

CURRICULUM & SYLLABUS – M.Sc- Biotechnology

(Applicable to the batches admitted from July 2018)

I SEMESTER

S.No.	CATEGORY	SUB. CODE	SUBJECT	Total Contact Hrs	L	T	P	C
THEORY								
1.	MC	P18MCBS101	Core I - General Microbiology	4	3	1	0	4
2.	MC	P18MCBS102	Core II - Cell and Molecular biology	4	3	1	0	4
3.	MC	P18MCBS103	Core III - Advanced Biochemistry	4	3	1	0	4
4.	ME		Major Elective – I	4	3	1	0	4
5.	ME		Major Elective – II	4	3	1	0	4
PRACTICAL								
6.	MC	P18MCBS1L1	Core IV -General Microbiology Lab	6	0	0	6	3
7.	MC	P18MCBS1L2	Core V - Biochemistry and Molecular Biology	6	0	0	6	3
8.	EEC	P18PRBS1S1	Technical Seminar	0	0	0	2	1
Total					15	5	14	27

II SEMESTER

S.No.	CATEGORY	SUB. CODE	SUBJECT	Total Contact Hrs	L	T	P	C
THEORY								
1.	MC	P18MCBS201	Core VI - Plant and Animal Biotechnology	4	3	1	0	4
2.	MC	P18MCBS202	Core VII -rDNA technology	4	3	1	0	4
3.	MC	P18MCBS203	Core VIII - Immunotechnology	4	3	1	0	4
4.	MC	P18MCBS204	Core IX - Genomics	4	3	1	0	4

			and Proteomics					
5.	ME		Major Elective-III	4	3	1	0	4
PRACTICAL								
6.	MC	P18MCBS2L1	Core X - Plant and Animal Biotechnology Lab	6	0	0	6	3
7.	MC	P18MCBS2L2	Core XI - Immunotechnology and rDNA technology Lab	6	0	0	6	3
8.	EEC	P18PRBS1V1	Internship	0	0	0	0	1
Total					15	5	12	27

III SEMESTER

S.No.	CATEGORY	SUB. CODE	SUBJECT	Total Contact Hrs	L	T	P	C
THEORY								
1.	MC	P18MCBS301	Core XII - Research Methods in Biology	5	3	1	0	4
2.	MC	P18MCBS302	Core XIII - Fermentation Technology and Bioengineering	5	3	1	0	4
3.	MC	P18MCBS303	Core XIV - Food Processing Technology	5	3	1	0	4
4.	MC	P18MCBS304	Core XV- Medical Biotechnology	5	3	1	0	4
5.	MC	P18MCBS305	Core XVI- Nanotechnology	5	3	1	0	4
6.	EEC	P18ACEN001	Audit course English for Research paper	2	2	0	0	0
		P18ACCE002	Disaster Management					
		P18ACEN003	Sanskrit for technical knowledge					

		P18ACBA004	Value Education					
		P18ACBW005	Constitution of India					
		P18ACBA006	Pedagogy Studies					
		P18ACBA007	Personality development through Life Enlightenment Skills					
	PRACTICAL							
7.	MC	P18MCBS3L1	Core XVII - Fermentation technology and Food technology Lab	6	0	0	6	3
Total					17	5	6	23

IV SEMESTER

S.No.	CATEGORY	SUB. CODE	SUBJECT	Total Contact Hrs	L	T	P	C
THEORY								
1.	MC	P18MCBS401	Molecular Diagnostic Techniques	4	3	1	0	4
2.	EEC		Open Elective	2	2	0	0	2
3.	HS	P18MCYO001	Stress Management by Yoga	0	0	0	0	0
4.	HS	P18PRBS4T1	Term paper	1	0	0	1	1
5.	HS	P18PRBS4P1	Project	16	0	0	16	8
Total					3	1	19	15

LIST OF MAJOR ELECTIVE – I
CHOOSE ANY ONE IN SEMESTER I

S.No.	Sub Code	Subjects	Total Contact Hrs	L	T	P	C
1	P18MEBS011	Major Elective – I: Metabolic Regulation	4	4	0	0	4
2	P18MEBS012	Major Elective – I: Enzyme Technology	4	4	0	0	4
3	P18MEBS013	Major Elective – I: Bioinformatics	4	4	0	0	4
Total			4	4	0	0	4

LIST OF MAJOR ELECTIVE – II
CHOOSE ANY ONE IN SEMESTER I

S.No.	Sub Code	Subjects	Total Contact Hrs	L	T	P	C
1	P18MEBS021	Major Elective – II: Industrial Biotechnology	4	4	0	0	4
2	P18MEBS022	Major Elective – II: Industrial Microbiology	4	4	0	0	4
3	P18MEBS023	Major Elective – II: Molecular Genetics	4	4	0	0	4
Total			4	4	0	0	4

LIST OF MAJOR ELECTIVE – III
CHOOSE ANY ONE IN SEMESTER II

S.No.	Sub Code	Subjects	Total Contact Hrs	L	T	P	C
1	P18MEBS031	Major Elective-III: Waste Management Technology	4	4	0	0	4
2	P18MEBS032	Major Elective-III: Biostatistics	4	4	0	0	4
3	P18MEBS033	Major Elective-III: Bioethics and IPR	4	4	0	0	4
Total			4	4	0	0	4

LIST OF OPEN ELECTIVES
CHOOSE ANY ONE COURSE IN SEMESTER IV

S.No.	Sub Code	Subjects	Total Contact Hrs	L	T	P	C
1.	P18OEBA001	Advertising and Sales Management	2	2	0	0	2
2.	P18OEBA002	BPO Management	2	2	0	0	2
3.	P18OEBA003	Call Centre Management – Voice & Non Voice	2	2	0	0	2
4.	P18OEBA004	Customer Relationship Management	2	2	0	0	2
5.	P18OEBA005	Entrepreneurship Development	2	2	0	0	2
6.	P18OEBA006	Advanced Human Resource Management	2	2	0	0	2
7.	P18OEBA007	Logistics & Supply Chain Management	2	2	0	0	2
8.	P18OEBA008	Office Management	2	2	0	0	2
9.	P18OEVC001	Photography & Videography	2	2	0	0	2
10.	P18OEEN001	Soft Skills	2	2	0	0	2
11.	P18OEEN002	Mass Media and Communication	2	2	0	0	2
12.	P18OESC001	Computer Applications	2	2	0	0	2
13.	P18OESC002	Multimedia	2	2	0	0	2
14.	P18OESC003	Advanced Excel	2	2	0	0	2
15.	P18OESC004	Web Designing	2	2	0	0	2
16.	P18OESC005	Photoshop	2	2	0	0	2
17.	P18OESC006	Flash	2	2	0	0	2
18.	P18OESC007	Computer Hardware and Networking	2	2	0	0	2
19.	P18OESC008	Computer Programming	2	2	0	0	2
20.	P18OESC009	Office Automation Tools	2	2	0	0	2
21.	P18OEMI001	Clinical Microbiology	2	2	0	0	2
22.	P18OEMI002	Herbal Medicine	2	2	0	0	2

UNIT I	12
Microscopy – Its principles and application in the field of Microbiology including the following: Dark field, Phase contrast, Fluorescence microscopy. TEM and SEM. Principles, operation and maintenance of: refrigerated and ultracentrifuges, Spectrophotometer. Lyophilizers. Staining methods – Simple, differential and special methods. Sterilization and disinfection methods and their quality control.	
UNIT II	12
Bacterial Anatomy, Structure, properties and biosynthesis cellular components of bacteria – Sporulation – Growth and nutrition –Nutritional requirements – Growth curve – Kinetics of growth – Batch culture – Synchronous growth – Measurement of growth and enumeration of cells – Pure culture techniques.	
UNIT III	12
Distribution of Algae - Thallus structure in algae - Reproduction in alga - Life cycle patterns in algae - Chlamydomonas – Volvox (Green algae) - Nostoc – Spirogyra (BGA) - Ectocarpus – Sargassum (Brown algae) - Poly siphonia – Batrachospermum (Red algae).	
UNIT IV	12
Staining techniques – Classification of stains, Theories and Mechanism of Gram staining, acid fast staining, Negative staining, Capsule staining, Flagella staining, Endospore staining.	
UNIT V	12
Common pathogenesis of bacteria, fungi and virus (Morphology, Biochemical characters, pathogenicity, treatment and preventive measures).	
TEXT BOOKS:	
1. Pelczar MJ, Chan ECS and Kreig NR. Microbiology, McGraw Hill, NewYork, 1999.	
2. Madigan MT, Martinko, JM and Parker J. Brock's Biology of Microorganisms, 9th ed., Prentice Hall, New Jersey press, 1999.	
3. J. M. Willey, K. Sandman and D. Wood. 2019. Prescott's Microbiology, 11th edition. McGraw Hill Higher Education, USA.	
REFERENCE BOOKS:	
1. Prescott LM, Harley JP and Klein DA. Microbiology, McGraw Hill, New Delhi, 1999.	
2. Dubey RC and Maheswari DK. A Textbook of Microbiology, 1 st edition, S Chand & Co. Ltd., New Delhi, 2003.	
3. Michael T. Madigan, John M Martinko; 2006. Brock's Biology of Microorganisms, Pearson-Prentice Hall. Ed. 11.	
2. Topley & Wilson's. 2002. Principles of Bacteriology, Virology & Immunology, Edward Arnold. Ed. 9.	
Course Coordinator	HOD

P18MCBS102	CELL AND MOLECULAR BIOLOGY	L	T	P	C
	Total Contact Hours – 60	3	1	0	4
	Prerequisite course – B.Sc. Biochemistry, Biotechnology, Microbiology and other related Life Science Subject.				
	Course Coordinator Name & Department: - Dr. J. Senthil & Biotechnology				

COURSE OBJECTIVES: -

Learners will be familiar with the basics of cells, origin and evolution. Learners will understand the DNA structure and replication, synthesis of RNA and Protein.

COURSE OUTCOMES (COs)

CO1	Recall the history of cells, theory of cell biology and classification of cells.
CO2	Recognize the DNA repair mechanisms.
CO3	Apply the role of cell organelles in physiology.
CO4	Apply the knowledge of cell cycles and growth of cells.
CO5	Analyze the importance of gene expression and silencing.
CO6	Analyze the familiarity of phages and viruses.

Mapping of Course Outcomes with Program outcomes (POs)
(H/M/L indicates strength of correlation) H-High, M-Medium, L-Low

1	COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
2	CO1	H	M						H		
	CO2	H	M								
	CO3	H	M								
	CO4	H	M								
	CO5	H	M								
	CO6	H	M								
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
An overview of cells – Origin and evolution of cells. Cell theory, classification of cells – Prokaryotic cells and eukaryotic cells. Comparison of prokaryotic and eukaryotic cells. Cell cycle – components in cell cycle control – cyclic-CDKs- check points in cell cycle – abnormalities in cell cycle.	
UNIT II	12
DNA replication, repair and recombination - unit of replication, enzymes involved, replication origin and replication fork, fidelity of replication, extra-chromosomal replications. DNA damage and repair mechanisms.	
UNIT III	12
RNA synthesis and processing: Transcription factors and machinery - formation of initiation complex, transcription activators and repressors, RNA polymerases, capping, elongation and termination. RNA processing - RNA editing, splicing, polyadenylation, RNA transport.	
UNIT IV	12
Protein synthesis - formation of initiation complex, elongation and termination – machineries and their regulation. Genetic code. Aminoacylation of tRNA, tRNA-identity, aminoacyl tRNA synthetase, translational proof-reading, translation inhibitors. Post-translational modification of proteins.	
UNIT V	12
Control of gene expression at transcription and translation level -Regulation of phages, viruses, prokaryotic and eukaryotic gene expression - Role of chromatin in regulating gene expression and gene silencing.	
TEXT BOOKS:	
1. Blackburn GM, Gait MJ. Nucleic acids in chemistry and biology, Oxford University Press, 1996.	
2. Hopkins NH, Roberts JW, Steitz JA and Weiner AM. Molecular biology of the gene, 4 th edition, Benjamin/Cummings Publishing Company, 1998.	
3. Harvey Lodish, Arnold Berk, Chris A. Kaiser and Monty Krieger, 1999, Molecular Cell Biology, 4th ed., WH Freeman and Co, New York	
REFERENCE BOOKS:	
1. Friedberg EC, Walker GC and Siede W. DNA Repair and Mutagenesis, ASM Press, 2005.	
2. Ajoy Paul. Text Book of Cell and Molecular Biology, Books & Allied (P) Ltd., Kolkata, 2007.	
3. Verma P.S. and Agarwal V.K, 2016, Cell Biology (Cytology, Biomolecules,Molecular Biology),Paperback,S.Chand and Company Ltd.	
4. Karp G,Iwasa J.and Maswall W,2015, Karp's Cell and Molecular Biology-Concepts and Experiments.8 th Edn.John Wiley and Sons.	
Course Coordinator	HOD

P18MCBS103	ADVANCED BIOCHEMISTRY	L	T	P	C
	Total Contact Hours – 60	3	1	0	4
	Prerequisite course – B.Sc. Biochemistry, Biotechnology, Microbiology and other related Life Science Subject.				
	Course Coordinator Name & Department: - Dr. J. Senthil & Biotechnology				

COURSE OBJECTIVES: -

COURSE OUTCOMES (COs)

Mapping of Course Outcomes with Program outcomes (POs)
(H/M/L indicates strength of correlation) H-High, M-Medium, L-Low

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								

Approval	Academic Council Meeting

UNIT I	12
Classification, chemical properties of carbohydrates, Chemistry and biological roles of polysaccharides. Structural elucidation of polysaccharides; Structure and role of proteoglycans, glycoproteins and glycolipids (gangliosides and lipopolysaccharides).	
UNIT II	12
Classification and physico-chemical properties of amino acids and peptides; Peptide bond; Primary, secondary, tertiary and quaternary structures of proteins; Ramchandranplot; Silk fibroin, coiled coils, collagen triple helix and hemoglobin; Denaturation and renaturation of proteins.	
UNIT III	12
Classification, structure and functions: Triglycerides; Phospholipids; Steroids and Terpenes; Lipoproteins: Structure and functions of lipoproteins; Role of lipids in biomembranes; Biosynthesis: Fatty acids; Triglycerides; Phospholipids; Sterols.	
UNIT IV	12
Structure of double stranded DNA (A, B and ZDNA). The biological significance of double strandedness; Sequence dependent variation in the shape of DNA. Physical properties of double stranded DNA. Types of RNAs and their biological significance. Topology of DNA, Conformational properties of polynucleotides, secondary and tertiary structural features and their analysis.	
UNIT V	12
Structure and properties of vitamins and hormones –Definition and nomenclature – biological availability – assessment of vitamins in nutritional status – vitamins B1,B12, K, E and niacin – Protein and peptide hormones – auxin, gibberellins, abscisic acid.	
TEXT BOOKS:	
1. Freidberg EC, Walker GC and Siede W. DNA Repair and Mutagenesis, ASM Press, 1995.	
2. Geoffrey L Zuba. Biochemistry, Wm. C. Brown Publishers, 4 th Edition, 1998.	
3. Stryer, L, Biochemistry, Freeman Company, New York, 4th Edition, 1999.	
REFERENCE BOOKS:	
1. Freifelder D. Molecular Biology, 2 nd edition, Narosa Publishing House, 1996.	
2. Campbell MK. Biochemistry, 3 rd edition, Saunders College Publishing Harcourt Brace College Publishers,1999.	
3. Palmer T, Bonner PL. Enzymes: biochemistry, biotechnology, clinical chemistry. 2007	
4. Voet D, Voet JG, Pratt CW. Fundamentals of biochemistry: life at the molecular level. 2016.	

1. Principles and methods of sterilization.
2. Preparation of Media: Nutrient broth, Nutrient agar.
3. Isolation and pure culture of micro organisms from soil and water.
4. Maintenance of micro organisms – Agar slant.
5. Motility determination – Hanging drop method.
6. Staining methods: Simple, Gram staining, Spore.
7. Cultural characteristics of micro organisms and basal medium, selective medium and enriched medium.
8. Biochemical characterization of bacteria – Catalase and Oxidase test.
9. IMVIC test.
10. Urease and TSI test.
11. Study on bacterial extracellular enzymes – Starch hydrolysis.
12. Antibiotic sensitivity test (Kirby Bauer disc diffusion method).

TEXT BOOKS:

1. James T Stanley, Marvin P Bryant. Bergey's Manual of Systematic Bacteriology Vol. II, Nobert Fleming Springer Publishers, 1984.
2. Gerhardt P, Murray RG, Wood WA and Kreig NR. Methods of General and Molecular Bacteriology, American Society for Microbiology, Washington, 1994.
3. Kanika Sharma. (2009). Manual of Microbiology – Tools and Techniques. 2nd edition, Ane Books Pvt.Ltd., New Delhi.

REFERENCE BOOKS:

1. Cappuccino and James G. Microbiology a laboratory manual, Addison Wesley Publishing Company Inc., 4th edition, England, California, 1996.
2. David R Brooke. Bergey's Manual of Systematic Bacteriology, Second edition, Vol.III, Eastern Halz, Springer Publication, 2009.
4. Ronald M. Atlas. 1997. Principles of Microbiology, WCB Publishers. 2nd ed.
5. Albert Balows, Hens G. Truper., Martin Dworkin, Wim, Hardes, Karl-heinz Schoeifer (eds). 1992. A Hand book on the biology of bacteria, ecophysiology, isolation, identification and applications, Springer Verlag.

P18MCBS1L2	BIOCHEMISTRY AND MOLECULAR BIOLOGY	L	T	P	C
	LAB				
	Total Contact Hours – 45	0	0	6	3
	Prerequisite course – B.Sc. Biochemistry, Biotechnology, Microbiology and other related Life Science Subject.				
	Course Coordinator Name & Department: - Dr. J. Senthil & Biotechnology				

COURSE OBJECTIVES: -

Learners will be familiar with the estimation process of biomolecules. Learners will understand the isolation of genomic DNA from various sources.

COURSE OUTCOMES (COs)

CO1	Perform the estimation of different macromolecules skillfully.
CO2	Operates the electrophoretic apparatus.
CO3	Handle various instruments related to molecular biological experiments.
CO4	Calibrates the values with reference range values.
CO5	Sketches and write the interpretation and inferences.

Mapping of Course Outcomes with Program outcomes (POs)
(H/M/L indicates strength of correlation) H-High, M-Medium, L-Low

1	COs/POs	PO1	PO2	PO3		PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3						
2	CO1	H	M							H								
	CO2	H	M							H								
	CO3	H	M							H								
	CO4	H	M							H	M	M						
	CO5	H	M							H	M	M						
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																

2. Estimation of carbohydrate by Anthrone method.
3. Estimation of total amino acid by Ninhydrin method.
4. Estimation of serum cholesterol by Zaks method.
5. Estimation of chlorophyll.
6. Isolation of plant genomic DNA by Dellaporta method.
7. Isolation of genomic DNA from liver tissue.
8. Isolation of genomic DNA from bacteria.
9. Agarose gel electrophoresis
10. Quantitative analysis of DNA

TEXT BOOKS:

1. Wilson K Walker. Practical Biochemistry, Principles and Techniques, Cambridge University Press, 1995.
2. Wilson K and Walker J. Practical Biochemistry, 5th Edition, Cambridge University Press, 2000.
3. Mu P, Plummer DT. Introduction to practical biochemistry. Tata McGraw-Hill Education; 2001.

REFERENCE BOOKS:

1. Joseph Sambrook and David W Russell. Molecular Cloning: A Laboratory Manual, Third edition, Volume 1, 2 and 3, Cold Spring Harbor Laboratory Press, 2001.
2. Dr. Sarma PVGK. Molecular Biology, A Practical Manual Hardcover, MJP Publishers, 2017.
3. Jayaraman J, Jayaraman J. Laboratory manual in biochemistry. Delhi: Wiley Eastern; 1981.
4. Fasman GD. Practical handbook of biochemistry and molecular biology. 1989.

Course Coordinator

HOD

P18MCBS201	PLANT AND ANIMAL BIOTECHNOLOGY	L	T	P	C
	Total Contact Hours –60	3	1	0	4
	Prerequisite course – B.Sc. Biochemistry, Biotechnology, Microbiology and other related Life Science Subject				
	Course Coordinator Name & Department: - Dr. V. Padmapriya & Biotechnology				

COURSE OBJECTIVES: -

Learners will be familiar with the basics of plant genomic organization. Learners will understand the plant and animal tissue culture techniques, gene transfer methods and cloning strategies.

COURSE OUTCOMES (COs)

CO1	Recall the principles and technical advances behind the <i>in vitro</i> culture
CO2	Recognize the stem cell techniques
CO3	Apply the fundamental knowledge in animal and plant biotechnology and their applications
CO4	Apply the basic principles and techniques in genetic manipulation and genetic engineering.
CO5	Analyze gene transfer technologies for animals and animal cell lines
CO6	Analyze the structure of animal genes and genomes

Mapping of Course Outcomes with Program outcomes (POs)

(H/M/L indicates strength of correlation) H-High, M-Medium, L-Low

1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
2	CO1	H	M							H	
	CO2	H	M								
	CO3	H	M								
	CO4	H	M								
	CO5	H	M								
	CO6	H	M								
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

10

Biotechnology: Definition and scope- global impact of biotechnology in agriculture, health care and environment- potentials in modern biotechnology- achievements in biotechnology.

UNIT II**12**

Tissue culture as a source of genetic variability: Introduction-Variation: somaclonal and gametoclonal variation, sources and causes of variation, selection of variants, application in crop improvement- Protoplast: isolation, culture and fusion, selection of hybrid cells, regeneration of hybrid plants-Somatic hybridization and Cybridization- Micropropagation as a tool of in vitro multiplication-secondary metabolite production through plant cell cultures.

UNIT III**12**

Genetic Transformation methods for production of transgenic plants: Direct Gene Transfer Methods, Agrobacterium mediated genetic transformation (Indirect), Chloroplast transformation, transplasmids. Production of genetically modified plants/crops: transgenic plants for biotic and abiotic stress tolerance, transgenic plants for quality traits, herbicide and pest resistance, Industrial enzymes, Plantibodies, Plantigens and Edible Vaccines.

UNIT IV**14**

Animal cell culture: history- requirements for animal cell and organ culture-culture media: natural and synthetic media-sterilization of glassware, equipment and culture media-maintenance of different cell lines-characteristics of animal growth in culture-Cultivation of animal cells in bioreactor-methods of scaling up of cell culture-immobilized cell culture - somatic and organ cell culture-whole embryo culture- -hybridoma technology-stem cell culture.

UNIT V**12**

Basic steps in gene cloning-methods of gene transfer: calcium phosphate co precipitation, electroporation and microinjection-Screening of recombinants: marker inactivation technique. Cloning strategies: genomic and cDNA cloning (basic concepts)-Cloning of insulin gene-Development of transgenic animals and applications- DNA finger printing techniques-Biopharming- xeno transplantation- genetically engineered animals- mapping of human genome- ethical issues in animal biotechnology- Intellectual property rights- patenting.

TEXT BOOKS:

1. Ignacimuthu S, Plant Biotechnology, S J Oxford and IBH, New Delhi, 1996.
2. Nigel Jenkins, Animal cell Biotechnology: Methods and protocols, Humana press, New Jersey, 1999. 4.
3. Dube, R.C. (2014). A Text Book of Biotechnology. S. Chand & Company Ltd., New Delhi

REFERENCE BOOKS:

1. Grierson and S N Covey, Plant Molecular Biology, Blackie Academic & Professional, 1988.
2. Sudhir M, Applied Biotechnology and Plant Genetics, Domain publishers & distributors, 2000.
3. Ignacimuthu S. Applied Plant Biotechnology, Tata McGraw - Hill, 1996.
4. Gupta, P.K. (2016). Plant Biotechnology. Rastogi Publications, Meerut.

Course Coordinator**HOD**

P18MCBS202	rDNA TECHNOLOGY							L	T	P	C
	Total Contact Hours – 60							3	1	0	4
	Prerequisite course – B.Sc. Biochemistry, Biotechnology, Microbiology and other related Life Science Subject										
	Course Coordinator Name & Department: - Dr. V. Padmapriya & Biotechnology										
COURSE OBJECTIVES: -											
Learners will be familiar with the basic of mutagenesis and recombination methods. Learners will understand the gene library, nucleic acid hybridization and blotting techniques.											
COURSE OUTCOMES (COs)											
CO1	Recall the basic genetic engineering experiments										
CO2	Recognize the recombination methods										
CO3	Apply and acquire knowledge in hybridization techniques										
CO4	Apply the recombinant technology in microbes for product formation.										
CO5	Analyze the applications of rDNA technology in plants, animals and industries.										
CO6	Analyze the new technologies in genetic engineering field.										
Mapping of Course Outcomes with Program outcomes (POs) (H/M/L indicates strength of correlation) H-High, M-Medium, L-Low											
1	COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
2	CO1	H	M							H	
	CO2	H	M								
	CO3	H	M								
	CO4	H	M								
	CO5	H	M								
	CO6	H	M								
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**

Gene as a unit of mutation and recombination. Mutagenesis, mutations and mutants biochemical basis of mutations, spontaneous and induced mutations, isolation of mutants, mutagenesis, reversion, suppression, genetic analysis of mutants. Recombination methods – conjugation and transformation.

UNIT II**12**

Enzymes in Genetic Engineering - DNA Polymerase, Polynucleotide kinase, T4 DNA ligase, Nick translation system, Terminal deoxynucleotidyl transferase, Reverse transcriptase Restriction endonucleases Type I & II. Vectors – plasmid, bacteriophage and other viral vectors, cosmids, Ti plasmid, yeast artificial chromosome

UNIT III**12**

Strategy of recombinant DNA technology; Gene library - Genomic library, cDNA library Cloning strategies - Use of linkers, adoptors, homopolymer tails – Nucleic acid hybridization - Colony hybridization, plaque hybridization; Blotting techniques - Southern, Northern, Western and dot blotting

UNIT IV**12**

PCR – principles, techniques and applications. Gene isolation, cloning and expression, DNA sequencing, oligonucleotide synthesis, Southern and Northern hybridization, FISH, RAPD, PCR-RFLP, STRR, LTRR. DNA fingerprinting and their applications for diagnosis of disease, site-directed mutagenesis, Gene silencing, Gene transfer technologies.

UNIT V**12**

DNA chips and microarray gene screen technology; site directed mutagenesis, transgenic animals and gene knockout techniques, cell culture based techniques Genetic diagnosis. Applications in medical field, biology, transgenic plants, transgenic animals, Recombinant vaccines development. Gene therapy molecular basis of genetic diseases, genetic counseling

TEXT BOOKS:

1. Peter J Russell, Genetics, 5th edition, Benjamin-Cummings Publishing Company, 1997
2. Bernard R. Glick and Jack J. Pasternak, Molecular Biotechnology, 2nd edition, ASM press, 2003
3. Das HK. Textbook of Biotechnology, 4th Edition, Wiley India, 2010.

REFERENCE BOOKS:

1. Brown. T.A, Gene Cloning and DNA analysis, 2nd edition, ASM press, 2004.
2. Sandy Primrose, Principles of Gene Manipulation and Genomics, 7th edition, Black Well Publishers, 2006
3. Mickloss DA and Freyar GA. DNA Science - A First Course in Recombinant Technology, Cold Spring Harbor Laboratory Press, New York, 1990.
4. Walker MR and Rapley R. Route Maps in Gene Technology, Blackwell Science Limited, Oxford, 1997.

P18MCBS203	IMMUNOTECHNOLOGY	L	T	P	C
	Total Contact Hours – 60	3	1	0	4
	Prerequisite course – B.Sc. Biochemistry, Biotechnology, Microbiology and other related Life Science Subject				
	Course Coordinator Name & Department: - Dr. V. Padmapriya & Biotechnology				

COURSE OBJECTIVES: -

Learners will be familiar with the basic immune systems. Learners will understand the antigen recognition, mode of activation of complement system and hyper sensitivity reactions.

COURSE OUTCOMES (COs)

CO1	Recall the basic of history and scope of immunology
CO2	Recognize the principles and importance of biological macromolecules
CO3	Apply knowledge in factors governing antigenicity
CO4	Apply the principles of immunology.
CO5	Analyze the molecular basis of antigen recognition, hypersensitivity and Ag-Ab reactions.
CO6	Analyze its applications in treating human diseases.

Mapping of Course Outcomes with Program outcomes (POs)

(H/M/L indicates strength of correlation) H-High, M-Medium, L-Low

1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
2	CO1	H	M						H		
	CO2	H	M								
	CO3	H	M								
	CO4	H	M								
	CO5	H	M								
	CO6	H	M								
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**
History and scope of immunology; Lymphoid tissues and organs. Types of immunity: Innate and acquired, active and passive. Cell mediated immunity and Humoral immunity. Kinetics of antibody production – primary and secondary antibody response.

UNIT II **12**
Haematopoiesis. Ontogeny, origin, development and differentiation of immune cells. Clonal selection theory. B-lymphocytes and their activation. Thymus derived lymphocytes, Antigen presenting cells, mechanism of T-cell activation. T Helper and T-cytotoxic cells, Natural killer cells, Dendritic cells, Langerhan cells, Macrophages, Microphages. Phagocytosis process. Structure and functions of Class I and II molecules. Major Histocompatibility Complex

UNIT III **12**
Immunoglobulins - structure, distribution and function. Generation of antibody diversity. Organisation and expression of immunoglobulin genes. Antigenicity: factors governing antigenicity. Antigen types, haptens, epitopes, adjuvants, carriers, bacterial, viral and tumour antigens, autoantigens, blood group antigens, T dependent, T independent antigens. Antigen antibody reactions. Factors governing antigen-antibody interactions: affinity, avidity, valency, cross reactivity

UNIT IV **12**
The complement systems: mode of activation, classical and alternate pathway Transplantation immunity - Organ transplantation and HLA tissue typing. Introduction to autoimmune disorders and immunology of infectious diseases

UNIT V **12**
Hypersensitivity reactions. Immunological tolerance. Immunosuppression. Immunotherapy. Hybridoma and monoclonals. Recombinant antibodies. DNA vaccines and Edible vaccines. Complement system and Autoimmune disorders.

TEXT BOOKS:

1. Roitt IM. Essential Immunology, Blackwell Scientific Publications, Oxford, 1998.
2. Abbas, A.K., Litchman, A.H., Pober. J.S. Cellular and Molecular Immunology, 2nd ed, W.B.Saunders, USA, 1994.
- 3.. P. Delves, S. Martin, D. Burton and I. Roitt, Roitt's Essential Immunology, Latest Edition, 2006, Wiley – Blackwell.

REFERENCE BOOKS:

1. Joshi KR, Osama NO. Immunology, Agrobios Ltd, India, 2000.
2. Rao CV. An Introduction to Immunology, Narosa Publishing House, India, 2002
3. .J. Kindt, R.A. Goldsby and B.A. Osborne, Kuby, Immunology, 2007, W.H. Freeman and Company.
4. Clemens Van Blitterswijk ,Tissue Engineering.Elseiver,2nd edition,2014.

P18MCBS204	GENOMICS AND PROTEOMICS	L	T	P	C
	Total Contact Hours – 60	3	1	0	4
	Prerequisite course – B.Sc. Biochemistry, Biotechnology, Microbiology and other related Life Science Subject				
	Course Coordinator Name & Department: - Dr. V. Padmapriya & Biotechnology				

COURSE OBJECTIVES:-

Learners will be familiar with the genomic and cDNA sequences. Learners will understand the gene therapy, transgenic animals and plants, gene expressions and transformations.

COURSE OUTCOMES (COs)

CO1	Recall the basics of Omics studies
CO2	Recognize the techniques in genomics and proteomics analysis
CO3	Apply knowledge of modern techniques in proteomics and Genomics
CO4	Analyse the bioinformatic software in Omics studies
CO5	Evaluate the applications of proteomics and Genomics
CO6	Create the knowledge in futures of genomics and proteomics

Mapping of Course Outcomes with Program outcomes (POs)
(H/M/L indicates strength of correlation) H-High, M-Medium, L-Low

1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
2	CO1	H	M							H	
	CO2	H	M								
	CO3	H	M								
	CO4	H	M								
	CO5	H	M								
	CO6	H	M								
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	47 th Academic Council Meeting									

UNIT I**12**

Genomic and cDNA sequence: gene prediction rules – gene prediction softwares – human and Arabidopsis genome projects – mutations.

UNIT II**12**

Gene therapy - applications of genome – transgenic animals and plants – Pathway regulatory networks

UNIT III**12**

Introduction, Serial Analysis of Gene Expression, Microarray, Types of Microarrays, Microarray Fabrication, Microarray hybridization and detection, Microarray Image Processing and analysis, Expression ratios, Transformations of the Expression ratio, Data Normalization

UNIT IV**12**

Proteomics – protein separation - 2DE, protein identification – mass spectrometry. Protein chips. Applications of proteomics – Medical proteomics in disease diagnosis, pharmaceutical proteomics in drug development

UNIT V**12**

Discovering a drug - target identification and validation - identifying the lead compound - optimization of lead compound - chemical libraries

TEXT BOOKS:

1. Andreas D. Baxevanis and B. F. Francis Ouellette, Bioinformatics: A Practical Guide to the Analysis of Genes and Proteins, Wiley Interscience, 2004.
2. Twyman RM. Principles of Proteomics, Taylor & Francis group, BIOS Scientific Publishers, 2004.
3. Bernard R. Glick and Jack J. Pasternak, Molecular Biotechnology, 2nd edition ,ASM press,2003

REFERENCE BOOKS:

1. Nawin C Mishra and Gunter Blobel. Introduction to Proteomics: Principles and Applications, Wiley, 2010.
2. Saraswathy N and Ramalingam P, Concepts and Techniques in Genomics and Proteomics, 1st edition, Woodhead Publishing, 2011.
3. Brown. T.A, Gene Cloning and DNA analysis, 2nd edition, ASM press, 2004.
4. Sandy Primrose, Principles of Gene Manipulation and Genomics,7th edition, Black Well Publishers,2006

1. Sterilization Techniques
2. An introduction to plant tissue culture
3. Callus induction from Carrot
4. Production of Secondary metabolite
5. Micropropagation
6. Preparation of primary cell culture
7. Passaging and cell viability by Tryphan blue
8. Trypsinization
9. MTT assay
10. Micronucleus test

TEXT BOOKS:

1. Ignacimuthu S. Plant Biotechnology, S J Oxford and IBH, New Delhi, 1996.

REFERENCE BOOKS:

1. Reinert J and Yeoman MM. Plant Cell and Tissue Culture, A Laboratory Manual ,Springer-Verlag Berlin Heidelberg, New York, 1982.
2. Nigel Jenkins (Ed). Animal cell Biotechnology: Methods and protocols, Humana press, New Jersey, 1999.

Course Coordinator

HOD

P18MCBS2L2	IMMUNOTECHONOLGY & rDNA TECHNOLOGY LAB							L	T	P	C
	Total Contact Hours – 45							0	0	6	3
	Prerequisite course – B.Sc. Biochemistry, Biotechnology, Microbiology and other related Life Science Subject										
	Course Coordinator Name & Department: - Dr. V. Padmapriya & Biotechnology										
COURSE OBJECTIVES: -											
Learners will be familiar with the immunological techniques. Learners will understand the diagnostic tests that are used in identifying diseases.											
COURSE OUTCOMES (COs)											
CO1	Handle various antigen antibody interaction techniques.										
CO2	Perform the blotting techniques.										
CO3	Calibrates the polymerase chain reaction.										
CO4	Manipulates the isolated DNA with the standard.										
CO5	Organizes and perform the Enzyme Linked Immune Sorbent Assay.										
Mapping of Course Outcomes with Program outcomes (POs) (H/M/L indicates strength of correlation) H-High, M-Medium, L-Low											
1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
2	CO1	H	M								
	CO2	H	M								
	CO3	H	M								
	CO4	H	M								
	CO5	H	M								
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									

1. Immunodiffusion
2. Radial immunodiffusion
3. Rocket immunoelectrophoresis
4. Enzyme Linked Immuno Sorbent Assay
5. Isolation of peripheral blood mononuclear cells
6. Isolation of bacterial genomic DNA
7. Restriction enzyme digestion of PUC18 DNA
8. Ligation of DNA fragments with cloning vector
9. Polymerase chain reaction
10. Southern blotting

TEXT BOOKS:

1. Karp G. Cell and Molecular Biology – Concepts and Experiments, 6 th Edn., John Wiley and Sons., 1998.
2. Verma PS and Agarwal VK. Cell Biology (Cytology, Biomolecules, Molecular Biology), Paperback, S. Chand and Company Ltd., 2016.

REFERENCE BOOKS:

1. McLennan A, Bates A, Turner P and White M. Bios Instant Notes Molecular Biology, 4 th Edn., Taylor and Francis, 2012.
2. Cox MM, Doudna JA and O'Donnell M. Molecular biology: Principles and Practice, WH Freeman and Company, 2012.

Course Coordinator

HOD

P18MCBS301	RESEARCH METHODS IN BIOLOGY	L	T	P	C
	Total Contact Hours – 60	3	1	0	4
	Prerequisite course – B.Sc. Biochemistry, Biotechnology, Microbiology and other related Life Science Subject.				
	Course Coordinator Name & Department: - Dr. V. JanakiDevi & Biotechnology				

COURSE OBJECTIVES: -

Learners will be familiar with the research in life sciences. Learners will understand the data collection, analysis and interpretation.

COURSE OUTCOMES (COs)	

CO1	Remember the basic research concepts and its types.
CO2	Understand the research topics related to society welfare and design a research using references.
CO3	Apply appropriate methods for data/ sample collection with ethical clearance.
CO4	Apply the data/samples using various methods.
CO5	Analyze the results with previous related research studies.
CO6	Analyze the results and interpret the value and predict the results.

Mapping of Course Outcomes with Program outcomes (POs)
(H/M/L indicates strength of correlation) H-High, M-Medium, L-Low

1	COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
2	CO1	H	M						H		
	CO2	H	M								
	CO3	H	M								
	CO4	H	M								
	CO5	H	M								
	CO6	H	M								
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**

Research- Meaning, Objectives and Motivation, Types of researches, Research process-steps. Criteria of good research. Data collection method- Primary data-observation method, Interview method, Secondary data.

UNIT II **12**

Need for Research Design, Features of good design, Important concepts relating to research designs, Types of Research Design, Basic Principles of Experimenting design, Developing a research plan.

UNIT III **12**

Interpretation-Technique and precaution in interpreting, Significance of report writing, Different steps in writing report, Layout of the research report. Writing research report. Case study.

UNIT IV **12**

Sampling Concepts for statistical analysis-Mean, median, standard deviation-standard error-ANNOVA, SPSS, R-program, Graph pad prism, origin software, sigma statistics, sigma plot.

UNIT V **12**

Legal and socio-economic impacts of biotech research-biosafety regulation-rDNA guidelines-issues involved in experimenting with animals-Experimental protocol approvals-contaminant level and environmental effects-impact of GM organisms and GM foods-IPR and patents.

TEXT BOOKS:

1. Gurumani N. Research Methodology for biological sciences, MJP publishers, Chennai, 2006
2. Kothari CR. Research Methodology-Methods and techniques, New Age publications, New Delhi, 2009.

REFERENCE BOOKS:

1. Paneerselvam R. Research Methodology, Prentice-Hall of India, New Delhi, 2004.
2. Ranjit Kumar. Research Methodology a step by step guide for beginners, 3rd edition, Sage publications, New Delhi 2011.

Course Coordinator

HOD

UNIT I **12**

Fermentation processes, Screening and selection of microbial culture, strain development. Design and operation of Fermenters, Packed bed reactor, Fluidized bed reactor, Photobioreactor, Solid state fermenter and Bubble column reactor. Measurement of process parameters temperature, pressure and pH, DO, foam; Flow rate of liquid and gases; Automation (processes computerization).

UNIT II **12**

Media sterilization, Batch and continuous sterilization; fermenter sterilization, filter sterilization. Microbial growth kinetics: Microbial growth cycle, measurement of growth, Batch culture, continuous culture, fed-batch culture. Inoculum production and transfer.

UNIT III **12**

Down Stream processing techniques - Recovery of particulate matter, product isolation, distillation, centrifugation, whole broth processing, filtration, aqueous two-phase separation, solvent extraction, chromatography and electrophoresis.

UNIT IV **12**

Analysis of the final product - Protein-based contaminants and removal, Product potency, Determination of protein and amino acids. Peptide mapping, N-terminal sequencing, Analysis of secondary and tertiary structure. Detection of protein-based product impurities: rapid methods for detection of specific organisms and toxins (immunological/molecular methods).

UNIT V **12**

Production of amino acids, Vitamins, Organic acids, Antibiotics and Recombinant protein production insulin. Microbial production and purification of lipase. Microbial exopolysaccharides (EPS). Production of cheese-cheddar, sauerkraut, probiotics, Baker's yeast, SCP. Mushroom cultivation. Production of wine and beer.

TEXT BOOKS:

1. Demain AL and Soloman INA. Mammal of Industrial Microbiology and Biotechnology, American society for Microbiology, Washington DC, 1986.
2. Cruger and Cruger. Industrial biotechnology, 2nd Ed, Sutherland MA Sinauer Associates, 1990

REFERENCE BOOKS:

1. Stanbury PF and Whitaker. Principles of fermentation technology, Pergamon Press, II Ed, Butterworth Heinemann-Elsevier, 2005
2. Belter PA, Cussler EL and Hu WS. Bio separation: Downstream processing for Biotechnology, John Wiley and Sons, 2003.

P18MCBS303	FOOD PROCESSING TECHNOLOGY	L	T	P	C
	Total Contact Hours – 60	3	1	0	4
	Prerequisite course – B.Sc. Biochemistry, Biotechnology, Microbiology and other related Life Science Subject.				
	Course Coordinator Name & Department: - Dr. V. JanakiDevi & Biotechnology				

COURSE OBJECTIVES: -

Learners will be familiar with food processing techniques. Learners will understand to protect the foods from various spoilage, processing and prevention methods.

COURSE OUTCOMES (COs)

CO1	Remember the basics about sources of food spoilage.
CO2	Understand the proper equipment and method depending upon nature of foods.
CO3	Apply various methods for avoid the spoilage of natural and fermented foods.
CO4	Apply food processing and preservation techniques for natural and fermented foods.
CO5	Analyze the quality of foods in post processing operations.
CO6	Analyze novel methods to preserve the food materials from spoilage.

Mapping of Course Outcomes with Program outcomes (POs)
(H/M/L indicates strength of correlation) H-High, M-Medium, L-Low

1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3			
2	CO1	H	M							H				
	CO2	H	M											
	CO3	H	M											
	CO4	H	M											
	CO5	H	M											
	CO6	H	M											
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**
Food processing industries in India, status, scope and categorization of food processing industries. Food safety, good manufacturing practice and quality assurance - HACCP and hurdle technology. Process control - Automatic and Computer based systems. Enzyme Technology - Application of enzymes in food processing.

UNIT II **12**
Food spoilage causes - biological changes - factors affecting bacterial growth and survival of microbes in food - Intrinsic and Extrinsic factors, Food borne diseases - bacterial and non bacterial agents, Fermented foods - Yoghurt, Cheese, Soy sauce, Sauerkraut, Bread and Idly.

UNIT III **12**
Processing and preservation by heat - Theory, Equipment and Effect on Foods - Blanching, Pasteurization, Sterilization, UHT Processing, Evaporation, Distillation, Extrusion, Baking, Roasting, Frying, Dielectric heating and Infrared heating. Retort processing of Ready to eat (RTE) products. Drying - water activity, Dehydration of fruits, vegetables, milk and animal products.

UNIT IV **12**
Processing and preservation by low temperature - Chilling, MAS, CAS, Freezing, Freeze drying and Freeze concentration. Food irradiation, Electromagnetic spectrum in food processing industry, ionizing and non-ionizing radiations - advantages and disadvantages.

UNIT V **12**
Coating, Enrobing, Dusting, Pan Coating and its types, Packaging - Theory, types of packaging materials, Printing and interactions. Filling and sealing of containers - Rigid, semi rigid, flexible containers and types of sealers, wrapping and labelling. Handling equipment for raw materials, ingredients and processing, waste management and disposal, storage and distribution.

TEXT BOOKS:

1. Adams MR and Mass MO. Food Microbiology, Second Edt., Royal Society of Chemistry, 1995.
2. Fellows PJ. Food Processing Technology - Principles and Practice, Second Edition, CRC Press, Woodhead Publishing Limited, Cambridge, England, 2000.

REFERENCE BOOKS:

1. Yin H Hui and Culberston JD. Handbook of Food Science, Technology and Engineering, CRC Press, 2006.
2. Desrosier NW and James N. The Technology of Food Preservation, AVI Publishers, 2007.

Course Coordinator

HOD

P18MCBS304	MEDICAL BIOTECHNOLOGY	L	T	P	C
	Total Contact Hours – 60	3	1	0	4
	Prerequisite course – B.Sc. Biochemistry, Biotechnology, Microbiology and other related Life Science Subject.				
	Course Coordinator Name & Department: - Dr. V. JanakiDevi & Biotechnology				

COURSE OBJECTIVES: -

Learners will be familiar with biotechnological application in medical aspects. Learners will understand the diseases, sample collection, diagnosis techniques and therapies.

COURSE OUTCOMES (COs)

CO1	Recall the basic of biotechnological applications in medical aspects
CO2	Recognize the gene therapy techniques for cure the diseases
CO3	Apply various mechanisms in assisted reproductive technology
CO4	Apply the knowledge of genetic material for disease diagnosis and environmental monitoring
CO5	Analyze the samples using DNA technology in medical forensics
CO6	Analyze the knowledge in recent trends in medical biotechnology

Mapping of Course Outcomes with Program outcomes (POs)
(H/M/L indicates strength of correlation) H-High, M-Medium, L-Low

1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
2	CO1	H	M								
	CO2	H	M								
	CO3	H	M								
	CO4	H	M								
	CO5	H	M								
	CO6	H	M								
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**

Gene therapy -Approaches for genetherapy, Exvivo therapy-Vectors in Gene therapy, Human artificial chromosome, Invivo gene therapy-Gene delivery by viruses, Gene therapy for AIDS, Antigen and antisense therapy, Monoclonal antibody production and its applications.

UNIT II **12**

Pharmaceutical products of DNA technology- Human protein replacement –Insulin, Growth hormone, Clotting factors VIII. Therapeutic agents for human diseases-Tissue plasminogen activators-Interferons - Erythropoietin -Alginate lyase.

UNIT III **12**

Assisted Reproductive technology, Manipulation of reproduction in human and animals- Artificial insemination, Embryo transfer, Invitro fertilization, Embryo cloning, causes of infertility and application of ART, Intrauterine insemination (IUI), Methodology of IVF- Cytoplasmic transfer, IVC, PED.

UNIT IV **12**

DNA in disease diagnosis and medical forensics- Methods of DNA assay-DNA in the diagnosis of infectious diseases and DNA and diagnosis of Genetic diseases, DNA analysis for environmental monitoring- DNA profiling.

UNIT V **12**

Recent trends in medical biotechnology-Exosomes in cancer nano medicine and immunotherapy, Neurodegenerative diseases, vaccine- Recombinant vaccines.

TEXT BOOKS:

1. Sathyanarayana U. Biotechnology, Third edition, Books & Allied Pvt. Ltd, New Delhi, 2010.
2. Pratibha Nallari and Venugopal Rao V. Medical Biotechnology, Oxford University Press, 2010.

REFERENCE BOOKS:

1. Bernard R Glick, Terry L Delovitch and Cheryl L Patten. Medical Biotechnology, Second edition, ASM Books Pvt Ltd, 2008.
2. George P Patrinos and Wilhelm Ansorge. Molecular Diagnostics, Academic Press, 2005.

P18MCBS305	NANOTECHNOLOGY	L	T	P	C
	Total Contact Hours – 60	3	1	0	4
	Prerequisite course – B.Sc. Biochemistry, Biotechnology, Microbiology and other related Life Science Subject.				
	Course Coordinator Name & Department: - Dr. V. JanakiDevi & Biotechnology				

COURSE OBJECTIVES: -

Learners will be familiar with nanomaterial science. Learners will understand the nanoparticles synthesis, properties and applications.

COURSE OUTCOMES (COs)	

CO1	Recall the basic history and future scope of nanotechnology
CO2	Understand physical, chemical and biological methods for nanoparticle synthesis
CO3	Apply the knowledge to develop new methods in particle size reduction and stabilization
CO4	Apply the properties nanoparticles using various techniques
CO5	Analyze the applications of nanoparticles in various fields
CO6	Analyze nano based products and their toxicity effects

Mapping of Course Outcomes with Program outcomes (POs)
(H/M/L indicates strength of correlation) H-High, M-Medium, L-Low

1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
2	CO1	H	M							M	H
	CO2	H	M								
	CO3	H	M								
	CO4	H	M								
	CO5	H	M								
	CO6	H	M								
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**

Scope and overview, length scales, history of nanotechnology, future of nanotechnology. Nanoparticles – size, shape, properties. Metal/metal oxide nanoparticles – polymer based nanomaterials - nano composites - carbon nano tubes - fullerenes – quantum dots – dendrimers.

UNIT II**12**

Synthesis of nanostructure: Physical methods - Chemical methods- Biological methods-Synthesis using microorganism and plant extracts. Characterization techniques- X-ray diffraction, Electron Microscopy -Scanning & Transmission, Energy dispersive analysis, Scanning Probe Microscopy, Atomic Force Microscopy, X-ray photo electron Spectroscopy, Fourier transform Infrared spectroscopy – Ultraviolet and visible spectroscopy– Thermogravimetric Analysis – Differential Scanning Calorimetry.

UNIT III**12**

Biosensors - optical biosensors based on nanoplasmonics, nanobiosensors. Nanorobotics in surgery. Nanocircuitry - S-layer proteins: structure, chemistry and assembly. DNA–protein nanostructures. DNA- gold-nanoparticle conjugates. Magnetic nanoparticles as contrast agents for MRI application and therapeutic application.

UNIT IV**12**

Activation and targeting of nanotechnology-based drug delivery systems- Metal/metal oxide and magnetic nanoparticles, polymer micelles, biodegradable polymers as drug carriers. Targeted drug delivery systems- Antibody conjugated nanoparticles. Ultrasound-responsive nanoparticles as drug and gene delivery carriers.

UNIT V**12**

Polymer-based nanocomposites for food packaging, Insecticides using nanotechnology, nano-fertilizers, Nano finishing in textiles (UV resistant, antibacterial, hydrophilic, self-cleaning, flame retardant finishes). Photocatalytic degradation of specific waterborne pollutants by nanomaterials. Toxicity and environmental risks of nanomaterials.

TEXT BOOKS:

1. Rao CN, Muller A, Cheetham AK. The Chemistry of Nanomaterials: Synthesis, Properties and Applications, Wiley, 2004.
2. David S Goodsell. Bionanotechnology, John Wiley & Sons, 2004.

REFERENCE BOOKS:

1. Brown.PJ and Stevens K. Nanofibers and Nanotechnology in Textiles. Woodhead Publishing Limited, Cambridge, 2007.
2. Pradeep T. Textbook of Nanoscience and Nanotechnology. McGraw Hill Education Private Ltd., 2012.

P18MCBS3L1	FERMENTATION TECHNOLOGY & FOOD TECHNOLOGY LAB	L	T	P	C
	Total Contact Hours – 45	0	0	6	3
	Prerequisite course – B.Sc. Biochemistry, Biotechnology, Microbiology and other related Life Science Subject.				
	Course Coordinator Name & Department: - Dr. V. JanakiDevi & Biotechnology				

COURSE OBJECTIVES: -

Learners will be familiar with the fermented food productions. Learners will understand the fermenter, standardize the fermentation conditions, improvement of quality and quantity of fermented foods.

COURSE OUTCOMES (COs)

CO1	Recall the basics about fermented food products
CO2	Select the specific fermentation method and appropriate conditions for processing
CO3	Organizes and perform the production method sequentially
CO4	Distinguish the byproducts from the fermenter and purify the products
CO5	Fastens the skills to develop a new fermented food product

Mapping of Course Outcomes with Program outcomes (POs)
(H/M/L indicates strength of correlation) H-High, M-Medium, L-Low

1	COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
2	CO1	H	M								H
	CO2	H	M								
	CO3	H	M								
	CO4	H	M								
	CO5	H	M								
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									

1. Microbial analysis of food products – bacterial and fungal
2. Microbial spoilage of refrigerated food
3. Extracellular enzyme activities – cellulase, protease, lipase and phosphatase
4. Milk microbiology – direct microscopic count – standard plate count
5. Reductase test (resazurin/methylene blue)
6. Isolation of microbes from yoghurt, curd
7. Field trip to dairy, food industries, sewage treatment plants
8. Inoculum preparation for fermentation
9. Screening of antibiotic producing microorganisms from soil
10. Production of extracellular metabolites from actinomycetes
11. Production of industrially important enzymes by Submerged fermentation
(Any one enzyme)
12. Production of industrially important enzymes by Solid state fermentation
(Any one enzyme)

TEXT BOOKS:

1. Hui YH, Lisbeth Meunier Goddik, Jytte Josephsen, Wai Kit Nip, Peggy S Stanfield. Handbook of Food and Beverage Fermentation Technology, CRC Press, 2004.
2. Brian Mcneil and Linda MH. Practical Fermentation Technology, John Wiley & Sons, Ltd, England, 2008.

REFERENCE BOOKS:

1. Neway JO. Bioprocess Technology Fermentation Process Development of Industrial Organisms, T & F Publisher, 1989.
2. Janarthanan S. Practical Manual on Fermentation Technology, I.K International Publishing House Ltd, New Delhi, 2012.

IV SEMESTER

P18MCBS401	MOLECULAR DIAGNOSTIC TECHNIQUES							L	T	P	C
	Total Contact Hours – 60							3	1	0	4
	Prerequisite course – B.Sc. Biochemistry, Biotechnology, Microbiology and other related Life Science Subject.										
	Course Coordinator Name & Department: - Dr. J. Senthil & Biotechnology										
COURSE OBJECTIVES: -											
Learners will be familiar with disease diagnosis and diagnostic tools. Learners will understand the molecular techniques, biochemical tests and assays.											
COURSE OUTCOMES (COs)											
CO1	Recall the infection, types of diseases and mode of transmission.										
CO2	Recognize the disease diagnosis methods and tools.										
CO3	Apply the molecular techniques for diagnosis.										
CO4	Apply the biochemical tests for detection of sugar, urea and protein.										
CO5	Analyze the importance of PCR and different assays.										
CO6	Analyze and design the primers that are needed for PCR analysis.										
Mapping of Course Outcomes with Program outcomes (POs) (H/M/L indicates strength of correlation) H-High, M-Medium, L-Low											
1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
2	CO1	H	M							H	M
	CO2	H	M								
	CO3	H	M								
	CO4	H	M								
	CO5	H	M								
	CO6	H	M								
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**

Introduction and History of diagnostics, Genetic basis of diseases, Inherited diseases. Infections - mode of transmission in infections, Types of infectious diseases - bacterial, viral, fungal, protozoan and other parasites. Philosophy and general approach to clinical specimens, Sample collection - method of collection, transport and processing of samples, interpretation of results.

UNIT II **12**

Traditional disease diagnosis methods and tools - Diagnosis of infectious diseases caused by bacteria (*Streptococcus*, *Salmonella*, *Vibrio*), fungal (Dermatophytosis, Aspergellosis), viruses (Pox, Adenoviruses, Hepatitis viruses), protozoa (Amoebiasis, Malaria, Leishmaniasis) and Helminthes (Filariasis, *Ascaris lumbricoides*).

UNIT III **12**

Molecular Techniques for diagnosis - PCR, RFLP, ELISA, DHPLC, MALDI-TOF. Disease identification and Genetic tests of disorders (Thalassemia, Sickle cell anaemia, Alzheimer's disease, Muscular Dystrophy), Cardio vascular disorder, Neural tube defects and Male infertility, Ultrasonography, Foetal Blood Sampling (FBS).

UNIT IV **12**

Biochemical tests for detection and quantification of sugar, albumin, urea, protein, globulin and vitamin. Endocrine disorders related to Thyroid and Reproduction (TSH, T3, T4, Estradiol, testosterone, LH, FSH).

UNIT V **12**

Methods and types of PCR and its applications, RT PCR, Real time PCR, Inverse, Multiplex and Nested PCR. Southern and Northern Hybridization, FISH, PAE and Western Blot. Immunoassays Types [RIA, ELISA, Chemiluminescent IA, FIA] and specific applications; Immunohistochemistry – principle and techniques. Different Levels of Biosafety, Containment.

TEXT BOOKS:

1. Carl A Burtis, Edward R Ashwood and David E Bruns. Tietz Textbook of Clinical Chemistry and Molecular Diagnosis, 5th edition, Elsevier, 2007.
2. Leonard DG, Bagg A, Caliendo AM, Deerlin VM and Kaul KL. Molecular Pathology in Clinical Practice, pp. 411 - 424, Springer, 2007.

REFERENCE BOOKS:

1. David E Bruns, Edward R Ashwood and Carl A Burtis. Fundamentals of Molecular Diagnostics, Saunders Group, 2007, ISBN-13: 9781416037378.
2. George P Patrinos and Wilhelm Ansorge. Molecular Diagnostics, Academic Press, 2005 ISBN: 0125466617.

MAJOR ELECTIVES

P18MEBS011	MAJOR ELECTIVE-I: METABOLIC REGULATION	L	T	P	C
	Total Contact Hours – 60	3	1	0	4
	Prerequisite course – B.Sc. Biochemistry, Biotechnology, Microbiology and other related Life Science Subject.				
	Course Coordinator Name & Department: - Dr. J. Senthil & Biotechnology				

COURSE OBJECTIVES: -

Learners will be familiar with the metabolism of biomolecules. Learners will understand the biosynthesis, biodegradation of each biological macromolecules and metabolic disorders.

