
- Brain-subdivision, location, external features of Medulla oblongata, Pons, Midbrain, Cerebellum, andCerebrum, Thalamus and Hypothalamus, Location and subdivision of ventricles of brain. Circle of Willis.
- Cranial nerves-name, number, attachment, area of distribution
- Spinal nerves-typical spinal nerves. Name and location of plexuses. Location and distribution of brachialand lumbosacral plexus.
- Autonomic nervous system-sympathetic and parasympathetic nervous system. Location of preganglionicand postganglionic neurons.

2. Sense organs

- Location and features of nose, tongue, eye, ear and skin.

3. Endocrine system

- Names of the endocrine glands. Location and features of pituitary, thyroid, parathyroid, suprarenal,pancreas, ovaries and testes. Names of hormones produced by each gland.
- Microscopic features of thyroid and pancreas.

UNIT IV: Maintenance of the human body

1. **Cardiovascular system**

- Types and general features of blood vessels. Structure and types of arteries and veins. Shape, size, location, covering, external and internal features of Heart. Conducting system of heart. Blood supply ofthe heart. Name, location, branches and main distribution of principal arteries and veins

2. Lymphatic system

- General features of Lymph nodes and lymphatic vessels. Name, location, external features, microscopicfeatures of tonsil and spleen.

3. Respiratory system

Name the organs of respiration. Location and features of Nasal cavity, pharynx, larynx, trachea, lung & pleura.Mention the microscopic feature of the lung.

4. Digestive system

- Name the parts of the alimentary canal and accessory organs. Location & features of esophagus, stomach, small and large intestine. Location and feature of tongue, salivary glands, pancreas, liver andgallbladder. Microscopic features of the liver.

5. Urinary system

- Names of urinary organs. Location and features of kidney, ureter, urinary bladder & urethra.Microscopic features of the kidney.

6. Reproductive system

- Names of male and female organs of reproduction. Location and features of testis, epididymis, vasdeferens, prostate gland and spermatic cord. Location & features of uterus, uterine tube, ovary andbreast.

7. Embryology

- Structure of gametes & gametogenesis. Fertilization to development of embryo till 3rd week.Derivatives of germ layers. Teratogens, Structure and Functions of placenta.

UNIT V: Anatomical regions

- Simple ideas about scalp, triangles of neck, axilla, cubital fossa, carpal tunnel, mediastinum, umbilicus, inguinal canal, femoral triangle
- sub sartorial canal popliteal fossa

PRACTICALS/DEMONSTRATIONS

1. Demonstrations of dissected specimens.

2. Viewing of projection of microscopic slides of muscle, bone, cartilage, spleen, tonsil, lung, liver, kidney, thyroid and pancreas

REFERENCE BOOKS

1. Manipal manual for AHS by Dr. Sampath Madhyastha, (Second Edition) Published by CBS Publishers.

2. Handbook of anatomy for nurses by Dr. P. Saraswathi

3. Ross and Wilson, Anatomy and physiology in health & illness

COURSE OUTCOMES	
CO1	The student will be able to gain knowledge of general anatomy and locomotion.
CO2	The student will be able to gain knowledge of basic human anatomy and histology of CVS and Respiratory systems.
CO3	The student will be able to gain knowledge of basic human anatomy and histology of CNS, GI, excretotry and reproductive systems.
CO4	The student will be able to gain of knowledge basic human anatomy and histology of endocrine system and special senses.

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S					
2		**M**				
3			**S**			
4	s			**S**		**M**

Category	Basic Science (Non Clinical)
Approval	46th Meeting of Academic Council held in Aug, 2017

UAH17CT102	**PHYSIOLOGY**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Physiology
OBJECTIVES	To know the basic functioning of the human body, and the various organ systems.

Unit-I

1. General Physiology:

- Concept of Homeostasis
- Cell structure and functions
- Transport across membranes

Body and body fluids:

- Body fluid volumes, compartments and composition
- Blood composition and functions
- Plasma proteins – Types and functions
- Erythrocytes – functions, Erythropoiesis, anemia‟s
- Leucocytes – classification and functions
- Platelets – morphology and functions
- Blood coagulation – Mechanism and name of anticoagulants
- Blood groups – Basis of ABO & Rh grouping, Erythroblastosis Foetalis

2. Muscle physiology:

- Muscles – Classification & structure of striated, nonstriated & cardiac muscle
- Neuromuscular junction
- Mechanism of skeletal muscle contraction

3. Digestive system:

- Salivary glands, functions of saliva
- Parts of stomach, composition & functions of gastric juice

- Pancreatic Juice – composition & functions
- Bile – composition & functions of bile & bile salts
- Functions of Small intestine & large intestine

Unit-II

1. Skin : Structure & Functions

2. Excretory system:

- Kidney: Basic physiological anatomy (Including JGA)
- Formation of urine – GFR
- Formation of urine – Reabsorption & secretion
- Micturition Reflex
- Dialysis – Principle, types
- Renal function tests

Unit-III

1. Endocrine system:

- Hypothalamo hypophyseal inter relationship
- Posterior pituitary hormones and its actions
- Anterior pituitary hormones, Growth hormone – Actions
- Dwarfism, gigantism, acromegaly
- Thyroid hormones – Actions
- Cretinism, Myxoedema, Grave‟s disease (clinical features)
- Parathyroid hormones – Functions, Tetany
- Insulin, Glucagon‟s – Actions, Diabetes mellitus
- Adrenal medullary hormones & their actions
- Adrenal cortex hormones & their actions

2. Reproductive system:

- Male reproductive organs – Spermatogenesis, Testosterone actions
- Female reproductive organs – menstrual cycle (endometrial and ovarian cycles) and its hormonal control
- Contraceptive methods in male and female

Unit-IV

1. Respiratory system:

- Basic physiological anatomy

- Surfactant
- Mechanics of respiration
- Lung volumes and capacities
- Oxygen transport, Carbon-di-oxide transport
- Nervous and chemical regulation
- Pulmonary function tests.

2. Cardiovascular system:

- Basic physiological anatomy, innervations of heart
- ECG – normal waves, intervals and their significance
- Cardiac cycle – mechanical events, Heart sounds
- Blood pressure – Definition, measurement, normal values, factors maintaining BP Regulation

Unit-V

1. Nervous system:

- Structure of neuron, neuroglial cells, synapse and transmission across it
- Reflex – Components of reflex arc, examples.
- Functions of ascending tracts – anterior, lateral spinothalamic tracts, Dorsal column
- Functions of Corticospinal (Pyramidal) tract-Descending tract
- Functional areas of cerebral cortex
- Functions of basal ganglia, thalamus, hypothalamus, limbic system and cerebellum

2. Special senses:

● Receptors for various special senses

Practical Demonstration

Hematology:

1. Enumeration of RBC count.
2. Enumeration of WBC count.
3. Differential Count.
4. Estimation of Hemoglobin.
5. Determination of blood group.
6. Determination of bleeding time and clotting time.

Clinical physiology:

1. Measurement of blood pressure.
2. Determination of Radial pulse

Reference Book

1. Human Physiology for BDS by A.K.Jain, 4th Edition, Avichal publishing co

COURSE OUTCOMES	
CO1	The student will be able to gain knowledge of general physiology, nerve-muscle physiologyand haematology.
CO2	The student will be able to gain knowledge of basic human physiology with respect to CVS,Respiratory system and GI system.
CO3	The student will be able to gain knowledge of basic human physiology of excretion andCNS.
CO4	The student will be able to gain knowledge of basic human physiology of special senses andendocrine system

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S					
2		**M**				
3			**S**			
4	s			**S**		**M**
Category	Basic Science (Non Clinical)					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CT103	**BIOCHEMISTRY**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Biochemistry
OBJECTIVES	To know the basic Biochemical reactions within the human body, and the various organ system.

UNIT I – Cell and its molecules

Cell – Cell organelles, Fluid Mosaic Model, functions of cell membrane, Brief description of transport across the cell membrane.

Carbohydrates – Definition, Classification with examples, Sources, physiological significance and HbA1c.

Lipids – Definition, Classification with examples, Sources, Types of lipids present in the body, storage form, storage site, free cholesterol structure, functions of lipids, lipoprotein structure and its functions.

Nucleic acids – Nucleotide, Nucleoside, types of nucleic acids, secondary structure of DNA & Its functions; Types of RNA & its functions.

UNIT II – Proteins and Enzymes

Proteins – Definition, Classification, functions of proteins, Plasma proteins; Classification of Amino acids with examples Hemoglobin structure, Functions of hemoglobin, hemoglobin derivatives, abnormal hemoglobin

Enzymes: Definition, Classification, coenzymes, Metalloenzymes, Factors affecting enzyme activity, Regulation of enzymes, overview of Mechanism of enzyme action, Isoenzymes and Clinical importance of enzymes

UNIT III-Vitamins, Minerals, Nutrition

Vitamins: Definition, Classification of Vitamins

Sources, RDA, Function & Deficiency symptoms of

- Fat Soluble Vitamins (A, D, E & K);
- Water Soluble Vitamins (Thiamine, Riboflavin, Niacin, Biotin, Pantothenic acid, Pyridoxine, Folic acid, Cobalamin) and Vitamin C

Minerals: Definition, Classification of Minerals Sources, RDA, Function, Reference levels & Deficiency Symptoms

- Calcium, Phosphorus, Iron Copper, Zinc, Sodium, Chloride, Iodine, Potassium, Fluorine and Selenium.

Nutrition: BMR, SDA, Dietary fibres, protein Energy Malnutrition and Obesity 24

UNIT IV – Bioenergetics and Metabolism

Bioenergetics: Electron Transport chain and Oxidative Phosphorylation

Metabolism

Carbohydrates: Digestion and absorption, Glycolysis, TCA cycle, Metabolism of Fructose and Galactose.

Lipids: Digestion and absorption, Beta oxidation of fatty acids, Regulation of Cholesterol level in the cell and outline of lipid transport.

Proteins: Digestion and Absorption, Formation and Disposal of Ammonia, Urea Cycle, Special Products of Glycine, Tyrosine and Tryptophan.

UNIT V – Miscellaneous

Outlines of DNA organization, Replication, Transcription, Genetic code and Translation

Organ function Tests: Liver, Renal and Bone.

PRACTICAL

- Spotters

COURSE OUTCOMES	
CO1	The student will be able to gain knowledge of biochemistry of cell structure, functions,digestion, enzymes and proteins.
CO2	The student will be able to gain knowledge of biochemistry of carbohydrates, minerals and vitamins
CO3	The student will be able to gain knowledge of liver and renal function tests, specialized laboratory investigations and lipids.
CO4	The student will be able to gain knowledge of biochemistry of metabolism, homeostasis,nucleic acids and cancer

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S				s	
2		**M**		s		
3	M		**S**			
4	s			**S**		**M**
Category	Basic Science (Non Clinical)					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CT104	**BASICS IN MEDICAL PHYSICS AND ELECTRONICS**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Radiology
OBJECTIVES	To know the basics in Medical Physics, Bio electric potential and the functioning of Medical equipment

Unit I: Laser

Nature of light-Reflection-Refraction-Total internal reflection-Optical fibers-Applications in Medicine – Laser-Principles-Action-Types of laser, Basic principles of laser in Medical Application – Argon-Ion laser photocoagulator-Photo thermal-Photochemical application-Applications of laser in Medicine-Laser hazards and safety measures.

Unit II: Radiation Physics

Introduction to nuclear physics and radioactivity, Radioactive radiations – X-ray, production of x-ray, Properties of x-ray radiations – Biological effects of radiation, Radiation damage in matter, Radiation protection principles, radiation detection and measurement – Ultrasound and generation of ultrasound.

Unit III: Introduction to Imaging Technique

Principles of Microscope: Simple microscope and compound microscope-Radiography: Making and X-ray image-Fluoroscopy. CT Scans, MRI – Ultrasonography: Ultrasound picture of Body-A-Scan-M-Scan-Ultrasound diathermy-Phonocardiography – Radio isotopes: Uses of Radio isotopes – 99mTc Generator – Scintillation detectors – Application of scintillation detectors – Gamma Camera – Positron Camera

Unit IV: Semiconductor devices

Principles of diodes and Transistors – Integrated circuits – Amplifiers – Basic configuration and types – differential and operational amplifiers – Waveform generators – Timer – A/D and D/A converters – Active filters – Transducers – Basic configuration and types.

Unit V: Bio potential Recording Systems

Introduction to bioelectric potential – Electrodes and surfaces – Bio potential amplifier – Frequency ranges of various biopotential signals – Working principles of bio potential recording systems – Electrocardiography – Electroencephalograph –Electromyography.

Reference Books:

1. New Understanding physics for advanced level – Jim Breithauput.

2. Advanced Physics for you by Keith Johnson, Simmons Hewett, Sue holt, John miller

3. Christensen‟s Physics of diagnostic Radiology by Thomas S. Curry III, M.D., Robert C Murry, Jr. PhD, Dow Dey, PhD.

4. Applied Electronics, A. Subramanyam, The National Publishing co., Madras (1996).

5. Design and Development of Medical Electronic Instrumentation, David Prutchi and Michael Norris, John Wiley & Sons (2005).

COURSE OUTCOMES	
CO1	The student will be able to know the functioning of radiological devices
CO2	The student will be able to understand the mechanism of functioning of medical equipments
CO3	The student will be able to know the functioning of Lab instruments
CO4	The student will be able to understand the functioning of radiation devices

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CT105	**ENGLISH**
	Total Contact Periods – 60
	Total credits -4
	Course Designed by – Department of English
OBJECTIVES	To enable students to enhance their ability to comprehend spoken and written English required for effective communication in their professional work. Students will practice their skills in verbal and written.

Unit I: Spoken Communication

Learning to read the phonetic symbols

Stress

Intonation

Rhythm

Commonly mispronounced words

Correct pronunciation of important commonly used

Words in hospital practice

Unit II: Vocabulary and Reading

Special features of English vocabulary

Common errors in choice of word

Semi technical vocabulary

Collecting material from library on scientific topics

Comprehensive exercises

Unit III: Writing

Writing letters regarding permission, leave, opening bank account etc.

Taking notes from lecture / reading materials

Writing reports on patient care

Summarizing scientific passages

Unit IV: Grammatical and Idiomatic Usage

Correction of errors

Types of interrogative sentences

Active-Passive voice

Tense

Principles of procession, clarity and specificity

Reference Books:

1. Effective English Communication by Krishna Mohan and Meenakshi Raman, Tata McGraw – Hill PublishingCompany Limited, New Delhi. (Approx. Cost Rs. 200)

2. English for colleges and Competitive Exams by Dr. R. Dyvadatham, Emerald Publishers (Approx. cost Rs. 150)

COURSE OUTCOMES	
CO1	The student will be able to develop their intellectual, personal and professional abilities.
CO2	The student will be able to acquire basic language skills, listening, speaking, reading and writing.
CO3	The student will be able to acquire the linguistic competence necessarily required in variouslife situation
CO4	The student will be able to communicate with speakers of English language

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES

COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**

Category	Language
Approval	46th Meeting of Academic Council held in Aug, 2017

UAH17CT106	**BASIC OF COMPUTERS**
	Total Contact Periods – 30
	Total credits -4
	Course Designed by – Department of English
OBJECTIVES	This course is designed for students to develop basic understanding of used of computer and its applications in Clinical Departments

UNIT I: INTRODUCTION

Computer basics – Types of computers – hardware components – input devices – output devices – storage devices
– memory – units and sizes – factors affecting performance – operating systems – applications software – networking – LAN and WAN – Accessories – backup – computer virus – software copyright.

UNIT II: WORD PROCESSING

Windows – Office automation – WORD processor – open a new document – toolbars – menus – font dialog box –enter text – scroll – spelling checker – Autocorrect – undo and redo – bullets and numbered lists – indenting – moving and copying – find and replace – auto shapes – saving document – preview and print.

UNT III: ELECTRONIC SPREADSHEET AND DATA PRESENTATION

EXCEL spreadsheet – grid of rows and columns – active cell – selecting range – entering data – editing data – row and column labels – adjusting width – creating and copying formulae – relative – logical functions – lookup function – creating chart – bar chart – pit chart – print and save.

POWERPOINT presentation – creating slideshows- building outline – switching levels in outline – adding pictures – slide designs – design templates – formatting – color scheme – customized backgrounds – inserting content – hyperlink – revolution in education.

UNIT IV: DATABASE MANAGEMENT SYSTEM

ACCESS database – concept – template –primary key – records and fields – Student roster database – input mask

– adding records – viewing data – updating entries – searching and querying – sorting – Table, forms and reports.

UNIT V: APPLICATIONS IN HEALTHCARE AND MEDICINE

INTERNET – e-governance – access to information – communication facility – mechanics of E-mail – social transformation – electronic billing – drug information –information flow in lab and radiology – storage of medicalrecords – networking the organization – patient care – intelligent monitoring – scholarly information – health informatics – robotic assisted surgery – Clinical decision support systems – Telemedicine.

COURSE OUTCOMES	
CO1	The student will be able to develop basic under-standing of computer use.
CO2	The student will be able to acquire knowledge on Applications of computers in clinicaldepartments.
CO3	The student will be able to have the detailed knowledge on how to use hospital informationsystems.
CO4	The student will be able to communicate with speakers of English language

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES

COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**

Category	Basic Science
Approval	46th Meeting of Academic Council held in Aug, 2017

UAH17CT107	**MICROBIOLOGY**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Microbiology
OBJECTIVES	This course is designed to enable students to acquire understanding of fundamentals of microbiology and identification of various microorganisms. It also provides opportunities for practicing infection control measures in hospital and community settings.

UNIT – I: General Bacteriology

Introduction & History of Microbiology, Classification & Morphology of Bacteria, Growth & nutrition, Culture Media & Methods, Sterilization & Disinfection, Fundamental aspects of antibacterial agents and antimicrobial susceptibility testing.

UNIT – II: Immunology

Infection, Immunity, Immunization schedule, applications of antigen antibody reactions, Hypersensitivity, Tumor & Transplantation Immunology.

UNIT – III: Virology

Introduction to virology, viral hepatitis, poliomyelitis, Rabies, Human immunodeficiency virus.

UNIT – IV Mycology & Parasitology

Introduction to mycology, pathogenic yeasts & fungi, Introduction to parasitology, Amoebiasis, Malaria, Helminthic infections.

UNIT – V: Applied Microbiology

Outline of common bacterial diseases, treatment & prevention-Respiratory tract infections (upper & lower), Meningitis (septic & aseptic), Enteric infections (food poisoning & gastro enteritis), Anaerobic infections, Skin & soft tissue infections, Urinary tract infections, Sexually transmitted diseases, Tuberculosis & Leprosy, Hospital acquired infections, Biomedical waste management.

PRACTICAL EXERCISES: Spotters, Gram staining.

Reference Books

1. Textbook of Microbiology by Ananthanarayan & Panicker‟s, 8th edition-Universities Press (India) PVT LTD.

2. Textbook of Microbiology by C. P. Baveja, 4th edition, Arya Publications.

3. Textbook of Medical Parasitology, CK Jayaram Paniker, 5th edition, Jaypee Publications.

4. Medical Parasitology by C. P. Baveja & V. Baveja, 2nd edition, Arya

5. Publications.

COURSE OUTCOMES	
CO1	The student will be able to understand the morphological characters of bacteria.
CO2	The student will be able to master the preparation of smear, fixation and staining of bacterial smears and its quality control methods
CO3	The student will be able to learn to use microscope , autoclave, hot air oven, water bath, steamer, filters
CO4	The student will be able to differentiate between innate and adaptive immunity, and explain the main defences lines as well as biological barrier to the infections.

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES

COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**

Category	Basic Science
Approval	46th Meeting of Academic Council held in Aug, 2017

UAH17CT108	**PATHOLOGY**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Pathology
OBJECTIVES	This course is designed to enable students to acquire understanding of fundamentals of microbiology and identification of various microorganisms. It also provides opportunities for practicing infection control measures in hospital and community settings.

UNIT-I: General Pathology I: Cellular Pathology, Acute and Chronic Inflammation, Tissue Renewal Regeneration and Repair, Hemodynamic Disorders Thromboembolic Disease and Shock

Introduction to Pathology, Adaptations Of Cellular Growth And Differentiation, Causes Of Cell Injury, Mechanisms Of Cell Injury, Necrosis, Apoptosis, Pathologic Calcification, Cellular Aging, Acute Inflammation – Mediators Of Inflammation Outcomes Of Acute Inflammation, Morphologic Patterns Of Acute Inflammation, Chronic Inflammation – Causes Of Chronic Inflammation, Granulomatous Inflammation, Healing By Repair, Scar formation And Fibrosis, Cutaneous Wound Healing, Healing By First Intention, Healing By Second Intention, Edema, Hemostasis and Thrombosis, Infarction, Shock

UNIT-II: General Pathology II: Diseases of the Immune System, Neoplasia, Environmental And Nutritional Disease, Diseases Of Infancy And Childhood

Innate Immunity, Adaptive Immunity, Components Of The Immune System, Mechanisms Of Hypersensitivity Reactions, Acquired Immunodeficiency Syndrome (AIDS), Neoplasia – Definition and Nomenclature, Characteristics Of Benign And Malignant Neoplasm‟s, Molecular Basis Of Cancer, Essential Alterations For Malignant Transformation, Clinical Aspects Of Neoplasia, Laboratory Diagnosis Of Cancer, Common Environmental And Nutritional Pathology, Nutritional Diseases, Tumors And Tumor-Like Lesions Of Infancy And Childhood

UNIT-III: Systemic Pathology I: Blood Vessels, the Heart, Red Blood Cell and Bleeding Disorders, Diseases Of White Blood Cells

Arteriosclerosis, Atherosclerosis, Hypertensive Vascular Disease, Ischemic Heart Disease, Hypertensive Heart Disease, Valvular Heart Disease, Infective Endocarditic, Rheumatic Fever And Rheumatic Heart Disease, Cardiomyopathies, Leucopenia, Anemia‟s, Polycythemia, Bleeding Disorders, Reactive Proliferations Of White

Cells, Definitions And Classifications of Lymphoid Neoplasm‟s and Myeloid Neoplasm‟s, Splenomegaly.

UNIT-IV: Systemic Pathology II: The Lung, The Gastrointestinal Tract, Liver And Biliary Tract

Acute Respiratory Distress Syndrome, Obstructive Pulmonary Diseases, Pulmonary Infections, Gastritis, Peptic Ulcer Disease, Inflammatory Bowel Diseases, Liver Function Tests, Hepatic Failure, Cirrhosis, Portal Hypertension, Jaundice, Cholelithiasis

UNIT-V: Systemic Pathology III: The Urogenital System, the Breast, the Endocrine System, Bones Joints and Soft-Tissue, Peripheral Nerve and Skeletal Muscle, the Central Nervous System

Renal Function Tests, Nephrotic Syndrome, Nephritic Syndrome, Urolithiasis, Pap Smear, Carcinoma Of The Breast-Types And Classification, Thyroid Gland – Hyperthyroidism, Hypothyroidism, Thyroiditis, Graves‟ Disease, Diffuse And Multinodular Goiters, Parathyroid Glands – Hyperparathyroidism, Hyperparathyroidism, Diabetes Mellitus, Fractures, Osteomyelitis, Arthritis, Osteoarthritis, Rheumatoid Arthritis, Infectious Arthritis, Diseases of Peripheral Nerve, Diseases of Skeletal Muscle, Infections of CNS – CSF Find

REFERENCE BOOKS

1. Pocket companion to Pathologic Basis of Disease by Robbins and Cotran, 7th edition, Saunders.
2. Pathology Quick Review and MCQs by Harsh Mohan, 2nd edition, Jaypee Publications.

COURSE OUTCOMES	
CO1	The student will be able to gain knowledge of general pathology.
CO2	The student will be able to gain knowledge pathology of neoplasms.
CO3	The student will be able to gain knowledge of basics of community health.
CO4	The student will be able to gain knowledge of systemic pathology.

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES

COs\POs	a	b	c	d	e	f
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**

Category	Basic Medical Science
Approval	46th Meeting of Academic Council held in Aug, 2017

UAH17CT109	**PHARMACOLOGY**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Pharmacology
OBJECTIVES	This course is designed to help the students to develop an understanding of basic knowledge of pharmacology and knowledge of common drugs/group of drugs

UNIT-I: General Pharmacology

Introduction to pharmacology-various terminologies-sources & routes of drug administration – Absorption & Factors modifying drug absorption – Distribution of drugs – Metabolism: Phase II, - Excretion: routes, modes & kinetics of elimination – Excretion – Mechanism of drug action in brief, synergism & antagonism and Factors modifying drug action – Adverse drug reactions – ADR reporting & monitoring – Drug interactions.

UNIT-II: Central Nervous System & Respiratory System

Introduction to CNS and Neurotransmitters, drugs used in insomnia, Sedatives and hypnotics – diazepam – alprazolam, anti-anxiety drugs, Antiepileptic – phenytoin, carbamazepine, sodium valproate,General Anesthetics – halothane, isoflurane, sevoflurane – Local Anesthetics – lignocaine – list of other drugs, Alcohols – ethyl alcohol – disulfuram, Anti parkinsonians – levodopa – carbidopa, Opioids – morphine – naloxone – tramadol – pentazocine, NSAIDs – aspirin – diclofenac – ibuprofen – paracetamol – Cox 2 inhibitors. Drugs used in bronchial asthma and cough

UNIT-III: Cardio vascular system & blood

Drugs used in Ischemic Heart Disease-nitrates-Calcium channel blockers-nifedipine, verapamil-list of other drugs – Beta blockers – propranolol, atenolol – metoprolol and antiplatelets – aspirin, clopidogrel, and names of other drugs-fibrinolysis drugs-streptokinase and other drugs, Drugs used in CCF-digoxin and list of other drugs useful in CCF, Shock. Diuretics: 4 groups – Thiazides, Loop diuretics, Potassium sparing and osmotic diuretics. Hypertension – outline of drugs used in hypertension, Rennin angiotensin system – ACE inhibitors – captopril, ramipril and names of other drugs – Receptor antagonist – losartan and list of other drugs, Antiarrhythmic drugs-classification – Quinidine, Lignocaine and amiodaron – Drugs for Hypercholesterolemia – statins. Drugs for anemia – oral & parenteral iron preparations, folic acid, vit B12 and erythropoietin. Coagulants and anti-coagulants

UNIT-IV: Hormones and GIT

Contraceptives – oral and injectable, Corticosteroids – glucocorticoids – hydrocortisone-prednisolone-dexamethasone and names of topical steroids – Insulin – Oral hypoglycemic – sulphonyl ureas, biguanides and others, Thyroid and Antithyroid drugs, Sex Hormones-Estrogen and anti estrogens, Progestin and Anti progestin‟s, Androgen And anti androgens. Emetics and anti emetics- metoclopromide and domperidone, Drugs used in peptic ulcer, constipation-lactulose & Diarrhea-ORS- Loperamide.

UNIT-V: Chemotherapy and Miscellaneous

Introduction – Beta lactam antibiotics: Penicillin‟s – natural, semi synthetic penicillin‟s – amoxicillin – cloxacillin-clauvulinic acid – sulbactum – Cephalosporin‟s – cephalexin – cefuroxime – cefixime – ceftrioxone-cefipime, Broad spectrum antibiotics – Doxycycline – chloramphenicol-imipenum-Macrolides – erythromycin, azithromycin and others – Quinolones- ciprofloxacin and list of other drugs and sulfonamides- cotrimoxazole- Amino glycosides-gentamycin, amikacin and names of other drugs Anti TB-first line drugs, Anti leprosy-dapsone and clofazimine Anti-malarial- chloroquine- mefloquine and artemisinins, Anti-fungal- amphotericin B- fluconazole and topical drugs & Anti-viral drugs- acyclovir and anti HIV, Anti protozoals- metronidazole – Anthelmintics- albendazole- praziquantel.

Anti-cancer drugs-Introduction – Anti metabolites- methotrexate- 6 mercapto purine- Alkylating agents-cyclophosphamide- busulphan and cisplatin – Plant products- vinblatin- vincristine- taxanes, antibiotics-actinomycin D- monoclonal antibodies. Immuno modulators- cyclosporine, tacrolimus, azathioprine and steroids. Toxicology-Drugs used in common poisoning, organophosphates, methyl alcohol, Benzodiazepam.

REFERENCE BOOKS:

1. Lippincott‟s Illustrated Reviews: Pharmacology, 5th edition, by Richard A. Harvey and Pamela C. Champe,Lippincott Williams & Wilkins Publisher
2. Essentials of Medical Pharmacology: K.D. Tripathi, 6th edition, Jaypee Publishers.

COURSE OUTCOMES						
CO1	The student will be able to gain basic knowledge in pharmacology.					
CO2	The student will be able to gain knowledge of detailed systemic pharmacology.					
CO3	The student will be able to gain knowledge of detailed knowledge of drugs and groups of drugs.					
CO4	The student will be able to gain knowledge of action of drugs					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CT110	**ENVIRONMENTAL SCIENCE AND COMMUNITY MEDICINE**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Community Medicine
OBJECTIVES	This course is designed for students to practice community health nursing for theindividual, family and groups at both urban and rural settings by using concept and principles of health and community health nursing. It also is designed for students to understand the natural resources and environmental pollution

UNIT – I:

Natural Resources: Introduction, Multi-disciplinary nature of environmental studies, Earth Resources and Man, Renewable and Non-Renewable Resources, Water Resources, Mineral Resources: Food Resources: Effect of modern agriculture, Fertilizer/pesticide problems, Water logging, and salinity, Energy Resources.

Ecosystems: Concept of an Ecosystem, Structure and Functions of an Ecosystem, Producers, Consumers and Decomposers, Cycles in the Ecosystem

Biodiversity: Introduction, Definition: Genetic, Species, Ecosystem diversity, India as a Mega Diversity Nation, Hotspots Of Biodiversity Threats to Biodiversity. Poaching of Wildlife, Man-Wildlife Conflicts, Endangered and Endemic Species Of India, Conservation of Biodiversity

UNIT – II:

Pollution: Definition, Causes, Effects and Control Measures of Air Pollution, Water Pollution, Pollution, Marine Pollution, Noise Pollution, Thermal Pollution, Nuclear hazards, Solid Waste Management role of Individuals in Pollution Prevention.

Social Issues Human, Population and Environment: From Unsustainable To Sustainable Development, Urban Problems Related To Energy, Water Conservation, rain Water Harvesting, global warming, acid rain, ozone layer depletion, nuclear accidents and nuclear holocaust. Environment Protection Act.

UNIT – III:

Concept of health & disease: Concept of health, Definition of health, Philosophy of health- Dimension of health – Concept of wellbeing, Spectrum of health, Responsibility of health – Determinates of health & Indicators of health – Concepts of disease & Concepts of cessation – Natural history of disease – Iceberg

phenomenon, Concepts of control – Concepts of prevention – Modes of Intervention, Changing pattern of disease.

UNIT – IV:

Epidemiology: Definition & explanation, Aims, Epidemiologic approach, Basic measurements in epidemiology & tools of measurements – Measurements of Mortality & Morbidity, Epidemiologic methods- Descriptive epidemiology-Analytical epidemiology – case control study – analytical epidemiology – Cohort study – Experimental epidemiology – RCT – Association & Causation Uses of epidemiology (Criteria for judging causality) – Infection disease epidemiology Definitions Dynamic of disease transmission & Modes of transmission – Disinfection – Definition Types Agents used Recommended disinfection procedures-Investigation of an epidemic.

Unit – V:

Environment & health: Definition & components (environment sanitation environmental sanitation) Water: Safe & Whole some water Requirements Uses source of water supply (sanitary well)-Purification of water (1). Large scale purification, (2). Small scale purification – Water Quality – Special treatment

of water

Air: Composition The air of occupied room discomfort. Air pollution & its effects. Prevention & Control of air pollution

Ventilation: Definition Standards of ventilation Types of ventilation. Light, Noise & Radiation, Metrological environment, Housing, Disposal of waste Excreta disposal

PRACTICALS:

1. Epidemiology Problems
2. Environmental spotters

REFERENCE BOOK

1. Textbook of Preventive and Social medicine by k. Park, 21st edition, published by Banarsidas Bhanot

COURSE OUTCOMES						
CO1	The student will be able to know the concept of health & illness					
CO2	The student will be able to know epidemiology of common communicable diseases					
CO3	The student will be able to know epidemiology of common non communicable diseases					
CO4	The student will be able to know the effects of pollution on humans.					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CT111	**BASICS OF NURSING**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Nursing
OBJECTIVES	This course is designed to help the students to develop an understanding of the nursing profession, philosophy, objectives, theories and application of nursing in various clinical settings. It is aimed at helping the students to acquire knowledge, understanding and skills in techniques of nursing and practice them in supervised clinical settings.

Unit I: Introduction of Health

Health care system, major health problems of the country, nature of disease pattern, technological advances and national health programmes, health for all by 2000 AD. Role of health care workers in the health care delivery system, impact of illness of the individual family and community. History of Nursing, Communication Skills -Relationship with patients, process of communication

UNIT II: Concept of Nursing

Nursing Processes- Problems solving approach, assessment, diagnosis, planning, implementation and evaluation.

Unit III: First Aid and Nursing in Emergencies

Definition, basic principles, scope and rules, Wounds, hemorrhages, shock, fracture, dislocation and muscle injuries, respiratory emergencies, resuscitation, unconsciousness, Miscellaneous conditions, burns, scalds, foreign bodies in the skin, eyes, ear, nose, throat and stomach.Frost bite, effects of heart cramps, bites and stings. Poisoning, Transporting injured persons.

Unit IV: **Personal Hygiene and Health**

Care of skin, mouth, eyes, nails, hair, Menstrual hygiene, clothing, mental health, common health problems of poor personal hygiene. Comfort, Rest and Sleep, Hospital Housekeeping

Unit V: Health Education

Introduction to principles and methods of health education. Use of audio visual aids, mass education, role of nurse in health education.

COURSE OUTCOMES						
CO1	The student will be able to gain knowledge on concept of health, health-illness continuum and health care delivery system.					
CO2	The student will be able to gain knowledge on scope of nursing practice.					
CO3	The student will be able to gain knowledge on concept, theories and models of nursing practice.					
CO4	The student will be able to gain knowledge on concept, theories and models of nursing practice.					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17RIS201 - ANATOMY, PHYSIOLOGY, PATHOLOGY AND PHARMACOLOGY RELATED TO RADIOLOGY

Course Objective

An outline of anatomy, physiology, and pathology will be provided to improve the students understanding of the technical and diagnostic procedures used with special emphasis on applied aspects.

Unit I: Introduction and general considerations

- **General**- Topographical and other general terms employed, Cell structure and function, Tissues-differentiation, Bone structure, development and ossification
- **Skin-**Elementary account of structure and physiology of the skin with special reference to the effects of Radiation**.**
- **Ductless Glands-** Surface markings, thyroid gland and parathyroid, suprarenal glands, pituitary gland, thymus gland and pineal body.
- **Pathology in Relation to Radiographic Applications / General Pathological Terms-**Inflammation – pyrexia, ulcer, bacteria and the specific granulamata neoplasms benign, malignant, with some examples.
- **Lymphatic System**
  Surface markings, tonsils, elementary physiology of the lymphatic system.

Unit II: MUSCULOSKELETAL SYSTEM

- **Osseous System**
  Detailed description of bones and joints of the upper limb, shoulder girdle, lower limb, pelvic girdle, vertebral column, thorax, skull and their Radiographic appearance. Skull with reference to nasal bones, sinuses, temporal bone & teeth.
- **The Muscular System**

Voluntary and involuntary muscles with special attention to the following: Sternocleidomastoids, pectoralis major, diaphragm, iliopsoas, deltoid, supraspinatus, biceps, triceps, brachialis, quadriceps femoris, erector spinae.

Unit III: Cardio-respiratory, alimentary and urinary systems

- **The Cardiovascular System**

  Structure and function of heart and main vessels. Their principal relations and the surface markings on main structure of the chest. Composition of blood. Radiographic appearances of heart and aorta in various projections.

- **The Respiratory System**

  Structure, position and function of nose, pharynx, larynx, trachea, bronchi, lungs and pleura with surface markings, anatomy and significance of the mediastinum.

- **Elementary Physiology of Respiration**

  Radiographic appearance of the larynx, pharynx and trachea of the chest in various projections.

- **The Alimentary System**

  Structure, position and function of the buccal cavity, tongue, salivary glands, pharynx, esophagus, stomach, small intestine, large intestine, liver, gall bladder and pancreas. Radiographic surface markings.

- **The Urinary System**

  Structure, position and function of kidney, ureters, bladder and urethra. Radiographic surface markings.

Unit IV: Nervous System, reproductive system and elementary pathology

- **The Nervous System**

Spinal cord, meninges, secretion and circulation of the CSF. Radiographic appearance of the central nervous system following use of contrast media.

- **Reproductive System**

  The uterus and tubes as shown by the injection of opaque media. Anatomy of male reproductive system.

- **Elementary Pathology of Common Conditions**

  Benign tumors, malignant tumors, epithelial tumors, connective tissue tumors, nervous tissue tumors, tumors of the haemopoietic and reticulo-endothelial system, leukemia.

Unit V: Contrast media and patient care

- **Contrast Pharmacology**

Types of contrast media. Ionic and non-ionic contrast media. Testing of sensitivity administration of proper dose. Advantages of non ionic contrast media. Mild to major reactions and management of the same.

- **Patient Care in Radiology Department-Care and comfort** of the patient, Handling of patient – fracture cases lifting of injured patients. **Records of patients.** Temperature, pulse, respiration, setting of trays for various **examinations, simple instruments.** (syringes and needles – Higginsen's syringe – catheters, tourniquets etc) treatment of shock – surgical – electrical, first aid for such occurrences as fainting, vomiting, epilepsy, etc, common medical and surgical terms. **Psychological approach** to patient as an individual not as a case in relation to pathological condition – handling of fracture cases – stretcher and bed patient – method of dealing with helpless patients – ventilation and temperature of X-ray room and cross infection – **general hygiene** – organization to avoid delay – waiting and restrooms – special apparatus for children

1. **Radiographic Surface Anatomy**
2. **Contrast Agents**
3. **Spotters**
4. **Skeletal anatomy**
5. **Film discussion**
6. **Charts**

UAH17RIS202 - RADIOLOGICAL PHYSICS AND DARK ROOM TECHNIQUES

Course Objective

This course will provide an introduction to concepts in radiation physics radiation instrumentation, radiation safety and film processing so that the students can better understand the operations of radiation detectors and radiographic film processing.

Unit I: Radiation Physics X-Rays

Electro magnetic radiations, waves and quanta, rectilinear propagation, inverse square law, general electro magnetic, spectrum, production and properties of X-rays.

X-ray Spectrum: characteristic radiation and bremstrahlung radiation. Effects of variations in the tube potentials.

Unit II: X-Rays and Matter

Elementary outline of absorption of x-ray by matter, secondary electron emission, Compton & photoelectric absorption of x-rays by light elements variations with wave length, scattering of x-rays, practical aspects of these phenomenon in radiology. Lionization by x-rays. The definitions of the roentgen.

Unit III: Radiation Protection

Principles of protection in x-ray department, measurements of stray radiation, Radiation units. ICRP and AERB recommendations. Biological effects of ionizing radiation, TDS, ALARA, X-ray room design.

Unit IV: X-Rays Measurements

Methods of measuring x-rays ionization measurement – realization of line roentgen parallel plate chamber. Principles of integrating, direct reading and condenser dosimeters half value layer. Film dosimetry, TLD, Pocket dosimeter, chemical dosimetry, biological dosimetry, scintillation defectors, solid state detectors, GM counter ionization chamber, proportional counter.

Unit V: Dark Room Techniques

Ideal dark room-construction-accessories-safelight, wet bench, dry bench, types of films, types of hangers, Automatic film processor-analysis the various parts of the unit maintenance, required chemicals and monitoring, Manual film processing-contents of developer and fixer-need of water bath, rinsing and various methods of drying, Types of films, manufacture of films, storage of films, film definition-density and contrast, characteristic curve, image defects, artifacts, film cassettes types of intensifying screens. Artifacts in Radiography.