COURSE OUTCOMES (COs)

CO1	Remember the basics of Carbohydrates, Lipids and Nucleic acids.
CO2	Recognize the metabolisms behind the macromolecules.
CO3	Apply the role of lipids and aminoacid degradation in eukaryotes.
CO4	Apply the biological significance of nucleic acids.
CO5	Analyze the importance of regulation and salvage pathways.
CO6	Analyze and understand the familiarity regarding purine and pyrimidine disorders.

Mapping of Course Outcomes with Program outcomes (POs)
(H/M/L indicates strength of correlation) H-High, M-Medium, L-Low

1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
2	CO1	H	M						H		
	CO2	H	M								
	CO3	H	M								
	CO4	H	M								
	CO5	H	M								
	CO6	H	M								
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**

Aerobic and anaerobic pathways: Glycolysis and its regulation, Gluconeogenesis and its regulation. TCA cycle, amphibolic & anaplerotic reactions. Electron Transport chain, Oxidative phosphorylation, & production of ATP, balance sheet of glucose oxidation, Oxidative stress, Pentose phosphate pathway (HMP shunt) & its regulation.

UNIT II**12**

Beta – oxidations of saturated & unsaturated fatty acids. Biosynthesis of fatty acids – Acetyl-CoA carboxylase reaction, Fatty acid synthase complex, biosynthesis of palmitate, energetics, Regulation of fatty acid biosynthesis. Biosynthesis of triacyl glycerols, Biosynthesis of cholesterol, regulation.

UNIT III**12**

Overview of amino acid synthesis. Biosynthesis of non-essential amino acids and its regulation. Biodegradation of amino acids – deamination, transamination, decarboxylation, urea cycle including its regulation.

UNIT IV**12**

De novo synthesis of purine and pyrimidine nucleotides, regulation and salvage pathways. Digestion of nucleic acids, degradation of purine and pyrimidine nucleotides. Inhibitors of nucleotide metabolism.

UNIT V**12**

Disorders of amino acids metabolism, phenylketonuria, alkaptonuria, maple syrup urine disease, homocystinuria and Hartnup's disease. Disorders of purine and pyrimidine metabolism – Lesch - Nyhan syndrome, Gout, and SCID.

TEXT BOOKS:

1. Freifelder D. Molecular Biology, 2nd edition, Narosa Publishing House, 1996.
2. Campbell MK. Biochemistry, 3rd edition, Saunders College Publishing Harcourt Brace College Publishers, 1999.

REFERENCE BOOKS:

1. Geoffrey L Zubay. Biochemistry, Wm C Brown Publishers, 4th Edition, 1998.
2. David W Martin, Peter A Mayes and Victor W Rodwell. Harper's Review of Biochemistry, LANGE Medical Publications, 1983.

UNIT I **12**
Introduction-Classification and nomenclature of enzyme –Properties of enzymes –Enzyme purification-selection-isolation and homogenization-separation and purification –gel filtration ,Ion exchange chromatography-Isoelectric focussing - test for purity and catalytic activity-Active site titrations, examples of purification of enzymes.

UNIT II **12**
Enzyme stability-folding and unfolding state-kinetic stability-methods for enzyme stability-enzyme modification, stabilizing agents-concentration-Immobilization-enzyme reactors.

UNIT III **12**
Biosensor-Introduction- components and working of biosensors-categories of biosensors-types of biosensors-Colorimetric-potentiometric-Amperometric-Optical-Piezoelectric and immune chemical biosensors.

UNIT IV **12**
Biphasic system-aqueous two phase system-aqueous organic biphasic system-Enzyme engineering-solvent engineering/Synzyme - polyfunctional enzymes-coenzyme regenerating system.

UNIT V **12**
Enzyme assay-Spectrophotometric-Radio isotope-Manometric methods-Substrate assays-Immuno assays-Radio immuno assays-Fluorescence-Photoluminescence based immune assay-Delayed enhanced Lanthanide fluorescence immunoassay- Applications of enzymes.

TEXT BOOKS:

1. Robert A Copeland. Enzymes - A Practical Introduction to Structure, Mechanism, and Data Analysis, 2nd edition, Wiley Publishers, 2004.
2. Harwey W Blanch and Douglas S Clark. Biochemical Engineering, CRC Press, 1995.

REFERENCE BOOKS:

1. Berger SL and Kimmel AR. Methods in Enzymology, Vol.152, Academic Press, 1987.
2. Martin F Chaplin, Bucke C. Enzyme technology, Cambridge University Press, 1990.

P18MEBS013	MAJOR ELECTIVE-I: BIOINFORMATICS							L	T	P	C
	Total Contact Hours – 60							3	1	0	4
	Prerequisite course – B.Sc. Biochemistry, Biotechnology, Microbiology and other related Life Science Subject.										
	Course Coordinator Name & Department: - Dr. J. Senthil & Biotechnology										
COURSE OBJECTIVES: - Learners will be familiar with biological sequences and databases. Learners will understand the databases searches and sequence analysis.											
COURSE OUTCOMES (COs)											
CO1	Recall the concept of data storage and retrieval.										
CO2	Recognize the different biological software and public database.										
CO3	Apply computational techniques for biological data acquisition.										
CO4	Apply the importance of computer aided drug design										
CO5	Analyze the database searches like BLAST and FASTA.										
CO6	Analyze and develop the drug designing methods and molecular modeling.										
Mapping of Course Outcomes with Program outcomes (POs) (H/M/L indicates strength of correlation) H-High, M-Medium, L-Low											
1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
2	CO1	H	M							H	
	CO2	H	M								
	CO3	H	M								
	CO4	H	M								
	CO5	H	M								
	CO6	H	M								
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**

Introduction: Bioinformatics – scope, history and application of Bioinformatics, Emerging areas in Bioinformatics. Introduction to Genomics and Proteomics, Human Genome Project, Biological Software, # Public Database- GenBank, Current Status of Bioinformatics.

UNIT II **12**

Workstation: Bioinformatics workstation, Unix system, Scripting languages- Perl and Python, markup languages- HTML, XML. General Purpose Language C Language, Types of Operator, Array, Function and Structure. #Basic ideas of C++ and Java based object oriented programming.

UNIT III **12**

Biological sequences and Databases: Introduction to Database Management System. Biological sequences databases – including proteins and nucleic acids sequence – EMBL, DDBJ. Structure databases- CATH, SCOP, Specialized database –Genome data base, #EST- Phylogenetic analysis: PAUP and PHYLIP, Genome Database: GOLD.

UNIT IV **12**

Database searches and sequence alignment: Database searches: FASTA and BLAST, Sequence Alignment- Pair wise sequence alignment and multiple sequence alignment. Sequences retrieval from database - NCBI. # Protein sequence analysis - SwissProt and PDB, GEM Dock.

UNIT V **12**

Applications: Introduction to Drug Design, Drug Design Approaches, and Computer aided Drug Designing Methods. # Molecular modeling drug design, Molecular Docking, ChemSketch.

TEXT BOOKS:

1. Attwood TK and Parry Smith DJ. Introduction to Bioinformatics, Pearson Education Ltd., New Delhi, 2004.

REFERENCE BOOKS:

1. Puneet Mehrotra, Dr. Kumud Sarin Swapna and K.Srivastava, The New Handbook of Bioinformatics, 2005.

Course Coordinator

HOD

UNIT I **12**
Fermentation - Bacterial, Fungal and Yeast, Biochemistry of fermentation. Traditional and Modern Biotechnology - A brief survey of organisms, processes, products. Basic concepts of upstream and downstream processing in Bioprocess, Process flow sheeting - block diagrams, pictorial representation.

UNIT II **12**
Primary Metabolites- Production of commercially important primary metabolites like organic acids, amino acids, alcohols and vitamins.

UNIT III **12**
Secondary Metabolites- Production processes for various classes of secondary metabolites: Antibiotics and Steroids.

UNIT IV **12**
Production of Industrial Enzymes, Biopesticides, Biofertilizers, Biopreservatives, Biopolymers Biodiesel, Cheese, Beer, SCP & Mushroom culture. Bioremediation.

UNIT V **12**
Production of recombinant proteins having therapeutic and diagnostic applications, vaccines. Bioprocess strategies in Plant Cell and Animal Cell culture.

TEXT BOOKS:

1. Kumar HD. A Textbook on Biotechnology, 2nd Edition, East West Press Pvt. Ltd., 1998.
2. Cruger Wulf and Anneliese Crueger. Biotechnology: A Textbook of Industrial Microbiology, 2nd Edition, Panima Publishing, 2000.

REFERENCE BOOKS:

1. Ratledge Colin and Bjorn Kristiansen. Basic Biotechnology, 2nd Edition, Cambridge University Press, 2001.
2. Prescott SC and Cecil G Dunn. Industrial Microbiology, Agrobios, India, 2005.

P18MEBS022	MAJOR ELECTIVE-II: INDUSTRIAL MICROBIOLOGY							L	T	P	C
	Total Contact Hours – 60							3	1	0	4
	Prerequisite course – B.Sc. Biochemistry, Biotechnology, Microbiology and other related Life Science Subject.										
	Course Coordinator Name & Department: - Dr. J. Senthil & Biotechnology										
COURSE OBJECTIVES: - Learners will be familiar with the production of various beneficial products. Learners will understand the production and application of feremnted products, sterilization methods and fermentation methods.											
COURSE OUTCOMES (COs)											
CO1	Recall the industrially important microorganisms.										
CO2	Recognize the microbial role in fermentation process.										
CO3	Apply the microbes in the production of fermented products.										
CO4	Apply microbes in the production of enzymes, antibiotics, beverages, organic acids.										
CO5	Analyze the importance of fermented vegetables, SCP and probiotics.										
CO6	Analyze and develop new methods in the design of bioreactors.										
Mapping of Course Outcomes with Program outcomes (POs) (H/M/L indicates strength of correlation) H-High, M-Medium, L-Low											
1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
2	CO1	H	M								H
	CO2	H	M								
	CO3	H	M								
	CO4	H	M								
	CO5	H	M								
	CO6	H	M								
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**
Introduction to fermentation– the range of fermentation process. The development of industrial fermentation industry. The component parts of a fermentation process. Industrial important organisms-Isolation and preservation- and strain improvement.

UNIT II **12**
Development of inoculums-Upstream processing media for industrial fermentation. Downstream processing – Removal of microbial cells and solid matter, foam separation, precipitation, filtration, centrifugation, cell disruptions, liquid – liquid extraction, chromatography membrane process.

UNIT III **12**
Kinetics-batch, fed batch and continuous process: Sterilization methods –batch sterilization, continuous sterilization of medium and air. Solid state and submerged: aerobic and anaerobic fermentation. Development of inoculum for yeast, bacterial mycelia and vegetative fungal process.

UNIT IV **12**
Industrial production of beverages –wine, beer; microbial production organic acids (Vinegar, lactic acid, citric acid), enzymes (amylase and protease) and antibiotics (penicillin). Fermented vegetables, SCP. Probiotics and prebiotics foods.

UNIT V **12**
Types and design of bioreactor : Construction material, Basic components –Agitator, aerator, valves and stream stirrer glands. Fermentor-Air lift, stirred tank ,tower, fluidized bed, packed bed , pulsed, photo reactors, PFR.

TEXT BOOKS:

1. Prescott and Dunn S. Industrial biotechnology, The AVI Publishing Component. Inc., 4th Edition, USA, 1982.
2. Stanbury PF, Whittaker A and Hall SJ. Principles of fermentation, Elsevier, 3rd edition, 1995.

REFERENCE BOOKS:

1. Joc MM, Sivakumar PK and Sukesh. An Introduction to Industrial Microbiology, Chand Publishing, 2010.
2. Casida LEJR. Industrial Microbiology, Second Edition, New Age International (P) Ltd. Publishers, New Delhi, 2011.

UNIT I **12**
Gene as a unit of mutation and recombination - DNA as a genetic material - different types; RNA as a genetic material - different types-genetic code; Mutation - molecular nature - physical and chemical mutagens and its applications.

UNIT II **12**
DNA replication - prokaryotic and eukaryotic DNA replication - Mechanisms of DNA replication - Enzymes and accessory proteins involved in DNA replication - Bacterial genetic system - transformation, conjugation and transduction.

UNIT III **12**
DNA damage - mechanism of repair - excision repair, recombination repair, promoter, operator, terminator and attenuator - SOS, and adaptive responses and their regulation - Heat shock response.

UNIT IV **12**
Genomics and Proteomics: structural and functional genomics; proteomics -definition - analysis and characterization - related technologies, and interrelations with genomics.

UNIT V **12**
Discovery of types and structure of plasmids - artificial plasmid transfer and their applications - Insertion sequence in prokaryotes - Transposable elements - discovery and characterization.

TEXT BOOKS:

1. Watson JD. The Molecular Biology of the Gene, Benjamin Cummings, 1987.

REFERENCE BOOKS:

1. Kumar HDK. Molecular Biology, Vikas Publishing House Private Ltd.
2. Alberts Szent- Gyorgyi. Introduction to Sub Molecular Biology, Academic Press, 1960.
3. Benjamin Lewin. Genes VII, Oxford University Press, Oxford, 1994.

Course Coordinator

HOD

P18MEBS031	MAJOR ELECTIVE-III: WASTE MANAGEMENT TECHNOLOGY	L	T	P	C
	Total Contact Hours – 60	3	1	0	4
	Prerequisite course – B.Sc. Biochemistry, Biotechnology, Microbiology and other related Life Science Subject				
	Course Coordinator Name & Department: - Dr. V. Padmapriya & Biotechnology				

COURSE OBJECTIVES:-

COURSE OUTCOMES (COs)

Mapping of Course Outcomes with Program outcomes (POs)
(H/M/L indicates strength of correlation) H-High, M-Medium, L-Low

4	Approval	Academic Council Meeting

UNIT I **12**

Introduction: Definition and Classification- Disposal methods: Land fill and Incineration – Recycling methods: biological reprocessing and Energy recovery-. Avoidance and Reduction Methods- Waste handling and Transport – Waste management Concepts

UNIT II **14**

Introduction- Waste Consistency- Waste Management Function: Production ,Collection, Storage, Treatment , Transfer, Utilization- Waste Management system Design – Waste Management System: Dairy Waste, Beef Waste, Swine Waste, Poultry Waste, Other animal – Municipal and Industrial Sludge- Food Processing – Agri Chemical Waste Management- Handling..

UNIT III **12**

Introduction- Overview – Characterization of Medical Waste- Waste Generation Methodology – Sterilization- Chemical Disinfection – Thermal Inactivation- Irradiation- Microwave Treatment – Grinding and Shredding – Compaction- Current Practice – Standards.

UNIT IV **12**

Paper and Pulp Industry – Leather Industry – Cement Industry – Chemical Industry – fertilizer Industry – Pharmaceutical Industry – Textile industry – Iron and Steel industry – Mining Industry – Lignite industry – Petroleum Industry – Nuclear Industry.

UNIT V **10**

Bioremediation – Phyto-remediation- Recycling of Plastic and Paper.

TEXT BOOK

1. Agricultural Waste Management Hand Book, USDA, 3rd Ed, 2005.
2. Indu Shekhar Thakur, Industrial Biotechnology Problems and Remedie, 6th Ed, 2006.

REFERENCE BOOKS

1. Lawrence K Wang, Nazik K Shammass and Yung Tse Hung. Advances in Hazardous Industrial Waste Treatment, CRC Press, Taylor & Francis group, 2008.

Course Coordinator

HOD

P18MEBS032	MAJOR ELECTIVE-III: BIOSTATISTICS	L	T	P	C

Total Contact Hours - 60							3	1	0	4	
Prerequisite course – B.Sc. Biochemistry, Biotechnology, Microbiology and other related Life Science Subject											
Course Coordinator Name & Department: - Dr. V. Padmapriya & Biotechnology											
COURSE OBJECTIVES: -											
Learners will be familiar with the biostatistical tools. Learners will understand the measures of central tendency, correlation and regression analysis and probability.											
COURSE OUTCOMES (COs)											
CO1	Recall the basic in biostatistics										
CO2	Recognize the measures of central tendency - Mean, Median, Mode										
CO3	Apply the correlation and regression table.										
CO4	Apply the probability, poisson and normal distributions										
CO5	Analyze the statistical interferences										
CO6	Analyze the results and interpret the values.										
Mapping of Course Outcomes with Program outcomes (POs) (H/M/L indicates strength of correlation) H-High, M-Medium, L-Low											
1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
2	CO1	H	M						H		
	CO2	H	M								
	CO3	H	M								
	CO4	H	M								
	CO5	H	M								
	CO6	H	M								
3	Category	Humanities & Social Studies (HS)	Basic Sciences	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									

Statistics - scope, collection, classification, tabulation of Statistical data-Diagrammatic and graphical representation of data-Bar diagram (simple, multiple and subdivided)-Pie diagram. Frequency diagram, histogram, frequency polygon and frequency curve line graphs..

UNIT II

12

Measures of central tendency; Arithmetic mean-definition-computation for different types of data(ungrouped and discrete and continuous frequency distributions)-other measures such as median, mode, geometric mean, harmonic mean and weighed average may be defined-computation for different types of data(ungrouped and discrete and continuous frequency distributions).

UNIT III

12

Correlation and regression-correlation table-coefficient of correlation-z transformation-regression-relation between regression and correlation.

UNIT IV

12

Probability –Probability distributions-Binomial (Gaussian distribution) and negative binomial, compound and multinomial distribution. Poisson distribution-Normal distribution-graphic representation-frequency curve and its characteristics-measures of central value, dispersion, coefficient of variation.

UNIT V

12

Statistical Interference –Testing of hypothesis-Null hypothesis-Type I and Type II errors. Test of significance of large and small samples based on Normal, t, z distributions with regards to mean, variance, proportions and Correlation coefficient-chi- square test of goodness of fit.

TEXT BOOKS:

1. Zar JH. Bio statistical methods, Prentice Hall, International Edition, 1984.
2. Daniel WW. Biostatistics, John Wiley Sons, New York, 1987

REFERENCE BOOKS:

1. Warren J, Gregoru E, Grant R. Statistical Methods in Bioinformatics, 1st edition, Springer, 2004.
2. Ronald Forthofer, Eun Lee, Mike Hernandez, Biostatistics- A Guide to Design, Analysis and Discovery, 2nd Edition, Academic Press, 2006..

Course Coordinator

HOD

Course Coordinator Name & Department: - Dr. V. Padmapriya & Biotechnology

Learners will be familiar with a basic knowledge about Ethics and copyrights. Learners will understand the types of patents and biosafety committee.

CO1	Recall the basic concepts in bioethics and theories related to biotechnology
CO2	Recognize the research concerns and challenges to public regulations
CO3	Apply knowledge for IPR patents
CO4	Apply the type of patents and their scopes
CO5	Analyze the roles of biosafety committee.
CO6	Analyze patent according to ethics and copyrights.

1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	H	PSO1	PSO2	PSO3
2	CO1	H	M									
	CO2	H	M									
	CO3	H	M									
	CO4	H	M									
	CO5	H	M									
	CO6	H	M									

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**
Bio ethics-concepts-Philosophical considerations-epistemology of science, ethical terms, principles and theories relevance to bio technology-Ethical and law issues-Medical techniques-Trans humanism and bio weapons

UNIT II **12**
Research concerns-animal rights, ethics of human cloning, emerging issue biotechnology's impact on society.DNA on the witness stand and use of genetics evidence in civil and criminal court cases. Challenges to public policy regulations, improving public understanding of biotechnology products to correct misconceptions

UNIT III **12**
Introduction to IPR-basics of patents, types of patents indian patent Act1970 recent amendments, filing patent application, precautions before patenting –disclosure and non disclosure. WIP Otreaties, Budapert treaty, PCT and implication, procedure for filing a PCT application, types of IP-patent, trademarks, copyrights. International frame work for the protection of IP and to history of GATT, WTO. WIPO and TRIPS global scenario of patents and Indian position

UNIT IV **12**
Patent filing infringement-application forms and guidelines, fee structure and time frames. Types of patenting-requirement procedure and costs, financial assistance for patenting and publication of patents - gazette of India, status in Europe and us patenting by research students. Patent meaning, scope, litigation case studies and examples.

UNIT V **12**
Biosafety committee, RCGM, GEAC of GMoS and LMoS- Definition –roles of institutional biosafety committee. GMos applications in food and agriculture environmental release of GMoS. Biosafety levels and primary containment for biohazards recommended biosafety levels for infectious levels of specific microorganism

TEXT BOOKS:

1. Ellen frankel Paul, Fred. Miller, Bioethics, Cambridge University Press, 2002.
2. John A Bryant, Linda Baggott la Vella, Bioethics for Scientists, Wiley, 2002.

REFERENCE BOOKS:

1. Emanuel E Crouch and Grady C Baltimore Maryland. John's Hopkins University Press, 2003.

OPEN ELECTIVES

P18OEBA001	ADVERTISING AND SALES MANAGEMENT					L	T	P	C		
	Total Contact Hours – 30					2	0	0	2		
	Prerequisite course –UG Level										
	Course Coordinator Name & Department:- T Manjiniprakash/BBA										
COURSE OBJECTIVES: - - Identify the terms and concepts that are commonly used in promotion and advertising. - Demonstrate preparation to comprehend the basic advertising. - Give the relationship which underlines these terms and concepts 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.											
	COURSE OUT COMES (COs)										
CO1	Students gain basic knowledge of Advertising its functions, roles and development of advertising.										
CO2	Know about Advertising design and its strategies.										
CO3	Expose on Advertising, media and about its types.										
CO4	To forecast sales and its techniques used in management.										
CO5	Students were enriched about salesmanship, sales planning, budgeting.										
CO6	Develop an advertising plan and present and defend it persuasively.										
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	PSO3
2	CO1	L	M						M	L	
	CO2	H	L								
	CO3	L	H								
	CO4	H	L								
	CO5	L	M								
	CO6	M	L								
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								

	BPO MANAGEMENT	L	T	P	C
UNIT – I	6				
Introduction to Advertising- Definition -Roles of Advertising- Functions of Advertising- Steps in Development of Advertisement					
UNIT – II	6				
Advertising Design- Appeals- Structure of an Advertisement - Message Strategies - Cognitive strategy- Executional Strategies-Creating Advertising- Advertising Effectiveness.					
UNIT – III	6				
Advertising Media - Merit and demerits- Kinds of Advertising - Advertising Media- print media - Broadcasting media- Non-media advertising- online advertising.					
UNIT – IV	6				
Sales Management - Defining - Objectives -Strategies- Sales Executives – Functions - Qualities - Sales Presentation Techniques - Emerging Trends in Sales Management.					
UNIT – V	6				
Selling Concept - Objectives- scope and techniques of Salesmanship- Sales Planning- Importance – process- Sales Budget- Objectives-uses of sales Budget.					
TEXT BOOKS					
1. Advertising & promotion: George E.Belch, THM					
2. Advertising Management, Dr. Varma&Aggarwal, kingBooks					
REFERENCES:					
1. Sales promotion and advertising management by M .N.Mishra. Himalaya Publication.					
2. Advertising and sales management by SanjeevChauhan (Astha publication)					
3. Anderson, Hair, Bush: Professional Sales Management, McGraw Hill, Singapore.					
T Manjiniprakash					
Course Coordinator					HOD

UNIT-I	6
Business Process Outsourcing – Meaning – definition - Basics - Benefits - BPO Models - - BPO Companies in India.	
UNIT-II	6
Healthcare BPO – Structure of the American Healthcare Sector – Activity Profile –Future Trends and Threats – Case Study – Cbay Systems.	
UNIT – III	6
Human Resource BPO – Reasons for outsourcing HR – Activities involved in HR BPO – HR Outsourcing Trends – Career in HR BPO – Emerging BPO Domains – Media and Entertainment BPO – Publishing BPO.	
UNIT – IV	6
Call Centres – Functions – Processes – classifications – Telemarketing – Tele selling – Preparing for a Job – Approach – Training – Selection Process.	
UNIT – V	6
Improving Efficiency – Handling Calls – Team Player – Pleasing the Customers –	
Converse efficiently – Reducing stress.	
TEXT BOOKS:	
1.BPO Industry in India by S K Awasthi by Jain Book	
2.Business Process Outsourcing: Its Prospects and Challenges by Barua.	
REFERENCE BOOKS	
i) SudhindraMokhasi(2009) ,BPO – Sutra : True stories from India’s BPO and call centres, -Rupa& Co.	
ii) Kulkarni, Sarika.(2005), Business process outsourcing – Delhi, Jaico Publishing House.	
iii) Shikapur, Deepak(2004), BPO Digest. Ameya Inspiring Books.	
Mr.P.Srinivasan	
CourseCoordinator	HOD

P18OEBA003	CALL CENTER MANAGEMENT- Voice and Non Voice						L	T	P	C	
	Total Contact Hours –30						2	0	0	2	
	Prerequisite course – UG Level										
	Course Coordinator Name & Department:-A.Jhoncy / BBA										
COURSE OBJECTIVES:- - Develop and motivate a call centre team. - Get the most out of call monitoring technology and prepare effective management reports. - React to and plan for operational bottlenecks. - Give meaningful feedback to call-centre agents and set achievable goals and targets. - Students will learn about the roles and methods of different kinds of call centers. They will apply this by designing their own call center and trying to anticipate customer needs.											
	COURSE OUT COMES (COs)										
CO1	Gaining a basic knowledge about call centers its functioning and classifications.										
CO2	To know about handling the Issues and problems related to calls in a efficient manner.										
CO3	Gives knowledge of technical communications, speech process and educate conversation of oral skills.										
CO4	Students acquire knowledge towards pre-interview about Interview questions and answering techniques										
CO5	Analyses fully about the medias of communications.										
CO6	Demonstrate awareness of the pragmatics of call center planning and operation										
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	PSO 1	PSO 2	PSO3
2	CO1	M	H						M	H	
	CO2	M	H								
	CO3	L	H								
	CO4	L	H								
	CO5	M	H								
	CO6	L	H								
3	Category	Humanities & Social Studies	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**
Call centers – Meaning – Functions – Processes - Classifications – Tele selling – Types of call centers.

UNIT – II **6**
Improving Efficiency – Handling calls – Team Players – Components and working of call center – Issues and problems.

UNIT – III **6**
Nature of Technical communication: Stages of communication – Nature of Technical Communication - The speech process – Conversation and Oral skills.

UNIT – IV **6**
Job Interview: Pre – Interview preparation techniques – Interview questions – Answering Strategies – Frequently asked Interview questions.

UNIT – V **6**
Communication media – Telephone – Fax – Internet – Email – Video conferencing.

TEXT BOOKS

1. Brad Cleveland - Call Center Management on Fast Forward: Succeeding in the New Era of Customer Relationships (3rd Edition) Third Edition,
2. Mr. Thomas Anthony Laird - Advice from a Call Center Geek: Rethinking Call Center Operations,

REFERENCE BOOKS

1. W. Stallings “Data and Computer Communication” Pearson Education, 5 Edition, 2001.
2. M. AshrajRizvi,” Effective Technical Communication”, Tata McGraw – Hill Education, 2005.
3. R.S.N.Pillai&Bagavathi – Modern commercial correspondence.

A.Jhoncy

Course Coordinator

HOD

UNIT – I	6
CRM – Introduction – Definition – Need for CRM – Customer satisfaction – Customer loyalty – Product Marketing – Direct Marketing-	
UNIT – II	6
Customer learning relationship – Key stages of CRM - Force driving CRM – Benefits of CRM – Growth of CRM Market in India – Key principles of CRM.	
UNIT – III	6
CRM – Program – Ground work for effective use of CRM – Components of CRM – Types of CRM.	
UNIT – IV	6
CRM Process - Frame work – Governance process- Performance evaluation process.	
UNIT – V	6
Use of Technology in CRM – Call center process – CRM Technology tools – Implementation – Requirements analysis – selection of CRM Package – reasons and failure of CRM.	
TEXT BOOK	
1. Kristin Anderson & Carol Kerr – Customer Relationship Management – McGrawHill 2002	
2.Sheth – Customer Relationship Management – McGraw Hill Edition 1 st Edition 2000	
REFERENCE BOOK	
1. Dr. P .Sheela Rani – Customer Relationship Management – Margham Publication.	
2. K. Balasubramaniyam – Customer Relationship Management – GIGO Publication, 2005.	
3. Dr. Ravi Kalakota E – business – Road map for success, Pearson education Asia, 2000.	
Dr.D.ArunKumar	
CourseCoordinator	HOD

UNIT – I	6
Introduction to Entrepreneurship: Meaning and concept of entrepreneurship - the history of entrepreneurship development - role of entrepreneurship in economic development	
UNIT – II	6
The Entrepreneur: Meaning of entrepreneur - the skills required to be an entrepreneur, and role models, mentors and support system.	
UNIT – III	6
Business Opportunity Identification: Business ideas, methods of generating ideas - legal form of new venture, protection of intellectual property -marketing the new venture.	
UNIT – IV	6
Preparing a Business Plan: Meaning - significance of a business plan - components -feasibility study.	
UNIT – V	6
Financing the New Venture: Importance - types of ownership securities - venture capital - types of debt securities -determining ideal debt-equity mix - financial institutions and banks.	
TEXT BOOK	
1. Robert D. Hisrich, Mathew J Manimala, Michael P Peters, Dean A Shepherd, “Entrepreneurship”, 9e,McGraw Hill Education, 2014.	
2. Peter F. Drucker, “Innovation and Entrepreneurship”,Harper Collins, 2009.	
REFERENCE BOOK	
1. John Bessant, Joe Tidd, “Innovation and Entrepreneurship”,2e,Wiley India Private Limited, 2012.	
2. Robin Lowe, Sue Marriott,"Enterprise: Entrepreneurship and Innovation: Concepts,Contexts and Commercialization"1e,Routledge, 2012.	
3. VeeraBhadrapaHavinal – Management Entrepreneurship – New Age International Publishers.	
Course Coordinator	HOD

P18OEBA006	ADVANCE HUMAN RESOURCE MANAGEMENT				L	T	P	C			
	Total Contact Hours – 30				2	0	0	2			
	Prerequisite course – UG Level										
	Course Coordinator Name & Department:- P.Srinivasan / BBA										
COURSE OBJECTIVES:- • Today’s competitive business environment owes its success to effective management of its human resource. • The quality of the organization’s employees, their attitude, behavior and satisfaction with their jobs, and their behavior towards ethics and values and a sense of fair treatment all impact the firm’s productivity, level of customer service, reputation, and survival. • The students of human resources management must aware of basic aspects of human resource management to understand the functioning of human resource management in an organizational setting. • Students gained knowledge in the present day human resources development practice by incorporate themselves in the changing environment of HRM.											
	COURSE OUT COMES (COs)										
CO1	Identify how firms gain a sustainable competitive advantages through people										
CO2	To be aware of the responsibility managers of have concerning human resource management										
CO3	Identify the importance of change management.										
CO4	To implement basics compensation and performance appraisal										
CO5	Importance of labour welfare and grievance handling for employment										
CO6	Understand the importance of Employee participation and Relations.										
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	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
2	CO1	H	H						M		
	CO2	M	M								
	CO3	L	H								
	CO4	M	L								
	CO5	M	M								
	CO6	H	H								
3	Category	Humanities & Social Studies	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
Human Resource Function- Human Resource Philosophy – Changing environments of HRM – Strategic human resource management – Role of HR Managers.	
UNIT – II	6
Recruitment & Placement: Sources, Developing and using application forms - IT and online recruitment - Selection process, basic testing concepts - types of test - work samples & simulation - selection techniques – interview - Designing & conducting the effective interview - computer aided interview.	
UNIT – III	6
Training & Development: Employee Orientation- Training process- Need analysis- Training techniques- special purpose training- Performance appraisal: Methods - Problem and solutions - MBO approach - Performance appraisal in practice.	
UNIT – IV	6
Basic Compensation & Pay plans - factors determining pay rate - Current trends in compensation - Computerized job evaluation - financial incentives - benefits - Insurance benefits - retirement benefits – welfare measure	
UNIT – V	6
Trade unions - Discipline administration - grievances handling - Labour Welfare: Importance & Implications of labour legislations - Employee health.	
TEXT BOOKS	
1. Dr. R.Venkatapathy& Assissi Menacheri, Industrial Relations &Labour Welfare, Adithya Publications, CBE, 2001. 5. Robert L.Gibson and Marianne H.Mitchell, Introduction to Counseling and Guidance, VI edition, PHI, 2005	
2. L.M. Prasad – Human Resource Management – S. Chand & Sons – 2007.	
REFERENCEBOOKS	
1. Gary Dessler & Biju Varrkey, "Human Resource Management, 15th edition.Pearson.	
2. David A. DeCenzo& Stephen P.Robbins, Personnel/Human Resource Management, Third edition, PHI/Pearson.	
3. VSP Rao, Human Resource Management: Text and cases, First edition, Excel Books, New Delhi - 2000.	
4. P.Srinivasan Human Resource Management", Seventh edition, Prentice-Hall of India P.Ltd., Pearson.	
D.K.Sowmiyalakshmi	
Course Coordinator	HOD

UNIT –I	6
Logistics management and Supply Chain management - Definition, Evolution, Importance. The concepts of logistics. Logistics relationships - Functional applications - Logistics Organization - Logistics in different industries.	
UNIT –I	6
Logistics Activities: – objectives, solution. Customer Service, Warehousing and Material Storage, Material Handling, information handling and procurement Transportation and Packaging - Reverse Logistics - Global Logistics	
UNIT-III	6
Fundamentals of Supply Chain - Development of SCM - Strategic Supply Chain Management and Key components - Drivers of Supply Chain Performance – key decision areas – External Drivers of Change.	
UNIT-IV	6
Supply Chain Drivers and Design Drivers of supply chain performance: Framework for structuring Facilities warehouse – Inventory – Transportation – Information - Sourcing, and Pricing – Revenue management.	
UNIT-V	6
Demand and Inventory Aggregate Planning in a Supply Chain: role - strategies Implementation Responding to predictable variability in supply chain – Types of supply chains - creating responsive supply chains lean	
TEXT BOOKS	
1. Supply Chain Management: Ronald H. Ballou, Samir K. Srivastava, Pearson Education Ltd, Jan 2007.	
2. Supply Chain Management: Anil Sinha, McGraw Hill Education, August 2011.	
REFERENCE BOOKS	
1. Logistics and Supply Chain Management: Martin Christopher, Pearson Education Ltd, 2016.	
2. Supply Chain Management: Sunil Chopra, Peter Meindl, Dharma Virus Kalra, Pearson Education Ltd, 2016.	
3. Supply Chain And Logistics Management: V. Anandaraj, S. Kumaran, Ishanka Saikira, Airwalk Publication, Jan 2018.	
T.Manjiniprakash.	
Course Coordinator	HOD

P18OEBA008	OFFICE MANAGEMENT						L	T	P	C	
	Total Contact Hours – 30						2	0	0	2	
	Prerequisite course – UG Level										
	Course Coordinator Name & Department:- D.K.Sowmiyalakshmi /BBA										
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.											
	COURSE OUT COMES (COs)										
CO1	To make them understand office management and duties of an office manager										
CO2	To give an idea about proper filing and indexing of office documents										
CO3	To understand the principles of record management and different types of records in business organization.										
CO4	To enable them to aware about safety hazardous and steps to improve office safety.										
CO5	To introduce different measures of office work										
CO6	Create an ideas about office 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	PSO 1	PSO 2	PSO3
2	CO1	H	H						H		
	CO2	M	M								
	CO3	M	H								
	CO4	L	H								
	CO5	H	H								
	CO6	H	M								
3	Category	Humanities & Social Studies	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: Meaning, functions and importance of office management; office management and organization. Principles of office management and organization.Principal departments of modern office.	
UNIT-II	6
Office Manager: qualities of office manager. The authorities and responsibilities of an office manager. Office accommodation: Selection of site. Office layout.Environment and working conditions.	
UNIT-III	6
Office equipment's - Reproduction equipment - Typewriter - Duplicators - Photo Copier - Communication Equipment - Intercom - Telephone - Use of Computers in Office Management Office System - Procedure - Routine - And methods - Paper work in office Filling functions.	
UNIT-IV	6
Office Communication: Various means of communication- Their use, Correspondence through Internet - Office Correspondence -Central vs. Departmental Correspondence - Handling Mail - Postal Services - Oral written - Internal and external communication - Records Management Types - Forms Controls - Principles - Foremost -Continuous stationery	
UNIT-V	6
Office Supervisor - Meaning and characteristics of Supervisor - Status - Place and Role of Supervisor - Effective Supervisor - Qualification - skill of Supervisor.	
TEXT BOOKS	
1. Modern Office Management: N. D Sharma, And Publishers, Jan 2006.	
2. Office Management: Prashansa K. Ghosh, S. Chand & Sons, Jan 2010	
REFERENCE BOOKS	
1. Office Management: R.S.N Pillai&Bhagavathi, S. Chandler & Come, Dec 2010.	
2. Office Management: R. Nangia, G. K Gupta, Crescent Publishing House.	
3. Office Management: Dr. R. K Chopra, PriyankaGauri, Himalaya Publishing House, Jan 2017.	
4. Of Non-Trading Organization-Receipts And Payment Account- Income And Expenditure Account	
D.K.Sowmiyalakshmi	
Course Coordinator	HOD

P18OEVC001	PHOTOGRAPHY AND VIDEOGRAPHY						L	T	P	C	
	Total Contact Hours – 45						2	0	0	2	
	Prerequisite – UG Level										
	Course Coordinator Name & Department:- L.Rakesh– Dept of Visual Communication										
COURSE OBJECTIVES											
- To understand the fundamentals of Photography and Videography - To examine the technical factors of indoor and outdoor photography and Videography - To enable the students to equip themselves to become a photography and Videography professionals.											
	COURSE OUT COMES (COs)										
CO1	Can analyze the fundamentals of Photography and Videography										
CO2	Understanding of the camera operations										
CO3	Evaluating the lighting										
CO4	Can be aware of the wrong exposures										
CO5	Can promote various types of photography and Videography										
CO6	Understanding the concept of photo-journalism										
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	PSO3
2	CO1	H	M								
	CO2	H	M								
	CO3	H	M								
	CO4	H	M								
	CO5	H	M								
	CO6	H	M								
3	Category	Humanities & Social Studies	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
Human Eye and Camera. Basics of Camera (aperture, shutter speed, focal length, f-stop, depth of field etc.) Camera operations, Introduction to Television Production, Types of telecasting, Television Crew, an overview of direction.	
UNIT-II:	6
Types of Still and video cameras. Types of Lenses. Visual Perception, Art direction, floor management- indoor & outdoor, production management, budget preparation. Locations: Indoor, set, on-sights sets, - Outdoor on-sight sets, blue matte. Etc.,	
UNIT-III:	6
Understanding lighting-indoor and outdoor, Exposing and Focusing, Types of lighting, Natural and Artificial Lights, Controlling lights, Exposure Meters. Camera techniques & operation, Framing, shots & movements (wide, medium, close ups, shadow, zoom, pan, tilt, aerial etc.),	
UNIT-IV:	6
Photography for advertising-Consumer and industrial. Usage of various types of camera lenses (Normal, Tele, Zoom etc.), usages of various filters (day ,night, colour correcting filter, diffusion filter), objectives TV lighting, various types of Lights (baby, Junior, Senior, etc.,)	
UNIT- V:	6
Basics of photo-journalism, Photo-features, Photo - essays, Writing captions, Visual story telling. Planning a shoot-studio, location, set props and casting.Colour temperature, lighting for different situations (interviews, indoor, out-door), types of lighting (Back, Front, full, semi, etc.,)	
TEXT BOOKS:	
1.The Art of Photography: A Personal Approach to Artistic Expression, Barnbaum, Bruce, Rocky Nook.	
2.Photography Demystified: Your Guide to Gaining Creative Control, David McKay, Photography Inc.	
3. Television Productions: A History of All Series and Pilots, by <u>Jon Abbott</u> , Publisher: McFarland & Company (May 13, 2009)	
4. Production Management for TV and Film: The Professional's Guide, Methuen Drama (August 1, 2010)	
REFERENCE BOOKS:	
1.The Photographer's Eye,Szarkowski, John, The Museum of Modern Art, New York (Publisher)	
2.Creative Composition: Digital Photography Tips and Techniques, Davis, Harold, Wiley	
3.From Concept to Screen: An Overview of Film and Television Production, Robert Benedetti, Pearson; 1 edition (June 11, 2001)	
4.The Television Handbook, Routledge, Holland, P (1998)	
Course Coordinator	HOD

P18OEEN001	SOFT SKILLS						L	T	P	C	
	Total Contact Hours – 30						2	0	0	2	
	Prerequisite – UG 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 OUT COMES (COs)										
CO1	Remember the personal as well as professionals goals of the students										
CO2	Understand the manners during professional meetings										
CO3	Apply the confidence and fluency in speaking English.										
CO4	Analyze the learners to fine-tune their linguistic skill with communication globally										
CO5	Evaluate the excellence in both personal and professional life										
CO6	Create the performance of learners at placement interviews and other recruitment procedures.										
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	PSO 1	PSO 2	PSO3
2	CO1	H	H						H		
	CO2	H	H								
	CO3	H	H								
	CO4	H	L								
	CO5	H	L								
	CO6	H	H								
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- LISTENING / VIEWING	6
Listening and note-taking – Listening to telephonic conversations – Ted talks – Inspiring Speeches – Watching documentaries on personalities, places, socio-cultural events, TV news programmes and discussions to answer different kinds questions, viz., identifying key idea and comprehension questions... so on.	
UNIT II- SPEAKING	6
Elements of presentation skills-Structure of presentation-presentation tools- mock interviews – group discussion – introducing one self and others – welcome address and proposing a vote of thanks- role play – debating.	
UNIT III - READING	6
Different genres of text (literature, media, technical) for comprehension – Reading strategies like note-making – reading graphs, charts and graphic organizer – Sequencing sentences – reading online sources like e-books, e-journals and e-newspapers.	
UNIT IV - WRITING	6
Resume/Report preparation/Letter Writing-Structuring the resume-comprehension-Describing charts and tables – writing for media on current events.	
UNIT V- PROJECT	6
Gender injustice: Dowry-Violence against women -Sexual Harassment -Eve teasing-Female infanticide-Prostitution. Social problem: Poverty-unemployment-Child Labour-Terrorism-Drug abuse-Alcoholism-Corruption. Industrial problem: Work and Labour organization-Elements-Principles-Staff and Functional Activities. Industrial Conflict: Strikes-Disputes-Grievances-Industrial development in India-Steps in Automation process-Industrial policy-Liberation.	
TEXT BOOKS	
1 .Rizvi ashraf ,Effective Technical Communication , Tata amcgraw Hill Education Private Ltd,New Delhi,2011.	
2. Townsend Roz , Presentation skills for the upwardly mobile , Emerald Publishers.	
REFERENCE BOOKS	
1. T.M.Farhathullah, communication skills for Technical students, Orient Longman Ltd,2002.	
2. Andree J Rutherford, Basic communication skills for Technology, Pearson Education,Asia (Singapore) Pte.Ltd, Banglore , 2001.	
Course Coordinator	HOD

P18OEEN002	MASS MEDIA AND COMMUNICATION						L	T	P	C	
	Total Contact Hours – 30						2	0	0	2	
	Prerequisite – UG Level										
	Course coordinator :- Dr.P.AROCKIA NATHAN Dept of English										
COURSE OBJECTIVES : To impart students with the efficient knowledge of important events in through literature											
	COURSE OUT COMES (COs)										
CO1	Remember the art of writing, report and editing										
CO2	Understand the skills of writing										
CO3	Apply the Role & importance in social change										
CO4	Analyze the social structure of Indian society										
CO5	Evaluate the growth & development of communication and media										
CO6	Create the interpreting the meaning from the text										
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	PSO3
2	CO1	H	L						H	M	L
	CO2	H	L								
	CO3	H	L								
	CO4	H	L								
	CO5	H	L								
	CO6	H	L								
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 -Communication and Media	6
Communication & Media: Definition, meaning and concept.	
Different types of communication: verbal and written	
Scope and Process of Mass Media & Communication	
UNIT II -History of Mass media	6
History of the development of electric media in India: Radio & TV	
Role of media in society, Impact of media on audience,	
Media effects, limitations and different form of media.	
UNIT- III- Role & Responsibilities	6
Role and responsibilities of journalist, ethics, careers,	
Media management, Media laws in India, and freedom of press	
Qualities and Responsibilities of a reporter	
UNIT IV -Theories & Principles	6
Theories and Principles of Editing	
Communication and theories of social change,	
Role of media in social change, Development communication	
UNIT V-Technology & Development	6
Changing trends of mass communication under the process of globalization	
Technology in the development of media.	
TEXT BOOKS	
1. Vivian, John, Mass Media & communication Boston, Massachusetts : Pearson Allyn and Bacon, c.2008.	
2. Stovall, James Glen, Writing for the mass media, New Jersey : Pearson Education, Inc., c.2012	
REFERENCE BOOKS:	
1. Parthasarathy, Rangaswami, journalism in India, sterling Publisher pvt. Ltd. New Delhi.	
2. D.S. Mehta. Mass communication and Journalism in India New Delhi, Allied Publishers, 2011	
Course Coordinator	HOD

P18OESC001	COMPUTER APPLICATIONS					L	T	P	C		
	Total Contact Hours – 30					2	0	0	2		
	Prerequisite course – UG Level										
	Course Coordinator Name & Department:- Dr. S.Thiru Nirai Senthil / 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 OUT COMES (COs)										
CO1	Gain knowledge in fundamental computer applications										
CO2	Understand the concept of input device functions										
CO3	Identify 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	PSO 1	PSO2	PSO3
2	CO1	H	L							H	
	CO2	H	L								
	CO3	H	L								
	CO4	H	L								
	CO5	H	L								
	CO6	H	L								
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	Approv		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,2010.	
2. Alexis Leon & Mathews Leon, “Fundamentals of Information Technology”, Vikas Publishing House, New Delhi,2009.	
REFERENCE BOOKS:	
1. Rajeev Mathur, “Dos Quick Reference”, Galgotia Publications.	
Course Coordinator	HOD

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 to multimedia”,1998.	
2. Mohammad Dastbaz, “Designing Interactive Multimedia Systems”,2002.	
Reference Books	
1. Bohdan O. Szuprowicz, “Multimedia Networking”,1995.	
2. Stephen McGloughlin, “Multimedia on the web”,1997.	
Course Coordinator	HOD

P18OESC003	ADVANCED EXCEL						L	T	P	C	
	Total Contact Hours – 30						24	0	0	2	
	Prerequisite course – UG Level										
	Course Coordinator Name & Department:- S.Anupriya / BCA										
COURSE OBJECTIVES:- To identify the various functions in Excel Sheet											
	COURSE OUT COMES (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	PSO 1	PSO 2	PSO 3
2	CO1	H	L								H
	CO2	H	L								
	CO3	H	L	M	M						
	CO4	H	L	M	M						
	CO5	H	L	M	M						
	CO6	H	L	M	M						
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 Subtotals , 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” ,A Press, 2015 edition.	
REFERENCE BOOKS	
hn Walkenbach, “Microsoft Excel 2013 Bible”, Wiley Publications, 2013.	
Course Coordinator	HOD

P18OESC004	WEB DESIGNING					L	T	P	C		
	Total Contact Hours – 30					2	0	0	2		
	Prerequisite course – UG Level										
	Course Coordinator Name & Department:- V.Ramya/BCA										
COURSE OBJECTIVES:- To Understand the basic web designing concepts.											
	COURSE OUT COMES (COs)										
CO1	Gain knowledge in web basics and server side scripting.										
CO2	Execute the HTML coding.										
CO3	Apply hyper links between webpages										
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	PSO3
2	CO1	H	L								H
	CO2	H									
	CO3	H									
	CO4	H									
	CO5	H	L								
	CO6	H	L								
3	Category	Humanities & Social Studies	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,2010.	
4. T. A Powell, “Complete Reference HTML (Third Edition)”, TMH, 2002.	
Course Coordinator	HOD

P18OESC005	PHOTOSHOP						L	T	P	C	
	Total Contact Hours – 30						2	0	0	2	
	Prerequisite course – UG 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 OUT COMES (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	Gain knowledge in 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	PSO3
2	CO1	H	L								H
	CO2	H	-								
	CO3	H	-								
	CO4	H	-								
	CO5	H	L								
	CO6	H	L								
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 back ground.	
UNIT II	6
Photoshop program window-titlebar, menu bar, option bar, image window, image title bar, status bar, ruler, palettes ,tool box, 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 tool box: 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.	
TEXT BOOKS	
1. Reema Thareja ,”Fundamentals of Computers”,Oxford University Press,2014.	
REFERENCE BOOKS	
1. Photoshop: Beginner's Guide for Photoshop - Digital Photography, Photo Editing, Color	
2. Adobe Creative Team ,”Adobe Photoshop Class Room in a Book”,2014.	
Course Coordinator	HOD

P18OESC006	FLASH					L	T	P	C		
	Total Contact Hours – 30					2	0	0	2		
	Prerequisite course – UG Level										
	Course Coordinator Name & Department:- N.Mathimagal/ BCA										
COURSE OBJECTIVES:- Learners can identify methods appropriate for Basic Animation. Apply methods to design with flash.											
	COURSE OUT COMES (COs)										
CO1	Understand in 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	PSO3
2	CO1	H	L								H
	CO2	H	-								
	CO3	H	-								
	CO4	H									
	CO5	H	L								
	CO6	H	L								
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 twining , 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.	
Course Coordinator	HOD

P18OESC007	COMPUTER HARDWARE AND NETWORKING						L	T	P	C	
	Total Contact Hours – 30						2	0	0	2	
	Prerequisite course – UG Level										
	Course Coordinator Name & Department:- V.Ramya/BCA										
COURSE OBJECTIVES:- Learners familiar with the basic concepts of Microprosser,Controller, Server and to demonstrate the traditional imperative design of CPUs, cards, PCs and BIOS.											
	COURSE OUT COMES (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	PSO 1	PSO2	PSO3
2	CO1	H	L						H	M	L
	CO2	H	L								
	CO3	H	L								
	CO4	H	L								
	CO5	H	L								
	CO6	H	L								
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, October 2013.	
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

P18OESC008	COMPUTER PROGRAMMING						L	T	P	C	
	Total Contact Hours – 30						2	0	0	2	
	Prerequisite course – UG Level										
	Course Coordinator Name & Department:- S.Anupriya/ BCA										
COURSE OBJECTIVES:- Learners understand the basic concepts of C programming. Practice the use of conditional and looping statements. Implement arrays, functions and pointers. Gain skills to handle strings and files.											
	COURSE OUT COMES (COs)										
CO1	Understand the concept of data types, loops, functions, array, pointers, string, structures and files.										
CO2	Design flow-chart, algorithm and program logic.										
CO3	Analyze problems, errors and exceptions.										
CO4	Apply programming concepts to compile and debug c programs to find solutions.										
CO5	Gain knowledge to use Function, Pointers, Structures, Unions & preprocessor directives										
CO6	Construct programs that demonstrate effective use of C.										
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	PSO 1	PSO 2	PSO3
2	CO1	H	L								H
	CO2	H	L								
	CO3	H	L	M				H			
	CO4	H	L	M				H			
	CO5	H	L	M				H			
	CO6	H	L	M				H			
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. Pradip Dey, Manas Ghosh, “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	

P18OESC009		OFFICE AUTOMATION TOOLS						L	T	P	C
		Total Contact Hours – 30						2	0	0	2
		Prerequisite course – UG Level									
		Course Coordinator Name & Department:- V.Brindha/BCA									
COURSE OBJECTIVES:- Learners understand the basic concepts of word, Excel, Power Point.											
	COURSE OUT COMES (COs)										
CO1	Understand the text manipulations for word documents.										
CO2	Analyze the templates and mail merge concepts.										
CO3	Apply the cell editing, formulae, built in functions used in the Excel Sheet.										
CO4	Develop the power point slide designs and backgrounds.										
CO5	Develop the graphics and animations using wizards.										
CO6	Create a document and apply various formatting 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	PSO 1	PSO 2	PSO3
2	CO1	H	L								H
	CO2	H	L								
	CO3	H	L	M				H			
	CO4	H	L	M				H			
	CO5	H	L	M				H			
	CO6	M	L	M				H			
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”, Universe Publications,2012.	
Course Coordinator	HOD

U18OEMI001	CLINICAL MICROBIOLOGY					L	T	P	C		
	Total Contact Hours – 30					2	0	0	2		
	Prerequisite course – Under graduate degree in any discipline										
	Course Coordinator Name & Department:- Dr. J. Senthil & Microbiology										
COURSE OBJECTIVES:- Learners will be familiar with microbiological related diagnostic techniques. Learners will understand the microbial morphology, structure, characters, classification, diseases and diagnostic tests.											
	COURSE OUT COMES (COs)										
CO1	Recall the general classification of microbes.										
CO2	Recognize the different specimen collection methods and staining methods.										
CO3	Apply different diagnostic tests to identify the diseases.										
CO4	Apply the role of human pathogens in causing diseases.										
CO5	Analyze the importance of antimicrobial compounds.										
CO6	Analyze and develop new antimicrobial drugs and antibiotics against wide range of pathogens.										
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	PSO 1	PSO 2	PSO3
2	CO1	H	M						H		
	CO2	H	M								
	CO3	H	M								
	CO4	H	M								
	CO5	H	M								
	CO6	H	M								
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
General introduction about clinical microbiology, Sterilization and Disinfection., Culture Media preparation, Staining Methods, Collection and Transportation of Specimen - General Principles, Containers, Rejection, Samples - Urine, Faeces, Sputum, Pus, Body fluids, Swab, Blood, Disposal of Laboratory/Hospital Waste.	
UNIT II	6
General characters and classification of bacteria, Characteristics - Growth and maintenance of Bacteria, Pathogenicity and diagnosis of bacterial pathogens, antimicrobial compounds against clinical pathogens.	
UNIT III	6
Morphology and structure of fungi - Classification of fungi - Nutrition and cultivation of fungus - Cutaneous & Sub cutaneous and Systemic Mycosis - Lab diagnosis of fungal Infections - Opportunistic fungal infections.	
UNIT IV	6
General characters of viruses. - Classification of viruses. - Lab diagnosis of viral infections. - Cultivation of viruses. - Bacteriophages - Retro viruses - HIV, Hepatitis virus, Pox virus . - Picorna virus - Polio. - Orthomyxo virus - Influenza. - Arbo virus - Chikungunya, Dengue. - Herpes and Adeno virus.	
UNIT V	6
Definition - parasitism, host, vectors etc. Classification of Parasites, Phylum Protozoa- general Pathogenic and non pathogenic protozoa, Phylum Nematelminthes/Round words (Nematoda), Phylum Platyhelminthes - class - Cestoda, class - Trematoda, Lab diagnosis of parasitic infections.	
TEXT BOOKS:	
1. Monica Chees Brough. Medical laboratory manual for tropical countries, Elsevier Health Sciences, Butter worths, 1987.	
2. Bailey and Scott. Diagnostic Microbiology, Eighth edition, The Mosby Company, 1990.	
REFERENCE BOOKS:	
1. Keith Struthers K. Clinical Microbiology, 2 nd Edition, CRC Press, 2017.	
2. Jennie Wilson. Clinical Microbiology -An Introduction for Healthcare Professional,	
8 th Edition, Baillière Tindall, 2000.	
Course Coordinator	HOD

U18OEMI002	HERBAL MEDICINE						L	T	P	C	
	Total Contact Hours – 30						2	0	0	2	
	Prerequisite course – Under graduate degree in any discipline										
	Course Coordinator Name & Department:- Dr. J. Senthil & Microbiology										
COURSE OBJECTIVES:-											
Learners will be familiar with medicinal herbs. Learners will understand the importance of herbal drugs and herbal therapies.											
	COURSE OUT COMES (COs)										
CO1	Recall the herbal medicines used in daily life.										
CO2	Recognize the different methods of herbal extraction and its types.										
CO3	Apply various herbal medicines in curing the diseases.										
CO4	Analyze the role of herbs in drug discovery.										
CO5	Evaluate the importance and toxicity studies of herbal extracts.										
CO6	Create and develop new drugs from wide range of medicinal plants available worldwide.										
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	PSO 1	PSO 2	PSO 3
2	CO1	H	M						H		
	CO2	H	M								
	CO3	H	M								
	CO4	H	M								
	CO5	H	M								
	CO6	H	M								
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 of Herbal drug, Importance of Herbal therapies, Herbs used as nutraceuticals and healing agents. Making and using herbal medicines for common ailments like cold, skin infections and Diarrhea; Analytical Profiles of selected herbs.	
UNIT II	6
General methods of extraction, types and principles of extractions - merits and demerits, selection of suitable extraction methods, purification and recovery of solvents	
UNIT III	6
Different methods for isolation and estimation of phyto-constituents from medicinal herbs like <i>Mucuna pruriens</i> , <i>Garcinia combogia</i> , Green tea, <i>Hypericum species</i> etc.	
UNIT IV	6
Qualitative and Quantitative estimation of standardized extracts by HPTLC, Biological standardization -Pharmacological screening of herbal extracts and Microbiological evaluation of herbal extracts, Toxicity studies of herbal extracts.	
UNIT V	6
Herbal drugs acting on brain and nervous system – Rheumatoid arthritis – Psychoactive drugs – Depressants, Stimulants, hallucinogens – sources, effects, basic mechanism of action.	
TEXT BOOKS:	
1. Indian Herbal Pharmacopoeia, Vol.1 & 2, RRL, 1 DMA, 1998, 2000.	
2. Kokate CK, Purohit and Gokhale. Text book of Pharmacognosy, 4 th edition, Nirali Prakashan, 1996.	
REFERENCE BOOKS:	
1. Toxicology and Clinical Pharmacology of Herbal Products, Melanie Johns Cupp.	
2. Choudhary RD. Herbal drug industry, 1 st edition, Eastern publisher, New Delhi, 1996.	
Course Coordinator	HOD

P18OEPH001	ELECTRICAL TECHNICIAN					L	T	P	C		
	Total Contact Hours - 30					2	0	0	2		
	Prerequisite – B.Sc Physics										
	Course Coordinator Name & Department:- – Dr. S.Anandhi / Physics										
OBJECTIVES: Students will have an appreciation on the electrical systems and electrical equipment typically used in the Oil and Gas production plant.											
	COURSE OUT COMES (COs)										
CO1	Analyze and solve routine technical problems related to electrical systems by applying mathematics and science principles.										
CO2	Explain how to used electrical tools, operate and maintain specific equipment in the Oil and Gas production plant										
CO3	Explain how to perform corrective and preventive maintenance in electrical tasks.										
CO4	Understand the work on electrical systems safely and efficiently.										
CO5	Understand the electrical system and electrical equipment used in the Oil and Gas production plant.										
CO6	To execute the principle and how to working process of the transformer and classification of transformer										
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	PSO 2	PSO3
2	CO1	H	H						H		
	CO2	H	H								
	CO3	M	M								
	CO4	M	H								
	CO5	H	H								
	CO6	H	H								
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
Basic Principle Of Petroleum - Overview of Oil and Gas Processing -Wellhead Platform and Equipment	
UNIT –II	6
Introduction to Instrumentation -P & ID Drawing -Introduction to Distributed Control System (DCS)	
UNIT –III	6
Safety in Electrical Maintenance - Batteries and Chargers -Reading Electrical Diagrams - Cables and Conductors - Terminations and Splices - Motor Branch Circuit Protections	
UNIT –IV	6
Three Phase AC Induction Motors - AC Generator Maintenance -Fire & Gas Detection and Safety Systems and SIS -DC Generator -Construction& Principle- Types-Series,- Shunt & Compound Generator- EMF equation, Characteristics - (OCC & LCC). Armature reactions,- commutation Efficiency, Regulation & Applications. DC Motor-Construction& Principle. Types- Series, Shunt & Compound Motors. Characteristics curve-Applications. Necessity of starter- Construction and Working of- starters (3 point& 4 point). Speed control of DC Shunt-motor (armature & Field control. Traction System.- Trouble shooting –Care and maintenance.	
UNIT-V	6
Transformer –Principle -Construction- Classification of Transformers - EMF equation ,rating - Loading, Losses & Efficiency Regulation. Parallel Operation- Cooling methods, Transformer- oil testing. Care and maintenance,- Protective devices. Tap Changer – ON load and OFF- load. Auto transformer, Instrument- Transformer- CT & PT. Welding Transformer.	
TEXT BOOKS	
1. Fundamental Electrical circuits by Charles K.Alexandeer and Matthew NO Sadiku(2003)	
2. Fundamental of Digital circuits 3 rd edition by Kumar A Anandh	
Course Coordinator	HOD

P18ACEN001	AUDIT COURSE : ENGLISH FOR RESEARCH PAPER WRITING					L	T	P	C		
	Total Contact Hours – 30					2	0	0	0		
	Prerequisite course – UG Level										
	Course Coordinator Name & Department:- Mr.V.C.Jain/Department of English										
COURSE OBJECTIVES:- Understand the skills needed when writing a Title Ensure the good quality of paper at very first-time submission.											
	COURSE OUT COMES (COs)										
CO1	Recognize to prepare and Plan the word order, breaking of long sentences, structural formation of paragraph and being concise without any ambiguities.										
CO2	Describe how to write abstract and introduction to any topic or project.										
CO3	Relate the skills require for the discussions and conclusions.										
CO4	Express the quality of paper and time management in writing skills.										
CO5	Categorize the useful phrase and how to ensure the paper is as good.										
CO6	Prepare the oral presentation in class using effective delivery strategies.										
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	PSO3
2	CO1		H	L					H		
	CO2		H	L							
	CO3		H	L							
	CO4		H	L							
	CO5		H	L							
	CO6		H	L							
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 PLANNING AND PREPARATION : **6**

Planning and Preparation - word order - breaking up long sentences, structuring, paragraphs and sentences, being concise and removing redundancy, avoiding ambiguity and vagueness.

UNIT-II ABSTRACT **6**

Clarifying who did what - highlighting your findings - hedging and criticizing - paraphrasing and plagiarism - sections of a paper - abstracts - introduction.

UNIT -III DISCUSSION AND CONCLUSION **6**

Review of the literature - methods - results - discussion - conclusions, the final check - key skills are needed when writing a title - key skills are needed when writing an abstract - key skills are needed when writing an introduction - skills needed when a review of the literature.

UNIT –IV WRITING SKILLS **6**

Skills are needed when writing the methods - skills needed when writing the results - skills are needed when writing the discussion - skills are needed when writing the conclusions.

UNIT –V QUALITY AND TIME MAINTAINANCE **6**

Useful phrases - how to ensure paper is as good as it could possibly be the first -time submission.

TEXT BOOKS :

1. Goldbort R (2006) Writing for Science, Yale University Press (Available on Google Books).
2. Day R(2006), How to Write and Publish a Scientific Paper, Cambridge University Press.

REFERENCE:

1. HighmanN, Handbook of Writing for the Mathematical Sciences, SIAM, Highman's Book, 1st, Edition, 1998.
2. Adrian Wallwork, English for Writing Research Papers, Springer New York Dordrecht
3. Heidelberg London, 2nd Edition, 2011.

Course Coordinator

HOD

P18ACCE002	DISASTER MANAGEMENT					L	T	P	C		
	Total Contact Hours – 30					2	0	0	0		
	Prerequisite course – UG Level										
	Course Coordinator Name & Department:- Mr.V.C.Jain/Department of English										
COURSE OBJECTIVES:- Understand the skills needed when writing a Title Ensure the good quality of paper at very first-time submission.											
	COURSE OUT COMES (COs)										
CO1	Recognize to prepare and Plan the word order, breaking of long sentences, structural formation of paragraph and being concise without any ambiguities.										
CO2	Describe how to write abstract and introduction to any topic or project.										
CO3	Relate the skills require for the discussions and conclusions.										
CO4	Express the quality of paper and time management in writing skills.										
CO5	Categorize the useful phrase and how to ensure the paper is as good.										
CO6	Prepare the oral presentation in class using effective delivery strategies.										
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	PSO 1	PSO 2	PSO3
2	CO1						H				
	CO2						H				
	CO3						H				
	CO4						H				
	CO5						H				
	CO6						H				
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 INTRODUCTION:**6**

Disaster : Definition - Factors and Significance - Difference between Hazard and Disaster - Natural and Manmade Disasters - Difference - Nature - Types and Magnitude.

UNIT – II REPERCUSSIONS OF DISASTERS AND HAZARDS:**6**

Economic Damage - Loss Of Human And Animal Life - Destruction Of Ecosystem - Natural Disasters: Earthquakes - Volcanisms - Cyclones - Tsunamis - Floods - Droughts And Famines - Landslides And Avalanches - Man-made disaster.

UNIT –III DISASTER PRONE AREAS IN INDIA:**6**

Study Of Seismic Zones - Areas Prone To Floods And Droughts - Landslides And Avalanches - Areas Prone To Cyclonic And Coastal Hazards With Special Reference To Tsunami - Post-Disaster Diseases And Epidemics.

UNIT -IV DISASTER PREPAREDNESS AND MANAGEMENT**6**

Preparedness: Monitoring Of Phenomena Triggering A Disaster Or Hazard - Evaluation Of Risk: Application Of Remote Sensing, Data From Meteorological And Other Agencies - Media Reports: Governmental And Community Preparedness.

UNIT -V RISK ASSESSMENT**6**

Disaster Risk: Concept And Elements - Disaster Risk Reduction, Global And National Disaster Risk Situation - Techniques Of Risk Assessment - Global Co- Operation In Risk Assessment And Warning, People's Participation In Risk Assessment - Strategies for Survival.

TEXT BOOKS:

1. R. Nishith, Singh AK, "Disaster Management in India: Perspectives, issues and strategies "New Royal book Company.
2. Sanskrit for Beginners by Dr. M. Narasimhacharyand Dr.S. Ramaratnam, N&R Publications, Chennai & New Delhi.

REFERENCE:

1. Sahni, PardeepEt.Al. (Eds.)," Disaster Mitigation Experiences And Reflections", Prentice Hall Of India, New Delhi.
2. Goel S. L. , Disaster Administration And Management Text And Case Studies" ,Deep &Deep Publication Pvt. Ltd., New Delhi.

Course Coordinator**HOD**

P18ACEN003		AUDIT COURSE : SANSKRIT FOR TECHNICAL KNOWLEDGE					L	T	P	C	
		Total Contact Hours – 30					2	0	0	0	
		Prerequisite course – UG Level									
		Course Coordinator Name & Department:- Ms.Subathra / Dept. of English									
COURSE OBJECTIVES:- Learners will get a working knowledge in illustrious Sanskrit, the scientific language in the world.											
	COURSE OUT COMES (COs)										
CO1	Define the learning of Sanskrit to improve brain functioning										
CO2	Review the Learning of Sanskrit to develop the logic in mathematics, science & other subjects enhancing the memory power										
CO3	Practice the engineering scholars equipped with Sanskrit will be able to explore the huge knowledge from ancient literature										
CO4	Identify the uses of basic Sanskrit language										
CO5	Estimate Ancient Sanskrit literature about science & technology can be understood										
CO6	Develop the projects either individual or group on presentations.										
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	PSO3
2	CO1		H	L							
	CO2		H	L							
	CO3		H	L							
	CO4		H	L							
	CO5		H	L							
	CO6		H	L							
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 INTRODUCTION:**6**

Alphabets, Consonants, Nouns Declensions; Nominative, Accusative(singular, dual and plural)

UNIT - II BASIC OF SANSKRIT LITERATURE:**6**

Instrumental case, Dative, Ablative, and Indeclinables, verbal conjugation: first person, second person, third person: Present Tense.

UNIT – III FUNDAMENTALS OF SANSKRIT ARCHITECTURE:**6**

Genitive, locative and Vocative Absolute, Masculine Gender, Feminine Gender and Neuter Gender.

UNIT -IV VERBAL CONJUGATION:**6**

Verbal Conjugation: Past Tense and Future Tense Declensions ending in Rāmaḥ, Kaviḥ, Bhānuḥ, Mātr , Mālā

UNIT - V TRANSLATION:**6**

Translation of simple sentences, Stories & selected Subhashitas

TEXT BOOKS:

1. Abhyaspustakam– Dr.Vishwas, Samskrita-Bharti Publication, New Delhi.
2. Sanskrit for Beginners by Dr. M. Narasimhacharyand Dr.S. Ramaratnam, N&R Publications, Chennai & New Delhi.

REFERENCE :

1. Teach Yourself Sanskrit Prathama Deeksha-VempatiKutumbshastri, Rashtriya Sanskrit Sansthanam, New Delhi Publication.
2. India's Glorious Scientific Tradition” Suresh Soni, Ocean books (P) Ltd., New Delhi.

Course Coordinator**HOD**

P18ACBA004	AUDIT COURSE : VALUE EDUCATION						L	T	P	C	
	Total Contact Hours – 30						2	0	0	0	
	Prerequisite course – UG Level										
	Course Coordinator Name & Department:- Mr.Srinivasan/ Dept. of Business Administration										
COURSE OBJECTIVES:- Our objectives are to promote a new understanding and framework help learners to achieve positive and purposeful lives for themselves and their communities through engaging with values to guide and inform their behaviour.											
	COURSE OUT COMES (COs)										
CO1	Identify and describe feelings of self-worth that arise through striving for personal success in physical activity and sport										
CO2	Demonstrate the tolerance of other people's abilities during physical activity and sport										
CO3	Generalize the Values,attitudes that they need to develop in their class programmes										
CO4	Choose the essential steps to become good leaders.										
CO5	Select their role and contribution to the nation building.										
CO6	Prepare to understand value of education and self- development										
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	PSO 1	PSO2	PSO3
2	CO1				H			L			
	CO2				H			L			
	CO3				H			L			
	CO4				H			L			
	CO5				H			L			
	CO6				H			L			
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.

UNIT-II: 6
Family values - Components, structure and responsibilities of family - Neutralization of anger - Adjustability - Threats of family life - Status of women in family and society - Caring for needy and elderly - Time allotment for sharing ideas and concerns.

UNIT-III: 6
Ethical values - Professional ethics - Mass media ethics - Advertising ethics - Influence of ethics on family life - psychology of children and youth - Leadership qualities - Personality development.

UNIT-IV: 6
Social values - Faith, service and secularism - Social sense and commitment - Students and Politics - Social awareness, Consumer awareness, Consumer rights and responsibilities - Redressal mechanisms.

UNIT-V: 6
Effect of international affairs on values of life/ Issue of Globalization - Modern warfare - Terrorism. Environmental issues - mutual respect of different cultures, religions and their beliefs.

TEXT BOOKS:

1. T. Anchukandam and J. Kuttainimathathil (Ed) Grow Free Live Free, Krisitu Jyoti Publications, Bangalore (1995).
2. Mani Jacob (Ed) Resource Book for Value Education, Institute for Value Education, New Delhi 2002.

REFERENCE:

1. DBNI, NCERT, SCERT, Dharma Bharti National Institute of Peace and Value Education, Secunderabad, 2002.
2. Daniel and Selvamony - Value Education Today, (Madras Christian College, Tambaram and ALACHE, New Delhi, 1990)
3. S. Ignacimuthu - Values for Life - Better Yourself Books, Mumbai, 1991.
4. .M.M.M.Mascaronhas Centre for Research Education Science and Training for Family Life \Promotion - Family Life Education, Bangalore, 1993.

Course Coordinator

HOD

P18ACW005	AUDIT COURSE : CONSTITUTION OF INDIA					L	T	P	C		
	Total Contact Hours – 30					2	0	0	0		
	Prerequisite course – UG Level										
	Course Coordinator Name & Department:- Mr.Prakash/Dept. of Law										
COURSE OBJECTIVES:- To Understand the premises informing the twin themes of liberty and freedom from a civil rights perspective.											
	COURSE OUT COMES (COs)										
CO1	Underline to address the growth of Indian opinion regarding modern Indian intellectuals										
CO2	Express the constitutional role and entitlement to civil and economic rights										
CO3	Utilize the emergence of nationhood in the early years of Indian nationalism.										
CO4	Distinguish the role of socialism in India										
CO5	Judge the commencement of the Bolshevik Revolution										
CO6	Predict its impact on the initial drafting of the Indian Constitution										
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	PSO 1	PSO2	PSO3
2	CO1				H			L			
	CO2				H			L			
	CO3				H			L			
	CO4				H			L			
	CO5				H			L			
	CO6				H			L			
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 HISTORY OF MAKING OF THE INDIAN CONSTITUTION: 6
History - Drafting Committee, (Composition & Working)

UNIT -II PHILOSOPHY OF THE INDIAN CONSTITUTION: 6

Preamble - Salient Features - Directive Principles of State Policy - Fundamental Duties.

UNIT - III CONTOURS OF CONSTITUTIONAL RIGHTS & DUTIES: 6

Fundamental Rights - Right to Equality - Right to Freedom - Right against Exploitation - Right to Freedom of Religion - Cultural and Educational Rights - Right to Constitutional Remedies.

UNIT -IV ORGANS OF GOVERNANCE: 6

Parliament - Composition - Qualifications and Disqualifications - Powers and Functions - Executive President - Governor - Council of Ministers - Judiciary, Appointment and Transfer of Judges, Qualifications - Powers and Functions.

UNIT - V LOCAL ADMINISTRATION & ELECTION COMMISSION : 6

District's Administration head: Role and Importance - Introduction, Mayor and role of Elected Representative CEO of Municipal Corporation - Pachayati raj: Introduction, PRI: Zila Pachayat - Elected officials and their roles - Introduction of Election Commission - Election Commission: Role and Functioning - Chief Election Commissioner and Election Commissioners - State Election Commission: Role and Functioning - Institute and Bodies for the welfare of SC/ST/OBC and women.

TEXT BOOKS:

1. The Constitution of India, 1950 (Bare Act), Government Publication.
2. Dr. S. N. Busi, Dr. B. R. Ambedkar framing of Indian Constitution, 1st Edition, 2015.

REFERENCE:

1. M. P. Jain, Indian Constitution Law, 7th Edn., Lexis Nexis, 2014.
2. D.D. Basu, Introduction to the Constitution of India, Lexis Nexis, 2015.

Course Coordinator

HOD

P18ACBA006	AUDIT COURSE : PEDAGOGY STUDIES					L	T	P	C		
	Total Contact Hours – 30					2	0	0	0		
	Prerequisite course – UG Level										
	Course Coordinator Name & Department:- Dr.Arunkumar / Dept. of Business Administration										
COURSE OBJECTIVES:- To inform programme design and policy making undertaken by the DfID, other agencies and researchers.											
	COURSE OUT COMES (COs)										
CO1	List common training so everyone teaches from the same curriculum										
CO2	Describe to learners what is expected of them										
CO3	Illustrate the teacher education (curriculum and practicum) and the school curriculum and guidance materials best support effective pedagogy.										
CO4	Inspect the review existing evidence on the review topic to inform programme design.										
CO5	Assess how the outcomes of a single course align with larger outcomes for an entire program										
CO6	Plan appropriate teaching strategies, materials and assessments										
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	PSO 1	PSO 2	PSO3
2	CO1		H	L							
	CO2		H	L							
	CO3		H	L							
	CO4		H	L							
	CO5		H	L							
	CO6		H	L							
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 INTRODUCTION AND METHODOLOGY:**6**

Aims and rationale, Policy background, Conceptual framework and terminology - Theories of learning - Curriculum - Teacher education - Conceptual framework, Research questions - Overview of methodology and Searching.

UNIT - II THEMATIC OVERVIEW:**6**

Pedagogical practices are being used by teachers in formal and informal classrooms in developing countries - Curriculum, Teacher education.

UNIT III EVIDENCE ON THE EFFECTIVENESS OF PEDAGOGICAL PRACTICES :-

Methodology for the in depth stage: quality assessment of included studies - How can teacher education (curriculum and practicum) and the school curriculum and guidance materials best support effective pedagogy? Theory of change - Strength and nature of the body of evidence for effective pedagogical practices.

UNIT - 4 : PROFESSIONAL DEVELOPMENT:**6**

Alignment with classroom practices and follow up support - Peer support - Support from the head teacher and the community - Curriculum and assessment - Barriers to learning: limited resources and large class sizes

UNIT - 5 : Research gaps and future directions:-**6**

Research design - Contexts - Pedagogy - Teacher education - Curriculum and assessment - Dissemination and research impact.

TEXT BOOKS:

1. Ackers J, Hardman F (2001) Classroom interaction in Kenyan primary schools, Compare, 31 (2): 245-261.
2. Agrawal M (2004) Curricular reform in schools: The importance of evaluation, Journal of Curriculum Studies, 36 (3): 361-379.
3. Akyeampong K (2003) Teacher training in Ghana - does it count? Multi-site teacher education
4. research project (MUSTER) country report 1. London: DFID.

REFERENCE:

1. Akyeampong K, Lussier K, Pryor J, Westbrook J (2013) Improving teaching and learning of basic maths and reading in Africa: Does teacher preparation count? International Journal Educational Development, 33 (3): 272–282.
3. Alexander RJ (2001) Culture and pedagogy: International comparisons in primary education. Oxford and Boston: Blackwell.
4. Chavan M (2003) Read India: A mass scale, rapid, 'learning to read' campaign.

Course Coordinator**HOD**

P18ACBA007	AUDIT COURSE : PERSONALITY DEVELOPMENT THROUGH LIFE ENLIGHTENMENT SKILLS						L	T	P	C	
	Total Contact Hours – 30						2	0	0	0	
	Prerequisite course – UG Level										
	Course Coordinator Name & Department:- Mr.Srinivasan/Dept.of Business Administration										
COURSE OBJECTIVES:- To become a person with stable mind, pleasing personality and determination											
	COURSE OUT COMES (COs)										
CO1	Identify the way to achieve the highest goal happily										
CO2	Review to awaken wisdom for learners										
CO3	Schedule to study of Shrimad-Bhagwad-Geeta will help the student										
CO4	Developing his personality and achieve the highest goal in life										
CO5	Evaluate the person who has studied Geeta will lead the nation and mankind to peace and prosperity										
CO6	Propose to study of Neetishatakam will help in developing versatile personality of students										
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	PSO 1	PSO 2	PSO 3
2	CO1		H					H			
	CO2		H					L			
	CO3		H					H			
	CO4		H					L			
	CO5		L					H			
	CO6		H					H			
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 HOLISTIC DEVELOPMENT OF PERSONALITY- I**6**

Neetisatakam-Holistic development of personality : Verses- 19,20,21,22 (wisdom) - Verses- 29,31,32 (pride & heroism) - Verses- 26,28,63,65 (virtue) - Verses- 52,53,59 (don't's) - Verses- 71,73,75,78 (do's).

UNIT - II BHAGWADGEETA:**6**

Approach to day to day work and duties. ShrimadBhagwadGeeta: Chapter 2-Verses 41, 47,48. Chapter 3- Verses 13, 21, 27, 35.

UNIT - III BHAGWAD GEETA:-**6**

ShrimadBhagwadGeeta: Chapter 6-Verses 5, 13, 17, 23, 35, Chapter 18-Verses 45, 46, 48.

UNIT – IV BASIC KNOWLEDGE:**6**

Statements of basic knowledge. ShrimadBhagwadGeeta: Chapter2-Verses 56, 62, 68. Chapter 12 - Verses 13,14, 15, 16,17, 18.

UNIT – V ROLE MODEL : -**6**

Personality of Role model. Shrimad BhagwadGeeta: Chapter2-Verses 17, Chapter 3-Verses 36,37,42, - Chapter 4-Verses 18, 38,39 - Chapter18 – Verses 37,38,63.

TEXT BOOK:

1. P.Gopinath, “Bhartrihari’s Three Satakam (Niti-sringar-vairagya)”, Rashtriya Sanskrit Sansthanam, New Delhi.
2. Ackers J, Hardman F (2001) Classroom interaction in Kenyan primary schools, Compare, 31 (2): 245-261.

REFERENCE :

1. Srimad Bhagavad Gita by Swami SwarupanandaAdvaita Ashram (Publication Department), a. Kolkata.
2. Agrawal M (2004) Curricular reform in schools: The importance of evaluation, Journal o Curriculum Studies, 36 (3): 361-379.

Course Coordinator**HOD**

CURRICULUM & SYLLABUS – M.Sc Computer Science
(Applicable to the batches admitted from July 2018)
I SEMESTER

S.No.	CATEGORY	SUB. CODE	SUBJECT	Total Contact Hrs	L	T	P	C
THEORY								
1.	MC	P18MCSC101	Design and Analysis of Algorithms	5	3	1	0	4
2.	MC	P18MCSC102	Operating Systems	4	3	1	0	4
3.	MC	P18MCSC103	Programming in Java	5	3	1	0	4
4.	MC	P18MCSC104	Object Oriented Analysis and Design	4	3	1	0	4
5.	MC	P18MCSC105	Computer Networks	4	3	1	0	4
PRACTICAL								
7.	MC	P18MCSC1L1	LAB I : Programming in Java Lab	4	0	0	4	2
8.	MC	P18MCSC1L2	LAB II : Operating Systems Lab	4	0	0	4	2
Total				30	15	5	8	24

II SEMESTER

S.No.	CATEGORY	SUB. CODE	SUBJECT	Total Contact Hrs	L	T	P	C
THEORY								
	MC	P18MCSC201	Web Technology	4	3	1	0	4
1.	MC	P18MCSC202	Cloud Computing	4	3	1	0	4
2.	MC	P18MCSC203	Data Mining and Data Warehousing	4	3	1	0	4
3.	MC	P18MCSC204	Cryptography	4	3	1	0	4
4.	ME		Major Elective - I	4	4	0	0	4
5.	EEC	P18PRSC2V1	Internship Program	2	0	0	2	1
PRACTICAL								
8.	MC	P18MCSC2L1	LAB-III : Web Technology Lab	4	0	0	4	2

9.	MC	P18MCSC2L2	LAB-IV : Data Mining and Data Warehousing Lab	4	0	0	4	2
Total				30	16	4	10	25
III SEMESTER								
S.No.	CATEGORY	SUB. CODE	SUBJECT	Total Contact Hrs	L	T	P	C
THEORY								
1.	MC	P18MCSC301	ASP.Net in C# Programming	4	3	1	0	4
2.	MC	P18MCSC302	Big Data Analytics	4	3	1	0	4
3.	MC	P18MCSC303	Grid Computing	4	3	1	0	4
4.	ME		Major Elective - II	4	4	0	0	4
5.	ME		Major Elective III :	4	4	0	0	4
	PRACTICAL							
7.	MC	P18MCSC3L1	LAB-V : ASP.Net in C# Programming Lab	4	0	0	4	2
8.	MC	P18MCSC3L2	LAB-VI : Elective II Lab	4	0	0	4	2
Total				28	17	3	8	24
IV SEMESTER								
S.No.	CATEGORY	SUB. CODE	SUBJECT	Total Contact Hrs	L	T	P	C
THEORY								
2.	MC	P18MCSC401	Programming in Python	4	3	1	0	4
3.	OE		Open Elective	2	3	0	0	2
4.	EEC	P18PRSC4T1	Term Paper	1	0	0	0	1
5.	MC	P18MCYO001	Stress Management by Yoga	1	0	0	0	0
6.	EEC	P18PRSC4P1	Project	10	0	0	16	8
	PRACTICAL							

7.	MC	P18MCSC4L1	Programming in Python Lab	4	0	0	4	2
Total				22	6	1	20	17

**LIST OF MAJOR ELECTIVE – I
CHOOSE ANY ONE IN SEMESTER II**

S.No.	Sub Code	Subjects	Total Contact Hrs	L	T	P	C
1	P18MESC011	Major Elective I : Software Engineering	4	4	0	0	4
2	P18MESC012	Major Elective I : Internet of Things	4	4	0	0	4
3	P18MESC013	Major Elective I : Data Communication	4	4	0	0	4
Total			4	4	0	0	4

-

**LIST OF MAJOR ELECTIVE – II
CHOOSE ANY ONE IN SEMESTER III**

S.No.	Sub Code	Subjects	Total Contact Hrs	L	T	P	C
1	P18MESC021	Major Elective II : Image Processing	4	4	0	0	4
2	P18MESC022	Major Elective II : RDBMS	4	4	0	0	4
3	P18MESC023	Major Elective II : PHP	4	4	0	0	4
Total			4	4	0	0	4

**LIST OF MAJOR ELECTIVE – III
CHOOSE ANY ONE IN SEMESTER III**

S.No.	Sub Code	Subjects	Total Contact Hrs	L	T	P	C
1	P18MESC031	Major Elective III : Multimedia Systems	4	4	0	0	4
2	P18MESC032	Major Elective III : Software Project	4	4	0	0	4

		Management					
3	P18MESC033	Major Elective III : Network Programming	4	4	0	0	4
Total			4	4	0	0	4

LIST OF OPEN ELECTIVES
CHOOSE IN FOUR SEMESTER IN ANY SUBJECTS (CHOOSE ANY ONE SUBJECT)

S.No.	Sub Code	Subjects	Total Contact Hrs	L	T	P	C
1	P18OEBA001	Advertising and Sales Management	2	2	0	0	2
2	P18OEBA002	BPO Management	2	2	0	0	2
3	P18OEBA003	Call Centre Management – Voice & Non Voice	2	2	0	0	2
4	P18OEBA004	Customer Relationship Management	2	2	0	0	2
5	P18OEBA005	Entrepreneurship Development	2	2	0	0	2
6	P18OEBA006	Advanced Human Resource Management	2	2	0	0	2
7	P18OEBA007	Logistics & Supply Chain Management	2	2	0	0	2
8	P18OEBA008	Office Management	2	2	0	0	2
9	P18OEVC001	Photography & Videography	2	2	0	0	2
10	P18OEEN001	Soft Skills	2	2	0	0	2
11	P18OEEN002	Mass Media and Communication	2	2	0	0	2
12	P18OESC001	Computer Applications	2	2	0	0	2
13	P18OESC002	Multimedia	2	2	0	0	2
14	P18OESC003	Advanced Excel	2	2	0	0	2
15	P18OESC004	Web Designing	2	2	0	0	2
16	P18OESC005	Photoshop	2	2	0	0	2
17	P18OESC006	Flash	2	2	0	0	2
18	P18OESC007	Computer Hardware and Networking	2	2	0	0	2
19	P18OESC008	Computer Programming	2	2	0	0	2

20	P18OESC009	Office Automation Tools	2	2	0	0	2
21	P18OEMI001	Clinical Microbiology	2	2	0	0	2
22	P18OEMI002	Herbal Medicine	2	2	0	0	2
23.	P18OEPH001	Electrical Technician	2	2	0	0	2

LIST OF AUDIT COURSES

CHOOSE ANY THREE SEMESTER IN ANY SUBJECTS (CHOOSE ANY ONE SUBJECT)

S.No.	Sub Code	Subjects	Total Contact Hrs	L	T	P	C
1.	P18ACEN001	English for Research Paper Writing	2	2	0	0	0
2.	P18ACCE002	Disaster Management	2	2	0	0	0
3.	P18ACEN003	Sanskrit for Technical Knowledge	2	2	0	0	0
4.	P18ACBA004	Value Education	2	2	0	0	0
5.	P18ACLW005	Constitution of India	2	2	0	0	0
6.	P18ACBA006	Pedagogy Studies	2	2	0	0	0
7.	P18ACBA007	Personality Development through Life Enlightenment Skills	2	2	0	0	0
8.	P18ACEN001	English for Research Paper Writing	2	2	0	0	0
9.	P18ACCE002	Disaster Management	2	2	0	0	0

SEMESTER - I

P18MCSC101	DESIGN AND ANALYSIS OF ALGORITHMS	L	T	P	C
	Total Contact Hours – 60	3	1	0	4
	Prerequisite course – UG Level				
	Course Coordinator Name & Department:- Dr.K.Rajakumari /Department of CS				

COURSE OBJECTIVES:-

Ability to understand and design algorithms using greedy strategy, divide and conquer approach, dynamic programming, and max flow - min cut theory.

COURSE OUTCOMES (COs)

CO1	Explain the basic concepts of time and space complexity
CO2	Describe the methodologies of how to analyze an algorithm
CO3	Describe the data structures of graph colouring and back tracking
CO4	Design a better algorithm to solve the problems
CO5	To Evaluate the Divide-and-Conquer Strategy,
CO6	dynamic programming, greedy and approximate algorithms

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	PSO3
2	CO1	H	L						H	M	M
	CO2	H	L						H	M	M
	CO3	H	L						H	M	M
	CO4	H	L						H		
	CO5	H	L						H		
	CO6	H	L						H		
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)	
					✓						

47th Academic Council Meeting

UNIT I : INTRODUCTION

12

Fundamentals of algorithmic problem solving – Important problem types – Fundamentals of the analysis of algorithm efficiency – analysis frame work – Asymptotic notations – Mathematical analysis for recursive and non-recursive algorithms.

UNIT II : DIVIDE AND CONQUER METHOD AND GREEDY METHOD

12

Divide and conquer methodology – Merge sort – Quick sort – Binary search – Binary tree traversal – Strassen's matrix multiplication – Greedy method – Prim's algorithm – Kruskal's algorithm – Dijkstra's algorithm.

UNIT III : DYNAMIC PROGRAMMING

12

Single source shortest paths – Multi stage graphs – 0/1Knapsack problem – String editing.

UNIT IV : BACKTRACKING

12

Backtracking – 8-Queens problem – Hamiltonian circuit problem – Subset sum problem – Graph coloring

UNIT V : BRANCH AND BOUND AND NP-HARD ,COMPLETE PROBLEMS

12

Branch and bound – General method – Traveling salesman problem - P & NP problems – NP-complete problems – Approximation algorithms for NP-hard problems.

TEXT BOOKS:

1. Ellis Horowitz, Sartaj Sahni and S. Rajasekaran "Fundamentals of computer Algorithms" Universities Press 2nd Edition 2007.

REFERENCE BOOKS:

1. Thomas H.Cormen, Charles E.Leiserson, Ronald L.Rivest, "Introduction to algorithms" Prentice Hall 1990.

Course Coordinator

HOD

P18MCSC102	OPERATING SYSTEMS							L	T	P	C
	Total Contact Hours – 60							3	1	0	4
	Prerequisite course – UG Level										
	Course Coordinator Name & Department:- Ms. P.Jennifer/Department of CS										
COURSE OBJECTIVES:-											
Learners can know about essential part of any computer system with the help of an operating system. The purpose of this course is providing a clear understanding of the concepts that underlie operating systems											
COURSE OUTCOMES (COs)											
CO1	Remember the concepts to gain knowledge about an operating system and the role it plays.										
CO2	Understand the high-level structure of operating systems, applications, and the relationship between them.										
CO3	Applying various knowledge of the services provided by operating systems. Exposure to some details of major OS concepts.										
CO4	Analyzing about the behavior of the different scheduling, memory management and file systems.										
CO5	Evaluate to understand clearly the concept of Virtual memory and learn about techniques to manage and recovery from the deadlock.										
CO6	Used to create different types of I/O 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	PSO3
2	CO1	H	L						H	L	L
	CO2	H	L						H	L	L
	CO3	H	L						H	L	L
	CO4	H	L						H	M	M
	CO5	H	L						H	M	M
	CO6	H	L						H	M	M
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)	Project/Term Paper/ Seminar/ Internship (PR)		
					✓						
4	Approval	47 th Academic Council Meeting									

UNIT –I INTRODUCTION

Multiprogramming – Time Sharing – Distributed system – Real Time systems – I/O structure – Dual Mode operation – Hardware protection – General System architecture – OS services – system calls – System programs – system design and implementation.

UNIT –II PROCESS MANAGEMENT

Process concept – Concurrent process – Scheduling concept – CPU Scheduling algorithms – Multiple Processor scheduling.

UNIT –III PROCESS SYNCHRONIZATION

Critical section – Synchronization hardware – semaphores Classical Problems of synchronization - Inter –process communication – Deadlock – Characterization, Prevention, Avoidance, and Detection.

UNIT –IV STORAGE MANAGEMENT

Swapping, Single and Multiple Partition allocation – Paging – Segmentation – Paged Segmentation Virtual Memory – Demand Paging – Page replacement algorithm- Thrashing – Secondary storage Management Disk structure – Free Space Management – Allocation methods - Disk scheduling – Performance and reliability improvements – storage hierarchy.

UNIT –V FILES AND PROTECTION

File system organization, File operations – Access Methods – Consistency semantics-Directory structure organization – File Protection – Implementation issues – Security – Encryption – Case Study – UNIX and Windows NT – Introduction to distributed OS design.

TEXT BOOKS:

1. Silberschatz and Galvin , “Operating System Concepts”, 4th Edition Addison Wesley Publishing co, 1995.
2. Milankovic . M “Operating System Concepts and Design”, 2nd Edition, McGraw Hill, 1992.

REFERENCE BOOKS:

1. Deital ,” An Introduction to Operating System”, Addison Wesley Publishing Co.,1985.
2. Gray Nutt, “Operating System”, A. Modern Perspective – 2000

Course Coordinator

HOD

P18MCSC103	PROGRAMMING IN JAVA							L	T	P	C
	Total Contact Hours – 60							3	1	0	4
	Prerequisite course – UG Level										
	Course Coordinator Name & Department:- Dr.S.Brintha Rajakumari/Department of CS										
COURSE OBJECTIVES:-											
Learners will be familiar with the basic programming in JAVA concepts and the ability to write a computer program to solve specified problems using Java structure.											
COURSE OUTCOMES (COs)											
CO1	Remember the basic concepts of object-oriented programming										
CO2	Understand the classes and objects										
CO3	Gain knowledge to create packages										
CO4	Used to create Java SDK environment to create, debug and run simple Javaprograms.										
CO5	Apply the concept of network programming										
CO6	Create a event driven programming using applets										
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	PSO3
2	CO1	H	L						H		
	CO2	H	L						H		
	CO3	H	L						H	M	
	CO4	H	L						H	M	M
	CO5	H	L						H	M	M
	CO6	H	L						H	M	M
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	47 th Academic Council Meeting									

UNIT-I INTRODUCTION:-

Java features – Benefits – Applications – Data types – Expressions – Conditional and iteration executions – References – Arrays – Garbage Collection - Run time environment.

UNIT-II JAVA OBJECT MODEL:-

Classes – Variables - Methods – Constructors – Access specifies – Inheritance – interface – Packages – Strings – Dynamic binding.

UNIT-III EXCEPTIONS AND THREADS:-

Exceptions and Errors – Exception classes – Run time Exception – Uncompact Exception – Finally Block – User Defined Exception – Creating Threads – Controlling Threads – Multithreading – Thread Properties – Thread groups.

UNIT-IV JAVA I/O:-

Java streams – File class – Serialization – Applets.

UNIT-V AWT:-

AWT controls – Panel – Layout Managers – Event Handling – Event Listener – Dialog box – Menus –Graphics context.

TEXT BOOKS:-

1. Java 2: “The Complete Reference”, 3rd Edition – TMGH – 1999 P.Naughton and H.Schildt.
2. “Java Secrets” IDG Book World.

REFERENCE BOOKS:

1. Joseph. L. Weber- “Using Java 2-EEE “-Prentice Hall of India – 1998.
2. Patrick Henry Winston & Sundar Narsimbhan “Onto Java “- Addison Wesley - 1996.
3. Daniel Groner, K. C. Hoipson-“Java Language API Super Bible” – Waite Grocey Press 1996.

Course Coordinator

HOD

UNIT I INTRODUCTION **12**

System Development - Object Basics - Development life cycle - Methodologies-Patterns – Frameworks- Unified Approach -UML.

UNIT II CLASS AND OBJECT **12**

Use - Case Models - Object Analysis - Object relations - Attributes – Method - Class and object responsibilities - case studies.

UNIT III DESIGN PROCESSING **12**

Design Processes - Design Analysis - class design - Object Storage - Object interoperability - Case Studies.

UNIT IV USER INTERFACE DESIGNING **12**

User interface Design -View layer classes – Micro - level Processes - View layer Interface - Case Studies.

UNIT V TESTING AND DEBUGGING **12**

Quality Assurance Tests - Testing Strategies - Object orientation of testing -Test Cases - Test Plans - Continuous testing – Debugging Principles - System usability -Measuring user satisfaction -Case studies.

TEXT BOOKS:

1. Ali Bahrami, “Object Oriented System Development”, McGraw Hill International Edition - 1999.
2. R. S. Pressman, “Software Engineering”, Fourth Edition, McGraw Hill international Edition - 1997.

REFERENCE BOOKS:

1. Pierre – Alain Miller, “Instant UML”, Work Press-1997.
2. Grady Booch, James Rumbaugh, Ivar Jacobson, “The Unified Modeling Language, User Guide”, Addison-Wesley Longman, 1999.
3. Graig Larman, “Applying UML and Patterns”, Addison Wesley, 2000

Course Coordinator

HOD

P18MCSC105	COMPUTER NETWORKS						L	T	P	C	
	Total Contact Hours – 60						3	1	0	4	
	Prerequisite course – UG Level										
	Course Coordinator Name & Department:- Mr.R.Balamurugan/Department of CS										
COURSE OBJECTIVES:-											
Students will gain knowledge in computer networks and concentrates on building a firm foundation for understanding Data Communications and Networks.											
COURSE OUTCOMES (COs)											
CO1	Understand the layers of OSI and TCP/IP networks.										
CO2	Identify the solution for the error control and flow control problems.										
CO3	Understand the working principles of IP layer and its routing algorithms.										
CO4	Analyze the functionalities of transport layer protocols and its congestion control mechanism.										
CO5	Apply the functionalities of application layer protocols.										
CO6	Analyze the different types of network devices and their 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	PSO3
2	CO1	H	L								
	CO2	H	L								
	CO3	H	L						H	H	M
	CO4	H	L						H	H	M
	CO5	H	L						H	H	M
	CO6	H	L						H	H	M
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	47 th Academic Council Meeting									

UNIT I INTRODUCTION

12

Introduction – Network Hardware – Software – Reference Models – OSI and TCP/IP models – Example networks: Internet, ATM, Ethernet and Wireless LANs.

UNIT II WIRELESS TRANSMISSION

12

Physical layer – Theoretical basis for data communication - guided transmission media - wireless transmission - Communication Satellites – Telephones structure –local loop, trunks and multiplexing, switching-Bluetooth.

UNIT III DATA LINK LAYER

12

Data link layer: Design issues – error detection and correction- elementary data link protocols sliding window protocols – Data Link Layer in the Internet - Medium Access Layer – Channel Allocation Problem – Multiple Access Protocols.

UNIT IV NETWORK LAYER

12

Network layer design issues Routing algorithms Congestion control algorithms – IP protocol – IP Address – Internet Control Protocol.

UNIT V TRANSPORT LAYER & APPLICATION LAYER

12

Transport layer design issues Connection management Addressing– Simple Transport Protocol– Internet Transport Protocol (TCP) – Application Layer: DNS- Email, Network Security: Cryptography.

TEXT BOOKS:-

1. S.Tanenbaum, “Computer Networks”, Fourth Edition, - Pearson Education, Inc, (Prentice hall of India Ltd), 2003, Delhi.

REFERENCE BOOKS:-

1. B. Forouzan, “Introduction to Data Communications in Networking”, Tata McGraw Hill, 1998, New Delhi.
2. F. Halsall, “Data Communications, Computer Networks and Open Systems”, 1995, Addison Wesley.
3. D. Bertsekas and R. Gallager, “Data Networks”, Prentice hall of India, 1992, New Delhi.
4. Lamarca, “Communication Networks”, Tata McGraw Hill, 2002, New Delhi.

Course Coordinator

HOD

P18MCSC1L1	LAB-I : PROGRAMMING IN JAVA LAB						L	T	P	C	
	Total Contact Hours – 30						0	0	6	2	
	Prerequisite course – UG Level										
	Course Coordinator Name & Department:- Dr.K.Rajakumari/Department of CS										
COURSE OBJECTIVES:-											
Learners will be familiar with the basic programming in JAVA concepts and the ability to write a computer program to solve specified problems using Java structure.											
COURSE OUTCOMES (COs)											
CO1	Remember the basic concepts of object-oriented programming										
CO2	Understand the classes and objects										
CO3	Gain knowledge to create packages										
CO4	Used to create Java SDK environment to create, debug and run simple Javaprograms.										
CO5	Apply the concept of network programming										
CO6	Create a event driven programming using applets										
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	PSO3
2	CO1	H	L						H		
	CO2	H	L						H		
	CO3	H	L						H		
	CO4	H	L						H	M	M
	CO5	H	L						H	M	M
	CO6	H	L						H	M	M
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	47 th Academic Council Meeting									

S.NO	LIST OF PROGRAMS - APPLICATION
1.	Determining the order of numbers generated randomly using Random Class.
2.	Implementation of Point Class for Image manipulation
3.	Usage of Calendar Class and manipulation
4.	String Manipulation using Char Array
5.	Database Creation for string e-mail address and manipulation
6.	Usage of Vector Classes
7.	Implementing Thread based applications and Exception Handling (Synchronization and a synchronization)
	APPLETS
8.	Working with frames and various controls.
9.	Working with Dialogs and Menus
10.	Working with Panel and Layout

Course Coordinator

HOD

P18MCSC1L2	LAB-II : OPERATING SYSTEMS LAB						L	T	P	C	
	Total Contact Hours – 30						0	0	6	2	
	Prerequisite course – UG Level										
	Course Coordinator Name & Department:- Ms.P.Jennifer/Department of CS										
COURSE OBJECTIVES:-											
Learners can know about essential part of any computer system with the help of an operating system. The purpose of this course is providing a clear understanding of the concepts that underlie operating systems											
COURSE OUTCOMES (COs)											
CO1	Remember the concepts to gain knowledge about an operating system and the role it plays.										
CO2	Understand the high-level structure of operating systems, applications, and the relationship between them.										
CO3	Applying various knowledge of the services provided by operating systems. Exposure to some details of major OS concepts.										
CO4	Analyzing about the behavior of the different scheduling, memory management and file systems.										
CO5	Evaluate to understand clearly the concept of Virtual memory and learn about techniques to manage and recovery from the deadlock.										
CO6	Used to create different types of I/O 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	PSO3
2	CO1	H	L						H		
	CO2	H	L						H		
	CO3	H	L						H		
	CO4	H	L						H		
	CO5	H	L						H		
	CO6	H	L						H		
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	47 th Academic Council Meeting									

S.NO	LIST OF PROGRAMS
1.	Inter Process Communication (IPC) using Message Queues.
2.	IPC Using Pipes
3.	Implementation of wait and Signal using counting Semaphores
4.	Atomic Counter update problem
5.	IPC Using Pipes
6.	Implementation of wait and Signal using counting Semaphores
7.	Atomic Counter update problem
8.	Signaling processes
9.	Deadlock detection (for process passing messages)
10.	Process scheduling FCFS
11.	Process Scheduling: Least Frequency used.
12.	Process Scheduling: Round Robin
13.	Producer – Consumer problem with limited buffers

Course Coordinator

HOD

SEMESTER - II

P18MCSC201	WEB TECHNOLOGY	L	T	P	C
	Total Contact Hours – 60	3	1	0	4
	Prerequisite course – UG Level				
	Course Coordinator Name & Department:- Ms. P. Jennifer/ Department of CS				

COURSE OBJECTIVES:-

Learners will be familiar with the basic concepts of web technology and Understand the various steps in designing a creative and dynamic website.

COURSE OUTCOMES (COs)

CO1	Remember the basic internet concepts
CO2	Gain knowledge to design dynamic and interactive web pages
CO3	Ability to create Events and functions in java script
CO4	Apply Dynamic HTML to create website
CO5	Understand the fundamentals of ASP .Net & to use web server controls
CO6	Create website by connecting with data base for real time application .

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	PSO3
2	CO1	H	L						H	M	M
	CO2	H	L						H	M	M
	CO3	H	L						H	M	M
	CO4	H	L						H	M	M
	CO5	H	L						H	M	M
	CO6	H	L						H	M	M
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	47 th Academic Council Meeting									

UNIT I : INTRODUCTION**12**

Basic Web Concepts - How the web server works – static web pages-Dynamic web pages-How scripting languages work – Server side scripting Language – Client Side Scripting – Introduction to Common HTML

UNIT II : HTML**12**

Links and Addressing –Linking in HTML –Images and Anchor –HTML and Images –HTML Image Basics – ALT Attributes – Image Alignment – HSPACE and VSPACE – HEIGHT and WIDTH –Layout with Tables – Introduction Tables – Simple Tables – ROWSPAN and COLSPAN – Tables for Layout– Frames – Simple Frame Example-Forms – Form Controls-Text Controls-Additional <Input> Type- New and Emerging Form Elements – <Button Elements>- Labels.

UNIT III : JAVA SCRIPT**12**

Core Java Script – Variables-Constant – Expressions Conditions- Relational Operators- Data Types – FlowControl – Functions-Objects – Data type Conversion & Equality – Windows and Frames – Forms and data.

UNIT IV : XML**12**

Characteristics of Markup Languages- Examples of Markup Languages-What is XML – The data revolution-Breaking beyond data display-Well Formed Documents - Valid Documents - Writing DTDs - Styling XML – XSL.

UNIT V : VB SCRIPT**12**

VB Script- Operators-Math Functions-Date and Functions-Unsupported array functions and statements-Unsupported string functions, statements and constructs-String Constants-Conversion Functions-Unsupported Conversion Functions.

TEXT BOOKS:-

1. Professional Java Script 2nd Edition – April 2002 (Chapter 2,4,5)
2. Eric Ladd, Jim O'Donnel –“Using HTML 4, XML and JAVA”-Prentice Hall of India - 1999.

REFERENCE BOOKS:-

1. “Web Server Programming “– Nail Grey –Wiley Publications –2004.
2. HTML BLOCK BOOK.
3. Professional IBM Websphere 5.0 – Tim Francis , Eric Harness –SPD Publications –2003
4. “Beginning Java Script “ – Paul Wilton – SPD Publications –2001.

Course Coordinator**HOD**

P18MCSC202	CLOUD COMPUTING						L	T	P	C	
	Total Contact Hours – 60						3	1	0	4	
	Prerequisite course – UG Level										
	Course Coordinator Name & Department:- Mr.S.KANNAN/Department of CS										
COURSE OBJECTIVES:- Learners will be familiar with world-leading IT technology with high international standard of service. Learners will understand the expertise of service											
COURSE OUTCOMES (COs)											
CO1	Gain knowledge in identifying the technical foundations of cloud systems architectures.										
CO2	Understand the problems and solutions to cloud application problems.										
CO3	Apply principles of best practice in cloud application design and management.										
CO4	Analyze and define technical challenges for cloud applications and assess their importance.										
CO5	Evaluate the implementation service with a quality control from project imitation to production										
CO6	Create an real time application using Cloud Computing by using various services.										
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	PSO3
2	CO1	H	L								
	CO2	H	L								
	CO3	H	L								
	CO4	H	L	M	M	M	M	M	H	M	M
	CO5	H	L	M	M	M	M	M	H	M	M
	CO6	H	L	M	M	M	M	M	H	M	M
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	47 th Academic Council Meeting									

UNIT I FUNDAMENTALS OF GRID AND CLOUD COMPUTING 12

Fundamentals – Cloud computing – History of Cloud Computing – Cloud Architecture – Cloud Storage – Why cloud computing Matters – Advantages of Cloud computing – Disadvantages of Cloud Computing – Companies in the Cloud Today – Cloud Services.

UNIT II DEVELOPING CLOUD SERVICES 12

Web-Based Application – Pros and Cons of Cloud Service Development – Types of Cloud Service Development – Software as a Service – Platform as a Service – Web Services – On- Demand computing – Discovering Cloud Services Development Services and Tools – Amazon Ec2- Google App Engine – IBM Clouds.

UNIT III CLOUD COMPUTING FOR EVERY ONE 12

Centralizing Email communications – collaborating on Schedules – Collaborating on To-Do Lists – Collaborating Contact Lists – Cloud computing for the Community – Collaborating on Group Projects and Events – Cloud Computing for the Corporation.

UNIT IV USING CLOUD SERVICES 12

Collaborating on Calendars, Schedules and Task Management – Exploring Online Scheduling Applications – Exploring Online Planning and Task Management – Collaborating on Event Management – Collaborating on Contact Management – Collaborating on Project Management – Collaborating on Word Processing – Collaborating on Databases – Storing and Sharing Files – Evaluating Web Mail Services – Evaluating Web Conference Tools – Collaborating via Social Networks and Groupware – Collaborating via Blogs and Wikis.

UNIT V GRID COMPUTING 12

OGSA – Sample Use Cases – OGSA Platform Components – OGSI – OGSA Basic Services. Globus Toolkit – Architecture – Programming Model – High Level Services – OGSI.Net. Middleware Solutions.

TEXT BOOKS:

1. Michael Miller, Cloud Computing : Web-Based Applications That Change the Way You Work and Collaborate Online, Que Publishing, August 2008.

REFERENCE BOOKS:

1. Haley Bear, Cloud Computing Best Practices for Managing and Measuring Processes for On-demand Computing, Applications and Data Centers in the Cloud with SLAs

Course Coordinator

HOD

12

UNIT II INTRODUCTION TO DATA MINING

12

UNIT III CLASSIFICATION

12

UNIT IV CLUSTERING

12

UNIT V WEBMINING

12

TEXT BOOKS:

- ### REFERENCE BOOKS:

- ### Course Coordinator

HOD

P18MCSC204		CRYPTOGRAPHY						L	T	P	C
		Total Contact Hours – 60						3	1	0	4
		Prerequisite course – UG Level									
		Course Coordinator Name & Department:- Dr.K.Rajakumari/Department of CS									
COURSE OBJECTIVES:-											
Learners will be functioning of various cryptography algorithms used for authentication and encryption.											
COURSE OUTCOMES (COs)											
CO1	Gain knowledge in mathematical foundations of cryptography using fuzzy logic methods.										
CO2	Ability to use encryption algorithm using Number Theory										
CO3	To understand the Public key Cryptography										
CO4	Ability to use Message Authorization and Hash functions										
CO5	To understand the Digital Signature and Authentication Protocols										
CO6	To understand the Conventional Encryption										
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	PS01	PSO2	PSO3
2	CO1	H	L						H	M	M
	CO2	H	L						H	M	M
	CO3	H	L						H	M	M
	CO4	H	L						H	M	M
	CO5	H	L						H	M	M
	CO6	H	L						H	M	M
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	47 th Academic Council Meeting									

UNIT 1: CONVENTIONAL ENCRYPTION: 12

Conventional encryption model – DES –RC 5 – Introduction to AES - Random number generation.

UNIT-2: NUMBER THEORY: 12

Modular arithmetic – Euler's theorem – Euclid's algorithm – Chinese remainder theorem – Primarily and factorization –Discrete logarithms – RSA algorithm

UNIT 3: PUBLIC KEY CRYPTOGRAPHY: 12

Principles – RSA algorithm – key management- Diff – Hellman key exchange

UNIT 4: MESSAGE AUTHORIZATION AND HASH FUNCTIONS: 12

Hash functions- Authentication requirements – Authentication function- Message authentication codes –Secure Hash algorithms

UNIT 5: DIGITAL SIGNATURE AND AUTHENTICATION PROTOCOLS : 12

Digital Signature- Authentication Protocols – Digital signature standard.

TEXT BOOKS:-

1) Stallings, W., 2005 , Cryptography and Network Security Principles and Practice, Pearson Education, Delhi.

REFERENCE BOOKS:

- 1.Charlie Kaufman, Radia Perlman, Mike specimen, Network Security- Private Communication in a public world.
2. Michael Welsehenbach, 2005, Cryptography in C & C++", John Wiley.
3. Bruce sehneier , 2001 Applied Cryptography , John Wiley and sons.
4. Kailash N.Gupta , Kamlesh N. Agarwala, Pratek A. Agarwala, 2005, Digital signature Network security practices , PHI, New Delhi.

Course Coordinator

HOD

P18MCSC2L1	LAB-III : WEB TECHNOLOGY LAB						L	T	P	C	
	Total Contact Hours – 30						0	0	6	2	
	Prerequisite course – UG Level										
	Course Coordinator Name & Department:- Ms.P.Jennifer/Department of CS										
COURSE OBJECTIVES:- Learners will be familiar with the basic concepts of web technology and Understand the various steps in designing a creative and dynamic website.											
COURSE OUTCOMES (COs)											
CO1	Remember the basic internet concepts										
CO2	Gain knowledge to design dynamic and interactive web pages										
CO3	Ability to create Events and functions in java script										
CO4	Apply Dynamic HTML to create website										
CO5	Understand the fundamentals of ASP .Net & to use web server controls										
CO6	Create website by connecting with data base for real time application .										
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	PSO3
2	CO1	H	L						H		
	CO2	H	L						H		
	CO3	H	L						H		
	CO4	H	L						H		
	CO5	H	L						H		
	CO6	H	L						H		
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	47 th Academic Council Meeting									

1.	Create a simple page introducing your-self, how old you are, what you do, what you like and dislike. Modify the introduction to include a bullet list of what you do and put a list on the 5 things you like most and dislike is numbered lists. Create another page about your favorite hobby, and link it to (and from) your main page. Center something, and put a quote on one of your pages.
2.	Put an existing image on a web page. Create a table, use a heading and at least one use of row span / col span. Colour a page and some text within the page. Link to another site.
3.	Create a new file called index.html.
	a. Put the normal HTML document structure tags in the file.
	b. Give a title.
	c. At the bottom of the page (i.e. the last thing between the body tags) put the following:
4.	A horizontal rule.
5.	A link to your email-address (with your name between the tag); remember to put the link to your email address within address tags.
6.	A line break.
7.	The Date (I have this same structure at the bottom of this page)
8.	Above this Block (which is called the footer), put a title in heading tags.
9.	Add some text describing you. (You can split this into multiple headings and paragraphs if you want).
10.	Write a script to create an array of 10 elements and display its contents.