1. **Radiation survey**
2. **Leakage radiation test**
3. **Manual Film Processing**
4. **Automatic film processing**
5. **Effects of temperature on film processing**
6. **Effect of pH on film processing**

UAH17RIS203 - BASIC PRINCIPLES OF HOSPITAL MANAGEMENT

(Common to all specialties – Anesthesia Technology, Cardiac Technology, Clinical Laboratory Technology, Renal Dialysis Technology, Radiology & Imaging Science Technology, Perfusion Technology, Cath Lab Technology & Blood Banking Technology)

Unit I: Introduction to management & Organization:

The evolution of Management, Definition and importance of Management. Planning – Organizing – staffing – Motivating – Leading – Controlling. Management of health care units (in brief). Individual behaviour in organization; organizational functioning (Group/Individual); Perception; Motivation MBO; Organizational Development.

Unit II: Planning and Management of Hospitals & Clinical Services:

Building and physical layout – space required for separate function – Planning of infrastructure facilities, clinical services, equipment & Human resources – Types of Hospitals. Organization and administration of various clinical services; outpatient services. In-patient services, emergency services, operation theatres, ICU's and super specialty services.

Unit III: Organizing of support clinical services & Hospital management:

Imaging – CSSD – Laboratory – Blood Bank – diet – Medical Records – Mortuary. Housekeeping – Maintenance (Water, Electricity, Civil, Air Conditioning, Lift) – Pest Control – transport – Security.

Forecasting – Purchasing & procurement (Sourcing, methods and procedures) – Storing & issuing, Concept of inventory control, Maintenance of equipments and contracts (with special reference to major biomedical equipments). Trends in financing of Health and Hospital Services – Classification of Hospitals depending on source of financing – roles of financial institutions.

Unit IV: Personnel and quality Management in Hospital & Marketing:

Concepts – Manpower planning – Training & Developments – Team Building – Conflict Management – Performance appraisal – Office rules and regulations Outline of Strategic Planning and Marketing.

Concepts of quality – Professional Audit System – QA program – Medical Audit – Quality Circle – TQM – Patient Satisfaction – ISO 9000. A brief outline – computerization in hospital departments. Concept, Techniques, Indicators, Evaluation of Efficiency & Effectiveness evaluation of hospital and medical care services.

Unit V: Ethical, current issues and Legal Aspects of Hospitals management services:

Laws related to Hospital – Medico Legal Cases law of Torts – Autopsy – Dying declaration – CPA. – Waste Management – Telemedicine – Organ Transplantation – Rehabilitation Service – Health Insurance.

Operations Research and Quantitative Methods in Hospital Administration & Nursing Services in a Hospital.

UAH17RIS204 - COMPREHENSIVE VIVA: ANATOMY, PHYSIOLOGY AND PHARMACOLOGY RELATED TO RADIOLOGY(IE)

SEMESTER 4

UAH17RIS205 - HEALTH CARE MANAGEMENT

Course objective

1. To learn about development and evaluate the health programs.
2. To learn about various health policies

Course outcome

1) To know orientation about the health organization and policy.

2) To familiarize students with the basics concept of health policy and national health program.

UNIT I: Concept of Health Care and Health Policy

Health in Medical Care, Indigenous systems of Health Care & their relevance, Framework for Health Policy Development.

UNIT II: Health Organisation

Historical development of Health Care System in the third world & India, Organization & Structure of Health Administration in India, Type of Health Organization including International Organizations, Private & Voluntary Health care provider, Distribution of Health Care Services, Health Care System in Public Sector Organization, Health systems of Various Countries.

UNIT III: Health Policy and National Health Programme

National Health Policy, Drug Policy, National Health Programs (Malaria, T.B., Blindness, AIDS etc.), Evaluation of Health Programs (Developing indicators for evaluation), Medical Education & Health Manpower Development.

UNIT IV: Health Economics – Fundamentals of Economics

Scope & Coverage, Demand for Health Services, Health as an Investment, Population, health of Economic Development.

Economics of Health – Population based health services, Economics of Communicable and Non Communicable diseases.

UNIT V: Methods & Techniques of Economic Evaluation of Health Program

Cost Benefit & Cost Effective Methods.

- **Household & Health**

Health Expenditure & Outcome, Rationale for Government action, Household capacity, income and schooling

- **Health Insurance.**

Reference Book

1. Introduction to Health Care Management by Sharon Bell Buchbinder, Nancy H. Shanks, Dale Buchbinder
2. Healthcare operations management by Danial B

UAH17RIS206 - POSITIONING RADIOGRAPHY AND CONTRAST PROCEDURES

Course objective

This course will cover fundamental or radiography including radiographic techniques for individual systems, reproduction of radiographs and radiation protection.

Course Outcome

1. Students have a knowledge about contrast materials and procedures.
2. Gain adequate knowledge to handle the emergency patients and describe the film.

Unit I: Practice on the patient

- Age, subject types and sex, anatomical landmarks-postural variations-erect and horizontal technique-respiratory movement and diaphragm level-regional densities-preparations-and immobilization of patient-pathological conditions-injuries, fractures and dislocations congenital, localized views-periodic examinations-use of dry bones-positioning terminology identification systems.
- The position of the patient, the relative position of the tube to the patient and to all the exposure factors.

Unit II: Upper limb, Lower limb and Pelvic Girdle

- Techniques for hand-fingers-thumb-wrist joint-forearm-elbow joint-humerus-shoulder joint and sterno-clavicular joint.
- Techniques for foot-calcaneum-ankle joint-leg-knee joint-patella-and femur (lower two thirds).
- Techniques for pelvic-iliac fossa-ischium and sacro iliac joint.

Unit III: Vertebral column, Bones of Thorax and skull

- Techniques for Atlanto-occipital articulation, cervical vertebrae, cervico-thoracic junction, thoracic vertebrae, lumbar vertebrae, lumbosacral articulation, sacrum, coccyx.
- Techniques for sternum, ribs (upper and lower).
- Techniques for cranium, facial bone, sella turicica, temporal Bone and optic foraminae, sinuses, mandible and temporo mandible joint.

Unit IV: Abdomen

Routine and radiographs on acute condition

Bedside radiography-techniques for acute chest condition-intestinal obstruction, abdominal perforations-vertebral injuries-skull injuries-fractures immobilized. Theater radiography-introduction to C-arm image intensifier-exposure and training.

Unit V: Contrast Procedures

Barium swallow-Barium meal series-Barium enema-double contrast barium enema, small bowel enema, double and single contrast, ERCP, PTBD, sonograms, fistulograms, mammograms, IU, retrograde pyelogram, MCU, AUG, Opposing Urethrogram. Sialogram, darocystogram, HSG, T-Tube cholangiogram, operative cholangiogram (on table in theatre), Radiographic image processing.

1. **Contrast procedures**
2. **Film Criticism**
3. **Handling patient**
4. **Pre-medication and post-medication**
5. **Crash cott**
6. **SPOTTERS / CHART**
7. **Radiographic materials**

Reference Book

1. Positioning in Radiography – by Clark's
2. *Radiographic Positioning and Procedures – by Merrill's Atlas*

UAH17RIS207 - RADIOLOGY EQUIPMENTS

Course objective

1. To learn about Radiological instrumentation and physics concepts.
2. Quality assurance test procedures.
3. Machine accessories and maintenance.

Course outcome

1. Students know about positioning the patient during imaging procedures.
2. To learn about various imaging with contrast procedures

Unit I: Radiological Physics, Apparatus

- Introduction to general properties of radiation and matter. Fundamentals of nuclear physics and radioactivity, production of x-rays, Film characteristics, Contrast, Artifacts in radiography, Interaction of x-ray and gamma rays with matter and their effects on irradiated materials. Interaction of x-rays with patients, radiation protection, Quality assurance, Minature radiography, macro radiography and magnification techniques.
- Distribution of electric power.
- Mains-compensators-stabilizers-single phase-three phase mobile supply cable capacity, voltage drop-main switches, fuses earthing-effects of frequency variations.

Unit II: Transformers, Control of output

- Construction-closed or open-core-voltage and power relations, functions of core-losses and regulations-copper losses, iron losses-hysterisis and inherent regulations. Types of transformers high insulation transformers-condensor effect.
- Resistance control of primary transformer control of primary (acute transformer) dual control-continuous central.

Unit III: HT General Circuits and Distribution, X-ray Tubes

- Valve and metal rectifiers-mechanical rectifiers-self-suppression types of generators radiographic half-wave, three phases condenser-therapeutic-pulsating, HT distribution-bus bars stress shield chokes, electrical protection, inter-locks, safety devices.

- Construction-loading-rating, line focus, Dual focus-Rotating anode tube-principle of methods of cooling-grid tubes-X-ray proofing-proofing (Tubes cables) minimum requirements.

Unit IV: Instruments and Controls, Accessories

- Milliammeters-milliampere-second meter-kilovolt meters-direct and prereading layout of control desk contractor automatic and interlocked controls-exposure switches (clock work electronics, synchronous electric photoelectric). Mammography, Digital radiography, OPG, craniostat, Mobile X-ray equipment for operation theatres, Dual energy X-ray absorptiometry.
- Moving grids, stationary grids curved and flat grids-focused and non focused grids. Bucky tables, stands and pedestals, screening stands, serial devices, diaphragms, cones and applicators.

Unit V: Fluoroscopy

- Basic principle-assembly image intensifiers-camera-filters, magnification DSA-the angiographic room-the generators-the X-ray tube-image intensifier-cine camera and associated optics-the television chain-cine film selection-processing and viewing digital fluoroscopy-Radiation safety.

1. Testing X-ray beam and light beam alignment.
2. Magnification techniques with constant SID
3. Magnification Techniques with constant OID
4. Beam Alignment Test
5. Focal shot test
6. Grid alignment test
7. CHART/SPOTTERS

Reference book

1. *Fundamentals of fluoroscopy* - by Jeffrey D. Houston, Michael Davis.
2. HANDBOOK OF BIOMEDICAL *INSTRUMENTATION* - by McGrew hill
3. The Physics of Radiology and Imaging - by THAYALAN K**.**

UAH17RIS208 - CLINICALS IN RADIOLOGY EQUIPMENTS AND POSITIONING RADIOGRAPHY AND CONTRAST PROCEDURES: COMPREHENSIVE VIVA(IE)

Course objective

This course will cover fundamental or radiography including radiographic techniques for individual systems, reproduction of radiographs and radiation protection.

Course outcome

1. Student know about positioning the patient during imaging procedure.

2. To learn about various imaging with contrast procedures.

SEMESTER 5

UAH17RIS301 - BASIC AND ADVANCED CT SCAN

Course Objective

1. To learn about concepts and theory of CT
2. To know advanced CT techniques
3. To know various CT procedures

Course outcome

At the end of the course, students will learn about the CT machine instrumentation, concepts, working principles and understanding of the benefits and risks of using a machine for a variety of applications. They gain knowledge about image reconstruction and documentation.

Unit I: Basic principle of CT scan, Generation of CT, Image formation in CT, Image quality Hounsfield unit, Detectors used in CT, X-ray tube,

Unit II: Patient preparation, Imaging techniques for Head, Chest, Abdomen and other parts.

Unit III: Contrast media in CT scan, Artifacts in CT, Image documentation, Safety regulation.

Unit IV: Basics of spiral CT scan, advantages of spiral CT scan, Electron beam CT, patient preparation-CTprotocols for various parts of body, CT contrast enhanced protocols-CT angiography-(aortogram, selective angiogram head, neck and peripheral angiography.).

Unit V: 3D processing and reconstruction-Different Rendering mode used in 3D Reconstruction-HRCT-image documentation-image filing-documental maintenance.

1. **Brain scanning Protocol**
2. **CT Chest scanning Protocol**
3. **CT Abdomen scanning Protocol**
4. **CT Angiography Protocol**
5. **Image processing in workstation**
6. **CT Biopsy Protocol**

UAH17RIS302 - BASIC AND ADVANCED ULTRASOUND IMAGING

Course objective

1. To learn about concepts and theory of ultrasound machine
2. To know advanced advanced techniques

Course outcome

Students have a good knowledge about ultrasound machine parts, different type of transducers and uses for various techniques. Adequate knowledge about ultrasound room layout construction and maintenance.

Unit I: Ultrasound Physics: Ultrasound units, Transducer techniques for imaging different anatomic areas, Different types of Transducer, Ultrasound artifacts.

Unit II: Ultrasound anatomy, Patient Preparation, Biologic effects and safety, Contrast agents in Ultrasound, Quantitive ultrasound densitometry.

Unit III: Doppler physics-Doppler artifacts-doppler techniques-tissue harmonic imaging, seascape imaging-Hybrid imaging-Thermography

Unit IV: 3D and 4D Ultrasound Imaging, patient preparation for Doppler, Vascularsonography.

Unit V: Musculoskeletal sonography, basic echocardiography, interventional sonography, intra-operative sonography.

1. **USG abdominal imaging.**
2. **USG Neck imaging**
3. **Doppler evaluation**
4. **Advanced Ultrasound Imaging**
5. **Spotter / Image discussion**

Reference book

1. Physics for medical imaging – by farr's
2. Basic radiological physics – by thayalan

UAH17RIS303 - HOSPITAL PRODUCTS, PROMOTION, SALES & PUBLIC RELATIONS

Course Objectives

1. To educate them on the importance of patient education, to understand the outpatient and inpatient registration process and to make patient satisfaction and patient records.
2. To make them understand the importance of coordination among various departments in hospitals.

Unit I:

- **An introduction to Marketing**

  Role of marketing in Business management – Evolution and definition of marketing – Concepts of Marketing – Service vs. Products – Management of Service Management process

- **Service Marketing**

  Classification of services – Characteristics of services and their marketing implication – Selecting appropriate tools for marketing

Unit II:

- **Component of Service Marketing**

  Product Planning, Market research system – Market segmentation – Targeting – Positioning – Launching new service – Concept of product life cycle, Pricing, Setting the price – Economic Theory – Responding to price change, Physical Distribution, Major Aspects – Channels of distribution – Selection of channel, Promotion, role of communication – Promotion mix – Advertising (Media – budget – Cost effectiveness – (attributing to hospitals a human face – Good will – image building among major public), Sales promotion (techniques – Evaluation), Direct selling (Sales force – Evaluation), Physical Environment, Process, People Unit III.

Unit III:

- **Analysing Markets and Buyer Behaviour**

Model of consumer behaviour – Factors influencing buyer behaviour – Buying decision process.

- **Branding of a Hospital Facility**

  Brand name and concept – Positioning hospitals – Developing and USP – Brand image – Image building – long term and short term activities.

Unit IV:

- **Other Marketing routes for Health Care Units**

  Interpersonal communication – Print materials institutional marketing – seminars – conference.

- **Marketing Strategies for Hospital**

  Managing Differentiation – Service Quality – Productivity – Product support service.

Unit V:

- **Evaluating and Controlling Market Performance**

  Annual plan control (sales analysis – market share analysis – Marketing expense to sales analysis – Financial analysis), Profitability control, Efficiency control, Strategic control.

- **One case study related to Hospital Marketing**

OR

PHYSICIAN'S OFFICE MANAGEMENT

Course outcome

Students will have adequate knowledge about medical office management.

UNIT I. Outpatient Section

Registration of new cases, Registration of repeat cases, Patient record guide, Laboratory X-Ray reports & reports filing, Alpha index typing & Filing, O.P. Records coding (disease & indexing), O.P. records retrieval, O.P. Statistics

UNIT II. Inpatient Section

Admitting office procedure, Inpatient record removal & forwarding, Ward Census,

UNIT III. Assembling & deficiency checks, I.P. record coding & indexing,

UNIT IV. Discharge Analysis

Incomplete record control, Completed record control, Medico legal procedures & issue of Medical certification, Record retention & destruction of O.P. & I.P. records,

UNIT V. Miscellaneous

Hospital reception, Secretarial practice, Library (Medical)

Reference book

1. Medical Office Management – Christine Malone
2. Medical Office Management – Alice Anne Andress
3. The Business Side of Medicine – by MD Harbin Mba

UAH17RIS304 - CLINICALS IN BASIC AND ADVANCED ULTRA SOUND IMAGING: COMPREHENSIVE VIVA (IE) – 75 MARKS

SEMESTER 6

UAH17RIS305 - BASICS AND ADVANCED MRI

Course Objective

1. To learn about MRI parts
2. To learn working principles of MRI
3. To learn various types of coils and techniques.

Course outcome

Students have adequate knowledge about handling MRI machine and Various sequences for varies imaging.

Unit I:

Basic principle and concepts of MRI, the need for MRI, Role of hydrogen in MR Imaging Advantages and disadvantages of MRI,

Unit II:

MRI architecture, magnet system and gradient system

Unit III:

Patient screening before scanning, safety aspects

Unit IV:

Types of magnets and RF coils, different types of pulse sequence, fourier transformation, Inverse Fourier transformation, and K space imaging Image formation in MRI with & without gating image formation in MRI, maintaining image quality

Unit V:

MR Angiography, (dynamic contrast MR angiography, phase contrast and TOF) Functional MRI, MR spectroscopy, Recent advances in MRI and open MRI.

1. **MRI Brain screening Protocol demonstration**
2. **MRI Spine screening Protocol**
3. **MRI Angiography Protocol**
4. **MRI Musculoskeletal screening Protocol**
5. **Image processing in work station.**
6. **MR Advanced imaging Protocol**

UAH17RIS306 - INTERVENTIONAL RADIOLOGICAL PROCEDURES AND BASIC ANGIOGRAPHY

Course objective

1. To learn about catheter incision procedure and risk
2. To learn protocol for different procedures

Course Outcome

Students gain knowledge about angiography, venography procedure and how to manage the shock.

Unit I: Procedure of image guided biopsies and drainage procedure.

Unit II: Invasive Angiography and Venography, 4 Vessel DSA, aortogram, Selective Angiogram, Venogram.

Unit III: Invasive Monitoring, Cardiac resuscitation measures, Plethysomography, Interventional Procedures, PTBD, Stenting, Management of shock, PTA +stenting, stent graft, Embolisation Tips, drainage procedure.

Unit IV: Embolisation, GDC, Glue embolisation, Vertebroplasty, Direct puncture, Laser guided procedures, Adult and Paediatric Invasive Cardiology.

Unit V:

a) Basics of cardiac catheterization

b) Coronary angiogram

c) Cardiac interventional procedures

1. Catheter Intervention Procedures Protocol
2. Equipment handling
3. Image guided interventional procedure Protocol
4. Image processing in work station

Reference book

1. Handbook Of Interventional Radiologic Procedures - by Krishna Kandarpa
2. Vascular and Interventional Radiology - by Brian Strife MD (Author), Jeffrey Elbich (Author)

UAH17RIS307 - TRAUMA LIFE & CARDIAC LIFE SUPPORT

Course objective

Describe first aid and the role of first aide, Describe the purpose of emergency care. Outline steps of emergency care.

Course outcome

Students have adequate knowledge about various emergency life support

UNIT I. Trauma Life (Part 1)

- BLS
- TRIAGE
    a. Primary Survey
    b. Secondary Survey
- Airway & Ventilatory management
- Shock
- Central & peripheral venous access
- Thoracic trauma – Tension pneumothorax
- Otherthoracic injuries
- Abdominal trauma – Blunt injuries
- Abdominal trauma – Penetrating injuries

UNIT II. Trauma Life (Part 2)

- Spine and spinal cord trauma
- Head trauma
- Musculoskeletal trauma
- Electrical injuries
- Thermal burns
- Cold injury

UNIT III. Trauma Life (Part 3)

- Paediatric trauma
- Trauma in pregnant women
- Workshop BLS
- Workshop cervical spine immobilization
- Imaging studies in trauma

UNIT IV. CARDIAC LIFE SUPPORT (Part 1)

- BLS
- The universal algorithm for adult ECC
- Ventricular fibrillation/Pulseless ventricular tachycardia algorithm
- Pulseless electrical activity (PEA) / asystole algorithm
- Bradycardia treatment algorithm
- Tachycardia Treatment algorithm

UNIT V. CARDIAC LIFE SUPPORT (Part 2)

- Hypotension / Shock
- Acute myocardial infarction
- Paediatric advanced life support
- Airway management
- Defibrillation
- Drugs used in ACLS
- S Emergency Cardiac pacing
- AED
- Techniques for oxygenation and ventilation

Reference Book

1. First aid book-St Johns Ambulance services

2. Text book of Orthopaedics – Natarajan

UAH17RIS308 - CLINICALS IN ADVANCED MRI AND INTERVENTION RADIOLOGICAL PROCEDURE: COMPREHENSIVE (IE)

INTERNSHIP

Regulation for Internship

Internship is an important part of training wherein an Allied Health Science Graduate acquires skills, and applies his knowledge gained during his course of study.

Objectives:

1. To Facilitate Reinforcement of Training.
2. To Develop Professionalism, Communication and Team Building skills.
3. To help in understating of ethical Practices like
    - Rights and dignity of patients
    - Ethical Conduct and professional obligations to colleagues, patients, families and community

The Internship is compulsory for all the candidates. It shall commence after the students have completed and passed all academic and clinical requirements.

The internship shall be for a duration of one year.

The degree shall be awarded after satisfactory completion of internship.

EVALUATION OF INTERNEES

Formative and Summative evaluation are carried out. A **Log Book** is maintained by all internees. No Marks are allotted. Satisfactory completion of Log Book is essential for completion of internship.

Day to day assessment of the internees during the internship posting should be done (Log Book). Summative evaluation is based on observation of the supervisors of different department and their records in the log books. Based on the formative and summative evaluation the head of department shall issue certificate of satisfactory completion of training, following which the university shall award the degree.

During internship a project is allocated to each intern by the respective Heads of departments.

The project work is marked for 100 (including viva).

Six credits are given for the project

30 hours per credit

Total 180 hours

The Project is done for a Maximum duration of 6 months.

Internship credits

The internship is given 15 Credits. (i.e.) 45 hrs/Credit. A Total of 675 hours.

After Undergoing internship for a period of Six months, each Department shall conduct an **internal evaluation** of the student to assess the skills developed and progress of the student before issuing the certificate of completeness.

The duration of the posting and skill acquisition in various technology courses are attached.

Number of Working days for interns:-

All Sundays are holidays.

On Government holidays duties are allotted on turns to the interns. In cases of leave or absence extension of posting shall be given which is done at the discretion of Head of Department.

COMMON TO ALL BRANCHES

INTERNSHIP [VII & VIII SEMESTER]

Sl. No.	Programme	Hours Prescribed	University Examination			
			Project Evaluation	Viva	Total	Credits
1	Internship	675	-	-	-	15
2	Project	180	80	20	100	6
No Minimum for Passing			Total Credits			21

RADIOLOGY AND IMAGING SCIENCE TECHNOLOGY

OBJECTIVES

Practical training is given to the students who have completed successfully in all subjects year.

GUIDELINES

- Internship shall commence after the students have completed examination in all subjects successfully.
- Degree shall be awarded after satisfactory completion of internship.
- This would be certified by the immediate supervisor under whom the training was done and further countersigned by the HOD.

EVALUATION OF INTERNEES

- A log book shall be maintained and updated daily at the end of the day which be monitored and signed by the concerned supervisor.
- Based on the report given by the supervisor and satisfactory signature obtained in the log book, the head of the department shall issue satisfactorily completion of training.

Duration of postings

CT Scan	-	4 months
MRI	-	4 months
Ultrasound	-	3 months
Interventional Radiology	-	1 month

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UAH17CE1020	**FUNDAMENTALS OF BIOSTATISTICS**
	TotalContactPeriods–4
	Total credits -2
	Course Designed by–Department of Community Medicine
OBJECTIVES	The course will offer basic knowledge about Biostatistics and to correctly apply a variety of statistical procedures and tests according to objective of study

UNIT I: Introducing the Basics

Introduction, Graphical representation of data, Data collection, Diagrammatic and Graphical Presentation of data, Types of data, limitations.

UNIT II: Measures of Central Tendency & Dispersion

Measures of Central Tendency; Mean, Median, Mode, Geometric mean, Harmonic mean for raw data. Measures of dispersion; Quartile deviation, Mean Deviation - Standard Deviation - Coefficient of variation- Range

UNIT III: Probability

Introduction to Probability, Theorems of probability; Bayer‘s Theorem, Probability Distributions; Discrete & Continuous distributions, Binomial Distribution, Poisson Distribution, Normal Distribution.

UNIT IV: Correlation & Regression Analysis

Correlation Analysis, Types of correlation; Rank Correlation Coefficient. Regression analysis, Types of Regression, Assumptions; Comparison to Correlation.

UNIT V: Hypothesis Testing

Introduction; Types of sampling, Hypothesis testing; Type of errors, Parametric & Non-parametric tests; Mann Whitney’s U test, Chi-square, t-tests, ANOVA.

REFERENCES

1. Don. Mc Neil - Epidemiological Research Methods - Oxford University Press, London.

2. Biostatistics –Principle & Practice – McGraw Hill Education.

3. http://www.ats.ucla.edu/stat/

4. Ahttp://www.statsoft.com/textbook/basic-statistics/

COURSEOUTCOMES	
CO1	The student will be able to understand and apply the Biostatistics.
CO2	The student will be able to use the software independently for the data analysis.
CO3	The student will be able determine the correct procedures to use in a given situation
CO4	The student will be able to interpret the results of hypothesis tests

MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	S			**S**		**M**
Category	Management					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE1021	**COMMUNICATION SKILLS FOR HEALTH CARE PROFESSIONALS**
	TotalContactPeriods–5
	Total credits -2
	Course Designed by–Department of Community Medicine
OBJECTIVES	This course deals with essential functional English aspects of the of communication skills essential for the health care professionals.

UNIT: I APPLIED GRAMMAR

Identifying common errors in sentences, Transformation of sentences, Usage of either …or…, Neither… nor…, So… that…, Such… that…, Not only… but also…, unless…

UNIT: II VOCABULARY

Abbreviations used in healthcare, Medical idioms & Phrases

UNIT: III WRITING

Letter writing, Curriculum Vitae writing, covering letter, Creative writing – invite, posters, Essay writing, summary writing, note taking, report writing.

UNIT: IV SPOKEN COMMUNICATION

Telephone etiquette, Importance of Stress, Intonation and rhythm, speaking; describing simple process, Filling a form etc., - Asking and answering questions; Debate/Oral Reporting

UNIT: V LISTENING AND READING SKILLS:

Listening and reading comprehension exercises.

Textbook Recommended:

1. Effective English Communication by Krishna Mohan and Meenakshi Raman, Tata McGraw – Hill Publishing Company Limited, New Delhi.

2. English for Colleges and Competitive Exams by Dr. R. Dyvadatham, Emerald Publishers.

COURSEOUTCOMES						
CO1	The student will be able to express better.					
CO2	The student will be able to get knowledge about MOA, adverse effects					
CO3	The student will Grow personally and professionally					
CO4	The student will Develop confidence in every field					
MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**		S	
4	S			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE1022	**BIOMEDICAL ETHICS**
	TotalContactPeriods–3
	Total credits -2
	Course Designed by–Department of Community Medicine
OBJECTIVES	To provide basic skills in: A) Approaching ethical issues. B) Analysis and statement of issues. C) Understanding the relevant ethical principles invoked..

Introduction to Bioethics

Bioethical issues related to Healthcare &Medicine 5

2Anatomy - Cadaver ethics, Human dignity, PNDT, Disposal of cadaver, Genetic Counseling 7

Physiology - Animal ethics, Health policy privacy 7

Biochemistry & Pathology - Prudence of investigation confidentiality, Patients bill of rights, Disposal of investigative material, Integrity, Blood transfusion 5

Pharmacology - Rational drug prescribing, Clinical trials, Risk minimization, Animal ethics

Microbiology - Hand wash, Drug resistance minimization, Prudence of investigation confidentiality, Sterilization procedure, Bio safety and bio hazard 5

Medicolegal aspects of medical records

Introduction to Intellectual Property:

Concept of Intellectual Property Kinds of Intellectual Property

Patents, Copyrights Designs, Trademarks,Geographical Indication, Infringement of IPR, Its protection and

Remedies Licensing and its types

REFERENCE BOOKS

1. Contemporary issues in bioethics – Beauchamp & walters (B&W) 4th edition.

2. Classic philosophical questions by Gloud (8th Edition)

3. Case book series and booklets by UNESCO Bioethics Core curriculum 2008

4. Encyclopedia of Bioethics 5 vol set, (2003) ISBN-10: 0028657748

5. Intellectual property rights- Ganguli-Tat McGrawhill. (2001) ISBN-10: 0074638602,

6. Intellectual Property Right- Wattal- Oxford Publications House.(1997) ISBN:0195905024.

COURSEOUTCOMES	
CO1	The students will be able to: Recognize what constitutes an ethical concern in health care
CO2	The student will be able to understand the clinical evaluations of Disease Condition
CO3	The student will be able to Understand better the complexity and multi-dimensionality of medical ethical concerns and uniqueness of each problem.
CO4	The student will get the knowledge of plagiarism in their innovations which can be questioned legally

MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**d**	**E**	**f**
1	S		M		S	S
2				s		
3			**S**			
4	S		M			**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE1023	**FUNDAMENTALS OF HUMAN GENETICS**
	Total Contact Periods– 4
	Total credits -2
	Course Designed by–Department of Genetics
OBJECTIVES	To Comprehend the Chromosomal basis of inheritance

I -Introduction to cellular components

Structure and morphology of various types of cells - Biochemical composition - Cellular organelles -Composition and components of nucleus - Chromosomes - Cell division and Mechanics of cell division and regulation.

II - Structure and functions of nucleic acids

Functions, Structure and characteristics of nucleic acids - Types of mutations -Genetic variations and polymorphisms

III - Chromosomal basis of inheritance

Chromosome behavior and inheritance pattern in man - Single gene Mendelian disorders: autosomal dominant, recessive, sex linked dominant and recessive - Polygeneic and mitochondrial inheritance.

III - Origin and detection of genetic disorders

Mutation - Non-disjunction - Chromosomal abnormalities and clinical phenotypes of common genetic syndromes (Down's syndrome, Patua‘s syndrome, Edward syndrome, Turner syndrome and Klinefelter's syndrome, Cri-du-caht syndrome)- Karyotyping, Neural tube defects, Carcinogenesis.

IV–Biochemical basis for the inborn errors of metabolism

General characteristics of inborn errors of metabolism – Incidence - etiology - Folic acid metabolism - triple markers - New born screening, prevention and management. False positive and false negative -Ethical principles of Genetic counseling for prenatal diagnosis - Fetal rights – Regulation and prevention of misuse act 1994.

Reference books

1. A guide to genetic counseling, 2nd edition, D.L. Baker, J.L. Schuette and W.R. Uhlmann, Wiley –Leiss Publications 2002.

2. Emery Elements of Medical Genetics, 9th edition, Robert F. Mueller & Ian D. young, Churchill Livingstone, 1995.

3. Medical Genetics, 3rd edition, Lynn B. Jorde, John C. Carey, Michael J. Bamshad, & Raymond L. White, Mosby, 2003.

COURSEOUTCOMES						
CO1	The student will be able to Be able to describe the chromosomal basis of inheritance and how alterations in chromosome number or structure. . .					
CO2	The student will be able to understand of the differences and similarities between diagnostic, predictive and carrier genetic testing.					
CO3	The student will be able to know detailed information of Chromosome behavior and inheritance pattern in man					
CO4	The student will be to understand the phenotype and genotype .					
MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**d**	**E**	**f**
1	S		M		S	
2				s		M
3			**M**			
4	S			**S**		**S**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE2024	**PRINCIPLES AND APPLICATION OF CLINICAL GENETICS**
	Total Contact Periods– 6
	Total credits -2
	Course Designed by–Department of Nephrology
OBJECTIVES	To develop awareness about Genetic testing, Genetic counseling, Philosophy and Ethos of Genetic services

I -Principle and components of genetic testing Lay out of genetic laboratories - Genetic testing, Genetic counseling, Philosophy and Ethos of Genetic services, Types of testing- Cytogenetic testing- Molecular cytogenetic testing- DNA testing.

II - Cytogenetic testing Indications, Type of sample, Sampling and transport conditions, Karyotyping - chromosome identification, merits and demerits of conventional cytogenetic testing

III - Molecular Cytogenetic testing

Indications, Type of sample, Sampling and transport conditions - Fluorescence in-situ hybridization, fluorescence signal enumeration, merits and demerits of FISH.

IV - DNA testing

Organization of human genome, Structure and function of genetic material, Polymerases chainmreaction - Types, principles and testing, Sequencing.

V - Practical:

Case studies

Reference books

1. Practical Genetic counseling, Peter S. Harper, 6th edition, Holder Headline Group 2004.

2. Medical Genetics, 3rd edition, Lynn B. Jorde, John C. Carey, Michael J. Bamshad, &

Raymond L. White, Mosby, 2006.

3. Genetics in Medicine, Thompson & Thompson, 6th edition, Elsevier 2004.

4. Practical Genetic counseling, Peter S. Harper, 6th edition, Holder Headline Group 2004.

COURSEOUTCOMES						
CO1	The student will be able to become familiar with and practice genetic tests.					
CO2	The student will be able to provide better patient care					
CO3	The student will be able to know detailed information about Genetic Counselling					
CO4	The student will be to know about Genetic testing.					
MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3			**M**			
4	S				S	**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE2025	**CLINICAL EXAMINATION OF THE HUMANVISUAL SYSTEM**
	TotalContactPeriods–5
	Total credits -2
	Course Designed by–Department of Opthalmology
OBJECTIVES	The core objective of this course is to gain in depth knowledge on the structural and physiological functions of the various parts of the eye and the different examination procedures for the ocular structures.

: **I - History Taking**

Importance of history taking, Demographic data and its importance, Chief presenting symptoms, History of present illness, History of past illness, Family History, Common ocular symptoms and their causes – defective vision, watering eyes, discharge, redness, pain, asthenopia and other symptoms

II - Visual Acuity measurement

Distance visual acuity-charts, methods and measurements; Near visual acuity –charts, methods and measurements; contrast sensitivity testing; colour vision testing

III - External Examination

Examination of head posture, examination of forehead, examination of eye brows, examination of eyelids, examination of Lacrimal apparatus, examination of eyeball on the whole, examination of the cornea, conjunctiva sclera and anterior chamber, eye movements, muscle balance and squint evaluation

IV - Anterior segment Evaluation

Slit lamp examination of the eyelids, cornea, conjunctiva, anterior chamber depth, iris, and lens Intraocular pressure measurements using non contact tonometer

V - Posterior segment Evaluation

Introduction and importance of posterior segment evaluation- direct and indirect ophthalmoscopy

REFERENCE BOOKS:

1. Comprehensive Ophthalmology – A K Khurana, 5th edition, New Age International Publishers,

2012.

2. Clinical Ophthalmology – Jack J Kanski, 7th edition, Butterworths, 2012

1. Borish's Clinical Refraction - William J. Benjamin, Irvin M. Borish, Butterworth-Heinemann, 2006

COURSEOUTCOMES						
CO1	The student will be able to have the skill to perform basic ophthalmic examination					
CO2	The student will be able to understand concept of theory and clinical evaluation of disease conditions gain an in- depth knowledge on disease outline and clinical evaluation of patients					
CO3	The student will be able to depth knowledge on the functions of the visual system					
CO4	The student will have the skill to perform basic ophthalmic examination					
MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**D**	**e**	**f**
1	S		M		s	
2				S		M
3	M		**S**			
4	M			**C**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE2026	**PERSONALITY DEVELOPMENT AND STRESS MANAGEMENT**
	Total Contact Periods– 4
	Total credits -2
	Course Designed by–Department of HR
OBJECTIVES	• To Explain the effect of personality, attitudes, perceptions and attributions on Health stress, coping and relaxation.

Unit 1

Introduction to Personality Development, Different Stages of Development, Types of personalities, personality perspectives and theories

Unit 2

How needs impact personality, Maslow's hierarchy of need, Basic Personality Traits; Values, Beliefs, Interactions, Experiences, Environmental influences, the big five dimensions.

Unit 3

Stress; causes, effect and types, Stress resistant personalities, Relaxation; training aspects importance and Body works.

Unit 4

Health stress and coping, Understanding and communicating our health needs, Behavioral and psychological correlates of illness.

Unit 5

Soft skill; need and importance, Personality development and soft skills. Effective communication, listening, speaking, writing, interpretation part of soft skills and personality

Learning Outcome:

By successfully completing this course, students will be able to Describe how a personality develops.

- Define the stages of personality development.
- Define personality types.
- Describe basic personality traits.
- Personality and stress.
- Health stress, coping and relaxation.
- Soft skills and personality.

Text Books:

1. Hurlock (1976). Personality development.Tata McGraw Hill.

2. Baron R A, Psychology 5th edition, Pearsons publication.

3. Abraham A, General Psychology, Tata McGraw hill Education private limited.

Reference Books:

1. Lazarus J Stress Relief and Relaxation Techniques, Viva Book Private limited.

2. Shelly E. Taylor, Health psychology, 7th edition, TATA McGrawHil, New Delhi.

COURSEOUTCOMES	
CO1	The student will be able to Define the stages of personality development.
CO2	• The student will be able to Describe basic personality traits.
CO3	The student will be able to Describe how a personality develops-Personality and stress.
CO4	The student will be able to Develop the Soft skills and personality.

MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**D**	**e**	**f**
1	S		M		s	
2				S		M
3	M		**S**			
4	S			**S**		**M**
Category	Management					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE2027	**FIRST AID MANAGEMENT & SPLINTING TECHNIQUES**
	TotalContactPeriods–6
	Total credits -2
	Course Designed by–Department of Medicine
OBJECTIVES	Students will gain additional skills in interventional procedures and Differentiate between emergency situation and other use.

Unit-I BACKGROUND INFORMATION

- The importance of first Aid
- First aid supplies
- First aid and the law
- Prevention practices

Unit-II ACTION AT AN EMERGENCY

- Recognizing Emergencies
- Deciding to act
- Seeking medical care
- Disease transmission
- Rescuer reactions

Unit –III BLEEDING AND WOUNDS

- External bleeding
- Wound infection
- Amputations
- Impaled objects
- Wound that require medical care
- Internal Bleeding
- Dressing and Bandages

Unit-IV BONE, JOINT AND MUSCLE INJURIES

- Bone injuries
- Splinting
- Joint injuries
- RICE injuries
- Muscle injuries
- Splints – Introduction, Types, Uses, Splinting guidelines, Slings, Procedure,Complications

UNIT-V RESCUING AND MOVING INJURIES

- Water rescue
- Ice rescue
- Electrical Emergency Rescue Hazardous materials incidents

- Motor Vehicle crashes
- Fires
- Confined spaces
- Triage – what to do with multiple victims
- Moving victims

Text books:

1 .First Aid CPR and AED standard (sixth edition)

2. First aid book-St Johns Ambulance services

3. Text book of Orthopaedics – Natarajan

4. Text book of Orthopaedics – John Ebenezer Reference books: First Aid and Management of Minor Injuries by Jon Dallimore First Aid and Beyond by Dan Wolfe - Smashwords , 2014 International Trauma Life Support Provider Manual Essentials Orthpaedics Mark D Mille

COURSEOUTCOMES	
CO1	The student will be able to Differentiate between emergency situation and other use.
CO2	The student will be able to know about the basics of concepts of disease & outlines of clinical evaluation.
CO3	The student will be able to List management, assessment, and care steps for upper extremity and lower extremity fractures.
CO4	The student will be to know Splinting techniques of lower extremities – Thomas splint, sam splint, etc

MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES

COs\Pos	**A**	**B**	**c**	**D**	**e**	**f**
1	S		M		s	
2				S		M
3	M		**S**			
4	S			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE3028	**ESSENTIALS OF MEDICAL TRANSCRIPTION**
	Total Contact Periods– 7
	Total credits -2
	Course Designed by–Department of MRD
OBJECTIVES	Provide Hands on training on English Language and listening comprehension and provide foundation to learn medical terminology & learn laboratory report

Unit 1

The Medical Transcriptionist‘s career including Ethical& Legal Responsibilities Introduction to Medical transcription, Job Opportunities, Transcription Skills, Medical records, Certification for Medical Transcriptionists, Ethical and Legal responsibilities

Unit 2

Equipments in Transcription Equipment, Computer Systems, Ergonomics, Dictation Equipments, Hand and Foot control Dictation, Transcription Preparation

Unit 3

Transcription Guidelines Punctuations, Proof reading notations, Formats and styles, SOAP for Chart notes; Discharge Summary

Unit 4 PRACTICAL:

1. Equipments for Medical Transcription,2. Typing for the beginners, 3.Vocabulary, 4. Proof reading Notations , 5. Formats and styles in document preparation , 6. Preparation of chart notes, 7. Listening Comprehension, 8. Transcription check off sheet **References Book**1. Medical Key boarding, Typing, and Transcribing Techniques and procedures 4th Edition, March

Otis Diehl, Marilyn Takahashi Fordney, W.B. Saunders Company

2. The AAMT Book of Style for Medical Transcription, Claudia J. Tessier

3. CD‘s available for:

a. Stedman‘s Electronic Medical Dictionary 4.0

b. American Drug Index 2003

Text Books:

1. Medical Key boarding, Typing, and Transcribing Techniques and procedures 4th Edition, March

Otis Diehl, Marilyn Takahashi Fordney, W.B. Saunders Company

2. The AAMT Book of Style for Medical Transcription, Claudia J. Tessie

COURSEOUTCOMES						
CO1	The student will be able to Demonstrate their basic skills in the knowledge of Vocabulary, Medical terminology					
CO2	The student will be able to Demonstrate their basic skills in the preparation of chart notes. .					
CO3	The student will be able to Demonstrate skills in listening comprehension					
CO4	• The student will be be able to identify accurate format for medical document preparation					
MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**d**	**E**	**f**
1	S		M		S	
2				s		M
3	M		**S**			
4	S			**S**		**M**
Category	Medical Records					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE3029	**COMMUNICATION AND SOFT SKILL**
	Total Contact Periods– 7
	Total credits -2
	Course Designed by–Department of Human Resources
OBJECTIVES	This course is designed to equip the students with essential soft skills needed for workplace and improve personality.