Course Coordinator

HOD

P18MCSC2L2	LAB-IV : DATA MINING AND DATA WAREHOUSING LAB						L	T	P	C	
	Total Contact Hours – 30						0	0	6	2	
	Prerequisite course – UG Level										
	Course Coordinator Name & Department:- Dr.S.Brintha Rajakumari/Dept. of.CS										
COURSE OBJECTIVES:-											
Learners will be familiar with the concepts of data ware house and data mining, which gives a complete description about the principles, used, architectures, applications, design and implementation of data mining and data ware housing concepts.											
COURSE OUTCOMES (COs)											
CO1	Gain knowledge in mathematical foundations of data mining tools										
CO2	Understand how to gather and analyze large sets of data to gain useful business										
CO3	Understand and implement classical models and algorithms in data warehouses and data mining.										
CO4	Characterize the kinds of patterns that can be discovered by association rule mining, classification and clustering.Analyzing and demonstrating basic data miningalgorithms, methods, and tools										
CO5	Master data mining techniques in various applications like social, scientific and environmental context.										
CO6	Develop skill in selecting the appropriate data mining algorithm for solving practical 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	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
2	CO1	H	L						H	M	
	CO2	H	L						H	M	
	CO3	H	L						H	M	
	CO4	H	L						H	M	
	CO5	H	L						H	M	
	CO6	H	L						H	M	
3	Category	Humanities & Social Studies (HS)	Basic Sciences (BS)	Engg Sciences (ES)	Professional Core (PC)	Core Elective (CE)	Non-Maior Open Elective (OE)	Any other	Project/Term Paper/ Seminar/ Internship (PR)		
					✓						

4	Approval	47 th Academic Council Meeting

1.	Create an Employee Table with the help of Data Mining Tool WEKA.
2.	Create a Weather Table with the help of Data Mining Tool WEKA.
3.	Apply Pre-Processing techniques to the training data set of Weather Table
4.	Apply Pre-Processing techniques to the training data set of Employee Table
5.	Normalize Weather Table data using Knowledge Flow.
6.	Normalize Employee Table data using Knowledge Flow.
7.	Finding Association Rules for Buying data.
8.	Finding Association Rules for Banking data
9.	Finding Association Rules for Employee data.
10.	To Construct Decision Tree for Weather data and classify it.
11.	To Construct Decision Tree for Customer data and classify it.
12.	To Construct Decision Tree for Location data and classify it.
13.	Write a procedure for Visualization for Weather Table.
14.	Write a procedure for Visualization of Banking Table.
15.	Write a procedure for Clustering Weather data using EM Algorithm.

Course Coordinator

HOD

SEMESTER - III

P18MCSC301	ASP.NET IN C# PROGRAMMING						L	T	P	C	
	Total Contact Hours – 60						3	1	0	4	
	Prerequisite course – UG Level										
	Course Coordinator Name & Department:- Dr.S.Brintha Rajakumari/Dept.of.CS										
COURSE OBJECTIVES:- Learners will be familiar with basics of the ASP .NET. Learners will understand the design and implementation of the complete applications over the web											
COURSE OUTCOMES (COs)											
CO1	Gain knowledge in developing and creating ASP .Net Applications										
CO2	Understand the usage of web controls and forms										
CO3	Apply development products of Microsoft Visual Studio.Net® products										
CO4	Analyze the implementation and connect the automated system to a database stored on a web server.										
CO5	Evaluate how to link and publish Visual Studio.Net® applications to reflect a web application.										
CO6	Create an real time application using ASP .NET										
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	PSO3
2	CO1	H	L						H	M	
	CO2	H	L						H	M	
	CO3	H	L		L	L			H	M	
	CO4	H	L		L	L			H	M	
	CO5	H	L		L	L			H	M	
	CO6	H	L		L	L			H	M	
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	47 th Academic Council Meeting									

UNIT I INTRODUCTION TO .NET FRAMEWORK 12

Genesis of .Net – Features of .Net - .Net binaries – Microsoft Intermediate Language – Meta Data - .Net types and .net name spaces – Common Language Runtime – Common Type System - Common Language Specification - .Net Applications using command line compiler and visual studio .net IDE.

UNIT II BASICS OF ASP. NET 12

Introducing ASP .NET – Creating and deploying ASP .NET applications – Web forms – Web controls – working with events – Rich web controls – Custom web controls – Validation controls - Debugging ASP .NET pages.

UNIT III ADVANCED ASP .NET 12

ASP .NET configuration – Business objects – HTTP Handlers – Caching in ASP .NET – ASP .NET security – Localizing ASP .NET applications – Deployment projects.

UNIT IV BUILDING WEB SERVICES 12

Introduction to web services – Web services Infrastructure – SOAP – Building a web service – Deploying and publishing web services – Finding web services – Consuming web services.

UNIT V ADO .NET 12

Basics of ADO .NET – Changes from ADO – Data Table – Data Views – Data Set – Data Relation Type – ADO .NET Managed Providers – OLEDB and SQL Managed Providers – OLEDB Data Adapter Type.

TEXT BOOKS:

1. Andrew Troelsen – “**C# and the .Net Platform**” – Apress – 2001.(Unit I and II).
2. Mridula Parihar, et. al. – “**ASP .NET Bible**” – Wiley-dreamtech India Pvt. Ltd. – 2002.

REFERENCE BOOKS:

1. David S. Platt – “**Introducing .Net**” – Microsoft Press – 2002.
2. Alex Homer et. al. – “**Professional ASP .NET 1.1**” – Wiley-dreamtech India Pvt. Ltd. – 2004.
3. Rebecaa M. Riordan – “**ADO .Net step by step**” - Microsoft Press.

Course Coordinator

HOD

P18MCSC302	BIG DATA ANALYTICS							L	T	P	C
	Total Contact Hours – 60							3	1	0	4
	Prerequisite course – UG Level										
	Course Coordinator Name & Department:- Ms.E.Srimathi/Department of CS										
COURSE OBJECTIVES:- Learners to the basics of Analytics – Concepts, Data preparation – merging, managing missing numbers sampling, Data visualization, Basic statistics.											
COURSE OUTCOMES (COs)											
CO1	Be able to analyze a problem for NN solution in terms of these Methods.										
CO2	Have an awareness of the computational theory underlying NN.										
CO3	Have a working knowledge of a typical neural network simulation										
CO4	Experience in programming NN applications from scratch.										
CO5	Have knowledge of sufficient theoretical background to be able to reason about the behaviour of neural networks.										
CO6	Be able to analyze a problem for NN solution in terms of these Methods.										
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	PSO3
2	CO1	H	L						H	M	
	CO2	H	L						H	M	
	CO3	H	L		L	L			H	M	
	CO4	H	L		L	L			H	M	
	CO5	H	L		L	L			H	M	
	CO6	H	L		L	L			H	M	
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	47 th Academic Council Meeting									

UNIT- I INTRODUCTION TO BIG DATA

12

Analytics – Nuances of big data – Value – Issues – Case for Big data – Big data options Team challenge – Big data sources – Acquisition – Nuts and Bolts of Big data. Features of Big Data -Security, Compliance, auditing and protection - Evolution of Big data – Best Practices for Big Data Analytics - Big data characteristics - Volume, Veracity, Velocity, Variety – Data Appliance and Integration tools – Green plum – Informatics.

UNIT- II DATA ANALYSIS

12

Evolution of analytic scalability – Convergence – parallel processing systems – Cloud computing –grid computing – map reduce – enterprise analytic sand box – analytic data sets – Analytic Methods –analytic tools – Cognos – Micro strategy - Pentaho. Analysis approaches – Statistical significance –business approaches – Analytic innovation – Traditional approaches – Iterative.

UNIT- III STREAM COMPUTING

12

Introduction to Streams Concepts – Stream data model and architecture - Stream Computing, Sampling data in a stream – Filtering streams – Counting distinct elements in a stream – Estimating moments – Counting oneness in a window – Decaying window – Real time Analytics Platform(RTAP)applications IBM Infosphere – Big data at rest – Infosphere streams – Data stage – Statistical analysis– Intelligent scheduler – Infosphere Streams.

UNIT- IV PREDICTIVE ANALYTICS AND VISUALIZATION

12

Predictive Analytics – Supervised – Unsupervised learning – Neural networks – Kohonen models –Normal – Deviations from normal patterns – Normal behaviours – Expert options – Variable entry -Mining Frequent item sets - Market based model – Apriori Algorithm – Handling large data sets in Main memory – Limited Pass algorithm – Counting frequent item sets in a stream – Clustering Techniques –Hierarchical – K- Means – Clustering high dimensional data Visualizations - Visual data analysis techniques, interaction techniques; Systems and applications.

UNIT- V FRAMEWORKS AND APPLICATIONS

12

IBM for Big Data – Map Reduce Framework - Hadoop – Hive - – Sharding – NoSQL Databases - S3 - Hadoop Distributed file systems – Hbase – Impala – Analyzing big data with twitter – Big data for Ecommerce– Big data for blogs.

TEXT BOOKS:

1. Frank J Ohlhorst, “Big Data Analytics: Turning Big Data into Big Money”, Wiley and SAS BusinessSeries, 2012.
2. Colleen Mccue, “Data Mining and Predictive Analysis: Intelligence Gathering and Crime Analysis”,Elsevier, 2007
3. Michael Berthold, David J. Hand,” Intelligent Data Analysis”, Springer, 2007.

REFERENCES:

1. AnandRajaraman and Jeffrey David Ullman, Mining of Massive Datasets, Cambridge UniversityPress, 2012.
2. <http://www.mosaic.geo-strategies.com/wp-content/uploads/2013/10/Big-Data-for-Dummies.pdf>

Course Coordinator

HOD

P18MCSC303	GRID COMPUTING							L	T	P	C
	Total Contact Hours – 60							3	1	0	4
	Prerequisite course – UG Level										
	Course Coordinator Name & Department:- Dr. K.Rajakumari/Dept.of.CS										
COURSE OBJECTIVES:- Identify the technical foundations of cloud systems architectures. Analyze the problems and solutions to cloud application and grid computing problems.											
COURSE OUTCOMES (COs)											
CO1	Understand the fundamental principles of distributed computing.										
CO2	Understand how the distributed computing environments known as Grids can be built from lower level services.										
CO3	Understand the importance of virtualization in distributed computing and how this has enabled the development of Grid with Cloud Computing.										
CO4	Analyze the performance of Grid Computing.										
CO5	Understand the concept of Cloud Security.										
CO6	Apply principles of best practice in Grid application design and 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	PSO3
2	CO1	H	L						H	M	
	CO2	H	L						H	M	
	CO3	H	L		L	L			H	M	
	CO4	H	L		L	L			H	M	
	CO5	H	L		L	L			H	M	
	CO6	H	L		L	L			H	M	
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	47 th Academic Council Meeting									

UNIT- I : GRID COMPUTING

12

Introduction - Definition and Scope of grid computing, Computational and Data Grids, Current Grid Activities – Overview of Grid Business Areas, Grid Applications, Grid Computing Anatomy- Concept of Virtual Organization, Grid Architecture- Fabric layer, Connectivity layer, Resource Layer, Collective Layer, Application Layer, Layered Grid Architecture.

UNIT-II : CLOUD ARCHITECTURE AND MODEL

12

Technologies for Network Based system-System Models for Distributed and Cloud Computing-NIST Cloud Computing Reference Architecture Cloud models: Characteristics-Cloud Services-Cloud Models (IaaS, PaaS, SaaS)-Public vs. Private Cloud-Cloud Solutions-Cloud ecosystem-Service Management-Computing on demand.

UNIT-III : CLOUD INFRASTRUCTURE

12

Architectural Design of compute and Storage Clouds-Layered Cloud Architecture Development-Design Challenges-Inter Cloud Resource Management-Resource Provisioning and Platform Deployment-Global Exchange of Cloud Resources.

UNIT-IV : PROGRAMMING MODEL

12

Parallel and Distributed Programming Paradigms-Map Reduce-Twister and Iterative Map Reduce-Hadoop Library from Apache-Mapping Applications-Programming Support-Google App Engine, Amazon AWS-Cloud Software Environments-Eucalyptus, Open Nebula, Open Stack, Aneka, CloudSim.

UNIT-V : SECURITY IN THE CLOUD

12

Security Overview-Cloud Security Challenges and Risks-Software-as-a-Service-Security Security Governance-Risk Management-Security Monitoring-Security Architecture Design-Data Security-Application Security-Virtual Machine Security-Identity Management and Access Control-Autonomic Security.

TEXTBOOKS:

1. Joshy Joseph & Craig Fellenstein, “Grid Computing”, PHI, PTR-2003(UNIT I)
2. Kai Hwang, Geoffrey C Fox, Jack G Dongarra “Distributed and Cloud Computing ,From parallel processing to the Internet of Things” Morgan Kaufmann Publishers, 2012 (Unit-II to Unit-V)

REFERENCE BOOKS:

1. John W. Rittinghouse and James F. Ransome, “Cloud Computing Implementation, Management and Security”, CRC Press, 2010
2. Toby Velte, Anthony Velte, Robert Elsenpeter, “Cloud Computing, A Practical Approach”, TMH, 2009.
3. Kumar Saurabh, “Cloud Computing – Insights into New-Era Infrastructure”, Wiley India, 2011
4. George Reese, “Cloud Applications Architectures: Building Applications and Infrastructure in the Cloud” O’Reilly.
5. <https://benzology.files.wordpress.com/2013/05/grid-computing-joshy-joseph-ebook.pdf>
6. http://cloudipedia.com/files/2009/11/cloud_computing_made_easy.pdf

Course Coordinator

HOD

P18MCSC3L1	LAB-V : ASP.NET IN C# PROGRAMMING LAB						L	T	P	C	
	Total Contact Hours – 30						0	0	6	2	
	Prerequisite course – UG Level										
	Course Coordinator Name & Department:- Dr.S.Brintha Rajakumari/Dept. of. CS										
COURSE OBJECTIVES:- Learners will gain ability to design and implement the complete applications over the web.											
COURSE OUTCOMES (COs)											
CO1	Implement the basic concept of console applications like string manipulation, exception handling.										
CO2	Understand the technical code to implement windows applications										
CO3	Develop the programs using predefined functions										
CO4	Create Web Applications										
CO5	Develop applications that connect database										
CO6	Create web pages using ASP .NET										
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	PSO3
2	CO1	H	L						H	M	
	CO2	H	L						H	M	
	CO3	H	L		L	L			H	M	
	CO4	H	L		L	L			H	M	
	CO5	H	L		L	L			H	M	
	CO6	H	L		L	L			H	M	
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	47 th Academic Council Meeting									

S.NO	ASP.NETPROGRAMS
	<u>CONSOLE APPLICATIONS</u>
1.	STRING MANIPULATION
2.	AREA OF RECTANGLE, SQUARE, CIRCLE
3.	SWAPPING OF TWO NUMBERS(USING FUNCTION)
4.	CONVERSION OF CELSIUS TO FAHRENHEIT & FAHRENHEIT TO CELSIUS
5.	EXCEPTION HANDLING
	<u>WINDOWS APPLICATIONS</u>
6.	CONVERT CASE & DISPLAY DAY,MONTH,& YEAR
7.	MENUS USING TEXT EDITOR
8.	QUIZ PROGRAM
9.	STUDENT PROGRESS DETAILS
	<u>WEB APPLICATIONS</u>
10.	CREATION OF CUSTOMER DETAILS(USING STANDARD WEB CONTROLS)
11.	CREATION OF BIODATA(USING HTML SERVER CONTROLS)
12.	CREATION OF MASTER PAGE(USING RICH WEB CONTROLS)
13.	DISPLAY DATABASE(USING DATA CONTROLS)
14.	CREATION OF DATABASE(MANIPULATE WITH REPORT)

Course Coordinator

HOD

P18MCSC3L2	LAB-VI : ELECTIVE II LAB : NETWORK PROGRAMMING LAB							L	T	P	C
	Total Contact Hours – 30							0	0	6	2
	Prerequisite course – UG Level										
	Course Coordinator Name & Department:- Ms.K.Hemalakshmi/ Dept.of.CS										
COURSE OBJECTIVES:-											
Learners will understand the use of client/server architecture in application development and use elementary and advanced socket system calls.											
COURSE OUTCOMES (COs)											
CO1	Implement simple networking concepts										
CO2	Understand to develop application using Client Server Communication										
CO3	Implement programs using TCP and UDP based sockets.										
CO4	Develop interaction between Echo Server and Echo Client										
CO5	Develop and implement protocols										
CO6	Create application to retrieve Remote Data File & RPC										
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	PSO3
2	CO1	H	L						H	M	
	CO2	H	L						H	M	
	CO3	H	L						H	M	
	CO4	H	L						H	M	
	CO5	H	L						H	M	
	CO6	H	L						H	M	
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	47 th Academic Council Meeting									

S.NO.	LIST OF PROGRAMS
1.	IP Address of Local Machine
2.	Ping Server
3.	Echo Server and Echo Client
4.	Client Server Communication Using Object
5.	Time and Date Server
6.	TCP Server
7.	UDP Server
8.	Chat Server
9.	Address Resolution Protocol
10.	Multiple Client Handling
11.	Retrieving Remote Data File
12.	Remote Procedure Call

Course Coordinator

HOD

P18MCSC3L2		LAB-VI : ELECTIVE II LAB : PHP LAB						L	T	P	C
		Total Contact Hours – 30						0	0	6	2
		Prerequisite course – UG Level									
		Course Coordinator Name & Department:- Dr.K.Rajakumari/Dept.of.CS									
COURSE OBJECTIVES:- Learners will gain practical experience in the overall view of web technologies and its programming with PHP.											
COURSE OUTCOMES (COs)											
CO1	Create PHP scripts to handle HTML forms										
CO2	Create PHP programs that use various PHP library functions, and that manipulate files and directories										
CO3	Develop programs for downloading files from servers										
CO4	Develop program to store the cookie and session status										
CO5	Analyse and solve various database tasks using the PHP language										
CO6	Develop web based applications with database connection										
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	PSO3
2	CO1	H	L						H	M	
	CO2	H	L						H	M	
	CO3	H	L						H	M	
	CO4	H	L		H	L	H		H	M	
	CO5	H	L		H	L	H		H	M	
	CO6	H	L		H	L	H		H	M	
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	47 th Academic Council Meeting									

S.NO.	LIST OF PROGRAMS
1	A program to find the factorial of a number.
2	A program using Conditional Statements.
3	A program to find the maximum value in a given multidimensional array.
4	A program to find the GCD of two numbers using user-defined functions.
5	Design a simple web page to generate multiplication table for a given number.
6	Design a web page that should compute one's age on a given date.
7	A program to download a file from the server.
8	A program to store the current date and time in a COOKIE and display the „Last Visited“ date and time on the web page.
9	A program to store page views count in SESSION, to increment the count on each refresh and to show the count on web page.
10	A program to draw the human face.
11	A program to design a simple calculator.
12	Design an authentication web page in PHP with MySQL to check username and password.

Course Coordinator

HOD

SEMESTER - IV

P18MCSC401	PROGRAMMING IN PYTHON							L	T	P	C
	Total Contact Hours – 60							3	1	0	4
	Prerequisite course – UG Level										
	Course Coordinator Name & Department:- Dr.S.Brintha Rajakumari/Dept.of.CS										
COURSE OBJECTIVES:- To understand about python basics and how to use concept in Python programs.											
COURSE OUTCOMES (COs)											
CO1	Use if-else statements and switch-case statements to write programs in Python to tackle any decision-making scenario										
CO2	Master Object-oriented programming to create an entire Python project using objects and classes										
CO3	Store and retrieve information using variables										
CO4	Develop cost-effective robust applications using the latest Python trends and technologies										
CO5	Proficient in Debugging and Version Control										
CO6	Build systems entire web development process using various tools										
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	PSO3
2	CO1	H	L						H	M	
	CO2	H	L						H	M	
	CO3	H	L						H	M	
	CO4	H	L		H	L	H		H	M	
	CO5	H	L		H	L	H		H	M	
	CO6	H	L		H	L	H		H	M	
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	47 th Academic Council Meeting									

UNIT I : INTRODUCTION**12**

Introduction: The Context of Software Development- Development Tools, Learning Programming with Python, Writing a Python Program, the Python Interactive Shell. Values and Variables - Integer and String Values, Variables and Assignment, Identifiers, Floating-point Numbers, Control Codes within Strings, User Input, Controlling the print Function, String Formatting, Multi-line Strings.

UNIT II : EXPRESSIONS AND LOOPS**12**

Expressions and Arithmetic- Expressions, Mixed Type Expressions, Operator Precedence and Associativity, Formatting Expressions, Comments, Errors. Conditional Execution- Boolean Expressions, Simple if, if/else, Compound Boolean, pass, Nested Conditionals, Conditional Expressions. Iteration- while, for, Definite Loops vs. Indefinite Loop, Nested loops, Abnormal Loop Termination, while/else and for/else.

UNIT III : FUNCTION, CLASS AND OBJECT**12**

Function-Introduction, Functions and Modules, Built-in Functions, Random Numbers, eval and exec, Turtle Graphics. Basics- Parameter Passing- Documenting- Custom Functions vs. Standard Functions. Introduction to Recursion, Generator, Local Function. Objects: String Objects, File Objects, Fraction, Turtle Graphics, Graphics with tkinter.

UNIT IV : LIST , TUPLES AND DICTIONARIES**12**

Lists, Traversal, Building, List Membership, Assignment and Equivalence, List Bounds, Slicing, Element Removal, List Functions, List Methods. Command-line Arguments, Multidimensional Lists, Lists vs. Generators, Tuples, Dictionaries, and Sets.

UNIT V : EXCEPTION HANLING AND FILES**12**

Handling Exceptions - Standard Exceptions, Handling Exceptions, Catch-all Handler, Catching Exception Objects, The try Statement's Optional else Block, finally block. Custom Types, Inheritance, Files.

TEXT BOOKS:

1. Fundamentals of Programming Python Richard L. Halterman Southern Adventist University, 2019.

REFERENCE BOOKS:-

1. Robert Sedgewick, Kevin Wayne, Robert Dondero, —Introduction to Programming in Python: An Inter-disciplinary Approach, Pearson India Education Services Pvt. Ltd., 2016.
2. Timothy A. Budd, —Exploring Python, Mc-Graw Hill Education (India) Private Ltd., 2015.
3. Kenneth A. Lambert, —Fundamentals of Python: First Programs, CENGAGE Learning, 2012.
4. Charles Dierbach, —Introduction to Computer Science using Python: A Computational Problem- Solving Focus, Wiley India Edition, 2013.
5. Paul Gries, Jennifer Campbell and Jason Montojo, —Practical Programming: An Introduction to Computer Science using Python 3, Second edition, Pragmatic Programmers, LLC, 2013.

Course Coordinator**HOD**

P18MCSC4L1	PROGRAMMING IN PYTHON LAB							L	T	P	C
	Total Contact Hours – 30							0	0	6	2
	Prerequisite course – UG Level										
	Course Coordinator Name & Department:- Dr.S.Brintha Rajakumari/Dept.of.CS										
COURSE OBJECTIVES:- To understand about python basics and how to use concept in Python programs.											
COURSE OUTCOMES (COs)											
CO1	Use if-else statements and switch-case statements to write programs in Python to tackle any decision-making scenario										
CO2	Master Object-oriented programming to create an entire Python project using objects and classes										
CO3	Store and retrieve information using variables										
CO4	Develop cost-effective robust applications using the latest Python trends and technologies										
CO5	Proficient in Debugging and Version Control										
CO6	Build systems entire web development process using various tools										
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	PSO3
2	CO1	H	L						H	M	
	CO2	H	L						H	M	
	CO3	H	L						H	M	
	CO4	H	L		H	L	H		H	M	
	CO5	H	L		H	L	H		H	M	
	CO6	H	L		H	L	H		H	M	
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	47 th Academic Council Meeting									

LIST OF PROGRAMS	
1.	Compute the GCD of two numbers
2.	Find the maximum of a list of numbers
3.	Linear search
4.	Insertion sort
5.	Convert decimal number into binary numbers.
6.	Calculate addition of two number using methods.
7.	Calculate average of numbers using function.
8.	Find the Area of a Rectangle Using Classes.
9.	Find the sum of all the primes.
10.	Program that takes two numbers as command line arguments and prints its sum.
11.	To Append, Delete and Display Elements of a List Using Classes.
12.	To count frequency of characters in a given file.
13.	Reads a Text File and Counts the Number of Times a Certain Letter Appears in the Text File.
14.	Read a Text File and Print all the Numbers Present in the Text File.
15.	Generation of pyramid.

Course Coordinator

HOD

MAJOR ELECTIVE – I

P18MESC011	MAJOR ELECTIVE- I : SOFTWARE ENGINEERING	L	T	P	C
	Total Contact Hours – 60	3	1	0	4
	Prerequisite course – UG Level				
	Course Coordinator Name & Department:- Mr. R. BalaMurugan/ Dept.of.CS				

COURSE OBJECTIVES:-

Helps the learners to understand theories, methods, and technologies applied for professional software development.

COURSE OUTCOMES (COs)

CO1	Gain knowledge about the fundamentals of Software Engineering.
CO2	Understand the Planning of a software Project
CO3	Applying various Software Cost Estimation Techniques
CO4	Analyze the various software design techniques
CO5	Evaluate the Coding and testing part of the project.
CO6	Understand the Software Quality Assurance and software maintenance tools

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	PSO1	PSO3			
2	CO1	H	L								H	M				
	CO2	H	L								H	M				
	CO3	H	L								H	M				
	CO4	H	L			H	L	H			H	M				
	CO5	H	L			H	L	H			H	M				
	CO6	H	L			H	L	H			H	M				
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	47 th Academic Council Meeting														

UNIT I**12**

Introduction to Software Engineering : Definitions – Size Factors- Quality and Productivity Factors – Managerial Issues- Planning a software Project: Defining the Problem – Developing a Solution – Strategy – Planning the Development Process – Planning an Organization Structure – Other Planning Activities.

UNIT II**12**

Software Cost Estimation : Software cost factors – Software Cost Estimation Techniques – Staffing – Level Estimation – Estimating Software Maintenance Costs – The Software Requirements Specification – Formal Specification Techniques – Languages and Processors for Requirements Specification.

UNIT III**12**

Software design: Fundamental Design Concepts – Modules and Modularization Criteria – Design Notations – Design Techniques – Detailed Design Considerations – Real-Time and Distributed System Design – Test Plans – Milestones, Walkthroughs, and Inspections.

UNIT IV**12**

Implementation issues : Structured Coding Techniques – Coding Style – Standards and Guidelines – Documentation guidelines – Type checking – Scoping Rules – Concurrency Mechanism.

UNIT V**12**

Quality Assurance – Walkthroughs and Inspections – Static Analysis – Symbolic Execution – Unit Testing and Debugging – System Testing – Formal Verification: Enhancing Maintainability during Development – Managerial aspects of Software Maintenance – Source Code Metrics – Other Maintenance Tools and Techniques.

TEXT BOOKS:

1. Richard Fairley, Software Engineering Concepts, McGrawHill, 2002.

REFERENCE BOOKS:

1. R.S. Pressman, Software Engineering , Fourth Ed , McGraw Hill, 1997.

Course Coordinator**HOD**

UNIT - 1 :Introduction to IoT **12**

Defining IoT, Characteristics of IoT, Physical design of IoT, Logical design of IoT, Functional blocks of IoT, Communication models & APIs

UNIT-2: IoT & M2M **12**

Machine to Machine, Difference between IoT and M2M, Software define Network

UNIT-3: Network & Communication aspects **12**

Wireless medium access issues, MAC protocol survey, Survey routing protocols, Sensor deployment & Node discovery, Data aggregation & dissemination

UNIT-4: Challenges in IoT **12**

Design challenges, Development challenges, Security challenges, Other challenges

UNIT-5: Domain specific applications of IoT **12**

Home automation, Industry applications, Surveillance applications, Other IoT applications, Introduction to Python, Introduction to different IoT tools, Developing applications through IoT tools,

Reference Books:

1. Vijay Madiseti, Arshdeep Bahga, "Internet of Things: A Hands-On Approach".
2. Waltenegus Dargie, Christian Poellabauer, "Fundamentals of Wireless Sensor Networks: Theory and Practice".

Course Coordinator

HOD

P18MESC013	MAJOR ELECTIVE- I : DATA COMMUNICATION							L	T	P	C
	Total Contact Hours – 60							3	1	0	4
	Prerequisite course – UG Level										
	Course Coordinator Name & Department:- Ms.E.Srimathi/Dept of CS										
COURSE OBJECTIVES:- This course aims to give students a good overview of the ideas techniques which are behind data communications											
COURSE OUTCOMES (COs)											
CO1	Communicate effectively with networking professionals.										
CO2	Explain the process of data communication.										
CO3	Prepare elementary internetworking designs, including cost evaluations.										
CO4	Select appropriate data communications solutions to business problems and needs.										
CO5	Use data communication vocabulary appropriately.										
CO6	when discussing issues with other networking professionals.										
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	PSO3
2	CO1	H	L						H	M	
	CO2	H	L						H	M	
	CO3	H	L						H	M	
	CO4	H	L		H	L	H		H	M	
	CO5	H	L		H	L	H		H	M	
	CO6	H	L		H	L	H		H	M	
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	47 th Academic Council Meeting									

Unit I: INTRODUCTION **12**

Introducing TCP/IP – IP addressing – Subnetting – Supernetting – IP packets – Delivery – Routing – Routing model – Routing table – Structure of a Router– ARP – RARP.

Unit II: INTERNET PROTOCOL **12**

Datagram – Fragmentation – Checksum – IP Package Design– Internet control - message protocol – message format – Error Reporting – Query – Checksum – Debugging Tools -Internet group management protocol – IGMP Messages –IGMP - Operation – Encapsulation – IGMP Package .

Unit III: TRANSMISSION CONTROL PROTOCOL **12**

User Datagram protocol – UDP operation – Application Of UDP – UDP design – TCP services – Flow control – Error control – TCP operation and design – TCP Connection – Transition diagram – Congestion control

Unit IV: STREAM CONTROL TRANSMISSION PROTOCOL **12**

SCTP Services – SCTP Features - Packet Format - An SCTP Association – State Transition Diagram – Flow Control – Error Control – Congestion Control.

Unit V: APPLICATION PROTOCOLS **12**

File Transfer Protocol – Trivial File Transfer Protocol – Simple Mail Transfer Protocol – Simple Network Management Protocol – Hyper Text Transfer Protocol.

TEXT BOOKS: -

1. Behrouz A. Forouzan, "TCP/IP Protocol Suite", Tata McGraw Hill, Third Edition, Eleventh reprint 2008.

REFERENCES

1. Douglas E. Comer, David L. Stevens, "Internetworking with TCP/IP – Volume I, II and III", Prentice-Hall of India Pvt. Ltd., 2nd Edition 1994.
2. K.Washburn, J.T.Evans, “TCP/IP – Running a successful Network “, Addison – Wesley Publishing Company, First Edition 1995.

Course Coordinator

HOD

MAJOR ELECTIVE – II

P18MESC021	MAJOR ELECTIVE- II : IMAGE PROCESSING						L	T	P	C	
	Total Contact Hours – 60						3	1	0	4	
	Prerequisite course – UG Level										
	Course Coordinator Name & Department:- Dr.K.Rajakumari/Dept of CS										
COURSE OBJECTIVES:- Understand the basics of the human visual system as they relate to image processing; including spatial frequency resolution and brightness adaption.											
COURSE OUTCOMES (COs)											
CO1	Understand image formation and the role human visual system plays in perception of gray and color image data.										
CO2	Get broad exposure to and understanding of various applications of image processing in industry, medicine, and defense.										
CO3	Learn the signal processing algorithms and techniques in image enhancement and image restoration.										
CO4	Acquire an appreciation for the image processing issues and techniques and be able to apply these techniques to real world problems.										
CO5	Be able to conduct independent study and analysis . image processing problems and techniques										
CO6	Image processing problems and 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	PSO3
2	CO1	H	L						H	M	H
	CO2	H	L						H	M	H
	CO3	H	L						H	M	H
	CO4	H	L		H	L	H		H	M	H
	CO5	H	L		H	L	H		H	M	H
	CO6	H	L		H	L	H		H	M	H
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	47 th Academic Council Meeting									

UNIT I : FUNDAMENTALS OF IMAGE PROCESSING :**12**

Image Acquisition, Image Model, Sampling, Quantization, Relationship between pixels, distance measures, connectivity, Image Geometry, Photographic film. Histogram: Definition, decision of contrast basing on histogram, operations basing on histograms like image stretching, image sliding, Image classification. Definition and Algorithm of Histogram equalization.

UNIT II : IMAGE TRANSFORMS :**12**

A detail discussion on Fourier Transform, DFT, FFT, properties A brief discussion on WALSH Transform, WFT, HADAMARD Transform, DCT. **IMAGE ENHANCEMENT :** (by SPATIAL Domain Methods) Arithmetic and logical operations, pixel or point operations, size operations - Smoothing filters-Mean, Median, Mode filters – Comparative study - Edge enhancement filters – Directorial filters, Sobel, Laplacian, Robert, KIRSCH Homogeneity & DIFF Filters, prewitt filter, Contrast Based edge enhancement techniques. – Comparative study - Low Pass filters, High Pass filters, sharpening filters. – Comparative Study - Comparative study of all filters - Color image processing.

UNIT III : IMAGE ENHANCEMENT :**12**

(By FREQUENCY Domain Methods) -esign of Low pass, High pass, EDGE Enhancement, smoothening filters in Frequency Domain. Butter worth filter, Homomorphic filters in Frequency Domain Advantages of filters in frequency domain, comparative study of filters in frequency domain and spatial domain. **IMAGE COMPRESSION: DEFINITION:** A brief discussion on – Run length encoding, contour coding, Huffman code, compression due to change in domain, compression due to quantization Compression at the time of image transmission. Brief discussion on:- Image Compression standards.

UNIT IV : IMAGE SEGMENTATION:**12**

Definition, characteristics of segmentation. Detection of Discontinuities, Thresholding Pixel based segmentation method. Region based segmentation methods – segmentation by pixel aggregation, segmentation by sub region aggregation, histogram based segmentation, spilt and merge technique. Use of motion in segmentation (spatial domain technique only)

UNIT V: MORPHOLOGY: -**12**

Dilation, Erosion, Opening, closing, Hit-and-Miss transform, Boundary extraction, Region filling, connected components, thinning, Thickening, skeletons, Pruning Extensions to Gray – Scale Images Application of Morphology in I.P

Text Book:

1. Digital Image Processing, Rafael C. Gonzalez and Richard E. Woods Addison Wesley

Reference books:

1. Fundamentals of Electronic Image Processing by Arthyr –R – Weeks, Jr. (PHI).
2. Image processing, Analysis, and Machine vision by Milan Sonka vaclan Halavac Roger Boyle, Vikas Publishing House.

COURSE COORDINATOR**HOD**

P18MESC022	MAJOR ELECTIVE- II : RDBMS							L	T	P	C
	Total Contact Hours – 60							3	1	0	4
	Prerequisite course – UG Level										
	Course Coordinator Name & Department:- Ms. K. Hemalakshmi/Dept of CS										
COURSE OBJECTIVES:-											
The aim of this module is to build on the previous background of database systems by Deepening the understanding of the theoretical and practical aspects of the database technologies.											
COURSE OUTCOMES (COs)											
CO1	Understand distributed database										
CO2	To understand the transformation of queries										
CO3	To learn about concurrency control										
CO4	To understand Distributed object database management systems										
CO5	To understand Parallel Database Systems and its architecture										
CO6	To create the distributed database including principles, architectures, design, implementation and major domain of application.										
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	PSO3
2	CO1	H	L						H	M	H
	CO2	H	L						H	M	H
	CO3	H	L						H	M	H
	CO4	H	L		H	L	H		H	M	H
	CO5	H	L		H	L	H		H	M	H
	CO6	H	L		H	L	H		H	M	H
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	47 th Academic Council Meeting									

Unit 1: INTRODUCTION:-**12**

Features of Distributed versus Centralized Databases – Why Distributed Databases – Distributed Database Management Systems (DDBMSs)- Review of Databases – Review of Computer Networks-Levels of Distribution Transparency- Reference Architecture for Distributed Databases – Types of Data Fragmentation – Distribution Transparency for read- only Applications – Distribution transparency for Update Applications – Distributed Database Access Primitives – Integrity Constraints in Distributed Databases - A Framework for Distributed Database Design – The Design of Database Fragmentation – The Allocation of Fragments.

Unit-2: EQUIVALENCE TRANSFORMATIONS:-**12**

Equivalence Transformations for Queries – Transforming Global Queries into Fragment Queries - Distributed Grouping and Aggregate Function Evaluation – Parametric Queries - Optimization of Access Strategies - A Framework for Query Optimization – Join Queries – General Queries. A Framework for Transaction Management – Supporting Atomicity of Distributed Transactions – Concurrency Control for Distributed Transactions – Architectural Aspects of Distributed Transactions.

Unit 3: CONCURRENCY CONTROL:-**12**

Foundations of Distributed Concurrency Control – Distributed Deadlocks – Concurrency Control Based on Timestamps – Optimistic Methods for Distributed Concurrency Control - Reliability – Basic Concepts Nonblocking Commitment Protocols – Reliability and Concurrency Control – Determining a Consistent View of the Network – Detection and Resolution of Inconsistency – Checkpoints and Cold Restart - Distributed Database Administration – Catalog Management in Distributed Databases – Authorization and Protection.

Unit-4: DISTRIBUTED DATABASE SYSTEMS:-**12**

Distributed object database management systems – Fundamental object concepts and Models – Object – Abstract Data Types – Composition (Aggregation) – Class – Collection – Subtyping and Inheritance. – Object Distribution Design – Horizontal Class Partitioning – Vertical Class Partitioning – Path Partitioning – Class Partitioning Algorithms – Allocation – Replication – Alternative Client / Server Architectures – Cache Consistency – Object Identifier Management – Pointer Switching Object Migration Distributed Object Storage – Object Query Processor Architectures – Query Processing Issues – Query Execution – Correctness Criteria – Transaction Models and Object Structures – Transactions Management in Object DBMSs – Transactions as Objects – Conclusion – Bibliographic Notes – Exercises.

Unit-5 : PARALLEL DATABASE SYSTEMS:-**12**

Parallel Database Systems – Database Server Approach – Database Servers and Distributed Databases – Parallel System Architectures – Objectives – Functional Aspects – Parallel Data Processing – Parallel Query Optimization – Data Placement – Query Parallelism – Parallel Execution Problems – Initialization – Interferences and Convoy Effect – Load Balancing – Parallel Execution for Hierarchical Architecture – Problem Formulation – Basic Concepts – Load Balancing Strategy – Performance Evaluation – Conclusion – Bibliographic Notes – Exercises.

Recommended Text:

1. Stefano Ceri, Giuseppe Pelagatti, Distributed Databases Principles & Systems, McGraw-Hill.
2. M.Tamer Ozsu, Patrick Valduriez, Distributed database systems, 2nd Edition, Prentice Hall of India, New Delhi.

Course Coordinator**HOD**

P18MESC023	MAJOR ELECTIVE- II : PHP							L	T	P	C
	Total Contact Hours – 60							3	1	0	4
	Prerequisite course – UG Level										
	Course Coordinator Name & Department:- Dr.S.Brintha Rajakumari/Dept.Of.CS										
COURSE OBJECTIVES:-											
Learners will gain practical experience in the overall view of web technologies and its programming with PHP.											
COURSE OUTCOMES (COs)											
CO1	Gain knowledge in basic concepts of PHP and its advantages over other languages.										
CO2	Understand HTML form elements that work with any server-side language.										
CO3	Understand the concept of functions, arrays , strings and databases in PHP										
CO4	Ability to validate user input.										
CO5	Evaluate to perform various MySQL database queries										
CO6	Create software using MYSQL 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	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
2	CO1	H	L						H	M	
	CO2	H	L						H	M	
	CO3	H	L						H	M	
	CO4	H	L		H	L	H		H	M	
	CO5	H	L		H	L	H		H	M	
	CO6	H	L		H	L	H		H	M	
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	47 th Academic Council Meeting									

UNIT I – BASICSOF PHP

12

Introduction to PHP – what does PHP Do? – a brief history of PHP – language basics lexical structure – data types – variables – expressions and operators – flow control statements – including code – embedding PHP in web pages.

UNIT II – FUNCTIONS&STRINGS

12

Functions : Calling a function – defining a function – variable scope – function parameters – return values – variable functions – anonymous functions. Strings: Accessing individual characters – cleaning strings – encoding and escaping – comparing strings – manipulating and searching strings – regular expression.

UNIT III -ARRAYS

12

Arrays: Indexed Vs associative arrays – identifying elements of an array – storing data in arrays - multidimensional arrays – extracting multiple values – converting between arrays and variables traversing arrays – sorting.

UNIT IV – OOPs Concept and PHPForms

12

Object-Oriented Programming in php: Class, Objects, Inheritance, Interface, Abstraction, Constructor,Destructor,Magic Methods – php Form: Create a form, POST method, GET method, GET vs POST Methods, Processing the registration form data – form validation

UNIT V - MYSQL DATABASESIN PHP

12

Working with MYSQL Databases: connecting to and disconnecting from the server – Entering queries – Creating and using a database – Creating and selecting a database – working with tables – loading data into a table – Retrieving information from a table – selecting all data – selecting particular rows – selecting particular columns – sorting rows – date calculations – working with NULL values – pattern matching – counting rows – using more than one tables - Sessions,CookieS

TEXT BOOKS :

- 1.Rasmus Lerdorf, Kevin Tatroe, Bob Kaehms, Ric McGredy (2002),Programming PHP, O'REILLY(SPD). (Unit I,II&III)
2. Lee Babin, Nathan A. Good, Frank M. Kromann, Jon Stephens (2005), “PHP 5 Recipes, A problem solution approach”, après.(Unit IV &V)
3. The PHP Complete Reference, Steven Holzner, McGrawHillEducation,2007

REFERENCE BOOKS:

1. Vikram Vaswani (2008), PHP: A BEGINNER'S GUIDE,McGraw-Hill
2. <https://www.guru99.com/php-tutorials.html>

Course Coordinator

HOD

MAJOR ELECTIVE – III

P18MESC031	MAJOR ELECTIVE- III : MULTIMEDIA SYSTEMS							L	T	P	C
	Total Contact Hours – 60							3	1	0	4
	Prerequisite course – UG Level										
	Course Coordinator Name & Department:- Ms.P.Jennifer/Dept.of CS										
COURSE OBJECTIVES:-											
To give an overall view of multimedia tools. To understand and differentiate text, image, video & audio											
COURSE OUTCOMES (COs)											
CO1	Design and implement an animation for various themes.										
CO2	Prepare multimedia advertisement										
CO3	differentiate text, image, video & audio & Edit image										
CO4	Concepts using difference multimedia presentation										
CO5	Different concepts using multimedia preparation										
CO6	Using multimedia components in various activities										
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	PSO3
2	CO1	H	L						H	M	H
	CO2	H	L						H	M	H
	CO3	H	L						H	M	H
	CO4	H	L						H	M	H
	CO5	H	L						H	M	H
	CO6	H	L						H	M	H
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	47 th Academic Council Meeting									

UNIT-1 INTRODUCTION

12

Definitions - CD - Rom and the multimedia highway - where to use multimedia - Introduction - to making multimedia : The stages of a project - What you need - Multimedia skills and Training : The team - Macintosh and windows production platforms: Macintosh versus PC - The Macintosh platform - The windows Multimedia PC Platform - Networking Macintosh and windows computers - Hardware peripherals - Connection - Memory and stage Devices - Input Devices-Output Hardware - Communication Devices.

UNIT-II FUNDAMENTAL TOOLS OF MULTIMEDIA

12

Basic Tools - Text editing and word processing Tools- OCR Software - Painting and Drawing Tools - 3-D Modeling and Animation Tools - Image - Editing Tools - Sound Editing Tools - Animation, Video and Digital Movie Tools - Helpful Accessories- Making Instant Multimedia - Linking Multimedia Objects - Office - Suites - Word Processors - Spreadsheets - Databases - Presentation Tools - Multimedia Authoring Tools: Types of Authoring Tools - cards -and- Page - Based Authoring Tools - Icon - Based Authoring Tools - Time Based Authoring Tools-Object - Oriented Authoring Tools - Cross Platform Authoring Notes.

UNIT-III COMPONENTS OF MULTIMEDIA

12

Text: The Power of meaning: About fonts and Faces - Using Text in Multimedia - Computers and text - Font Editing and Design Tools - Hypermedia and Hypertext -Sound: The Power of Sound- Multimedia System Sounds - MIDI Versus Digital Audio -Digital Audio -Making MIDI Audio - Audio File formats - Working with sound on the Macintosh - Notation Interchange file Format (NIFF) - Adding sound to your multimedia Project - Toward Professional sound : The Red Book standard - Production Tips.

UNIT-IV IMAGES- AND ANIMATION

12

Images: Making still Images - colours - Image File formats - Animation: The Power of Motion - Principles of Animation - Making Animations that work - Video: Using Video - How Video works Broadcast Video standards - Integrating Computers and Television - shooting and Editing video - Video Tips - Recording formats -Digital Video.

UNIT-V PROJECT PLANNING AND MAINTENANCE

12

Planning and Costing: Project Planning - Estimating - REPs and Bit Proposals - Designing and producing - Designing - Producing - Content and Talent: Acquiring content - Using content created by others - Using Talent - Delivering : Testing - Preparing for Delivery - Delivering on CD-Rom - Compact Disc Technology - Wrapping It up - Delivering on the World wide web.

TEXT BOOKS:

1. Tay Vaughan - "Multimedia Making it Work" - Fourth Edition Tata McGraw Hill Edition -1999.
2. Walterworth John A - "Multimedia Technologies and Application"-Ellies Horwod Ltd - London - 1991.

REFERENCE BOOKS:

1. John F Korgel Buford -"Multimedia Systems"-ACM press, 2001
2. Rajneesh Agarwal, Bharath Bhushan Tiwari – Excel books,2000
3. Erik Holsinger-"How Multimedia works", Ziff davis Press 1994.

Course Coordinator

HOD

P18MESC032	MAJOR ELECTIVE- III : SOFTWARE PROJECT MANAGEMENT							L	T	P	C
	Total Contact Hours – 60							3	1	0	4
	Prerequisite course – UG Level										
	Course Coordinator Name & Department:- Mr.R.Balamurugan/Dept.of.CS										
COURSE OBJECTIVES:-											
To provide basic project management skills with a strong emphasis on issues and problems.											
COURSE OUTCOMES (COs)											
CO1	It Enables the students understand what is a product, project and process is.										
CO2	It enables students understand the lifecycle for a software product is calculated.project										
CO3	It enables students understand how the quality of a software										
CO4	It uses the project development process.										
CO5	It can able to create a new process.										
CO6	To create a software project management is associated with delivering successful IT projects										
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	PSO3
2	CO1	H	L						H	M	
	CO2	H	L						H	M	
	CO3	H	L						H	M	
	CO4	H	L		H	L			H	M	
	CO5	H	L		H	L			H	M	
	CO6	H	L		H	L			H	M	
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	47 th Academic Council Meeting									

UNIT I : INTRODUCTION**12**

Introduction to Competencies - Product Development Techniques - Management Skills - Product Development Life Cycle - Software Development Process and models - The SEI CMM - International Organization for Standardization.

UNIT II : DOMAIN PROCESSES**12**

Managing Domain Processes - Project Selection Models - Project Portfolio Management - Financial Processes - Selecting a Project Team - Goal and Scope of the Software Project - Project Planning - Creating the Work Breakdown Structure - Approaches to Building a WBS - Project Milestones - Work Packages - Building a WBS for Software.

UNIT III : SOFTWARE DEVELOPMENT**12**

Tasks and Activities - Software Size and Reuse Estimating - The SEI CMM - Problems and Risks - Cost Estimation - Effort Measures - COCOMO: A Regression Model - COCOMO II - SLIM: A Mathematical Model - Organizational Planning - Project Roles and Skills Needed.

UNIT IV : SCHEDULING ACTIVITIES**12**

Project Management Resource Activities - Organizational Form and Structure - Software Development Dependencies - Brainstorming - Scheduling Fundamentals - PERT and CPM - Leveling Resource Assignments - Map the Schedule to a Real Calendar - Critical Chain Scheduling.

UNIT V : QUALITY ASSURANCE**12**

Quality: Requirements – The SEI CMM - Guidelines - Challenges - Quality Function Deployment - Building the Software Quality Assurance - Plan - Software Configuration Management: Principles - Requirements - Planning and Organizing - Tools - Benefits - Legal Issues in Software - Case Study.

TEXT BOOK:

1. Robert T. Futrell, Donald F. Shafer, Linda I. Safer, “Quality Software Project Management”, Pearson Education, Asia, 2002.

REFERENCE BOOKS:

1. Pankaj Jalote, “Software Project Management in Practice”, Addison Wesley, 2002.
2. Hughes, “Software Project Management, 3/E”, Tata McGraw-Hill, 2004.

Course Coordinator**HOD**

P18MESC033	MAJOR ELECTIVE- III : NETWORK PROGRAMMNG						L	T	P	C	
	Total Contact Hours – 60						3	1	0	4	
	Prerequisite course – UG Level										
	Course Coordinator Name & Department:- Ms.K.Hemalakshmi/Dept.of.CS										
COURSE OBJECTIVES:-											
Learners will understand the use of client/server architecture in application development and use elementary and advanced socket system calls.											
COURSE OUTCOMES (COs)											
CO1	Gain knowledge in networking.										
CO2	Understand the network protocols										
CO3	Be familiar with several common programming interfaces for network communication.										
CO4	Apply advanced knowledge of programming for network communications.										
CO5	Understand and evaluate knowledge of the TCP/UDP Sockets.										
CO6	Ability to create an application using sockets and network programming										
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	PSO3
2	CO1	H	L						H		M
	CO2	H	L						H		M
	CO3	H	L						H		M
	CO4	H	L						H	M	
	CO5	H	L						H	M	
	CO6	H	L						H	M	
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	47 th Academic Council Meeting									

UNIT-I : Introduction to Network Programming: 12

OSI model, Unix standards, TCP and UDP & TCP connection establishment and termination, Buffer sizes and limitation, standard internet services, Protocol usage by common internet application.

UNIT-II:Sockets : 12

Address structures, value – result arguments, Byte ordering and manipulation function and related functions Elementary TCP sockets – Socket, connect, bind, listen, accept, fork and exec function, concurrent servers. Close function and relatedfunction.

UNIT-III : TCP clientserver: 12

Introduction, TCP Echo server functions, Normal startup, terminate and signal handling server process termination, Crashing and Rebooting of server host shutdown of server host.

UNIT – IV: I/O Multiplexing andsocketoptions: 12

I/O Models, select function, Batch input, shutdown function, poll function, TCP Echo server, getsockopt and setsockopt functions. Socket states, Generic socket option.

UNIT- V :ElementaryUDPsockets: 12

Introduction UDP Echo server function, lost datagram, summary of UDP example, Lack of flow control with UDP, determining outgoing interface with UDP. Elementary name and Address conversions: DNS, gethost by Name function, Resolver option.

TEXT BOOKS:

1. W.Richard Stevens, UNIX Network Programming, Sockets API, Volume I, 3rd Edition, PHI , 2010.
2. W.Richard Stevens, UNIX Network Programming, Volume II, 1st Edition, PHI,2009.

REFERENCE BOOKS:

1. T Chan, “UNIX Systems Programming using C++”, 1st Edition, PHI,2010.
2. Graham Glass, King abls, “UNIX for Programmers and Users”, 3rd Edition,PearsonEducation,2010.
3. M.J. Rochkind, “Advanced UNIX Programming”, 2nd Edition, Pearson Education,2008

Course Coordinator

HOD

P18PRSC4T1	TERM PAPER					L	T	P	C
	Total Contact Hours –								
	Prerequisite course – UG Level								
	Course Coordinator Name & Department:- Mr.S.KANNAN/Dept.Of.CS								

COURSE OBJECTIVES:-

to develop activities for teaching transformations with two different interactive dynamic educational resources to elementary school students.

COURSE OUTCOMES (COs)

CO1	Provide students with an opportunity to develop in-depth expertise in an aspect of solid waste management that is of particular interest.
CO2	Provide an opportunity for some individual interaction between the student and instructor.
CO3	Guide students through the process of planning and executing a substantial project.
CO4	Allow students the opportunity to teach themselves
CO5	To investigate the effect that two different types of interactive dynamic educational resources for teaching transformational geometry have on different types of students
CO6	To design tests for measuring students' ability on transformational geometry and spatial abilities, and a self-report questionnaire for assessing their cognitive styles.

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	PSO3
2	CO1	H	L						H		M
	CO2	H	L						H		M
	CO3	H	L						H		M
	CO4	H	L						H	M	
	CO5	H	L						H	M	
	CO6	H	L						H	M	
3	Category	Humanities & Social Studies (HS)	Basic Sciences (BS)	Engg Sciences (ES)	Professional Core (PC) Core Elective (CE)	Non-Major Elective (NE)	Open Elective	Any other	Project/Term Paper/ Seminar/ Internship (PR)		

✓

TERM PAPER

Now that you have written an argumentative paper on the topic of your choice, you should be well prepared to make a 10 minute presentation to the class on your topic and claim. Create an 8-12 slide PowerPoint presentation in PPT format (do not use pptx format!). Use the provided class PowerPoint template unless you have one of your own that you would prefer to use.

Practice your presentation so that your delivery is smooth and polished. We will assign students to presentation slots starting on Monday of dead week. If you would prefer to present during the final period (or earlier) please let us know.

Grading Criteria:-

1. Are the key points of your paper captured by your presentation slides?	- 35%
2. Is length of presentation limited to under 13 slides and 10 minutes?	- 15%
3. Is appearance of the presentation neat and professional?	- 25%
4. Is the presentation smooth and convincing?	- 25%

Your presentation should be submitted to T-Square under the assignment Term Paper Presentation.

Course Coordinator**HOD**

UNIT I:-

6

Meaning and definition of Yoga – aims & objectives of yoga – misconception about yoga. Historical perspective on yoga – yoga before the time of Patanjali (Indus valley civilization, Vedas, Brahmnas, Upanishads, Epics, Puranas). Contributions of Patanjali and Thirumular to yoga. Yoga practices and other systems of exercises.

UNIT II:-

6

Schools of Yoga: Bhakthi Yoga, Jnana Yoga, Karma Yoga, Kundalini Yoga, Mantra Yoga, Hatha Yoga, Raja Yoga. Eight Limbs of Yoga: Yama, Niyama, Asana, Pranayama, Pratyahara, Dharana, Dhyana & Samathi. General principles of practicing Asana, Pranayama, Meditation, Kriyas Bandhas and Mudra.

UNIT III:-

6

Classification of Asanas - Meditative Asanas – Relaxative Asanas – Cultural Asanas. - safety measure and precautions while performing asanas. Pranayama – different phases in Pranayama practices: Puraka (Inhalation), Kumbhaka (Retention) and Recaka (Exhalation), - safety measures and precautions while performing pranayama. Meditation - Its techniques & benefits. Practicing methods and benefits of Kriyas, Bandha and Mudra.

UNIT IV:-

6

Impact of Yoga on Muscular system, Respiratory System, Circulatory system, Nervous system, Digestive system and Endocrine system

UNIT V:-

6

Yoga and development of Social qualities of personality – Co-operation – Simplicity – Tolerance – Social adjustments – Yoga and personal efficiency. Improvement of personal efficiency through yoga.

REFERENCE BOOKS:-

1. Author's guide, (2003). Yoga – The Science of Holistic living. Chennai: Vivekananda Kendra Prakashana trust
2. Chandrasekaran, K., (1999) Sound Health through Yoga. Sedapatti: Prem Kalyan Publications.
3. Maguire, Imelda., (2005) Yoga for a Healthy Body. London: Greenwich Editions.

4. Mariayyah, P., (2000). Suriyanamaskar. Perunthurai: Jaya Publishing House.
5. Tummers, Nanette. E., (2009) Teaching Yoga for Life. Champaign: Human Kinetics.

Course Coordinator

HOD

P18PRSC4P1	PROJECT (DISSERTATION AND VIVA-VOCE)	L	T	P	C
	Total Contact Hours –	0	0	16	8
	Prerequisite course – UG Level				
	Course Coordinator Name & Department:- Mr.S.KANNAN/Dept.of.CS				

COURSE OBJECTIVES:-

To facilitate the students to understand the current scenario in computing technology and present the research report on their findings 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	PSO3
2	CO1	H	L						H		
	CO2	H	L						H		
	CO3	H	L						H		
	CO4	H	L						H		
	CO5	H	L						H		
	CO6	H	L						H		
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	47 th Academic Council Meeting									

PROJECT (DISSERTATION AND VIVA-VOCE)

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 Computer Application. 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

OPEN ELECTIVES

P18OEBA001	ADVERTISING AND SALES MANAGEMENT	L	T	P	C
	Total Contact Hours – 30	2	0	0	2
	Prerequisite course –UG Level				
	Course Coordinator Name & Department:- T Manjiniprakash/BBA				

COURSE OBJECTIVES: -

- Identify the terms and concepts that are commonly used in promotion and advertising.
- Demonstrate preparation to comprehend the basic advertising.
- Give the relationship which underlines these terms and concepts 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.

COURSE OUTCOMES (COs)

CO1	Students gain basic knowledge of Advertising its functions, roles and development of advertising.
CO2	Know about Advertising design and its strategies.
CO3	Expose on Advertising, media and about its types.
CO4	To forecast sales and its techniques used in management.
CO5	Students were enriched about salesmanship, sales planning, budgeting.
CO6	Develop an advertising plan and present and defend it persuasively.

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	PSO3
2	CO1	H	L						H		H
	CO2	H	L						H		H
	CO3	H	L						H	M	H
	CO4	H	L						H	M	H
	CO5	H	L						H	M	H
	CO6	H	L						H	M	H

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	47 th Academic Council Meeting								

Unit - I 6

Introduction to Advertising- Definition -Roles of Advertising- Functions of Advertising-Steps in Development of Advertisement

Unit – II 6

Advertising Design- Appeals- Structure of an Advertisement - Message Strategies - Cognitive strategy- Executional Strategies-Creating Advertising- Advertising Effectiveness.

Unit – III 6

Advertising Media - Merit and demerits- Kinds of Advertising - Advertising Media- print media - Broadcasting media- Non-media advertising- online advertising.

Unit - IV 6

Sales Management - Defining - Objectives -Strategies- Sales Executives – Functions -Qualities - Sales Presentation Techniques - Emerging Trends in Sales Management.

Unit - V 6

Selling Concept - Objectives- scope and techniques of Salesmanship- Sales Planning- Importance – process- Sales Budget- Objectives-uses of sales Budget.

Text book

1. Advertising & promotion: George E.Belch, THM
2. Advertising Management, Dr. Varma&Aggarwal, kingBooks

References:

1. Sales promotion and advertising management by M .N.Mishra. Himalaya Publication.
2. Advertising and sales management by SanjeevChauhan (Asta publication)
3. Anderson, Hair, Bush: Professional Sales Management, McGraw Hill, Singapore.

T Manjiniprakash

Course Coordinator

HOD

P18OEBA002	BPO MANAGEMENT	L	T	P	C
	Total Contact Hours – 30	2	0	0	2
	Prerequisite course – UG Level				
	Course Coordinator Name & Department:- .P.Srinivasan/ Business Administration				

COURSE OBJECTIVES: -

- To familiarize the students with the basic fundamentals of BPO industry
- To impart knowledge on BPO industry
- To enable the students on the concept of various decisions in Business Process Outsourcing

COURSE OUTCOMES (COs)

CO1	Develop a strategic understanding of the concepts of BPO's and its benefits
CO2	Explaining various models used in functioning of BPO's and Trends.
CO3	Describe the opportunities and challenges in Human Resources BPO
CO4	Analyzes about call centers its functions, processes and classifications
CO5	Developing efficiency in understanding the customers and capabilities in handling calls.
CO6	To understand the future trends in BPO industry

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

	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
	CO1	H	L						H		H
	CO2	H	L						H		H
	CO3	H	L						H	M	H
	CO4	H	L						H	M	H
	CO5	H	L						H	M	H
	CO6	H	L						H	M	H

3	Category	Humanities & Social Studies (HS)	Basic Sciences (BS)	Enngsciences (ES)	Professional Core (PC)	Professional Core (PC)	Non-Major Elective (NE)	Open Elective (OE)	Any other	Project/Term Paper/ Seminar/ Internship(PR)
								✓		
4	Approval	47 th Academic Council Meeting								

UNIT-I

6

Business Process Outsourcing – Meaning – definition - Basics - Benefits - BPO Models - - BPO Companies in India.

UNIT-II

6

Healthcare BPO – Structure of the American Healthcare Sector – Activity Profile –Future Trends and Threats – Case Study – Cbay Systems.

UNIT - III

6

Human Resource BPO – Reasons for outsourcing HR – Activities involved in HR BPO – HR Outsourcing Trends – Career in HR BPO – Emerging BPO Domains – Media and Entertainment BPO – Publishing BPO.

UNIT – IV

6

Call Centres – Functions – Processes – classifications – Telemarketing – Tele selling – Preparing for a Job – Approach – Training – Selection Process.

UNIT – V

6

Improving Efficiency – Handling Calls – Team Player – Pleasing the Customers – Converse efficiently – Reducing stress.

TEXT BOOKS:

- 1.BPO Industry in India by S K Awasthi by Jain Book
- 2.Business Process Outsourcing: Its Prospects and Challenges by Barua.

REFERENCE BOOKS

- i) SudhindraMokhasi(2009) ,BPO – Sutra : True stories from India’s BPO and call centres, -Rupa& Co.
- ii) Kulkarni, Sarika.(2005), Business process outsourcing – Delhi, Jaico Publishing House.
- iii) Shikapur, Deepak(2004), BPO Digest. Ameya Inspiring Books.

Mr.P.Srinivasan

CourseCoordinator

HOD

P18OEBA003	CALL CENTER MANAGEMENT-VOICE AND NON VOICE						L	T	P	C	
	Total Contact Hours –30						2	0	0	2	
	Prerequisite course – UG Level										
	Course Coordinator Name & Department:-A.Jhony / BBA										
COURSE OBJECTIVES:- - Develop and motivate a call centre team. - Get the most out of call monitoring technology and prepare effective management reports. - React to and plan for operational bottlenecks. - Give meaningful feedback to call-centre agents and set achievable goals and targets. - Students will learn about the roles and methods of different kinds of call centers. They will apply this by designing their own call center and trying to anticipate customer needs.											
COURSE OUTCOMES (COs)											
CO1	Gaining a basic knowledge about call centers its functioning and classifications.										
CO2	To know about handling the Issues and problems related to calls in a efficient manner.										
CO3	Gives knowledge of technical communications, speech process and educate conversation of oral skills.										
CO4	Students acquire knowledge towards pre-interview about Interview questions and answering techniques										
CO5	Analyses fully about the medias of communications.										
CO6	Demonstrate awareness of the pragmatics of call center planning and operation										
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	PSO3
	CO1	H	L						H		H
	CO2	H	L						H		H
	CO3	H	L						H	M	H
	CO4	H	L						H	M	H
	CO5	H	L						H	M	H
	CO6	H	L						H	M	H
	Category	Humanities & Social Studies (HS)	Basic Sciences (BS)	Engg Sciences (ES)	Professional Core	Core Elective	Non-Major Elective (NE)	Open Elective (OE)	Any other	Project/Term Paper/ Seminar/ Internship(PR)	
		□□□				□□		□			
4	Approval	47 th Academic Council Meeting									

UNIT – I **6**

Call centers – Meaning – Functions – Processes - Classifications – Tele selling – Types of call centers.

UNIT – II **6**

Improving Efficiency – Handling calls – Team Players – Components and working of call center – Issues and problems.

UNIT – III **6**

Nature of Technical communication: Stages of communication – Nature of Technical Communication - The speech process – Conversation and Oral skills.

UNIT – IV **6**

Job Interview: Pre – Interview preparation techniques – Interview questions – Answering Strategies – Frequently asked Interview questions.

UNIT – V **6**

Communication media – Telephone – Fax – Internet – Email – Video conferencing.

TEXT BOOKS

1. Brad Cleveland - Call Center Management on Fast Forward: Succeeding in the New Era of Customer Relationships (3rd Edition) Third Edition,
2. Mr. Thomas Anthony Laird - Advice from a Call Center Geek: Rethinking Call Center Operations,

REFERENCE BOOKS

1. W. Stallings “Data and Computer Communication” Pearson Education, 5 Edition, 2001.
2. M. AshrajRizvi,” Effective Technical Communication”, Tata McGraw – Hill Education, 2005.
3. R.S.N.Pillai&Bagavathi – Modern commercial correspondence.

A.Jhoncy

Course Coordinator

HOD

P18OEBA004	CUSTOMER RELATIONSHIP MANAGEMENT						L	T	P	C	
	Total Contact Hours – 30						2	0	0	2	
	Prerequisite course – UG Level										
	Course Coordinator Name & Department:- Dr.DArun Kumar /BBA										
COURSE OBJECTIVES: - - To Popularize the students with the basic fundamentals of CRM. - To improve knowledge & skills on Customer relationship of Marketing strategy. - To develop the students on the concept of Customer service.											
COURSE OUTCOMES (COs)											
CO1	To popularize with the basics of CRM.										
CO2	Can increase awareness about Customer relationship.										
CO3	Able to be aware of the concept of Customer service.										
CO4	Can respond to the concept of Customer needs.										
CO5	Develop confidence in the practical aspects of Customer Satisfaction										
CO6	Identify the main Customer Expectations.										
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	PO 2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO 2	PSO 3
2	CO1	H	L						H		H
	CO2	H	L						H		H
	CO3	H	L						H	M	H
	CO4	H	L						H	M	H
	CO5	H	L						H	M	H
	CO6	H	L						H	M	H
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	47 th Academic Council Meeting									

UNIT – I**6**

CRM – Introduction – Definition – Need for CRM – Customer satisfaction – Customer loyalty – Product Marketing – Direct Marketing-

UNIT – II**6**

Customer learning relationship – Key stages of CRM - Force driving CRM – Benefits of CRM – Growth of CRM Market in India – Key principles of CRM.

UNIT - III**6**

CRM – Program – Ground work for effective use of CRM – Components of CRM – Types of CRM.

UNIT - IV**6**

CRM Process - Frame work – Governance process- Performance evaluation process.

UNIT – V**6**

Use of Technology in CRM – Call center process – CRM Technology tools – Implementation – Requirements analysis – selection of CRM Package – reasons and failure of CRM.

TEXT BOOK

1. Kristin Anderson & Carol Kerr – Customer Relationship Management – McGrawHill 2002
2. Sheth – Customer Relationship Management – McGraw Hill Edition 1st Edition 2000

REFERENCE BOOK

1. Dr. P .Sheela Rani – Customer Relationship Management – Margham Publication.
2. K. Balasubramaniyam – Customer Relationship Management – GIGO Publication, 2005.
3. Dr. Ravi Kalakota E – business – Road map for success, Pearson education Asia, 2000.

Dr.D.ArunKumar

CourseCoordinator

HOD

UNIT – I**6**

Introduction to Entrepreneurship: Meaning and concept of entrepreneurship - the history of entrepreneurship development - role of entrepreneurship in economic development

UNIT – II**6**

The Entrepreneur: Meaning of entrepreneur - the skills required to be an entrepreneur, and role models, mentors and support system.

UNIT – III**6**

Business Opportunity Identification: Business ideas, methods of generating ideas - legal form of new venture, protection of intellectual property -marketing the new venture.

UNIT – IV**6**

Preparing a Business Plan: Meaning - significance of a business plan - components -feasibility study.

UNIT – V**6**

Financing the New Venture: Importance - types of ownership securities - venture capital - types of debt securities -determining ideal debt-equity mix - financial institutions and banks.

TEXT BOOK

1. Robert D. Hisrich, Mathew J Manimala, Michael P Peters, Dean A Shepherd, “Entrepreneurship”, 9e, McGraw Hill Education, 2014.
2. Peter F. Drucker, “Innovation and Entrepreneurship”, Harper Collins, 2009.

REFERENCE BOOK

1. John Bessant, Joe Tidd, “Innovation and Entrepreneurship”, 2e, Wiley India Private Limited, 2012.
2. Robin Lowe, Sue Marriott, "Enterprise: Entrepreneurship and Innovation: Concepts, Contexts and Commercialization" 1e, Routledge, 2012.
3. VeeraBhadrapa Havinal – Management Entrepreneurship – New Age International Publishers.

Dr.D.ArunKumar

CourseCoordinator

HOD

P18OEBA006	ADVANCE HUMAN RESOURCE MANAGEMENT	L	T	P	C
	Total Contact Hours – 30	2	0	0	2
	Prerequisite course – UG Level				
	Course Coordinator Name & Department:- P.Srinivasan / BBA				

COURSE OBJECTIVES:-

- Today's competitive business environment owes its success to effective management of its human resource.
- The quality of the organization's employees, their attitude, behavior and satisfaction with their jobs, and their behavior towards ethics and values and a sense of fair treatment all impact the firm's productivity, level of customer service, reputation, and survival.
- The students of human resources management must aware of basic aspects of human resource management to understand the functioning of human resource management in an organizational setting.
- Students gained knowledge in the present day human resources development practice by incorporate themselves in the changing environment of HRM.

COURSE OUTCOMES (COs)

CO1	Identify how firms gain a sustainable competitive advantages through people
CO2	To be aware of the responsibility managers of have concerning human resource management
CO3	Identify the importance of change management.
CO4	To implement basics compensation and performance appraisal
CO5	Importance of labour welfare and grievance handling for employment
CO6	Understand the importance of Employee participation and Relations.

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	PSO 1	PSO 2	PSO 3
2	CO1	H	L						H		H
	CO2	H	L						H		H
	CO3	H	L	M	M	L	L	H	H	M	H
	CO4	H	L	M	M	L	L	H	H	M	H
	CO5	H	L	M	M	L	L	H	H	M	H
	CO6	H	L	M	M	L	L	H	H	M	H
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	47 th Academic Council Meeting

UNIT – I

6

Human Resource Function- Human Resource Philosophy – Changing environments of HRM – Strategic human resource management – Role of HR Managers.

UNIT – II

6

Recruitment & Placement: Sources, Developing and using application forms - IT and online recruitment - Selection process, basic testing concepts - types of test - work samples & simulation - selection techniques – interview - Designing & conducting the effective interview - computer aided interview.

UNIT – III

6

Training & Development: Employee Orientation- Training process- Need analysis- Training techniques-special purpose training- Performance appraisal: Methods - Problem and solutions - MBO approach - Performance appraisal in practice.

UNIT – IV

6

Basic Compensation & Pay plans - factors determining pay rate - Current trends in compensation - Computerized job evaluation - financial incentives - benefits - Insurance benefits - retirement benefits – welfare measure

UNIT – V

6

Trade unions - Discipline administration - grievances handling - Labour Welfare: Importance & Implications of labour legislations - Employee health.

TEXT BOOKS

1. Dr. R.Venkatapathy&AssissiMenacheri, Industrial Relations &Labour Welfare, Adithya Publications, CBE, 2001.
2. Robert L.Gibson and Marianne H.Mitchell, Introduction to Counseling and Guidance, VI edition, PHI, 2005
3. L.M. Prasad – Human Resource Management – S. Chand & Sons – 2007.

REFERENCE BOOKS

1. Gary Dessler, " zo& Stephen P.Robbins, Personnel/Human Resource Management, Third edition, PHI/Pearson.
2. VSP Rao, Human Resource Management: Text and cases, First edition, Excel Books, New Delhi - 2000.
3. P.SrinivasanHuman Resource Management", Seventh edition, Prentice-Hall of India P.Ltd., Pearson. David A. DeCen

Course Coordinator**HOD**

P18OEBA007	LOGISTICS & SUPPLY CHAIN MANAGEMENT	L	T	P	C
	Total Contact Hours – 30	2	0	0	2
	Prerequisite course: UG Level				
	Course Coordinator Name & Department:- T.Manjiniprakash / BBA				

COURSE OBJECTIVES:-

- To make the students to understand the usefulness of logistics and supply chain.
- This document lists the course's major subject areas and the knowledge, comprehension, application, analysis, synthesis and evaluation skills that they are designed to impart.
- Identify the sources of cost in a supply chain.
- Define inventory and types of inventory in a supply chain.
- Define transportation cost and identify the factors that contribute to this cost.
- Calculate inventory cost and transportation cost for a logistics problem.
- Define fixed and variable cost.
- Understand the economies of scale in transportation and inventory cost

COURSE OUTCOMES (COs)

CO1	Identify and Analyze Business Models, Business Strategies and corresponding Competitive Advantage.
CO2	Formulate and implement Warehouse Best Practices and Strategies.
CO3	Plan Warehouse and Logistics operations for optimum utilization of resources
CO4	Apply logistics and purchasing concepts to improve supply chain operations
CO5	Apply quality management tools for process improvement
CO6	Create an ideas about logistics and supply chain 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	PO 2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO 2	PSO 3
2	CO1	H	L						H		H
	CO2	H	L						H		H
	CO3	H	L	M	M	L	L	H	H	M	H
	CO4	H	L	M	M	L	L	H	H	M	H
	CO5	H	L	M	M	L	L	H	H	M	H
	CO6	H	L	M	M	L	L	H	H	M	H

3	Category	Humanities & Social Studies (HS)	Basic Sciences (BS)	Engg Sciences (ES)	Professiona I Core	Core Elective	Non-Major Elective (NE)	Open Elective (OE)	Any other	Project/Term Paper/ Seminar/ Internship(PR)
								✓		
4	Approval	47 th Academic Council Meeting								

UNIT –I

6

Logistics management and Supply Chain management - Definition, Evolution, Importance. The concepts of logistics. Logistics relationships - Functional applications - Logistics Organization - Logistics in different industries.

UNIT –II

6

Logistics Activities: – objectives, solution. Customer Service, Warehousing and Material Storage, Material Handling, information handling and procurement Transportation and Packaging - Reverse Logistics - Global Logistics

UNIT-III

6

Fundamentals of Supply Chain - Development of SCM - Strategic Supply Chain Management and Key components - Drivers of Supply Chain Performance – key decision areas – External Drivers of Change.

UNIT-IV

6

Supply Chain Drivers and Design Drivers of supply chain performance: Framework for structuring Facilities warehouse – Inventory – Transportation – Information - Sourcing, and Pricing – Revenue management.

UNIT-V

6

Demand and Inventory Aggregate Planning in a Supply Chain: role - strategies Implementation Responding to predictable variability in supply chain – Types of supply chains - creating responsive supply chains lean

TEXT BOOKS

1. Supply Chain Management: Ronald H. Ballou, Samir K. Srivastava, Pearson Education Ltd, Jan 2007.
2. Supply Chain Management: Anil Sinha, McGraw Hill Education, August 2011.

REFERENCE BOOKS

1. Logistics And Supply Chain Management: Martin Christopher, Pearson Education Ltd, 2016.
2. Supply Chain Management: Sunil Chopra, Peter Meindl, Dharma Virus Kalra, Pearson Education Ltd, 2016.

3. Supply Chain And Logistics Management: V. Anandaraj, S. Kumaran, IshankaSaikira, Airwalk Publication, Jan 2018.

T.Manjiniprakash.

Course Coordinator

HOD

P18OEBA008	OFFICE MANAGEMENT	L	T	P	C
	Total Contact Hours – 30	2	0	0	2
	Prerequisite course – UG Level				
	Course Coordinator Name & Department:- D.K.Sowmiyalakshmi /BBA				

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.

COURSE OUTCOMES (COs)

CO1	To make them understand office management and duties of an office manager
CO2	To give an idea about proper filing and indexing of office documents
CO3	To understand the principles of record management and different types of records in business organization.
CO4	To enable them to aware about safety hazardous and steps to improve office safety.
CO5	To introduce different measures of office work
CO6	Create an ideas about office 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	PSO3
2	CO1	H	L						H		H
	CO2	H	L						H		H
	CO3	H	L	M	M	L	L	H	H	M	H
	CO4	H	L	M	M	L	L	H	H	M	H
	CO5	H	L	M	M	L	L	H	H	M	H
	CO6	H	L	M	M	L	L	H	H	M	H

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	47 th Academic Council Meeting								

UNIT -I

6

Introduction: Meaning, functions and importance of office management; office management and organization. Principles of office management and organization. Principal departments of modern office.

UNIT-II

6

Office Manager: qualities of office manager. The authorities and responsibilities of an office manager. Office accommodation: Selection of site. Office layout. Environment and working conditions.

UNIT-III

6

Office equipment's - Reproduction equipment - Typewriter - Duplicators - Photo Copier - Communication Equipment - Intercom - Telephone - Use of Computers in Office Management Office System - Procedure - Routine - And methods - Paper work in office Filling functions.

UNIT-IV

6

Office Communication: Various means of communication- Their use, Correspondence through Internet - Office Correspondence -Central vs. Departmental Correspondence - Handling Mail - Postal Services - Oral written - Internal and external communication - Records Management Types - Forms Controls - Principles - Foremost -Continuous stationery

UNIT-V

6

Office Supervisor - Meaning and characteristics of Supervisor - Status - Place and Role of Supervisor - Effective Supervisor - Qualification - skill of Supervisor.

TEXT BOOKS

1. Modern Office Management: N. D Sharma, And Publishers, Jan 2006.
2. Office Management: Prashansa K. Ghosh, S. Chand & Sons, Jan 2010

REFERENCE BOOKS

1. Office Management: R.S.N Pillai&Bhagavathi, S. Chandler & Come, Dec 2010.
2. Office Management: R. Nangia, G. K Gupta, Crescent Publishing House.
3. Office Management: Dr. R. K Chopra, PriyankaGauri, Himalaya Publishing House, Jan 2017.
4. Of Non-Trading Organization-Receipts And Payment Account- Income And Expenditure Account

D.K.Sowmiyalakshmi

CourseCoordinator

HOD

P18OEVC001	PHOTOGRAPHY AND VIDEOGRAPHY	L	T	P	C
	Total Contact Hours – 30	2	0	0	2
	Prerequisite – UG Level				
	Course Coordinator Name & Department:- L.Rakesh – Dept of Visual Communication				

COURSE OBJECTIVES

- To understand the fundamentals of Photography and Videography
- To examine the technical factors of indoor and outdoor photography and Videography
- To enable the students to equip themselves to become a photography and Videography professionals.

COURSE OUTCOMES (COs)

CO1	Can analyze the fundamentals of Photography and Videography
CO2	Understanding of the camera operations
CO3	Evaluating the lighting
CO4	Can be aware of the wrong exposures
CO5	Can promote various types of photography and Videography
CO6	Understanding the concept of photo-journalism

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

	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
1											
2	CO1	H	L						H		H
	CO2	H	L						H		H
	CO3	H	L	M	M	L	L	H	H	M	H
	CO4	H	L	M	M	L	L	H	H	M	H
	CO5	H	L	M	M	L	L	H	H	M	H

	CO6	H	L	M	M	L	L	H	H	M	H
3	Category	Humanities & Social	Basic Sciences (BS)	Engg Sciences (ES)	Professional Core (PC)	Core Elective	Non-Major Elective	Open Elective (OE)			Any other
4	Approval	47 th Academic Council Meeting									

UNIT-I: 6

Human Eye and Camera. Basics of Camera (aperture, shutter speed, focal length, f-stop, depth of field etc.,) Camera operations, Introduction to Television Production, Types of telecasting, Television Crew, an overview of direction.

UNIT-II: 6

Types of Still and video cameras. Types of Lenses. Visual Perception, Art direction, floor management-indoor & outdoor, production management, budget preparation. Locations: In-door, set, on-sights sets, - Outdoor on-sight sets, blue matte. Etc.,

UNIT-III: 6

Understanding lighting-indoor and outdoor, Exposing and Focusing, Types of lighting, Natural and Artificial Lights, Controlling lights, Exposure Meters. Camera techniques & operation, Framing, shots & movements (wide, medium, close ups, shadow, zoom, pan, tilt, aerial etc.,),

UNIT-IV: 6

Photography for advertising-Consumer and industrial. Usage of various types of camera lenses (Normal, Tele, Zoom etc.,), usages of various filters (day ,night, colour correcting filter, diffusion filter), objectives TV lighting, various types of Lights (baby, Junior, Senior, etc.,)

UNIT- V: 6

Basics of photo-journalism, Photo-features, Photo - essays, Writing captions, Visual story telling. Planning a shoot-studio, location, set props and casting. Colour temperature, lighting for different situations (interviews, indoor, out-door), types of lighting(Back, Front, full, semi, etc.,)

TEXT BOOKS:

- 1.The Art of Photography: A Personal Approach to Artistic Expression, Barnbaum, Bruce, Rocky Nook
2. **Photography Demystified: Your Guide to Gaining Creative Control**, David McKay, Photography Inc.
3. Television Productions: A History of All Series and Pilots, by [Jon Abbott](#), Publisher: McFarland & Company (May 13, 2009).

4. Production Management for TV and Film: The Professional's Guide, Methuen Drama (August 1, 2010).

REFERENCE BOOKS:

1.The Photographer's Eye,Szarkowski, John, The Museum of Modern Art, New York (Publisher)

2.Creative Composition: Digital Photography Tips and Techniques, Davis, Harold, Wiley

3.From Concept to Screen: An Overview of Film and Television Production, Robert Benedetti, Pearson; 1 edition (June 11, 2001)

4.The Television Handbook, Routledge, Holland, P (1998)

Course Coordinator

HOD

P18OEEN001	SOFT SKILLS	L	T	P	C
	Total Contact Hours – 30	2	0	0	2
	Prerequisite – UG 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 confidence and fluency in speaking English.
CO4	Analyze the learners to fine-tune their linguistic skill with communication globally
CO5	Evaluate the excellence in both personal and professional life
CO6	Create the performance of learners at placement interviews and other recruitment procedures.

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	PSO 2	PSO 3
2	CO1	H	L						H	L	M
	CO2	H	L						H	L	M
	CO3	H	L	M	M	L	L	H	H	L	M
	CO4	H	L	M	M	L	L	H	H	L	M
	CO5	H	L	M	M	L	L	H	H	L	M
	CO6	H	L	M	M	L	L	H	H	L	M

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	47 th Academic Council Meeting								

UNIT I- LISTENING / VIEWING

6

Listening and note-taking – Listening to telephonic conversations – Ted talks – Inspiring Speeches – Watching documentaries on personalities, places, socio-cultural events, TV news programmes and discussions to answer different kinds questions, viz., identifying key idea and comprehension questions... so on.

UNIT II- SPEAKING

6

Elements of presentation skills-Structure of presentation-presentation tools- mock interviews – group discussion – introducing one self and others – welcome address and proposing a vote of thanks- role play – debating.

UNIT III - READING

6

Different genres of text (literature, media, technical) for comprehension – Reading strategies like note-making – reading graphs, charts and graphic organizer – Sequencing sentences – reading online sources like e-books, e-journals and e-newspapers.

UNIT IV - WRITING

6

Resume/Report preparation/Letter Writing-Structuring the resume-comprehension- Describing charts and tables – writing for media on current events.

UNIT V- PROJECT

6

Gender injustice: Dowry-Violence against women -Sexual Harassment -Eve teasing-Female infanticide-Prostitution. **Social problem:** Poverty-unemployment-Child Labour-Terrorism-Drug abuse-Alcoholism-Corruption. **Industrial problem:** Work and Labour organization-Elements-Principles-Staff and Functional Activities. **Industrial Conflict:** Strikes-Disputes-Grievances-Industrial development in India-Steps in Automation process-Industrial policy-Liberation.

TEXT BOOKS:-

1. Rizvi ashraf ,Effective Technical Communication , Tata amcgraw Hill Education Private Ltd,New Delhi,2011.
2. Townsend Roz , Presentation skills for the upwardly mobile , Emerald Publishers .

REFERENCE BOOKS:-

1. T.M.Farhathullah, communication skills for Technical students, Orient Longman Ltd,2002.
2. Andree J Rutherford, Basic communication skills for Technology, Pearson Education,Asia (Singapore) Pte.Ltd, Bangalore , 2001.

Course Coordinator**HOD**

	MASS MEDIA AND COMMUNICATION	L	T	P	C
P18OEEN002	Total Contact Hours – 30	2	0	0	2
	Prerequisite – UG Level				
	Course coordinator :- Dr.P.AROCKIA NATHAN Dept of English				

COURSE OBJECTIVES :

To impart students with the efficient knowledge of important events in through literature

COURSE OUTCOMES (COs)

CO1	Remember the art of writing, report and editing
CO2	Understand the skills of writing
CO3	Apply the Role & importance in social change
CO4	Analyze the social structure of Indian society
CO5	Evaluate the growth & development of communication and media
CO6	Create the interpreting the meaning from the text

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	PSO 2	PSO 3
2	CO1	H	L						H	L	M
	CO2	H	L						H	L	M
	CO3	H	L	M	M	L	L	H	H	L	M
	CO4	H	L	M	M	L	L	H	H	L	M
	CO5	H	L	M	M	L	L	H	H	L	M
	CO6	H	L	M	M	L	L	H	H	L	M

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	47 th Academic Council Meeting								

UNIT I -Communication and Media

6

Communication & Media: Definition, meaning and concept.

Different types of communication: verbal and written

Scope and Process of Mass Media & Communication

UNIT II -History of Mass media

6

History of the development of electric media in India: Radio & TV

Role of media in society, Impact of media on audience,

Media effects, limitations and different form of media.

UNIT- III- Role & Responsibilities

6

Role and responsibilities of journalist, ethics, careers,

Media management, Media laws in India, and freedom of press

Qualities and Responsibilities of a reporter

UNIT IV -Theories & Principles

6

Theories and Principles of Editing

Communication and theories of social change,

Role of media in social change, Development communication

UNIT V-Technology & Development

6

Changing trends of mass communication under the process of globalization

Technology in the development of media.

Text Books:-

1. Vivian, John, Mass Media & communication Boston, Massachusetts : Pearson Allyn and Bacon, c.2008.
2. Stovall, James Glen, Writing for the mass media, New Jersey : Pearson Education, Inc., c.2012

Reference Books:-

1. Parthasarathy, Rangaswami, journalism in India, sterling Publisher pvt. Ltd. New Delhi.
2. D.S. Mehta. Mass communication and Journalism in India New Delhi, Allied Publishers, 2011

Course Coordinator**HOD**

P18OESC001	COMPUTER APPLICATIONS	L	T	P	C
	Total Contact Hours – 30	2	0	0	2
	Prerequisite course – UG Level				
	Course Coordinator Name & Department:- Dr. S.Thiru Nirai Senthil / 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	Identify 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	PSO 2	PSO 3
2	CO1	H	L							H	
	CO2	H	L								
	CO3	H	L								
	CO4	H	L								
	CO5	H	L								
	CO6	H	L								

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

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,2010.
2. Alexis Leon & Mathews Leon, “Fundamentals of Information Technology”, Vikas Publishing House, New Delhi,2009.

REFERENCE BOOKS:

1. Rajeev Mathur, “Dos Quick Reference”, Galgotia Publications.

Course Coordinator**HOD**

P18OESC002	MULTIMEDIA							L	T	P	C
	Total Contact Hours – 30							2	0	0	2
	Prerequisite course – UG Level										
	Course Coordinator Name & Department:- Dr. S.Thiru Nirai Senthil / BCA										
COURSE OBJECTIVES:- To Understand 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	PSO 2	PSO 3
2	CO1	H	L								H
	CO2	H	-								
	CO3	H	-								
	CO4	H	L								
	CO5	H	L								
	CO6	H	L								
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									

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 to multimedia",1998.
2. Mohammad Dastbaz, "Designing Interactive Multimedia Systems",2002.

Reference Books

1. Bohdan O. Szuprowicz, "Multimedia Networking",1995.
2. Stephen McGloughlin, "Multimedia on the web",1997.

Course Coordinator

HOD

	ADVANCED EXCEL	L	T	P	C
	Total Contact Hours – 30	2	0	0	2

P18OESC003		Prerequisite course – UG Level									
		Course Coordinator Name & Department:- S.Anupriya / 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	PSO 2	PSO 3
2	CO1	H	L								H
	CO2	H	L								
	CO3	H	L	M	M						
	CO4	H	L	M	M						
	CO5	H	L	M	M						
	CO6	H	L	M	M						
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									

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 Subtotals , 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” ,A Press, 2015 edition.

Reference Books

1. John Walkenbach, “Microsoft Excel 2013 Bible”, Wiley Publications,2013.

Course Coordinator

HOD

P18OESC004	WEB DESIGNING							L	T	P	C
	Total Contact Hours – 30							2	0	0	2
	Prerequisite course – UG Level										
	Course Coordinator Name & Department:- V.Ramya/BCA										
COURSE OBJECTIVES:- To Understand the basic web designing concepts.											
COURSE OUTCOMES (COs)											
CO1	Gain knowledge in web basics and server side scripting.										
CO2	Execute the HTML coding.										
CO3	Apply hyper links between webpages										
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	PSO 2	PSO 3
2	CO1	H	L								H
	CO2	H									
	CO3	H									
	CO4	H									
	CO5	H	L								
	CO6	H	L								
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**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, 2010.
4. T. A Powell, “Complete Reference HTML (Third Edition)”, TMH, 2002.

Course Coordinator

HOD

P18OESC005	PHOTOSHOP						L	T	P	C	
	Total Contact Hours – 30						2	0	0	2	
	Prerequisite course – UG 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	Gain knowledge in 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	PSO 2	PSO 3
2	CO1	H	L								H
	CO2	H	-								
	CO3	H	-								
	CO4	H	-								
	CO5	H	L								
	CO6	H	L								
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

6

Introduction to Adobe photoshop, Getting started with photoshop, creating and saving a document in photoshop, page layout and back ground.

UNIT II

6

Photoshop program window-titlebar, menu bar, option bar, image window, image title bar, status bar, ruler, palettes ,tool box, 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 tool box: 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.

Text Books

1. Reema Thareja ,”Fundamentals of Computers”,Oxford University Press,2014.

Reference Books

1. Photoshop: Beginner's Guide for Photoshop - Digital Photography, Photo Editing, Color
2. Adobe Creative Team ,”Adobe Photoshop Class Room in a Book”,2014.

Course Coordinator

HOD

P18OESC006	FLASH							L	T	P	C
	Total Contact Hours – 30							2	0	0	2
	Prerequisite course – UG Level										
	Course Coordinator Name & Department:- N.Mathimagal/ BCA										
COURSE OBJECTIVES:- Learners can identify methods appropriate for Basic Animation. Apply methods to design with flash.											
COURSE OUTCOMES (COs)											
CO1	Understand inWorking 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	PSO 2	PSO 3
2	CO1	H	L								H
	CO2	H	-								
	CO3	H	-								
	CO4	H									
	CO5	H	L								
	CO6	H	L								
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	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 twining , 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.

Course Coordinator

HOD

P18OESC007	COMPUTER HARDWARE AND NETWORKING						L	T	P	C	
	Total Contact Hours – 30						2	0	0	2	
	Prerequisite course – UG Level										
	Course Coordinator Name & Department:- V.Ramya/BCA										
COURSE OBJECTIVES:- Learners familiar with the basic concepts of Microprosster,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	PSO 2	PSO 3
2	CO1	3	3	1	1	1	1	3	H		
	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/	
								√			
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, October 2013.

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 McGraw-Hill Publication.
3. Stephen J. Bigelow, "PC Troubleshooting and Repair", Dream tech Press, New Delhi.

Course Coordinator**HOD**

P18OESC008	COMPUTER PROGRAMMING						L	T	P	C	
	Total Contact Hours – 30						2	0	0	2	
	Prerequisite course – UG Level										
	Course Coordinator Name & Department:- S.Anupriya/ BCA										
COURSE OBJECTIVES:- Learners understand the basic concepts of C programming. Practice the use of conditional and looping statements. Implement arrays, functions and pointers. Gain skills to handle strings and files.											
COURSE OUTCOMES (COs)											
CO1	Understand the concept of data types, loops, functions, array, pointers, string, structures and files.										
CO2	Design flow-chart, algorithm and program logic.										
CO3	Analyze problems, errors and exceptions.										
CO4	Apply programming concepts to compile and debug c programs to find solutions.										
CO5	Gain knowledge to use Function, Pointers, Structures, Unions & preprocessor directives										
CO6	Construct programs that demonstrate effective use of C.										
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	PSO3
2	CO1	H	L						H		
	CO2	H	L								
	CO3	H	L	M				H			
	CO4	H	L	M				H			
	CO5	H	L	M				H			
	CO6	H	L	M				H			
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 (OP)	
								√			
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. Pradip Dey, Manas Ghosh, “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’s Outlines, 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

P18OESC009	OFFICE AUTOMATION TOOLS	L	T	P	C
	Total Contact Hours – 30	2	0	0	2
	Prerequisite course – UG Level				
	Course Coordinator Name & Department:- V.Brindha/BCA				

COURSE OBJECTIVES:-

Learners understand the basic concepts of word, Excel, Power Point.

COURSE OUTCOMES (COs)

CO1	Understand the text manipulations for word documents.
CO2	Analyze the templates and mail merge concepts.
CO3	Apply the cell editing, formulae, built in functions used in the Excel Sheet.
CO4	Develop the power point slide designs and backgrounds.
CO5	Develop the graphics and animations using wizards.
CO6	Create a document and apply various formatting 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	PSO3
2	CO1	H	L								H
	CO2	H	L								
	CO3	H	L	M				H			
	CO4	H	L	M				H			
	CO5	H	L	M				H			
	CO6	H	L	M				H			

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 (DP)

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”, Universe Publications,2012.

Course Coordinator

HOD

U18OEMI001		CLINICAL MICROBIOLOGY						L	T	P	C
		Total Contact Hours – 30						2	0	0	2
		Prerequisite course – Under graduate degree in any discipline									
		Course Coordinator Name & Department:- Dr. J. Senthil & Microbiology									
COURSE OBJECTIVES:-											
Learners will be familiar with microbiological related diagnostic techniques. Learners will understand the microbial morphology, structure, characters, classification, diseases and diagnostic tests.											
COURSE OUTCOMES (COs)											
CO1	Recall the general classification of microbes.										
CO2	Recognize the different specimen collection methods and staining methods.										
CO3	Apply different diagnostic tests to identify the diseases.										
CO4	Analyze the role of human pathogens in causing diseases.										
CO5	Evaluate the importance of antimicrobial compounds.										
CO6	Create and develop new antimicrobial drugs and antibiotics against wide range of pathogens.										
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	PSO 1	PSO 2	PSO 3
2	CO1	H	L						H	M	L
	CO2	H	L						H	M	L
	CO3	H	L	M				H	H	M	L
	CO4	H	L	M				H	H	M	L
	CO5	H	L	M				H	H	M	L
	CO6	H	L	M				H	H	M	L
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	47 th Academic Council Meeting									

UNIT I

6

General introduction about clinical microbiology, Sterilization and Disinfection., Culture Media preparation, Staining Methods, Collection and Transportation of Specimen - General Principles, Containers, Rejection, Samples - Urine, Faeces, Sputum, Pus, Body fluids, Swab, Blood, Disposal of Laboratory/Hospital Waste.

UNIT II

6

General characters and classification of bacteria, Characteristics - Growth and maintenance of Bacteria, Pathogenicity and diagnosis of bacterial pathogens, antimicrobial compounds against clinical pathogens.

UNIT III

6

Morphology and structure of fungi - Classification of fungi - Nutrition and cultivation of fungus - Cutaneous & Sub cutaneous and Systemic Mycosis - Lab diagnosis of fungal Infections - Opportunistic fungal infections.

UNIT IV

6

General characters of viruses. - Classification of viruses. - Lab diagnosis of viral infections. - Cultivation of viruses. - Bacteriophages - Retro viruses - HIV, Hepatitis virus, Pox virus . - Picorna virus - Polio. - Orthomyxo virus - Influenza. - Arbo virus - Chikungunya, Dengue. - Herpes and Adeno virus.

UNIT V

6

Definition - parasitism, host, vectors etc. Classification of Parasites, Phylum Protozoa- general Pathogenic and non pathogenic protozoa, Phylum Nematelminthes/Round words (Nematoda), Phylum Platyhelminthes - class - Cestoda, class - Trematoda, Lab diagnosis of parasitic infections.

TEXT BOOKS:

1. Monica Chees Brough. Medical laboratory manual for tropical countries, Elsevier Health Sciences, Butter worths, 1987.
2. Bailey and Scott. Diagnostic Microbiology, Eighth edition, The Mosby Company, 1990.

REFERENCE BOOKS:

1. Keith Struthers K. Clinical Microbiology, 2nd Edition, CRC Press, 2017.
2. Jennie Wilson. Clinical Microbiology -An Introduction for Healthcare Professional, 8th Edition, Bailyère Tindall, 2000.

U18OEMI002		HERBAL MEDICINE						L	T	P	C
		Total Contact Hours – 30						2	0	0	2
		Prerequisite course – Under graduate degree in any discipline									
		Course Coordinator Name & Department:- Dr. J. Senthil & Microbiology									
COURSE OBJECTIVES:- Learners will be familiar with medicinal herbs. Learners will understand the importance of herbal drugs and herbal therapies.											
COURSE OUTCOMES (COs)											
CO1	Recall the herbal medicines used in daily life.										
CO2	Recognize the different methods of herbal extraction and its types.										
CO3	Apply various herbal medicines in curing the diseases.										
CO4	Analyze the role of herbs in drug discovery.										
CO5	Evaluate the importance and toxicity studies of herbal extracts.										
CO6	Create and develop new drugs from wide range of medicinal plants available worldwide.										
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	PSO 2	PSO 3
2	CO1	H	L						H	`	M
	CO2	H	L						H	L	M
	CO3	H	L	M				H	H	L	M
	CO4	H	L	M				H	H	L	M
	CO5	H	L	M				H	H	L	M
	CO6	H	L	M				H	H	L	M
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	47 th Academic Council Meeting									

UNIT I **6**

Definition of Herbal drug, Importance of Herbal therapies, Herbs used as nutraceuticals and healing agents. Making and using herbal medicines for common ailments like cold, skin infections and Diarrhea; Analytical Profiles of selected herbs.

UNIT II **6**

General methods of extraction, types and principles of extractions - merits and demerits, selection of suitable extraction methods, purification and recovery of solvents

UNIT III **6**

Different methods for isolation and estimation of phyto-constituents from medicinal herbs like *Mucuna pruriens*, *Garcinia combogia*, Green tea, *Hypericum species* etc.

UNIT IV **6**

Qualitative and Quantitative estimation of standardized extracts by HPTLC, Biological standardization -Pharmacological screening of herbal extracts and Microbiological evaluation of herbal extracts, Toxicity studies of herbal extracts.

UNIT V **6**

Herbal drugs acting on brain and nervous system – Rheumatoid arthritis – Psychoactive drugs – Depressants, Stimulants, hallucinogens – sources, effects, basic mechanism of action.

TEXT BOOKS:

1. Indian Herbal Pharmacopoeia, Vol.1 & 2, RRL, 1 DMA, 1998, 2000.
2. Kokate CK, Purohit and Gokhale. Text book of Pharmacognosy, 4th edition, Nirali Prakashan, 1996.

REFERENCE BOOKS:

1. Toxicology and Clinical Pharmacology of Herbal Products, Melanie Johns Cupp.
2. Choudhary RD. Herbal drug industry, 1st edition, Eastern publisher, New Delhi, 1996.

Course Coordinator

HOD

P18OEPH001	ELECTRICAL TECHNICIAN	L	T	P	C
	Total Contact Hours - 30	2	0	0	2
	Prerequisite – B.Sc Physics				
	Course Coordinator Name & Department:- – Dr. S.Anandhi / Physics				

OBJECTIVES: Students will have an appreciation on the electrical systems and electrical equipment typically used in the Oil and Gas production plant.

COURSE OUTCOMES (COs)

CO1	Analyze and solve routine technical problems related to electrical systems by applying mathematics and science principles.
CO2	Explain how to used electrical tools, operate and maintain specific equipment in the Oil and Gas production plant
CO3	Explain how to perform corrective and preventive maintenance in electrical tasks.
CO4	Understand the work on electrical systems safely and efficiently.
CO5	Understand the electrical system and electrical equipment used in the Oil and Gas production plant.
CO6	To execute the principle and how to working process of the transformer and classification of transformer

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	PSO3
2	CO1	H	L						H		
	CO2	H	L						H		
	CO3	H	L	M				M	H		
	CO4	H	L	M				M	H		
	CO5	H	L	M				M	H		
	CO6	H	L	M				M	H		

3	Category	Humanities & Social Studies (HS)	Basic Sciences (BS)	Engg Sciences (ES)	Professional Core Elective (CE)	Non-Major Elective (NE)	Open Elective (OE)	Any other	Project/Term Paper/Seminar/
							✓		
4	Approval	47 th Academic Council Meeting							

UNIT-I

6

Basic Principle Of Petroleum - Overview of Oil and Gas Processing -Wellhead Platform and Equipment

UNIT –II

6

Introduction to Instrumentation -P & ID Drawing -Introduction to Distributed Control System (DCS)

UNIT –III

6

Safety in Electrical Maintenance - Batteries and Chargers -Reading Electrical Diagrams -Cables and Conductors - Terminations and Splices - Motor Branch Circuit Protections

UNIT –IV

6

Three Phase AC Induction Motors - AC Generator Maintenance -Fire & Gas Detection and Safety Systems and SIS -DC Generator -Construction& Principle- Types-Series,- Shunt & Compound Generator- EMF equation, Characteristics - (OCC & LCC). Armature reactions,- commutation Efficiency, Regulation & Applications. DC Motor- Construction& Principle. Types- Series, Shunt & Compound Motors. Characteristics curve-Applications. Necessity of starter- Construction and Working of- starters (3 point& 4 point). Speed control of DC Shunt-motor (armature & Field control. Traction System.- Trouble shooting –Care and maintenance.

UNIT-V

6

Transformer –Principle -Construction- Classification of Transformers - EMF equation ,rating - Loading, Losses & Efficiency Regulation. Parallel Operation- Cooling methods, Transformer- oil testing. Care and maintenance,- Protective devices. Tap Changer – ON load and OFF- load. Auto transformer, Instrument- Transformer- CT & PT. Welding Transformer.

TEXT BOOKS

1. Fundamental Electrical circuits by Charles K.Alexandeer and Matthew NO Sadiku(2003)
2. Fundamental of Digital circuits 3rd edition by Kumar A Anandh

Course Coordinator**HOD**

AUDIT COURSES

P18ACEN001	AUDIT COURSE : ENGLISH FOR RESEARCH PAPER WRITING	L	T	P	C
	Total Contact Hours – 30	2	0	0	0
	Prerequisite course – UG Level				
	Course Coordinator Name & Department:- Mr.V.C.Jain/Department of English				

COURSE OBJECTIVES:-

Understand the skills needed when writing a Title Ensure the good quality of paper at very first-time submission.

COURSE OUTCOMES (COs)

CO1	Recognize to prepare and Plan the word order, breaking of long sentences, structural formation of paragraph and being concise without any ambiguities.
CO2	Describe how to write abstract and introduction to any topic or project.
CO3	Relate the skills require for the discussions and conclusions.
CO4	Express the quality of paper and time management in writing skills.
CO5	Categorize the useful phrase and how to ensure the paper is as good.
CO6	Prepare the oral presentation in class using effective delivery strategies.

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	PSO 2	PSO 3
2	CO1	H	L											H		
	CO2	H	L											H		
	CO3	H	L	M								M	H			
	CO4	H	L	M								M	H			
	CO5	H	L	M								M	H			
	CO6	H	L	M								M	H			
3	Category	Humanities & Social Studies (HS)		Basic Sciences (BS)	Engg Sciences (ES)		Professional	Core Elective (CE)		Non-Major Elective (NE)		Open Elective (OE)		Any other	Project/Term Paper/ Seminar/	
													✓			
4	Approval	47 th Academic Council Meeting														

UNIT - 1: PLANNING AND PREPARATION :**6**

Planning and Preparation - word order - breaking up long sentences, structuring, paragraphs and sentences, being concise and removing redundancy, avoiding ambiguity and vagueness.

UNIT-2 : ABSTRACT**6**

Clarifying who did what - highlighting your findings - hedging and criticizing - paraphrasing and plagiarism - sections of a paper - abstracts - introduction.

UNIT -3 : DISCUSSION AND CONCLUSION**6**

Review of the literature - methods - results - discussion - conclusions, the final check - key skills are needed when writing a title - key skills are needed when writing an abstract - key skills are needed when writing an introduction - skills needed when a review of the literature.

UNIT -4 : WRITING SKILLS**6**

Skills are needed when writing the methods - skills needed when writing the results - skills are needed when writing the discussion - skills are needed when writing the conclusions.

UNIT -5: QUALITY AND TIME MAINTAINANCE**6**

Useful phrases - how to ensure paper is as good as it could possibly be the first -time submission.

TEXT BOOKS :

1. Goldbort R (2006) Writing for Science, Yale University Press (Available on Google Books).
2. Day R(2006), How to Write and Publish a Scientific Paper, Cambridge University Press.

REFERENCE BOOKS :

1. HighmanN, Handbook of Writing for the Mathematical Sciences, SIAM, Highman's Book, 1st, Edition, 1998.
2. Adrian Wallwork, English for Writing Research Papers, Springer New York Dordrecht Heidelberg London, 2nd Edition, 2011.

Course Coordinator**HOD**

UNIT - : INTRODUCTION:**6**

Disaster : Definition - Factors and Significance - Difference between Hazard and Disaster - Natural and Manmade Disasters - Difference - Nature - Types and Magnitude.

UNIT - 2 : REPERCUSSIONS OF DISASTERS AND HAZARDS:**6**

Economic Damage - Loss Of Human And Animal Life - Destruction Of Ecosystem - Natural Disasters: Earthquakes - Volcanisms - Cyclones - Tsunamis - Floods - Droughts And Famines - Landslides And Avalanches - Man-made disaster.

UNIT -3 : DISASTER PRONE AREAS IN INDIA:**6**

Study Of Seismic Zones - Areas Prone To Floods And Droughts - Landslides And Avalanches - Areas Prone To Cyclonic And Coastal Hazards With Special Reference To Tsunami - Post-Disaster Diseases And Epidemics.

UNIT -4 : DISASTER PREPAREDNESS AND MANAGEMENT**6**

Preparedness: Monitoring Of Phenomena Triggering A Disaster Or Hazard - Evaluation Of Risk: Application Of Remote Sensing, Data From Meteorological And Other Agencies - Media Reports: Governmental And Community Preparedness.

UNIT -5 : RISK ASSESSMENT**6**

Disaster Risk: Concept And Elements - Disaster Risk Reduction, Global And National Disaster Risk Situation - Techniques Of Risk Assessment - Global Co- Operation In Risk Assessment And Warning, People's Participation In Risk Assessment - Strategies for Survival.

TEXT BOOKS:

1. R. Nishith, Singh AK, "Disaster Management in India: Perspectives, issues and strategies "New Royal book Company.

REFERENCE BOOKS:

1. Sahni, PardeepEt.Al. (Eds.)," Disaster Mitigation Experiences And Reflections", Prentice Hall Of India, New Delhi.
2. Goel S. L. , Disaster Administration And Management Text And Case Studies" ,Deep &Deep Publication Pvt. Ltd., New Delhi.

Course Coordinator**HOD**

UNIT -1 : INTRODUCTION: 6

Alphabets, Consonants, Nouns Declensions; Nominative, Accusative(singular, dual and plural)

UNIT - 2 : BASIC OF SANSKRIT LITERATURE: 6

Instrumental case, Dative, Ablative, and Indeclinables, verbal conjugation: first person, second person, third person: Present Tense.

UNIT - 3 : FUNDAMENTALS OF SANSKRIT ARCHITECTURE: 6

Genitive, locative and Vocative Absolute, Masculine Gender, Feminine Gender and Neuter Gender.

UNIT -4 : VERBAL CONJUGATION: 6

Verbal Conjugation: Past Tense and Future Tense Declensions ending in Rāmaḥ, Kaviḥ, Bhānuḥ, Mātr , Mālā

UNIT - 5 : TRANSLATION: 6

Translation of simple sentences, Stories & selected Subhashitas

TEXT BOOKS:

1. “Abhyastakam” – Dr.Vishwas, Samskrita-Bharti Publication, New Delhi.
2. Sanskrit for Beginners by Dr. M. Narasimhacharyand Dr.S. Ramaratnam, N&R Publications, Chennai & New Delhi.

REFERENCE BOOKS :

1. “Teach Yourself Sanskrit” Prathama Deeksha-VempatiKutumbshastri, Rashtriya Sanskrit Sansthanam, New Delhi Publication.
2. “India’s Glorious Scientific Tradition” Suresh Soni, Ocean books (P) Ltd., New Delhi.

Course Coordinator

HOD

UNIT-I:**6**

Value Education - Definition - relevance to present day - Concept of Human Values - self introspection - Self esteem.

UNIT-II:**6**

Family values - Components, structure and responsibilities of family - Neutralization of anger - Adjustability - Threats of family life - Status of women in family and society - Caring for needy and elderly - Time allotment for sharing ideas and concerns.

UNIT-III:**6**

Ethical values - Professional ethics - Mass media ethics - Advertising ethics - Influence of ethics on family life - psychology of children and youth - Leadership qualities - Personality development.

UNIT-IV:**6**

Social values - Faith, service and secularism - Social sense and commitment - Students and Politics - Social awareness, Consumer awareness, Consumer rights and responsibilities - Redressal mechanisms.

UNIT-V:**6**

Effect of international affairs on values of life/ Issue of Globalization - Modern warfare - Terrorism. Environmental issues - mutual respect of different cultures, religions and their beliefs.

TEXT BOOKS:

1. T. Anchukandam and J. Kuttainimathathil (Ed) Grow Free Live Free, Krisitu Jyoti Publications, Bangalore (1995).
2. Mani Jacob (Ed) Resource Book for Value Education, Institute for Value Education, New Delhi 2002.

REFERENCE BOOKS:

1. DBNI, NCERT, SCERT, Dharma Bharti National Institute of Peace and Value Education, Secunderabad, 2002.
2. Daniel and Selvamony - Value Education Today, (Madras Christian College, Tambaram and ALACHE, New Delhi, 1990)
3. S. Ignacimuthu - Values for Life - Better Yourself Books, Mumbai, 1991.
4. M.M.M.Mascaronhas Centre for Research Education Science and Training for Family Life Promotion - Family Life Education, Bangalore, 1993.

Course Coordinator**HOD**

UNIT -1 : HISTORY OF MAKING OF THE INDIAN CONSTITUTION: 6

History - Drafting Committee, (Composition & Working)

UNIT -2 : PHILOSOPHY OF THE INDIAN CONSTITUTION: 6

Preamble - Salient Features - Directive Principles of State Policy - Fundamental Duties.

UNIT - 3 : CONTOURS OF CONSTITUTIONAL RIGHTS & DUTIES: 6

Fundamental Rights - Right to Equality - Right to Freedom - Right against Exploitation - Right to Freedom of Religion - Cultural and Educational Rights - Right to Constitutional Remedies.

UNIT -4 : ORGANS OF GOVERNANCE: 6

Parliament - Composition - Qualifications and Disqualifications - Powers and Functions - Executive President - Governor - Council of Ministers - Judiciary, Appointment and Transfer of Judges, Qualifications - Powers and Functions.

UNIT - 5 : LOCAL ADMINISTRATION & ELECTION COMMISSION : 6

District's Administration head: Role and Importance - Introduction, Mayor and role of Elected Representative CEO of Municipal Corporation - Pachayati raj: Introduction, PRI: Zila Pachayat - Elected officials and their roles - Introduction of Election Commission - Election Commission: Role and Functioning - Chief Election Commissioner and Election Commissioners - State Election Commission: Role and Functioning - Institute and Bodies for the welfare of SC/ST/OBC and women.

TEXT BOOKS:

1. The Constitution of India, 1950 (Bare Act), Government Publication.
2. Dr. S. N. Busi, Dr. B. R. Ambedkar framing of Indian Constitution, 1st Edition, 2015.

REFERENCE BOOKS:

1. M. P. Jain, Indian Constitution Law, 7th Edn., Lexis Nexis, 2014.
2. D.D. Basu, Introduction to the Constitution of India, Lexis Nexis, 2015.

Course Coordinator

HOD

UNIT - 1 : INTRODUCTION AND METHODOLOGY:**6**

Aims and rationale, Policy background, Conceptual framework and terminology - Theories of learning - Curriculum - Teacher education - Conceptual framework, Research questions -Overview of methodology and Searching.

UNIT - 2 : THEMATIC OVERVIEW:**6**

Pedagogical practices are being used by teachers in formal and informal classrooms in developing countries - Curriculum, Teacher education.

UNIT - 3 : EVIDENCE ON THE EFFECTIVENESS OF PEDAGOGICAL PRACTICES :-6

Methodology for the in depth stage: quality assessment of included studies - How can teacher education (curriculum and practicum) and the school curriculum and guidance materials best support effective pedagogy? Theory of change - Strength and nature of the body of evidence for effective pedagogical practices.

UNIT - 4 : PROFESSIONAL DEVELOPMENT:**6**

Alignment with classroom practices and follow up support - Peer support - Support from the head teacher and the community - Curriculum and assessment - Barriers to learning: limited resources and large class sizes

UNIT - 5 : Research gaps and future directions:-**6**

Research design - Contexts - Pedagogy - Teacher education - Curriculum and assessment - Dissemination and research impact.

TEXT BOOKS:

1. Ackers J, Hardman F (2001) Classroom interaction in Kenyan primary schools, Compare, 31 (2): 245-261.
2. Agrawal M (2004) Curricular reform in schools: The importance of evaluation, Journal o Curriculum Studies, 36 (3): 361-379.
3. Akyeampong K (2003) Teacher training in Ghana - does it count? Multi-site teacher education research project (MUSTER) country report 1. London: DFID.

REFERENCE BOOKS:-

1. Akyeampong K, Lussier K, Pryor J, Westbrook J (2013) Improving teaching and learning of basic maths and reading in Africa: Does teacher preparation count? International Journal Educational Development, 33 (3): 272–282.
2. Alexander RJ (2001) Culture and pedagogy: International comparisons in primary education. Oxford and Boston: Blackwell.
3. Chavan M (2003) Read India: A mass scale, rapid, ‘learning to read’ campaign.

Course Coordinator**HOD**

UNIT - 1 : HOLISTIC DEVELOPMENT OF PERSONALITY- I**6**

Neetisatakam-Holistic development of personality : Verses- 19,20,21,22 (wisdom) - Verses- 29,31,32 (pride & heroism) - Verses- 26,28,63,65 (virtue) - Verses- 52,53,59 (don't's) - Verses- 71,73,75,78 (do's).

UNIT - 2 : BHAGWADGEETA:**6**

Approach to day to day work and duties. ShrimadBhagwadGeeta: Chapter 2-Verses 41, 47,48. Chapter 3-Verses 13, 21, 27, 35.

UNIT - 3: BHAGWAD GEETA:-**6**

ShrimadBhagwadGeeta: Chapter 6-Verses 5, 13, 17, 23, 35, Chapter 18-Verses 45, 46, 48.

UNIT - 4: BASIC KNOWLEDGE:**6**

Statements of basic knowledge. ShrimadBhagwadGeeta: Chapter2-Verses 56, 62, 68. Chapter 12 - Verses 13,14, 15, 16,17, 18.

UNIT - 5: ROLE MODEL : -**6**

Personality of Role model. Shrimad BhagwadGeeta: Chapter2-Verses 17, Chapter 3-Verses 36,37,42, - Chapter 4-Verses 18, 38,39 - Chapter18 – Verses 37,38,63.