LEARNING OUTCOME:

This course is designed to help the students to

- Foster healthy attitude.
- Develop effective inter and intra personal skills to be an effective team worker.
- Communicate effectively in both academic and professional setup

UNIT: I ASPECTS OF COMMUNICATION

Importance of communication, Process, Barriers, Non verbal Communication

UNIT: II SPEAKING

How to Open and Close conversations, Introductions and Address System, Expressing Courtesy, Giving Compliments and replying to Compliments, Presentation Skills, Telephonic conversation and telephone etiquette

UNIT – III PRESCRIBED READING

Tom Sawyer by Mark Twain, Bacon‘s Essays: - Of Goodness and goodness of nature

UNIT – IV WRITING

Letter writing - Letter of Complaints, Inviting and Declining an invitation, Writing Memos and Emails, Grammar, Spelling & Punctuation, Use of Dictionary & Thesaurus.

UNIT – V SOFT SKILLS

Active Listening Skills, Assertive Skills, Negotiation and Persuasive Skills, Interview Skills

Text Book:

Developing Communication Skills by Krishna Mohan and Meera Banerji, II edition, Macmillan.

Reference Books:

1. Communication Skills for Engineers and Scientists by Sangeeta Sharma and Binod Mishra, PHI Learning Private Limited, New Delhi.

2. English and soft skills by S.P. Dhanavel, Orient Black Swan

3. Effective English Communication by Krishna Mohan and Meenakshi Raman, Tata McGraw – Hill Publishing Company Limited.

4. Technical Communication – Principles and Practice, by Meenakshi Raman and Sangeetha Sharma, II edition, Oxford University Press.

5. Developing Communication Skills by Krishna Mohan and MeeraBanerji, II edition, Macmillan.

6. The Complete Guide to Functional Writing in English by M. Sarada, Sterling Publishers (P) Ltd., New Delhi.

7. Speaking Naturally: Communication Skills in American English by Bruce Tillitt and Mary Newton Bruder, Cambridge University

COURSEOUTCOMES	
CO1	The student will be able to Foster healthy attitude
CO2	The student will be able to develop effective inter and intra personal skills to be an effective team worker
CO3	The student will be able to Develop effective inter and intra personal skills to be an effective team worker
CO4	The student will be able to Communicate effectively in both academic and professional setup

MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**a**	**B**	**C**	**d**	**e**	**F**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE3030	**PROFESSIONAL SKILLS DEVELOPMENT**
	Total Contact Periods– 6
	Total credits -2
	Course Designed by–Department of Human Resources
OBJECTIVES	To Advance the students' intellectual curiosity, competency and skills in preparation for employment

1. Communication Skills

Importance of Communication skills in Public health; Communication process; Methods of communication; Types of communication: Verbal and Non-verbal; Impediments to effective communication; Feedback

2. Oral Presentation Skills:

Preparation and planning; Structure; Audio-visual aids; Creating interest and establishing a relationship with the audience; Body language; Voice and pronunciation; Review

3. Writing skills:

Writing a scientific paper; Writing a proposal; Structure of an article; References and literature review; Peer-review process-Publication bias; International guidelines for publication in journals; Professional Ethics

4. Leadership in Public health:

Leadership styles and trait; Motivation skills; Interpersonal communication skills; Problem solving skills; Decision making skills; Management skills; Communication Skills

5. Manuscript writing

Writing introduction, objectives, methodologies, major finding, discussion, conclusion and recommendation**6. Seminar presentations**Use of computers present data and information on recent topics

Text Books:

1. Professional Writing Skills, A self paced training programme by Janis Fisher Chan and Diane Lutovich. Advanced Communication Designs Inc, 2003. San Anselmo, CA. ISBN 0963745549

2. Speaking Your Mind: Oral Presentation and Seminar Skills By Rebecca Stott, Tory Young, Cordelia Bryan Contributor Rebecca Stott, Tory Young, Cordelia Bryan Published by Longman, 2001 ISBN 0582382432, 9780582382435

3. Public Health Leadership: Putting Principles into Practice Louis Rowitz, PhD. Jones and Bartlett Publishers, 2003. ISBN-13: 9780763725013 ISBN-10: 07637250

COURSEOUTCOMES						
CO1	The student will be able to Develop good written and oral communication abilities					
CO2	The student will be able to Develop an understanding of team building and leadership skills.					
CO3	The student will be able to Develop knowledge regarding capacities needed to work independently within diverse work environments					
CO4	The student will be able to know how to maintain Records and Reports and demonstrate the procedure.					
MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**D**	**e**	**f**
1	S		M		s	
2				S		M
3	M		**S**			
4	S			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting Of Academic Council held in Aug, 2017					

UAH17CE3031	**LIBRARY SCIENCE AND E-RESOURCES**
	Total Contact Periods– 6
	Total credits -2
	Course Designed by–Department of Library science
OBJECTIVES	To gain knowledge about Documentary Sources of Information and Library Automation

Unit 1 BASIC CONCEPTS AND INFORMATION SERVICES

Meaning of Library – Types of Library -– Library layout - Functions of Library – need for Library – Meaning of ISBN and ISSN – Collection management - Library Classification system - Five laws of Library Science – Inter Library Loan (ILL), Communication theories and models.Barriers to communication.Levels of communications – Intrapersonal, interpersonal and mass communication. Information services – literature search Methods of Dissemination of information Current Awareness Service (CAS), Selective Dissemination of Information (SDI), Document delivery service, Alert services, and Internet services.

Unit 2 INFORMATION SOURCES

Documentary Sources of Information, Print, and Non-print including Electronic, Human and Institutional sources: Nature, types, characteristics and utility. Internet as a source of Information. Primary sources of information – Journal, conference volume, patents, research reports, thesis and their electronic format – Secondary sources of information - Bibliography, Encyclopedia Dictionary, Yearbook , Directory, Geographical Source, Textbook, Index and Abstracts.

Unit 3 LIBRARY AUTOMATION

Definition need, Purpose, advantages. Planning for Library automation. Automation of Library operations - Acquisitions, Cataloguing, OPAC, Circulation and Serials control. Evaluation of Library automation systems - Application of Barcode and RFID Technology for Library Functions. Basic concepts: Bibliography, bibliographic coupling, Impact factor.

Unit 4 ELECTRONIC INFORMATION SOURCES

Electronic Information resources: Meaning and definition, Growth and development, Types. Journals, e-Books, e-Theses, e-newspapers, Blogs, Wikis. Free databases and fee based bibliographical and full text databases, subject related websites, Institutional repositories, Open Archives and digital Libraries. - Resource Sharing and Networks: Consortia- Importance and objectives. Study of Information networks and Digital Library Consortia. Types of computer networks: Local Area Networks – Concept, Topologies - Bus, Star, Mesh, Tree, and Ring). Wide Area Networks and Metropolitan Area Networks- Concepts, Circuit switching and Packet switching. Difference between LAN and WAN. Wireless Networks –Mobile telephones.

Unit 5 DIGITAL LIBRARIES

Digital Libraries: Concepts and issues. Understanding digital Libraries Content creation – Electronic documents, files and file formats. Study of different file formats.Studying PDF in detail-features of PDF.Digitization- scanning, Digital Preservation, Conservation and Archival Management – Problems and prospects. Open Access Movement and Institutional repositories.

TEXTBOOKS

1. Ranganathan, S.R The five Laws of Library Science UBS Publishers, 1988.

2. Ranganathan, S.R. Library Manual SaradaRanganathan endowment for Library Science, 1989.

3. Ranganathan, S.R. Cataloguing Practice SaradaRanganathan endowment for Library Science 1990

COURSEOUTCOMES						
CO1	The student will be able to analyze and understand the query					
CO2	The student will be able to Identify the sources of information					
CO3	The student will be able to Find out the information					
CO4	The student will be able to know how to maintain Records and Reports and demonstrate the procedure.					
MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**d**	**e**	**F**
1	S		M		s	
2				s		M
3	M		**S**			
4	S			**S**		**M**
Category	Library Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

RENAL DIALYSIS TECHNOLOGY

R2017

CURRICULUM

UAH17CT101	**ANATOMY**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Anatomy
OBJECTIVES	An outline of anatomy with special emphasis on applied aspects is provided to the students for better understanding of the technical and diagnostic procedure.

UNIT I: Organization of the human body

1. **Introduction**

- Introduction to human body
- Definition and subdivision of anatomy
- Anatomical position and terminology
- Region and systems of the body
- Cavities of the body and their contents
- Levels of organization of the body

2. Cell and genetics

- Parts of cell – cell membrane, cytoplasm, organelles, inclusion bodies, nucleus
- Structure of chromosome, DNA, RNA.
- Basics & fundamentals of Genetics, Karyotyping, Chromosomal disorders, prenatal diagnosis, genetic counseling and gene therapy.
- Cell division – Definition and main events that occur in different stages of mitosis and meiosis.
- Tissues – Definition, characteristic features and types with example.
- Types of glands with example

UNIT II: Systems of support and movement

1. **Skeletal system**

- Cartilage: Type and basic histological feature.
- Bones: definition, classification based on location, name and number of bones with general features of important bones, function of bone, histological feature of a compact bone.

- Joints – Definition and types with example, Axis and movements. Shoulder, elbow, hip, knee joints – type, bones and ligaments involved, possible movements.

1. Muscular system

- Types of muscle with basic histological features
- Parts of skeletal muscle.
- Definition of origin and insertion
- Origin, insertion, nerve supply, action of sternocleidomastoid, pectoralis major, deltoid, gluteus maximus and diaphragm.

UNIT III: Controls systems of the body

1. Nervous system

- Subdivisions of the nervous system
- Spinal cord-location, extent, external features and blood supply
- Brain-subdivision, location, external features of Medulla oblongata, Pons, Midbrain, Cerebellum, and Cerebrum, Thalamus and Hypothalamus, Location and subdivision of ventricles of brain. Circle of Willis.
- Cranial nerves-name, number, attachment, area of distribution
- Spinal nerves-typical spinal nerves. Name and location of plexuses. Location and distribution of brachial and lumbosacral plexus.
- Autonomic nervous system-sympathetic and parasympathetic nervous system. Location of preganglionic and postganglionic neurons.

2. Sense organs

- Location and features of nose, tongue, eye, ear and skin.

3. Endocrine system

- Names of the endocrine glands. Location and features of pituitary, thyroid, parathyroid, suprarenal, pancreas, ovaries and testes. Names of hormones produced by each gland.
- Microscopic features of thyroid and pancreas.

UNIT IV: Maintenance of the human body

1. Cardiovascular system

- Types and general features of blood vessels. Structure and types of arteries and veins. Shape, size, location, covering, external and internal features of Heart. Conducting system of heart. Blood supply of the heart. Name, location, branches and main distribution of principal arteries and veins

2. Lymphatic system

- General features of Lymph nodes and lymphatic vessels. Name, location, external features, microscopic features of tonsil and spleen.

3. Respiratory system

Name the organs of respiration. Location and features of Nasal cavity, pharynx, larynx, trachea, lung & pleura. Mention the microscopic feature of the lung.

4. Digestive system

- Name the parts of the alimentary canal and accessory organs. Location & features of esophagus, stomach, small and large intestine. Location and feature of tongue, salivary glands, pancreas, liver and gallbladder. Microscopic features of the liver.

5. Urinary system

- Names of urinary organs. Location and features of kidney, ureter, urinary bladder & urethra. Microscopic features of the kidney.

6. Reproductive system

- Names of male and female organs of reproduction. Location and features of testis, epididymis, vas deferens, prostate gland and spermatic cord. Location & features of uterus, uterine tube, ovary and breast.

7. Embryology

- Structure of gametes & gametogenesis. Fertilization to development of embryo till 3rd week. Derivatives of germ layers. Teratogens, Structure and Functions of placenta.

UNIT V: Anatomical regions

- Simple ideas about scalp, triangles of neck, axilla, cubital fossa, carpal tunnel, mediastinum, umbilicus, inguinal canal, femoral triangle
- sub sartorial canal popliteal fossa

PRACTICALS/DEMONSTRATIONS

1. Demonstrations of dissected specimens.

2. Viewing of projection of microscopic slides of muscle, bone, cartilage, spleen, tonsil, lung, liver, kidney, thyroid and pancreas

REFERENCE BOOKS

1. Manipal manual for AHS by Dr. Sampath Madhyastha, (Second Edition) Published by CBS Publishers.

2. Handbook of anatomy for nurses by Dr. P. Saraswathi

3. Ross and Wilson, Anatomy and physiology in health & illness

COURSE OUTCOMES	
CO1	The student will be able to gain knowledge of general anatomy and locomotion.
CO2	The student will be able to gain knowledge of basic human anatomy and histology of CVS and Respiratory systems.
CO3	The student will be able to gain knowledge of basic human anatomy and histology of CNS, GI, excretotry and reproductive systems.
CO4	The student will be able to gain of knowledge basic human anatomy and histology of endocrine system and special senses.

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S					
2		**M**				
3			**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CT102	**PHYSIOLOGY**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Physiology
OBJECTIVES	To know the basic functioning of the human body, and the various organ systems.

Unit-I

1. **General Physiology:**

- Concept of Homeostasis
- Cell structure and functions
- Transport across membranes

Body and body fluids:

- Body fluid volumes, compartments and composition
- Blood composition and functions
- Plasma proteins – Types and functions
- Erythrocytes – functions, Erythropoiesis, anemia's
- Leucocytes – classification and functions
- Platelets – morphology and functions
- Blood coagulation – Mechanism and name of anticoagulants
- Blood groups – Basis of ABO & Rh grouping, Erythroblastosis Foetalis

2. Muscle physiology:

- Muscles – Classification & structure of striated, nonstriated & cardiac muscle
- Neuromuscular junction
- Mechanism of skeletal muscle contraction

3. Digestive system:

- Salivary glands, functions of saliva
- Parts of stomach, composition & functions of gastric juice
- Pancreatic Juice – composition & functions
- Bile – composition & functions of bile & bile salts
- Functions of Small intestine & large intestine

Unit-II

1. Skin

● Structure & Functions

2. Excretory system:

- Kidney: Basic physiological anatomy (Including JGA)
- Formation of urine – GFR
- Formation of urine – Reabsorption & secretion

- Micturition Reflex
- Dialysis – Principle, types
- Renal function tests

Unit-III

1. Endocrine system:

- Hypothalamo hypophyseal inter relationship
- Posterior pituitary hormones and its actions
- Anterior pituitary hormones, Growth hormone – Actions
- Dwarfism, gigantism, acromegaly
- Thyroid hormones – Actions
- Cretinism, Myxoedema, Grave‟s disease (clinical features)
- Parathyroid hormones – Functions, Tetany
- Insulin, Glucagon‟s – Actions, Diabetes mellitus
- Adrenal medullary hormones & their actions
- Adrenal cortex hormones & their actions

2. Reproductive system:

- Male reproductive organs – Spermatogenesis, Testosterone actions
- Female reproductive organs – menstrual cycle (endometrial and ovarian cycles) and its hormonal control
- Contraceptive methods in male and female

Unit-IV

1. Respiratory system:

- Basic physiological anatomy
- Surfactant
- Mechanics of respiration
- Lung volumes and capacities
- Oxygen transport, Carbon-di-oxide transport
- Nervous and chemical regulation
- Pulmonary function tests.

2. Cardiovascular system:

- Basic physiological anatomy, innervations of heart
- ECG – normal waves, intervals and their significance
- Cardiac cycle – mechanical events, Heart sounds
- Blood pressure – Definition, measurement, normal values, factors maintaining BP Regulation

Unit-V

1. Nervous system:

- Structure of neuron, neuroglial cells, synapse and transmission across it
- Reflex – Components of reflex arc, examples.
- Functions of ascending tracts – anterior, lateral spinothalamic tracts, Dorsal column
- Functions of Corticospinal (Pyramidal) tract-Descending tract
- Functional areas of cerebral cortex
- Functions of basal ganglia, thalamus, hypothalamus, limbic system and cerebellum

2. Special senses:

● Receptors for various special senses

Practical Demonstration

Hematology:

1. Enumeration of RBC count.
2. Enumeration of WBC count.
3. Differential Count.
4. Estimation of Hemoglobin.
5. Determination of blood group.
6. Determination of bleeding time and clotting time.

Clinical physiology:

1. Measurement of blood pressure.
2. Determination of Radial pulse

Reference Book

1. Human Physiology for BDS by A.K.Jain, 4th Edition, Avichal publishing co

COURSE OUTCOMES	
CO1	The student will be able to gain knowledge of general physiology, nerve-muscle physiology and haematology.
CO2	The student will be able to gain knowledge of basic human physiology with respect to CVS, Respiratory system and GI system.
CO3	The student will be able to gain knowledge of basic human physiology of excretion and CNS.
CO4	The student will be able to gain knowledge of basic human physiology of special senses and endocrine system.
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES	

COs\POs	a	b	c	d	e	f
1	S					
2		**M**				
3			**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CT103	**BIOCHEMISTRY**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Biochemistry
OBJECTIVES	To know the basic Biochemical reactions within the human body, and the various organ systems. .

UNIT I – Cell and its molecules

Cell – Cell organelles, Fluid Mosaic Model, functions of cell membrane, Brief description of transport across the cell membrane.

Carbohydrates – Definition, Classification with examples, Sources, physiological significance and HbA1c.

Lipids – Definition, Classification with examples, Sources, Types of lipids present in the body, storage form, storage site, free cholesterol structure, functions of lipids, lipoprotein structure and its functions.

Nucleic acids – Nucleotide, Nucleoside, types of nucleic acids, secondary structure of DNA & Its functions; Types of RNA & its functions.

UNIT II – Proteins and Enzymes

Proteins – Definition, Classification, functions of proteins, Plasma proteins; Classification of Amino acids with examples
Hemoglobin structure, Functions of hemoglobin, hemoglobin derivatives, abnormal hemoglobin

Enzymes: Definition, Classification, coenzymes, Metalloenzymes, Factors affecting enzyme activity, Regulation of enzymes, overview of Mechanism of enzyme action, Isoenzymes and Clinical importance of enzymes

UNIT III-Vitamins, Minerals, Nutrition

Vitamins: Definition, Classification of Vitamins
Sources, RDA, Function & Deficiency symptoms of

- Fat Soluble Vitamins (A, D, E & K);
- Water Soluble Vitamins (Thiamine, Riboflavin, Niacin, Biotin, Pantothenic acid, Pyridoxine, Folic acid, Cobalamin) and Vitamin C

Minerals: Definition, Classification of Minerals

Sources, RDA, Function, Reference levels & Deficiency Symptoms of

- Calcium, Phosphorus, Iron Copper, Zinc, Sodium, Chloride, Iodine, Potassium, Fluorine and Selenium.

Nutrition: BMR, SDA, Dietary fibres, protein Energy Malnutrition and Obesity 24

UNIT IV – Bioenergetics and Metabolism
Bioenergetics: Electron Transport chain and Oxidative Phosphorylation
Metabolism

Carbohydrates: Digestion and absorption, Glycolysis, TCA cycle, Metabolism of Fructose and Galactose.

Lipids: Digestion and absorption, Beta oxidation of fatty acids, Regulation of Cholesterol level in the cell and outline of lipid transport.

Proteins: Digestion and Absorption, Formation and Disposal of Ammonia, Urea Cycle, Special Products of Glycine, Tyrosine and Tryptophan.

UNIT V – Miscellaneous
Outlines of DNA organization, Replication, Transcription, Genetic code and Translation
Organ function Tests: Liver, Renal and Bone.

PRACTICAL

- Spotters

COURSE OUTCOMES						
CO1	The student will be able to gain knowledge of biochemistry of cell structure, functions, digestion, enzymes and proteins.					
CO2	The student will be able to gain knowledge of biochemistry of carbohydrates, minerals and vitamins					
CO3	The student will be able to gain knowledge of liver and renal function tests, specialized laboratory investigations and lipids.					
CO4	The student will be able to gain knowledge of biochemistry of metabolism, homeostasis, nucleic acids and cancer					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S				s	
2		**M**		s		
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CT104	**BASICS IN MEDICAL PHYSICS AND ELECTRONICS**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Radiology
OBJECTIVES	To know the basics in Medical Physics, Bio electric potential and the functioning of Medical equipment.

Unit I: Laser

Nature of Light-Reflection-Refraction-Total internal reflection-Optical fibers-Applications in Medicine – Laser-Principles-Action-Types of laser, Basic principles of laser in Medical Application – Argon-Ion laser photocoagulator-Photo thermal-Photochemical application-Applications of laser in Medicine-Laser hazards and safety measures.

Unit II: Radiation Physics

Introduction to nuclear physics and radioactivity, Radioactive radiations – X-ray, production of x-ray, Properties of x-ray radiations – Biological effects of radiation, Radiation damage in matter, Radiation protection principles, radiation detection and measurement – Ultrasound and generation of ultrasound.

Unit III: Introduction to Imaging Technique

Principles of Microscope: Simple microscope and compound microscope-Radiography: Making and X-ray image-Fluoroscopy. CT Scans, MRI – Ultrasonography: Ultrasound picture of Body-A-Scan-M-Scan-Ultrasound diathermy-Phonocardiography – Radio isotopes: Uses of Radio isotopes – 99mTc Generator – Scintillation detectors – Application of scintillation detectors – Gamma Camera – Positron Camera

Unit IV: Semiconductor devices

Principles of diodes and Transistors – Integrated circuits – Amplifiers – Basic configuration and types – differential and operational amplifiers – Waveform generators – Timer – A/D and D/A converters – Active filters – Transducers – Basic configuration and types.

Unit V: Bio potential Recording Systems

Introduction to bioelectric potential – Electrodes and surfaces – Bio potential amplifier – Frequency ranges of various biopotential signals – Working principles of bio potential recording systems – Electrocardiography – Electroencephalograph –Electromyography.

Reference Books:

1. New Understanding physics for advanced level – Jim Breithauput.

2. Advanced Physics for you by Keith Johnson, Simmons Hewett, Sue holt, John miller

3. Christensen‟s Physics of diagnostic Radiology by Thomas S. Curry III, M.D., Robert C Murry, Jr. PhD, Dow Dey, PhD.

4. Applied Electronics, A. Subramanyam, The National Publishing co., Madras (1996).

5. Design and Development of Medical Electronic Instrumentation, David Prutchi and Michael Norris, John Wiley & Sons (2005).

COURSE OUTCOMES	
CO1	The student will be able to know the functioning of radiological devices
CO2	The student will be able to understand the mechanism of functioning of medical equipment
CO3	The student will be able to know the functioning of Lab instruments
CO4	The student will be able to understand the functioning of radiation devices

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES

COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**

Category	Medical Science
Approval	46th Meeting of Academic Council held in Aug, 2017

UAH17CT105	**ENGLISH**
	Total Contact Periods – 60
	Total credits -4
	Course Designed by – Department of English
OBJECTIVES	To enable students to enhance their ability to comprehend spoken and written English required for effective communication in their professional work. Students will practice their skills in verbal and written.

Unit I: Spoken Communication

Learning to read the phonetic symbols
Stress
Intonation
Rhythm
Commonly mispronounced words
Correct pronunciation of important commonly used
Words in hospital practice

Unit II: Vocabulary and Reading

Special features of English vocabulary
Common errors in choice of word
Semi technical vocabulary
Collecting material from library on scientific topics
Comprehensive exercises

Unit III: Writing

Writing letters regarding permission, leave, opening bank account etc.
Taking notes from lecture / reading materials
Writing reports on patient care
Summarizing scientific passages

Unit IV: Grammatical and Idiomatic Usage

Correction of errors
Types of interrogative sentences
Active-Passive voice
Tense
Principles of procession, clarity and specificity

Reference Books:

1. Effective English Communication by Krishna Mohan and Meenakshi Raman, Tata McGraw-Hill publishing Company Limited, New Delhi. (Approx. Cost Rs.200.
2. English for colleges and competitive Exams by Dr. R. Dyvadatham, Emerald Publishers (Approx. cost Rs. 150)

COURSE OUTCOMES	
CO1	The student will be able to develop their intellectual, personal and professional abilities.
CO2	The student will be able to acquire basic language skills, listening, speaking, reading and writing.
CO3	The student will be able to acquire the linguistic competence necessarily required in various life situations
CO4	The student will be able to communicate with speakers of English language

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES

COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**

Category	Language
Approval	46th Meeting of Academic Council held in Aug, 2017

UAH17CT106	**BASIC OF COMPUTERS**
	Total Contact Periods – 30
	Total credits -4
	Course Designed by – Department of English
OBJECTIVES	This course is designed for students to develop basic understanding of used of computer and its applications in Clinical Departments

UNIT I: INTRODUCTION

Computer basics – Types of computers – hardware components – input devices – output devices – storage devices – memory – units and sizes – factors affecting performance – operating systems – applications software – networking – LAN and WAN – Accessories – backup – computer virus – software copyright.

UNIT II: WORD PROCESSING

Windows – Office automation – WORD processor – open a new document – toolbars – menus – font dialog box – enter text – scroll – spelling checker – Autocorrect – undo and redo – bullets and numbered lists – indenting – moving and copying – find and replace – auto shapes – saving document – preview and print.

UNT III: ELECTRONIC SPREADSHEET AND DATA PRESENTATION

EXCEL spreadsheet – grid of rows and columns – active cell – selecting range – entering data – editing data – row and column labels – adjusting width – creating and copying formulae – relative – logical functions – lookup function – creating chart – bar chart – pit chart – print and save.

POWERPOINT presentation – creating slideshows- building outline – switching levels in outline – adding pictures – slide designs – design templates – formatting – color scheme – customized backgrounds – inserting content – hyperlink – revolution in education.

UNIT IV: DATABASE MANAGEMENT SYSTEM

ACCESS database – concept – template –primary key – records and fields – Student roster database – input mask – adding records – viewing data – updating entries – searching and querying – sorting – Table, forms and reports.

UNIT V: APPLICATIONS IN HEALTHCARE AND MEDICINE

INTERNET – e-governance – access to information – communication facility – mechanics of E-mail – social transformation – electronic billing – drug information – information flow in lab and radiology – storage of medical records – networking the organization – patient care – intelligent monitoring – scholarly information – health

informatics – robotic assisted surgery – Clinical decision support systems – Telemedicine.

COURSE OUTCOMES	
CO1	The student will be able to develop basic under-standing of computer use.
CO2	The student will be able to acquire knowledge on Applications of computers in clinical departments.
CO3	The student will be able to have the detailed knowledge on how to use hospital information systems.
CO4	The student will be able to communicate with speakers of English language

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**

Category	Soft Skills
Approval	46th Meeting of Academic Council held in Aug, 2017

UAH17CT107	**MICROBIOLOGY**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Microbiology
OBJECTIVES	This course is designed to enable students to acquire understanding of fundamentals of microbiology and identification of various microorganisms. It also provides opportunities for practicing infection control measures in hospital and community settings.

UNIT – I: General Bacteriology

Introduction & History of Microbiology, Classification & Morphology of Bacteria, Growth & nutrition, Culture Media & Methods, Sterilization & Disinfection, Fundamental aspects of antibacterial agents and antimicrobial susceptibility testing.

UNIT – II: Immunology

Infection, Immunity, Immunization schedule, applications of antigen antibody reactions, Hypersensitivity, Tumor & Transplantation Immunology.

UNIT – III: Virology

Introduction to virology, viral hepatitis, poliomyelitis, Rabies, Human immunodeficiency virus.

UNIT – IV Mycology & Parasitology

Introduction to mycology, pathogenic yeasts & fungi, Introduction to parasitology, Amoebiasis, Malaria, Helminthic infections.

UNIT – V: Applied Microbiology

Outline of common bacterial diseases, treatment & Prevention-Respiratory tract infections (upper & lower), Meningitis (septic & aseptic), Enteric infections (food poisoning & gastro enteritis), Anaerobic infections, Skin & soft tissue infections, Urinary tract infections, sexually transmitted diseases, Tuberculosis & Leprosy, Hospital acquired infections, Biomedical waste management.

PRACTICAL EXERCISES: Spotters, Gram staining.

Reference Books

1. Textbook of Microbiology by Ananthanarayan & Panicker‟s, 8th edition-Universities Press (India) PVT LTD.
2. Textbook of Microbiology by C. P. Baveja, 4th edition, Arya Publications.
3. Textbook of Medical Parasitology, CK Jayaram Paniker, 5th edition, Jaypee Publications.
4. Medical Parasitology by C. P. Baveja & V. Baveja, 2nd edition, Arya
5. Publications.

COURSE OUTCOMES	
CO1	The student will be able to understand the morphological characters of bacteria.

CO2	The student will be able to master the preparation of smear, fixation and staining of bacterial smears and its quality control methods
CO3	The student will be able to learn to use microscope, autoclave, hot air oven, water bath, steamer, filters
CO4	The student will be able to differentiate between innate and adaptive immunity, and explain the main defences lines as well as biological barrier to the infections.

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES

COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**

Category	Basic Medical Science
Approval	46th Meeting of Academic Council held in Aug, 2017

UAH17CT108	**PATHOLOGY**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Pathology
OBJECTIVES	This course is designed for students to develop an understanding of general and systemic pathology. It helps them to know pathophysiology of common diseases

UNIT-I: General Pathology I: Cellular Pathology, Acute and Chronic Inflammation, Tissue Renewal Regeneration and Repair, Hemodynamic Disorders Thromboembolic Disease and Shock

Introduction to Pathology, Adaptations Of Cellular Growth And Differentiation, Causes Of Cell Injury, Mechanisms Of Cell Injury, Necrosis, Apoptosis, Pathologic Calcification, Cellular Aging, Acute Inflammation – Mediators Of Inflammation Outcomes Of Acute Inflammation, Morphologic Patterns Of Acute Inflammation, Chronic Inflammation – Causes Of Chronic Inflammation, Granulomatous Inflammation, Healing By Repair, Scar formation And Fibrosis, Cutaneous Wound Healing, Healing By First Intention, Healing By Second Intention, Edema, Hemostasis and Thrombosis, Infarction, Shock

UNIT-II: General Pathology II: Diseases of the Immune System, Neoplasia, Environmental And Nutritional Disease, Diseases Of Infancy And Childhood

Innate Immunity, Adaptive Immunity, Components Of The Immune System, Mechanisms Of Hypersensitivity Reactions, Acquired Immunodeficiency Syndrome (AIDS), Neoplasia – Definition and Nomenclature, Characteristics Of Benign And Malignant Neoplasm‟s, Molecular Basis Of Cancer, Essential Alterations For Malignant Transformation, Clinical Aspects Of Neoplasia, Laboratory Diagnosis Of Cancer, Common Environmental And Nutritional Pathology, Nutritional Diseases, Tumors And Tumor-Like Lesions Of Infancy And Childhood

UNIT-III: Systemic Pathology I: Blood Vessels, the Heart, Red Blood Cell and Bleeding Disorders, Diseases Of White Blood Cells

Arteriosclerosis, Atherosclerosis, Hypertensive Vascular Disease, Ischemic Heart Disease, Hypertensive Heart Disease, Valvular Heart Disease, Infective Endocarditic, Rheumatic Fever And Rheumatic Heart Disease, Cardiomyopathies, Leucopenia, Anemia‟s, Polycythemia, Bleeding Disorders, Reactive Proliferations Of White Cells, Definitions And Classifications of Lymphoid Neoplasm‟s and Myeloid Neoplasm‟s, Splenomegaly.

UNIT-IV: Systemic Pathology II: The Lung, The Gastrointestinal Tract, Liver And Biliary Tract

Acute Respiratory Distress Syndrome, Obstructive Pulmonary Diseases, Pulmonary Infections, Gastritis, Peptic Ulcer Disease, Inflammatory Bowel Diseases, Liver Function Tests, Hepatic Failure, Cirrhosis, Portal Hypertension, Jaundice, Cholelithiasis

UNIT-V: Systemic Pathology III: The Urogenital System, the Breast, the Endocrine System, Bones Joints and Soft-Tissue, Peripheral Nerve and Skeletal Muscle, the Central Nervous System

Renal Function Tests, Nephrotic Syndrome, Nephritic Syndrome, Urolithiasis, Pap Smear, Carcinoma Of The Breast-Types And Classification, Thyroid Gland – Hyperthyroidism, Hypothyroidism, Thyroiditis, Graves‟ Disease, Diffuse And Multinodular Goiters, Parathyroid Glands – Hyperparathyroidism, Hyperparathyroidism, Diabetes Mellitus, Fractures, Osteomyelitis, Arthritis, Osteoarthritis, Rheumatoid Arthritis, Infectious Arthritis, Diseases of Peripheral Nerve, Diseases of Skeletal Muscle, Infections of CNS – CSF Find

REFERENCE BOOKS

1. Pocket companion to Pathologic Basis of Disease by Robbins and Cotran, 7th edition, Saunders.
2. Pathology Quick Review and MCQs by Harsh Mohan, 2nd edition, Jaypee Publications.

COURSE OUTCOMES	
CO1	The student will be able to gain knowledge of general pathology.
CO2	The student will be able to gain knowledge pathology of neoplasms
CO3	The student will be able to gain knowledge of basics of community health.
CO4	The student will be able to gain knowledge of systemic pathology.

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**

Category	Basic Medical Science
Approval	46th Meeting of Academic Council held in Aug, 2017

UAH17CT109	**PHARMACOLOGY**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Pathology
OBJECTIVES	This course is designed to help the students to develop an understanding of basic knowledge of pharmacology and knowledge of common drugs/group of drugs

UNIT-I: General Pharmacology

Introduction to pharmacology-various terminologies-sources & routes of drug administration – Absorption & Factors modifying drug absorption – Distribution of drugs – Metabolism: Phase II, - Excretion: routes, modes & kinetics of elimination – Excretion – Mechanism of drug action in brief, synergism & antagonism and Factors modifying drug action – Adverse drug reactions – ADR reporting & monitoring – Drug interactions.

UNIT-II: Central Nervous System & Respiratory System

Introduction to CNS and Neurotransmitters, drugs used in insomnia, Sedatives and hypnotics – diazepam – alprazolam, anti-anxiety drugs, Antiepileptic – phenytoin, carbamazepine, sodium valproate, General Anesthetics – halothane, isoflurane, sevoflurane – Local Anesthetics – lignocaine – list of other drugs, Alcohols – ethyl alcohol – disulfuram, Anti parkinsonians – levodopa – carbidopa, Opioids – morphine – naloxone – tramadol – pentazocine, NSAIDs – aspirin – diclofenac – ibuprofen – paracetamol – Cox 2 inhibitors. Drugs used in bronchial asthma and cough

UNIT-III: Cardio vascular system & blood

Drugs used in Ischemic Heart Disease-nitrates-Calcium channel blockers-nifedipine, verapamil-list of other drugs – Beta blockers – propranolol, atenolol – metoprolol and antiplatelets – aspirin, clopidogrel, and names of other drugs-fibrinolysis drugs-streptokinase and other drugs, Drugs used in CCF-digoxin and list of other drugs useful in CCF, Shock. Diuretics: 4 groups – Thiazides, Loop diuretics, Potassium sparing and osmotic diuretics. Hypertension – outline of drugs used in hypertension, Rennin angiotensin system – ACE inhibitors – captopril, ramipril and names of other drugs – Receptor antagonist – losartan and list of other drugs, Antiarrhythmic drugs-classification – Quinidine, Lignocaine and amiodaron – Drugs for Hypercholesterolemia – statins. Drugs for anemia – oral & parenteral iron preparations, folic acid, vit B12 and erythropoietin. Coagulants and anti-coagulants

UNIT-IV: Hormones and GIT

Contraceptives – oral and injectable, Corticosteroids – glucocorticoids – hydrocortisone-prednisolone-dexamethasone and names of topical steroids – Insulin – Oral hypoglycemic – sulphonyl ureas, biguanides and others, Thyroid and Antithyroid drugs, Sex Hormones-Estrogen and anti estrogens, Progestin and Anti progestin‟s, Androgen And anti androgens. Emetics and anti emetics-metoclopromide and domperidone, Drugs used in peptic ulcer, constipation-lactulose & Diarrhea-ORS-Loperamide.

UNIT-V: Chemotherapy and Miscellaneous

Introduction – Beta lactam antibiotics: Penicillin‟s – natural, semi synthetic penicillin‟s – amoxicillin – cloxacillin-clauvulinic acid – sulbactum – Cephalosporin‟s – cephalexin – cefuroxime – cefixime – ceftrioxone-cefipime, Broad spectrum antibiotics – Doxycycline –

chloramphenicol-imipenum-Macrolides – erythromycin, azithromycin and others – Quinolones- ciprofloxacin and list of other drugs and sulfonamides- cotrimoxazole- Amino glycosides-gentamycin, amikacin and names of other drugs Anti TB-first line drugs, Anti leprosy-dapsone and clofazimine Anti-malarial- chloroquine- mefloquine and artemisinins, Anti-fungal- amphotericin B- fluconazole and topical drugs & Anti-viral drugs- acyclovir and anti HIV, Anti protozoals- metronidazole – Anthelmintics- albendazole- praziquantel.
Anti-cancer drugs-Introduction – Anti metabolites- methotrexate- 6 mercapto purine- Alkylating agents- cyclophosphamide- busulphan and cisplatin – Plant products- vinblatin-vincristine- taxanes, antibiotics-actinomycin D- monoclonal antibodies. Immuno modulators-cyclosporine, tacrolimus, azathioprine and steroids. Toxicology-Drugs used in common poisoning, organophosphates, methyl alcohol, Benzodiazepam.

REFERENCE BOOKS:

1. Lippincott‟s Illustrated Reviews: Pharmacology, 5th edition, by Richard A. Harvey and Pamela C. Champe, Lippincott Williams & Wilkins Publisher
2. Essentials of Medical Pharmacology: K.D. Tripathi, 6th edition, Jaypee Publishers.

COURSE OUTCOMES						
CO1	The student will be able to gain basic knowledge in pharmacology. .					
CO2	The student will be able to gain knowledge of detailed systemic pharmacology.					
CO3	The student will be able to gain knowledge of detailed knowledge of drugs and groups of drugs.					
CO4	The student will be able to gain knowledge of action of drugs					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CT110	**ENVIRONMENTAL SCIENCE AND COMMUNITY MEDICINE**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Community Medicine
OBJECTIVES	This course is designed for students to practice community health nursing for the individual, family and groups at both urban and rural settings by using concept and principles of health and community health nursing. It also is designed for students to understand the natural resources and environmental pollution

UNIT – I:

Natural Resources: Introduction, Multi-disciplinary nature of environmental studies, Earth Resources and Man, Renewable and Non-Renewable Resources, Water Resources, Mineral Resources: Food Resources: Effect of modern agriculture, Fertilizer/pesticide problems, Water logging, and salinity, Energy Resources.