TEXT BOOK:

1. P.Gopinath, “Bhartrihari’s Three Satakam (Niti-sringar-vairagya)”, Rashtriya Sanskrit Sansthanam, New Delhi.

REFERENCE BOOK:

1. “Srimad Bhagavad Gita” by Swami SwarupanandaAdvaita Ashram (Publication Department), Kolkata.
2. http://openlearningworld.com/section_personality_development.html

Course Coordinator**HOD**



FACULTY OF ARTS & SCIENCE DEPARTMENT OF MATHEMATICS

REGULATIONS 2018 & CURRICULUM & SYLLABUS

**CHOICE BASED CREDIT SYSTEM
(Applicable to the batches admitted from July 2018)**

BHARATH INSTITUTE OF HIGHER EDUCATION AND RESEARCH
FACULTY OF ARTS AND SCIENCE
REGULATIONS 2018
CHOICE BASED CREDIT SYSTEM
(R2018)
POST-GRADUATE PROGRAMMES
M.A., M.Sc., & M.Com.
(Applicable to the batches admitted from July 2018)

1.0 PRELIMINARY DEFINITIONS AND NOMENCLATURE

In these Regulations:

- i. **“Programme”** means P.G Programme, that is M.A., M.Sc, & M.Com Degree Programme
- ii. **“Course”** means Theory or Practical subject that is normally studied in a semester, like Indian Writing in English and Commonwealth Literature, Literature and Cognitive Sciences, etc.
- iii. **“Head of the Institution”** means the Dean of the Faculty who is responsible for all academic activities of the Arts and Science for implementation of relevant Rules and Regulations.
- iv. **“University”** means Bharath Institute of Higher Education & Research (BIHER).

v. **The Vision of the Department:**

To achieve high standards of excellence in generating and propagating knowledge in Mathematics. The Department of Mathematics is committed to provide an education that combines rigorous academics with the joy of discovering innovative ideas in Mathematics, to provide an environment where students can learn, become competent users of mathematics, and understand the use of mathematics in other discipline.

vi. **The Mission of the Department**

Department Mission(M1)	Develop the student’s ability to intelligently communicate mathematical results in order to succeed both academically and professionally.
Department Mission(M2)	Imparting quality education in Mathematics and Statistics by inculcating the spirit of research through innovative teaching and research methodologies.
Department Mission(M3)	The Department of mathematics and statistics offers courses which ensures that the student learner develop the skills that will enable him/her able to contribute to today’s society.
Department Mission(M4)	Establish industrial interaction to improve the employability skills as well as the technical skills of students and the ability to solve the complex technological problems in realtime.

2.0 PROGRAMMES OFFERED, MODES OF STUDY AND ADMISSION REQUIREMENTS

2.1 P.G. PROGRAMMES OFFERED: M.A., M.Sc., M.Com.,

The various specializations offered and its input requirements are given in Table 1

TABLE – 1 : ELIGIBILITY CRETERIA

S.NO.	COURSE	SUBJECT	ELIGIBILITY
POST GRADUATE COURSES			
1.	M.A. English	English	B.A. English or B.A.& B.Sc. with part-II English
2.	M.A.Tamil Literature	Tamil Literature	Bachelor’s degree with Tamil under Part-I or B.A./B.Litt. with Tamil as the main branch of Study
3.	M.Com.	Commerce	B.Com. / B.B.A. / B.B.M. / B.A. Corporate Secretary ship / B.A. Cooperation / B.A. Business Economics / B.Sc Mathematics with Accountancy and Costing or Banking as Allied / Ancillary subjects. or B.Sc. Statistics or B.Sc. Computer Science
4.	M. Sc.	Mathematics	B.Sc. Mathematics or B.Sc. Applied Science
5.	M. Sc. Statistics	Statistics	B.Sc. Statistics or B.Sc. Mathematics with Statistics as an Ancillary/allied subject.

6.	M. Sc. Biotechnology	Biotechnology	B.Sc.Biology/Botany/Zoology/B.VSc./ Microbiology/Chemistry/Biochemistry/Physics/Agriculture/B.E./B.Tech.(Biotech)/MBBS/BDS/Biotechnology
7.	M.Sc	Physics	B.Sc. Physics or B.Sc. BSc Triple major with Allied Mathematics

3.0 MODES OF STUDY

3.1 Full-Time

Candidates admitted under 'Full-Time' should be available in the College / Institution during the entire complete working hours for the curricular, co-curricular and extra-curricular activities assigned to them.

3.2. Credit Banking

Some of the courses may be credited by enrolling for short term courses (during week days or weekends or evenings), which are offered for a small group of 15 to 25 participants and conducted by BIST. Further instruction will be through electronic and other media. Such short-term courses will be specially notified by BIST as eligible for credit banking.

4.0 ADMISSION REQUIREMENTS:

4.1 Candidates for admission to the first semester of the Master's Degree Programme shall be required to have passed an appropriate Degree **Examination of BIST** as specified in Table 1 or any other examination of any University or authority accepted by the Board of Management of BIHER as equivalent thereto.

4.2 However, the Board of Management of the University may decide to restrict admission in any particular year to candidates having a subset of qualifications prescribed in Table1.

4.3 Notwithstanding the qualifying examination the candidate might have passed, he/she shall have a minimum level of proficiency in the appropriate programme / courses as prescribed by the Board of Management of the University from time to time.

4.4 Eligibility conditions for admission such as the class obtained, the number of attempts in qualifying examination and physical fitness will be as prescribed by the Board of Management of the University from time to time.

5.0 DURATION OF THE PROGRAMMES:

5.1 The minimum period for completion of the M.A, M.Com & M.Sc shall be four (4) semesters/ two (2) years and a maximum period of eight (8) semesters/ four (4) years.

5.2 In exceptional circumstance a further extension of two more semesters/one year shall be granted. During the extended period the student shall be considered as a private candidate and also not be eligible for ranking.

5.3 Each semester shall normally consist of 90 working days or 450 hours. The Head of the Department/Dean of the faculty shall ensure that every teacher imparts instruction as per the number of periods specified in the syllabus and that the teacher teaches the full content of the specified syllabus for the course being taught. End-semester examination will ordinarily follow immediately after the last working day of the semester.

6.0 STRUCTURE OF THE PROGRAMMES

6.1 Every Programme will have curricula with syllabi consisting of theory and practical courses.

6.2 Outline of Choice Based Credit System

a. Major Core Courses (MC): Courses which should compulsorily be studied by a candidate as core requirement are termed as Programme Major Core courses.

b. Major Elective Courses (ME): Generally a course which can be chosen from a pool of courses for specializing in a specific area within the discipline/domain of the core curriculum.

c. Open Elective Courses (OE): a course which can be chosen from a pool of courses supportive to the discipline or which provides an extended scope or which enables an exposure to some other discipline/subject/domain or a course that would improve his/her employability such as advanced technology courses offered by the industries or a course which the student thinks that would add value for his/her career nurtures the candidate's proficiency/skill.

d. Projects & Research (PR): Project work/Dissertation and Internship, Technical Seminar and Comprehension.

e. Audit Courses (AC):

6.3 The total number credit shall be within the range of 87-93 for all PG programmes.

Structure of the Curriculum

Sl. No.	Category	Range of

		Credits	
		Min	Max
1	Major Core (MC)	65	68
2	Major Elective (ME)	9	12
3	Open Elective (OE)	3	3
4	Project, Seminars, Internship, etc (PR)	10	10
5	Audit Course	-	-
Total Credits		87	93

6.4 Credit Assignment

Each course is assigned certain number of credits based on the following:

Contact period per week	Credits
1 Lecture period	1
1 tutorial Periods	1
2 Laboratory Periods (also for EE Courses like Seminar/project work/case study/etc.)	1

Seminar and Industrial Training are also given 1 to 2 credits depending on the amount of time allotted based on the specific requirement of the branch concerned.

6.5 Each semester curriculum shall normally have a blend of theory courses not exceeding 7 and practical courses not exceeding 3.

6.6 Four weeks of practical training will correspond to one credit, and applicable to all modes of study.

6.7 The number of Credits to be earned for the successful completion of the programme shall be as specified in the Curriculum of the respective specialization of the P.G. Programme

6.8 To help the students to take up special research areas in their project work and to enable a department to introduce a new elective in latest emerging areas in the curriculum, “Special Elective” may be offered. Candidate may be permitted to enroll for a “Special Elective” up to a maximum of 3 credits during the period of his /her study, provided the detailed syllabus of this /course is recommended by the Head of the Department through the head of the Institution, before the commencement of the semester in which the Special Elective course is introduced. This may be brought to the Board of Studies of the Faculty concerned for ratification.

6.9 The medium of instruction, examinations and project report will be English.

7. COURSE ENROLLMENT AND REGISTRATION

7.1 Each student, on admission shall be assigned to a Faculty Advisor (vide clause 9) who shall advise and counsel the student about the details of the academic programme and the choice of courses considering the student’s academic background and career objectives.

7.2 Every student shall enroll for the course of the succeeding semester in the current semester. However, the student shall confirm the enrollment by registering for the courses within the first five working days after the commencement of the concerned semester.

7.3 After registering for a course, a student shall attend the classes, satisfy the attendance requirements, earn Continuous Assessment marks and appear for the End Semester Examinations.

7.4 Each student on admission shall register for all the courses prescribed in the curriculum in the student’s first Semester of study.

7.5 The enrollment for all the courses of the Semester II onwards will commence 10 working days prior to the last working day of Semester I. The student shall confirm the enrollment by registering for the courses within the first five working days after the commencement of the Semester.

7.6 The student shall enroll for the courses with the guidance of the student’s Faculty Advisor. If the student wishes, the student may drop or add courses (vide clause 7.8) within five working days after the commencement of the concerned semester and complete the registration process duly authorized by the Faculty Advisor.

7.7 The courses that a student registers in a particular semester may include

- Courses of the current semester.
- The core (Theory/Lab) courses that the student has not cleared in the previous semesters.

iii. Elective courses which the student failed (either the same elective or a different elective instead)

7.8 Flexibility to Drop courses

7.8.1 A student has to earn the total number of credits specified in the curriculum of the respective Programme of study in order to be eligible to obtain the degree.

7.8.2 The student has the option of dropping existing courses in a semester during registration. Total number of credits of such courses cannot exceed 3.

8.0 ATTENDANCE REQUIREMENTS FOR COMPLETION OF THE SEMESTER

8.1 A Candidate who has fulfilled the following conditions shall be deemed to have satisfied the requirements for completion of a semester:

8.1.1 Every student is expected to earn at least 75% attendance.

8.1.2 However, a candidate who could secure attendance between 65% and 74% only in one particular semester due to medical reasons (hospitalization / accident / specific illness) is given exemptions of 10% of attendance on production of Medical Certificate.

8.1.3 Students who go for participating in Seminar or Conference will be given on duty permission. The candidate shall submit the on duty participation certificate to the HOD who will in turn recommend and submit to the Head of the Institution for the approval. The approved certificates will be forwarded to the Controller of Examinations for record.

8.1.4 Candidates who do not satisfy the clauses 8.1.2 and 8.1.3 will not be permitted to write the End-Semester Examinations of the subject and are not permitted to go to the next semester, the detained semester should be repeated in the next academic year. When a student fulfills the requirement of overall attendance in a semester as per the clause 8.1.2 and 8.1.3 but fails to fulfill the attendance requirement for some of the courses, such courses should be repeated in the next academic year when offered.

9 FACULTY ADVISOR

To help the students in planning their courses of study and for general advice on the academic programme, the Head of the Department of the student will attach a certain number of students to a teacher of the Department who shall function as Faculty advisor for those students throughout their period of study. Such Faculty Advisor shall advise the students and monitor the courses taken by the students, check the attendance and progress of the students attached to him/her and counsel them periodically. If necessary, the faculty advisor may also discuss with or inform the parents about the progress of these students.

10 CLASS COMMITTEE

There shall be a class committee for each semester for each programme of study.

10.1 The class committee for a class under a particular programme is constituted by the Head of the Department.

10.2 The class committee shall be constituted on the first working day of any semester or earlier.

10.3 A class committee consists of teachers of the concerned class, student representatives (usually 2 boys and 2 girls), Faculty Advisor and a chairperson who is not normally teaching the class. The function of the class committee include

- Solving problems experienced by students in the class room and in the laboratories.
- Clarifying the regulations of the degree programme and the details of rules
- Informing the student representatives, the academic schedule including the dates of assessments and the syllabus coverage for each assessment.
- Analyzing the performance of the students of the class after each test and finding the ways and means of solving the problems, if any.
- The committee shall devise suitable methods for improving the performance of slow learners identified.

10.4 The Head of the Institution may participate in any class committee of the institution.

10.5 The chairperson is required to prepare the minutes of every meeting, submit the same to Head of the Institution within two days of the meeting and arrange to circulate it among the concerned students and teachers. If there are some points in the minutes requiring action by the institution, the same shall be brought to the notice of the Head of the Institution by the chairperson of the class committee through respective HODs.

10.6 The first meeting of the class committee shall be held within one week from the date of commencement of the semester, in order to inform the students about the nature and weightage of assessments within the framework of the Regulations. Two or three subsequent meetings may be held at suitable intervals. During these meetings the student members representing the entire class, shall meaningfully interact and express the opinions and suggestions of the class students to improve the effectiveness of the teaching-learning process.

11.0 COURSE COMMITTEE FOR COMMON COURSES

Each common theory course offered to more than one group of students shall have a "Course Committee" comprising all

the teachers teaching the common course with one of them nominated as Course Coordinator. The nomination of the course Coordinator shall be made by the Head of the Department / Head of the Institution depending upon whether all the teachers teaching the common course belong to a single department or to several departments. The 'Course committee' shall meet as often as possible and ensure uniform evaluation of the tests and arrive at a common scheme of evaluation for the tests. Wherever it is feasible, the course committee may also prepare a common question paper for the Assessment Test(s).

12.0 PROJECT WORK /THESIS /DISSERTATION

12.1 Project work/Thesis/Dissertation shall be carried out under the supervision of a qualified teacher in the concerned Department.

12.2 A candidate may, however, in certain cases, be permitted to work on projects in an Industrial/Research Organization, on the recommendations of the Dean, Faculty of Arts and Science with the approval of the Head of the Institution. In such cases, the project work shall be jointly supervised by a Supervisor of the Department and Scientist/eligible expert from the Organisation and the student shall meet the supervisor periodically and attend the review committee meetings in the Department for evaluating the progress

12.3 The project Report / thesis / dissertation report/ drawings prepared according to approved guidelines and fully signed by the supervisors and the Head of the Department shall be submitted to the Head of the department.

12.4 The deadline for submission of final Project / Thesis /Dissertation Report is one week prior to the last working day of the semester.

12.5 If a candidate fails to submit the project report /thesis report/dissertation on or before the specified deadline, he/she is deemed to have failed in the Project Work and shall re-enroll for the same in a subsequent semester

13.0 PROCEDURES FOR AWARDING MARKS FOR INTERNAL ASSESSMENT(IA)

13.1 Every teacher is required to maintain a 'Attendance and Assessment record' which consists of attendance marked in each lecture or practical or project work class, the test marks and the record of class work (topic covered), separately for each course. This should be submitted to the Head of the department periodically (at least three times in a semester) for checking the syllabus coverage and the records of test marks and attendance. The Head of department will put his signature and date after due verification. At the end of the semester the record should be verified by the Head of the institution who will keep this document in safe custody (for five years). The University or any inspection team appointed by the University may inspect the records of attendance and assessment of both current and previous semesters.

13.2 There will be two periodical tests, each carrying weightage of 7.5 marks and one model examination carrying weightage of 20 marks. The distribution of marks for various components for the Internal Assessment is shown below in the table:

S.No	Components for Internal Assessment	Syllabus Coverage for the test / exam	Duration of the test in Minutes.	Marks (max.)
01	Internal Test – I	2 Units of the Syllabus	90	7.5
02	Internal Test – II	Next 2 Units of the Syllabus	90	7.5
03	Model Test	Full Syllabus	180	20
04	Seminar/Assignment/Online Test/Quiz	-	-	5
Total				40

13.3 Practical Courses

Every practical exercise / experiment in all practical courses will be evaluated based on the conduct of exercise / experiment and records maintained by the students. There will be at least **one** model practical examination.

The criteria for awarding marks for internal assessment are given in **Table below:**

Items	Marks (Maximum)
Observation	10
Record	10
Model Practical	30
Total	50

13.4 Theory Courses with Laboratory component:

There shall be three assessments (each 100 marks) during the semester two test for theory and one test for laboratory practical. The total marks obtained in the three assessments shall be reduced to 40 marks and rounded to the nearest integer.

13.5 Seminar

The seminar shall carry 100 marks and shall be evaluated through Continuous Assessment only. Every student is expected to present a minimum of 2 seminars per semester before the evaluation committee and for each seminar, marks can be equally apportioned. The three member committee appointed by the Head of the Department will evaluate the seminar and at the end of the semester the marks can be consolidated and taken as the final mark. The evaluation shall be based on the seminar paper / report (40%), presentation (40%) and response to the questions asked during presentation (20%).

13.6 Industrial / Practical Training / Internship

The Industrial / Practical Training shall carry 100 marks and shall be evaluated through Continuous Assessment only. At the end of Industrial / Practical training / Internship / Summer Project, the student shall submit a brief report on the training undergone and a certificate from the organization concerned. The evaluation will be made based on this report and a Viva-Voce Examination, conducted internally by a three member Departmental Committee constituted by the Head of the Department. Certificates (issued by the Organization) submitted by the student shall be attached to the mark list and sent to the Controller of Examinations by the Head of the Department.

13.7 Project Work

The evaluation of Project Work for Phase I and Phase II each shall be done independently in the respective semesters and marks shall be allotted as per the weightages given in Clause 13.7.1.

13.7.1 There shall be three assessments (each 100 marks) during the semester by a review committee. The student shall make presentation on the progress made before the committee. The Head of the Department shall constitute the review committee consisting of supervisor, project coordinator and another faculty member from the Department for each programme of study. The total marks obtained in the three assessments shall be reduced to 50 marks and rounded to the nearest integer. The marks are to be distributed as detailed below:

Internal (50 Marks)		
Review I	Review II	Review III
10	20	20

13.7.2 There shall be three assessments (each 100 marks) during the semester by a review committee. The student shall make presentation on the progress made before the committee. The Head of the Department shall constitute the review committee consisting of supervisor, project coordinator and another faculty member from the Department for each programme of study. The total marks obtained in the three assessments shall be reduced to 50 marks and rounded to the nearest integer.

14.0 MINIMUM REQUIREMENTS TO DO PROJECT / THESIS / DISSERTATION

14.1A candidate is permitted to enroll the Project Work if he/she has earned the minimum number of credits as 30

14.2 If the candidate has not earned the requisite minimum credits, he/she has to complete the arrears (at least to the extent of earning the minimum credits specified) and then enroll for the project work in the subsequent year (along with junior batch). The enrolling should be done not later than 3 weeks from the beginning of the project semester.

15.0 REQUIREMENTS FOR APPEARING FOR UNIVERSITY EXAMINATIONS

A candidate shall normally be permitted to appear for the semester Examinations of the current semester if he/she has satisfied the semester completion requirements and has registered for examination in all courses of the semester to enroll for more courses to improve his /her cumulative grade point average.

16.0 EXAMINATIONS

The examinations shall ordinarily be conducted between October and December during the odd semesters and between April and June in the even semesters. For the practical examinations (including project work), both internal and external examiners shall be appointed by the University. The maximum marks for each theory course shall be 100 comprising of 40 marks for internal assessment and 60 marks for the examinations conducted by the University. The maximum marks for each practical course shall be 100 comprising of 50 marks for internal assessment and 50 marks for the examinations conducted by the University.

17.0 END SEMESTER EXAMINATION

17.1 Theory

There shall be one end- Semester Examination of 3 hours duration in each lecture based course. The Board of Studies may fix the duration of exam, beyond 3 hours for certain courses, if necessary.

17.2 Practical Courses

End Semester examination for practical courses will be conducted jointly by one internal examiner and one external examiner appointed by the Controller of Examinations with the recommendation of the Head of the Dept.

17.3 Project work

17.3.1 The evaluation of the Project Work will be based on the project report submitted and a Viva-Voce Examination by a team consisting of internal examiner (other than the supervisor) and External Examiner. The external examiner shall be appointed by the COE from the panel of examiners submitted by the HOD. The marks are to be distributed as detailed

below

External (50 Marks)		
Thesis Evaluation (External)	Viva – Voce(30 Marks)	
	External	Internal
20	15	15

17.3.2 If a student fails to submit the project report on or before the specified deadline, student is deemed to have failed in the Project Work and shall re-enroll for the same in a subsequent (next) semester.

17.3.3 A copy of the approved project report after the successful completion of viva-voice examinations shall be kept in the library of the University.

18.0 PASSING REQUIREMENTS

18.1 A candidate who secures not less than 50% of total marks prescribed for the course with a minimum of 50% of the marks prescribed for each of the course of the End-Semester University Examination in both theory and practical courses shall be declared to have passed in the examination.

18.2 If the candidate fails to secure a pass in a particular course as per 18.1, clause it is mandatory that the candidate shall register and re-appear for the examination in that course during the next semester when examination is conducted for that course; he /she should continue to register and reappear for the examination till he/she secures a pass. A candidate may redo a particular course including project work/ thesis for improving the internal assessment mark.

19.0. AWARD OF LETTER GRADES

All assessments of a course will be done on absolute marks basis. However, for the purpose of reporting the performance of a candidate, letter grades, each carrying certain points specified, will be awarded as per the range of total marks (out of 100) obtained by the candidate (Regular or Arrear), as detailed below:

Letter Grade		Grade Points	Marks Range
O	Outstanding	10	91 - 100
A+	Excellent	9	81 - 90
A	Very Good	8	71 - 80
B +	Good	7	61 - 70
B	Average	6	50 - 60
RA	Re-Appeal	0	<50
SA	Shortage of Attendance	0	-
W	Withdrawal	0	-

A student is deemed to have passed and acquired the corresponding credits in a particular course if he/she obtains any one of the following grades: “O”, “A+”, “A”, “B+”, “B”.

‘SA’ denotes shortage of attendance (as per clause 7) and hence prevention from writing the end semester examinations. ‘SA’ will appear only in the result sheet. “RA” denotes that the student has failed to pass in that course. “W” denotes **withdrawal** from the exam for the particular course. The grades RA and W will figure both in Marks Sheet as well as in Result Sheet). In both cases the student has to earn Continuous Assessment marks and appear for the End Semester Examinations. If the grade W is given to course, the attendance requirement need not be satisfied.

If the grade RA is given to a core **theory course**, the attendance requirement need not be satisfied, but if the grade RA is given to a **Laboratory Course/ Project work / Seminar and any other PR course**, the attendance requirements (vide clause 7) should be satisfied.

Grade sheet

After results are declared, Grade Sheets will be issued to each student which will contain the following details:

- The list of courses registered during the semester and the grade scored.
- The Grade Point Average (GPA) for the semester and
- The Cumulative Grade Point Average (CGPA) of all courses enrolled from first semester onwards.

GPA for a semester is the ratio of the sum of the products of the number of credits for courses acquired and the corresponding points to the sum of the number of credits for the courses acquired in the semester. CGPA will be calculated in a similar manner, considering all the courses registered from first semester. RA grades will be excluded for calculating GPA and CGPA.

$$\sum_{i=1}^n C_i GP_i$$

GPA / CGPA = -----

$$\frac{\sum_{i=1}^n C_i}{n}$$

where C_i is the number of Credits assigned to the course

G_i is the point corresponding to the grade obtained for each course

n is number of all courses successfully cleared during the particular semester in the case of GPA and during all the semesters in the case of CGPA

20.0 ELIGIBILITY FOR THE AWARD OF THE DEGREE

20.1 A student shall be declared eligible for the award of the degree if he/she has:

- Successfully passed all the courses as specified in the curriculum corresponding to his/her programme within the stipulated period.
- No disciplinary action is pending against him/her.
- Successfully completed the field visit/industrial training, if any as prescribed in the curriculum

20.2 The award of the degree must have been approved by the Board of Management.

21.0 CLASSIFICATION OF THE DEGREE AWARDED

21.1 First Class With Distinction

A candidate who qualifies for the award of the Degree (vide clause 19) having passed the examination in the courses in his/her first appearance within the specified minimum number of semester securing a CGPA of not less than 8.5 shall be declared to have passed the examination in First Class with Distinction. For this purpose the withdrawal from examination (vide clause 23) will not be considered as an appearance. Further, the authorized break of study (vide clause 24.3) will not be counted for the purpose of classification.

21.2 First Class:

A candidate who qualifies for the award of the Degree (vide clause 20) having passed the examination in all the courses within the maximum period of eight (8) semesters and securing a CGPA of not less than 6.50 shall be declared to have passed the examination in First Class. For this purpose the authorized break of study (vide clause 24.3) will not be counted for the purpose of classification.

21.3 Second Class

All other candidates (not covered in clauses 21.1 and 21.2) who qualify for the award of the degree (vide Clause 20.0) within the maximum period of eight (8) semesters shall be declared to have passed the examination in **Second Class**

21.4 All other candidates (not covered in clauses 21.1, 21.2 & 21.3) who qualify for the award of the degree during the extended period as per the clause 5.2 shall be considered as a private candidate and also not be eligible for ranking and they shall be eligible to get only a **pass** certificate.

21.5 A candidate who is absent in semester examination in a course / project work after having registered for the same shall be considered to have appeared in that examination for the purpose of classification.

22.0 METHODS FOR REDRESSAL OF GRIEVANCES IN EVALUATION

A candidate can apply for revaluation of his/her semester examination answer paper in a theory course, within 2 weeks from the declaration of results, on payment of a prescribed fee through proper application to the Controller of Examinations through the Head of Departments concerned. The Controller of Examinations will arrange for the revaluation and the results will be intimated to the candidate concerned through the Head of the Department. Revaluation is not permitted for practical courses, seminars, practical training and for project work/thesis /Dissertation.

23.0 PROVISION FOR WITHDRAWAL FROM EXAMINATION:

23.1 A candidate may for valid reasons and on prior application, be granted permission to withdraw from appearing for the examination of any course or courses of only one semester examinations in which withdrawal is sought.

23.2 Withdrawal application shall be valid only if the candidate is otherwise eligible to write the examination and if it is made within the prescribed number of days prior to the commencement of the examination in that course or courses and also recommended by the Head of the Department.

23.3 A candidate for valid reasons like sudden illness or accident or unexpected natural calamities not able to be present in the examination hall in time or absent for the examination may seek post permission for the withdrawal from the examination.

23.4 Withdrawal shall not be construed as an appearance for the eligibility of a candidate for First Class with Distinction.

24.0 TEMPORARY BREAK OF STUDY FROM A PROGRAMME

24.1 A candidate is not normally permitted to temporarily break the study. However, if a candidate intends to temporarily discontinue the programme in the middle for valid reasons (such as accident or hospitalization due to prolonged ill health) and to rejoin the programmes in a later semester he/she shall apply to the University in advance, in any case, not later than the last date for enrolling for the semester examinations of the semester in question, through the Head of the Department and Head the Institution stating the reasons therefore.

24.2The candidates permitted to rejoin the programme after break of study shall be governed by the rules and Regulations in force at the time of rejoining.

24.3The authorized break of study will not be counted for the duration specified for passing all the courses for the purpose of classification (vide Clause 24.1 and 24.2).

24.4The total period for completion of the Programme reckoned from, the commencement of the first semester to which the candidate was admitted shall not exceed the maximum period specified in clause 5.1 irrespective of the period of break of study (vide clause 24.1) in order that he/she may be eligible for the award of the degree(vide clause 20).

24.5If any student is detained for want of required attendance, progress and good conduct , the period spent in that semester shall not be considered as permitted 'Break of Study' and clause 23.3 is not applicable for this case

25.0 MALPRACTICE

If a student indulges in malpractice in any internal test/model examination/end semester examination, he/she shall be liable for punitive action as recommended by the Malpractice committee.

26.0 DISCIPLINE

Every student is required to observe disciplined and decorous behavior both inside and outside the Institute and not to indulge in any activity which will tend to bring down the prestige of the University/Institute. The Dean shall constitute a disciplinary committee consisting of Dean, Head of the departments to which the student concerned belongs, and the Head of another department to enquire into acts of indiscipline and notify the University about the disciplinary action recommended for approval.

27.0 REVISION OF REGULATIONS, CURRICULUM AND SYLLABI

The University may from time to time revise, amend or change the Regulations, Curricula, Syllabi and scheme of examinations through the Academic Council with the approval of Board of Management.

-----XXX-----

SEMESTER I

S.No.	CATEGORY	SUB. CODE	SUBJECT	TOTAL L CONT	L	T	P	C
THEORY								
1.	MC	P18MCMA101	Algebra-I	5	3	1	0	4
2.	MC	P18MCMA102	Real Analysis I	5	3	1	0	4
3.	MC	P18MCMA103	Ordinary Differential Equations	5	3	1	0	4
4.	MC	P18MCMA104	Graph Theory	5	3	1	0	4
5	ME	P18MEMA012	Major Elective 1 Discrete Mathematics	4	3	1	0	4

SEMESTER II

S.No.	CATEGORY	SUB. CODE	SUBJECT	TOTAL L CONT	L	T	P	C
THEORY								
1.	MC	P18MCMA201	Algebra – II	5	3	1	0	4
2.	MC	P18MCMA202	Real Analysis – II	4	3	1	0	4
3.	MC	P18MCMA203	Partial Differential Equations	5	3	1	0	4
4.	MC	P18MCMA204	Probability Theory	4	3	1	0	4
5	ME	P18MEMA021	Major Elective 2 Numerical Methods	4	3	1	0	4

6	PR	P18PRMA2S1	Technical Seminar	0	0	0	2	1
7	PR	P18PRMA2V1	Internship Programme	0	0	0	0	1

SEMESTER III

S.No.	CATEGORY	SUB. CODE	SUBJECT	TOTAL L CONT	L	T	P	C
THEORY								
1.	MC	P18MCMA301	Complex Analysis – I	5	3	1	0	4
2.	MC	P18MCMA302	Operations Research	4	3	1	0	4
3.	MC	P18MCMA303	Mechanics	5	3	1	0	4
4.	MC	P18MCMA304	Tensor Analysis And Relativity	4	3	1	0	4
5	ME	P18MEMA031	Major Elective III Stochastic Processes	4	3	1	0	4
6	EEC	P18ACEN004	Audit Course- Value Education	2	2	0	0	0

SEMESTER IV

S.No.	CATEGORY	SUB. CODE	SUBJECT	TOTAL L CONT	L	T	P	C
THEORY								
1.	MC	P18MCMA401	Complex Analysis- II	5	3	1	0	4
2.	MC	P18MCMA402	Differential Geometry	4	3	1	0	4
3.	MC	P18MCMA403	Functional Analysis	5	3	1	0	4
4.	MC	P18MCMA404	Number Theory And Cryptography	4	3	1	0	4
5	EEC		Open Elective	2	2	0	0	2(3)
6		P18PRMA4T1	Term Paper	1	0	0	0	1
7	HS	P18MCYO001	Stress Management by yoga	0	0	0	0	0

8	PR	P18PRMA4P1	Project	9	0	0		9

MAJOR ELECTIVES: I

Sub Code	Sub Name	No. of periods per week			C
		L	T	P	
P18MEMA011	Formal Language And Automata theory	3	1	0	4
P18MEMA012	Discrete Mathematics	3	1	0	4
P18MEMA013	Mathematical Economics	3	1	0	4

MAJOR ELECTIVES: II

Sub Code	Sub Name	No. of periods per week			C
		L	T	P	
P18MEMA021	Numerical Methods	3	1	0	4
P18MEMA022	Mathematical programming	3	1	0	4
P18MEMA023	Fuzzy Sets and Application	3	1	0	4

MAJOR ELECTIVES: III

Sub Code	Sub Name	No. of periods per week			C
		L	T	P	
P18MEMA031	Stochastic Processes	3	1	0	4

P18MEMA032	Data Structures And Algorithms	3	1	0	4
P18MEMA033	Algebraic theory of Numbers	3	1	0	4

LIST OF OPEN ELECTIVE

S.No.	Sub.Code	Subject	Total No.Hours	L	T	P	C
1.	P18OEBA001	Advertising and Sales Management	2	2	0	0	2
2.	P18OEBA002	BPO Management	2	2	0	0	2
3.	P18OEBA003	Call Centre Management – Voice & Non Voice	2	2	0	0	2
4.	P18OEBA004	Customer Relationship Management	2	2	0	0	2
5.	P18OEBA005	Entrepreneurship Development	2	2	0	0	2
6.	P18OEBA006	Advanced Human Resource Management	2	2	0	0	2
7.	P18OEBA007	Logistics & Supply Chain Management	2	2	0	0	2
8.	P18OEBA008	Office Management	2	2	0	0	2
9.	P18OEVC001	Photography & Videography	2	2	0	0	2
10.	P18OEEN001	Soft Skills	2	2	0	0	2
11.	P18OEEN002	Mass Media and Communication	2	2	0	0	2
12.	P18OESC001	Computer Applications	2	2	0	0	2
13.	P18OESC002	Multimedia	2	2	0	0	2
14.	P18OESC003	Advanced Excel	2	2	0	0	2
15.	P18OESC004	Web Designing	2	2	0	0	2
16.	P18OESC005	Photoshop	2	2	0	0	2
17.	P18OESC006	Flash	2	2	0	0	2
18.	P18OESC007	Computer Hardware and Networking	2	2	0	0	2
19.	P18OESC008	Computer Programming	2	2	0	0	2
20.	P18OESC009	Office Automation Tools	2	2	0	0	2
21.	P18OEMI001	Clinical Microbiology	2	2	0	0	2
22.	P18OEMI002	Herbal Medicine	2	2	0	0	2
23.	P18OEPH001	Electrical Technician	2	2	0	0	2

1	P18ACEN001	English for Research Paper Writing	2	2	0	0	0
2	P18ACCE002	Disaster Management	2	2	0	0	0
3	P18ACEN003	Sanskrit for Technical Knowledge	2	2	0	0	0
4	P18ACBA004	Value Education	2	2	0	0	0
5	P18ACBW005	Constitution of India	2	2	0	0	0
6	P18ACBA006	Pedagogy Studies	2	2	0	0	0
7	P18ACBA007	Personality Development through Life Enlightenment Skills	2	2	0	0	0

LIST OF AUDIT COURSE

P18MCMA101		ALGEBRA-I						L	T	P	C
		Total Contact Hours – 60						3	1	0	4
		Prerequisite course – Mathematics Studied in Under Graduate.									
		Course Coordinator Name & Department:- Mr. V. Nandakumar /Mathematics									
COURSE OBJECTIVES:- Learners will be familiar with basic and algorithm analysis. Learners will able to apply the problem solving techniques using theorem.											
COURSE OUTCOMES (COs)											
CO1		Gain knowledge in Group Theory									
CO2		Understand the concept of algorithmic design of Ring Theory									
CO3		Apply suitable data structure for developing a modulus									
CO4		Analyze the algorithm for its complexity and fields									
CO5		Evaluate data structures and algorithms on which file structures and transformations									
CO6		Create an real time application from algorithms.									
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	PS O1	PS O2	
2	CO1	3	3	3	3	1	1	3			
	CO2	3	3	1	2	2	2	3			
	CO3	3	3	3	3	1	3	1			
	CO4	3	2	2	3	3	2	3			
	CO5	2	1	2	1	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

12

GROUP THEORY:

A counting principle – Normal Subgroups and Quotient groups – Homomorphism – Cayley's theorem – Permutation groups – Another counting principle – Sylow's theorems.

UNIT II

12

RING THEORY :

Homomorphism of rings – Ideals and quotient rings – More ideals and quotient rings – Polynomial rings – Polynomials over the rational field – polynomials over commutative rings.

UNIT III

12

MODULUS:

Inner Product Spaces – Orthogonal complement – Orthogonal Basis – Left Module over a Ring – Sub module – Quotient Module – Cyclic Module – Structure theorem for finitely generated Modules over Euclidean Rings.

UNIT IV

12

FIELDS :

Extension fields – Roots of Polynomials – More about roots – The elements of Galois theory – Finite fields.

UNIT V

12

TRANSFORMATIONS:

Triangular form – Hermitian, Unitary and Normal Transformations

TEXT BOOK(S)

[1] I.N. Herstein, Topics in Algebra, Second Edn, Wiley Eastern Limited.

UNIT – I -Chapter II : Sec 2.5, 2.6, 2.7, 2.10, 2.11, 2.12

UNIT – II -Chapter III : Sec 3.3, 3.4, 3.5, 3.9, 3.10, 3.11

UNIT – III - Chapter IV : Sec 4.1, 4.2, 4.3, 4.4, 4.5

UNIT – IV -Chapter V : Sec 5.1, 5.3, 5.5, 5.6 and Chapter VII: Sec 7.1

UNIT – V -Chapter VI : Sec 6.4, 6.5 and 6.10

REFERENCE BOOK(S)

[1] Surjeet Singh, Qazi Zameeruddin, Modern Algebra, Vikas Publishing House Pvt Ltd.

[2] John, B. Fraleigh, A First Course in Abstract Algebra, Addison-Wesley Publishing company.

[3] Vijay, K. Khanna, and S.K. Bhambri, A Course in Abstract Algebra, Vikas Publishing House Pvt Limited, 1993.

CourseCoordinator

HOD

+*

P18MCMA102	REAL ANALYSIS I						L	T	P	C
	Total Contact Hours – 60						3	1	0	4
	Prerequisite course – Mathematics Studied in Under Graduate. Studies									
	Course Coordinator Name & Department:- Mrs.L.Radhika /Mathematics									
COURSE OBJECTIVES:- Learners will be familiar with basic and algorithm analysis. Learners will able to know how to prove theorem.										
COURSE OUTCOMES (COs)										
CO1	Gain knowledge in Basic Topology									
CO2	Understand the concept of continuity									
CO3	Apply suitable data for developing a real time application in Riemann – Stieltjes Integral.									
CO4	Analyze the algorithm for its Sequences and series of functions									
CO5	Evaluate algorithms on which functions of several variables									
CO6	Create an real time application from algorithms.									
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	PS O1	PS O2
2	CO1	2	3	3	1	3	3	3		
	CO2	3	3	1	2	2	2	2		
	CO3	2	2	3	1	3	3	3		
	CO4	3	1	2	3	2	2	2		
	CO5	2	2	3	3	1	3	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

Basic Topology:

Finite, Countable and Uncountable Sets – Metric spaces – Compact sets – Perfect sets – Connected sets.

Numerical Sequences and Series: Sequences – Convergence – Subsequences – Cauchy Sequences – Upper and Lower Limits – Some Special Sequences – Tests of convergence – Power series – Absolute convergence – Addition and multiplication of series – Rearrangements.

UNIT II

Continuity:

Limits of functions – Continuous functions – continuity and Compactness – Continuity and connectedness – Discontinuities – Monotonic functions – Infinite limits and limits at infinity. Differentiation: Derivative of a real function – Mean Value Theorems – Intermediate value theorem for derivatives – L'Hospital Rule – Taylor's Theorem – Differentiation of vector valued functions.

UNIT III

Riemann – Stieltjes Integral:

Definition and Existence – Properties – Integration and Differentiation – Integration of vector valued functions.

UNIT IV

Sequences and series of functions:

Uniform Convergence and Continuity – Uniform Convergence and Differentiation – Equicontinuous families of functions – The Stone – Weierstrass Theorem.

UNIT V

Functions of several variables:

Linear Transformations – Differentiation – The Contraction Principle – The Inverse Function Theorem – The Implicit Function Theorem.

TEXT BOOK(S)

[1] Walter Rudin, Principles of Mathematical Analysis Third Edition, Mcgraw Hill, 1976.

UNIT – I - Chapters 2 and 3

UNIT – II - Chapters 4 and 5

UNIT – III - Chapter 6

UNIT – IV - Chapter 7

UNIT – V - Chapter 9 Sections 9.1 to 9.29

REFERENCE(S)

- [1] Tom P. Apostol, Mathematical Analysis, Narosa Publishing House, New Delhi, 1985.
- [2] A.J. White, Real Analysis : An Introduction, Addison Wesley Publishing Co., Inc. 1968.
- [3] Serge Lang, Analysis I & II, Addison-Wesley Publishing Company, Inc. 1969

CourseCoordinator

HOD

P18MCMA103	ORDINARY DIFFERENTIAL EQUATIONS						L	T	P	C
	Total Contact Hours – 60						3	1	0	4
	Prerequisite course – Mathematics Studied in Under Graduate									
	Course Coordinator Name & Department:- Ms.S.Kavitha /Mathematics									
COURSE OBJECTIVES:- Learners will be familiar with basic and differential equations.To equip students with adequate knowledge of Mathematics to formulate problems and solve them analytically or numerically										
COURSE OUTCOMES (COs)										
CO1	Gain knowledge in fundamental linear equations with constant coefficients									
CO2	Understand the concept of algorithmic linear equations with constant coefficients									
CO3	Apply suitable linear equation with variable coefficients									
CO4	Analyze the algorithm for linear equation with regular singular points									
CO5	Evaluate existence and uniqueness of solutions to first order equations:									
CO6	Create an real time application from algorithms.									
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	PS O1	PS O2
2	CO1	3	3	1	1		2	1		
	CO2	3	3	2	2	2	1	2		
	CO3	3	1	3	3	3	3	3		
	CO4	3	2	1	1	1	2	1		
	CO5	3	2	2	3	3	3	3		
	CO6	3	3	3	2	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

Linear equations with constant coefficients -1

Second order homogeneous equations-Initial value problems-Linear dependence and independence-Wronskian and a formula for Wronskian-Non-homogeneous equation of order two.

Chapter 2: Sections 1 to 6

UNIT-II :

12

Linear equations with constant coefficients-2

Homogeneous and non-homogeneous equation of order n –Initial value problems- Annihilator method to solve non-homogeneous equation- Algebra of constant coefficient operators.

Chapter 2 : Sections 7 to 12.

UNIT-III :12

Linear equation with variable coefficients:

Initial value problems -Existence and uniqueness theorems – Solutions to solve a non-homogeneous equation – Wronskian and linear dependence – reduction of the order of a homogeneous equation – homogeneous equation with analytic coefficients-The Legendre equation.

Chapter : 3 Sections 1 to 8 (Omit section 9)

UNIT-IV :

12

Linear equation with regular singular points:

Euler equation – Second order equations with regular singular points –Exceptional cases – Bessel Function.Chapter 4 : Sections 1 to 4 and 6 to 8 (Omit sections 5 and 9)

UNIT-V :

Existence and uniqueness of solutions to first order equations

12

Equation with variable separated – Exact equation – method of successive approximations – the Lipschitz condition – convergence of the successive approximations and the existence theorem.

Chapter 5 : Sections 1 to 6 (Omit Sections 7 to 9)

Recommended Text

E.A.Coddington, A introduction to ordinary differential equations (3rd Printing) Prentice-Hall of India Ltd.,New Delhi, 1987.

Reference Books

- 1.Williams E. Boyce and Richard C. Di Prima, Elementary differential equations and boundary value problems,John Wiley and sons, New York, 1967.
2. George F Simmons, Differential equations with applications and historical notes, Tata McGraw Hill, New Delhi, 1974.
3. N.N. Lebedev, Special functions and their applications, Prentice Hall of India, New Delhi, 1965.
4. W.T.Reid. Ordinary Differential Equations, John Wiley and Sons, New York, 1971
5. M.D.Raisinghania,Advanced Differential Equations, S.Chand& Company Ltd. New Delhi 2001
6. B.Rai, D.P.Choudhury and H.I. Freedman, A Course in Ordinary Differential Equations, Narosa Publishing House, New Delhi, 2002.

P18MCMA104	GRAPH THEORY						L	T	P	C
	Total Contact Hours – 60						3	1	0	4
	Prerequisite course – Mathematics Studied in Under Graduate									
	Course Coordinator Name& Department:- Dr.P.Sumathi/Mathematics									
COURSE OBJECTIVES:- Learners will be familiar with basic and algorithm analysis. Learners will able to apply the problem solving techniques using theorem.										
COURSE OUTCOMES (COs)										
CO1	Gain knowledge in graphs, subgraphs and trees									
CO2	Understand the concept of algorithmic design and connectivity, Euler tours and Hamilton cycles									
CO3	Apply for developing a real time application in matchings, edge colourings									
CO4	Analyze the algorithm for independent sets and cliques, vertex colourings									
CO5	Evaluate data structures for planar graphs									
CO6	Create an real time application from algorithms.									
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	PS O1	PS O2
2	CO1	1	1	3	3	3	3	1		
	CO2	3	3	2	2	2	2	3		
	CO3	2	2	3	1	3	3	2		
	CO4	3	3	2	1	1	3	3		
	CO5	3	2	2	1	1	1	1		
	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 :

12

Graphs, subgraphs and Trees

Graphs and simple graphs – Graph Isomorphism – The Incidence and Adjacency Matrices – Subgraphs – Vertex Degrees – Paths and Connection – Cycles – Trees – Cut Edges and Bonds – Cut Vertices.

Chapter 1 (Section 1.1 – 1.7)

Chapter 2 (Section 2.1 – 2.3)

UNIT-II : 12

Connectivity, Euler tours and Hamilton Cycles :

Connectivity – Blocks – Euler tours – Hamilton Cycles.

Chapter 3 (Section 3.1 – 3.2)

Chapter 4 (Section 4.1 – 4.2)

UNIT-III : 12

Matchings, Edge Colourings :

Matchings – Matchings and Coverings in Bipartite Graphs – Edge Chromatic Number – Vizing's Theorem.

Chapter 5 (Section 5.1 – 5.2)

Chapter 6 (Section 6.1 – 6.2)

UNIT-IV : 12

Independent sets and Cliques, Vertex Colourings :

Independent sets – Ramsey's Theorem – Chromatic Number – Brooks' Theorem – Chromatic Polynomials.

Chapter 7 (Section 7.1 – 7.2)

Chapter 8 (Section 8.1 – 8.2, 8.4)

UNIT-V: 12

Planar graphs :

Plane and planar Graphs – Dual graphs – Euler's Formula – The Five- Colour Theorem and the Four- Colour Conjecture.

Chapter 9 (Section 9.1 – 9.3, 9.6)

Recommended Text

J.A.Bondy and U.S.R. Murthy ,Graph Theory and Applications , Macmillan, London, 1976.

Reference Books

1. J.Clark and D.A.Holton ,A First look at Graph Theory, Allied Publishers, New Delhi , 1995.
2. R. Gould. Graph Theory, Benjamin/Cummings, Menlo Park, 1989.
3. A.Gibbons, Algorithmic Graph Theory, Cambridge University Press, Cambridge, 1989.
4. R.J.Wilson and J.J.Watkins, Graphs : An Introductory Approach, John Wiley and Sons, New York, 1989.
5. R.J. Wilson, Introduction to Graph Theory, Pearson Education, 4th Edition, 2004, Indian Print.
6. S.A.Choudum, A First Course in Graph Theory, MacMillan India Ltd. 1987

P18MEMA011	FORMAL LANGUAGES AND AUTOMATA THEORY						L	T	P	C
	Total Contact Hours – 60						3	1	0	4
	Prerequisite course – Mathematics Studied in Under Graduate									
	Course Coordinator Name & Department:- Mrs.P.S.Sharmila /Mathematics									
COURSE OBJECTIVES:- Learners will be familiar with basic and algorithm analysis. Learners will able to apply the problem solving techniques using theorem.										
COURSE OUTCOMES (COs)										
CO1	Gain knowledge in finite automata.									
CO2	Understand the concept of properties of regular sets.									
CO3	Apply for developing a real time application in context-free grammars									
CO4	Analyze the pushdown Automata									
CO5	Understand the properties of context-free languages									
CO6	Understand the computer 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	PS O1	PS O2
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

FINITE AUTOMATA

12

Finite Automata, regular expressions and regular grammars Finite state systems – Basic definitions – Nondeterministic finite automata – Finite automata with ϵ moves – Regular expressions – Regular grammars.

Chapter 2. Sections 2.1 to 2.5

Chapter 9 Section 9.1

UNIT-II

REGULAR SETS

12

Properties of regular sets. The Pumping lemma for regular sets – Closure properties of regular sets – Decision algorithms for regular sets – The Myhill-Nerode Theorem and minimization of finite automata.
Chapter 3 : Sections 3.1 to 3.4

UNIT-III

CONTEXT-FREE GRAMMARS

Motivation and introduction – Context-free grammars – Derivation trees- Simplification of context-free grammars – Chomsky normal form – Greibach normal form.
Chapter 4 : Section 4.1 to 4.6

UNIT-IV

12

PUSHDOWN AUTOMATA INFORMAL DESCRIPTION

Definitions-Pushdown automata and context-free languages – Normal forms for deterministic pushdown automata.
Chapter 5 : Sections 5.1 to 5.3

UNIT-V

PROPERTIES OF CONTEXT-FREE LANGUAGES

12

The pumping lemma for CFL's – Closure properties for CFL's – Decision algorithms for CFL's.
Chapter 6 : Sections 6.1 to 6.3

TEXT BOOK

1. John E. Hopcroft and Jeffrey D. Ullman, Introduction to Automata Theory, Languages and Computation, Narosa Publishing House, New Delhi, 1987.

REFERENCE BOOKS

1. A. Salomaa, *Formal Languages*, Academic Press, New York, 1973.
2. John C. Martin, Introduction to Languages and theory of Computations (2nd Edition) Tata-McGraw Hill Company Ltd., New Delhi, 1997

P18MEMA012	DISCRETE MATHEMATICS						L	T	P	C
	Total Contact Hours – 60						3	1	0	4
	Prerequisite course – Mathematics Studied in Under Graduate.									
	Course Coordinator Name & Department:- Ms.E.Vanishree /Mathematics									
COURSE OBJECTIVES:- Learners will be familiar with basic and algorithm analysis. Learners will able to apply the problem solving techniques using theorem.										
COURSE OUTCOMES (COs)										
CO1	Gain knowledge about Lattices									
CO2	Understand the applications of lattices									
CO3	Apply a real time application in finite fields									
CO4	Analyze the problems in polynomials									
CO5	Understanding the concept of coding theory									
CO6	Create an real time application from algorithms.									
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	PS O1	PS O2
2	CO1	3	1	2	3	2	1	3		
	CO2	2	3	1	2	2	2	3		
	CO3	3	2	3	3	3	2	3		
	CO4	2	3	2	3	3	2	2		
	CO5	2	3	3	3	3	3	2		
	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

Lattices:

Properties of Lattices: Lattice definitions – Modular and distributive lattice; Boolean algebras: Basic properties – Boolean polynomials, Ideals; Minimal forms of Boolean polynomials.

Chapter 1: § 1 A and B § 2A and B. § 3.

UNIT-II :

12

Applications of Lattices:

Switching Circuits: Basic Definitions - Applications
Chapter 2: § 1 A and B

UNIT-III :**12****Finite Fields**

Basic Definitions - Applications Chapter 3: § 2

UNIT-IV :**12****Polynomials :**

Irreducible Polynomials over Finite fields – Factorization of Polynomials

Chapter 3: § 3 and §4.

UNIT-V:**12****Coding Theory :**

Linear Codes and Cyclic Codes

Chapter 4 § 1 and 2

Recommended Text

Rudolf Lidl and Gunter Pilz, Applied Abstract Algebra, Springer-Verlag, New York, 1984.

Reference Books

1. A.Gill, Applied Algebra for Computer Science, Prentice Hall Inc., New Jersey.
2. J.L.Gersting, Mathematical Structures for Computer Science(3rdEdn.), Computer Science Press, New York.
3. S.Wiitala, Discrete Mathematics- A Unified Approach, McGraw Hill Book Co.

P18MEMA013	MATHEMATICAL ECONOMICS						L	T	P	C
	Total Contact Hours – 60						3	1	0	4
	Prerequisite course – Mathematics Studied in Under Graduate									
	Course Coordinator Name & Department:- Ms.E.Vanishree /Mathematics									
COURSE OBJECTIVES:- Learners will be familiar with basic and algorithm in Economics . Learners will able to apply the problem solving techniques .										
COURSE OUTCOMES (COs)										
CO1	Gain knowledge aboutthe theory of consumer behavior									
CO2	Understand the applications of theory of firm									
CO3	Understand the concept of market equilibrium									
CO4	Analyzethe imperfect competition									
CO5	Gain knowledge aboutwelfare economics									
CO6	Detail in external effects in consumption and 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	PS O1	PS O2
2	CO1	3	3	3	2	2	1	3		
	CO2	2	3	1	2	2	3	2		
	CO3	3	3	3	1	3	3	3		
	CO4	2	3	2	3	3	2	1		
	CO5	2	2	2	3	1	2	2		
	CO6	3	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:

THE THEORY OF CONSUMER BEHAVIOUR:

12

Utility function – Indifference Curves – Rate of Commodity Substitution – Existence of Utility Function – Maximizatin of Utility – Choice of a utility Index – Demand function – Income and Leisure – Substitution and Income Effects – Generalization to n variables – Theory of Revealed Preference – Problem of Choice in Risk.

Chapter 2: 2.1 to 2.10

UNIT-II :**THE THEORY OF FIRM:****12**

Production Function – Productivity Curves – Isoquents – Optimization behaviour – Input Demand Functions – Cost Functions (short-run and long-run) – Homogeneous Production functions and their properties – CES Production Function and their Properties – Joint Products – Generalisation to m variables.

UNIT-III :**MARKET EQUILIBRIUM:****12**

Assumptions of Perfect Competition – Demand Functions – Supply Functions – Commodity Equilibrium – Applications of the Analysis – Factor Market Equilibrium – Existence of Uniqueness of Equilibrium – Stability of Equilibrium – Dynamic Equilibrium with lagged adjustment.

UNIT-IV :**IMPERFECT COMPETITION:****12**

Monopoly and its Applications – Duopoly and Oligopoly – Monopolistic Composition – Monopsony, Duopsony and Oligopsony – Bilateral Monopoly
Chapter 6 : Sections 6.1 to 6.7

UNIT-V:**WELFARE ECONOMICS:****12**

Parato Optimality and the efficiency of Perfect competition – The efficiency of Imperfect competition – External Effects in consumption and Production – Taxes, Subsidies and Compensation – Social Welfare functions – The theory of Second Best.
Chapter 7 : Sections 7.1 to 7.7

TEXT BOOK:

1. J.M.Henderson and R.E.Quandt, Micro Economic Theory- A Mathematical Approach, (2nd Edn) McGraw Hill, New York, 1971.
2. A. Kautsoyiannis, Modern Microeconomics (2ndedn) MacMillan, New York, 1979.

REFERENCE BOOKS

1. William J. Baumol. Economic Theory and Operations Analysis, Prentice Hall of India, New Delhi, 1978
2. A.C.Chiang, Fundamental Methods of Mathematical Economics, McGraw Hill, New York, 1984
3. Michael D. Intriligator, Mathematical Optimization and Economic Theory, Prentice Hall, New York, 1971.

P18MCMA201	ALGEBRA – II						L	T	P	C
	Total Contact Hours – 60						3	1	0	4
	Prerequisite course – Mathematics Studied in Under Graduate									
	Course Coordinator Name & Department:- Mr.V.Nandakumar /Mathematics									
COURSE OBJECTIVES:- Learners will understand the concepts and develop working knowledge on extension field , roots of polynomials, Galois Theory, Finite division ring, Solvability by radicals.										
COURSE OUTCOMES (COs)										
CO1	Gain knowledge in concepts of Extension field.									
CO2	Understand the usage of roots of the polynomials.									
CO3	Apply the algorithms in Elements of Galois theory									
CO4	Analyze the algorithm and the usage of Finite fields									
CO5	Evaluate numerical solution in Solvability by Radicals									
CO6	Apply the algorithms in Algebraic Structure.									
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	PS O1	PS O2
2	CO1	3	3	2	1	3	2	1		
	CO2	3	3	3	2	2	2	3		
	CO3	3	2	3	1	3	3	2		
	CO4	3	2	2	2	3	3	3		
	CO5	2	2	3	1	1	1	2		
	CO6	3	3	3	2	2	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

EXTENSION OF FIELD

Extension fields - Transcendence of e.
Chapter 5: Section 5.1 and 5.2

UNIT II

12

ROOTS OF POLYNOMIALS

Roots of Polynomials.- More about roots

Chapter 5: Sections 5.3 and 5.5

UNIT III

12

GALOIS THEORY

Elements of Galois theory.

Chapter 5 : Section 5.6

UNIT IV

12

FINITE DIVISION RINGS

Finite fields - Wedderburn's theorem on finite division rings

Chapter 7: Sections 7.1 and 7.2 (Theorem 7.2.1 only)

UNIT V

12

SOLVABILITY BY RADICALS

Solvability by radicals – Galois groups over the rationals — A theorem of Frobenius.

Chapter 5: Sections 5.7 and 5.8

Chapter 7: Sections 7.3

TEXT BOOK :

1.N. Herstein. Topics in Algebra (II Edition) Wiley 2002

2.N.Jacobson, Basic Algebra, Vol. I & II Hindustan Publishing Company, New Delhi.

REFERENCE BOOKS :

1. M.Artin, Algebra, Prentice Hall of India, 1991.

2. P.B.Bhattacharya, S.K.Jain, and S.R.Nagpaul, Basic Abstract Algebra (II Edition) Cambridge University Press, 1997. (Indian Edition)

3. I.S.Luther and I.B.S.Passi, Algebra, Vol. I - Groups(1996); Vol. II Rings, (1999) Narosa Publishing House , New Delhi.