Ecosystems: Concept of an Ecosystem, Structure and Functions of an Ecosystem, Producers, Consumers and Decomposers, Cycles in the Ecosystem

Biodiversity: Introduction, Definition: Genetic, Species, Ecosystem diversity, India as a Mega Diversity Nation, Hotspots Of Biodiversity Threats to Biodiversity. Poaching of Wildlife, Man-Wildlife Conflicts, Endangered and Endemic Species Of India, Conservation of Biodiversity

UNIT – II:

Pollution: Definition, Causes, Effects and Control Measures of Air Pollution, Water Pollution, Pollution, Marine Pollution, Noise Pollution, Thermal Pollution, Nuclear hazards, Solid Waste Management role of Individuals in Pollution Prevention.

Social Issues Human, Population and Environment: From Unsustainable To Sustainable Development, Urban Problems Related To Energy, Water Conservation, rain Water Harvesting, global warming, acid rain, ozone layer depletion, nuclear accidents and nuclear holocaust. Environment Protection Act.

UNIT – III:

Concept of health & disease: Concept of health, Definition of health, Philosophy of health- Dimension of health – Concept of wellbeing, Spectrum of health, Responsibility of health – Determinates of health & Indicators of health – Concepts of disease & Concepts of cessation – Natural history of disease – Iceberg phenomenon, Concepts of control – Concepts of prevention – Modes of Intervention, Changing pattern of disease.

UNIT – IV:

Epidemiology: Definition & explanation, Aims, Epidemiologic approach, Basic measurements in epidemiology & tools of measurements – Measurements of Mortality & Morbidity, Epidemiologic methods- Descriptive epidemiology-Analytical epidemiology – case control study – analytical epidemiology – Cohort study – Experimental epidemiology – RCT – Association & Causation Uses of epidemiology (Criteria for judging causality) – Infection disease epidemiology Definitions Dynamic of disease transmission & Modes of transmission – Disinfection – Definition Types Agents used Recommended disinfection procedures-Investigation of an epidemic.

Unit – V:

Environment & health: Definition & components (environment sanitation environmental sanitation) Water: Safe & Whole some water Requirements Uses source of water supply

(sanitary well)-Purification of water (1). Large scale purification, (2). Small scale purification – Water Quality – Special treatment of water
Air: Composition The air of occupied room discomfort. Air pollution & its effects. Prevention & Control of air pollution
Ventilation: Definition Standards of ventilation Types of ventilation. Light, Noise & Radiation, Metrological environment, Housing, Disposal of waste Excreta disposal

PRACTICALS:

1. Epidemiology Problems
2. Environmental spotters

REFERENCE BOOK

1. Textbook of Preventive and Social medicine by k. Park, 21st edition, published by Banarsidas Bhanot

COURSE OUTCOMES						
CO1	The student will be able to know the concept of health & illness .					
CO2	The student will be able to know epidemiology of common communicable diseases					
CO3	The student will be able to know epidemiology of common non communicable diseases					
CO4	The student will be able to know the effects of pollution on humans.					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CT111	**BASICS OF NURSING**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Community Medicine
OBJECTIVES	This course is designed to help the students to develop an understanding of the nursing profession, philosophy, objectives, theories and application of nursing in various clinical settings. It is aimed at helping the students to acquire knowledge, understanding and skills in techniques of nursing and practice them in supervised clinical settings.

Unit I: Introduction of Health

Health care system, major health problems of the country, nature of disease pattern, technological advances and national health programmes, health for all by 2000 AD. Role of health care workers in the health care delivery system, impact of illness of the individual family and community. History of Nursing, Communication Skills - Relationship with patients, process of communication

UNIT II: Concept of Nursing

Nursing Processes- Problems solving approach, assessment, diagnosis, planning, implementation and evaluation.

Unit III: First Aid and Nursing in Emergencies

Definition, basic principles, scope and rules, Wounds, hemorrhages, shock, fracture, dislocation and muscle injuries, respiratory emergencies, resuscitation, unconsciousness, Miscellaneous conditions, burns, scalds, foreign bodies in the skin, eyes, ear, nose, throat and stomach.Frost bite, effects of heart cramps, bites and stings. Poisoning, Transporting injured persons.

Unit IV: **Personal Hygiene and Health**

Care of skin, mouth, eyes, nails, hair, Menstrual hygiene, clothing, mental health, common health problems of poor personal hygiene. Comfort, Rest and Sleep, Hospital Housekeeping

Unit V: Health Education

Introduction to principles and methods of health education. Use of audio visual aids, mass education, role of nurse in health education.

Course outcome:

1) Knowledge on concept of health, health-illness continuum and health care delivery system.
2) Knowledge on scope of nursing practice.
3) Knowledge on concept, theories and models of nursing practice.
4) Desirable attitude to ethics and professional conduct.

COURSE OUTCOMES	
CO1	The student will be able to gain knowledge on concept of health, health-illness continuum and health care delivery system.
CO2	The student will be able to gain knowledge on scope of nursing practice.

CO3	The student will be able to gain knowledge on concept, theories and models of nursing practice.					
CO4	The student will be able to gain knowledge on concept, theories and models of nursing practice.					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UARD17CT201	**APPLIED ANATOMY AND PHYSIOLOGY RELATED TO DIALYSIS TECHNOLOGY THEORY**
	Total Contact Periods – 60
	Total credits -4
	Course Designed by – Department of Nephrology
OBJECTIVES	An outline of anatomy and physiology will be provided to improve the students understanding of the technical and diagnostic procedures used with special emphasis on applied aspects.

Unit I: Gross structures of excretory system

- Structure of kidney
- Structure of ureter & urinary bladder
- Structure of Nephron, renal corpuscle, glomerular apparatus, proximal tubule, loop of Henle, distal tubule and collecting tubule

Unit II: Vascular supply of excretory system

- Renal Artery
- Renal vein
- Subclavian vein
- Femoral vein
- Jugular vein
- Radial artery
- Innervations of kidney and urinary bladder
- Peritoneum in general

Unit III: Physiology related to dialysis technology – Mechanism of urine formation

- Filtration
- Reabsorption
- Concentration
- Dilution and acidification

Unit IV: Functions of excretory system

- Excretory and regulatory functions
- Metabolic and endocrine functions
- Physiology of bladder function
- Renal function test
- Micturition
- Types of bladder dysfunction

Unit V: Regulatory functions of excretory system

- Role of kidney in blood pressure regulation in health and diseases
- Role of peritoneum in peritoneal dialysis
- Mechanism of blood formation and regulation

- Role of kidney in bone formation
- Other endocrine functions of the kidney
- Body fluids and electrolytes and their regulation in health and disease
- Disorders of water metabolism (Potassium, Sodium, Phosphate, Calclum)
- Role of kidney in acid-base balance

REFERENCE BOOKS

1. Hand book of Anatomy – P.Saraswathi
2. Human Anatomy – B.D. Chaurasias
3. Human physiology – A.K.Jain
4. Anatomy and physiology in health and illness – Ross and Willson

COURSE OUTCOMES						
CO1	To understand the basic structure and function related to the kidney.					
CO2	Understand the function of important physiological systems.					
CO3	To learn about regulatory function & excretory system					
CO4	The student will be able to gain knowledge of renal mechanism					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**A**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	S			**S**		**M**
Category	Nephrology					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UARD17CL202	**APPLIED ANATOMY AND PHYSIOLOGY RELATED TO DIALYSIS TECHNOLOGY – PRACTICAL**
	Total Contact Periods – 120
	Total credits -4
	Course Designed by – Department of Nephrology
OBJECTIVES	An outline of anatomy and physiology will be provided to improve the students understanding of the technical and diagnostic procedures used with special emphasis on applied aspects.

GROSS SPECIMENS / SPOTTERS

- Kidney
- Ureter
- Urinary bladder

CHARTS / SPOTTERS

- Renal corpuscle
- Glomerular apparatus
- Nephrone (proximal tubule, loop of Henle, distal tubule and collecting tubule)
- Renal Artery, Renal vein, Subclavian vein, femoral vein, Jugular veine, radial artery,
- Innervations of kidney and urinary bladder,
- Peritoneum in general
- Functions of excretory system (Excretory, regulatory, Metabolic and endocrine functions)
- Renal function tests
- Physiology of bladder function
- Miturition
- Types of bladder dysfunction
- Mechanism of urine formation
- Role of kidney in blood pressure regulation in health and diseases
- Role of peritoneum in peritoneal dialysis
- Mechanism of blood formation and regulation
- Role of kidney in bone formation
- Other endocrine functions of the kidney
- Body fluids and electrolytes and their regulation in health and disease
- Disorders of water metabolism (Potassium, Sodium, Phosphate, Calcium)
- Role of kidney in acid-base balance.

Exam pattern (UE) Total marks -60

1. SPOTTERS – 10 (10X2=20)
2. CHARTS/STATIONS – 5 (5X4=20)
3. VIVA – 20

COURSE OUTCOMES						
CO1	To Demonstrate the structure of kidney, ureter, urinary bladder, Nephron and Label the parts.					
CO2	To demonstrate the structure of peritoneum					
CO3	To explain flowchart of micturition.					
CO4	The student will be able to gain knowledge of Body fluids and electrolytes and their regulation in health and disease					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UARD17CT203	**PHARMACOLOGY RELATED TO DIALYSIS TECHNOLOGY – THEORY**
	Total Contact Periods – 60
	Total credits -4
	Course Designed by – Department of Nephrology
OBJECTIVES	The course will cover general pharmacology with special emphasis on common drugs used, route of administration, type of formulations, dose and frequency of administration, side effects and toxicity, management of toxic effects, drug interactions, knowledge of chemical and trade names, importance of manufacturing and expiry dates and instruction about handling each drug.

Unit I: Common drugs used in renal medicine

- I.V. Fluids in renal patient
- Diuretics
- Antihypertensives
- Steroids
- Azthioprine
- Cyclosporine
- Cyclosphosphamide
- Vit-D analogs
- Erythropoietin
- Antibiotics
- Chemicals used in the dialysis room including composition and mechanism of action
- Hemodialysis concentrate
- Peritoneal dialysis fluid
- Replacement fluids for CRRT
- Chemicals used for sterilization including formaldehyde, Hydrogen peroxide and its mechanism of action
- Vaccines used in dialysis patients – Hepatitis B
- Fluids used in peritoneal dialysis

Unit II: Cardiovascular drugs & inotropic drugs

- Digoxin
- Betablockers
- Dopamine
- Dobutamine
- Adrenaline,
- Isoprenaline

Unit III: Vasodilators

- Nitro-glycerine
- Nitroprusside

Unit IV: Drugs affecting coagulation

- Heparin
- Protamin

Unit V: Other drugs

- Bicarbonate
- Potassium
- Magnesium,
- Steroid,
- Antihistamine

REFERENCE BOOKS

Medical pharmacology – Padmaja Udaykumar

Tripathi – Pharmacology

COURSE OUTCOMES						
CO1	knowledge about diuretics, antihypertensive drugs & immunosuppressive drugs					
CO2	To gain knowledge about antihistamine & cardiovascular drugs					
CO3	To develop basic knowledge about dialysis related dialysis drugs					
CO4	The student will be able to learn nephrotoxic drugs					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**D**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UARD17CL204	**PHARMACOLOGY RELATED TO DIALYSIS TECHNOLOGY – PRACTICAL**
	Total Contact Periods – 120
	Total credits -4
	Course Designed by – Department of Respiratory
OBJECTIVES	The course will cover general pharmacology with special emphasis on common drugs used, route of administration, type of formulations, dose and frequency of administration, side effects and toxicity, management of toxic effects, drug interactions, knowledge of chemical and trade names, importance of manufacturing and expiry dates and instruction about handling each drug.

SPOTTERS AND CHARTS

- I.V. Fluids in renal patient
- Diuretics
- Antihypertensives
- Steroids
- Azthioprine
- Cyclosporine and Cyclosphosphamide
- Vit-D analogs
- Erythropoietin
- IV iron
- Antibiotics
- Chemicals used in the dialysis room including composition and mechanism of action
- Hemodialysis concentrate
- Peritoneal dialysis fluid
- Replacement fluids for CRRT
- Chemicals used for sterilization (Formaldehyde, Hydrogen peroxide, Cltrosterile, Renaline)
- Vaccines used in dialysis patients – Hepatitis B
- Fluids used In peritoneal dialysis
- (Digoxine, Betablockers, Dopamine, Dobutamine, Adrenaline, Isoprenaline)
- Vasodilators (Nitro-glycerine, Nitroprusside)
- Anticoagulation (Heparin)
- Protamin
- Bicarbonate
- Electrolytes (Potassium, Magnesium)
- Antihistamine

Exam pattern (UE) Total marks – 60

1. SPOTTERS – 10 (10X2)
2. CHARTS/STATIONS – 5 (5X4=20)
3. VIVA – 20

REFERENCE BOOKS

1. Medical pharmacology – Padmaja Udaykumar
2. Tripathi – Pharmacology

COURSE OUTCOMES						
CO1	To gain knowledge about mechanism of action in diuretics & antihypertensive drugs					
CO2	specific drug related mechanism of action, adverse effects and uses of cardiovascular drugs, steroids, anticoagulation & immunosuppressive drugs					
CO3	To identify drugs name, classification, mechanism of action & uses of erythropoietin, antihypertensive drugs & antihistamine					
CO4	To learn about hemodialysis concentration, peritoneal dialysis fluid & replacement fluid in CRRT					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**A**	**b**	**C**	**D**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	S			**S**		**M**
Category	Nephrology					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UARD17CT205	**BASIC PRINCIPLES OF HOSPITAL MANAGEMENT**
	Total Contact Periods – 60
	Total credits -4
	Course Designed by – Department of Hospital Administration
OBJECTIVES	The course will offer basic knowledge about management planning, Organizing, staffing, motivating and controlling management in Health care units

Unit I: Introduction to management & Organization:

The evolution of Management, Definition and Importance of Management. Planning – Organizing – staffing – Motivating – Leading – Controlling. Management of health care units (in brief). Individual behavior in organization; organizational functioning (Group/Individual); Perception; Motivation MBO; Organizational Development.

Unit II: Planning and Management of Hospitals & Clinical Services:

Building and physical layout – space required for separate function – Planning of infrastructure facilities, clinical services, equipment & Human resources – Types of Hospitals. Organization and administration of various clinical services; outpatient services. In-patient services, emergency services, operation theatres, ICU's and super specialty services.

Unit III: Organizing of support clinical services & Hospital management:

Imaging – CSSD – Laboratory – Blood Bank – diet – Medical Records – Mortuary. Housekeeping – Maintenance (Water, Electricity, Civil, Air Conditioning, Lift) – Pest Control – transport – Security. Forecasting – Purchasing & procurement (Sourcing, methods and procedures) – storing & issuing, Concept of inventory control, Maintenance of equipment and contracts (with special reference to major biomedical equipment). Trends in financing of Health and Hospital Services – Classification of Hospitals depending on source of financing – roles of financial institutions.

Unit IV: Personnel and quality Management in Hospital & Marketing:

Concepts – Manpower planning – Training & Developments – Team Building – Conflict Management – Performance appraisal – Office rules and regulations Outline of Strategic Planning and Marketing.

Concepts of quality – Professional Audit System – QA program – Medical Audit – Quality Circle – TOM – Patient Satisfaction – ISO 9000. A brief outline – computerization in hospital departments. Concept, Techniques, Indicators, Evaluation of Efficiency & Effectiveness evaluation of hospital and medical care services.

Unit V: Ethical, current issues and Legal Aspects of Hospitals management services:

Laws related to Hospital – Medico Legal Cases law of Torts – Autopsy – Dying delaration – CPA. – Waste Management – Telemedicine – Organ Transplantation – Rehabilitation Service – Health Insurance.

Operations Research and Quantitative Methods in Hospital Administration & Nursing Services in a Hospital.

COURSE OUTCOMES						
CO1	The student will be able to gain knowledge about infrastructure facilities, clinical services, equipment and Human resources					
CO2	The student will be able to understand how to maintain inpatient services, outpatient services, ICUs, Emergency services, Operation theatres and super speciality services					
CO3	The student will be able know about Manpower planning, training, developing and knowledge about marketing					
CO4	The student will be able to learn developing and knowledge about marketing					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Management					
Approval	47th Meeting of Academic Council held in Aug, 2018					

UARD17CL206	**COMPREHENSIVE VIVA: APPLIED ANATOMY, PHYSIOLOGY & PHARMACOLOGY RELATED TO RELATED TO DIALYSIS**
	Total Contact Periods –180
	Total credits -5
	Course Designed by – Department of Nephrology
OBJECTIVES	The course will offer basic knowledge about structure and functions of respiratory related organs. Develop fundamental knowledge about drugs related to dialysis care.

- Structure of kidney
- Structure of ureter & urinary bladder
- Structure of Nephron, renal corpuscle, glomerular apparatus, proximal tubule, loop of Henle, distal tubule and collecting tubule

- I.V. Fluids in renal patient

- Diuretics
- Antihypertensive
- Steroids
- Azthioprine
- Cyclosporine and Cyclosphosphamide
- Vit-D analogs
- Erythropoietin
- IV iron

Text Books:

1. Textbook of Human Anatomy – B.D. Chaurasias, 6th edition, CBS Publishers, 2013.
2. Textbook of physiology – A.K.Jain, 5th edition, Avichal Publishing Company, 2014.
3. Pharmacology for dental and allied health sciences – PadmajaUdaykumar – 3rd edition – 2013
4. Essentials of medical pharmacology – Tripathi – 7th edition – 2013

COURSE OUTCOMES	
CO1	To student will be able to understand common drugs in renal disease.
CO2	To know the structure and function related to Dialysis technology.
CO3	To get know about patient details in I. V fluids and IV injection.
CO4	To get knowledge about MOA, adverse effects, Pharmacodynamics,Pharmacokinetics and routes related to Dialysis Technology

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES	

COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Management					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UARD17CT207	**CONCEPTS OF DISEASE AND OUTLINES OF CLINICAL EVALUATION RELATED TO DIALYSIS TECHNOLOGY – PAPER – I – THEORY**
	Total Contact Periods – 60
	Total credits -4
	Course Designed by – Department of Nephrology
OBJECTIVES	This course is designed to help the students to develop an understanding of basic knowledge of renal related disease conditions..

Unit I: Basic Renal disorders

- Glomerular Diseases
- Post infectious glomerulonephritis
- Acute Renal Failure
- Chronic renal Failure – chronic kidney disease (CKD)

Unit II: Acid-Base, Fluids and Electrolyte Disorders

- Metabolic Acidosis
- Metabolic Alkalosis
- Respiratory acidosis and alkalosis
- Edema and the clinical use of diuretics
- Disorders of sodium (Hyponatremia, Hypernatremia)
- Disorders of potassium metabolism
- Disorders of calcium, and Phosphorous Homeostasis

Unit III: The Kidney in systemic disease

- Renal function in congestive heart failure
- Renal function in liver disease
- Renal involvement in systemic vacuities
- Renal manifestations in SLE and other rheumatic disorders

Unit IV: Diabetic nephropathy

- Epidemiology
- Pathogenesis
- Diagnosis
- Management
- Prevention

Unit V: Renal Biopsy

- Indications
- Contraindications
- Procedure
- Pre and post biopsy care

REFERENCE BOOKS (PATHOLOGY PAPER I & II)

1. Text book of pathology – pocket harsh Mohan's

2. Basic pathology – pocket Robbins
3. Principles and practice of medicine – davidson's
4. Kidney diseases in primary care – K. Mandal, Stanly

COURSE OUTCOMES						
CO1	To Understand the basic concepts of renal related Disease.					
CO2	The student will be able to understand the clinical evaluations of Disease Condition.					
CO3	To know detailed information about renal failure.					
CO4	To understand the indication, contraindication, procedure, pre & post Renal Biopsy care.					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Nephrology					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UARD17CL208	**CONCEPTS OF DISEASE AND OUTLINES OF CLINICAL EVALUATION RELATED TO DIALYSIS TECHNOLOGY – PAPER – I – PRACTICAL**
	Total Contact Periods – 120
	Total credits -4
	Course Designed by – Department of Nephrology
OBJECTIVES	This course is designed to help the students to develop an understanding of basic knowledge of renal related disease conditions..

SPECIMENS AND CHARTS/CASE DISCUSSIONS

- Glomerular Diseases
- Post infectious glomerulonephritis
- Acute Renal Failure
- Chronic renal Failure – chronic kidney disease (CKD)
- Acid-Base, Fluids and Electrolyte Disorders
- Renal function in congestive heart failure
- Renal function in liver disease
- Renal involvement in systemic vacuities
- Renal manifestations in SLE and other rheumatic disorders
- Diabetic nephropathy

URINE ANALYSIS

- Physical examination
- Chemical examination
- Microscopic examination

REFERENCE BOOKS (PATHOLOGY PAPER I & II)

1. Text book of pathology – pocket harsh Mohan's
2. Basic pathology – pocket Robbins
3. Principles and practice of medicine – davidson's
4. Kidney diseases in primary care – K. Mandal, Stanly

COURSE OUTCOMES	
CO1	To understand the analysis of urine examination.
CO2	To demonstrate the structure of each disease kidney.
CO3	To demonstrate the conditions related to renal disease.

CO4	To gain an in- depth knowledge on disease outline and clinical evaluation of patients.					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Management					
Approval	47th Meeting of Academic Council held in Aug, 2018					

UARD17CT209	**CONCEPTS OF DISEASE AND OUTLINES OF CLINICAL EVALUATION RELATED TO DIALYSIS TECHNOLOGY –PAPER – II – THEORY**
	Total Contact Periods – 60
	Total credits -4
	Course Designed by – Department of Nephrology
OBJECTIVES	This course is designed to help the students to develop an understanding of basic knowledge of clinical evaluation related to renal condition.

Unit I: The Kidney in systemic disease

- Amyloidosis
- Hyperoxaluria
- HUS/TTP
- Hereditary renal disorders
- Kidney disorders in pregnancy

Unit II: Obstructive Renal disorders

- Obstructive uropathy
- VUR and Reflux nephropathy
- Nephrolithiasis

Unit III: Infectious Diseases

- Renal diseases associated with HIV infection
- UTI (urinary tract infection)

Unit IV: Drugs and the kidney

- Analgesics and the kidney
- Principles of drug therapy in kidney failure

Unit V: Renal hypertension

- Pathogenesis
- Essential HTN
- Renovascular HTN
- Therapy of HTN

REFERENCE BOOKS (PATHOLOGY PAPER I & II)

Text book of pathology – pocket harsh Mohan's

Basic pathology – pocket Robbins

Principles and practice of medicine – davidson's

Kidney diseases in primary care – K. Mandal, Stanly

COURSE OUTCOMES

CO1	To learn about the importance of each renal related disease condition and clinical evaluation of patients.
CO2	To understand the concept of theory and clinical evaluation of disease conditions.
CO3	To get knowledge about renal hypertension.
CO4	The student will be able to understand the basic disorders like Renal hypertension

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES

COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**

Category	Management
Approval	47th Meeting of Academic Council held in Aug, 2018

UARD17CL210	**CONCEPTS OF DISEASE AND OUTLINES OF CLINICAL EVALUATION RELATED TO DIALYSIS TECHNOLOGY – PAPER –II – PRACTICAL**
	Total Contact Periods – 120
	Total credits -4
	Course Designed by – Department of Nephrology
OBJECTIVES	This course is designed to help the students to develop an understanding of basic knowledge of renal related disease conditions..

CHARTS/SPOTTERS/SPECIMENS

- Amyloidosis
- Hyperoxaluria
- HUS/TTP
- Hereditary renal disorders
- Kidney disorders in pregnancy
- Obstructive uropathy
- VUR and Reflux nephropathy
- Nephrolithiasis
- Renal diseases associated with HIV infection
- UTI (urinary tract infection)
- Drugs and the kidney
- Renal hypertension

REFERENCE BOOKS (PATHOLOGY PAPER I & II)

- Text book of pathology – pocket harsh Mohan's
- Basic pathology – pocket Robbins
- Principles and practice of medicine – davidson's
- Kidney diseases in primary care – K. Mandal, Stanly

COURSE OUTCOMES	
CO1	To understand renal diseases and treatment
CO2	To get knowledge about sample collection/analysis & Interpretations
CO3	To demonstrate different disease conditions related to renal charts.
CO4	To gain an in- depth knowledge on disease outline and clinical evaluation of patients.

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	

2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Management					
Approval	47th Meeting of Academic Council held in Aug, 2018					

UARD17CT211	**HEALTH CARE MANAGEMENT**
	Total Contact Periods – 60
	Total credits -4
	Course Designed by – Department of Hospital Administration
OBJECTIVES	To Explain the effect of personality, attitudes, perceptions and attributions on their own and other's behaviors in team and organizational settings.

UNIT I: Concept of Health Care and Health Policy

Health in Medical Care, Indigenous systems of Health Care & their relevance, Framework for Health Policy Development.

UNIT II: Health Organisation

Historical development of Health Care System in the third world & India, Organization & Structure of Health administration in India, Type of Health Organization including International Organizations, Private & Voluntary Health care provider, Distribution of Health Care Services, Health Care System in Public Sector Organization, Health systems of Various Countries.

UNIT III: Health Policy and National Health Programme

National Health Policy, Drug Policy, National Health Programs (Malaria, T.B., Blindness, AIDS etc.,) Evaluation of Health Programs (Developing indicators for evaluation), Medical Education & Health Manpower Development.

UNIT IV: Health Economics – Fundamentals of Economics

Scope & Coverage, Demand for Health Services, Health as an Investment, Population, health of Economic Development. **Economics of Health-** Population based health services, Economics of Communicable and Non Communicable diseases

UNIT V: Methods & Techniques of Economic Evaluation of Health Program

Cost Benefit & Cost Effective Methods

- **Household & Health**

  Health Expenditure & Outcome, Rationale for Government action, Household capacity, income and schooling
- **Health Insurance**

COURSE OUTCOMES	
CO1	The student will be able to Develop skills in using materials tools and/or technology central to health care management
CO2	The student will be able to understand perspectives and values of health care management;
CO3	The student will be able to Integrate health care management theory with real world situations
CO4	The student will be to Develop the ability to work productively with others in diverse teams
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES	

COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UARD17CL212	**COMPREHENSIVE VIVA: CONCEPTS OF DISEASE AND OUTLINES OF CLINICAL EVALUATION RELATED TO DIALYSIS TECHNOLOGY**
	Total Contact Periods –180
	Total credits -5
	Course Designed by – Department of Nephrology
OBJECTIVES	This course is designed to help the students to develop an understanding of basic knowledge about overall renal related pathophysiology.

- Glomerular Diseases
- Post infectious glomerulonephritis
- Acute Renal Failure
- Chronic renal Failure – chronic kidney disease (CKD)
- Metabolic Acidosis
- Metabolic Alkalosis
- Respiratory acidosis and alkalosis
- Edema and the clinical use of diuretics
- Disorders of sodium (Hyponatremia, Hypernatremia)
- Disorders of potassium metabolism
- Disorders of calcium, and Phosphorous Homeostasis
- Kidney disorders in pregnancy
- Obstructive uropathy
- VUR and Reflux nephropathy
- Nephrolithiasis
- Renal diseases associated with HIV infection
- UTI (urinary tract infection)
- Drugs and the kidney
- Renal hypertension

REFERENCE BOOKS (PATHOLOGY PAPER I & II)

- Text book of pathology – pocket harsh Mohan's
- Basic pathology – pocket Robbins
- Principles and practice of medicine – davidson's
- Kidney diseases in primary care – K. Mandal, Stanly

COURSE OUTCOMES	
CO1	To know the concepts of disease condition and clinical evaluation related to renal condition.
CO2	

	To get knowledge about the basics of concepts of disease & outlines of clinical evaluation.
CO3	To learn about causes & pathology of renal disease
CO4	The student will be able to understand about the application of renal function studies.

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Nephrology					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UARD17CT313	**DIALYSIS TECHNOLOGY PART – I PAPER I - THEORY**
	Total Contact Periods –60
	Total credits -4
	Course Designed by – Department of Respiratory
OBJECTIVES	This course is designed to enable students to acquire understanding of basic of dialysis techniques

Unit I: Introduction to hemodialysis

- Dialysis Team (Doctors, Technologist, Nurses, Technician, Renal Dietician- right, responsibilities and relationship with patients)
- Basic chemistry of body fluids and Electrolytes
- History of Hemodialysis
- Principles of Hemodialysis
- Indications for dialysis
- Types of Hemodialysis
- Types of dialysers

Unit II: **Water Treatment**

- Purpose of water treatment
- Filtration
- Softener and carbon filtration
- Deionizer
- RO system
- Ultrafiltration

Unit III: Hemodialysis Equipment

- Components and function HD equipments
- Dialyser membranes – Types and biocompatibility
- Types of dialyser
- Hemodialysis adequacy
- Anticoagulation
- Composition of dialysate
- Dialyser reprocessing and reuse of dialysers

Unit IV: Vascular access

- History
- Types of access
- Access care
- Access complications and management
- Vascular access recirculation

Unit V: General aspects

- Infection control and universal precautions
- Psychosocial aspects of dialysis
- Drugs and dialysis

REFERENCE BOOKS (HD paper I & II)

HandBook of Dialysis –I.T.Daugirdas
Dialysis therapy – Allen R.Nissenson,Richard N.Fine

COURSE OUTCOMES	
CO1	To get knowledge about the basics of dialysis.
CO2	To understand the concept of hemodialysis equipments
CO3	To be able to have an overview of hemodialysis principles & equipments
CO4	To understand the various types of infection, how to control the infection & how to maintain universal precaution.

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Nephrology					
Approval	47th Meeting of Academic Council held in Aug, 2018					

UARD17CL314	**DIALYSIS TECHNOLOGY PART – I PAPER I - PRACTICAL**
	Total Contact Periods –120
	Total credits -4
	Course Designed by – Department of Nephrology
OBJECTIVES	This course is designed to help the students to develop an understanding of basic knowledge about advance renal dialysis care.

CHARTS/SLIDES/SPOTTERS

- Dialysis Team (Doctors, Technologist, Nurses, Technician, Renal Dietician- rights, responsibilities and relationship with patients)
- Basic chemistry of body fluids and Electrolytes
- History, principles and indications of Hemodialysis
- IV fluids used in dialysis patients
- Types of Hemodialysis
- Water Treatment system
- Dialyser membranes – Types and biocompatibility
- Types of dialyser
- Hemodialysis adequacy
- Anticoagulation
- Composition of dialysate
- Infection control and universal precautions
- Psychosocial aspects of dialysis
- Drugs and dialysis

CASE STUDY / HEMODIALYSIS PROCEDURES

- Preparing the concentration of the dialysate depending upon the situation
- Priming
- Vascular access assessment
- Skin suturing
- Temporary catheter care and its exit site dressing
- Dialyser reprocessing and reuse of dialysers

REFERANCE BOOK

1. Handbook of Dialysis, John T. Daugirdas, Peter G. Blake, Todd S. Ing
2. Handbook of Dialysis therapy, Allen.R. Nissenson , Richard .N. Fine

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COURSE OUTCOMES	
CO1	To demonstrate the hemodialysis procedure
CO2	To demonstrate the vascular access assessment

CO3	To demonstrate the temporary catheter care & its exit site dressing					
CO4	To demonstrate the reprocessing & reuse of dialysers					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Nephrology					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UARD17CT315	**DIALYSIS TECHNOLOGY PART – I PAPER II - THEORY**
	Total Contact Periods –60
	Total credits -4
	Course Designed by – Department of Nephrology
OBJECTIVES	This course is designed to help the students to develop an understanding of basic knowledge about advance dialysis treatment

Unit I

- Quality assurance in dialysis
- High flux and high efficiency dialysis
- Machine monitoring during hemodialysis

Unit II

- Patient assessment & Complications – General, pre, intra and post dialysis
- Lab data analysis
- Acute complications during hemodialysis

Unit III

- Hemodialysis in infants and children

Unit IV: **SPECIAL PROCEDURES**

- Slow continuous therapies
- Plasmapheresis
- Hemoperfusion
- MARS

Unit V

- Current research in hemodialysis

REFERANCE BOOK

1. Handbook of Dialysis, John T. Daugirdas, Peter G. Blake, Todd S. Ing
2. Handbook of Dialysis therapy, Allen.R. Nissenson , Richard .N. Fine

COURSE OUTCOMES	
CO1	To understand the various special therapies in related to dialysis
CO2	To understand the machine monitoring during Hemodialysis
CO3	To learn about complication related to dialysis.
CO4	To get knowledge about advance dialysis treatment & procedures

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	

2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Nephrology					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UARC17CL316	**DIALYSIS TECHNOLOGY PART – I PAPER II - PRACTICAL**
	Total Contact Periods –60
	Total credits -4
	Course Designed by – Department of Nephrology
OBJECTIVES	This course is designed to help the students to develop an understanding of basic knowledge related to respiratory care.

CHARTS/SLIDES/SPOTTERS/CASE STUDY

- Quality assurance in dialysis
- High flux and high efficiency dialysis
- Hemodialysis in infants and children
- Acute complications in hemodialysis patients
- CRRT (continuous renal replacement therapy)
- Plasmapheresis
- Hemoperfusion
- MARS (molecular adsorbent re circulating system)
- Nutrition management in hemodialysis patients
- Prevention of blood adulteration
- Current research in hemodialysis

HEMODIALYSIS PROCEDURES

- Patient assessment – General, pre, intra and post dialysis
- Machine monitoring during hemodialysis/setting of dialysis machine
- Initiation of dialysis through Central venous catheter
- AV fistula/AV graft cannulation
- Sequential dialysis
- Sodium profiling
- Termination (closing of dialysis)

REFERANCE BOOK

1. Handbook of Dialysis, John T. Daugirdas, Peter G. Blake, Todd S. Ing

2. Handbook of Dialysis therapy, Allen .R. Nissenson , Richard .N. Fine

COURSE OUTCOMES	
CO1	To understand the machine monitoring during hemodialysis
CO2	To learn about how to manage complication during hemodialysis
CO3	To understand the how to maintain sodium profiling in each patient.

CO4	To understand about practical procedure related dialysis therapy					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Nephrology					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UARD17CT317	**PHYSICIANS OFFICE MANAGEMENT**
	Total Contact Periods – 60
	Total credits -4
	Course Designed by – Department of Nephrology
OBJECTIVES	To promote scientific management of hospital and advancement of health care systems so as to make it rational, responsive and cost efficient

UNIT I. Outpatient Section

Registration of new cases, Registration of repeat cases, Patient record guide, Laboratory X-Ray reports & reports & reports filing, Alpha index typing & Filing, O.P. Records coding
(disease & indexing), O.P. records retrieval, O.P. Statistics

UNIT II. Inpatient Section

Admitting office procedure, Inpatient record removal & forwarding, Ward Census,

UNIT III. Assembling & deficiency checks, I.P. record coding & indexing,

UNIT IV. Discharge Analysis

Incomplete record control, Completed record control, Medico legal procedures & issue of Medical certification, Record retention & destruction of O.P. & I.P. records,

UNIT V. Miscellaneous

Hospital reception, Secretarial practice, Library (Medical)

REFERENCE BOOKS

- Financial Management of the Medical Practice ,J. Max Reiboldt, American Medical Association

- Saunders Medical Office Management,Alice Anne Andress CCS-P CCP

COURSE OUTCOMES	
CO1	The student will be able to Understand and apply resource management concepts (personnel, finance, and material resources) and the processes and strategies needed in specific hospital sectors
CO2	The student will be able to Communicate effectively and develop their leadership and teambuilding abilities
CO3	Apply modern change management and innovation management concepts to optimize structures
CO4	The student will be to Analyze existing hospital service policies and enhance their alignment within the local and national context

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	

2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UARD17CL318	**CLINICALS IN DIALYSIS TECHNOLOGY: COMPREHENSIVE VIVA**
	Total Contact Periods –180
	Total credits -5
	Course Designed by – Department of Nephrology
OBJECTIVES	This course is designed to help the students to develop an understanding of basic knowledge

- Patient assessment – General, pre, intra and post dialysis
- Machine monitoring during hemodialysis/setting of dialysis machine
- Initiation of dialysis through Central venous catheter
- AV fistula/AV graft cannulation
- Sequential dialysis
- Sodium profiling
- Termination (closing of dialysis)

REFERANCE BOOK

1. Handbook of Dialysis, John T. Daugirdas, Peter G. Blake, Todd S. Ing
2. Handbook of Dialysis therapy, Allen .R. Nissenson , Richard .N. Fine

· **COURSE OUTCOMES**	
CO1	The student will be able to understand about basic knowledge about renal replacement therapy
CO2	To know the complication during hemodialysis and management.
CO3	To get knowledge about special therapies, hemoperfusion & plasmapheresis
CO4	To get knowledge about how to maintain I.C.U protocols

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES

COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2		**s**		s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basi Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UARD17CT319	**DIALYSIS TECHNOLOGY PART – II PAPER I - THEORY**
	Total Contact Periods –60
	Total credits -4
	Course Designed by – Department of Nephrology
OBJECTIVES	This course is designed to help the students to develop an understanding of basic knowledge **peritoneal dialysis**.

UNIT I: **Introduction to peritoneal dialysis**

- History of peritoneal dialysis
- Physiology of PD – Kinetics of PD,
- Acute peritoneal dialysis
- Indications and contraindications for chronic PD

UNIT II: **PD apparatus**

- Solution
- Transfer set,
- Connectologiesl.
- Access for CPAD
- Catheter and exit site care

UNIT III: PD process & Therapies

- Assessment of peritoneal membrane permeability
- Adequacy of peritoneal dialysis
- PD therapies – intermittent & continuous

UNIT IV: PD complications & management

- Non infectious complications of PD – Mechanical and metabolic
- Infectious complications of PD,
- Patient Education

UNIT V: Transplantation and current research

- Types of renal donor & cadaver donor maintenance
- Recipient and donor workup for renal transplantation
- Principles of post transplant management and follow up
- Current research in PD and Transplantation

REFERENCE BOOKS (PD paper I & II)

1. Hand Book of Dialysis – J.T. Daugirdas
2. Text Book of Peritoneal Dialysis – G. Abraham
3. HandBook of Kidney Transplantation – Gabriel M. Danovitch

COURSE OUTCOMES	
CO1	To get knowledge about the basics of peritoneal dialysis.
CO2	To understand the concept of indication & contraindication peritoneal dialysis

CO3	To be able to have an overview of peritoneal dialysis principles & Apparatus					
CO4	To understand the mechanical & metabolic infection					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Nephrology					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UARD17CL320	**DIALYSIS TECHNOLOGY PART – II PAPER I -PRACTICAL**
	Total Contact Periods –120
	Total credits -4
	Course Designed by – Department of Nephrology
OBJECTIVES	This course is designed to help the students to develop an understanding of basic knowledge about difference renal dialysis therapy & transplant work up

CHARTS/SLIDES/SPOTTERS

- History of peritoneal dialysis
- Physiology of PD – Kinetics of PD
- Acute peritoneal dialysis
- PD solution
- Transfer set
- Adequacy of peritoneal dialysis

CASE STUDY

- Non infectious complications of PD – Mechanical and metabolic
- Infectious complications of PD
- Patient Education
- Types of renal donor & cadaver donor maintenance
- Recipient and donor workup for renal transplantation
- Principles of post-transplant management and follow up

Exam pattern (UE) Total marks – 60

1. SPOTTERS & CHARTS – 10 (10X2=20)
2. CASE PRESENTATION & PROCEDURES – 20
3. VIVA – 20

REFERENCE BOOKS (PD paper I & II)

1. Hand Book of Dialysis – J.T. Daugirdas

2. Text Book of Peritoneal Dialysis – G. Abraham

3. HandBook of Kidney Transplantation – Gabriel M. Danovitch

COURSE OUTCOMES	
CO1	To know importance about renal live & cadaver transplantation
CO2	To learn noninfectious complication of PD
CO3	To get knowledge about to understand Adequacy procedure
CO4	The student will be able to understand Calculate PET & interpretation

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Nephrology					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UARD17CT321	**DIALYSIS TECHNOLOGY PART – II PAPER II - THEORY**
	Total Contact Periods –60
	Total credits -4
	Course Designed by – Department of Nephrology
OBJECTIVES	This course is designed to help the students to develop an understanding of basic knowledge about systemic diseases in dialysis patients

UNIT I: Systemic diseases in dialysis patients

- Nutrition in dialysis patient
- Diabetes in dialysis patient
- Hypertension in dialysis patient
- Serum enzyme levels
- Hematologic abnormalities

UNIT II: Systemic and infectious diseases in dialysis patients

- Infections in dialysis patients
- Endocrine disturbances
- Bone disease
- Aluminium toxicity
- Sleep disorders

UNIT III: Special problem

- Musculoskeletal & rheumatologic diseases in CRF patients
- Special problems pertaining to Heart & circulatory system in CRF patient,
- Special problems pertaining to digestive tract in CRF patients
- Special problems pertaining to genitourinary tract and male reproductive organs in CRF patient
- Special problems pertaining to obstetrics & gynaecology in CRF patient
- Special problems pertaining to the nervous system in CRF patients.

UNIT IV

- Common urosurgical procedures, instrument & their management
- ESWL

UNIT V

- Principles of ICU care

REFERENCE BOOKS

1. Hand Book of Dialysis – J.T. Daugirdas
2. Text Book of Peritoneal Dialysis – G. Abraham
3. HandBook of Kidney Transplantation – Gabriel M. Danovitch

COURSE OUTCOMES	
CO1	To understand the importance of nutrition in dialysis patients
CO2	

	T To demonstrate the structure of peritoneum					
CO3	To explain principles of ICU					
CO4	To learn about diabetic & hypertensive patients					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Nephrology					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UARD17CL322	**DIALYSIS TECHNOLOGY PART – II PAPER II -PRACTICAL**
	Total Contact Periods –120
	Total credits -4
	Course Designed by – Department of Nephrology
OBJECTIVES	This course is designed to help the students to develop an understanding of basic knowledge about respiratory related diagnostic tool

CHARTS/SLIDES/SPOTTERS/CASE STUDY

- Diabetes in dialysis patient
- Hypertension in dialysis patient
- Serum enzyme levels
- Hematologic abnormalities
- Infections in dialysis patients
- Endocrine disturbances
- Bone disease
- Aluminium toxicity
- Nutrition management in peritoneal dialysis patients

Introduction to the science of nutrition

Definition
Food pattern and its relation to health
Factors influencing food habits
Selection off food stuffs
Food storage and preservation

- Sleep disorders
- ESWL
- Principles of ICU care

PD PROCEDURE

- PD Catheter and exit site care
- Performance of PD exchanges manually
- Setting up of automated PD equipments
- First assessment in minor procedures
- PET analysis

CPR demonstration

Exam pattern (UE) Total marks – 60

1. SPOTTERS & CHARTS – 10 (10X2=20)
2. CASE PRESENTATION & PROCEDURES – 20
3. VIVA-20

REFERENCE BOOKS

1. Hand Book of Dialysis – J.T. Daugirdas
2. Text Book of Peritoneal Dialysis – G. Abraham
3. HandBook of Kidney Transplantation – Gabriel M. Danovitch

COURSE OUTCOMES						
CO1	To demonstrate the procedure in arterial blood gas and interpretation					
CO2	To get knowledge about basic interpretation					
CO3	To understand the hematological abnormalities					
CO4	To learn PET analysis in Peritoneal Dialysis patients					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Nephrology					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UARD17CT323	**TRAUMA LIFE & CARDIAC LIFE SUPPORT**
	Total Contact Periods – 60
	Total credits -4
	Course Designed by – Department of Cardiology
OBJECTIVES	To get knowledge about handling and management of trauma cases like musculoskeletal, head, and thermal burns

UNIT I. TRAUMA LIFE (Part 1)

- BLS
- TRIAGE
  a. Primary Survey
  b. Secondary Survey
- Airway & Ventilatory management
- Shock
- Central & peripheral venous access
- Thoracic trauma – Tension pneumothorax
- Other thoracic injuries
- Abdominal trauma – Blunt injuries
- Abdominal trauma – Penetrating injuries

UNIT II. TRAUMA LIFE (Part 2)

- Spine and spinal cord trauma
- Head trauma
- Musculoskeletal trauma
- Electrical injuries
- Thermal burns
- Cold injury

UNIT III. TRAUMA LIFE (Part 3)

- Paediatric trauma
- Trauma in pregnant women
- Workshop BLS
- Workshop cervical spine immobilization
- Imaging studies in trauma

UNIT IV. CARDIAC LIFE SUPPORT (Part 1)

- BLS
- The universal algorithm for adult ECC
- Ventricular fibrillation/Pulseless ventricular tachycardia algorithm
- Pulseless electrical activity (PEA) / asystole algorithm
- Bradycardia treatment algorithm
- Tachycardia Treatment algorithm

UNIT V. CARDIAC LIFE SUPPORT (Part 2)

- Hypotension / Shock
- Acute myocardial infarction
- Paediatric Advanced life support
- Airway management

- Defibrillation
- Drugs used in ACLS
- Emergency Cardiac pacing
- AED
- Techniques for oxygenation and ventilation

REFERENCE BOOKS:

- ECG Made Easy –AtulLuthra
- Reference by PGDCC – IGNOU Handbooks for ECG, ECHO and Stress Test
- An Introduction to Electrocardiography:Schamroth Colin
- Clinical Electrocardiography: Goldberger. A

COURSE OUTCOMES	
CO1	The student will be able to know basic knowledge about BLS and triage
CO2	The student will be able to understand the Handling and management of Airway ventilator and shock
CO3	The student will be able to Know about handling of Paediatric trauma cases
CO4	The student will be to know about Abdominal trauma in blunt injuries and penetrating injuries

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UARD17CL324	**COMPREHENSIVE VIVA: CLINICALS IN DIALYSIS TECHNOLOGY**
	Total Contact Periods –180
	Total credits -5
	Course Designed by – Department of Nephrology
OBJECTIVES	This course is designed to help the students to develop an understanding of basic knowledge about how to manage

PD Solution

- Transfer set,
- Connectologiesl.
- Access for CPAD
- Catheter and exit site care
- Infections in dialysis patients
- Endocrine disturbances
- Bone disease
- Nutrition in dialysis patient
- Diabetes in dialysis patient
- Hypertension in dialysis patient

REFERENCE BOOKS

1. Hand Book of Dialysis – J.T. Daugirdas
2. Text Book of Peritoneal Dialysis – G. Abraham
3. HandBook of Kidney Transplantation – Gabriel M. Danovitch

COURSE OUTCOMES	
CO1	To understand the basic principles of peritoneal dialysis
CO2	To learn how to manage complication in peritoneal dialysis
CO3	To understand about renal transplantation & complication
CO4	The student will be able to understand about calculation of body surface area, nutritional requirement

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES

COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	

2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Nephrology					
Approval	47th Meeting of Academic Council held in Aug, 2018					

UARD17CL425	**INTERNSHIP**
	Total Contact Periods – 675
	Total credits -15
	Course Designed by – Department of Nephrology
OBJECTIVES	To gain knowledge about all kind of renal care & treatment

INTERNSHIP

Regulation for Internship

Internship is an important part of training wherein an Allied Health Science Graduate acquires skills, and applies his knowledge gained during his course of study.

Objectives:

1. To Facilitate Reinforcement of Training.
2. To Develop Professionalism, Communication and Team Building skills.
3. To help in understating of ethical Practices like
    - Rights and dignity of patients
    - Ethical Conduct and professional obligations to colleagues, patients, families and community

The Internship is compulsory for all the candidates. It shall commence after the students have completed and passed all academic and clinical requirements.

The internship shall be for a duration of one year.

The degree shall be awarded after satisfactory completion of internship.

EVALUATION OF INTERNEES

Formative and Summative evaluation are carried out. A **Log Book** is maintained by all internees. No Marks are allotted. Satisfactory completion of Log Book is essential for completion of internship.

Day to day assessment of the internees during the internship posting should be done (Log Book). Summative evaluation is based on observation of the supervisors of different departments and their records in the log books. Based on the formative and summative evaluation the head of department shall issue a certificate of satisfactory completion of training, following which the university shall award the degree.
During internship a project is allocated to each intern by the respective Heads of departments. The project work is marked for 100 (including viva).
Six credits are given for the project
30 hours per credit
Total 180 hours

The Project is done for a Maximum duration of 6 months.

Internship credits

The internship is given 15 Credits. (i.e.) 45 hrs/Credit. A Total of 675 hours.

After Undergoing internship for a period of Six months, each Department shall conduct an **internal evaluation** of the student to assess the skills developed and progress of the student before issuing the certificate of completeness.
The duration of the posting and skill acquisition in various technology courses are attached.

Number of Working days for interns:-
All Sundays are holidays.

On Government holidays duties are allotted on turns to the interns. In cases of leave or absence extension of posting shall be given which is done at the discretion of Head of Department.

COMMON TO ALL BRANCHES

INTERNSHIP [VII & VIII SEMESTER]

Sl. No.	Programme	Hours Prescribed	University Examination			
			Project Evaluation	Viva	Total	Credits
1	Internship	675	-	-	-	15
2	Project	180	80	20	100	6
	No Minimum for Passing			Total Credits	21	

RENAL DIALYSIS TECHNOLOGY

Duration of postings

Hemodialysis	-	6 months
Physician assistance and public relations	-	3 months
ICU dialysis, slow continuous therapies, Plasmapheresis	-	3 months

Skill Acquisition

The internee is expected to demonstrate competence and independence in carrying out the following activities:

Dialysis

The student should:

- Have knowledge of the diagnostic and management procedure of the acute and chronic kidney disease
- Have the skills to administer required protocols and interpret the clinical findings with reference to the patient

- Be able to assess and evaluate associated patient and machine complication during dialysis
- Be able to write reports, make referrals (medical, educational) and counsel the patients
- Be able to independently train the patients on Home peritoneal dialysis
- Having knowledge of handling different types of HD machines, PD cycles and water treatment plants
- Have knowledge of calibration of hemodialysis machines
- Be able to perform short term dialysis research projects in various scientific forms and conferences.

Transplant

The Student should:

Be able to assess and evaluate the patient waiting for renal transplant and donor

Have the skill to administer required protocols and interpret the clinical findings with reference to the patients

Have the skills to take part in organising cadaver transplant

- Resuscitation
- Grief counselling
- Consent
- Medico legal documentations
- Coordinating with surgical teams
- Coordinating medico legal autopsies and aiding proper disposal of brain dead victim after donation

COURSE OUTCOMES						
CO1	To get knowledge about diagnostic and management procedure of the acute and chronic kidney disease					
CO2	To get knowledge about how to interpret the clinical findings with reference to the patient					
CO3	To understand the how to assess and evaluate associated patient and machine complication during dialysis					
CO4	To get knowledge about live donor transplant and cadaver transplant.					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**A**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	S			**S**		**M**
Category	Nephrology					
Approval	47th Meeting of Academic Council held in Aug, 2017					

UAH17CE1020	**FUNDAMENTALS OF BIOSTATISTICS**
	TotalContactPeriods–4
	Total credits -2
	Course Designed by–Department of Community Medicine
OBJECTIVES	The course will offer basic knowledge about Biostatistics and to correctly apply a variety of statistical procedures and tests according to objective of study

UNIT I: Introducing the Basics

Introduction, Graphical representation of data, Data collection, Diagrammatic and Graphical Presentation of data, Types of data, limitations.

UNIT II: Measures of Central Tendency & Dispersion

Measures of Central Tendency; Mean, Median, Mode, Geometric mean, Harmonic mean for raw data. Measures of dispersion; Quartile deviation, Mean Deviation - Standard Deviation - Coefficient of variation- Range

UNIT III: Probability

Introduction to Probability, Theorems of probability; Bayer‘s Theorem, Probability Distributions; Discrete & Continuous distributions, Binomial Distribution, Poisson Distribution, Normal Distribution.

UNIT IV: Correlation & Regression Analysis

Correlation Analysis, Types of correlation; Rank Correlation Coefficient. Regression analysis, Types of Regression, Assumptions; Comparison to Correlation.

UNIT V: Hypothesis Testing

Introduction; Types of sampling, Hypothesis testing; Type of errors, Parametric & Non-parametric tests; Mann Whitney’s U test, Chi-square, t-tests, ANOVA.

REFERENCES

1. Don. Mc Neil - Epidemiological Research Methods - Oxford University Press, London.

2. Biostatistics –Principle & Practice – McGraw Hill Education.

3. http://www.ats.ucla.edu/stat/

4. Ahttp://www.statsoft.com/textbook/basic-statistics/

COURSEOUTCOMES	
CO1	The student will be able to understand and apply the Biostatistics.
CO2	The student will be able to use the software independently for the data analysis.
CO3	The student will be able determine the correct procedures to use in a given situation
CO4	The student will be able to interpret the results of hypothesis tests

MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	S			**S**		**M**
Category	Management					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE1021	**COMMUNICATION SKILLS FOR HEALTH CARE PROFESSIONALS**
	TotalContactPeriods–5
	Total credits -2
	Course Designed by–Department of Community Medicine
OBJECTIVES	This course deals with essential functional English aspects of the of communication skills essential for the health care professionals.

UNIT: I APPLIED GRAMMAR

Identifying common errors in sentences, Transformation of sentences, Usage of either …or…, Neither… nor…, So… that…, Such… that…, Not only… but also…, unless…

UNIT: II VOCABULARY

Abbreviations used in healthcare, Medical idioms & Phrases

UNIT: III WRITING

Letter writing, Curriculum Vitae writing, covering letter, Creative writing – invite, posters, Essay writing, summary writing, note taking, report writing.

UNIT: IV SPOKEN COMMUNICATION

Telephone etiquette, Importance of Stress, Intonation and rhythm, speaking; describing simple process, Filling a form etc., - Asking and answering questions; Debate/Oral Reporting

UNIT: V LISTENING AND READING SKILLS:

Listening and reading comprehension exercises.

Textbook Recommended:

1. Effective English Communication by Krishna Mohan and Meenakshi Raman, Tata McGraw – Hill Publishing Company Limited, New Delhi.

2. English for Colleges and Competitive Exams by Dr. R. Dyvadatham, Emerald Publishers.

COURSEOUTCOMES						
CO1	The student will be able to express better.					
CO2	The student will be able to get knowledge about MOA, adverse effects					
CO3	The student will Grow personally and professionally					
CO4	The student will Develop confidence in every field					
MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**		S	
4	S			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE1022	**BIOMEDICAL ETHICS**
	TotalContactPeriods–3
	Total credits -2
	Course Designed by–Department of Community Medicine
OBJECTIVES	To provide basic skills in: A) Approaching ethical issues. B) Analysis and statement of issues. C) Understanding the relevant ethical principles invoked..

Introduction to Bioethics

Bioethical issues related to Healthcare &Medicine 5

2Anatomy - Cadaver ethics, Human dignity, PNDT, Disposal of cadaver, Genetic Counseling 7

Physiology - Animal ethics, Health policy privacy 7

Biochemistry & Pathology - Prudence of investigation confidentiality, Patients bill of rights, Disposal of investigative material, Integrity, Blood transfusion 5

Pharmacology - Rational drug prescribing, Clinical trials, Risk minimization, Animal ethics

Microbiology - Hand wash, Drug resistance minimization, Prudence of investigation confidentiality, Sterilization procedure, Bio safety and bio hazard 5

Medicolegal aspects of medical records

Introduction to Intellectual Property:

Concept of Intellectual Property Kinds of Intellectual Property

Patents, Copyrights Designs, Trademarks,Geographical Indication, Infringement of IPR, Its protection and

Remedies Licensing and its types

REFERENCE BOOKS

1. Contemporary issues in bioethics – Beauchamp & walters (B&W) 4th edition.

2. Classic philosophical questions by Gloud (8th Edition)

3. Case book series and booklets by UNESCO Bioethics Core curriculum 2008

4. Encyclopedia of Bioethics 5 vol set, (2003) ISBN-10: 0028657748

5. Intellectual property rights- Ganguli-Tat McGrawhill. (2001) ISBN-10: 0074638602,

6. Intellectual Property Right- Wattal- Oxford Publications House.(1997) ISBN:0195905024.

COURSEOUTCOMES	
CO1	The students will be able to: Recognize what constitutes an ethical concern in health care
CO2	The student will be able to understand the clinical evaluations of Disease Condition
CO3	The student will be able to Understand better the complexity and multi-dimensionality of medical ethical concerns and uniqueness of each problem.
CO4	The student will get the knowledge of plagiarism in their innovations which can be questioned legally

MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**d**	**E**	**f**
1	S		M		S	S
2				s		
3			**S**			
4	S		M			**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE1023	**FUNDAMENTALS OF HUMAN GENETICS**
	Total Contact Periods– 4
	Total credits -2
	Course Designed by–Department of Genetics
OBJECTIVES	To Comprehend the Chromosomal basis of inheritance

I -Introduction to cellular components

Structure and morphology of various types of cells - Biochemical composition - Cellular organelles -Composition and components of nucleus - Chromosomes - Cell division and Mechanics of cell division and regulation.

II - Structure and functions of nucleic acids

Functions, Structure and characteristics of nucleic acids - Types of mutations -Genetic variations and polymorphisms

III - Chromosomal basis of inheritance

Chromosome behavior and inheritance pattern in man - Single gene Mendelian disorders: autosomal dominant, recessive, sex linked dominant and recessive - Polygeneic and mitochondrial inheritance.

III - Origin and detection of genetic disorders

Mutation - Non-disjunction - Chromosomal abnormalities and clinical phenotypes of common genetic syndromes (Down's syndrome, Patua‘s syndrome, Edward syndrome, Turner syndrome and Klinefelter's syndrome, Cri-du-caht syndrome)- Karyotyping, Neural tube defects, Carcinogenesis.

IV–Biochemical basis for the inborn errors of metabolism

General characteristics of inborn errors of metabolism – Incidence - etiology - Folic acid metabolism - triple markers - New born screening, prevention and management. False positive and false negative -Ethical principles of Genetic counseling for prenatal diagnosis - Fetal rights – Regulation and prevention of misuse act 1994.

Reference books

1. A guide to genetic counseling, 2nd edition, D.L. Baker, J.L. Schuette and W.R. Uhlmann, Wiley –Leiss Publications 2002.

2. Emery Elements of Medical Genetics, 9th edition, Robert F. Mueller & Ian D. young, Churchill Livingstone, 1995.

3. Medical Genetics, 3rd edition, Lynn B. Jorde, John C. Carey, Michael J. Bamshad, & Raymond L. White, Mosby, 2003.

COURSEOUTCOMES						
CO1	The student will be able to Be able to describe the chromosomal basis of inheritance and how alterations in chromosome number or structure. . .					
CO2	The student will be able to understand of the differences and similarities between diagnostic, predictive and carrier genetic testing.					
CO3	The student will be able to know detailed information of Chromosome behavior and inheritance pattern in man					
CO4	The student will be to understand the phenotype and genotype .					
MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**d**	**E**	**f**
1	S		M		S	
2				s		M
3			**M**			
4	S			**S**		**S**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE2024	**PRINCIPLES AND APPLICATION OF CLINICAL GENETICS**
	Total Contact Periods– 6
	Total credits -2
	Course Designed by–Department of Nephrology
OBJECTIVES	To develop awareness about Genetic testing, Genetic counseling, Philosophy and Ethos of Genetic services

I -Principle and components of genetic testing Lay out of genetic laboratories - Genetic testing, Genetic counseling, Philosophy and Ethos of Genetic services, Types of testing- Cytogenetic testing- Molecular cytogenetic testing- DNA testing.

II - Cytogenetic testing Indications, Type of sample, Sampling and transport conditions, Karyotyping - chromosome identification, merits and demerits of conventional cytogenetic testing

III - Molecular Cytogenetic testing

Indications, Type of sample, Sampling and transport conditions - Fluorescence in-situ hybridization, fluorescence signal enumeration, merits and demerits of FISH.

IV - DNA testing

Organization of human genome, Structure and function of genetic material, Polymerases chainmreaction - Types, principles and testing, Sequencing.

V - Practical:

Case studies

Reference books

1. Practical Genetic counseling, Peter S. Harper, 6th edition, Holder Headline Group 2004.

2. Medical Genetics, 3rd edition, Lynn B. Jorde, John C. Carey, Michael J. Bamshad, &

Raymond L. White, Mosby, 2006.

3. Genetics in Medicine, Thompson & Thompson, 6th edition, Elsevier 2004.

4. Practical Genetic counseling, Peter S. Harper, 6th edition, Holder Headline Group 2004.

COURSEOUTCOMES						
CO1	The student will be able to become familiar with and practice genetic tests.					
CO2	The student will be able to provide better patient care					
CO3	The student will be able to know detailed information about Genetic Counselling					
CO4	The student will be to know about Genetic testing.					
MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3			**M**			
4	S				S	**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE2025	**CLINICAL EXAMINATION OF THE HUMANVISUAL SYSTEM**
	TotalContactPeriods–5
	Total credits -2
	Course Designed by–Department of Opthalmology
OBJECTIVES	The core objective of this course is to gain in depth knowledge on the structural and physiological functions of the various parts of the eye and the different examination procedures for the ocular structures.

: **I - History Taking**

Importance of history taking, Demographic data and its importance, Chief presenting symptoms, History of present illness, History of past illness, Family History, Common ocular symptoms and their causes – defective vision, watering eyes, discharge, redness, pain, asthenopia and other symptoms

II - Visual Acuity measurement

Distance visual acuity-charts, methods and measurements; Near visual acuity –charts, methods and measurements; contrast sensitivity testing; colour vision testing

III - External Examination

Examination of head posture, examination of forehead, examination of eye brows, examination of eyelids, examination of Lacrimal apparatus, examination of eyeball on the whole, examination of the cornea, conjunctiva sclera and anterior chamber, eye movements, muscle balance and squint evaluation

IV - Anterior segment Evaluation

Slit lamp examination of the eyelids, cornea, conjunctiva, anterior chamber depth, iris, and lens Intraocular pressure measurements using non contact tonometer

V - Posterior segment Evaluation

Introduction and importance of posterior segment evaluation- direct and indirect ophthalmoscopy

REFERENCE BOOKS:

1. Comprehensive Ophthalmology – A K Khurana, 5th edition, New Age International Publishers,

2012.

2. Clinical Ophthalmology – Jack J Kanski, 7th edition, Butterworths, 2012

1. Borish's Clinical Refraction - William J. Benjamin, Irvin M. Borish, Butterworth-Heinemann, 2006

COURSEOUTCOMES						
CO1	The student will be able to have the skill to perform basic ophthalmic examination					
CO2	The student will be able to understand concept of theory and clinical evaluation of disease conditions gain an in- depth knowledge on disease outline and clinical evaluation of patients					
CO3	The student will be able to depth knowledge on the functions of the visual system					
CO4	The student will have the skill to perform basic ophthalmic examination					
MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**D**	**e**	**f**
1	S		M		s	
2				S		M
3	M		**S**			
4	M			**C**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE2026	**PERSONALITY DEVELOPMENT AND STRESS MANAGEMENT**
	Total Contact Periods– 4
	Total credits -2
	Course Designed by–Department of HR
OBJECTIVES	• To Explain the effect of personality, attitudes, perceptions and attributions on Health stress, coping and relaxation.

Unit 1

Introduction to Personality Development, Different Stages of Development, Types of personalities, personality perspectives and theories

Unit 2

How needs impact personality, Maslow's hierarchy of need, Basic Personality Traits; Values, Beliefs, Interactions, Experiences, Environmental influences, the big five dimensions.

Unit 3

Stress; causes, effect and types, Stress resistant personalities, Relaxation; training aspects importance and Body works.

Unit 4

Health stress and coping, Understanding and communicating our health needs, Behavioral and psychological correlates of illness.

Unit 5

Soft skill; need and importance, Personality development and soft skills. Effective communication, listening, speaking, writing, interpretation part of soft skills and personality

Learning Outcome:

By successfully completing this course, students will be able to Describe how a personality develops.

- Define the stages of personality development.
- Define personality types.
- Describe basic personality traits.
- Personality and stress.
- Health stress, coping and relaxation.
- Soft skills and personality.

Text Books:

1. Hurlock (1976). Personality development.Tata McGraw Hill.

2. Baron R A, Psychology 5th edition, Pearsons publication.

3. Abraham A, General Psychology, Tata McGraw hill Education private limited.

Reference Books:

1. Lazarus J Stress Relief and Relaxation Techniques, Viva Book Private limited.

2. Shelly E. Taylor, Health psychology, 7th edition, TATA McGrawHil, New Delhi.

COURSEOUTCOMES	
CO1	The student will be able to Define the stages of personality development.
CO2	• The student will be able to Describe basic personality traits.
CO3	The student will be able to Describe how a personality develops-Personality and stress.
CO4	The student will be able to Develop the Soft skills and personality.

MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**D**	**e**	**f**
1	S		M		s	
2				S		M
3	M		**S**			
4	S			**S**		**M**
Category	Management					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE2027	**FIRST AID MANAGEMENT & SPLINTING TECHNIQUES**
	TotalContactPeriods–6
	Total credits -2
	Course Designed by–Department of Medicine
OBJECTIVES	Students will gain additional skills in interventional procedures and Differentiate between emergency situation and other use.

Unit-I BACKGROUND INFORMATION

- The importance of first Aid
- First aid supplies
- First aid and the law
- Prevention practices

Unit-II ACTION AT AN EMERGENCY

- Recognizing Emergencies
- Deciding to act
- Seeking medical care
- Disease transmission
- Rescuer reactions

Unit –III BLEEDING AND WOUNDS

- External bleeding
- Wound infection
- Amputations
- Impaled objects
- Wound that require medical care
- Internal Bleeding
- Dressing and Bandages

Unit-IV BONE, JOINT AND MUSCLE INJURIES

- Bone injuries
- Splinting
- Joint injuries
- RICE injuries
- Muscle injuries
- Splints – Introduction, Types, Uses, Splinting guidelines, Slings, Procedure,Complications

UNIT-V RESCUING AND MOVING INJURIES

- Water rescue
- Ice rescue
- Electrical Emergency Rescue Hazardous materials incidents

- Motor Vehicle crashes
- Fires
- Confined spaces
- Triage – what to do with multiple victims
- Moving victims

Text books:

1 .First Aid CPR and AED standard (sixth edition)

2. First aid book-St Johns Ambulance services

3. Text book of Orthopaedics – Natarajan

4. Text book of Orthopaedics – John Ebenezer Reference books: First Aid and Management of Minor Injuries by Jon Dallimore First Aid and Beyond by Dan Wolfe - Smashwords , 2014 International Trauma Life Support Provider Manual Essentials Orthpaedics Mark D Mille

COURSEOUTCOMES	
CO1	The student will be able to Differentiate between emergency situation and other use.
CO2	The student will be able to know about the basics of concepts of disease & outlines of clinical evaluation.
CO3	The student will be able to List management, assessment, and care steps for upper extremity and lower extremity fractures.
CO4	The student will be to know Splinting techniques of lower extremities – Thomas splint, sam splint, etc

MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES

COs\Pos	**A**	**B**	**c**	**D**	**e**	**f**
1	S		M		s	
2				S		M
3	M		**S**			
4	S			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE3028	**ESSENTIALS OF MEDICAL TRANSCRIPTION**
	Total Contact Periods– 7
	Total credits -2
	Course Designed by–Department of MRD
OBJECTIVES	Provide Hands on training on English Language and listening comprehension and provide foundation to learn medical terminology & learn laboratory report

Unit 1

The Medical Transcriptionist‘s career including Ethical& Legal Responsibilities Introduction to Medical transcription, Job Opportunities, Transcription Skills, Medical records, Certification for Medical Transcriptionists, Ethical and Legal responsibilities

Unit 2

Equipments in Transcription Equipment, Computer Systems, Ergonomics, Dictation Equipments, Hand and Foot control Dictation, Transcription Preparation

Unit 3

Transcription Guidelines Punctuations, Proof reading notations, Formats and styles, SOAP for Chart notes; Discharge Summary

Unit 4 PRACTICAL:

1. Equipments for Medical Transcription,2. Typing for the beginners, 3.Vocabulary, 4. Proof reading Notations , 5. Formats and styles in document preparation , 6. Preparation of chart notes, 7. Listening Comprehension, 8. Transcription check off sheet **References Book**1. Medical Key boarding, Typing, and Transcribing Techniques and procedures 4th Edition, March

Otis Diehl, Marilyn Takahashi Fordney, W.B. Saunders Company

2. The AAMT Book of Style for Medical Transcription, Claudia J. Tessier

3. CD‘s available for:

a. Stedman‘s Electronic Medical Dictionary 4.0

b. American Drug Index 2003

Text Books:

1. Medical Key boarding, Typing, and Transcribing Techniques and procedures 4th Edition, March

Otis Diehl, Marilyn Takahashi Fordney, W.B. Saunders Company

2. The AAMT Book of Style for Medical Transcription, Claudia J. Tessie

COURSEOUTCOMES						
CO1	The student will be able to Demonstrate their basic skills in the knowledge of Vocabulary, Medical terminology					
CO2	The student will be able to Demonstrate their basic skills in the preparation of chart notes. .					
CO3	The student will be able to Demonstrate skills in listening comprehension					
CO4	• The student will be be able to identify accurate format for medical document preparation					
MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**d**	**E**	**f**
1	S		M		S	
2				s		M
3	M		**S**			
4	S			**S**		**M**
Category	Medical Records					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE3029	**COMMUNICATION AND SOFT SKILL**
	Total Contact Periods– 7
	Total credits -2
	Course Designed by–Department of Human Resources
OBJECTIVES	This course is designed to equip the students with essential soft skills needed for workplace and improve personality.

LEARNING OUTCOME:

This course is designed to help the students to

- Foster healthy attitude.
- Develop effective inter and intra personal skills to be an effective team worker.
- Communicate effectively in both academic and professional setup

UNIT: I ASPECTS OF COMMUNICATION

Importance of communication, Process, Barriers, Non verbal Communication

UNIT: II SPEAKING

How to Open and Close conversations, Introductions and Address System, Expressing Courtesy, Giving Compliments and replying to Compliments, Presentation Skills, Telephonic conversation and telephone etiquette

UNIT – III PRESCRIBED READING

Tom Sawyer by Mark Twain, Bacon‘s Essays: - Of Goodness and goodness of nature

UNIT – IV WRITING

Letter writing - Letter of Complaints, Inviting and Declining an invitation, Writing Memos and Emails, Grammar, Spelling & Punctuation, Use of Dictionary & Thesaurus.

UNIT – V SOFT SKILLS

Active Listening Skills, Assertive Skills, Negotiation and Persuasive Skills, Interview Skills

Text Book:

Developing Communication Skills by Krishna Mohan and Meera Banerji, II edition, Macmillan.

Reference Books:

1. Communication Skills for Engineers and Scientists by Sangeeta Sharma and Binod Mishra, PHI Learning Private Limited, New Delhi.

2. English and soft skills by S.P. Dhanavel, Orient Black Swan

3. Effective English Communication by Krishna Mohan and Meenakshi Raman, Tata McGraw – Hill Publishing Company Limited.

4. Technical Communication – Principles and Practice, by Meenakshi Raman and Sangeetha Sharma, II edition, Oxford University Press.

5. Developing Communication Skills by Krishna Mohan and MeeraBanerji, II edition, Macmillan.

6. The Complete Guide to Functional Writing in English by M. Sarada, Sterling Publishers (P) Ltd., New Delhi.

7. Speaking Naturally: Communication Skills in American English by Bruce Tillitt and Mary Newton Bruder, Cambridge University

COURSEOUTCOMES	
CO1	The student will be able to Foster healthy attitude
CO2	The student will be able to develop effective inter and intra personal skills to be an effective team worker
CO3	The student will be able to Develop effective inter and intra personal skills to be an effective team worker
CO4	The student will be able to Communicate effectively in both academic and professional setup

MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**a**	**B**	**C**	**d**	**e**	**F**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE3030	**PROFESSIONAL SKILLS DEVELOPMENT**
	Total Contact Periods– 6
	Total credits -2
	Course Designed by–Department of Human Resources
OBJECTIVES	To Advance the students' intellectual curiosity, competency and skills in preparation for employment

1. Communication Skills

Importance of Communication skills in Public health; Communication process; Methods of communication; Types of communication: Verbal and Non-verbal; Impediments to effective communication; Feedback

2. Oral Presentation Skills:

Preparation and planning; Structure; Audio-visual aids; Creating interest and establishing a relationship with the audience; Body language; Voice and pronunciation; Review

3. Writing skills:

Writing a scientific paper; Writing a proposal; Structure of an article; References and literature review; Peer-review process-Publication bias; International guidelines for publication in journals; Professional Ethics

4. Leadership in Public health:

Leadership styles and trait; Motivation skills; Interpersonal communication skills; Problem solving skills; Decision making skills; Management skills; Communication Skills

5. Manuscript writing

Writing introduction, objectives, methodologies, major finding, discussion, conclusion and recommendation**6. Seminar presentations**Use of computers present data and information on recent topics

Text Books:

1. Professional Writing Skills, A self paced training programme by Janis Fisher Chan and Diane Lutovich. Advanced Communication Designs Inc, 2003. San Anselmo, CA. ISBN 0963745549

2. Speaking Your Mind: Oral Presentation and Seminar Skills By Rebecca Stott, Tory Young, Cordelia Bryan Contributor Rebecca Stott, Tory Young, Cordelia Bryan Published by Longman, 2001 ISBN 0582382432, 9780582382435

3. Public Health Leadership: Putting Principles into Practice Louis Rowitz, PhD. Jones and Bartlett Publishers, 2003. ISBN-13: 9780763725013 ISBN-10: 07637250

COURSEOUTCOMES						
CO1	The student will be able to Develop good written and oral communication abilities					
CO2	The student will be able to Develop an understanding of team building and leadership skills.					
CO3	The student will be able to Develop knowledge regarding capacities needed to work independently within diverse work environments					
CO4	The student will be able to know how to maintain Records and Reports and demonstrate the procedure.					
MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**D**	**e**	**f**
1	S		M		s	
2				S		M
3	M		**S**			
4	S			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting Of Academic Council held in Aug, 2017					

UAH17CE3031	**LIBRARY SCIENCE AND E-RESOURCES**
	Total Contact Periods– 6
	Total credits -2
	Course Designed by–Department of Library science
OBJECTIVES	To gain knowledge about Documentary Sources of Information and Library Automation

Unit 1 BASIC CONCEPTS AND INFORMATION SERVICES

Meaning of Library – Types of Library -– Library layout - Functions of Library – need for Library – Meaning of ISBN and ISSN – Collection management - Library Classification system - Five laws of Library Science – Inter Library Loan (ILL), Communication theories and models.Barriers to communication.Levels of communications – Intrapersonal, interpersonal and mass communication. Information services – literature search Methods of Dissemination of information Current Awareness Service (CAS), Selective Dissemination of Information (SDI), Document delivery service, Alert services, and Internet services.

Unit 2 INFORMATION SOURCES

Documentary Sources of Information, Print, and Non-print including Electronic, Human and Institutional sources: Nature, types, characteristics and utility. Internet as a source of Information. Primary sources of information – Journal, conference volume, patents, research reports, thesis and their electronic format – Secondary sources of information - Bibliography, Encyclopedia Dictionary, Yearbook , Directory, Geographical Source, Textbook, Index and Abstracts.

Unit 3 LIBRARY AUTOMATION

Definition need, Purpose, advantages. Planning for Library automation. Automation of Library operations - Acquisitions, Cataloguing, OPAC, Circulation and Serials control. Evaluation of Library automation systems - Application of Barcode and RFID Technology for Library Functions. Basic concepts: Bibliography, bibliographic coupling, Impact factor.

Unit 4 ELECTRONIC INFORMATION SOURCES

Electronic Information resources: Meaning and definition, Growth and development, Types. Journals, e-Books, e-Theses, e-newspapers, Blogs, Wikis. Free databases and fee based bibliographical and full text databases, subject related websites, Institutional repositories, Open Archives and digital Libraries. - Resource Sharing and Networks: Consortia- Importance and objectives. Study of Information networks and Digital Library Consortia. Types of computer networks: Local Area Networks – Concept, Topologies - Bus, Star, Mesh, Tree, and Ring). Wide Area Networks and Metropolitan Area Networks- Concepts, Circuit switching and Packet switching. Difference between LAN and WAN. Wireless Networks –Mobile telephones.

Unit 5 DIGITAL LIBRARIES

Digital Libraries: Concepts and issues. Understanding digital Libraries Content creation – Electronic documents, files and file formats. Study of different file formats.Studying PDF in detail-features of PDF.Digitization- scanning, Digital Preservation, Conservation and Archival Management – Problems and prospects. Open Access Movement and Institutional repositories.

TEXTBOOKS

1. Ranganathan, S.R The five Laws of Library Science UBS Publishers, 1988.

2. Ranganathan, S.R. Library Manual SaradaRanganathan endowment for Library Science, 1989.

3. Ranganathan, S.R. Cataloguing Practice SaradaRanganathan endowment for Library Science 1990

COURSEOUTCOMES						
CO1	The student will be able to analyze and understand the query					
CO2	The student will be able to Identify the sources of information					
CO3	The student will be able to Find out the information					
CO4	The student will be able to know how to maintain Records and Reports and demonstrate the procedure.					
MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**d**	**e**	**F**
1	S		M		s	
2				s		M
3	M		**S**			
4	S			**S**		**M**
Category	Library Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

RESPIRATORY CARE TECHNOLOGY

R2017

CURRICULUM

UAH17CT101	**ANATOMY**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Anatomy
OBJECTIVES	An outline of anatomy with special emphasis on applied aspects is provided to the students for better understanding of the technical and diagnostic procedure.

UNIT I: Organization of the human body

1. **Introduction**

- Introduction to human body
- Definition and subdivision of anatomy
- Anatomical position and terminology
- Region and systems of the body
- Cavities of the body and their contents
- Levels of organization of the body

2. **Cell and genetics**

- Parts of cell – cell membrane, cytoplasm, organelles, inclusion bodies, nucleus
- Structure of chromosome, DNA, RNA.
- Basics & fundamentals of Genetics, Karyotyping, Chromosomal disorders, prenatal diagnosis, genetic counseling and gene therapy.
- Cell division – Definition and main events that occur in different stages of mitosis and meiosis.
- Tissues – Definition, characteristic features and types with example.
- Types of glands with example

UNIT II: Systems of support and movement

1. **Skeletal system**

- Cartilage: Type and basic histological feature.
- Bones: definition, classification based on location, name and number of bones with general features of important bones, function of bone, histological feature of a compact bone.
- Joints – Definition and types with example, Axis and movements. Shoulder, elbow, hip, knee joints – type, bones and ligaments involved, possible movements.

1. **Muscular system**

- Types of muscle with basic histological features
- Parts of skeletal muscle.
- Definition of origin and insertion
- Origin, insertion, nerve supply, action of sternocleidomastoid, pectoralis major, deltoid, gluteus maximus and diaphragm.

UNIT III: Controls systems of the body

1. **Nervous system**

- Subdivisions of the nervous system
- Spinal cord-location, extent, external features and blood supply
- Brain-subdivision, location, external features of Medulla oblongata, Pons, Midbrain, Cerebellum, and Cerebrum, Thalamus and Hypothalamus, Location and subdivision of ventricles of brain. Circle of Willis.
- Cranial nerves-name, number, attachment, area of distribution
- Spinal nerves-typical spinal nerves. Name and location of plexuses. Location and distribution of brachial and lumbosacral plexus.

- Autonomic nervous system-sympathetic and parasympathetic nervous system. Location of preganglionic and postganglionic neurons.

2. Sense organs

- Location and features of nose, tongue, eye, ear and skin.

3. Endocrine system

- Names of the endocrine glands. Location and features of pituitary, thyroid, parathyroid, suprarenal, pancreas, ovaries and testes. Names of hormones produced by each gland.
- Microscopic features of thyroid and pancreas.

UNIT IV: Maintenance of the human body

1. **Cardiovascular system**

- Types and general features of blood vessels. Structure and types of arteries and veins. Shape, size, location, covering, external and internal features of Heart. Conducting system of heart. Blood supply of the heart. Name, location, branches and main distribution of principal arteries and veins

2. Lymphatic system

- General features of Lymph nodes and lymphatic vessels. Name, location, external features, microscopic features of tonsil and spleen.