4. D.S.Dummit and R.M.Foote, Abstract Algebra, 2nd edition, Wiley, 2002.

P18MCMA202	REAL ANALYSIS – II						L	T	P	C
	Total Contact Hours – 60						3	1	0	4
	Prerequisite course –Mathematics / Mathematics Studied in Under Graduate.									
	Course Coordinator Name & Department:- Mrs.L.Radhika /Mathematics									
COURSE OBJECTIVES:- Learners will be familiar with basic Fourier series and Fourier integrals, multivariable differential calculus, implicit functions and extremum problems.										
COURSE OUTCOMES (COs)										
CO1	Gain knowledge in measure on the real line									
CO2	Understand the concept of integration of functions of a real variable									
CO3	Apply suitable formulae for Fourier series and Fourier integrals									
CO4	Analyze the concept of multivariable differential calculus									
CO5	Evaluate problems in implicit functions and extremum problems									
CO6	Create an real time application using a suitable algorithms									
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	PS O1	PS O2
2	CO1	3	3	1	3	2	1	3		
	CO2	2	3	3	2	2	3	2		
	CO3	3	1	3	1	3	3	3		
	CO4	3	2	3	2	2	2	2		
	CO5	3	1	2	3	1	2	3		
	CO6	3	3	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

12

MEASURE ON THE REAL LINE

Lebesgue Outer Measure - Measurable sets - Regularity - Measurable Functions - Borel and Lebesgue Measurability

Chapter - 2 Sec 2.1 to 2.5 of de Barra

UNIT-II

INTEGRATION OF FUNCTIONS OF A REAL VARIABLE

Integration of Non- negative functions - The General Integral - Riemann and Lebesgue Integrals
Chapter - 3 Sec 3.1,3.2 and 3.4 of de Barra

UNIT-III

FOURIER SERIES AND FOURIER INTEGRALS

12

Introduction - Orthogonal system of functions - The theorem on best approximation - The Fourier series of a function relative to an orthonormal system - Properties of Fourier Coefficients - The Riesz-Fischer Theorem - The convergence and representation problems in for trigonometric series - The Riemann - Lebesgue Lemma - The Dirichlet Integrals - An integral representation for the partial sums of Fourier series - Riemann's localization theorem - Sufficient conditions for convergence of a Fourier series at a particular point - Cesaro summability of Fourier series- Consequences of Fejes's theorem - The Weierstrass approximation theorem

Chapter 11 : Sections 11.1 to 11.15 of Apostol

UNIT-IV

MULTIVARIABLE DIFFERENTIAL CALCULUS

12

Introduction - The Directional derivative - Directional derivative and continuity - The total derivative - The total derivative expressed in terms of partial derivatives - The matrix of linear function - The Jacobian matrix - The chain rule - Matrix form of chain rule - The mean - value theorem for differentiable functions - A sufficient condition for differentiability - A sufficient condition for equality of mixed partial derivatives - Taylor's theorem for functions of R^n to R^1

Chapter 12 : Section 12.1 to 12.14 of Apostol

UNIT-V

IMPLICIT FUNCTIONS AND EXTREMUM PROBLEMS

12

Functions with non-zero Jacobian determinants – The inverse function theorem-The Implicit function theorem-Extrema of real valued functions of severable variables-Extremum problems with side conditions.

Chapter 13 : Sections 13.1 to 13.7 of Apostol

TEXT BOOK

- 1). G. de Barra, Measure Theory and Integration, New Age International, 2003 (for Units I and II)
- 2). Tom M.Apostol :Mathematical Analysis, 2nd Edition, Narosa 1989 (for Units III, IV and V)

REFERENCE BOOKS

- 1.Burkill,J.C.The Lebesgue Integral, Cambridge University Press, 1951.
 - 2.Munroe,M.E.Measure and Integration. Addison-Wesley, Mass.1971.
 - 3.Royden,H.L.Real Analysis, Macmillan Pub. Company, New York, 1988.
 - 4.Rudin, W. Principles of Mathematical Analysis, McGraw Hill Company, New York,1979.
- Malik,S.C. and Savita Arora. Mathematical Analysis, Wiley Eastern Limited. New Delhi, 1991

P18MCMA203	PARTIAL DIFFERENTIAL EQUATIONS						L	T	P	C
	Total Contact Hours – 60						3	1	0	4
	Prerequisite course – Mathematics Studied in Under Graduate.									
	Course Coordinator Name & Department:- Ms.S.Kavitha /Mathematics									
COURSE OBJECTIVES:- Learners will be familiar with basic . Learners will able to apply the problem solving techniques. to equip students with adequate knowledge of Mathematics to formulate problems and solve them analytically or numerically										
COURSE OUTCOMES (COs)										
CO1	Gain knowledge in Partial Differential Equations of First Order									
CO2	Understand the concept of elliptic differential equations									
CO3	Apply suitable model for parabolic differential equations									
CO4	Analyze the algorithm for hyperbolic differential equations									
CO5	Evaluate algorithms on Green’s Function									
CO6	Create an real time application using a suitable algorithms.									
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	PS O1	PS O2
2	CO1	3	2	1	3	1	1	3		
	CO2	3	3	1	2	2	2	3		
	CO3	3	2	3	1	3	3	1		
	CO4	3	2	3	2	3	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 :

12

Partial Differential Equations of First Order:

Formation and solution of PDE- Integral surfaces – Cauchy Problem order eqn- Orthogonal surfaces – First order non-linear – Characteristics – Csmptable system – Charpit method. Fundamentals: Classification and canonical forms of PDE.

Chapter 0: 0.4 to 0.11 (omit .1,0.2.0.3 and 0.11.1) and Chapter 1: 1.1

UNIT-II :**12****Elliptic Differential Equations:**

Derivation of Laplace and Poisson equation – BVP – Separation of Variables – Dirichlet's Problem and Neumann Problem for a rectangle – Interior and Exterior Dirichlet's problems for a circle – Interior Neumann problem for a circle – Solution of Laplace equation in Cylindrical and spherical coordinates – Examples. Chapter 2: 2.1, 2.2, 2.5 to 2.13 (omit 2.3 and 2.4)

UNIT-III :**12****Parabolic Differential Equations:**

Formation and solution of Diffusion equation – Dirac-Delta function – Separation of variables method – Solution of Diffusion Equation in Cylindrical and spherical coordinates Examples.

Chapter 3: 3.1 to 3.7 and 3.9 (omit 3.8)

UNIT-IV :**12****Hyperbolic Differential equations:**

Formation and solution of one-dimensional wave equation – canonical reduction – IVP- d'Alembert's solution – Vibrating string – Forced Vibration – IVP and BVP for two-dimensional wave equation – Periodic solution of one-dimensional wave equation in cylindrical and spherical coordinate systems – vibration of circular membrane – Uniqueness of the solution for the wave equation – Duhamel's Principle – Examples

Chapter 4: 4.1 to 4.12 (omit 4.13)

UNIT-V:**12****Green's Function:**

Green's function for Laplace Equation – methods of Images – Eigen function Method – Green's function for the wave and Diffusion equations. Laplace Transform method: Solution of Diffusion and Wave equation by Laplace Transform. Fourier Transform Method: Finite Fourier sine and cosine transforms – solutions of Diffusion, Wave and Laplace equations by Fourier Transform Method.

Chapter 5: 5.1 to 5.6 Chapter 6: 6.13.1 and 6.13.2 only (omit 6.14) Chapter 7: 7.10 to 7.13 (omit 7.14)

Recommended Text

1. S. SankarRao, Introduction to Partial Differential Equations, 2nd Edition, Prentice Hall of India, New Delhi. 2005

Reference Books

1. R.C.McOwen, Partial Differential Equations, 2ndEdn. Pearson Education, New Delhi, 2005.
 2. I.N.Sneddon, Elements of Partial Differential Equations, McGraw Hill, New Delhi, 1983.
 3. R. Dennemeyer, Introduction to Partial Differential Equations and Boundary Value Problems, McGraw Hill, New York, 1968.
- M.D.Raisinghania, Advanced Differential Equations, S.Chand & Company Ltd., New Delhi, 2001.

P18MCMA204		PROBABILITY THEORY						L	T	P	C
		Total Contact Hours – 60						3	1	0	4
		Prerequisite course –Mathematics / Mathematics Studied in Undergraduate.									
		Course Coordinator Name & Department:- Mrs.P.S.Sharmila /Mathematics									
COURSE OBJECTIVES:-											
Learners will be familiar with basic random events and random variables, parameters of the distribution , characteristic functions, some probability distributions, limit theorems											
COURSE OUTCOMES (COs)											
CO1	Gain knowledge in random events and random variables										
CO2	Understand the concept in parameters of the distribution										
CO3	Apply suitable formulae for developing a real time application										
CO4	Analyze the algorithms in some probability distributions										
CO5	Evaluate the solution of limit theorems										
CO6	Create an real time application using algorithms.										
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	PS O1	PS O2	
2	CO1	3	3	1	1	1	1	1			
	CO2	2	3	3	2	2	3	3			
	CO3	3	1	3	1	3	3	2			
	CO4	1	2	2	3	1	2	3			
	CO5	2	3	3	2	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

12

RANDOM EVENTS AND RANDOM VARIABLES

Random events – Probability axioms – Combinatorial formulae – conditional probability – Bayes Theorem – Independent events – Random Variables – Distribution Function – Joint Distribution – Marginal Distribution – Conditional Distribution – Independent random variables – Functions of random variables.

Chapter 1: Sections 1.1 to 1.7

Chapter 2 : Sections 2.1 to 2.9

UNIT-II

PARAMETERS OF THE DISTRIBUTION

12

Expectation- Moments – The Chebyshev Inequality – Absolute moments – Order parameters – Moments of random vectors – Regression of the first and second types.

Chapter 3 : Sections 3.1 to 3.8

UNIT-III

12

CHARACTERISTIC FUNCTIONS :

Properties of characteristic functions – Characteristic functions and moments – semi-invariants – characteristic function of the sum of the independent random variables – Determination of distribution function by the Characteristic function – Characteristic function of multidimensional random vectors – Probability generating functions.

Chapter 4 : Sections 4.1 to 4.7

UNIT-IV

12

SOME PROBABILITY DISTRIBUTIONS

One point , two point , Binomial – Polya – Hypergeometric – Poisson (discrete) distributions – Uniform – normal gamma – Beta – Cauchy and Laplace (continuous) distributions.

Chapter 5 : Section 5.1 to 5.10 (Omit Section 5.11)

UNIT-V

12

LIMIT THEOREMS

Stochastic convergence – Bernoulli law of large numbers – Convergence of sequence of distribution functions – Levy-Cramer Theorems – de Moivre-Laplace Theorem – Poisson, Chebyshev, Khintchine Weak law of large numbers – Lindberg Theorem – Lapunov Theorem – Borel-Cantelli Lemma - Kolmogorov Inequality and Kolmogorov Strong Law of large numbers.

Chapter 6 : Sections 6.1 to 6.4, 6.6 to 6.9 , 6.11 and 6.12. (Omit Sections 6.5, 6.10, 6.13 to 6.15)

TEXT BOOK

1.M. Fisz, Probability Theory and Mathematical Statistics, John Wiley and Sons, New York, 1963.

REFERENCE BOOKS

R.B. Ash, Real Analysis and Probability, Academic Press, New York, 1972

2. K.L.Chung, A course in Probability, Academic Press, New York, 1974.

4. R.Durrett, Probability : Theory and Examples, (2nd Edition) Duxbury Press, New York, 1996.

5. V.K.Rohatgi An Introduction to Probability Theory and Mathematical Statistics, Wiley Eastern Ltd., New Delhi, 1988(3rd Print).

6. S.I.Resnick, A Probability Path, Birhauser, Berlin, 1999.

7. B.R.Bhat ,Modern Probability Theory (3rd Edition), New Age International (P)Ltd, New Delhi, 1999

P18MEMA021	NUMERICAL METHODS						L	T	P	C
	Total Contact Hours – 60						3	1	0	4
	Prerequisite course – Mathematics Studied in Under Graduate									
	Course Coordinator Name & Department:- Ms.E.Vanishree /Mathematics									
COURSE OBJECTIVES:- Learners will be familiar with basic and algorithm analysis. Learners will able to apply the problem solving techniques using theorem.										
COURSE OUTCOMES (COs)										
CO1	Gain knowledge in solution algebraic and transcendental equation									
CO2	Understand the concept of method of factorization									
CO3	Apply the concept of linear simultaneous equations									
CO4	Analyze the usage of differential equation									
CO5	Evaluate numerical solution of partial differential equations									
CO6	Understanding iterative methods for the solution									
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	PS O1	PS O2
2	CO1	3	3	2	3	1	3	2		
	CO2	2	3	1	2	2	2	3		
	CO3	3	2	3	1	3	2	1		
	CO4	3	2	2	3	3	2	3		
	CO5	2	2	2	3	1	1	2		
	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

ALGEBRAIC AND TRANSCENDENTAL EQUATION

12

Introduction – The Bi – section method – The iteration method – Aitken's A^2 process – The methods of False position – Newton Raphson's method – Ramanujans method.

UNIT II

METHOD OF FACTORIZATION

12

Muller's method – Graffe's roots squaring methods – Lin – Bairstow's method – Gauss elimination method – modification of elimination method to find the inverse of the matrix – method of factorization.

UNIT III

LINEAR SIMULTANEOUS EQUATIONS

12

Solution of tridiagonal system – solution of Centro – symmetric equations – Ill conditioned linear system – method of Ill conditioned matrices. Solutions of linear systems – Iterative methods – The Eigen value problem – House Holder method.

UNIT IV

DIFFERENTIAL EQUATION S

12

Introduction – Solution by Taylor's series - Picard's method of successive approximation – Euler's method – Runge –kutta's method (RK) – Predictor, corrector method – Boundary value problems – finite different method – Shotting method.

UNIT V

PARTIAL DIFFERENTIAL EQUATIONS

12

Introduction – finite difference approximation to derivatives – Laplace equation – Jacobi's method – Gauss Seidal method – Parabolic equations – Iterative methods for the solution of equations – Hyperbolic equations.

TEXT BOOK

- 1.Introductory methods of numerical Analysis by S.S. Sastry
- 2.B.D. Gupta , Numerical Analysis ,Konork Publisher

REFERENCE BOOKS

1. M.K. Jain – Numerical Solution of differential equation by wiley Eastern.
2. M.K.Jain , S.R.K. Iyenkar and R.K.J – Numerical methods for scientific and Engineering computation .New age international publishers

P18MEMA022		MATHEMATICAL PROGRAMMING						L	T	P	C
		Total Contact Hours – 60						3	1	0	4
		Prerequisite course –Mathematics / Mathematics Studied in Under Graduate.									
		Course Coordinator Name & Department:- Mrs.L.Radhika/Mathematics									
COURSE OBJECTIVES:- Learners will be familiar with methods appropriate for solving problems. Apply methods to specific problems.											
COURSE OUTCOMES (COs)											
CO1		Gain knowledge in basic of Cauchy’s Integral Formula									
CO2		Understand the concept of the general form of Cauchy’s Theorem									
CO3		Evaluation of definite integrals and harmonic functions									
CO4		Analyze the concept of harmonic functions and power series expansions									
CO5		Evaluate partial fractions and entire functions									
CO6		Analyze the concepts of canonical products									
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	PS O1	PS O2	
2	CO1	2	3	1	1	3	1	2			
	CO2	2	3	2	2	2	2	3			
	CO3	3	2	3	2	3	3	3			
	CO4	1	2	2	1	1	3	2			
	CO5	2	2	2	3	3	1	3			
	CO6	3	3	3	2	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

INTEGER LINEAR PROGRAMMING

12

Types of Integer Linear Programming Problems – Concept of Cutting Plane – Gomory's All Integer Cutting Plane Method – Gomory's mixed Integer Cutting Plane method – Branch and Bound Method. – Zero-One Integer Programming.

DYNAMIC PROGRAMMING

Characteristics of Dynamic Programming Problem – Developing Optimal Decision Policy – Dynamic Programming Under Certainty – DP approach to solve LPP. Chapters: 7 and 21.

UNIT-II

CLASSICAL OPTIMIZATION METHODS

12

Unconstrained Optimization – Constrained Multi-variable Optimization with Equality Constraints -
Constrained Multi-variable Optimization with inequality Constraints

NON-LINEAR PROGRAMMING METHODS:

Examples of NLPP – General NLPP – Graphical solution – Quadratic Programming – Wolfe's modified
Simplex Methods – Beale's Method.

Chapters: 22 and 23

UNIT-III

THEORY OF SIMPLEX METHOD

12

Canonical and Standard form of LP – Slack and Surplus Variables – Reduction of any Feasible solution to
a Basic Feasible solution – Alternative Optimal solution – Unbounded solution – Optimality conditions –
Some complications and their resolutions – Degeneracy and its resolution.

Chapter 24

UNIT-IV

REVISED SIMPLEX METHOD

12

Standard forms for Revised simplex Method – Computational procedure for Standard form I –
comparison of simplex method and Revised simplex Method.

BOUNDED VARIABLES LP PROBLEM:

The simplex algorithm Chapters 25 and 27

UNIT-V

12

PARAMETRIC LINEAR PROGRAMMING

Variation in the coefficients c_j , Variations in the Right hand side, b_i .

GOAL PROGRAMMING

Difference between LP and GP approach – Concept of Goal Programming – Goal Programming Model
formulation – Graphical Solution Method of Goal Programming – Modified Simplex method of Goal
Programming.

Chapters 28 and 29.

TEXT BOOK

1. J.K.Sharma, *Operations Research*, Macmillan (India) New Delhi 2001
2. Beightler. C, D.Phillips, B. Wilde, *Foundations of Optimization* (2nd Edition) Prentice Hall Pvt Ltd., New York, 1979

REFERENCE BOOKS

1. Hamdy A. Taha, *Operations Research*, (seventh edition)
Prentice - Hall of India Private Limited, New Delhi, 1997.
2. F.S. Hiller & J.Lieberman *Introduction to Operation Research*
(7th Edition) Tata- McGraw Hill Company, New Delhi, 2001.
2. S.S. Rao - *Optimization Theory and Applications*, Wiley Eastern Ltd. New Delhi. 1990

P18MEMA023	FUZZY SETS AND THEIR APPLICATIONS						L	T	P	C
	Total Contact Hours – 60						3	1	0	4
	Prerequisite course –Mathematics / Mathematics Studied in Under Graduate.									
	Course Coordinator Name & Department:- Ms.S.Kavitha /Mathematics									
COURSE OBJECTIVES:- To identify methods appropriate for solving problems. Apply methods to specific problems.										
COURSE OUTCOMES (COs)										
CO1	Gain knowledge in basic concepts of fuzzy									
CO2	Understand the concept of fuzzy graphs									
CO3	Analyze therelationship between fuzzy									
CO4	Analyze the concept of fuzzy logic									
CO5	Evaluate composition of fuzzy									
CO6	Analyze the Fundamental Notions									
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	PS O1	PS O2
2	CO1	2	3	2	3	1	3	3		
	CO2	2	3	1	2	2	2	3		
	CO3	3	2	3	1	3	3	3		
	CO4	3	2	2	3	3	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

12

BASIC CONCEPTS OF FUZZY

Fundamental Notions: Chapter I: Sec. 1 to 8

UNIT-II

12

GRAPHS IN FUZZY

Fuzzy Graphs: Chapter II: Sec. 10 to 18

UNIT-III

12

RELATIONSHIP BETWEEN FUZZY

Fuzzy Relations: Chapter II: Sec. 19 to 29

UNIT-IV

12

CONCEPTS OF FUZZY LOGIC

Fuzzy Logic: Chapter III: Sec.31 to 40 (omit Sec. 37, 38, 41)

UNIT-V

12

COMPOSITION OF FUZZY

The Laws of Fuzzy Composition: Chapter IV: Sec.43 to 49

Text Book

A.Kaufman, Introduction to the theory of Fuzzy subsets, Vol.I,
Academic Press, New York, 1975.

Reference Books

1. H.J.Zimmermann, Fuzzy Set Theory and its Applications, Allied Publishers, Chennai, 1996
2. George J.Klir and Bo Yuan, Fuzzy sets and Fuzzy Logic-Theory and Applications, Prentice Hall India, New Delhi, 2001.

P18MCMA301	COMPLEX ANALYSIS – I						L	T	P	C
	Total Contact Hours – 60						3	1	0	4
	Prerequisite course –Mathematics / Mathematics Studied in Under Graduate.									
	Course Coordinator Name & Department:- Ms.S.Kavitha /Mathematics									
COURSE OBJECTIVES:- Learners will be familiar with methods appropriate for solving problems. Apply methods to specific problems.										
COURSE OUTCOMES (COs)										
CO1	Gain knowledge in basic of Cauchy’s Integral Formula									
CO2	Understand the concept of the general form of Cauchy’s Theorem									
CO3	Evaluation of definite integrals and harmonic functions									
CO4	Analyze the concept of harmonic functions and power series expansions									
CO5	Evaluate partial fractions and entire functions									
CO6	Analyze the concepts of canonical products									
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	PS O1	PS O2
2	CO1	3	3	1	3	1	3	2		
	CO2	2	3	1	2	2	2	3		
	CO3	3	2	3	1	3	3	3		
	CO4	2	2	3	3	3	2	1		
	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

12

CAUCHY'S INTEGRAL FORMULA:

The Index of a point with respect to a closed curve - The Integral formula - Higher derivatives. Local Properties of Analytical Functions :Removable Singularities-Taylor's Theorem-Zeros and poles-The local Mapping - The Maximum Principle .

Chapter 4 : Section 2 : 2.1 to 2.3, Section 3 : 3.1 to 3.4

UNIT II

12

THE GENERAL FORM OF CAUCHY'S THEOREM:

Chains and cycles- Simple Connectivity -Homology - The General statement of Cauchy's Theorem - Proof of Cauchy's theorem – Locally exact differentials-Multilply connected regions – Residue theorem - The argument principle.

Chapter 4 : Section 4 : 4.1 to 4.7, Section 5: 5.1 and 5.2

UNIT III

12

EVALUATION OF DEFINITE INTEGRALS AND HARMONIC FUNCTIONS:

Evaluation of definite integrals - Definition of Harmonic functions and basic properties - Mean value property - Poisson formula.

Chapter 4 : Section 5 : 5.3, Section 6 : 6.1 to 6.3

UNIT IV

HARMONIC FUNCTIONS AND POWER SERIES EXPANSIONS:12

Schwarz theorem - The reflection principle – Weierstrasstheorem - Taylor Series - Laurent series .

Chapter 4 : Sections 6.4 and 6.5

Chapter 5 : Sections 1.1 to 1.3

UNIT V

12

PARTIAL FRACTIONS AND ENTIRE FUNCTIONS:

Partial fractions – Infinite products - Canonical products - Gamma Function - Jensen's formula

Chapter 5 : Sections 2.1 to 2.4, Section 3.1

TEXT BOOK:

- 1.Lars V. Ahlfors, Complex Analysis, (3rd edition) McGraw Hill Co., New York, 1979
2. D.Sarason, Notes on complex function Theory, Hindustan Book Agency, 1998

REFERENCE BOOKS :

1. H.A. Priestly, Introduction to Complex Analysis, Clarendon Press,Oxford, 2003.
2. J.B.Conway, Functions of one complex variable, Springer International Edition, 2003
3. T.W Gamelin, Complex Analysis, Springer International Edition, 2004.

P18MCMA302		OPERATIONS RESEARCH						L	T	P	C		
		Total Contact Hours – 60						3	1	0	4		
		Prerequisite course –Mathematics/ Mathematics Studied in Higher Secondary Studies											
		Course Coordinator Name & Department:- Mrs. L.Radhika /Mathematics											
COURSE OBJECTIVES:- To learn the methods of appropriate for solving problems. Apply methods to specific problems..													
COURSE OUTCOMES (COs)													
CO1		Gain the basic knowledge in decision theory											
CO2		Understand the concept of network models											
CO3		Todeterministic inventory control models											
CO4		Understanding basic knowledge and solving ability in Queueing theory											
CO5		Evaluate data in replacement and maintenance models											
CO6		Evaluate probabilistic inventory control models											
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	PS O1	PS O2
2	CO1	3	2	1		1		1		1	1		
	CO2	3	3	1		2		2		3	3		
	CO3	2	2	3		3		3		3	3		
	CO4	3	2	3		3		2		2	2		
	CO5	1	2	2		3		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

DECISION THEORY

12

Steps in Decision theory Approach – Types of Decision-Making Environments – Decision Making Under Uncertainty – Decision Making under Risk – Posterior Probabilities and Bayesian Analysis – Decision Tree Analysis – Decision Making with Utilities.

Chapter 10 : Sec. 10.1 to 10.8

UNIT-II

NETWORK MODELS

12

Scope of Network Applications – Network Definition – Minimal spanning tree Algorithm – Shortest Route problem – Maximum flow model – Minimum cost capacitated flow problem - Network representation – Linear Programming formulation – Capacitated Network simplex Algorithm.

Chapter 6 : Sections 6.1 to 6.6

H.A.Taha : Operations Research

UNIT-III

DETERMINISTIC INVENTORY CONTROL MODELS 12

Meaning of Inventory Control – Functional Classification – Advantage of Carrying Inventory – Features of Inventory System – Inventory Model building - Deterministic Inventory Models with no shortage – Deterministic Inventory with Shortages

PROBABILISTIC INVENTORY CONTROL MODELS:

Single Period Probabilistic Models without Setup cost – Single Period Probabilities Model with Setup cost.

Chapter 13: Sec. 13.1 to 13.8

Chapter 14: Sec. 14.1 to 14.3

UNIT-IV

QUEUEING THEORY 12

Essential Features of Queueing System – Operating Characteristic of Queueing System – Probabilistic Distribution in Queueing Systems – Classification of Queueing Models – Solution of Queueing Models – Probability Distribution of Arrivals and Departures – Erlangian Service times Distribution with k-Phases.

Chapter 15 : Sec. 15.1 to 15.8

UNIT-V

REPLACEMENT AND MAINTENANCE MODELS 12

Failure Mechanism of items – Replacement of Items that deteriorate with Time – Replacement of items that fail completely – other Replacement Problems.

Chapter 16: Sec. 16.1 to 16.5

TEXT BOOKS

1. For Unit 2 : H.A. Taha, Operations Research, 6th edition, Prentice Hall of India
2. For all other Units: J.K.Sharma, Operations Research ,MacMillan India, New Delhi, 2001.

REFERENCE BOOKS

1. F.S. Hiller and J.Lieberman -,Introduction to Operations Research (7th Edition), Tata McGraw Hill Publishing Company, New Delhi, 2001.
2. Beightler. C, D.Phillips, B. Wilde ,Foundations of Optimization (2nd Edition) Prentice Hall Pvt Ltd., New York, 1979
3. Bazaraa, M.S; J.J.Jarvis, H.D.Sharall ,Linear Programming and Network flow, John Wiley and sons, New York 1990.
4. Gross, D and C.M.Harris, Fundamentals of Queueing Theory, (3rd Edition), Wiley and Sons, New York, 1998.

P18MCMA303	MECHANICS							L	T	P	C
	Total Contact Hours – 60							3	1	0	4
	Prerequisite course –Mathematics / Mathematics Studied in Under Graduate										
	Course Coordinator Name & Department:- Mrs. L. Radhika /Mathematics										
COURSE OBJECTIVES:-											
To equip students with adequate knowledge of Mathematics to formulate problems and solve them analytically or numerically Learners will be familiar with basic and identify methods appropriate for solving problems. Apply methods to specific problems.											
COURSE OUTCOMES (COs)											
CO1	Gain knowledge in fundamental mechanical systems										
CO2	Evaluate the problems in Lagrange's equations										
CO3	Apply the concepts in Hamilton's equations										
CO4	Analyze the algorithm for its complexity and performance										
CO5	Evaluate Hamilton-Jacobi theory										
CO6	Create an real time application using a suitable 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	PS O1	PS O2	
2	CO1	3	3	1	2	1	1	3			
	CO2	3	3	1	2	2	2	3			
	CO3	3	2	3	1	3	3	2			
	CO4	3	2	3	2	2	2	3			
	CO5	2	2	2	1	1	1	1			
	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

MECHANICAL SYSTEMS

12

The Mechanical system- Generalised coordinates – Constraints - Virtual work - Energy and Momentum Chapter 1 : Sections 1.1 to 1.5

UNIT-II

LAGRANGE'S EQUATIONS

12

Derivation of Lagrange's equations- Examples- Integrals of motion. Chapter 2 : Sections 2.1 to 2.3 (Omit Section 2.4)

UNIT-III

HAMILTON'S EQUATIONS

12

Hamilton's Principle - Hamilton's Equation - Other variational principles. Chapter 4 : Sections 4.1 to 4.3 (Omit section 4.4)

UNIT – IV

HAMILTON-JACOBI THEORY

12

Hamilton Principle function – Hamilton-Jacobi Equation - Separability Chapter 5 : Sections 5.1 to 5.3

UNIT-V

CANONICAL TRANSFORMATION

12

Differential forms and generating functions – Special Transformations– Lagrange and Poisson brackets. Chapter 6 : Sections 6.1, 6.2 and 6.3 (omit sections 6.4, 6.5 and 6.6)

TEXT BOOK

- 1.D. Greenwood, Classical Dynamics, Prentice Hall of India, New Delhi, 1985.
- 2.J.L.Synge and B.A.Griffth, Principles of Mechanics (3rd Edition) McGraw Hill Book Co., New York, 1970.

Reference Books

1. H. Goldstein, Classical Mechanics, (2nd Edition) Narosa Publishing House, New Delhi.
2. N.C.Rane and P.S.C.Joag, Classical Mechanics, Tata McGraw Hill, 1991.

P18MCMA304		TENSOR ANALYSIS AND RELATIVITY						L	T	P	C
		Total Contact Hours – 60						3	1	0	4
		Prerequisite course –Mathematics / Mathematics Studied in Under Graduate.									
		Course Coordinator Name & Department:- Ms.S.Kavitha/Mathematics									
COURSE OBJECTIVES:- Learners will be familiar with basic and algorithm analysis. Learners will understand the applications & able to apply the problem solving techniques using calculus.											
COURSE OUTCOMES (COs)											
CO1		Gain knowledge in Tensor Algebra									
CO2		Understand the concept of algorithmic design in Tensor Calculus									
CO3		Apply problem solving algorithms in Intrinsic Differentiation									
CO4		Analyze the algorithm for Special Theory of Relativity									
CO5		Analyze the algorithms in Relativistic Dynamics									
CO6		Understanding the concepts of Relativistic Kinematics									
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	PS O1	PS O2	
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

Tensor Algebra

12

Systems of Different orders – Summation Convention – Kronecker Symbols – Transformation of coordinates in S_n – Invariants – Covariant and Contravariant vectors – Tensors of Second Order – Mixed Tensors – Zero Tensor – Tensor Field – Algebra of Tensors – Equality of Tensors – Symmetric and Skew-symmetric tensors – Outer multiplication, Contraction and Inner Multiplication – Quotient Law of Tensors – Reciprocal Tensor – Relative Tensor – Cross Product of Vectors.

Chapter I : I.1 – I.3,I.7 and I.8 and Chapter II : II.1 – II.19

UNIT-II

Tensor Calculus

12

Riemannian Space – Christoffel Symbols and their properties.

Chapter III: III.1 and III.2

UNIT-III

Tensor Calculus(contd)

12

Covariant Differentiation of Tensors – Riemann–Christoffel Curvature Tensor – Intrinsic Differentiation

Chapter III:III.3 – III.5

UNIT-IV

Special Theory of Relativity

12

Galilean Transformations – Maxwell's equations – The ether Theory – The Principle of Relativity.

Relativistic Kinematics

Lorentz Transformation equations – Events and simultaneity – Example – Einstein Train – Time dilation –

Longitudinal Contraction - Invariant Interval - Proper time and Proper distance - World line - Example

– twin paradox – addition of velocities – Relativistic Doppler effect.

Chapter 7 : Sections 7.1 and 7.2

UNIT-V

Relativistic Dynamics

12

Momentum – Energy – Momentum – energy four vector – Force - Conservation of Energy – Mass and energy – Example – inelastic collision – Principle of equivalence – Lagrangian and Hamiltonian formulations.

Accelerated Systems

Rocket with constant acceleration – example – Rocket with constant thrust.

Chapter 7 : Sections 7.3 and 7.4

TEXT BOOK

1.U.C. De, Absos Ali Shaikh and JoydeepSengupta, Tensor Calculus, Narosa Publishing House, New Delhi, 2004.For Units IV and V

2.D.Greenwood, Classical Dynamics, Prentice Hall of India, New Delhi, 1985.

REFERENCE BOOKS

1. J.L.Synge and A.Schild, Tensor Calculus, Toronto, 1949.
2. A.S.Eddington. The Mathematical Theory of Relativity, Cambridge University Press, 1930.
3. P.G.Bergman, An Introduction to Theory of Relativity, Newyor, 1942.
4. C.E.Weatherburn, Riemannian Geometry and the Tensor Calculus, Cambridge, 19

P18MEMA031	STOCHASTIC PROCESSES						L	T	P	C
	Total Contact Hours – 60						3	1	0	4
	Prerequisite course –Mathematics / Mathematics Studied in Under Graduate									
	Course Coordinator Name & Department:- Ms.S.Kavitha/ Mathematics									
COURSE OBJECTIVES:- Learners will be familiar with basic definitions. Learners will understand the basic theorems and its applications .										
COURSE OUTCOMES (COs)										
CO1	Gain knowledge in Markov chains									
CO2	Understand the concept of limit theorems of markov chains									
CO3	Understand the concept of continuous time Markov chains									
CO4	Analyze the algorithm for renewal processes.									
CO5	Evaluate the problems in Brownian motion									
CO6	Create an real time application using Birth and Death Process.									
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	PS O1	PS O2
2	CO1	3	3	2	2	3	3	3		
	CO2	3	3	1	2	2	1	3		
	CO3	3	2	3	3	3	3	2		
	CO4	3	2	2	3	2	2	2		
	CO5	2	2	2	3	2	1	2		
	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

MARKOV CHAINS

12

Classification of General Stochastic Processes – Markov Chain – Examples – Transition Probability Matrix – Classifications of States – Recurrence – Examples of recurrent Markov Chains.

Chapter 1 : Section 3 only

Chapter 2 : Sections 1 to 6 (Omit section 7)

UNIT-II

LIMIT THEOREMS OF MARKOV CHAINS

12

Discrete renewal equation and its proof – Absorption probabilities – criteria for recurrence – Queueing models – Random walk.

Chapter 3 : Sections 1 to 7

UNIT-III

CONTINUOUS TIME MARKOV CHAINS

12

Poisson Process – Pure Birth Process – Birth and Death Process – Birth and Death process with absorbing states – Finite State Continuous time Markov Chains.

Chapter 1 : Section 2 (Poisson Process)

Chapter 4 : Sections 1,2 and 4 to 7 (Omit sections 3 and 8)

UNIT-IV

RENEWAL PROCESSES:

12

Definition and related concepts – Some special Renewal processes – Renewal equation and Elementary Renewal Theorem and its applications.

Chapter 5 : Sections 1 to 6.

UNIT-V

BROWNIAN MOTION

12

Definition – Joint probabilities for Brownian Motion – Continuity of paths and the maximum variables – Variations and extensions – Computing some functionals of Brownian Motion by Martingale methods.

Chapter 1 : Section 2 (Brownian Motion)

Chapter 6 : Sections 1 to 5 and 7A only (Omit Sections 6, and 7B,C)

TEXT BOOK

- 1.S.Karlin and H.M.Taylor. A First Course in Stochastic Processes(2nd edition), Academic Press, New York, 1975.
- 2.H..Taylor and S.Karlin, An Introduction to Stochastic Modeling (3rd Edition), Academic Press, New York, 19982

REFERENCE BOOKS

1. Cinler E., Introduction to Stochastic Processes,Prentice Hall Inc., New Jersey, 1975
2. Cox D.R. &H.D.Miller, Theory of Stochastic Processes (3rdEdn.), Chapman and Hall, London, 1983
3. Kannan D., An Introduction to Stochastic Processes, North Holland, New York 1979
4. Ross S.M., Stochastic Processes, John Wiley and Sons, New ork,1983

P18MEMA032	DATA STRUCTURES AND ALGORITHMS						L	T	P	C
	Total Contact Hours – 60						3	1	0	4
	Prerequisite course –Computer Science / Mathematics Studied in Under Graduate									
	Course Coordinator Name & Department:- Mrs. P .S.Sharmila/ Mathematics									
COURSE OBJECTIVES:- Learners will be familiar with basic data structure and algorithm analysis. Learners will understand the applications of data structure & able to apply the problem solving techniques using datastructure.										
COURSE OUTCOMES (COs)										
CO1	Understanding algorithms and elementary data structures									
CO2	Understand the detailed concept of the divide and conquer method									
CO3	Gain knowledge about the Greedy method									
CO4	Analyze the backtracking method.									
CO5	Evaluate the branch-and-bound and np-hard and np-complete problems									
CO6	Create an real time application using data and algorithms.									
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	PS O1	PS O2
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

ALGORITHMS AND ELEMENTARY DATA STRUCTURES 12

Algorithms – Structures programs – Analysis of algorithms – Stacks and Queues – Trees – Heaps and Heapsort – Sets and disjoint set union – Graphs – Hashing.

Chapter 1 : Sections 1.1 to 1.4

Chapter 2 :Sections 2.1 to 2.6

UNIT-II

THE DIVIDE AND CONQUER METHOD

12

The general method – Binary search – Finding the maximum and minimum – Mergesort – Quicksort – Selection sort – Strassen's matrix multiplication.

Chapter 3 : Sections 3.1 to 3.7

UNIT-III

THE GREEDY METHOD

12

The General method – Optimal storage on tapes – Knapsack problem – Job Scheduling with deadlines – Optimal merge pattern – Minimum spanning trees – Single source shortest paths.

Chapter 4 : Sections 4.1 to 4.7

UNIT-IV

BACKTRACKING

12

The general methods – The 8-queens problem - sum of subsets – Graph colouring – Hamiltonian Cycles – Knapsack problem.

Chapter 7 : Section 7.1 to 7.6

UNIT-V :

BRANCH-AND-BOUND AND NP-HARD AND NP-COMPLETE PROBLEMS :

12

Branch and Bound Method – 0/1 knapsack problem – Traveling salesperson – Efficiency Considerations – Basic concepts of NP-Hard problems – Cook's theorem - NP-Hard graph problems - NP-Hard Scheduling Problems.

Chapter 8 : Sections 8.1 to 8.4

Chapter 11: Sections 11.1 to 11.4 (omit 11.5 and 11.6)

TEXT BOOK

- 1.E.Horowitz and S.Sahni. Fundamentals of Computer Algorithm, Galgotia Publications New Delhi, 1984
- 2.A.V.Aho, J.E.Hopcroft, J.D Ullman, The Design and Analysis of Computer Algorithms. Addison – Wesley, Reading', MASS. 1974.

REFERENCE BOOKS

1. D.E.Knuth, The Art of Computer Programming, Sorting and Searching. Vol.3. Addison-Wesley, Mass.1973.
2. A.Nijenhuis and H.S.Wilf, Combinatorial Algorithms, Academic Press. New York 1975.
3. M.Garey and D.Johnson, Computers and Intractability: A Guide to the theory of NP-Completeness. Johnson, Freeman and San Francisco, 1979.

P18MEMA033	ALGEBRAIC THEORY OF NUMBERS						L	T	P	C
	Total Contact Hours – 60						3	1	0	4
	Prerequisite course –Mathematics / Mathematics Studied in Under Graduate									
	Course Coordinator Name & Department:- Ms.S.Kavitha/ Mathematics									
COURSE OBJECTIVES:- Learners will be familiar with basic definitions. Learners will understand the basic theorems and its applications .										
COURSE OUTCOMES (COs)										
CO1	Gain knowledge in algebraic background									
CO2	Understand the detailed concept of algebraic numbers									
CO3	Understanding the concepts of quadratic and cyclotomic fields									
CO4	Analyze the algorithm for Euclidean domains									
CO5	Evaluate the problems in ideals									
CO6	Create an real time application using a known theorems.									
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	PS O1	PS O2
2	CO1	2	3	3	1	1	1	3		
	CO2	2	3	1	2	2	3	2		
	CO3	3	1	3	3	3	3	3		
	CO4	2	3	2	2	1	2	2		
	CO5	2	3	2	3	1	1	3		
	CO6	1	3	3	2	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

ALGEBRAIC BACKGROUND

12

Rings and Fields- Factorization of Polynomials – Field Extensions – Symmetric Polynomials – Modules – Free Abelian Groups.

Chapter 1: Sec. 1.1 to 1.6

UNIT-II :

ALGEBRAIC NUMBERS:

12

Algebraic numbers –Conjugates and Discriminants – Algebraic Integers – Integral Bases – Norms and Traces – Rings of Integers.

Chapters 2: Sec. 2.1 to 2.6

UNIT-III

QUADRATIC AND CYCLOTOMIC FIELDS

12

Quadratic fields and cyclotomic fields

Factorization into Irreducibles:

Trivial factorization – Factorization into irreducibles – Examples of non-unique factorization into irreducibles.

Chapter 3: Sec. 3.1 and 3.2 ; Chapter 4: Sec. 4.1 to 4.4

UNIT-IV

EUCLIDEAN DOMAINS

12

Prime Factorization – Euclidean Domains – Euclidean Quadratic fields - Consequences of unique factorization – The Ramanujan –Nagell Theorem.

Chapter 4: Sec. 4.5 to 4.9

UNIT-V

IDEALS:

12

Prime Factorization of Ideals – The norms of an Ideal – Non-unique Factorization in Cyclotomic Fields..

Chapter 5 : Sec. 5.1 to 5.4

TEXT BOOK

1. Stewart and D.Tall. Algebraic Number Theory and Fermat's Last Theorem (3rd Edition) A.K.Peters Ltd., Natick, Mass. 2002.
2. P.Ribenboim, Algebraic Numbers, Wiley, New York, 1972.
- P. Samuel, Algebraic Theory of Numbers, Houghton Mifflin Company, Boston, 1970.

REFERENCE BOOKS

1. Z.I.Borevic and I.R.Safarevic, *Number Theory*, Academic Press, New York, 1966.
2. J.W.S.Cassels and A.Frohlich, *Algebraic Number Theory*, Academic Press, New York, 1967

P18MCMA401	COMPLEX ANALYSIS- II						L	T	P	C
	Total Contact Hours – 60						3	1	0	4
	Prerequisite course –Mathematics / Mathematics Studied in Under Graduate									
	Course CoordinatorName & Department:- Mr.V.Nandakumar/ Mathematics									
COURSE OBJECTIVES:- Learners will be familiar with basic definitions. Learners will understand the basic theorems and its applications .										
COURSE OUTCOMES (COs)										
CO1	Gain knowledge in Riemann zeta function and normal families									
CO2	Understand the detailed concept of Riemann mapping theorem									
CO3	Gain knowledge about elliptic functions									
CO4	Analyze the algorithm for Weierstrass theory									
CO5	Evaluate the problems in analytic continuation									
CO6	Create an real time application using a known theorems.									
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	PS O1	PS O2
2	CO1	3	2	1	1	1	1	2		
	CO2	3	3	3	2	2	2	2		
	CO3	3	2	3	1	3	3	3		
	CO4	3	2	2	3	1	2	3		
	CO5	2	2	2	1	3	3	1		
	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

RIEMANN ZETA FUNCTION AND NORMAL FAMILIES

12

Product development – Extension of $\zeta(s)$ to the whole plane – The zeros of zeta function – Equicontinuity – Normality and compactness – Arzela's theorem – Families of analytic functions – The Classical Definition

Chapter 5 : Sections 4.1 to 4.4, Sections 5.1 to 5.5

UNIT-II

RIEMANN MAPPING THEOREM

12

Statement and Proof – Boundary Behaviour – Use of the Reflection Principle. Conformal mappings of

polygons :Behaviour at an angle Schwarz-Christoffel formula – Mapping of a rectangle.Harmonic Functions : Functions with mean value property – Harnack's principle.
Chapter 6 : Sections 1.1 to 1.3 (Omit Section 1.4)Sections 2.1 to 2.3 (Omit section 2.4), Section 3.1 and 3.2

UNIT-III

ELLIPTIC FUNCTIONS

12

Simply periodic functions – Doubly periodic functions
Chapter 7 : Sections 1.1 to 1.3, Sections 2.1 to 2.4

UNIT-IV

WEIERSTRASS THEORY

12

The Weierstrass $\wp$ -function – The functions $\zeta(s)$ and $\sigma(s)$ – The differential equation – The modular equation $\lambda(\tau)$ – The Conformal mapping by $\lambda(\tau)$.
Chapter 7 : Sections 3.1 to 3.5

UNIT-V

ANALYTIC CONTINUATION

12

The Weierstrass Theory – Germs and Sheaves – Sections and Riemann surfaces – Analytic continuation along Arcs – Homotopic curves – The Monodromy Theorem – Branch points.
Chapter 8 : Sections 1.1 to 1.7

TEXT BOOK

- 1.Lars V. Ahlfors, Complex Analysis, (3rd Edition) McGraw Hill Book Company, New York, 1979.
- 2.D.Sarason, Notes on Complex function Theory, Hindustan Book Agency, 1998

REFERENCE BOOKS

- 1.H.A. Priestly, Introduction to Complex Analysis, Clarendon Press,Oxford, 2003.
- 2.J.B.Conway, Functions of one complex variable, Springer International Edition, 2003
- 3.T.WGamelin, Complex Analysis, Springer International Edition, 2004

P18MCMA402	DIFFERENTIAL GEOMETRY						L	T	P	C
	Total Contact Hours – 60						3	1	0	4
	Prerequisite course –Mathematics / Mathematics Studied in Under Graduate									
	Course Coordinator Name & Department:- Mr.V.Nandakumar /Mathematics									
COURSE OBJECTIVES:- Learners will be familiar with basic definitions and algorithm analysis. Learners will understand the applications of algorithms & able to apply the problem solving techniques .										
COURSE OUTCOMES (COs)										
CO1	Gain basic knowledge in curves in the plane and in space									
CO2	Understand the concept of surfaces in space									
CO3	Apply suitable formulae for curvature of surfaces									
CO4	Analyze the algorithm for geodesics									
CO5	Understand the concepts and theorem egregium of gauss									
CO6	Create an real time application using differential equations.									
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	PS O1	PS O2
2	CO1	1	3	1	1	1	1	1		
	CO2	2	3	1	2	2	2	3		
	CO3	3	2	3	1	3	3	3		
	CO4	3	2	2	2	1	2	2		
	CO5	2	2	2	1	3	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

CURVES IN THE PLANE AND IN SPACE

12

Curves, parametrisation, arc length, level curves, curvature, plane and space curves.

Chapters 1 and 2.

UNIT II

SURFACES IN SPACE

12

Surface patches, smooth surfaces, tangents, normals, orientability, examples of surfaces, lengths of curves on surfaces, the first fundamental form, isometries, surface area.
Chapter 4 - 4.1, 4.2, 4.3, 4.4, 4.7 and Chapter 5 - 5.1, 5.2, 5.4

UNIT III

CURVATURE OF SURFACES

12

The second fundamental form, Curvature of curves on a surface, normal, principal, Gaussian and mean curvatures, Gauss map.

Chapter 6 - 6.1, 6.2, 6.3 and Chapter 7 - 7.1, 7.5, 7.6

UNIT IV

GEODESICS

12

Geodesics, geodesic equations, geodesics as shortest paths, geodesic coordinates.

Chapter 8 - 8.1, 8.2, 8.4, 8.5

UNIT V

THEOREMA EGREGIUM OF GAUSS

12

TheoremaEgregium, isometries of surfaces, Codazzi-Mainardi equations, compact surfaces of constant Gaussian curvature.

Chapter 10

TEXT BOOK

1.A. Pressley, Elementary Differential Geometry, Springer-Indian Edition, 2004.

2.M.P. do Carmo, Differential Geometry of Curves and Surfaces, Prentice-Hall, 1976.

REFERENCE BOOKS :

1. J.A. Thorpe, Elementary Topics in Differential Geometry, Springer-Indian edition.

2. E.D. Bloch, A First Course in Geometric Topology and Differential Geometry, Birkhauser, 1997.

P18MCMA403	FUNCTIONAL ANALYSIS						L	T	P	C
	Total Contact Hours – 60						3	1	0	4
	Prerequisite course –Mathematics / Mathematics Studied in Under Graduate									
	Course Coordinator Name & Department:- Dr.P.Sumathi /Mathematics									
COURSE OBJECTIVES:- Learners will be familiar with basic algorithm and analysis. Learners will understand the theorems and its applications										
COURSE OUTCOMES (COs)										
CO1	Gain knowledge in Banach spaces									
CO2	Understand the concept of boundedness principle									
CO3	Understand the concepts of duals and transposes									
CO4	Analyze the concepts of product spaces									
CO5	Gain knowledge about the operators and adjoints									
CO6	Understanding theorems in Spectrum and Numerical range									
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	PS O1	PS O2
2	CO1	3	3	3	3	2	1	3		
	CO2	3	3	1	2	2	2	3		
	CO3	3	2	3	1	3	3	2		
	CO4	3	2	2	3	3	2	2		
	CO5	2	2	2	1	1	1	2		
	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

BANACH SPACES

12

Normed spaces, Continuity of linear maps, Hahn-Banach Theorems, Banach Spaces.
Chapters II (omit sections 6.8, 7.11, 7.12, 8.4)

UNIT II

BOUNDEDNESS PRINCIPLE

12

Uniform boundedness principle, Closed Graph and Open Mapping theorems, Bounded Inverse Theorem, Spectrum of a bounded operator.

Chapter III (omit sections 9.4 to 9.7, 11.2, 11.4, 11.5, 12.6, 12.7)

UNIT III

DUALS AND TRANSPOSES

12

Duals and Transposes, Weak and weak *convergence, Reflexivity Chapter IV (omit sections 13.7, 13.8, 14, 15.5 to 15.7, 16.5 to 16.9)

UNIT IV

PRODUCT SPACES

12

Inner Product Spaces, Orthonormal sets, Best approximation, Projection and Riesz Representation theorems.

Chapter VI (omit sections 23.2, 23.4, 23.6, 24.7, 24.8)

UNIT V

OPERATORS AND ADJOINTS

12

Bounded operators and adjoints, Normal, unitary and self adjoint Operators, Spectrum and Numerical range, Compact selfadjoint operators

Chapter VII (omit sections 26.4, 26.5 26.6, 27.4 to 27.7, 28.7, 28.8)

TEXT BOOK

1.B.V. Limaye, Functional Analysis, New Age International, 1996.

2.E. Kreyszig, Introductory Functional Analysis with Applications, John Wiley & Sons, New York., 1978.

REFERENCE BOOKS

1. W.Rudin Functional Analysis, Tata McGraw-Hill Publishing Company, New Delhi , 1973

2. G.Bachman & L.Narici, Functional Analysis Academic Press, New York , 1966.

3. C. Goffman and G.Pedrick, First course in Functional Analysis, Prentice Hall of India, New Delhi, 1987

4. M.Thamban Nair, Functional Analysis. A First Course, Prentice Hall of India, New Delhi, 2002

P18MCMA404	NUMBER THEORY AND CRYPTOGRAPHY						L	T	P	C
	Total Contact Hours – 60						3	1	0	4
	Prerequisite course –mathematics / Mathematics Studied in Under Graduate.									
	Course Coordinator Name & Department:- Mrs.P.S.Sharmila/Mathematics									
COURSE OBJECTIVES:- Learners will identify methods appropriate for solving problems. Apply methods to specific problems. Learners will know about encryption and decryption method.										
COURSE OUTCOMES (COs)										
CO1	Gain knowledge in elementary number theory.									
CO2	Understand the concept of algorithmic design in crypto systems									
CO3	Understand the concept of quadratic residues									
CO4	Analyze the algorithm for its complexity and performance									
CO5	Evaluatethe problems in cryptography									
CO6	Analyze the algorithm for elliptic curve crypto 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	PS O1	PS O2
2	CO1	1	3	1	2	1	1	3		
	CO2	3	3	3	2	2	2	2		
	CO3	3	2	3	2	3	3	3		
	CO4	3	2	2	1	2	2	2		
	CO5	2	2	2	3	1	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

ELEMENTARY NUMBER THEORY

12

Time Estimates for doing arithmetic – divisibility and Euclidean algorithm – Congruences – Application to factoring. (Chapter 1)

UNIT-II

CRYPTO SYSTEMS

12

Introduction to Classical Crypto systems – Some simple crypto systems – Enciphering matrices DES (Chapter 3)

UNIT-III

QUADRATIC RESIDUES

12

Finite Fields, Quadratic Residues and Reciprocity (Chapter 2)

UNIT-IV

CRYPTOGRAPHY

Public Key Cryptography (Chapter 4)

UNIT-V

ELLIPTIC CURVE CRYPTO SYSTEMS

Primality, Factoring, Elliptic curves and Elliptic curve crypto systems (Chapter 5, sections 1,2,3 &5 (omit section 4), Chapter 6, sections 1& 2 only)

TEXT BOOK

1. Neal Koblitz, A Course in Number Theory and Cryptography, Springer-Verlag, New York, 1987
2. N. Koblitz, Algebraic Aspects of Cryptography, Springer 1998

REFERENCE BOOKS

1. Niven and H.S. Zuckermann, *An Introduction to Theory of Numbers* (Edn. 3), Wiley Eastern Ltd., New Delhi, 1976
2. David M. Burton, Elementary Number Theory, Brown Publishers, Iowa, 1989
3. K. Ireland and M. Rosen, A Classical Introduction to Modern Number Theory, Springer Verlag, 1972

P18PRMA4P1	PROJECT (DISSERTATION AND VIVA-VOCE)						L	T	P	C	
	Total Contact Hours – 45						0	0	20	10	
	Prerequisite course – Mathematics Studied in Higher Secondary studies										
	Course Coordinator Name & Department: -Mr.V.Nandakumar/Mathematics										
COURSE OBJECTIVES:- To make the students understand the importance of experimental and theoretical analysis. Students can develop a Scientific approach in solving a problems related to Mathematics.											
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	PS O1	PS O2	
2	CO1	3	3	1	1	1	2	3			
	CO2	3	3	1	1	1	2	3			
	CO3	3	2	1	1	1	2	3			
	CO4	3	2	1	1	1	2	3			
	CO5	2	2	1	1	1	2	3			
	CO6	3	3	1	1	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									

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 Computer Application. 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

P18OEBA001	ADVERTISING AND SALES MANAGEMENT							L	T	P	C
	Total Contact Hours – 30							2	0	0	2
	Prerequisite course –UG Level										
	Course Coordinator Name & Department:- T Manjiniprakash/BBA										
COURSE OBJECTIVES: - - Identify the terms and concepts that are commonly used in promotion and advertising. - Demonstrate preparation to comprehend the basic advertising. - Give the relationship which underlines these terms and conceptsTo 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.											
COURSE OUTCOMES (COs)											
CO1	Students gain basic knowledge of Advertising its functions, roles and development of advertising.										
CO2	Know about Advertising design and its strategies.										
CO3	Expose on Advertising, media and about its types.										
CO4	To forecast sales and its techniques used in management.										
CO5	Students were enriched about salesmanship, sales planning, budgeting.										
CO6	Develop an advertising plan and present and defend it persuasively.										
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	PO 2	PO3	PO4	PO5	PO6	PO7	PS O1	PS O2	
2	CO1	1	1	2	2	2	3	3			
	CO2	1	1	2	2	2	2	3			
	CO3	1	1	2	2	2	3	3			
	CO4	1	1	2	2	3s	3	3			
	CO5	1	1	2	3	2	2	3			
	CO6	1	1	2	2	2	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									

Introduction to Advertising- Definition -Roles of Advertising- Functions of Advertising-Steps in Development of Advertisement

Unit – II 6

Advertising Design- Appeals- Structure of an Advertisement - Message Strategies - Cognitive strategy- Executorial Strategies-Creating Advertising- Advertising Effectiveness.

Unit – III 6

Advertising Media - Merit and demerits- Kinds of Advertising - Advertising Media- print media - Broadcasting media- Non-media advertising- online advertising.

Unit - IV 6

Sales Management - Defining - Objectives -Strategies- Sales Executives – Functions -Qualities - Sales Presentation Techniques - Emerging Trends in Sales Management.

Unit - V 6

Selling Concept - Objectives- scope and techniques of Salesmanship- Sales Planning- Importance – process- Sales Budget- Objectives-uses of sales Budget.

Text book

1. Advertising & promotion: George E.Belch, THM
2. Advertising Management, Dr. Varma&Aggarwal, kingBooks

References:

1. Sales promotion and advertising management by M .N.Mishra. Himalaya Publication.
2. Advertising and sales management by SanjeevChauhan (Astha publication)
3. Anderson, Hair, Bush: Professional Sales Management, McGraw Hill, Singapore.

T Manjiniprakash

CourseCoordinator

HOD

	BPO MANAGEMENT	L	T	P	C
P18OEBA002	Total Contact Hours – 30	2	0	0	2

		Prerequisite course – UG Level										
		Course Coordinator Name & Department:- .P.Srinivasan/ Business Administration										
COURSE OBJECTIVES: - - To familiarize the students with the basic fundamentals of BPO industry - To impart knowledge on BPO industry - To enable the students on the concept of various decisions in Business Process Outsourcing												
COURSE OUTCOMES (COs)												
CO1	Develop a strategic understanding of the concepts of BPO’s and its benefits											
CO2	Explaining various models used in functioning of BPO’s and Trends.											
CO3	Describe the opportunities and challenges in Human Resources BPO											
CO4	Analyzes about call centers its functions, processes and classifications											
CO5	Developing efficiency in understanding the customers and capabilities in handling calls.											
CO6	To understand the future trends in BPO industry											
Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low												
	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2		
	CO1	3	2	1	2	2	1	2				
	CO2	3	1	2	1	3	2	1				
	CO3	3	2	1	2	2	1	2				
	CO4	2	3	2	1	2	1	3				
	CO5	2	2	1	2	1	3	2				
	CO6	1	2	2	3	1	2	1				
3	Category	Humanities & Social Studies (HS)	Basic Sciences (BS)	Enngsciences(E S)	Professional	Professional Core (PC)	Non-Major Elective (NE)	Open Elective (OE)	Any other	Project/Term Paper/ Seminar/ Internship(PR)		
								✓				
4	Approval	Academic Council Meeting										

	CALL CENTER MANAGEMENT-Voice and Non Voice	L	T	P	C

UNIT-II

6

Healthcare BPO – Structure of the American Healthcare Sector – Activity Profile –Future Trends and Threats – Case Study – Cbay Systems.