3. Respiratory system

Name the organs of respiration. Location and features of Nasal cavity, pharynx, larynx, trachea, lung & pleura. Mention the microscopic feature of the lung.

4. Digestive system

- Name the parts of the alimentary canal and accessory organs. Location & features of esophagus, stomach, small and large intestine. Location and feature of tongue, salivary glands, pancreas, liver and gallbladder. Microscopic features of the liver.

5. Urinary system

- Names of urinary organs. Location and features of kidney, ureter, urinary bladder & urethra. Microscopic features of the kidney.

6. Reproductive system

- Names of male and female organs of reproduction. Location and features of testis, epididymis, vas deferens, prostate gland and spermatic cord. Location & features of uterus, uterine tube, ovary and breast.

7. Embryology

- Structure of gametes & gametogenesis. Fertilization to development of embryo till 3rd week. Derivatives of germ layers. Teratogens, Structure and Functions of placenta.

UNIT V: Anatomical regions

- Simple ideas about scalp, triangles of neck, axilla, cubital fossa, carpal tunnel, mediastinum, umbilicus, inguinal canal, femoral triangle
- sub sartorial canal popliteal fossa

PRACTICALS/DEMONSTRATIONS

1. Demonstrations of dissected specimens.

2. Viewing of projection of microscopic slides of muscle, bone, cartilage, spleen, tonsil, lung, liver, kidney, thyroid and pancreas

REFERENCE BOOKS

1. Manipal manual for AHS by Dr. Sampath Madhyastha, (Second Edition) Published by CBS Publishers.

2. Handbook of anatomy for nurses by Dr. P. Saraswathi

3. Ross and Wilson, Anatomy and physiology in health & illness

COURSE OUTCOMES	
CO1	The student will be able to gain knowledge of general anatomy and locomotion.
CO2	The student will be able to gain knowledge of basic human anatomy and histology of

	CVS and Respiratory systems.
CO3	The student will be able to gain knowledge of basic human anatomy and histology of CNS, GI, excretory and reproductive systems.
CO4	The student will be able to gain of knowledge basic human anatomy and histology of endocrine system and special senses.

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES

COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S					
2		**M**				
3			**S**			
4	s			**S**		**M**

Category	Basic Medical Science
Approval	46th Meeting of Academic Council held in Aug, 2017

UAH17CT102	**PHYSIOLOGY**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Physiology
OBJECTIVES	To know the basic functioning of the human body, and the various organ systems.

Unit-I

1. **General Physiology:**

- Concept of Homeostasis
- Cell structure and functions
- Transport across membranes

Body and body fluids:

- Body fluid volumes, compartments and composition
- Blood composition and functions
- Plasma proteins – Types and functions
- Erythrocytes – functions, Erythropoiesis, anemia‟s
- Leucocytes – classification and functions
- Platelets – morphology and functions
- Blood coagulation – Mechanism and name of anticoagulants
- Blood groups – Basis of ABO & Rh grouping, Erythroblastosis Foetalis

2. Muscle physiology:

- Muscles – Classification & structure of striated, nonstriated & cardiac muscle
- Neuromuscular junction
- Mechanism of skeletal muscle contraction

3. Digestive system:

- Salivary glands, functions of saliva

- Parts of stomach, composition & functions of gastric juice
- Pancreatic Juice – composition & functions
- Bile – composition & functions of bile & bile salts
- Functions of Small intestine & large intestine

Unit-II

1. Skin

● Structure & Functions

2. Excretory system:

- Kidney: Basic physiological anatomy (Including JGA)
- Formation of urine – GFR
- Formation of urine – Reabsorption & secretion
- Micturition Reflex
- Dialysis – Principle, types
- Renal function tests

Unit-III

1. Endocrine system:

- Hypothalamo hypophyseal inter relationship
- Posterior pituitary hormones and its actions
- Anterior pituitary hormones, Growth hormone – Actions
- Dwarfism, gigantism, acromegaly
- Thyroid hormones – Actions
- Cretinism, Myxoedema, Grave‟s disease (clinical features)
- Parathyroid hormones – Functions, Tetany

- Insulin, Glucagon‟s – Actions, Diabetes mellitus
- Adrenal medullary hormones & their actions
- Adrenal cortex hormones & their actions

2. Reproductive system:

- Male reproductive organs – Spermatogenesis, Testosterone actions
- Female reproductive organs – menstrual cycle (endometrial and ovarian cycles) and its hormonal control
- Contraceptive methods in male and female

Unit-IV

1. Respiratory system:

- Basic physiological anatomy
- Surfactant
- Mechanics of respiration
- Lung volumes and capacities
- Oxygen transport, Carbon-di-oxide transport
- Nervous and chemical regulation
- Pulmonary function tests.

2. Cardiovascular system:

- Basic physiological anatomy, innervations of heart
- ECG – normal waves, intervals and their significance
- Cardiac cycle – mechanical events, Heart sounds
- Blood pressure – Definition, measurement, normal values, factors maintaining BP Regulation

Unit-V

1. Nervous system:

- Structure of neuron, neuroglial cells, synapse and transmission across it

- Reflex – Components of reflex arc, examples.
- Functions of ascending tracts – anterior, lateral spinothalamic tracts, Dorsal column
- Functions of Corticospinal (Pyramidal) tract-Descending tract
- Functional areas of cerebral cortex
- Functions of basal ganglia, thalamus, hypothalamus, limbic system and cerebellum

2. Special senses:

● Receptors for various special senses

Practical Demonstration

Hematology:

1. Enumeration of RBC count.
2. Enumeration of WBC count.
3. Differential Count.
4. Estimation of Hemoglobin.
5. Determination of blood group.
6. Determination of bleeding time and clotting time.

Clinical physiology:

1. Measurement of blood pressure.
2. Determination of Radial pulse

Reference Book

1. Human Physiology for BDS by A.K.Jain, 4th Edition, Avichal publishing co

COURSE OUTCOMES	
CO1	The student will be able to gain knowledge of general physiology, nerve-muscle physiology and haematology.
CO2	The student will be able to gain knowledge of basic human physiology with respect to CVS, Respiratory system and GI system.
CO3	The student will be able to gain knowledge of basic human physiology of excretion and CNS.
CO4	The student will be able to gain knowledge of basic human physiology of special senses and endocrine system.

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES

COs\POs	a	b	c	d	e	f
1	S					
2		**M**				
3			**S**			
4	s			**S**		**M**

Category	Basic Medical Science
Approval	46th Meeting of Academic Council held in Aug, 2017

UAH17CT103	**BIOCHEMISTRY**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Biochemistry
OBJECTIVES	To know the basic Biochemical reactions within the human body, and the various organ systems.

UNIT I – Cell and its molecules

Cell – Cell organelles, Fluid Mosaic Model, functions of cell membrane, Brief description of transport across the cell membrane.

Carbohydrates – Definition, Classification with examples, Sources, physiological significance and HbA1c.

Lipids – Definition, Classification with examples, Sources, Types of lipids present in the body, storage form, storage site, free cholesterol structure, functions of lipids, lipoprotein structure and its functions.

Nucleic acids – Nucleotide, Nucleoside, types of nucleic acids, secondary structure of DNA & Its functions; Types of RNA & its functions.

UNIT II – Proteins and Enzymes

Proteins – Definition, Classification, functions of proteins, Plasma proteins; Classification of Amino acids with examples
Hemoglobin structure, Functions of hemoglobin, hemoglobin derivatives, abnormal hemoglobin

Enzymes: Definition, Classification, coenzymes, Metalloenzymes, Factors affecting enzyme

activity, Regulation of enzymes, overview of Mechanism of enzyme action, Isoenzymes and Clinical importance of enzymes

UNIT III-Vitamins, Minerals, Nutrition

Vitamins: Definition, Classification of Vitamins
Sources, RDA, Function & Deficiency symptoms of

- Fat Soluble Vitamins (A, D, E & K);
- Water Soluble Vitamins (Thiamine, Riboflavin, Niacin, Biotin, Pantothenic acid, Pyridoxine, Folic acid, Cobalamin) and Vitamin C

Minerals: Definition, Classification of Minerals

Sources, RDA, Function, Reference levels & Deficiency Symptoms of

- Calcium, Phosphorus, Iron Copper, Zinc, Sodium, Chloride, Iodine, Potassium, Fluorine and Selenium.

Nutrition: BMR, SDA, Dietary fibres, protein Energy Malnutrition and Obesity 24

UNIT IV – Bioenergetics and Metabolism
Bioenergetics: Electron Transport chain and Oxidative Phosphorylation
Metabolism

Carbohydrates: Digestion and absorption, Glycolysis, TCA cycle, Metabolism of Fructose and Galactose.

Lipids: Digestion and absorption, Beta oxidation of fatty acids, Regulation of Cholesterol level in the cell and outline of lipid transport.
Proteins: Digestion and Absorption, Formation and Disposal of Ammonia, Urea Cycle, Special Products of Glycine, Tyrosine and Tryptophan.

UNIT V – Miscellaneous

Outlines of DNA organization, Replication, Transcription, Genetic code and Translation

Organ function Tests: Liver, Renal and Bone.

PRACTICAL

- Spotters

COURSE OUTCOMES	
CO1	The student will be able to gain knowledge of biochemistry of cell structure, functions, digestion, enzymes and proteins.
CO2	The student will be able to gain knowledge of biochemistry of carbohydrates, minerals and vitamins
CO3	The student will be able to gain knowledge of liver and renal function tests, specialized laboratory investigations and lipids.
CO4	The student will be able to gain knowledge of biochemistry of metabolism, homeostasis, nucleic acids and cancer

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES

COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S				s	
2		**M**		s		
3	M		**S**			
4	s			**S**		**M**

Category	Basic Medical Science
Approval	46th Meeting of Academic Council held in Aug, 2017

UAH17CT104	**BASICS IN MEDICAL PHYSICS AND ELECTRONICS**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Radiology
OBJECTIVES	To know the basics in Medical Physics, Bio electric potential and the functioning of Medical equipment. .

Unit I: Laser

Nature of light-Reflection-Refraction-Total internal reflection-Optical fibers-Applications in Medicine – Laser-Principles-Action-Types of laser, Basic principles of laser in Medical Application – Argon-Ion laser photocoagulator-Photo thermal-Photochemical application-Applications of laser in Medicine-Laser hazards and safety measures.

Unit II: Radiation Physics

Introduction to nuclear physics and radioactivity, Radioactive radiations – X-ray, production of x-ray, Properties of x-ray radiations – Biological effects of radiation, Radiation damage in matter, Radiation protection principles, radiation detection and measurement – Ultrasound and generation of ultrasound.

Unit III: Introduction to Imaging Technique

Principles of Microscope: Simple microscope and compound microscope-Radiography: Making and X-ray image-Fluoroscopy. CT Scans, MRI – Ultrasonography: Ultrasound picture of Body-A-Scan-M-Scan-Ultrasound diathermy-Phonocardiography – Radio isotopes: Uses of Radio isotopes – 99mTc Generator – Scintillation detectors – Application of scintillation detectors – Gamma Camera – Positron Camera

Unit IV: Semiconductor devices

Principles of diodes and Transistors – Integrated circuits – Amplifiers – Basic configuration and types – differential and operational amplifiers – Waveform generators – Timer – A/D and D/A converters – Active filters – Transducers – Basic configuration and types.

Unit V: Bio potential Recording Systems

Introduction to bioelectric potential – Electrodes and surfaces – Bio potential amplifier – Frequency ranges of various biopotential signals – Working principles of bio potential recording systems – Electrocardiography – Electroencephalograph –Electromyography.

Reference Books:

1. New Understanding physics for advanced level – Jim Breithauput.

2. Advanced Physics for you by Keith Johnson, Simmons Hewett, Sue holt, John miller

3. Christensen‟s Physics of diagnostic Radiology by Thomas S. Curry III, M.D., Robert C Murry, Jr. PhD, Dow Dey, PhD.

4. Applied Electronics, A. Subramanyam, The National Publishing co., Madras (1996).

5. Design and Development of Medical Electronic Instrumentation, David Prutchi and Michael Norris, John Wiley & Sons (2005).

COURSE OUTCOMES	
CO1	The student will be able to know the functioning of radiological devices
CO2	The student will be able to understand the mechanism of functioning of medical equipments
CO3	The student will be able to know the functioning of Lab instruments
CO4	The student will be able to understand the functioning of radiation devices
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES	

COs\POs	a	b	c	d	e	f
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**

Category	Medical Science
Approval	46th Meeting of Academic Council held in Aug, 2017

UAH17CT105	**ENGLISH**
	Total Contact Periods – 60
	Total credits -4
	Course Designed by – Department of English
OBJECTIVES	To enable students to enhance their ability to comprehend spoken and written English required for effective communication in their professional work. Students will practice their skills in verbal and written.

Unit I: Spoken Communication

Learning to read the phonetic symbols

Stress

Intonation

Rhythm

Commonly mispronounced words

Correct pronunciation of important commonly used

Words in hospital practice

Unit II: Vocabulary and Reading

Special features of English vocabulary

Common errors in choice of word

Semi technical vocabulary

Collecting material from library on scientific topics

Comprehensive exercises

Unit III: Writing

Writing letters regarding permission, leave, opening bank account etc.

Taking notes from lecture / reading materials

Writing reports on patient care

Summarizing scientific passages

Unit IV: Grammatical and Idiomatic Usage

Correction of errors

Types of interrogative sentences

Active-Passive voice

Tense

Principles of procession, clarity and specificity

Reference Books:

1. Effective English Communication by Krishna Mohan and Meenakshi Raman, Tata McGraw-Hill publishing Company Limited, New Delhi. (Approx. Cost Rs.200.
2. English for colleges and competitive Exams by Dr. R. Dyvadatham, Emerald Publishers (Approx. cost Rs. 150)

COURSE OUTCOMES	
CO1	The student will be able to develop their intellectual, personal and professional abilities.
CO2	The student will be able to acquire basic language skills, listening, speaking, reading and writing.
CO3	The student will be able to acquire the linguistic competence necessarily required in various life situations
CO4	The student will be able to communicate with speakers of English language

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES

COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**

Category	Language
Approval	46th Meeting of Academic Council held in Aug, 2017

UAH17CT106	**BASIC OF COMPUTERS**
	Total Contact Periods – 30
	Total credits -4
	Course Designed by – Department of English
OBJECTIVES	This course is designed for students to develop basic understanding of used of computer and its applications in Clinical Departments

UNIT I: INTRODUCTION

Computer basics – Types of computers – hardware components – input devices – output devices – storage devices – memory – units and sizes – factors affecting performance – operating systems – applications software – networking – LAN and WAN – Accessories – backup – computer virus – software copyright.

UNIT II: WORD PROCESSING

Windows – Office automation – WORD processor – open a new document – toolbars – menus – font dialog box – enter text – scroll – spelling checker – Autocorrect – undo and redo – bullets and numbered lists – indenting – moving and copying – find and replace – auto shapes – saving document – preview and print.

UNT III: ELECTRONIC SPREADSHEET AND DATA PRESENTATION

EXCEL spreadsheet – grid of rows and columns – active cell – selecting range – entering data – editing data – row and column labels – adjusting width – creating and copying formulae – relative – logical functions – lookup function – creating chart – bar chart – pit chart – print and save.

POWERPOINT presentation – creating slideshows- building outline – switching levels in outline – adding pictures – slide designs – design templates – formatting – color scheme – customized backgrounds – inserting content – hyperlink – revolution in education.

UNIT IV: DATABASE MANAGEMENT SYSTEM

ACCESS database – concept – template –primary key – records and fields – Student roster database – input mask – adding records – viewing data – updating entries – searching and querying – sorting – Table, forms and reports.

UNIT V: APPLICATIONS IN HEALTHCARE AND MEDICINE

INTERNET – e-governance – access to information – communication facility – mechanics of E-mail – social transformation – electronic billing – drug information –information flow in lab and radiology – storage of medical records – networking the organization – patient care – intelligent monitoring – scholarly information – health informatics – robotic assisted surgery – Clinical decision support systems – Telemedicine.

COURSE OUTCOMES	
CO1	The student will be able to develop basic under-standing of computer use.
CO2	The student will be able to acquire knowledge on Applications of computers in clinical departments.
CO3	The student will be able to have the detailed knowledge on how to use hospital information systems.
CO4	The student will be able to communicate with speakers of English language

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES

COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**

Category	Soft Skills
Approval	46th Meeting of Academic Council held in Aug, 2017

UAH17CT107	**MICROBIOLOGY**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Microbiology
OBJECTIVES	This course is designed to enable students to acquire understanding of fundamentals of microbiology and identification of various microorganisms. It also provides opportunities for practicing infection control measures in hospital and community settings.

UNIT – I: General Bacteriology

Introduction & History of Microbiology, Classification & Morphology of Bacteria, Growth & nutrition, Culture Media & Methods, Sterilization & Disinfection, Fundamental aspects of antibacterial agents and antimicrobial susceptibility testing.

UNIT – II: Immunology

Infection, Immunity, Immunization schedule, applications of antigen antibody reactions, Hypersensitivity, Tumor & Transplantation Immunology.

UNIT – III: Virology

Introduction to virology, viral hepatitis, poliomyelitis, Rabies, Human immunodeficiency virus.

UNIT – IV Mycology & Parasitology

Introduction to mycology, pathogenic yeasts & fungi, Introduction to parasitology, Amoebiasis, Malaria, Helminthic infections.

UNIT – V: Applied Microbiology

Outline of common bacterial diseases, treatment & Prevention-Respiratory tract infections (upper & lower), Meningitis (septic & aseptic), Enteric infections (food poisoning & gastro enteritis), Anaerobic infections, Skin & soft tissue infections, Urinary tract infections, Sexually transmitted diseases, Tuberculosis & Leprosy, Hospital acquired infections, Biomedical waste management.

PRACTICAL EXERCISES: Spotters, Gram staining.

Reference Books

1. Textbook of Microbiology by Ananthanarayan & Panicker"s, 8th edition-Universities Press (India) PVT LTD.

2. Textbook of Microbiology by C. P. Baveja, 4th edition, Arya Publications.

3. Textbook of Medical Parasitology, CK Jayaram Paniker, 5th edition, Jaypee Publications.

4. Medical Parasitology by C. P. Baveja & V. Baveja, 2nd edition, Arya

5. Publications.

COURSE OUTCOMES	
CO1	The student will be able to understand the morphological characters of bacteria.
CO2	The student will be able to master the preparation of smear, fixation and staining of bacterial smears and its quality control methods
CO3	The student will be able to learn to use microscope, autoclave, hot air oven, water bath, steamer, filters
CO4	The student will be able to differentiate between innate and adaptive immunity, and explain the main defences lines as well as biological barrier to the infections.

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES

COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**

Category	Basic Medical Science
Approval	46th Meeting of Academic Council held in Aug, 2017

UAH17CT108	**PATHOLOGY**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Pathology
OBJECTIVES	This course is designed for students to develop an understanding of general and systemic pathology. It helps them to know pathophysiology of common diseases

UNIT-I: General Pathology I: Cellular Pathology, Acute and Chronic Inflammation, Tissue Renewal Regeneration and Repair, Hemodynamic Disorders Thromboembolic Disease and Shock

Introduction to Pathology, Adaptations Of Cellular Growth And Differentiation, Causes Of Cell Injury, Mechanisms Of Cell Injury, Necrosis, Apoptosis, Pathologic Calcification, Cellular Aging, Acute Inflammation – Mediators Of Inflammation Outcomes Of Acute Inflammation, Morphologic Patterns Of Acute Inflammation, Chronic Inflammation – Causes Of Chronic Inflammation, Granulomatous Inflammation, Healing By Repair, Scar formation And Fibrosis, Cutaneous Wound Healing, Healing By First Intention, Healing By Second Intention, Edema, Hemostasis and Thrombosis, Infarction, Shock

UNIT-II: General Pathology II: Diseases of the Immune System, Neoplasia, Environmental And Nutritional Disease, Diseases Of Infancy And Childhood

Innate Immunity, Adaptive Immunity, Components Of The Immune System, Mechanisms Of Hypersensitivity Reactions, Acquired Immunodeficiency Syndrome (AIDS), Neoplasia – Definition and Nomenclature, Characteristics Of Benign And Malignant Neoplasm‟s, Molecular Basis Of Cancer, Essential Alterations For Malignant Transformation, Clinical Aspects Of Neoplasia, Laboratory Diagnosis Of Cancer, Common Environmental And Nutritional Pathology, Nutritional Diseases, Tumors And Tumor-Like Lesions Of Infancy And Childhood

UNIT-III: Systemic Pathology I: Blood Vessels, the Heart, Red Blood Cell and Bleeding Disorders, Diseases Of White Blood Cells

Arteriosclerosis, Atherosclerosis, Hypertensive Vascular Disease, Ischemic Heart Disease, Hypertensive Heart Disease, Valvular Heart Disease, Infective Endocarditic, Rheumatic Fever And Rheumatic Heart Disease, Cardiomyopathies, Leucopenia, Anemia‟s, Polycythemia, Bleeding Disorders, Reactive Proliferations Of White Cells, Definitions And Classifications of Lymphoid Neoplasm‟s and Myeloid Neoplasm‟s, Splenomegaly.

UNIT-IV: Systemic Pathology II: The Lung, The Gastrointestinal Tract, Liver And Biliary Tract

Acute Respiratory Distress Syndrome, Obstructive Pulmonary Diseases, Pulmonary Infections, Gastritis, Peptic Ulcer Disease, Inflammatory Bowel Diseases, Liver Function Tests, Hepatic Failure, Cirrhosis, Portal Hypertension, Jaundice, Cholelithiasis

UNIT-V: Systemic Pathology III: The Urogenital System, the Breast, the Endocrine System, Bones Joints and Soft-Tissue, Peripheral Nerve and Skeletal Muscle, the Central Nervous System

Renal Function Tests, Nephrotic Syndrome, Nephritic Syndrome, Urolithiasis, Pap Smear, Carcinoma Of The Breast-Types And Classification, Thyroid Gland – Hyperthyroidism, Hypothyroidism, Thyroiditis, Graves‟ Disease, Diffuse And Multinodular Goiters, Parathyroid Glands – Hyperparathyroidism, Hyperparathyroidism, Diabetes Mellitus, Fractures, Osteomyelitis, Arthritis, Osteoarthritis, Rheumatoid Arthritis, Infectious Arthritis, Diseases of Peripheral Nerve, Diseases of Skeletal Muscle, Infections of CNS – CSF Find

REFERENCE BOOKS

1. Pocket companion to Pathologic Basis of Disease by Robbins and Cotran, 7th edition, Saunders.
2. Pathology Quick Review and MCQs by Harsh Mohan, 2nd edition, Jaypee Publications.

COURSE OUTCOMES	
CO1	The student will be able to gain knowledge of general pathology
CO2	The student will be able to gain knowledge pathology of neoplasms.
CO3	The student will be able to gain knowledge of basics of community health.
CO4	The student will be able to gain knowledge of systemic pathology.

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES

COs\POs	a	b	c	d	e	f
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**

Category	Basic Medical Science
Approval	46th Meeting of Academic Council held in Aug, 2017

UAH17CT109	**PHARMACOLOGY**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Pathology
OBJECTIVES	This course is designed to help the students to develop an understanding of basic knowledge of pharmacology and knowledge of common drugs/group of drugs

UNIT-I: General Pharmacology

Introduction to pharmacology-various terminologies-sources & routes of drug administration – Absorption & Factors modifying drug absorption – Distribution of drugs – Metabolism: Phase II, - Excretion: routes, modes & kinetics of elimination – Excretion – Mechanism of drug action in brief, synergism & antagonism and Factors modifying drug action – Adverse drug reactions – ADR reporting & monitoring – Drug interactions.

UNIT-II: Central Nervous System & Respiratory System

Introduction to CNS and Neurotransmitters, drugs used in insomnia, Sedatives and hypnotics – diazepam – alprazolam, anti-anxiety drugs, Antiepileptic – phenytoin, carbamazepine, sodium valproate, General Anesthetics – halothane, isoflurane, sevoflurane – Local Anesthetics – lignocaine – list of other drugs, Alcohols – ethyl alcohol – disulfuram, Anti parkinsonians – levodopa – carbidopa, Opioids – morphine – naloxone – tramadol – pentazocine, NSAIDs – aspirin – diclofenac – ibuprofen – paracetamol – Cox 2 inhibitors. Drugs used in bronchial asthma and cough

UNIT-III: Cardio vascular system & blood

Drugs used in Ischemic Heart Disease-nitrates-Calcium channel blockers-nifedipine, verapamil-list of other drugs – Beta blockers – propranolol, atenolol – metoprolol and antiplatelets – aspirin, clopidogrel, and names of other drugs-fibrinolysis drugs-streptokinase and other drugs, Drugs used in CCF-digoxin and list of other drugs useful in CCF, Shock. Diuretics: 4 groups – Thiazides, Loop diuretics, Potassium sparing and osmotic diuretics. Hypertension – outline of drugs used in hypertension, Rennin angiotensin system – ACE inhibitors – captopril, ramipril and names of other drugs – Receptor antagonist – losartan and list of other drugs, Antiarrhythmic drugs-classification

– Quinidine, Lignocaine and amiodaron – Drugs for Hypercholesterolemia – statins. Drugs for anemia – oral & parenteral iron preparations, folic acid, vit B12 and erythropoietin. Coagulants and anti-coagulants

UNIT-IV: Hormones and GIT

Contraceptives – oral and injectable, Corticosteroids – glucocorticoids – hydrocortisone-prednisolone-dexamethasone and names of topical steroids – Insulin – Oral hypoglycemic – sulphonyl ureas, biguanides and others, Thyroid and Antithyroid drugs, Sex Hormones-Estrogen and anti-estrogens, Progestin and Anti progestin‟s, Androgen And anti-androgens. Emetics and anti-emetics-metoclopromide and domperidone, Drugs used in peptic ulcer, constipation-lactulose & Diarrhea-ORS-Loperamide.

UNIT-V: Chemotherapy and Miscellaneous

Introduction – Beta lactam antibiotics: Penicillin‟s – natural, semi synthetic penicillin‟s – amoxicillin – cloxacillin-clauvulinic acid – sulbactum – Cephalosporin‟s – cephalexin – cefuroxime – cefixime – ceftrioxone-cefipime, Broad spectrum antibiotics – Doxycycline – chloramphenicol-imipenum-Macrolides – erythromycin, azithromycin and others – Quinolones- ciprofloxacin and list of other drugs and sulfonamides- cotrimoxazole- Amino glycosides-gentamycin, amikacin and names of other drugs Anti TB-first line drugs, Anti leprosy-dapsone and clofazimine Anti-malarial- chloroquine- mefloquine and artemisinins, Anti-fungal- amphotericin B- fluconazole and topical drugs & Anti-viral drugs- acyclovir and anti HIV, Anti protozoals- metronidazole – Anthelmintics- albendazole- praziquantel.

Anti-cancer drugs-Introduction – Anti metabolites- methotrexate- 6 mercapto purine-Alkylating agents- cyclophosphamide- busulphan and cisplatin – Plant products- vinblatin-vincristine- taxanes, antibiotics-actinomycin D- monoclonal antibodies. Immuno modulators- cyclosporine, tacrolimus, azathioprine and steroids. Toxicology-Drugs used in common poisoning, organophosphates, methyl alcohol, Benzodiazepam.

REFERENCE BOOKS:

1. Lippincott‟s Illustrated Reviews: Pharmacology, 5th edition, by Richard A. Harvey and Pamela C. Champe, Lippincott Williams & Wilkins Publisher

2. Essentials of Medical Pharmacology: K.D. Tripathi, 6th edition, Jaypee Publishers.

COURSE OUTCOMES						
CO1	The student will be able to gain basic knowledge in pharmacology.					
CO2	The student will be able to gain knowledge of detailed systemic pharmacology.					
CO3	The student will be able to gain knowledge of detailed knowledge of drugs and groups of drugs.					
CO4	The student will be able to gain knowledge of action of drugs					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**A**	**b**	**c**	**d**	**E**	**f**
1	S		M		S	
2				s		M
3	M		**S**			
4	S			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CT110	**ENVIRONMENTAL SCIENCE AND COMMUNITY MEDICINE**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Community Medicine
OBJECTIVES	This course is designed for students to practice community health nursing for the individual, family and groups at both urban and rural settings by using concept and principles of health and community health nursing. It also is designed for students to understand the natural resources and environmental pollution

UNIT – I:

Natural Resources: Introduction, Multi-disciplinary nature of environmental studies, Earth Resources and Man, Renewable and Non-Renewable Resources, Water Resources, Mineral Resources: Food Resources: Effect of modern agriculture, Fertilizer/pesticide problems, Water logging, and salinity, Energy Resources.

Ecosystems: Concept of an Ecosystem, Structure and Functions of an Ecosystem, Producers, Consumers and Decomposers, Cycles in the Ecosystem

Biodiversity: Introduction, Definition: Genetic, Species, Ecosystem diversity, India as a Mega Diversity Nation, Hotspots Of Biodiversity Threats to Biodiversity. Poaching of Wildlife, Man-Wildlife Conflicts, Endangered and Endemic Species Of India, Conservation of Biodiversity

UNIT – II:

Pollution: Definition, Causes, Effects and Control Measures of Air Pollution, Water Pollution, Pollution, Marine Pollution, Noise Pollution, Thermal Pollution, Nuclear hazards, Solid Waste Management role of Individuals in Pollution Prevention.

Social Issues Human, Population and Environment: From Unsustainable To Sustainable Development, Urban Problems Related To Energy, Water Conservation, rain Water Harvesting, global warming, acid rain, ozone layer depletion, nuclear accidents and nuclear holocaust. Environment Protection Act.

UNIT – III:

Concept of health & disease: Concept of health, Definition of health, Philosophy of health- Dimension of health – Concept of wellbeing, Spectrum of health, Responsibility of health – Determinates of health & Indicators of health – Concepts of disease & Concepts of cessation – Natural history of disease – Iceberg phenomenon, Concepts of control – Concepts of prevention – Modes of Intervention, Changing pattern of disease.

UNIT – IV:

Epidemiology: Definition & explanation, Aims, Epidemiologic approach, Basic measurements in epidemiology & tools of measurements – Measurements of Mortality & Morbidity, Epidemiologic methods- Descriptive epidemiology-Analytical epidemiology – case control study – analytical epidemiology – Cohort study – Experimental epidemiology – RCT – Association & Causation Uses of epidemiology (Criteria for judging causality) – Infection disease epidemiology Definitions Dynamic of disease transmission & Modes of transmission – Disinfection – Definition Types Agents used Recommended disinfection procedures-Investigation of an epidemic.

Unit – V:

Environment & health: Definition & components (environment sanitation environmental sanitation) Water: Safe & Whole some water Requirements Uses source of water supply (sanitary well)-Purification of water (1). Large scale purification, (2). Small scale purification – Water Quality – Special treatment of water

Air: Composition The air of occupied room discomfort. Air pollution & its effects. Prevention & Control of air pollution

Ventilation: Definition Standards of ventilation Types of ventilation. Light, Noise & Radiation, Metrological environment, Housing, Disposal of waste Excreta disposal

PRACTICALS:

1. Epidemiology Problems
2. Environmental spotters

REFERENCE BOOK

1. Textbook of Preventive and Social medicine by k. Park, 21st edition, published by Banarsidas Bhanot

COURSE OUTCOMES						
CO1	The student will be able to know the concept of health & illness .					
CO2	The student will be able to know epidemiology of common communicable diseases					
CO3	The student will be able to know epidemiology of common non communicable diseases					
CO4	The student will be able to know the effects of pollution on humans.					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**A**	**b**	**c**	**d**	**E**	**f**
1	S		M		S	
2				s		M
3	M		**S**			
4	S			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CT111	**BASICS OF NURSING**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Community Medicine
OBJECTIVES	This course is designed to help the students to develop an understanding of the nursing profession, philosophy, objectives, theories and application of nursing in various clinical settings. It is aimed at helping the students to acquire knowledge, understanding and skills in techniques of nursing and practice them in supervised clinical settings.

Unit I: Introduction of Health

Health care system, major health problems of the country, nature of disease pattern, technological advances and national health programmes, health for all by 2000 AD. Role of health care workers in the health care delivery system, impact of illness of the individual family and community. History of Nursing, Communication Skills -Relationship with patients, process of communication

UNIT II: Concept of Nursing

Nursing Processes- Problems solving approach, assessment, diagnosis, planning, implementation and evaluation.

Unit III: First Aid and Nursing in Emergencies

Definition, basic principles, scope and rules, Wounds, hemorrhages, shock, fracture, dislocation and muscle injuries, respiratory emergencies, resuscitation, unconsciousness, Miscellaneous conditions, burns, scalds, foreign bodies in the skin, eyes, ear, nose, throat and stomach.Frost bite, effects of heart cramps, bites and stings. Poisoning, Transporting injured persons.

Unit IV: **Personal Hygiene and Health**

Care of skin, mouth, eyes, nails, hair, Menstrual hygiene, clothing, mental health, common health problems of poor personal hygiene. Comfort, Rest and Sleep, Hospital

Housekeeping

Unit V: Health Education

Introduction to principles and methods of health education. Use of audio visual aids, mass education, role of nurse in health education.

COURSE OUTCOMES						
CO1	The student will be able to gain knowledge on concept of health, health-illness continuum and health care delivery system.					
CO2	The student will be able to gain knowledge on scope of nursing practice.					
CO3	The student will be able to gain knowledge on concept, theories and models of nursing practice.					
CO4	The student will be able to gain knowledge on concept, theories and models of nursing practice.					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**A**	**b**	**C**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	S			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UARC17CT201	**APPLIED ANATOMY & PHYSIOLOGY RELATED TO RESPIRATORY TECHNOLOGY – THEORY**
	Total Contact Periods – 60
	Total credits -4
	Course Designed by – Department of Respiratory
OBJECTIVES	This course is designed to help the students to develop an understanding of basic knowledge of structure of human body.

UNIT – I Gross structures of Respiratory system - Structure of Respiratory system, Functional anatomy of the respiratory system, The upper airway of the Nose, pharynx, Larynx, The Tracheo bronchial tree histology, Trachea, Main stem Bronchi, lobar bronchi, Segmental bronchi, bronchioles, Terminal bronchioles, The mucous blanket mucus, Cilia function, Lung parenchyma alveolar epithelium, The alveolar macrophage, Surfactants. Respiratory muscles of the thorax, Muscles of ventilation.

UNIT – II Anatomy of the Cardio Vascular system – Anatomy of heart and great vessels, Gross anatomy and structural features, Gross anatomy of cardiac chambers, Atrium, Ventricles, AV Junctions. Heart value, Specialized conduction system Sinus node, AV node

UNIT – III Physiology of Pulmonary mechanics – The lung thorax relationship, The principle of compliance, the principle of airway resistance, Pulmonary function studies lung volumes and capacities FRC, VC (Expiratory spirogram), Screening pulmonary function testing, The work of breathing definition, essential clinical factors, ventilator reserve, Physiology of External Respiration – The systemic capillary blood, V/Q relationship, Distribution of pulmonary perfusion gravity, cardiac output, Regional differences in respiration, Shunting and dead space, The concepts of physiologic shunt, capillary shunt, shunt effect

UNIT – IV Physiology of cardiovascular system – Defining circulation, Myocardial mechanics, Myocardial contractility, Ventricular preload, ventricular afterload, Distribution of total body water, Absolute hypo and hypervolemia, Relative hypovolemia, venous return, venous driving pressure, distribution of circulation, Assesment of perfusion. Clinical assessment of circulation –

Cardiac output measurement, Thermal dilution technique, Atrial pressure measurement, Central venous pressure, Pulmonary artery catheter, Positive ionotrophic agents

UNIT – V Assesment of the intrapulmonary shunt – The concept of intrapulmonary shunting, True shunt mechanism, The fick's equation, Cardiac output, Oxygen consumption. Assesment of cardiopulmonary reserves – Ventilatory muscle fatique, Vital capacity, Negative inspiratory pressure, Forced expiratory volume (FEV), Cardiovascular reserve, Heart rate and rhythm, Blood pressure Perfusion, Gas exchange respiration

Text Books:

1. Textbook of Human Anatomy – B.D. Chaurasias, 6th edition, CBS Publishers, 2013.
2. Textbook of physiology – A.K.Jain, 5th edition, Avichal Publishing Company, 2014.

COURSE OUTCOMES						
CO1	To understand the basic structure and function related to the respiratory system					
CO2	Understand the function of important physiological systems.					
CO3	To learn about assessment of intrapulmonary shunt					
CO4	The student will be able to gain knowledge of pulmonary mechanism					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**A**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	S			**S**		**M**
Category	Pulmonology					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UARC17CL202	**APPLIED ANATOMY & PHYSIOLOGY RELATED TO RESPIRATORY TECHNOLOGY – PRACTICAL**
	Total Contact Periods – 120
	Total credits -4
	Course Designed by – Department of Respiratory
OBJECTIVES	This course is designed to help the students to develop an understanding of basic knowledge to technical and diagnostic procedures used with special emphasis on applied aspects.

PRACTICALS / DEMONSTRATIONS

1. **MODEL –** Trachea, Bronchi, Lungs**.**
2. **CHARTS –** Dead space, Dyspnea index, breathing reserve, Ventilation / perfusion ratio, Cardiac output, Alveolar ventilation, O2 carrying capacity, Vital capacity
3. **SPOTTERS –** Pulse oximeter, Stethoscope, BP apparatus, Peak flow meter

Text Books:

1. Textbook of Human Anatomy – B.D. Chaurasias, 6th edition, CBS Publishers, 2013.
2. Textbook of physiology – A.K.Jain, 5th edition, Avichal Publishing Company, 2014.

Exam pattern (UE) Total marks – 60

1. SPOTTERS – 10 (10X2=20)
2. CHARTS/STATIONS – 5 (5X4=20)
3. VIVA – 20

COURSE OUTCOMES						
CO1	To Demonstrate the structure of respiratory system & cardiovascular system					
CO2	To demonstrate Pulse oximeter, Stethoscope, BP apparatus, Peak flow meter					
CO3	The student will be able to understand Dead space, Dyspnea index, breathing reserve, Ventilation / perfusion ratio, Cardiac output					
CO4	The student will be able to gain knowledge of Alveolar ventilation, O2 carrying capacity, Vital capacity.					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UARC17CT203	**PHARMACOLOGY RELATED TO RESPIRATORY CARE TECHNOLOGY – THEORY**
	Total Contact Periods – 60
	Total credits -4
	Course Designed by – Department of Respiratory
OBJECTIVES	This course is designed to help the students to develop an understanding of basic knowledge of drugs related to respiratory care.

UNIT – I

Receptor site theory- adrenergic receptor site, alpha receptor, beta 1 receptor, beta 2 receptor, cholinergicreceptor, mechanism of bronchospasm, mast cell degranulation, slow reacting substance of anaphylaxis, histamine, prostaglandin, acetylcholine sympathomimetic drugs- adrenaline, salbutamol, terbutaline, salmetrol, formotrol, short acting and long acting beta 2 agonists phosphodiesterase inhibitors – aminophylline, theophyline, doxophylline

UNIT – II

Anticholenergic drugs – Atropine sulphate (Atropine), Ipatropium bromide, Tiotropium bromide, corticosteroids in respiratory care – Hydrocortisone, prednisalone, Dexamethasone, Triamcinolone, Beclamethasone, Solumedrol. Mucokinetic agents – Acetylcysteine, Sodium bicarbonate, Bromhexine

UNIT – III

Use of Bland Aerosols in Respiratory Care – Distilled water, Saline solution, Propylene glycol. Aerosolized Anti-Microbial Agents – Antibiotics – Gentamycin, Amoxcillin, Antiviral agents – Ribavirin, Antiprotozoal agent – Pentamidine, Anti Tuberculosis Drugs – 1st line drugs, 2nd line drugs, MDR TB / XDR TB

UNIT – IV

Anti-Viral Drugs – Acyclovir, ZidoudineAntifungal Drugs – Amphotercin – B, Ketoconozole, Fluconozole. Cardiovascular Drugs – Inotrophic drugs – Dopamine, Dobutamine, Isoprenaline.

Antianginal drugs – Nitroglycerine, Antiarrythmic drugs – Xylocard (Ligocaine), Procainmide, Amiodarone (Cordarone), Digoxin. Diuretics – Furosemide, Pottasium spring diuretics, Thiazides

UNIT – V

Drugs Used In Metabolic And Electrolyte Imbalance-Glucose, Bicarbonate, Calcium, Potassium. Anti-Inflammatory Drugs- Steroids, Non-steroidal anti-inflammatory drugs Anaesthetic Drugs-Muscle relaxants, Local anaesthetic – Ligocaine / Lidocaine

Text Books:

1. Pharmacology for dental and allied health sciences – PadmajaUdaykumar – 3rd edition – 2013
2. Essentials of medical pharmacology - Tripathi – 7th edition – 2013

COURSE OUTCOMES						
CO1	knowledge about Anticholinergic drugs & Anti-Viral Drugs,					
CO2	To gain knowledge about Drugs Used In Metabolic And Electrolyte Imbalance					
CO3	To develop basic knowledge about respiratory related drugs.					
CO4	The student will be able to learn Non-steroidal anti-inflammatory drugs Anesthetic Drugs					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**D**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UARC17CL204	**PHARMACOLOGY RELATED TO RESPIRATORY TECHNOLOGY – PRACTICAL**
	Total Contact Periods – 120
	Total credits -4
	Course Designed by – Department of Respiratory
OBJECTIVES	This course is designed to help the students to develop an understanding of basic knowledge of pharmacology & apply for respiratory related conditions.

PRACTICALS / DEMONSTRATIONS

1. **SPOTTERS –** I. V Fluids, Anti tuberculosis drugs, IV injections, Inhalers, Rota halers, Nebulizer, Bronchodilators
2. **CHARTS –** Indication, dosage, contraindications effects of all Respiratory drugs

Text Books:

1. Pharmacology for dental and allied health sciences – PadmajaUdaykumar – 3rd edition – 2013
2. Essentials of medical pharmacology – Tripathi – 7th edition – 2013

Exam pattern (UE) Total marks – 60

1. SPOTTERS – 10 (10X2=20)
2. CHARTS/STATIONS – 5 (5X4=20)
3. VIVA – 20

COURSE OUTCOMES						
CO1	The student will be able to gain knowledge about to Anti tuberculosis drugs					
CO2	The student will be able to gain knowledge about to understand about I.V Fluids & IV injections					
CO3	To students will be able to understand about Bronchodilators					
CO4	The student will be able to gain knowledge about Indication, dosage, contraindications effects of all Respiratory drugs					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**A**	**b**	**C**	**D**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	S			**S**		**M**
Category	Surgical					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CT205	**BASIC PRINCIPLES OF HOSPITAL MANAGEMENT**
	Total Contact Periods – 60
	Total credits -4
	Course Designed by – Department of Hospital Administration
OBJECTIVES	The course will offer basic knowledge about management planning, Organizing, staffing, motivating and controlling management in Health care units

Unit I: Introduction to management & Organization:

The evolution of Management, Definition and Importance of Management. Planning – Organizing – staffing – Motivating – Leading – Controlling. Management of health care units (in brief). Individual behavior in organization; organizational functioning (Group/Individual); Perception; Motivation MBO; Organizational Development.

Unit II: Planning and Management of Hospitals & Clinical Services:

Building and physical layout – space required for separate function – Planning of infrastructure facilities, clinical services, equipment & Human resources – Types of Hospitals. Organization and administration of various clinical services; outpatient services. In-patient services, emergency services, operation theatres, ICU's and super specialty services.

Unit III: Organizing of support clinical services & Hospital management:

Imaging – CSSD – Laboratory – Blood Bank – diet – Medical Records – Mortuary. Housekeeping – Maintenance (Water, Electricity, Civil, Air Conditioning, Lift) – Pest Control – transport – Security. Forecasting – Purchasing & procurement (Sourcing, methods and procedures) – storing & issuing, Concept of inventory control, Maintenance of equipment and contracts (with special reference to major biomedical equipment). Trends in financing of Health and Hospital Services – Classification of Hospitals depending on source of financing – roles of financial institutions.

Unit IV: Personnel and quality Management in Hospital & Marketing:

Concepts – Manpower planning – Training & Developments – Team Building – Conflict

Management – Performance appraisal – Office rules and regulations Outline of Strategic Planning and Marketing.

Concepts of quality – Professional Audit System – QA program – Medical Audit – Quality Circle – TOM – Patient Satisfaction – ISO 9000. A brief outline – computerization in hospital departments. Concept, Techniques, Indicators, Evaluation of Efficiency & Effectiveness evaluation of hospital and medical care services.

Unit V: Ethical, current issues and Legal Aspects of Hospitals management services:

Laws related to Hospital – Medico Legal Cases law of Torts – Autopsy – Dying delaration – CPA. – Waste Management – Telemedicine – Organ Transplantation – Rehabilitation Service – Health Insurance. Operations Research and Quantitative Methods in Hospital Administration & Nursing Services in a Hospital.

COURSE OUTCOMES						
CO1	The student will be able to gain knowledge about infrastructure facilities, clinical services, equipment and Human resources					
CO2	The student will be able to understand how to maintain inpatient services, outpatient services, ICUs, Emergency services, Operation theatres and super speciality services					
CO3	The student will be able know about Manpower planning, training, developing and knowledge about marketing					
CO4	The student will be able to learn developing and knowledge about marketing					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Management					
Approval	47th Meeting of Academic Council held in Aug, 2018					

UAH17CE2024	**PRINCIPLES AND APPLICATION OF CLINICAL GENETICS**
	Total Contact Periods – 6
	Total credits -2
	Course Designed by – Department of Nephrology
OBJECTIVES	To develop awareness about Genetic testing, Genetic counseling, Philosophy and Ethos of Genetic services

I -Principle and components of genetic testing Lay out of genetic laboratories - Genetic testing, Genetic counseling, Philosophy and Ethos of Genetic services, Types of testing- Cytogenetic testing- Molecular cytogenetic testing- DNA testing.

II - Cytogenetic Testing Indications, Type of sample, Sampling and transport conditions, Karyotyping - chromosome identification, merits and demerits of conventional cytogenetic testing

III - Molecular Cytogenetic testing

Indications, Type of sample, Sampling and transport conditions - Fluorescence in-situ hybridization, fluorescence signal enumeration, merits and demerits of FISH.

IV - DNA testing

Organization of human genome, Structure and function of genetic material, Polymerases chainmreaction - Types, principles and testing, Sequencing.

V - Practical:

Case studies

Reference books

1. Practical Genetic counseling, Peter S. Harper, 6th edition, Hodder Headline Group 2004.

2. Medical Genetics, 3rd edition, Lynn B. Jorde, John C. Carey, Michael J. Bamshad, &

Raymond L. White, Mosby, 2006.

3. Genetics in Medicine, Thompson & Thompson, 6th edition, Elsevier 2004.

4. Practical Genetic counseling, Peter S. Harper, 6th edition, Hodder Headline Group 2004.

COURSE OUTCOMES						
CO1	The student will be able to become familiar with and practice genetic tests.					
CO2	The student will be able to provide better patient care					
CO3	The student will be able to know detailed information about Genetic Counselling					
CO4	The student will be to know about Genetic testing.					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE2025	**CLINICAL EXAMINATION OF THE HUMANVISUAL SYSTEM**
	Total Contact Periods – 5
	Total credits -2
	Course Designed by – Department of Opthalmology
OBJECTIVES	The core objective of this course is to gain in depth knowledge on the structural and physiological functions of the various parts of the eye and the different examination procedures for the ocular structures.

: **I - History Taking**

Importance of history taking, Demographic data and its importance, Chief presenting symptoms, History of present illness, History of past illness, Family History, Common ocular symptoms and their causes – defective vision, watering eyes, discharge, redness, pain, asthenopia and other symptoms

II - Visual Acuity measurement

Distance visual acuity-charts, methods and measurements; Near visual acuity –charts, methods and measurements; contrast sensitivity testing; colour vision testing

III - External Examination

Examination of head posture, examination of forehead, examination of eye brows, examination of eyelids, examination of Lacrimal apparatus, examination of eyeball on the whole, examination of the cornea, conjunctiva sclera and anterior chamber, eye movements, muscle balance and squint evaluation

IV - Anterior Segment Evaluation

Slit lamp examination of the eyelids, cornea, conjunctiva, anterior chamber depth, iris, and lens Intraocular pressure measurements using non-contact tonometer

V - Posterior Segment Evaluation

Introduction and importance of posterior segment evaluation- direct and indirect ophthalmoscopy

REFERENCE BOOKS:

1. Comprehensive Ophthalmology – A K Khurana, 5th edition, New Age International Publishers,

2012.

2. Clinical Ophthalmology – Jack J Kanski, 7th edition, Butterworths, 2012

1. Borish's Clinical Refraction - William J. Benjamin, Irvin M. Borish, Butterworth-Heinemann, 2006

COURSE OUTCOMES						
CO1	The student will be able to have the skill to perform basic ophthalmic examination					
CO2	The student will be able to understand concept of theory and clinical evaluation of disease conditions gain an in- depth knowledge on disease outline and clinical evaluation of patients					
CO3	The student will be able to depth knowledge on the functions of the visual system					
CO4	The student will have the skill to perform basic ophthalmic examination					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**B**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UARC17CT206	**COMPREHENSIVE VIVA: APPLIED ANATOMY, PHYSIOLOGY & PHARMACOLOGY RELATED TO RESPIRATORY TECHNOLOGY**
	Total Contact Periods –180
	Total credits -5
	Course Designed by – Department of Respiratory
OBJECTIVES	The course will offer basic knowledge about structure and functions of respiratory related organs. Develop fundamental knowledge about drugs related to respiratory care.

1. Trachea, bronchi, lungs.
2. Dead space, dyspnea index, breathing reserve, ventilation / perfusion ratio, cardiac output, alveolar ventilation, o2 carrying capacity, vital capacity
3. Pulse oximeter, stethoscope, BP apparatus, peak flow meter
4. I. V fluids, anti-tuberculosis drugs, iv injections, inhalers, rota halers, nebulizer, bronchodilators
5. Indication, dosage, contraindications effects of all respiratory drugs

Text Books:

1. Textbook of Human Anatomy – B.D. Chaurasias, 6th edition, CBS Publishers, 2013.
2. Textbook of physiology – A.K.Jain, 5th edition, Avichal Publishing Company, 2014.
3. Pharmacology for dental and allied health sciences – PadmajaUdaykumar – 3rd edition – 2013
4. Essentials of medical pharmacology – Tripathi – 7th edition – 2013

COURSE OUTCOMES	
CO1	To student will be able to understand common drugs in respiratory disease.
CO2	To get know about Pulse oximeter, stethoscope, BP apparatus, peak flow meter

CO3	To get know about patient details in I. V fluids and IV injection.
CO4	To student will be able to understand of cardiac output, alveolar ventilation, o2 carrying capacity, vital capacity

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Management					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UARC17CT207	**CONCEPTS OF DISEASES AND ADVANCED CLINICAL EVALUATION RELATED TO RESPIRATORY CARE TECHNOLOGY – THEORY**
	Total Contact Periods – 60
	Total credits -4
	Course Designed by – Department of Respiratory
OBJECTIVES	This course is designed to help the students to develop an understanding of basic knowledge of pulmonology related disease conditions..

UNIT – I: Infectious Disease of Respiratory System

Upper respiratory tract infection – Acute Rhinitis, Acute Sinusitis, Acute pharyngitis Laryango Tracheiotis, Epiglottis, Acute otitis media

UNIT – II: Lower Respiratory Tract infection – I

Bronchitis, Pneumonia, Peumococcal pneumonia, Staphylococcal pneumonia, H Influenza infection, Klebsiella pneumonia, Pseudomonas Pneumonia, anaerobic pulmonary infection

UNIT – III: Lower Respiratory Tract infection – II

Empyema, Lung abscess, Bronchiectasis, Atypical pneumonia, Viral pneumonia, Mycobacterial infection, Tuberculosis – Clinical features, diagnosis and treatment (Pulmonary and Extra pulmonary TB), Mycobacterial infection other than tuberculosis, Aspergillus Lung disease, Nocardiosis, Actinomycosis, Tropical esinophilia, Pulmonary infection and complication in HIV infected patients, Hospital acquired pneumonia, Ventilator associated pneumonia

UNIT – IV: Noninfectious disease of respiratory system

Thrombo embolic disease, Pulmonary hypertension, sleep apnoea, alveolar ventilation and obesity hyperventilation

UNIT – V: Occupational Lung Diseases

Environmental and occupational disease, Silicosis; Coal worker's pneumoconiosis, Asbestos related diseases, Occupational asthma, Lung cancer – Aetiology, pathology, Classification, staging treatment.

Text Books:

1. Text book of pathology – pocket harsh Mohan's – 2nd edition – 2013
2. Basic pathology-pocket Robbins – 7th edition-2014

COURSE OUTCOMES						
CO1	To Understand the basic concepts of respiratory related Disease.					
CO2	The student will be able to understand the clinical evaluations of Disease Condition.					
CO3	To know detailed information about lower & upper tract infection.					
CO4	The student will be understanding Occupational Lung Diseases					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Management					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UARC17CL208	**CONCEPTS OF DISEASES AND ADVANCED CLINICAL EVALUATION RELATED TO RESPIRATORY CARE TECHNOLOGY – PRACTICAL**
	Total Contact Periods – 120
	Total credits -4
	Course Designed by – Department of Respiratory
OBJECTIVES	This course is designed to help the students to develop an understanding of basic knowledge of respiratory related disease conditions..

PRACTICALS/DEMONSTRATIONS

1. All the types of Pneumonia – Atypical pneumonia, Klebisiella pneumonia. Tuberculosis.
2. Case discussion – Lung abscess – Signs, symptoms, diagnosis and treatment, Occupational lung diseases – Signs, symptoms, diagnosis and treatment, Lung cancer – Etiology, pathology, classification and treatment

Text Books:

1. Principles and practice of medicine – Davidson's – 22nd edition – 2014
2. Hutchinson's Clinical Methods: An Integrated Approach to Clinical Practice – Hutchinson, 21st edition, CBS Publishers & distributors, 2012.

Exam pattern (UE) Total marks – 60

1. SPOTTERS-10 (10X2=20)
2. CHARTS/STATIONS-5(5X4=20)
3. VIVA-20

COURSE OUTCOMES	
CO1	To understand tuberculosis diseases and treatment
CO2	To get knowledge about sample collection/analysis & Interpretations

CO3	The student will be able know about biochemical parameters & their normal and abnormal values
CO4	To understand the viral markers related to Lung diseases

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES

COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Management					
Approval	47th Meeting of Academic Council held in Aug, 2018					

UARC17CT209	**CONCEPTS OF DISEASES AND ADVANCED CLINICAL EVALUATION RELATED TO RESPIRATORY CARE TECHNOLOGY -THEORY**
	Total Contact Periods – 60
	Total credits -4
	Course Designed by – Department of Respiratory
OBJECTIVES	This course is designed to help the students to develop an understanding of basic knowledge of clinical evaluation related to respiratory condition.

UNIT – I: Airways Disease

Asthma – Clinical presentation and diagnosis, investigation and management pharmacology, COPD definition, clinical, laboratory manifestation, patho – physiologies, management, pulmonary rehabilitation, Emphysema, Acute respiratory failure (ARF) – Pathogenosis of ARF, lung failure, pump failure, pulmonary pathology, leading to acute respiratory failure.

UNIT – II: Restrictive Lung Diseases

Acute Restrictive pathology, Equal diminishment of all lung volumes, Major disminishment of vital capacity, Atelectasis, Neuromuscular disease, Central nervous system depression

UNIT – III: Disease of pleura

Pleural effusion, Pneumo thorax. Disease of the chest wall – Mediastinal tumor, Pectusexcavatum, Pectuscarinatum

UNIT – IV: Clinical evaluation of the pulmonary system

Physical examination of the chest, Observation, Palpation, Auscultation, Abnormal findings, Assessment of portable chest x ray, principle of X rays, Assessing the chest film, The application of pulmonary function studies tidal volume, Minute volume, FVC, negative inspiratory force, clinical importance.

UNIT – V: Principle in the assessment of pulmonary performance-pulmonary rehabilitation. Disorders of the pulmonary interstitium

Interstitial lung disease. systemic disorders in lung – Rheumatoid arthritis, Systemic lupus erythromatosus, Progressive systemic sclerosis.

Text Books:

1. Text book of pathology – pocket harsh Mohan's – 2nd edition – 2013
2. Basic pathology – pocket Robbins – 7th edition – 2014

COURSE OUTCOMES						
CO1	To understand the basic knowledge about pathophysiology of respiratory related disease conditions.					
CO2	To learn about the airway disease					
CO3	To get learn about concepts of disease and outlines of clinical evaluation related to respiratory care.					
CO4	The student will be able to understand the basic disorders like Pleural effusion, Pneumo thorax. Disease of the chest wall					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Management					
Approval	47th Meeting of Academic Council held in Aug, 2018					

UARC17CL210	**CONCEPTS OF DISEASES AND ADVANCED CLINICAL EVALUATION RELATED TO RESPIRATORY CARE TECHNOLOGY – PRACTICAL**
	Total Contact Periods – 120
	Total credits -4
	Course Designed by – Department of Respiratory
OBJECTIVES	This course is designed to help the students to develop an understanding of basic knowledge of disease condition related to respiratory,

PRACTICALS/DEMONSTRATIONS

CHARTS/SPOTTERS – CLINICAL EVALUATION OF THE PULMONARY SYSTEM

Physical examination of the chest, Observation, Palpation, auscultation, Abnormal findings, Assessment of portable chest x ray, principle of X rays, Assessing the chest film, The application of pulmonary function studies tidal volume, Pulmonary rehabilitation.

Text Books:

1. Principles and practice of medicine – Davidson's – 22nd edition – 2014
2. Hutchinson's Clinical Methods: An Integrated Approach to Clinical Practice – Hutchinson, 21st edition, CBS Publishers & distributors, 2012.

Exam pattern (UE) Total marks – 60

1. SPOTTERS – 10 (10x2=20)
2. CHARTS/STATIONS-5 (5x4=20)
3. VIVA-20

COURSE OUTCOMES						
CO1	To demonstrate the how to do physical examination of the chest					
CO2	To understand the how to differentiate normal & Abnormal findings					
CO3	The student will be understand about Assessment of portable chest x ray					
CO4	The student will be able to understand about the application of pulmonary function studies tidal volume & Pulmonary rehabilitation.					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Management					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UARC17CT211	**HEALTH CARE MANAGEMENT**
	Total Contact Periods – 60
	Total credits -4
	Course Designed by – Department of Hospital Administration
OBJECTIVES	To Explain the effect of personality, attitudes, perceptions and attributions on their own and other's behaviors in team and organizational settings.

UNIT I: Concept of Health Care and Health Policy

Health in Medical Care, Indigenous systems of Health Care & their relevance, Framework for Health Policy Development.

UNIT II: Health Organisation

Historical development of Health Care System in the third world & India, Organization & Structure of Health administration in India, Type of Health Organization including International Organizations, Private & Voluntary Health care provider, Distribution of Health Care Services, Health Care System in Public Sector Organization, Health systems of Various Countries.

UNIT III: Health Policy and National Health Programme

National Health Policy, Drug Policy, National Health Programs (Malaria, T.B., Blindness, AIDS etc.,) Evaluation of Health Programs (Developing indicators for evaluation), Medical Education & Health Manpower Development.

UNIT IV: Health Economics – Fundamentals of Economics

Scope & Coverage, Demand for Health Services, Health as an Investment, Population, health of Economic Development. **Economics of Health-**

Population based health services, Economics of Communicable and Non Communicable diseases

UNIT V: Methods & Techniques of Economic Evaluation of Health Program

Cost Benefit & Cost Effective Methods

- **Household & Health**

Health Expenditure & Outcome, Rationale for Government action, Household capacity,

income and schooling

- **Health Insurance**

COURSE OUTCOMES						
CO1	The student will be able to Develop skills in using materials tools and/or technology central to health care management					
CO2	The student will be able to understand perspectives and values of health care management;					
CO3	The student will be able to Integrate health care management theory with real world situations					
CO4	The student will be to Develop the ability to work productively with others in diverse teams					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UARC17CT212	**COMPREHENSIVE VIVA: RESPIRATORY DISEASES**
	Total Contact Periods –180
	Total credits -5
	Course Designed by – Department of Respiratory
OBJECTIVES	This course is designed to help the students to develop an understanding of basic knowledge about overall respiratory related pathophysiology.

1. Physical examination of the chest, Observation, Palpation, auscultation, Abnormal findings, Assessment of portable chest x ray, principle of X rays, Assessing the chest film, The application of pulmonary function studies tidal volume, Pulmonary rehabilitation.

2. All the types of Pneumonia – Atypical pneumonia, Klebisiella pneumonia. Tuberculosis.
3. Case discussion – Lung abscess – Signs, symptoms, diagnosis and treatment, Occupational lung diseases – Signs, symptoms, diagnosis and treatment, Lung cancer – Etiology, pathology, classification and treatment

Text Books:

1. Principles and practice of medicine – Davidson's – 22nd edition – 2014
2. Hutchinson's Clinical Methods: An Integrated Approach to Clinical Practice – Hutchinson, 21st edition, CBS Publishers & distributors, 2012.

3. Principles and practice of medicine – Davidson's – 22nd edition – 2014

4. Hutchinson's Clinical Methods: An Integrated Approach to Clinical Practice – Hutchinson, 21st edition, CBS Publishers & distributors, 2012.

COURSE OUTCOMES						
CO1	To demonstrate the how to do physical examination of the chest, , Observation, Palpation, auscultation,					
CO2	To understand the how to differentiate Abnormal findings and interpretations					
CO3	The student will be understand about Assessment of portable chest x ray and finding.					
CO4	The student will be able to understand about the application of pulmonary function studies tidal volume & Pulmonary rehabilitation.					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UARC17CT313	**BASICS OF RESPIRATORY CARE TECHNOLOGY – THEORY**
	Total Contact Periods –60
	Total credits -4
	Course Designed by – Department of Respiratory
OBJECTIVES	This course is designed to enable students to acquire understanding of basic of oxygen therapy, gas analysers, manual resuscitators, artificial air way

UNIT I: Oxygen Therapy

- Causes and responses to hypoxemia
- Clinical signs of hypoxemia
- Geals of oxygen therapy
- Oxygen therapy devices
- Hazards of oxygen therapy
- Uses of humidification
- Possible of inadequate humidification
- Possible results if leained airway
- Types of humidifies (including active and passive methods of humidification)
- Goals of aerosol therapy
- Hazards of aerosol therapy
- Assessment of aerosol therapy
- Factors influencing aerosol deposition in the lungs
- Particle deposition
- Aerosol generators

UNIT II: Nebulisers and Metered Dose Inhaler

- Types of nebulisers
- Aerosol output
- Small volume nebuliser therapy – definition, physiological rationale

UNIT III: Gas Analysers (Oxygen, Carbon – Dioxide)

- Gas analysis
- Transcutaneos oxygen monitors
- Pulse oximeters
- Capnography

UNIT IV: Manual Resuscitators

- Types of resuscitator bags, bruits airway
- Indications
- Hazards

UNIT V: Artificial air way (oral and Nasal Endotracheal tubes tracheostomy tubes)

- Parts of airway and features
- Types sizes and method of insertion
- Indications for use
- Care of long term airway and complications
- Face mask – types sizes and its usage

Reference Books: -

1. George Mathew.K Medicine Prep manual 1st edition. B.I Churchill Livingstone Pvt Ltd. New delhi1995
2. Scot Irwin, Jan Stephen tecklin, Cardiopulmonary Physical therapy, a guide to practice, 3rd edition, USA.

COURSE OUTCOMES	
CO1	To get knowledge about oxygen therapy
CO2	To get knowledge about gas analysers (oxygen, carbon – dioxide)
CO3	To get knowledge about types of resuscitator bags, bruits airway, indications & hazards
CO4	The student will be able to understand about artificial air way (oral and nasal endotracheal tubes tracheostomy tubes)
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES	

COs\POs	a	b	c	d	e	f
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	47th Meeting of Academic Council held in Aug, 2018					

UARC17CL314	**BASICS OF RESPIRATORY CARE TECHNOLOGY – PRACTICAL**
	Total Contact Periods –120
	Total credits -4
	Course Designed by – Department of Respiratory
OBJECTIVES	This course is designed to help the students to develop an understanding of basic knowledge about respiratory care.

1. Oxygen Therapy
2. Gas Analysers (Oxygen, Carbon – Dioxide)
3. Artificial air way (oral and Nasal Endotracheal tubes tracheostomy tubes)
    - Parts of airway and features
    - Types sizes and method of insertion
    - Indications for use
    - Care of long term airway and complications
    - Face mask – types sizes and its usage

Exam pattern (UE) Total marks – 60

1. SPOTTERS – 10 (10x2=20)
2. CHARTS/STATIONS-5 (5x4=20)
3. VIVA-20

Reference Book: -

1. Donna Frownfelter, Elizabeth Dean (eds) Principles and practices of cardiopulmonary physical therapy, 3 rd Mosby, USA.
2. Craig L, Scanlan, Egan's Fundamentals of Respiratory care, 6th edition Mosby, 1995.

COURSE OUTCOMES	
CO1	To demonstrate the oxygen therapy
CO2	To get knowledge about gas analysis and interpretation.
CO3	The students will be able to understand about artificial airway
CO4	The student will be able to understand about parts of airway and features, types sizes and method of insertion, indications for use, care of long term airway and complications & face mask – types sizes and its usage

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UARC17CT315	**BASICS OF RESPIRATORY DIAGNOSTIC PROCEDURES - THEORY-**
	Total Contact Periods –60
	Total credits -4
	Course Designed by – Department of Respiratory
OBJECTIVES	This course is designed to help the students to develop an understanding of basic knowledge about mechanical ventilator

UNIT I:

- Mechanical Ventilation
- Initiation of Mechanical ventilation
- Modes of mechanical ventilation
- Different types of ventilation
- Monitoring during mechanical ventilation

UNIT II:

- Care of patients with mechanical ventilation
- Troubleshooting during mechanical ventilation
- Complications during mechanical ventilation
- Weaning during mechanical ventilation

UNIT III:

- PEEP, Auto PEEP
- Weaning criteria
- Post extubation care
- Lung recruitment maneuvers
- Prone Ventilation

UNIT IV:

- Non Invasive mechanical ventilation
- Indication
- Contra indication

- Modes
- Monitors
- Complication

UNIT V:

- Airway management in mechanical ventilation – intubation, common artificial airways, intubation procedures, management of endotracheal and tracheostomy tubes, extubation, complications of the above.
- Tracheostomy minitracheostomy Endotracheal intubation
- Humidification

REFERENCE BOOK: -

1. Stevansadowsky, H Ellan, A Hillegas, Essential of Cardiopulmonary physical therapy, W.B saunders company USA.
2. John F Murray, Jay A Nadel, Text book of Respiratory Medicine, 2nd edition W.B saunders company USA.

COURSE OUTCOMES						
CO1	The student will be able to understand about mechanical ventilator					
CO2	To get knowledge about modes of mechanical ventilator					
CO3	To understand the diagnostic tools related to respiratory system.					
CO4	To get knowledge about airway management in mechanical ventilation – intubation, common artificial airways, intubation procedures					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**

1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UARC17CL316	**BASICS OF RESPIRATORY DIAGNOSTIC PROCEDURES - PRACTICAL**
	Total Contact Periods –60
	Total credits -4
	Course Designed by – Department of Respiratory
OBJECTIVES	This course is designed to help the students to develop an understanding of basic knowledge related to respiratory care.

1. Mechanical Ventilation
2. Initiation of Mechanical ventilation
3. Modes of mechanical ventilation
4. Different types of ventilation
5. Monitoring during mechanical ventilation
6. Non Invasive mechanical ventilation
7. Indication
8. Contra indication & Modes
9. Monitors & Complication
10. Airway management in mechanical ventilation – intubation, common artificial airways, intubation procedures, management of endotracheal and tracheostomy tubes, extubation, complications of the above.

REFERENCE BOOK: -

1. Stevansadowsky, H Ellan, A Hillegas, Essential of Cardiopulmonary physical therapy, W.B saunders company USA.
2. John F Murray, Jay A Nadel, Text book of Respiratory Medicine, 2nd edition W.B saunders company USA.

Exam pattern (UE) Total marks – 60

1. SPOTTERS – 10 (10x2=20)
2. CHARTS/STATIONS-5 (5x4=20)

3. VIVA-20

COURSE OUTCOMES						
CO1	To get knowledge about monitor during mechanical ventilator					
CO2	To get knowledge about respiratory management of ventilator patients					
CO3	To get knowledge about how to manage mode of mechanical ventilator.					
CO4	To understand about intubation, common artificial airways, intubation procedures, management of endotracheal and tracheostomy tubes, extubation.					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UARC17CT317	**PHYSICIANS OFFICE MANAGEMENT**
	Total Contact Periods – 60
	Total credits -4
	Course Designed by – Department of Nephrology
OBJECTIVES	To promote scientific management of hospital and advancement of health care systems so as to make it rational, responsive and cost efficient

UNIT I. Outpatient Section

Registration of new cases, Registration of repeat cases, Patient record guide, Laboratory X-Ray reports & reports & reports filing, Alpha index typing & Filing, O.P. Records coding
(disease & indexing), O.P. records retrieval, O.P. Statistics

UNIT II. Inpatient Section

Admitting office procedure, Inpatient record removal & forwarding, Ward Census,

UNIT III. Assembling & deficiency checks, I.P. record coding & indexing,

UNIT IV. Discharge Analysis

Incomplete record control, Completed record control, Medico legal procedures & issue of Medical certification, Record retention & destruction of O.P. & I.P. records,

UNIT V. Miscellaneous

Hospital reception, Secretarial practice, Library (Medical)

REFERENCE BOOKS

- Financial Management of the Medical Practice ,J. Max Reiboldt, American Medical Association

- Saunders Medical Office Management,Alice Anne Andress CCS-P CCP

COURSE OUTCOMES	
CO1	The student will be able to Understand and apply resource management concepts (personnel, finance, and material resources) and the processes and strategies needed in specific hospital sectors

CO2	The student will be able to Communicate effectively and develop their leadership and teambuilding abilities
CO3	Apply modern change management and innovation management concepts to optimize structures
CO4	The student will be to Analyze existing hospital service policies and enhance their alignment within the local and national context

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES

COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE3028	**ESSENTIALS OF MEDICAL TRANSCRIPTION**
	Total Contact Periods – 7
	Total credits -2
	Course Designed by – Department of MRD
OBJECTIVES	Provide Hands on training on English Language and listening comprehension and provide foundation to learn medical terminology & learn laboratory report

Unit 1

The Medical Transcriptionist ‘s career including Ethical& Legal Responsibilities Introduction to Medical transcription, Job Opportunities,Transcription Skills, Medical records, Certification for Medical Transcriptionists, Ethical and Legal responsibilities

Unit 2

Equipments in Transcription Equipment, Computer Systems, Ergonomics, Dictation Equipments, Hand and Foot Control Dictation, Transcription Preparation

Unit 3

Transcription Guidelines Punctuations, Proof reading notations, Formats and styles, SOAP for Chart notes; Discharge Summary

Unit 4 PRACTICAL:

1. Equipments for Medical Transcription,2. Typing for the beginners, 3. Vocabulary, 4. Proof reading Notations, 5. Formats and styles in document preparation, 6. Preparation of chart notes, 7. Listening Comprehension, 8. Transcription check off sheet

References Books:

1. Medical Key boarding, Typing, and Transcribing Techniques and procedures 4th Edition, March

Otis Diehl, Marilyn Takahashi Fordney, W.B. Saunders Company

2. The AAMT Book of Style for Medical Transcription, Claudia J. Tessier

3. CD ‘s available for:

a. Stedman ‘s Electronic Medical Dictionary 4.0

b. American Drug Index 2003

Text Books:

1. Medical Key boarding, Typing, and Transcribing Techniques and procedures 4th Edition, March

Otis Diehl, Marilyn Takahashi Fordney, W.B. Saunders Company

2. The AAMT Book of Style for Medical Transcription, Claudia J. Tessier

COURSE OUTCOMES	
CO1	The student will be able to Demonstrate their basic skills in the knowledge of Vocabulary, Medical terminology
CO2	The student will be able to Demonstrate their basic skills in the preparation of chart notes.
CO3	The student will be able to Demonstrate skills in listening comprehension
CO4	The student will be able to identify accurate format for medical document preparation

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Medical Records					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE3029	**COMMUNICATION AND SOFT SKILL**
	Total Contact Periods – 7
	Total credits -2
	Course Designed by – Department of Human Resources
OBJECTIVES	This course is designed to equip the students with essential soft skills needed for workplace and improve personality.

LEARNING OUTCOME:

This course is designed to help the students to

- Foster healthy attitude.
- Develop effective inter and intra personal skills to be an effective team worker.
- Communicate effectively in both academic and professional setups

UNIT: I ASPECTS OF COMMUNICATION

Importance of communication, Process, Barriers, Nonverbal Communication

UNIT: II SPEAKING

How to Open and Close conversations, Introductions and Address System, Expressing Courtesy, Giving Compliments and replying to Compliments, Presentation Skills, Telephonic conversation and telephone etiquette

UNIT – III PRESCRIBED READING

Tom Sawyer by Mark Twain, Bacon ‘s Essays: - Of Goodness and goodness of nature

UNIT – IV WRITING

Letter writing - Letter of Complaints, Inviting and Declining an invitation, Writing Memos and Emails, Grammar, Spelling & Punctuation, Use of Dictionary & Thesaurus.

UNIT – V SOFT SKILLS

Active Listening Skills, Assertive Skills, Negotiation and Persuasive Skills, Interview Skills

Text Book:

Developing Communication Skills by Krishna Mohan and Meera Banerji, II edition, Macmillan.

Reference Books:

1. Communication Skills for Engineers and Scientists by Sangeeta Sharma and Binod Mishra, PHI Learning Private Limited, New Delhi.

2. English and soft skills by S.P. Dhanavel, Orient Black Swan

3. Effective English Communication by Krishna Mohan and Meenakshi Raman, Tata McGraw – Hill Publishing Company Limited.

4. Technical Communication – Principles and Practice, by Meenakshi Raman and Sangeetha Sharma, II edition, Oxford University Press.

5. Developing Communication Skills by Krishna Mohan and Meera Banerji, II edition, Macmillan.

6. The Complete Guide to Functional Writing in English by M. Sarada, Sterling Publishers (P) Ltd., New Delhi.

7. Speaking Naturally: Communication Skills in American English by Bruce Tillitt and Mary Newton Bruder, Cambridge University Press.

UARC17CT318	**COMPREHENSIVE VIVA: BASICS OF RESPIRATORY CARE TECHNOLOGY & BASICS OF RESPIRATORY DIAGNOSTIC PROCEDURES**
	Total Contact Periods –180
	Total credits -5
	Course Designed by – Department of Respiratory
OBJECTIVES	This course is designed to help the students to develop an understanding of basic knowledge

1. Oxygen Therapy
2. Gas Analysers (Oxygen, Carbon – Dioxide)
3. Artificial air way (oral and Nasal Endotracheal tubes tracheostomy tubes)
    - Parts of airway and features
    - Types sizes and method of insertion
    - Indications for use
    - Care of long term airway and complications
    - Face mask – types sizes and its usage
4. Mechanical Ventilation
5. Initiation of Mechanical ventilation
6. Modes of mechanical ventilation
7. Different types of ventilation
8. Monitoring during mechanical ventilation
9. Non Invasive mechanical ventilation
10. Indication
11. Contra indication & Modes
12. Monitors & Complication
13. Airway management in mechanical ventilation – intubation, common artificial airways, intubation procedures, management of endotracheal and tracheostomy tubes, extubation, complications of the above.

REFERENCE BOOK: -

1. George Mathew.K Medicine Prep manual 1st edition. B.I Churchill Livingstone Pvt Ltd. New delhi1995
2. Scot Irwin, Jan Stephen tecklin, Cardiopulmonary Physical therapy, a guide to practice, 3rd edition,USA.
3. Stevansadowsky, H Ellan, A Hillegas, Essential of Cardiopulmonary physical therapy, W.B saunders company USA.

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COURSE OUTCOMES						
CO1	The student will be able to understand about basic knowledge about mechanical ventilator					
CO2	To understand how to take care of mechanical ventilator patients					
CO3	To get knowledge about how to maintain I.C.U protocols & airway management in mechanical ventilator.					
CO4	To demonstrate about Different types of ventilation					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UARC17CT319	**ADVANCED RESPIRATORY CARE TECHNOLOGY-THEORY**
	Total Contact Periods –60
	Total credits -4
	Course Designed by – Department of Respiratory
OBJECTIVES	This course is designed to help the students to develop an understanding of basic knowledge pharmacotherapy for mechanical ventilation.

UNIT I:

Pharmacotherapy for mechanical ventilation –

- This includes drugs for improving ventilation, blocking agents like nitric oxide, propafol and Anaesthetic gases.

UNIT II:

Effect of PEEP –

- Pulmonary considerations, effects on the cardiovascular system, Haemodynamics, renal neurological considerations.

UNIT III:

Aerosol Therapy -

- Goals of aerosol therapy
- Hazards of aerosol therapy
- Assessment of aerosol therapy
- Factors influencing aerosol deposition in the lungs
- Particle deposition

UNIT IV:

Haemodynamics monitoring:

- ECG arterial catheter, CVP, pulmonary artery catheter, Cardiac output and vascular resistance calculation, Preload after load contractility assessment, calculation of haemodynamic values, monitoring of mixed venous saturation.

Text Book: -

1. John F Murray, Jay A Nadel, Text book of Respiratory Medicine, 2nd edition W.B saunders company USA.
2. Braunwald (edr), Heart disease, A text book or cardiovascular medicine, 4th edition, W.B saunders company, USA 1992.

COURSE OUTCOMES						
CO1	The student will be able to understand about drugs for improving ventilation					
CO2	To get knowledge about effect of PEEP					
CO3	Get knowledge about assessment of aerosol therapy and factors influencing aerosol deposition in the lungs					
CO4	The student able to understand about ECG arterial catheter, CVP, pulmonary artery catheter, Cardiac output and vascular resistance calculation, Preload after load contractility assessment, calculation of hemodynamic values and monitoring of mixed venous saturation.					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UARC17CL320	**ADVANCED RESPIRATORY CARE TECHNOLOGY-PRACTICAL**
	Total Contact Periods –120
	Total credits -4
	Course Designed by – Department of Respiratory
OBJECTIVES	This course is designed to help the students to develop an understanding of basic knowledge about neurological disease condition

Practical Exercises:

1. Interpretation and correction of a given arterial blood gas
2. Interpretation and correction of a given electrolyte abnormality
3. Calculation of body surface area, nutritional requirement and fluid electrolyte requirement
4. Setting of ventilator for a given case
5. Managing a simulated ventilator accident circuit including disconnection, kinking of tubes recognition o various alarms etc.
6. Identification of various respiratory circuit components and their used, method of sterilization and complications related them.
7. Identification of drugs and their pharmacology
8. Calculating lung compliance, interpretation of a PFT and management

Text Book: -

1. John F Murray, Jay A Nadel, Text book of Respiratory Medicine, 2nd edition W.B saunders company USA.
2. Braunwald (edr), Heart disease, A text book or cardiovascular medicine, 4th edition, W.B saunders company, USA 1992.
3. Shoemaker, Ayres, Greenvik, Holbrook, Text book of critical care, 4th edition, W.B saunders company 1984

COURSE OUTCOMES	
CO1	To understand the basic diagnostic tool related respiratory condition
CO2	To get knowledge about respiratory disease related to clinical examination & investigations
CO3	To get knowledge about identification of various respiratory circuit components and their used, method of sterilization and complications
CO4	The student will be able to understand Calculating lung compliance, interpretation of a PFT and management.

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UARC17CT321	**ADVANCED RESPIRATORY CARE, CARDIO PULMONARY REHABILITATION & EQUIPMENTs – THEORY**
	Total Contact Periods –60
	Total credits -4
	Course Designed by – Department of Respiratory
OBJECTIVES	This course is designed to help the students to develop an understanding of basic knowledge cardiopulmonary rehabilitation, equipment in respiratory care

UNIT I:

- Pulmonary Rehabilitation
- Definition and Aims
- Benefits of pulmonary rehabilitation
- Selection of patients

UNIT II:

- Patient assessment for pulmonary rehabilitation
- Assessment of dyspnea
- Quality of life
- Pulmonary rehabilitation team
- Structure of pulmonary rehabilitation

UNIT III:

- Cardiac Rehabilitation
- Goals
- Cardiac rehabilitation team
- Rationale for cardiac rehabilitation

UNIT IV:

- Medical Gas Pipelines
- Oxygen Flow meters
- Humidifiers

Heat & Moisture Exchanger

Heated Humidifier

- Defibrillators
- Capnography
- Pulse Oximeter

UNIT V:

- Cuff Pressure manometer
- Peak Expiratory flow meter
- AMBU
- Spirometor
- Ventilator
- O2 Analyser
- Laryngoscope, Bronchoscope

Text Book: -

1. George Mathew.K Medicine Prep manual 1st edition. B.I Churchill Livingstone Pvt Ltd. New delhi1995
2. Scot Irwin, Jan Stephen tecklin, Cardiopulmonary Physical therapy, a guide to practice, 3rd edition,USA.
3. Stevansadowsky, H Ellan, A Hillegas, Essential of Cardiopulmonary physical therapy, W.B saunders company USA.

COURSE OUTCOMES						
CO1	To understand the Pulmonary Rehabilitation and Benefits of pulmonary rehabilitation					
CO2	To get knowledge about Cardiac rehabilitation team & Assessment of dyspnea					
CO3	To learn about regulatory function of respiratory system					
CO4	The student will be able to understand clinical examination of oxygen flow meters, humidifiers, defibrillators, capnography and pulse oximeter					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UARC17CL322	**ADVANCED RESPIRATORY CARE, CARDIO PULMONARY REHABILITATION & EQUIPMENT - PRACTICAL**
	Total Contact Periods –120
	Total credits -4
	Course Designed by – Department of Respiratory
OBJECTIVES	This course is designed to help the students to develop an understanding of basic knowledge about respiratory related diagnostic tool

Practical Exercises:

1. Interpretation and correction of a given arterial blood gas
2. Interpretation and correction of a given electrolyte abnormality
3. Calculation of body surface area, nutritional requirement and fluid electrolyte requirement
4. Setting of ventilator for a given case
5. Managing a simulated ventilator accident circuit including disconnection, kinking of tubes recognition o various alarms etc.
6. Identification of various respiratory circuit components and their used, method of sterilization and complications related them.
7. Identification of drugs and their pharmacology
8. Calculating lung compliance, interpretation of a PFT and management

Text Book: -

1. John F Murray, Jay A Nadel, Text book of Respiratory Medicine, 2nd edition W.B saunders company USA.
2. Braunwald (edr), Heart disease, A text book or cardiovascular medicine, 4th edition, W.B saunders company, USA 1992.
3. Shoemaker, Ayres, Greenvik, Holbrook, Text book of critical care, 4th edition, W.B saunders company 1984

COURSE OUTCOMES						
CO1	To demonstrate the procedure in arterial blood gas and interpretation					
CO2	To get knowledge about basic interpretation of a PFT and management					
CO3	To learn about method of sterilization and complications related them.					
CO4	The student will able to understand Interpretation and correction of a given electrolyte abnormality					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UARC17CT323	**TRAUMA LIFE & CARDIAC LIFE SUPPORT**
	Total Contact Periods – 60
	Total credits -4
	Course Designed by – Department of Cardiology
OBJECTIVES	To get knowledge about handling and management of trauma cases like musculoskeletal, head, and thermal burns

UNIT I. TRAUMA LIFE (Part 1)

- BLS
- TRIAGE

  a. Primary Survey

  b. Secondary Survey
- Airway & Ventilatory management
- Shock
- Central & peripheral venous access
- Thoracic trauma – Tension pneumothorax
- Other thoracic injuries
- Abdominal trauma – Blunt injuries
- Abdominal trauma – Penetrating injuries

UNIT II. TRAUMA LIFE (Part 2)

- Spine and spinal cord trauma
- Head trauma
- Musculoskeletal trauma
- Electrical injuries
- Thermal burns
- Cold injury

UNIT III. TRAUMA LIFE (Part 3)

- Paediatric trauma
- Trauma in pregnant women
- Workshop BLS

- Workshop cervical spine immobilization
- Imaging studies in trauma

UNIT IV. CARDIAC LIFE SUPPORT (Part 1)

- BLS
- The universal algorithm for adult ECC
- Ventricular fibrillation/Pulseless ventricular tachycardia algorithm
- Pulseless electrical activity (PEA) / asystole algorithm
- Bradycardia treatment algorithm
- Tachycardia Treatment algorithm

UNIT V. CARDIAC LIFE SUPPORT (Part 2)

- Hypotension / Shock
- Acute myocardial infarction
- Paediatric Advanced life support
- Airway management
- Defibrillation
- Drugs used in ACLS
- Emergency Cardiac pacing
- AED
- Techniques for oxygenation and ventilation

REFERENCE BOOKS:

- ECG Made Easy –AtulLuthra
- Reference by PGDCC – IGNOU Handbooks for ECG, ECHO and Stress Test
- An Introduction to Electrocardiography:Schamroth Colin
- Clinical Electrocardiography: Goldberger. A

COURSE OUTCOMES						
CO1	The student will be able to know basic knowledge about BLS and triage					
CO2	The student will be able to understand the Handling and management of Airway ventilator and shock					
CO3	The student will be able to Know about handling of Paediatric trauma cases					
CO4	The student will be to know about Abdominal trauma in blunt injuries and penetrating injuries					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UARC17CL324	**COMPREHENSIVE VIVA: ADVANCED RESPIRATORY CARE TECHNOLOGY & ADVANCED CARDIO PULMONARY REHABILITATION & EQUIPMENTS IN RESPIRATORY CARE TECHNOLOGY**
	Total Contact Periods –180
	Total credits -5
	Course Designed by – Department of Respiratory
OBJECTIVES	This course is designed to help the students to develop an understanding of basic knowledge about how to manage

1. Interpretation and correction of a given arterial blood gas
2. Interpretation and correction of a given electrolyte abnormality
3. Calculation of body surface area, nutritional requirement and fluid electrolyte requirement
4. Setting of ventilator for a given case
5. Managing a simulated ventilator accident circuit including disconnection, kinking of tubes recognition o various alarms etc.
6. Identification of various respiratory circuit components and their used, method of sterilization and complications related them.
7. Identification of drugs and their pharmacology
8. Calculating lung compliance, interpretation of a PFT and management

COURSE OUTCOMES	
CO1	To demonstrate the arterial blood gas and interpretation
CO2	To demonstrate the setting ventilator

CO3	To understand about Calculating lung compliance, interpretation of a PFT and management
CO4	The student will be able to understand about calculation of body surface area, nutritional requirement and fluid electrolyte requirement

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES

COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	47th Meeting of Academic Council held in Aug, 2018					

UARC17CL425	**INTERNSHIP**
	Total Contact Periods – 675
	Total credits -15
	Course Designed by – Department of Respiratory
OBJECTIVES	To gain knowledge about all kind of respiratory care

Regulation for Internship

Internship is an important part of training wherein an Allied Health Science Graduate acquires skills, and applies his knowledge gained during his course of study.

Objectives:

1. To Facilitate Reinforcement of Training.
2. To Develop Professionalism, Communication and Team Building skills.
3. To help in understating of ethical Practices like
    - Rights and dignity of patients
    - Ethical Conduct and professional obligations to colleagues, patients, families and community

The Internship is compulsory for all the candidates. It shall commence after the students have completed and passed all academic and clinical requirements.

The internship shall be for a duration of one year.

The degree shall be awarded after satisfactory completion of internship.

EVALUATION OF INTERNEES

Formative and Summative evaluation are carried out. A **Log Book** is maintained by all internees. No Marks are allotted. Satisfactory completion of Log Book is essential for completion of internship.

Day to day assessment of the internees during the internship posting should be done (Log Book). Summative evaluation is based on observation of the supervisors of different department and their records in the log books. Based on the formative and summative evaluation the head of department shall issue certificate of satisfactory completion of training, following which the university shall award the degree.

During internship a project is allocated to each intern by the respective Heads of departments.
The project work is marked for 100 (including viva).
Six credits are given for the project
30 hours per credit
Total 180 hours
The Project is done for a Maximum duration of 6 months.

Internship credits

The internship is given 15 Credits. (i.e.) 45 hrs/Credit. A Total of 675 hours.

After Undergoing internship for a period of Six months, each Department shall conduct an **internal evaluation** of the student to assess the skills developed and progress of the student before issuing the certificate of completeness.
The duration of the posting and skill acquisition in various technology courses are attached.

Number of Working days for interns:-

All Sundays are holidays.

On Government holidays duties are allotted on turns to the interns. In cases of leave or absence extension of posting shall be given which is done at the discretion of Head of Department.

COMMON TO ALL BRANCHES

INTERNSHIP [VII & VIII SEMESTER]

Sl. No.	Programme	Hours Prescribed	University Examination			
			Project Evaluation	Viva	Total	Credits
1	Internship	675	-	-	-	15
2	Project	180	80	20	100	6
	No Minimum for Passing		Total Credits		21	

Duration of Postings

Out Patient department - 15 days

In Patient department - 15 days

Pulmonary Function Lab - 15 days

Respiratory Intensive Care Unit - 1 month

Chest Physiotherapy Clinic - 15 days

Bronchoscopy Room - 15 days

Minor Procedure Room - 15 days

(Thoracentesis, FNAC Lung, Pleural and Lung Biopsy)

Out Patient Resuscitation Room - 15 days

(Nebulisation and Oxygen suplimentation)

Home Oxygenation treatment - 1 month

Sleep lab - 15 days

(To diagnose OSAHS and titration of CPAP and BiPAP)

Medical ICU - 2 months

Cardiac ICU - 1 months

Cardio thoracic and Neuro - 1 months

Radiology Department - 1 month

Paediatric & Neonatal ICU - 1 months

Out Patient Department

Patient Assessment

- Patient history:
- Date of history taking
- Patient data: name, age, sex, race and occupation
- Primary complaints
- Secondary complaints
- Present illness history and symptoms
- Family history
- Medical history of cardiopulmonary disease

Physical Examination:

- Vital signs (Temp. BP, RR, HR)
- Talk to the patient
- Interview the patient to elicit answer
- Determine the patient's complete respiratory conditions by observation
- Determine the patient's complete respiratory conditions by palpation and auscultation
- Determine and continue to monitor how the patient responds to the treatment and procedure
- Evaluate the physician's order and patient respiratory care plan, make any recommendations or changes as needed
- Modify the treatment or procedures and recommend any changes in the patients' respiratory care plan depending on the response
- Record the treatment and or procedure on the patient's charts and communicate with the other members of the health care team
- Patient to be taken for the reference followed by physician's order

In Patient Department

Patient Assessment

- Patient history:

- Date of history taking
- Patient data: name, age, sex, race and occupation
- Primary complaints
- Secondary complaints
- Present illness history and symptoms
- Family history
- Medical history of cardiopulmonary disease

Physical Examination:

- Vital signs (Temp. BP, RR, HR)
- Talk to the patient
- Interview the patient to answer
- Determine the patient's complete respiratory conditions by observation

Cardiopulmonary Resuscitation (Emergency Care)

- Perform cardiopulmonary resuscitation (CPR) in adults and in paediatric management of acute respiratory emergencies
- Basic life support / advance cardiac life support

Biomedical

- Trouble shooting:
- Pulse oximetry
- Mechanical ventilators
- Monitors
- Ultrasonic nebuliser

Radiology

- X-ray chest / CT interpretation
- USG guided aspiration

Work Profile

A respiratory care technologist rotates around the Medical / Cardiac / Paediatrics / Neonatal Intensive Care Units as well as the pulmonary function testing laboratory.

- Determine the patient's complete respiratory conditions by palpation & auscultation

- Monitor how the patient responds to the treatment and procedures
- Evaluate the physician's order and patient respiratory care plan, make any recommendations or changes as needed
- Record the treatment and or procedure on the patient's charts and communicate with the other members of the health care team
- Patient to be taken for the reference followed by physician's order

Pulmonary Function Testing

- Perform the pulmonary function test (Including be side spirometry)
- Interpret spirometry results

Intensive Care Unit

Oxygen Therapy

- Perform oxygen administration procedures to ensure that the patient is adequately oxygenated
- Administration of oxygen therapy

Chest Physiotherapy

- Coughing and deep breathing
- Incentive spirometry

Postural Drainage Therapy

- Perform postural drainage therapy
- Chest percussion
- Chest vibration

Arterial Blood Gases

- Make a recommendation for arterial puncture to obtain a blood sample for analysis
- Obtain an arterial blood sample

- Analyse arterial blood
- Interpret the arterial blood gas results in order to determine how the patient is responding to respiratory care
- Interpret the results of CO oximetry blood gas analysis
- Interpret the results of pulse oximetry

Airway Management

- Care of the artificial airways and equipment to maintain a patent airway
- Ensure that the artificial airway is properly placed and maintained
- Suctioning the airway

Intermittent Positive – Pressure Breathing

Mechanical Ventilation

- Intubation
- Indication for Ventilatory support
- Modes of ventilation
- Setting of ventilation
- Weaning
- Extubation
- CPAP therapy
- BIPAP therapy

COURSE OUTCOMES	
CO1	The student will be able to analyze and understand CPAP therapy
CO2	The student will be able to get knowledge of ventilator
CO3	The student will be able to Find out Intubation
CO4	The student will be able to know how to do modes of ventilation setting of ventilation weaning & extubation

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Library Science					
Approval	47th Meeting of Academic Council held in Aug, 2017					

UAH17CE1020	**FUNDAMENTALS OF BIOSTATISTICS**
	TotalContactPeriods–4
	Total credits -2
	Course Designed by–Department of Community Medicine
OBJECTIVES	The course will offer basic knowledge about Biostatistics and to correctly apply a variety of statistical procedures and tests according to objective of study

UNIT I: Introducing the Basics

Introduction, Graphical representation of data, Data collection, Diagrammatic and Graphical Presentation of data, Types of data, limitations.

UNIT II: Measures of Central Tendency & Dispersion

Measures of Central Tendency; Mean, Median, Mode, Geometric mean, Harmonic mean for raw data. Measures of dispersion; Quartile deviation, Mean Deviation - Standard Deviation - Coefficient of variation- Range

UNIT III: Probability

Introduction to Probability, Theorems of probability; Bayer‘s Theorem, Probability Distributions; Discrete & Continuous distributions, Binomial Distribution, Poisson Distribution, Normal Distribution.

UNIT IV: Correlation & Regression Analysis

Correlation Analysis, Types of correlation; Rank Correlation Coefficient. Regression analysis, Types of Regression, Assumptions; Comparison to Correlation.

UNIT V: Hypothesis Testing

Introduction; Types of sampling, Hypothesis testing; Type of errors, Parametric & Non-parametric tests; Mann Whitney’s U test, Chi-square, t-tests, ANOVA.

REFERENCES

1. Don. Mc Neil - Epidemiological Research Methods - Oxford University Press, London.

2. Biostatistics –Principle & Practice – McGraw Hill Education.

3. http://www.ats.ucla.edu/stat/

4. Ahttp://www.statsoft.com/textbook/basic-statistics/

COURSEOUTCOMES	
CO1	The student will be able to understand and apply the Biostatistics.
CO2	The student will be able to use the software independently for the data analysis.
CO3	The student will be able determine the correct procedures to use in a given situation
CO4	The student will be able to interpret the results of hypothesis tests

MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	S			**S**		**M**
Category	Management					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE1021	**COMMUNICATION SKILLS FOR HEALTH CARE PROFESSIONALS**
	TotalContactPeriods–5
	Total credits -2
	Course Designed by–Department of Community Medicine
OBJECTIVES	This course deals with essential functional English aspects of the of communication skills essential for the health care professionals.

UNIT: I APPLIED GRAMMAR

Identifying common errors in sentences, Transformation of sentences, Usage of either …or…, Neither… nor…, So… that…, Such… that…, Not only… but also…, unless…

UNIT: II VOCABULARY

Abbreviations used in healthcare, Medical idioms & Phrases

UNIT: III WRITING

Letter writing, Curriculum Vitae writing, covering letter, Creative writing – invite, posters, Essay writing, summary writing, note taking, report writing.

UNIT: IV SPOKEN COMMUNICATION

Telephone etiquette, Importance of Stress, Intonation and rhythm, speaking; describing simple process, Filling a form etc., - Asking and answering questions; Debate/Oral Reporting

UNIT: V LISTENING AND READING SKILLS:

Listening and reading comprehension exercises.

Textbook Recommended:

1. Effective English Communication by Krishna Mohan and Meenakshi Raman, Tata McGraw – Hill Publishing Company Limited, New Delhi.

2. English for Colleges and Competitive Exams by Dr. R. Dyvadatham, Emerald Publishers.

COURSEOUTCOMES						
CO1	The student will be able to express better.					
CO2	The student will be able to get knowledge about MOA, adverse effects					
CO3	The student will Grow personally and professionally					
CO4	The student will Develop confidence in every field					
MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**		S	
4	S			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE1022	**BIOMEDICAL ETHICS**
	TotalContactPeriods–3
	Total credits -2
	Course Designed by–Department of Community Medicine
OBJECTIVES	To provide basic skills in: A) Approaching ethical issues. B) Analysis and statement of issues. C) Understanding the relevant ethical principles invoked..

Introduction to Bioethics

Bioethical issues related to Healthcare &Medicine 5

2Anatomy - Cadaver ethics, Human dignity, PNDT, Disposal of cadaver, Genetic Counseling 7

Physiology - Animal ethics, Health policy privacy 7

Biochemistry & Pathology - Prudence of investigation confidentiality, Patients bill of rights, Disposal of investigative material, Integrity, Blood transfusion 5

Pharmacology - Rational drug prescribing, Clinical trials, Risk minimization, Animal ethics

Microbiology - Hand wash, Drug resistance minimization, Prudence of investigation confidentiality, Sterilization procedure, Bio safety and bio hazard 5

Medicolegal aspects of medical records

Introduction to Intellectual Property:

Concept of Intellectual Property Kinds of Intellectual Property

Patents, Copyrights Designs, Trademarks,Geographical Indication, Infringement of IPR, Its protection and

Remedies Licensing and its types

REFERENCE BOOKS

1. Contemporary issues in bioethics – Beauchamp & walters (B&W) 4th edition.

2. Classic philosophical questions by Gloud (8th Edition)

3. Case book series and booklets by UNESCO Bioethics Core curriculum 2008

4. Encyclopedia of Bioethics 5 vol set, (2003) ISBN-10: 0028657748

5. Intellectual property rights- Ganguli-Tat McGrawhill. (2001) ISBN-10: 0074638602,

6. Intellectual Property Right- Wattal- Oxford Publications House.(1997) ISBN:0195905024.

COURSEOUTCOMES	
CO1	The students will be able to: Recognize what constitutes an ethical concern in health care
CO2	The student will be able to understand the clinical evaluations of Disease Condition
CO3	The student will be able to Understand better the complexity and multi-dimensionality of medical ethical concerns and uniqueness of each problem.
CO4	The student will get the knowledge of plagiarism in their innovations which can be questioned legally

MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**d**	**E**	**f**
1	S		M		S	S
2				s		
3			**S**			
4	S		M			**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE1023	**FUNDAMENTALS OF HUMAN GENETICS**
	Total Contact Periods– 4
	Total credits -2
	Course Designed by–Department of Genetics
OBJECTIVES	To Comprehend the Chromosomal basis of inheritance

I -Introduction to cellular components

Structure and morphology of various types of cells - Biochemical composition - Cellular organelles -Composition and components of nucleus - Chromosomes - Cell division and Mechanics of cell division and regulation.

II - Structure and functions of nucleic acids

Functions, Structure and characteristics of nucleic acids - Types of mutations -Genetic variations and polymorphisms

III - Chromosomal basis of inheritance

Chromosome behavior and inheritance pattern in man - Single gene Mendelian disorders: autosomal dominant, recessive, sex linked dominant and recessive - Polygeneic and mitochondrial inheritance.

III - Origin and detection of genetic disorders

Mutation - Non-disjunction - Chromosomal abnormalities and clinical phenotypes of common genetic syndromes (Down's syndrome, Patua‘s syndrome, Edward syndrome, Turner syndrome and Klinefelter's syndrome, Cri-du-caht syndrome)- Karyotyping, Neural tube defects, Carcinogenesis.

IV–Biochemical basis for the inborn errors of metabolism

General characteristics of inborn errors of metabolism – Incidence - etiology - Folic acid metabolism - triple markers - New born screening, prevention and management. False positive and false negative -Ethical principles of Genetic counseling for prenatal diagnosis - Fetal rights – Regulation and prevention of misuse act 1994.

Reference books

1. A guide to genetic counseling, 2nd edition, D.L. Baker, J.L. Schuette and W.R. Uhlmann, Wiley –Leiss Publications 2002.

2. Emery Elements of Medical Genetics, 9th edition, Robert F. Mueller & Ian D. young, Churchill Livingstone, 1995.

3. Medical Genetics, 3rd edition, Lynn B. Jorde, John C. Carey, Michael J. Bamshad, & Raymond L. White, Mosby, 2003.

COURSEOUTCOMES						
CO1	The student will be able to Be able to describe the chromosomal basis of inheritance and how alterations in chromosome number or structure. . .					
CO2	The student will be able to understand of the differences and similarities between diagnostic, predictive and carrier genetic testing.					
CO3	The student will be able to know detailed information of Chromosome behavior and inheritance pattern in man					
CO4	The student will be to understand the phenotype and genotype .					
MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**d**	**E**	**f**
1	S		M		S	
2				s		M
3			**M**			
4	S			**S**		**S**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE2024	**PRINCIPLES AND APPLICATION OF CLINICAL GENETICS**
	Total Contact Periods– 6
	Total credits -2
	Course Designed by–Department of Nephrology
OBJECTIVES	To develop awareness about Genetic testing, Genetic counseling, Philosophy and Ethos of Genetic services

I -Principle and components of genetic testing Lay out of genetic laboratories - Genetic testing, Genetic counseling, Philosophy and Ethos of Genetic services, Types of testing- Cytogenetic testing- Molecular cytogenetic testing- DNA testing.

II - Cytogenetic testing Indications, Type of sample, Sampling and transport conditions, Karyotyping - chromosome identification, merits and demerits of conventional cytogenetic testing

III - Molecular Cytogenetic testing

Indications, Type of sample, Sampling and transport conditions - Fluorescence in-situ hybridization, fluorescence signal enumeration, merits and demerits of FISH.

IV - DNA testing

Organization of human genome, Structure and function of genetic material, Polymerases chainmreaction - Types, principles and testing, Sequencing.

V - Practical:

Case studies

Reference books

1. Practical Genetic counseling, Peter S. Harper, 6th edition, Holder Headline Group 2004.

2. Medical Genetics, 3rd edition, Lynn B. Jorde, John C. Carey, Michael J. Bamshad, &

Raymond L. White, Mosby, 2006.

3. Genetics in Medicine, Thompson & Thompson, 6th edition, Elsevier 2004.

4. Practical Genetic counseling, Peter S. Harper, 6th edition, Holder Headline Group 2004.

COURSEOUTCOMES						
CO1	The student will be able to become familiar with and practice genetic tests.					
CO2	The student will be able to provide better patient care					
CO3	The student will be able to know detailed information about Genetic Counselling					
CO4	The student will be to know about Genetic testing.					
MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3			**M**			
4	S				S	**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE2025	**CLINICAL EXAMINATION OF THE HUMANVISUAL SYSTEM**
	TotalContactPeriods–5
	Total credits -2
	Course Designed by–Department of Opthalmology
OBJECTIVES	The core objective of this course is to gain in depth knowledge on the structural and physiological functions of the various parts of the eye and the different examination procedures for the ocular structures.

: **I - History Taking**

Importance of history taking, Demographic data and its importance, Chief presenting symptoms, History of present illness, History of past illness, Family History, Common ocular symptoms and their causes – defective vision, watering eyes, discharge, redness, pain, asthenopia and other symptoms

II - Visual Acuity measurement

Distance visual acuity-charts, methods and measurements; Near visual acuity –charts, methods and measurements; contrast sensitivity testing; colour vision testing

III - External Examination

Examination of head posture, examination of forehead, examination of eye brows, examination of eyelids, examination of Lacrimal apparatus, examination of eyeball on the whole, examination of the cornea, conjunctiva sclera and anterior chamber, eye movements, muscle balance and squint evaluation

IV - Anterior segment Evaluation

Slit lamp examination of the eyelids, cornea, conjunctiva, anterior chamber depth, iris, and lens Intraocular pressure measurements using non contact tonometer

V - Posterior segment Evaluation

Introduction and importance of posterior segment evaluation- direct and indirect ophthalmoscopy

REFERENCE BOOKS:

1. Comprehensive Ophthalmology – A K Khurana, 5th edition, New Age International Publishers,

2012.

2. Clinical Ophthalmology – Jack J Kanski, 7th edition, Butterworths, 2012

1. Borish's Clinical Refraction - William J. Benjamin, Irvin M. Borish, Butterworth-Heinemann, 2006

COURSEOUTCOMES						
CO1	The student will be able to have the skill to perform basic ophthalmic examination					
CO2	The student will be able to understand concept of theory and clinical evaluation of disease conditions gain an in- depth knowledge on disease outline and clinical evaluation of patients					
CO3	The student will be able to depth knowledge on the functions of the visual system					
CO4	The student will have the skill to perform basic ophthalmic examination					
MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**D**	**e**	**f**
1	S		M		s	
2				S		M
3	M		**S**			
4	M			**C**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE2026	**PERSONALITY DEVELOPMENT AND STRESS MANAGEMENT**
	Total Contact Periods– 4
	Total credits -2
	Course Designed by–Department of HR
OBJECTIVES	• To Explain the effect of personality, attitudes, perceptions and attributions on Health stress, coping and relaxation.

Unit 1

Introduction to Personality Development, Different Stages of Development, Types of personalities, personality perspectives and theories

Unit 2

How needs impact personality, Maslow's hierarchy of need, Basic Personality Traits; Values, Beliefs, Interactions, Experiences, Environmental influences, the big five dimensions.

Unit 3

Stress; causes, effect and types, Stress resistant personalities, Relaxation; training aspects importance and Body works.

Unit 4

Health stress and coping, Understanding and communicating our health needs, Behavioral and psychological correlates of illness.

Unit 5

Soft skill; need and importance, Personality development and soft skills. Effective communication, listening, speaking, writing, interpretation part of soft skills and personality

Learning Outcome:

By successfully completing this course, students will be able to Describe how a personality develops.

- Define the stages of personality development.
- Define personality types.
- Describe basic personality traits.
- Personality and stress.
- Health stress, coping and relaxation.
- Soft skills and personality.

Text Books:

1. Hurlock (1976). Personality development.Tata McGraw Hill.

2. Baron R A, Psychology 5th edition, Pearsons publication.

3. Abraham A, General Psychology, Tata McGraw hill Education private limited.

Reference Books:

1. Lazarus J Stress Relief and Relaxation Techniques, Viva Book Private limited.

2. Shelly E. Taylor, Health psychology, 7th edition, TATA McGrawHil, New Delhi.

COURSEOUTCOMES	
CO1	The student will be able to Define the stages of personality development.
CO2	• The student will be able to Describe basic personality traits.
CO3	The student will be able to Describe how a personality develops-Personality and stress.
CO4	The student will be able to Develop the Soft skills and personality.

MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**D**	**e**	**f**
1	S		M		s	
2				S		M
3	M		**S**			
4	S			**S**		**M**
Category	Management					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE2027	**FIRST AID MANAGEMENT & SPLINTING TECHNIQUES**
	TotalContactPeriods–6
	Total credits -2
	Course Designed by–Department of Medicine
OBJECTIVES	Students will gain additional skills in interventional procedures and Differentiate between emergency situation and other use.

Unit-I BACKGROUND INFORMATION

- The importance of first Aid
- First aid supplies
- First aid and the law
- Prevention practices

Unit-II ACTION AT AN EMERGENCY

- Recognizing Emergencies
- Deciding to act
- Seeking medical care
- Disease transmission
- Rescuer reactions

Unit –III BLEEDING AND WOUNDS

- External bleeding
- Wound infection
- Amputations
- Impaled objects
- Wound that require medical care
- Internal Bleeding
- Dressing and Bandages

Unit-IV BONE, JOINT AND MUSCLE INJURIES

- Bone injuries
- Splinting
- Joint injuries
- RICE injuries
- Muscle injuries
- Splints – Introduction, Types, Uses, Splinting guidelines, Slings, Procedure,Complications

UNIT-V RESCUING AND MOVING INJURIES

- Water rescue
- Ice rescue
- Electrical Emergency Rescue Hazardous materials incidents

- Motor Vehicle crashes
- Fires
- Confined spaces
- Triage – what to do with multiple victims
- Moving victims

Text books:

1 .First Aid CPR and AED standard (sixth edition)

2. First aid book-St Johns Ambulance services

3. Text book of Orthopaedics – Natarajan

4. Text book of Orthopaedics – John Ebenezer Reference books: First Aid and Management of Minor Injuries by Jon Dallimore First Aid and Beyond by Dan Wolfe - Smashwords , 2014 International Trauma Life Support Provider Manual Essentials Orthpaedics Mark D Mille

COURSEOUTCOMES	
CO1	The student will be able to Differentiate between emergency situation and other use.
CO2	The student will be able to know about the basics of concepts of disease & outlines of clinical evaluation.
CO3	The student will be able to List management, assessment, and care steps for upper extremity and lower extremity fractures.
CO4	The student will be to know Splinting techniques of lower extremities – Thomas splint, sam splint, etc

MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES

COs\Pos	**A**	**B**	**c**	**D**	**e**	**f**
1	S		M		s	
2				S		M
3	M		**S**			
4	S			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE3028	**ESSENTIALS OF MEDICAL TRANSCRIPTION**
	Total Contact Periods– 7
	Total credits -2
	Course Designed by–Department of MRD
OBJECTIVES	Provide Hands on training on English Language and listening comprehension and provide foundation to learn medical terminology & learn laboratory report

Unit 1

The Medical Transcriptionist‘s career including Ethical& Legal Responsibilities Introduction to Medical transcription, Job Opportunities, Transcription Skills, Medical records, Certification for Medical Transcriptionists, Ethical and Legal responsibilities

Unit 2

Equipments in Transcription Equipment, Computer Systems, Ergonomics, Dictation Equipments, Hand and Foot control Dictation, Transcription Preparation

Unit 3

Transcription Guidelines Punctuations, Proof reading notations, Formats and styles, SOAP for Chart notes; Discharge Summary

Unit 4 PRACTICAL:

1. Equipments for Medical Transcription,2. Typing for the beginners, 3.Vocabulary, 4. Proof reading Notations , 5. Formats and styles in document preparation , 6. Preparation of chart notes, 7. Listening Comprehension, 8. Transcription check off sheet **References Book**1. Medical Key boarding, Typing, and Transcribing Techniques and procedures 4th Edition, March

Otis Diehl, Marilyn Takahashi Fordney, W.B. Saunders Company

2. The AAMT Book of Style for Medical Transcription, Claudia J. Tessier

3. CD‘s available for:

a. Stedman‘s Electronic Medical Dictionary 4.0

b. American Drug Index 2003

Text Books:

1. Medical Key boarding, Typing, and Transcribing Techniques and procedures 4th Edition, March

Otis Diehl, Marilyn Takahashi Fordney, W.B. Saunders Company

2. The AAMT Book of Style for Medical Transcription, Claudia J. Tessie

COURSEOUTCOMES						
CO1	The student will be able to Demonstrate their basic skills in the knowledge of Vocabulary, Medical terminology					
CO2	The student will be able to Demonstrate their basic skills in the preparation of chart notes. .					
CO3	The student will be able to Demonstrate skills in listening comprehension					
CO4	• The student will be be able to identify accurate format for medical document preparation					
MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**d**	**E**	**f**
1	S		M		S	
2				s		M
3	M		**S**			
4	S			**S**		**M**
Category	Medical Records					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE3029	**COMMUNICATION AND SOFT SKILL**
	Total Contact Periods– 7
	Total credits -2
	Course Designed by–Department of Human Resources
OBJECTIVES	This course is designed to equip the students with essential soft skills needed for workplace and improve personality.

LEARNING OUTCOME:

This course is designed to help the students to

- Foster healthy attitude.
- Develop effective inter and intra personal skills to be an effective team worker.
- Communicate effectively in both academic and professional setup

UNIT: I ASPECTS OF COMMUNICATION

Importance of communication, Process, Barriers, Non verbal Communication

UNIT: II SPEAKING

How to Open and Close conversations, Introductions and Address System, Expressing Courtesy, Giving Compliments and replying to Compliments, Presentation Skills, Telephonic conversation and telephone etiquette

UNIT – III PRESCRIBED READING

Tom Sawyer by Mark Twain, Bacon‘s Essays: - Of Goodness and goodness of nature

UNIT – IV WRITING

Letter writing - Letter of Complaints, Inviting and Declining an invitation, Writing Memos and Emails, Grammar, Spelling & Punctuation, Use of Dictionary & Thesaurus.

UNIT – V SOFT SKILLS

Active Listening Skills, Assertive Skills, Negotiation and Persuasive Skills, Interview Skills

Text Book:

Developing Communication Skills by Krishna Mohan and Meera Banerji, II edition, Macmillan.

Reference Books:

1. Communication Skills for Engineers and Scientists by Sangeeta Sharma and Binod Mishra, PHI Learning Private Limited, New Delhi.

2. English and soft skills by S.P. Dhanavel, Orient Black Swan

3. Effective English Communication by Krishna Mohan and Meenakshi Raman, Tata McGraw – Hill Publishing Company Limited.

4. Technical Communication – Principles and Practice, by Meenakshi Raman and Sangeetha Sharma, II edition, Oxford University Press.

5. Developing Communication Skills by Krishna Mohan and MeeraBanerji, II edition, Macmillan.

6. The Complete Guide to Functional Writing in English by M. Sarada, Sterling Publishers (P) Ltd., New Delhi.

7. Speaking Naturally: Communication Skills in American English by Bruce Tillitt and Mary Newton Bruder, Cambridge University

COURSEOUTCOMES	
CO1	The student will be able to Foster healthy attitude
CO2	The student will be able to develop effective inter and intra personal skills to be an effective team worker
CO3	The student will be able to Develop effective inter and intra personal skills to be an effective team worker
CO4	The student will be able to Communicate effectively in both academic and professional setup

MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**a**	**B**	**C**	**d**	**e**	**F**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE3030	**PROFESSIONAL SKILLS DEVELOPMENT**
	Total Contact Periods– 6
	Total credits -2
	Course Designed by–Department of Human Resources
OBJECTIVES	To Advance the students' intellectual curiosity, competency and skills in preparation for employment

1. Communication Skills

Importance of Communication skills in Public health; Communication process; Methods of communication; Types of communication: Verbal and Non-verbal; Impediments to effective communication; Feedback

2. Oral Presentation Skills:

Preparation and planning; Structure; Audio-visual aids; Creating interest and establishing a relationship with the audience; Body language; Voice and pronunciation; Review

3. Writing skills:

Writing a scientific paper; Writing a proposal; Structure of an article; References and literature review; Peer-review process-Publication bias; International guidelines for publication in journals; Professional Ethics

4. Leadership in Public health:

Leadership styles and trait; Motivation skills; Interpersonal communication skills; Problem solving skills; Decision making skills; Management skills; Communication Skills

5. Manuscript writing

Writing introduction, objectives, methodologies, major finding, discussion, conclusion and recommendation**6. Seminar presentations**Use of computers present data and information on recent topics

Text Books:

1. Professional Writing Skills, A self paced training programme by Janis Fisher Chan and Diane Lutovich. Advanced Communication Designs Inc, 2003. San Anselmo, CA. ISBN 0963745549

2. Speaking Your Mind: Oral Presentation and Seminar Skills By Rebecca Stott, Tory Young, Cordelia Bryan Contributor Rebecca Stott, Tory Young, Cordelia Bryan Published by Longman, 2001 ISBN 0582382432, 9780582382435

3. Public Health Leadership: Putting Principles into Practice Louis Rowitz, PhD. Jones and Bartlett Publishers, 2003. ISBN-13: 9780763725013 ISBN-10: 07637250

COURSEOUTCOMES						
CO1	The student will be able to Develop good written and oral communication abilities					
CO2	The student will be able to Develop an understanding of team building and leadership skills.					
CO3	The student will be able to Develop knowledge regarding capacities needed to work independently within diverse work environments					
CO4	The student will be able to know how to maintain Records and Reports and demonstrate the procedure.					
MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**D**	**e**	**f**
1	S		M		s	
2				S		M
3	M		**S**			
4	S			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting Of Academic Council held in Aug, 2017					

UAH17CE3031	**LIBRARY SCIENCE AND E-RESOURCES**
	Total Contact Periods– 6
	Total credits -2
	Course Designed by–Department of Library science
OBJECTIVES	To gain knowledge about Documentary Sources of Information and Library Automation

Unit 1 BASIC CONCEPTS AND INFORMATION SERVICES

Meaning of Library – Types of Library -– Library layout - Functions of Library – need for Library – Meaning of ISBN and ISSN – Collection management - Library Classification system - Five laws of Library Science – Inter Library Loan (ILL), Communication theories and models.Barriers to communication.Levels of communications – Intrapersonal, interpersonal and mass communication. Information services – literature search Methods of Dissemination of information Current Awareness Service (CAS), Selective Dissemination of Information (SDI), Document delivery service, Alert services, and Internet services.

Unit 2 INFORMATION SOURCES

Documentary Sources of Information, Print, and Non-print including Electronic, Human and Institutional sources: Nature, types, characteristics and utility. Internet as a source of Information. Primary sources of information – Journal, conference volume, patents, research reports, thesis and their electronic format – Secondary sources of information - Bibliography, Encyclopedia Dictionary, Yearbook , Directory, Geographical Source, Textbook, Index and Abstracts.

Unit 3 LIBRARY AUTOMATION

Definition need, Purpose, advantages. Planning for Library automation. Automation of Library operations - Acquisitions, Cataloguing, OPAC, Circulation and Serials control. Evaluation of Library automation systems - Application of Barcode and RFID Technology for Library Functions. Basic concepts: Bibliography, bibliographic coupling, Impact factor.

Unit 4 ELECTRONIC INFORMATION SOURCES

Electronic Information resources: Meaning and definition, Growth and development, Types. Journals, e-Books, e-Theses, e-newspapers, Blogs, Wikis. Free databases and fee based bibliographical and full text databases, subject related websites, Institutional repositories, Open Archives and digital Libraries. - Resource Sharing and Networks: Consortia- Importance and objectives. Study of Information networks and Digital Library Consortia. Types of computer networks: Local Area Networks – Concept, Topologies - Bus, Star, Mesh, Tree, and Ring). Wide Area Networks and Metropolitan Area Networks- Concepts, Circuit switching and Packet switching. Difference between LAN and WAN. Wireless Networks –Mobile telephones.

Unit 5 DIGITAL LIBRARIES

Digital Libraries: Concepts and issues. Understanding digital Libraries Content creation – Electronic documents, files and file formats. Study of different file formats.Studying PDF in detail-features of PDF.Digitization- scanning, Digital Preservation, Conservation and Archival Management – Problems and prospects. Open Access Movement and Institutional repositories.

TEXTBOOKS

1. Ranganathan, S.R The five Laws of Library Science UBS Publishers, 1988.

2. Ranganathan, S.R. Library Manual SaradaRanganathan endowment for Library Science, 1989.

3. Ranganathan, S.R. Cataloguing Practice SaradaRanganathan endowment for Library Science 1990

COURSEOUTCOMES						
CO1	The student will be able to analyze and understand the query					
CO2	The student will be able to Identify the sources of information					
CO3	The student will be able to Find out the information					
CO4	The student will be able to know how to maintain Records and Reports and demonstrate the procedure.					
MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**d**	**e**	**F**
1	S		M		s	
2				s		M
3	M		**S**			
4	S			**S**		**M**
Category	Library Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					