UNIT - III

6

Human Resource BPO – Reasons for outsourcing HR – Activities involved in HR BPO – HR Outsourcing Trends – Career in HR BPO – Emerging BPO Domains – Media and Entertainment BPO – Publishing BPO.

UNIT – IV

6

Call Centres – Functions – Processes – classifications – Telemarketing – Tele selling – Preparing for a Job – Approach – Training – Selection Process.

UNIT – V

6

Improving Efficiency – Handling Calls – Team Player – Pleasing the Customers – Converse efficiently – Reducing stress.

TEXT BOOKS:

- 1.BPO Industry in India by S K Awasthi by Jain Book
- 2.Business Process Outsourcing: Its Prospects and Challenges by Barua.

REFERENCE BOOKS

- i) SudhindraMokhasi(2009) ,BPO – Sutra : True stories from India’s BPO and call centres, -Rupa& Co.
- ii) Kulkarni, Sarika.(2005), Business process outsourcing – Delhi, Jaico Publishing House.
- iii) Shikapur, Deepak(2004), BPO Digest. Ameya Inspiring Books.

Mr.P.Srinivasan

CourseCoordinator

HOD

		Total Contact Hours –30					2	0	0	2
		Prerequisite course – UG Level								
		Course Coordinator Name & Department:-A.Jhoncy / BBA								
COURSE OBJECTIVES:- • Develop and motivate a call centre team. • Get the most out of call monitoring technology and prepare effective management reports. • React to and plan for operational bottlenecks. • Give meaningful feedback to call-centre agents and set achievable goals and targets. • Students will learn about the roles and methods of different kinds of call centers. They will apply this by designing their own call center and trying to anticipate customer needs.										
COURSE OUTCOMES (COs)										
CO1	Gaining a basic knowledge about call centers its functioning and classifications.									
CO2	To know about handling the Issues and problems related to calls in a efficient manner.									
CO3	Gives knowledge of technical communications, speech process and educate conversation of oral skills.									
CO4	Students acquire knowledge towards pre-interview about Interview questions and answering techniques									
CO5	Analyses fully about the medias of communications.									
CO6	Demonstrate awareness of the pragmatics of call center planning and operation									
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	PS O1	PS O2
	CO1	1	3	3	1	1	1	3		
	CO2	1	3	3	2	2	1	3		
	CO3	1	3	3	2	1	1	3		
	CO4	1	3	2	2	1	1	3		
	CO5	1	3	2	1	1	1	3		
	CO6	1	3	3	2	1	1	3		
	Category	Humanities & Social Studies (HS)	Basic Sciences (BS)	Engg Sciences (ES)	Professional Core	Core Elective	Non-Major Elective (NE)	Open Elective (OE)	Any other	Project/Term Paper/ Seminar/ Internship(PR)
								✓		
4	Approval	Academic Council Meeting								

UNIT – I

6

Call centers – Meaning – Functions – Processes - Classifications – Tele selling – Types of call centers.

UNIT – II

6

Improving Efficiency – Handling calls – Team Players – Components and working of call center – Issues and problems.

UNIT – III

6

Nature of Technical communication: Stages of communication – Nature of Technical Communication - The speech process – Conversation and Oral skills.

UNIT – IV

6

Job Interview: Pre – Interview preparation techniques – Interview questions – Answering Strategies – Frequently asked Interview questions.

UNIT – V

6

Communication media – Telephone – Fax – Internet – Email – Video conferencing.

TEXT BOOKS

1. Brad Cleveland - Call Center Management on Fast Forward: Succeeding in the New Era of Customer Relationships (3rd Edition) Third Edition,
2. Mr. Thomas Anthony Laird - Advice from a Call Center Geek: Rethinking Call Center Operations,

REFERENCE BOOKS

1. W. Stallings “Data and Computer Communication” Pearson Education, 5 Edition, 2001.
2. M. AshrajRizvi,” Effective Technical Communication”, Tata McGraw – Hill Education, 2005.
3. R.S.N.Pillai&Bagavathi – Modern commercial correspondence.

A.Jhoncy

Course Coordinator

HOD

P18OEBA004	CUSTOMER RELATIONSHIP MANAGEMENT	L	T	P	C
	Total Contact Hours – 30	2	0	0	2
	Prerequisite course – UG Level				
	Course Coordinator Name & Department:- Dr.DArun Kumar /BBA				

COURSE OBJECTIVES: - • To Popularizethe students with the basic fundamentals of CRM. • To improve knowledge & skills on Customer relationship of Marketing strategy. • To develop the students on the concept of Customer service.											
COURSE OUTCOMES (COs)											
CO1	To popularize with the basicsof CRM.										
CO2	Can increase awareness about Customer relationship.										
CO3	Able to be aware of the concept of Customer service.										
CO4	Can respond to the concept of Customer needs.										
CO5	Develop confidence in the practical aspects of Customer Satisfaction										
CO6	Identify the main Customer Expectations.										
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	PO 2	PO3	PO4	PO5	PO6	PO7	PS O1	PS O2	
2	CO1	1	1	1	1	1	1	3			
	CO2	1	1	1	2	2	2	3			
	CO3	1	1	3	1	3	1	3			
	CO4	1	1	2	1	1	2	3			
	CO5	1	1	2	1	1	1	3			
	CO6	1	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

CRM – Introduction – Definition – Need for CRM – Customer satisfaction – Customer loyalty – Product Marketing – Direct Marketing-

UNIT – II

6

Customer learning relationship – Key stages of CRM - Force driving CRM – Benefits of CRM – Growth of CRM Market in India – Key principles of CRM.

UNIT - **III**

6

CRM – Program – Ground work for effective use of CRM – Components of CRM – Types of CRM.

UNIT - **IV**

6

CRM Process - Frame work – Governance process- Performance evaluation process.

UNIT – V **6**

Use of Technology in CRM – Call center process – CRM Technology tools – Implementation – Requirements analysis – selection of CRM Package – reasons and failure of CRM.

TEXT BOOK

1. Kristin Anderson & Carol Kerr – Customer Relationship Management – McGrawHill 2002
2. Sheth – Customer Relationship Management – McGraw Hill Edition 1st Edition 2000

REFERENCE BOOK

1. Dr. P .Sheela Rani – Customer Relationship Management – Margham Publication.
2. K. Balasubramaniam – Customer Relationship Management – GIGO Publication, 2005.
3. Dr. Ravi Kalakota E – business – Road map for success, Pearson education Asia, 2000.

Dr.D.ArunKumar

CourseCoordinator

HOD

	ENTREPRENEUR DEVELOPMENT	L	T	P	C
	Total Contact Hours – 30	2	0	0	2

P18OEBA005		Prerequisite course – UG Level								
		Course Coordinator Name & Department:- Dr.DArun Kumar /BBA								
COURSE OBJECTIVES: - - To make publicity on the students with the basic fundamentals of Entrepreneur Development - To improve knowledge & skills on Entrepreneurship. - To develop the students on the concept of Entrepreneurial skills.										
COURSE OUTCOMES (COs)										
CO1		To popularize with the basics of Entrepreneur development.								
CO2		Can increase awareness about Entrepreneurship.								
CO3		Able to be aware of the concept of Entrepreneurial skills.								
CO4		Can respond to the concept of Entrepreneurial knowledge.								
CO5		Develop confidence in the practical aspects of Business Opportunity.								
CO6		Identify the main Innovations in Entrepreneurial Development.								
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	PS O1	PS O2
2	CO1	1	1	1	1	1	1	3		
	CO2	1	1	1	2	2	2	3		
	CO3	1	1	3	1	3	1	3		
	CO4	1	1	2	1	1	2	3		
	CO5	1	1	2	1	1	1	3		
	CO6	1	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

Introduction to Entrepreneurship: Meaning and concept of entrepreneurship - the history of entrepreneurship development - role of entrepreneurship in economic development

UNIT – II

6

The Entrepreneur: Meaning of entrepreneur - the skills required to be an entrepreneur, and role models, mentors and support system.

UNIT

–

III

6

Business Opportunity Identification: Business ideas, methods of generating ideas - legal form of new venture, protection of intellectual property -marketing the new venture.

UNIT – IV

6

Preparing a Business Plan: Meaning - significance of a business plan - components -feasibility study.

UNIT – V

6

Financing the New Venture: Importance - types of ownership securities - venture capital - types of debt securities -determining ideal debt-equity mix - financial institutions and banks.

TEXT BOOK

1. Robert D. Hisrich, Mathew J Manimala, Michael P Peters, Dean A Shepherd, “Entrepreneurship”, 9e,McGraw Hill Education, 2014.
2. Peter F. Drucker, “Innovation and Entrepreneurship”,Harper Collins, 2009.

REFERENCE BOOK

1. John Bessant, Joe Tidd, “Innovation and Entrepreneurship”,2e,Wiley India Private Limited, 2012.
2. Robin Lowe, Sue Marriott,"Enterprise: Entrepreneurship and Innovation: Concepts,Contexts and Commercialization"1e,Routledge, 2012.
3. VeeraBhadrapaHavinal – Management Entrepreneurship – New Age International Publishers.

Dr.D.ArunKumar

CourseCoordinator

HOD

	ADVANCE HUMAN RESOURCE MANAGEMENT	L	T	P	C
	Total Contact Hours – 30	2	0	0	2

P18OEBA006		Prerequisite course – UG Level								
		Course Coordinator Name & Department:- P.Srinivasan / BBA								
COURSE OBJECTIVES:-										
• Today’s competitive business environment owes its success to effective management of its human resource. • The quality of the organization’s employees, their attitude, behavior and satisfaction with their jobs, and their behavior towards ethics and values and a sense of fair treatment all impact the firm’s productivity, level of customer service, reputation, and survival. • The students of human resources management must aware of basic aspects of human resource management to understand the functioning of human resource management in an organizational setting. • Students gained knowledge in the present day human resources development practice by incorporate themselves in the changing environment of HRM.										
COURSE OUTCOMES (COs)										
CO1	Identify how firms gain a sustainable competitive advantages through people									
CO2	To be aware of the responsibility managers of have concerning human resource management									
CO3	Identify the importance of change management.									
CO4	To implement basics compensation and performance appraisal									
CO5	Importance of labour welfare and grievance handling for employment									
CO6	Understand the importance of Employee participation and Relations.									
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	PS O1	PS O2
2	CO1	1	3	3	1	2	1	3		
	CO2	1	2	3	2	1	2	3		
	CO3	1	2	3	2	2	3	3		
	CO4	1	3	2	1	1	3	3		
	CO5	1	2	3	2	2	1	3		
	CO6	1	2	2	2	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

UNIT – II**6**

Recruitment & Placement: Sources, Developing and using application forms - IT and online recruitment - Selection process, basic testing concepts - types of test - work samples & simulation - selection techniques – interview - Designing & conducting the effective interview - computer aided interview.

UNIT – III**6**

Training & Development: Employee Orientation- Training process- Need analysis- Training techniques- special purpose training- Performance appraisal: Methods - Problem and solutions - MBO approach - Performance appraisal in practice.

UNIT – IV**6**

Basic Compensation & Pay plans - factors determining pay rate - Current trends in compensation - Computerized job evaluation - financial incentives - benefits - Insurance benefits - retirement benefits – welfare measure

UNIT – V**6**

Trade unions - Discipline administration - grievances handling - Labour Welfare: Importance & Implications of labour legislations - Employee health.

TEXT BOOKS

1. Dr. R.Venkatapathy&AssissiMenacheri, Industrial Relations &Labour Welfare, Adithya Publications, CBE, 2001. 5. Robert L.Gibson and Marianne H.Mitchell, Introduction to Counseling and Guidance, VI edition, PHI, 2005
- 2.
3. L.M. Prasad – Human Resource Management – S. Chand & Sons – 2007.

REFERENCEBOOKS

1. Gary Dessler, "
2. zo& Stephen P.Robbins, Personnel/Human Resource Management, Third edition, PHI/Pearson.
3. VSP Rao, Human Resource Management: Text and cases, First edition, Excel Books, New Delhi - 2000.
4. P.SrinivasanHuman Resource Management", Seventh edition, Prentice-Hall of India P.Ltd., Pearson.

David A. DeCen

D.K.SOWMIYALAKSHMI

Course Coordinator**HOD**

P18OEBA007	LOGISTICS & SUPPLY CHAIN MANAGEMENT	L	T	P	C
	Total Contact Hours – 30	2	0	0	2

		Prerequisite course: UG Level								
		Course Coordinator Name & Department:- T.Manjiniprakash / BBA								
COURSE OBJECTIVES:- - To make the students to understand the usefulness of logistics and supply chain. - This document lists the course’s major subject areas and the knowledge, comprehension, application, analysis, synthesis and evaluation skills that they are designed to impart. - Identify the sources of cost in a supply chain. - Define inventory and types of inventory in a supply chain. - Define transportation cost and identify the factors that contribute to this cost. - Calculate inventory cost and transportation cost for a logistics problem. - Define fixed and variable cost. - Understand the economies of scale in transportation and inventory cost										
COURSE OUTCOMES (COs)										
CO1	Identify and Analyze Business Models, Business Strategies and corresponding Competitive Advantage.									
CO2	Formulate and implement Warehouse Best Practices and Strategies.									
CO3	Plan Warehouse and Logistics operations for optimum utilization of resources									
CO4	Apply logistics and purchasing concepts to improve supply chain operations									
CO5	Apply quality management tools for process improvement									
CO6	Create an ideas about logistics and supply chain 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	1	1	2	1	1	1	3		
	CO2	1	2	3	3	2	3	3		
	CO3	1	1	3	3	3	3	3		
	CO4	1	1	2	3	1	2	3		
	CO5	1	2	2	1	1	1	3		
	CO6	1	1	3	2	3	3	3		
3	Category	Humanities & Social Studies (HS)	Basic Sciences (BS)	Engg Sciences (ES)	Professional Core	Core Elective	Non-Major Elective (NE)	Open Elective (OE)	Any other	Project/Term Paper/ Seminar/ Internship(PR)
							✓			
4	Approval	Academic Council Meeting								

UNIT

-I

Logistics management and Supply Chain management - Definition, Evolution, Importance. The concepts of logistics. Logistics relationships - Functional applications - Logistics Organization - Logistics in different industries.

UNIT

–II

6

Logistics Activities: – objectives, solution. Customer Service, Warehousing and Material Storage, Material Handling, information handling and procurement Transportation and Packaging - Reverse Logistics - Global Logistics

UNIT-III

6

Fundamentals of Supply Chain - Development of SCM - Strategic Supply Chain Management and Key components - Drivers of Supply Chain Performance – key decision areas – External Drivers of Change.

UNIT-IV

6

Supply Chain Drivers and Design Drivers of supply chain performance: Framework for structuring Facilities warehouse – Inventory – Transportation – Information - Sourcing, and Pricing – Revenue management.

UNIT-V

6

Demand and Inventory Aggregate Planning in a Supply Chain: role - strategies Implementation Responding to predictable variability in supply chain – Types of supply chains - creating responsive supply chains lean

TEXT BOOKS

1. Supply Chain Management: Ronald H. Ballou, Samir K. Srivastava, Pearson Education Ltd, Jan 2007.
2. Supply Chain Management: Anil Sinha, McGraw Hill Education, August 2011.

REFERENCE BOOKS

1. Logistics And Supply Chain Management: Martin Christopher, Pearson Education Ltd, 2016.

4	Approval	Academic Council Meeting

UNIT -I 6

Introduction: Meaning, functions and importance of office management; office management and organization. Principles of office management and organization. Principal departments of modern office.

UNIT-II 6

Office Manager: qualities of office manager. The authorities and responsibilities of an office manager. Office accommodation: Selection of site. Office layout. Environment and working conditions.

UNIT-III 6

Office equipment's - Reproduction equipment - Typewriter - Duplicators - Photo Copier - Communication Equipment - Intercom - Telephone - Use of Computers in Office Management Office System - Procedure - Routine - And methods - Paper work in office Filling functions.

UNIT-IV 6

Office Communication: Various means of communication- Their use, Correspondence through Internet - Office Correspondence -Central vs. Departmental Correspondence - Handling Mail - Postal Services - Oral written - Internal and external communication - Records Management Types - Forms Controls - Principles - Foremost -Continuous stationery

UNIT-V 6

Office Supervisor - Meaning and characteristics of Supervisor - Status - Place and Role of Supervisor - Effective Supervisor - Qualification - skill of Supervisor.

TEXT BOOKS

1. Modern Office Management: N. D Sharma, And Publishers, Jan 2006.
2. Office Management: Prashansa K. Ghosh, S. Chand & Sons, Jan 2010

REFERENCE BOOKS

1. Office Management: R.S.N Pillai&Bhagavathi, S. Chandler & Come, Dec 2010.
2. Office Management: R. Nangia, G. K Gupta, Crescent Publishing House.
3. Office Management: Dr. R. K Chopra, PriyankaGauri, Himalaya Publishing House, Jan 2017.
4. Of Non-Trading Organization-Receipts And Payment Account- Income And Expenditure Account

P18OEVC001	PHOTOGRAPHY AND VIDEOGRAPHY						L	T	P	C
	Total Contact Hours – 45						2	0	0	2
	Prerequisite – UG Level									
	Course Coordinator Name & Department:- L.Rakesh – Dept of Visual Communication									
COURSE OBJECTIVES										
- To understand the fundamentals of Photography and Videography - To examine the technical factors of indoor and outdoor photography and Videography - To enable the students to equip themselves to become a photography and Videography professionals.										
COURSE OUTCOMES (COs)										
CO1		Can analyze the fundamentals of Photography and Videography								
CO2		Understanding of the camera operations								
CO3		Evaluating the lighting								
CO4		Can be aware of the wrong exposures								
CO5		Can promote various types of photography and Videography								
CO6		Understanding the concept of photo-journalism								
	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	1	3	2	1	2	2	1		
	CO3	2	1	3	1	2	1	3		
	CO4	2	2	3	1	2	3	1		
	CO5	2	1	1	1	1	1	1		
	CO6	3	3	3	3	3	3	3		
3	Category	Humanities & Social Studies	Basic Sciences (BS)	Engg Sciences (ES)	Professional Core (PC)	Core Elective (CE)	Non-Major Elective	Open Elective (OE)	Any other	
					✓					
4	Approval	Academic Council Meeting								

Human Eye and Camera. Basics of Camera (aperture, shutter speed, focal length, f-stop, depth of field etc.,) Camera operations, Introduction to Television Production, Types of telecasting, Television Crew, an overview of direction.

UNIT-II:

6

Types of Still and video cameras. Types of Lenses. Visual Perception, Art direction, floor management-indoor & outdoor, production management, budget preparation. Locations: In-door, set, on-sights sets, - Outdoor on-sight sets, blue matte. Etc.,

UNIT-III:

6

Understanding lighting-indoor and outdoor, Exposing and Focusing, Types of lighting, Natural and Artificial Lights, Controlling lights, Exposure Meters. Camera techniques & operation, Framing, shots & movements (wide, medium, close ups, shadow, zoom, pan, tilt, aerial etc.,),

UNIT-IV:

6

Photography for advertising-Consumer and industrial. Usage of various types of camera lenses (Normal, Tele, Zoom etc.,), usages of various filters (day ,night, colour correcting filter, diffusion filter), objectives TV lighting, various types of Lights (baby, Junior, Senior, etc.,)

UNIT- V:

6

Basics of photo-journalism, Photo-features, Photo - essays, Writing captions, Visual story telling. Planning a shoot-studio, location, set props and casting. Colour temperature, lighting for different situations (interviews, indoor, out-door), types of lighting(Back, Front, full, semi, etc.,)

TEXT BOOKS:

- 1.The Art of Photography: A Personal Approach to Artistic Expression, Barnbaum, Bruce, Rocky Nook
- 2.Photography Demystified: Your Guide to Gaining Creative Control, David McKay, Photography Inc.
3. Television Productions: A History of All Series and Pilots, by [Jon Abbott](#), Publisher: McFarland & Company (May 13, 2009)
- 4.Production Management for TV and Film: The Professional's Guide, Methuen Drama (August 1, 2010)

REFERENCE BOOKS:

- 1.The Photographer's Eye, Szarkowski, John, The Museum of Modern Art, New York (Publisher)
- 2.Creative Composition: Digital Photography Tips and Techniques, Davis, Harold, Wiley
- 3.From Concept to Screen: An Overview of Film and Television Production, Robert Benedetti, Pearson; 1 edition (June 11, 2001)
- 4.The Television Handbook, Routledge, Holland, P (1998)

Sub. code : P18OEEN001	Subject name : SOFT SKILLS						L	T	P	C
	Total Contact Hours – 30						2	0	0	2
	Prerequisite – UG 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 confidence and fluency in speaking English.									
CO4	Analyze the learners to fine-tune their linguistic skill with communication globally									
CO5	Evaluate the excellence in both personal and professional life									
CO6	Createthe performance of learners at placement interviews and other recruitment procedures.									
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	PS O1	PS O2
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	Academic Council Meeting								

UNIT I- LISTENING / VIEWING

6

Listening and note-taking – Listening to telephonic conversations – Ted talks – Inspiring Speeches – Watching documentaries on personalities, places, socio-cultural events, TV news programmes and discussions to answer different kinds questions, viz., identifying key idea and comprehension questions... so on.

UNIT II- SPEAKING**6**

Elements of presentation skills-Structure of presentation-presentation tools- mock interviews – group discussion – introducing one self and others – welcome address and proposing a vote of thanks- role play – debating.

UNIT III - READING**6**

Different genres of text (literature, media, technical) for comprehension – Reading strategies like note-making – reading graphs, charts and graphic organizer – Sequencing sentences – reading online sources like e-books, e-journals and e-newspapers.

UNIT IV - WRITING**6**

Resume/Report preparation/Letter Writing-Structuring the resume-comprehension- Describing charts and tables – writing for media on current events.

UNIT V- PROJECT**6**

Gender injustice: Dowry-Violence against women -Sexual Harassment -Eve teasing-Female infanticide-Prostitution. **Social problem:** Poverty-unemployment-Child Labour-Terrorism-Drug abuse-Alcoholism-Corruption. **Industrial problem:** Work and Labour organization-Elements-Principles-Staff and Functional Activities. **Industrial Conflict:** Strikes-Disputes-Grievances-Industrial development in India-Steps in Automation process-Industrial policy-Liberation.

Text books

- 1 .Rizvi ashraf ,Effective Technical Communication , Tata amcgraw Hill Education Private Ltd,New Delhi,2011.
2. Townsend Roz , Presentation skills for the upwardly mobile , Emerald Publishers .

Reference

1. T.M.Farhathullah, communication skills for Technical students, Orient Longman Ltd,2002.
2. Andree J Rutherford, Basic communication skills for Technology, Pearson Education,Asia (Singapore) Pte.Ltd, Banglore , 2001.

Course Coordinator**HOD**

Sub. code : P18OEEN002	Sub name: MASS MEDIA AND COMMUNICATION						L	T	P	C
	Total Contact Hours – 30						2	0	0	2
	Prerequisite – UG Level									
	Course coordinator :– Dr.P.AROCKIA NATHAN Dept of English									
COURSE OBJECTIVES : To impart students with the efficient knowledge of important events in through literature										
COURSE OUTCOMES (COs)										
CO1	Remember the art of writing, report and editing									
CO2	Understand the skills of writing									
CO3	Apply the Role & importance in social change									
CO4	Analyze the social structure of Indian society									
CO5	Evaluate the growth & development of communication and media									
CO6	Create the interpreting the meaning from the text									
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	PS O1	PS O2
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	Academic Council Meeting								

Communication & Media: Definition, meaning and concept.
Different types of communication: verbal and written
Scope and Process of Mass Media & Communication

UNIT II -History of Mass media	6
History of the development of electric media in India: Radio & TV Role of media in society, Impact of media on audience, Media effects, limitations and different form of media.	
UNIT- III- Role & Responsibilities	6
Role and responsibilities of journalist, ethics, careers, Media management, Media laws in India, and freedom of press Qualities and Responsibilities of a reporter	
UNIT IV -Theories & Principles	6
Theories and Principles of Editing Communication and theories of social change, Role of media in social change, Development communication	
UNIT V-Technology & Development	6
Changing trends of mass communication under the process of globalization Technology in the development of media.	

Text Books

1. Vivian, John, Mass Media & communication Boston, Massachusetts : Pearson Allyn and Bacon, c.2008.
2. Stovall, James Glen, Writing for the mass media, New Jersey : Pearson Education, Inc., c.2012

Reference Books:

1. Parthasarathy, Rangaswami, journalism in India, sterling Publisher pvt. Ltd. New Delhi.
2. D.S. Mehta. Mass communication and Journalism in India New Delhi, Allied Publishers, 2011

Course Coordinator

HOD

	COMPUTER APPLICATIONS	L	T	P	C

P18OESC001	Total Contact Hours– 30						2	0	0	2
	Prerequisite course – UG Level									
	CourseCoordinator Name& Department:- Dr. S.Thiru Nirai Senthil / 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	Identify the suitableinput 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 CourseOutcomes with Program outcomes (POs) (1/2/3 indicates strengthof correlation) 3-High, 2-Medium, 1-Low										
1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PS O1	PS O2
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	AcademicCouncilMeeting								

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,2010.
2. Alexis Leon & Mathews Leon, “Fundamentals of Information Technology”, Vikas Publishing House, New Delhi,2009.

REFERENCE BOOKS:

1. Rajeev Mathur, “Dos Quick Reference”, Galgotia Publications.

Course Coordinator

HOD

	MULTIMEDIA	L	T	P	C

P18OESC002	Total Contact Hours– 30						2	0	0	2
	Prerequisite course – UG Level									
	CourseCoordinator Name& Department:- Dr. S.Thiru Nirai Senthil / BCA									
COURSE OBJECTIVES:- To Understand 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 CourseOutcomes with Program outcomes (POs) (1/2/3 indicates strengthof correlation) 3-High, 2-Medium, 1-Low										
1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PS O1	PS O2
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)	CoreElective (CE)	Non-Major Elective(NE)	Open Elective (OE)	Any other	Project/Term Paper/ Seminar/ Internship(PR)
								✓		
4	Approval	AcademicCouncilMeeting								

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 to multimedia”,1998.
2. Mohammad Dastbaz, “Designing Interactive Multimedia Systems”,2002.

Reference Books

1. Bohdan O. Szuprowicz, “Multimedia Networking”,1995.
2. Stephen McGloughlin, “Multimedia on theweb”,1997.

Course Coordinator

HOD

	ADVANCED EXCEL	L	T	P	C

P18OESC003	Total Contact Hours– 30						2	0	0	2
	Prerequisite course – UG Level									
	CourseCoordinator Name& Department:- S.Anupriya / 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 CourseOutcomes with Program outcomes (POs) (1/2/3 indicates strengthof correlation) 3-High, 2-Medium, 1-Low										
1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PS O1	PS O2
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)	CoreElective (CE)	Non-Major Elective(NE)	Open Elective (OE)	Any other	Project/Term Paper/ Seminar/ Internship(PR)
								✓		
4	Approval	AcademicCouncilMeeting								

UNIT I

Uses of Advance Excel Formulas -VLOOKUP, HLOOKUP, SUMIF, SUMIFS,SUMPRODUCT, DSUM, COUNTIF, COUNTIFS, IF, IFERROR, ISERROR, ISNA,ISNUMBER, ISNONTTEXT, 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 theOther 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 UsingCriteria

UNIT III

6

Filtering Data, AutoFilter, Totals and Subtotals, Row, Various Methods of Filterand Advance Filter options , Creating and Updating Subtotals , Various Method ofSorting 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, andGrouping items

Text Books

1. Jordan Goldmeler, “Advanced Excel Essentials” ,APress, 2015 edition.

Reference Books

1. John Walkenbach, “Microsoft Excel 2013 Bible”,Wiley Publications,2013.

Course Coordinator

HOD

	WEB DESIGNING	L	T	P	C

P18OESC004	Total Contact Hours– 30						2	0	0	2
	Prerequisite course – UG Level									
	CourseCoordinator Name& Department:- V.Ramya/BCA									
COURSE OBJECTIVES:- To Understand the basic web designing concepts.										
COURSE OUTCOMES(COs)										
CO1	Gain knowledge in web basics and server side scripting.									
CO2	Execute the HTML coding.									
CO3	Apply hyper links between webpages									
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 CourseOutcomes with Program outcomes (POs) (1/2/3 indicates strengthof correlation) 3-High, 2-Medium, 1-Low										
1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PS O1	PS O2
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)	CoreElective (CE)	Non-Major Elective(NE)	Open Elective (OE)	Any other	Project/Term Paper/ Seminar/ Internship(PR)
								✓		
4	Approval	AcademicCouncilMeeting								

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, 2010.
4. T. A Powell, “Complete Reference HTML (Third Edition)”, TMH, 2002.

Course Coordinator

HOD

P18OESC005	PHOTOSHOP						L	T	P	C
	Total Contact Hours– 30						2	0	0	2
	Prerequisite course – UG Level									
	CourseCoordinator 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	Gain knowledge in Working with layers.									
CO6	Create a real time application using 3D image and Animation.									
Mapping of CourseOutcomes with Program outcomes (POs) (1/2/3 indicates strengthof correlation) 3-High, 2-Medium, 1-Low										
1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PS O1	PS O2
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)	CoreElective (CE)	Non-Major Elective(NE)	Open Elective (OE)	Any other	Project/Term Paper/ Seminar/ Internship(PR)
								✓		
4	Approval	AcademicCouncilMeeting								

6

Introduction to Adobe photoshop, Getting started with photoshop, creating and saving adocument in photoshop, page layout and back ground.

UNIT II

6

Photoshop program window-titlebar,menu bar,option bar,image window,image title bar,status bar,ruler,palettes,tool box,screenmodes,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 tool box: working with pen tool, save and load selection-working witherasers-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.

Text Books

1. Reema Thareja ,”Fundamentals of Computers”,Oxford University Press,2014.

Reference Books

1. Photoshop: Beginner's Guide for Photoshop - Digital Photography, Photo Editing, Color
2. Adobe Creative Team ,”Adobe Photoshop Class Room in a Book”,2014.

Course Coordinator

HOD

P18OESC006	FLASH						L	T	P	C
	Total Contact Hours– 30						2	0	0	2
	Prerequisite course – UG Level									
	CourseCoordinator Name& Department:- N.Mathimagal/ BCA									
COURSE OBJECTIVES:- Learners can identify methods appropriate for Basic Animation. Apply methods to design with flash.										
COURSE OUTCOMES(COs)										
CO1	Understand inWorking 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 CourseOutcomes with Program outcomes (POs) (1/2/3 indicates strengthof correlation) 3-High, 2-Medium, 1-Low										
1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PS O1	PS O2
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	AcademicCouncilMeeting								

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, envelopemodifier, 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

Framesvs. key frames, deleting, copying, and reversing frames, frame-by-frame vector animation, Animation on an image.

UNIT V

6

Shape twining , 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.

Course Coordinator

HOD

P18OESC007	COMPUTER HARDWARE AND NETWORKING						L	T	P	C
	Total Contact Hours– 30						2	0	0	2
	Prerequisite course – UG Level									
	CourseCoordinator Name& Department:- V.Ramya/BCA									
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 CourseOutcomes with Program outcomes (POs) (1/2/3 indicates strengthof correlation) 3-High, 2-Medium, 1-Low										
1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PS O1	PS O2
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)	CoreElective (CE)	Non-Major Elective(NE)	Open Elective (OE)	Any other	Project/Term Paper/ Seminar/ Internship(PR)
								✓		
4	Approval	AcademicCouncilMeeting								

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 Duo, 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, October 2013.

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 McGraw-Hill Publication.
3. Stephen J. Bigelow, "PC Troubleshooting and Repair", Dream tech Press, New Delhi.

Course Coordinator**HOD**

P18OESC008	COMPUTER PROGRAMMING						L	T	P	C
	Total Contact Hours– 30						2	0	0	2
	Prerequisite course – UG Level									
	CourseCoordinator Name& Department:- S.Anupriya/ BCA									
COURSE OBJECTIVES:- Learners understand the basic concepts of C programming. Practice the use of conditional and looping statements. Implement arrays, functions and pointers. Gain skills to handle strings and files.										
COURSE OUTCOMES(COs)										
CO1	Understand the concept of data types, loops, functions, array, pointers, string, structures and files.									
CO2	Design flow-chart, algorithm and program logic.									
CO3	Analyze problems, errors and exceptions.									
CO4	Apply programming concepts to compile and debug c programs to find solutions.									
CO5	Gain knowledge to use Function, Pointers, Structures, Unions &preprocessor directives									
CO6	Construct programs that demonstrate effective use of C.									
Mapping of CourseOutcomes with Program outcomes (POs) (1/2/3 indicates strengthof correlation) 3-High, 2-Medium, 1-Low										
1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PS O1	PS O2
2	CO1	3	3	1	1	1	1	3		
	CO2	3	3	1	2	2	2	3		
	CO3	3	2	3	1	3	2	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	AcademicCouncilMeeting								

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. Pradip Dey, Manas Ghosh, “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’s Outlines, 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.

P18OESC009	OFFICE AUTOMATION TOOLS						L	T	P	C
	Total Contact Hours– 30						2	0	0	2
	Prerequisite course – UG Level									
	CourseCoordinator Name& Department:- V.Brindha/BCA									
COURSE OBJECTIVES:- Learners understand the basic concepts of word, Excel, Power Point.										
COURSE OUTCOMES(COs)										
CO1	Understand the text manipulations for word documents.									
CO2	Analyze the templates and mail merge concepts.									
CO3	Apply the cell editing, formulae, built in functions used in the Excel Sheet.									
CO4	Develop the power point slide designs and backgrounds.									
CO5	Develop the graphics and animations using wizards.									
CO6	Create a document and apply various formatting techniques									
Mapping of CourseOutcomes with Program outcomes (POs) (1/2/3 indicates strengthof correlation) 3-High, 2-Medium, 1-Low										
1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PS O1	PS O2
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	AcademicCouncilMeeting								

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”, Universe Publications,2012.

U18OEMI001	CLINICAL MICROBIOLOGY						L	T	P	C
	Total Contact Hours – 30						2	0	0	2
	Prerequisite course – Under graduate degree in any discipline									
	Course Coordinator Name & Department:-Dr. J. Senthil & Microbiology									
COURSE OBJECTIVES:- Learners will be familiar with microbiological related diagnostic techniques. Learners will understand the microbial morphology, structure, characters, classification, diseases and diagnostic tests.										
COURSE OUTCOMES (COs)										
CO1	Recall the general classification of microbes.									
CO2	Recognize the different specimen collection methods and staining methods.									
CO3	Apply different diagnostic tests to identify the diseases.									
CO4	Analyze the role of human pathogens in causing diseases.									
CO5	Evaluate the importance of antimicrobial compounds.									
CO6	Create and develop new antimicrobial drugs and antibiotics against wide range of pathogens.									
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	PS O1	PS O2
2	CO1	3	2	1	1	2	1	2		
	CO2	3	2	1	1	2	2	3		
	CO3	3	3	2	2	2	1	3		
	CO4	3	2	1	2	2	2	2		
	CO5	3	3	2	3	3	2	3		
	CO6	3	3	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								

General introduction about clinical microbiology, Sterilization and Disinfection., Culture Media preparation, Staining Methods, Collection and Transportation of Specimen-General Principles, Containers, Rejection, Samples- Urine, Faeces, Sputum, Pus, Body fluids, Swab, Blood, Disposal of Laboratory/Hospital Waste.

UNIT II

6

General characters and classification of bacteria, Characteristics - Growth and maintenance of Bacteria, Pathogenicity and diagnosis of bacterial pathogens, antimicrobial compounds against clinical pathogens.

UNIT III

6

Morphology and structure of fungi - Classification of fungi - Nutrition and cultivation of fungus - Cutaneous & Sub cutaneous and Systemic Mycosis - Lab diagnosis of fungal Infections - Opportunistic fungal infections.

UNIT IV

6

General characters of viruses. - Classification of viruses. - Lab diagnosis of viral infections. - Cultivation of viruses. - Bacteriophages - Retro viruses - HIV, Hepatitis virus, Pox virus. - Picorna virus - Polio. - Orthomyxo virus - Influenza. - Arbo virus - Chikungunya, Dengue. - Herpes and Adeno virus.

UNIT V

6

Definition - parasitism, host, vectors etc. Classification of Parasites, Phylum Protozoa- general Pathogenic and non pathogenic protozoa, Phylum Nematelminthes/Round worms (Nematoda), Phylum Platyhelminthes - class-Cestoda, class- Trematoda, Lab diagnosis of parasitic infections.

TEXT BOOKS:

1. Monica Chees Brough. Medical laboratory manual for tropical countries, Elsevier Health Sciences, Butter worths, 1987.
2. Bailey and Scott. Diagnostic Microbiology, Eighth edition, The Mosby Company, 1990.

REFERENCE BOOKS:

1. Keith Struthers K. Clinical Microbiology, 2nd Edition, CRC Press, 2017.
2. Jennie Wilson. Clinical Microbiology -An Introduction for Healthcare Professional, 8th Edition, Baillière Tindall, 2000.

Course Coordinator

HOD

U18OEMI002		HERBAL MEDICINE						L	T	P	C
		Total Contact Hours – 30						2	0	0	2
		Prerequisite course – Under graduate degree in any discipline									
		Course Coordinator Name & Department:-Dr. J. Senthil & Microbiology									
COURSE OBJECTIVES:- Learners will be familiar with medicinal herbs. Learners will understand the importance of herbal drugs and herbal therapies.											
COURSE OUTCOMES (COs)											
CO1		Recall the herbal medicines used in daily life.									
CO2		Recognize the different methods of herbal extraction and its types.									
CO3		Apply various herbal medicines in curing the diseases.									
CO4		Analyze the role of herbs in drug discovery.									
CO5		Evaluate the importance and toxicity studies of herbal extracts.									
CO6		Create and develop new drugs from wide range of medicinal plants available worldwide.									
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	PS O1	PS O2	
2	CO1	3	2	2	2	3	2	2			
	CO2	3	3	2	2	3	2	3			
	CO3	3	3	2	2	3	3	3			
	CO4	3	2	1	1	2	1	2			
	CO5	3	3	3	3	3	3	3			
	CO6	3	3	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

6

Definition of Herbal drug, Importance of Herbal therapies, Herbs used as nutraceuticals and healing agents. Making and using herbal medicines for common ailments like cold, skin infections and Diarrhea; Analytical Profiles of selected herbs.

UNIT II

6

General methods of extraction, types and principles of extractions - merits and demerits, selection of suitable extraction methods, purification and recovery of solvents

UNIT III

6

Different methods for isolation and estimation of phyto-constituents from medicinal herbs like *Mucuna pruriens*, *Garcinia combogia*, Green tea, *Hypericum species* etc.

UNIT IV

6

Qualitative and Quantitative estimation of standardized extracts by HPTLC, Biological standardization -Pharmacological screening of herbal extracts and Microbiological evaluation of herbal extracts, Toxicity studies of herbal extracts.

UNIT V

6

Herbal drugs acting on brain and nervous system – Rheumatoid arthritis – Psychoactive drugs – Depressants, Stimulants, hallucinogens – sources, effects, basic mechanism of action.

TEXT BOOKS:

1. Indian Herbal Pharmacopoeia, Vol.1&2, RRL, 1DMA, 1998, 2000.
2. Kokate CK, Purohit and Gokhale. Text book of Pharmacognosy, 4th edition, Nirali Prakashan, 1996.

REFERENCE BOOKS:

1. Toxicology and Clinical Pharmacology of Herbal Products, Melanie Johns Cupp.
2. Choudhary RD. Herbal drug industry, 1st edition, Eastern publisher, New Delhi, 1996.

P18OEPH001	ELECTRICAL TECHNICIAN						L	T	P	C
	Total Contact Hours - 30						2	0	0	2
	Prerequisite – B.Sc Physics									
	Course Coordinator Name & Department:- – Dr. S.Anandhi / Physics									
OBJECTIVES: Students will have an appreciation on the electrical systems and electrical equipment typically used in the Oil and Gas production plant.										
COURSE OUTCOMES (COs)										
CO1	Analyze and solve routine technical problems related to electrical systems by applying mathematics and science principles.									
CO2	Explain how to used electrical tools, operate and maintain specific equipment in the Oil and Gas production plant									
CO3	Explain how to perform corrective and preventive maintenance in electrical tasks.									
CO4	Understand the work on electrical systems safely and efficiently.									
CO5	Understand the electrical system and electrical equipment used in the Oil and Gas production plant.									
CO6	To execute the principle and how to working process of the transformer and classification of transformer									
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	PS O1	PS O2
2	CO1	3	3	2	2	3	1	3		
	CO2	3	3	3	3	2	3	3		
	CO3	2	2	3	2	1	2	3		
	CO4	2	3	1	1	3	2	3		
	CO5	3	3	3	2	2	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	Academic Council Meeting								

UNIT-I**6**

Basic Principle Of Petroleum - Overview of Oil and Gas Processing -Wellhead Platform and Equipment

S.No.	Sub.Code	Subject Name	Total No. of Hours	L	T	P	C

UNIT –II**6**

Introduction to Instrumentation -P & ID Drawing -Introduction to Distributed Control System (DCS)

UNIT –III**6**

Safety in Electrical Maintenance - Batteries and Chargers -Reading Electrical Diagrams -Cables and Conductors - Terminations and Splices - Motor Branch Circuit Protections

UNIT –IV**6**

Three Phase AC Induction Motors - AC Generator Maintenance -Fire & Gas Detection and Safety Systems and SIS -DC Generator -Construction& Principle- Types-Series,- Shunt & Compound Generator- EMF equation, Characteristics - (OCC & LCC). Armature reactions,- commutation Efficiency, Regulation & Applications. DC Motor- Construction& Principle. Types- Series, Shunt & Compound Motors. Characteristics curve-Applications. Necessity of starter- Construction and Working of- starters (3 point& 4 point). Speed control of DC Shunt-motor (armature & Field control. Traction System.- Trouble shooting –Care and maintenance.

UNIT-V**6**

Transformer –Principle -Construction- Classification of Transformers - EMF equation ,rating - Loading, Losses & Efficiency Regulation. Parallel Operation- Cooling methods, Transformer- oil testing. Care and maintenance,- Protective devices. Tap Changer – ON load and OFF- load. Auto transformer, Instrument- Transformer- CT & PT. Welding Transformer.

TEXT BOOKS

1. Fundamental Electrical circuits by Charles K.Alexandeer and Matthew NO Sadiku(2003)
2. Fundamental of Digital circuits 3rd edition by Kumar A Anandh

1	P18ACEN001	English for Research Paper Writing	2	2	0	0	0
2	P18ACCE002	Disaster Management	2	2	0	0	0
3	P18ACEN003	Sanskrit for Technical Knowledge	2	2	0	0	0
4	P18ACBA004	Value Education	2	2	0	0	0
5	P18ACBW005	Constitution of India	2	2	0	0	0
6	P18ACBA006	Pedagogy Studies	2	2	0	0	0
7	P18ACBA007	Personality Development through Life Enlightenment Skills	2	2	0	0	0

P18ACEN001	AUDIT COURSE : ENGLISH FOR RESEARCH PAPER WRITING							L	T	P	C
	Total Contact Hours – 30							2	0	0	0
	Prerequisite course – UG Level										
	Course Coordinator Name & Department:- Mr.V.C.Jain/Department of English										
COURSE OBJECTIVES:- Understand the skills needed when writing a Title Ensure the good quality of paper at very first timesubmission.											
COURSE OUTCOMES (COs)											
CO1	Recognize to prepare and Plan the word order, breaking of long sentences, structural formation of paragraph and being concise without any ambiguities.										
CO2	Describe how to write abstract and introduction to any topic or project.										
CO3	Relate the skills require for the discussions and conclusions.										
CO4	Express the quality of paper and time management in writing skills.										
CO5	Categorize the useful phrase and how to ensure the paper is as good.										
CO6	Prepare the oral presentation in class using effective delivery strategies.										
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	PS O1	PS O2	
2	CO1	3	2	2	3	2	2	3			
	CO2	3	2	3	2	1	3	2			
	CO3	3	1	2	3	2	3	3			
	CO4	2	3	3	3	3	2	2			
	CO5	2	2	3	2	2	2	3			
	CO6	1	1	2	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	Any other	Project/Term Paper/ Seminar/ Internship(PR)	
											✓
4	Approval	Academic Council Meeting									

UNIT - 1: PLANNING AND PREPARATION :

6

Planning and Preparation - word order - breaking up long sentences, structuring, paragraphs and sentences, being concise and removing redundancy, avoiding ambiguity and vagueness.

UNIT-2 : ABSTRACT

6

Clarifying who did what - highlighting your findings - hedging and criticizing - paraphrasing and plagiarism - sections of a paper - abstracts - introduction.

UNIT -3 : DISCUSSION AND CONCLUSION

6

Review of the literature - methods - results - discussion - conclusions, the final check - key skills are needed when writing a title - key skills are needed when writing an abstract - key skills are needed when writing an introduction - skills needed when a review of the literature.

UNIT -4 : WRITING SKILLS

6

Skills are needed when writing the methods - skills needed when writing the results - skills are needed when writing the discussion - skills are needed when writing the conclusions.

UNIT -5: QUALITY AND TIME MAINTAINANCE

6

Useful phrases - how to ensure paper is as good as it could possibly be the first -time submission.

TEXT BOOKS :

1. Goldbort R (2006) Writing for Science, Yale University Press (Available on Google Books).
2. Day R(2006), How to Write and Publish a Scientific Paper, Cambridge University Press.

REFERENCE BOOKS :

1. HighmanN, Handbook of Writing for the Mathematical Sciences, SIAM, Highman's Book, 1st, Edition, 1998.
2. Adrian Wallwork, English for Writing Research Papers, Springer New York Dordrecht Heidelberg London, 2nd Edition, 2011.

CourseCoordinator

HOD

P18ACCE002		AUDIT COURSE : DISASTER MANAGEMENT						L	T	P	C			
		Total Contact Hours – 30						2	0	0	0			
		Prerequisite course – UG Level												
		Course Coordinator Name & Department:- Ms.Jhony/ Dept. of Business Administration												
COURSE OBJECTIVES:- Develop an understanding of standards of humanitarian response and practical relevance in specific types of disasters and conflict situations.														
COURSE OUTCOMES (COs)														
CO1		Identify the key concepts in disaster risk reduction and humanitarian response.												
CO2		Determine the disaster risk reduction and humanitarian response policy from multiple perspectives.												
CO3		Illustrate the standards of humanitarian response.												
CO4		Criticize the practical relevance in specific types of disasters and conflict situations.												
CO5		Evaluate the strengths and weakness of disaster management approaches.												
CO6		Predict the planning and programming in different countries, particularly their home country or the countries they work .												
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	PS O1	PS O2
2	CO1	3	1	3		3		2		2		3		
	CO2	2	3	2		2		1		3		2		
	CO3	2	3	3		3		3		3		3		
	CO4	3	1	3		2		3		1		1		
	CO5	2	3	3		2		1		2		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	Any other	Project/Term Paper/ Seminar/ Internship(PR)	
4	Approval	47 th Academic Council Meeting												

UNIT - : INTRODUCTION:

6

Disaster : Definition - Factors and Significance - Difference between Hazard and Disaster - Natural and Manmade Disasters - Difference - Nature - Types and Magnitude.

UNIT - 2 : REPERCUSSIONS OF DISASTERS AND HAZARDS:

6

Economic Damage - Loss Of Human And Animal Life - Destruction Of Ecosystem - Natural Disasters:

Earthquakes - Volcanisms - Cyclones - Tsunamis - Floods - Droughts And Famines - Landslides And Avalanches - Man-made disaster.

UNIT -3 : DISASTER PRONE AREAS IN INDIA: 6

Study Of Seismic Zones - Areas Prone To Floods And Droughts - Landslides And Avalanches - Areas Prone To Cyclonic And Coastal Hazards With Special Reference To Tsunami - Post-Disaster Diseases And Epidemics.

UNIT -4 : DISASTER PREPAREDNESS AND MANAGEMENT 6

Preparedness: Monitoring Of Phenomena Triggering A Disaster Or Hazard - Evaluation Of Risk: Application Of Remote Sensing, Data From Meteorological And Other Agencies - Media Reports: Governmental And Community Preparedness.

UNIT -5 : RISK ASSESSMENT 6

Disaster Risk: Concept And Elements - Disaster Risk Reduction, Global And National Disaster Risk Situation - Techniques Of Risk Assessment - Global Co- Operation In Risk Assessment And Warning, People's Participation In Risk Assessment - Strategies for Survival.

TEXT BOOKS:

1. R. Nishith, Singh AK, "Disaster Management in India: Perspectives, issues and strategies "New Royal book Company.

REFERENCE BOOKS:

1. Sahni, PardeepEt.Al. (Eds.), "Disaster Mitigation Experiences And Reflections", Prentice Hall Of India, New Delhi.
2. Goel S. L. , Disaster Administration And Management Text And Case Studies" ,Deep &Deep Publication Pvt. Ltd., New Delhi.

Course Coordinator

HOD

P18ACEN003	AUDIT COURSE : SANSKRIT FOR TECHNICAL KNOWLEDGE	L	T	P	C
	Total Contact Hours – 30	2	0	0	0
	Prerequisite course – UG Level				
	Course Coordinator Name & Department:- Ms.Subathra / Dept. of English				
COURSE OBJECTIVES:- Learners will get a working knowledge in illustrious Sanskrit, the scientific language in the world.					
COURSE OUTCOMES (COs)					
CO1	Define the learning of Sanskrit to improve brain functioning				
CO2	Review the Learning of Sanskrit to develop the logic in mathematics, science & other subjects enhancing the memory power				
CO3	Practice the engineering scholars equipped with Sanskrit will be able to explore the huge knowledge from ancient literature				
CO4	Identify the uses of basic Sanskrit language				

CO5	Estimate Ancient Sanskrit literature about science & technology can be understood											
CO6	Develop the projects either individual or group on presentations.											
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	PS O1	PS O2
2	CO1	3	2	3		2		3	2	3		
	CO2	2	3	2		3		2	3	2		
	CO3	3	2	1		2		2	3	2		
	CO4	2	3	2		3		3	2	1		
	CO5	3	2	3		2		2	2	1		
CO6	2	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 -1 : INTRODUCTION:

6

Alphabets, Consonants, Nouns Declensions; Nominative, Accusative(singular, dual and plural)

UNIT - 2 : BASIC OF SANSKRIT LIERATURE:

6

Instrumental case, Dative, Ablative, and Indeclinables, verbal conjugation: first person, second person, third person: Present Tense.

UNIT - 3 : FUNDAMENTALS OF SANSKRIT ARCHITECTURE:

6

Genitive, locative and Vocative Absolute, Masculine Gender, Feminine Gender and Neuter Gender.

UNIT -4 : VERBAL CONJUGATION:

6

Verbal Conjugation: Past Tense and Future Tense Declensions ending in Rāmaḥ, Kaviḥ, Bhānuḥ, Mātr , Mālā

UNIT - 5 : TRANSLATION:

6

Translation of simple sentences, Stories & selected Subhashitas

TEXT BOOKS:

1. “Abhyaspustakam” – Dr.Vishwas, Samskrita-Bharti Publication, New Delhi.
2. Sanskrit for Beginners by Dr. M. Narasimhacharyand Dr.S. Ramaratnam, N&R Publications, Chennai & New Delhi.

REFERENCE BOOKS :

1. “Teach Yourself Sanskrit” Prathama Deeksha-VempatiKutumbshastri, Rashtriya Sanskrit Sansthanam, New Delhi Publication.
2. “India’s Glorious Scientific Tradition” Suresh Soni, Ocean books (P) Ltd., New Delhi.

Course Coordinator

HOD

P18ACBA004	AUDIT COURSE : VALUE EDUCATION						L	T	P	C
	Total Contact Hours – 30						2	0	0	0
	Prerequisite course – UG Level									
	Course Coordinator Name & Department:- Mr.Srinivasan/ Dept. of Business Administration									
COURSE OBJECTIVES:- Our objectives are to promote a new understanding and framework help learners to achieve positive and purposeful lives for themselves and their communities through engaging with values to guide and inform their behaviour.										
COURSE OUTCOMES (COs)										
CO1	Identify and describe feelings of self-worth that arise through striving for personal success in physical activity and sport									
CO2	Demonstrate the tolerance of other people's abilities during physical activity and sport									
CO3	Generalize the Values,attitudes that they need to develop in their class programmes									
CO4	Choose the essential steps to become good leaders.									
CO5	Select their role and contribution to the nation building.									
CO6	Prepare to understand value of education and self- development									
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	PS O1	PS O2
2	CO1	3	2	3	2	3	1	3		
	CO2	1	2	3	2	2	2	2		
	CO3	2	3	2	3	2	3	2		
	CO4	3	2	2	1	3	2	3		

	CO5	2	3	2	3	1	2	1		
	CO6	2	3	3	3	2	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	Any other	Project/Term Paper/ Seminar/ Internship(PR)
4	Approval	47 th Academic Council Meeting								

UNIT-I:

6

Value Education - Definition - relevance to present day - Concept of Human Values - self introspection - Self esteem.

UNIT-II:

6

Family values - Components, structure and responsibilities of family - Neutralization of anger - Adjustability - Threats of family life - Status of women in family and society - Caring for needy and elderly - Time allotment for sharing ideas and concerns.

UNIT-III:

6

Ethical values - Professional ethics - Mass media ethics - Advertising ethics - Influence of ethics on family life - psychology of children and youth - Leadership qualities - Personality development.

UNIT-IV:

6

Social values - Faith, service and secularism - Social sense and commitment - Students and Politics - Social awareness, Consumer awareness, Consumer rights and responsibilities - Redressal mechanisms.

UNIT-V:

6

Effect of international affairs on values of life/ Issue of Globalization - Modern warfare - Terrorism. Environmental issues - mutual respect of different cultures, religions and their beliefs.

TEXT BOOKS:

1. T. Anchukandam and J. Kuttainimathathil (Ed) Grow Free Live Free, Krisitu Jyoti Publications, Bangalore (1995).
2. Mani Jacob (Ed) Resource Book for Value Education, Institute for Value Education, New Delhi 2002.

REFERENCE BOOKS:

1. DBNI, NCERT, SCERT, Dharma Bharti National Institute of Peace and Value Education, Secunderabad, 2002.
2. Daniel and Selvamony - Value Education Today, (Madras Christian College, Tambaram and ALACHE, New Delhi, 1990)
3. S. Ignacimuthu - Values for Life - Better Yourself Books, Mumbai, 1991.

4. M.M.M.Mascaronhas Centre for Research Education Science and Training for Family Life Promotion - Family Life Education, Bangalore, 1993.

Course Coordinator

HOD

[illegible]

4	Approval	Academic Council Meeting

UNIT -1 : HISTORY OF MAKING OF THE INDIAN CONSTITUTION: 6

History - Drafting Committee, (Composition & Working)

UNIT -2 : PHILOSOPHY OF THE INDIAN CONSTITUTION: 6

Preamble - Salient Features - Directive Principles of State Policy - Fundamental Duties.

UNIT - 3 : CONTOURS OF CONSTITUTIONAL RIGHTS & DUTIES: 6

Fundamental Rights - Right to Equality - Right to Freedom - Right against Exploitation - Right to Freedom of Religion - Cultural and Educational Rights - Right to Constitutional Remedies.

UNIT -4 : ORGANS OF GOVERNANCE: 6

Parliament - Composition - Qualifications and Disqualifications - Powers and Functions - Executive President - Governor - Council of Ministers - Judiciary, Appointment and Transfer of Judges, Qualifications - Powers and Functions.

UNIT - 5 : LOCAL ADMINISTRATION & ELECTION COMMISSION : 6

District's Administration head: Role and Importance - Introduction, Mayor and role of Elected Representative CEO of Municipal Corporation - Pachayati raj: Introduction, PRI: Zila Pachayat - Elected officials and their roles - Introduction of Election Commission - Election Commission: Role and Functioning - Chief Election Commissioner and Election Commissioners - State Election Commission: Role and Functioning - Institute and Bodies for the welfare of SC/ST/OBC and women.

TEXT BOOKS:

1. The Constitution of India, 1950 (Bare Act), Government Publication.
2. Dr. S. N. Busi, Dr. B. R. Ambedkar framing of Indian Constitution, 1st Edition, 2015.

REFERENCE BOOKS:

1. M. P. Jain, Indian Constitution Law, 7th Edn., Lexis Nexis, 2014.
2. D.D. Basu, Introduction to the Constitution of India, Lexis Nexis, 2015.

Course Coordinator

HOD

P18ACBA006	AUDIT COURSE : PEDAGOGY STUDIES	L	T	P	C

		Total Contact Hours – 30						2	0	0	0
		Prerequisite course – UG Level									
		Course Coordinator Name & Department:- Dr.Arunkumar / Dept. of Business Administration									
COURSE OBJECTIVES:- To inform programme design and policy making undertaken by the Dfid, other agencies and researchers.											
COURSE OUTCOMES (COs)											
CO1	List common training so everyone teaches from the same curriculum										
CO2	Describe to learners what is expected of them										
CO3	Illustrate the teacher education (curriculum and practicum) and the school curriculum and guidancematerials best support effective pedagogy.										
CO4	Inspect the review existing evidence on the review topic to inform programme design.										
CO5	Assess how the outcomes of a single course align with larger outcomes for an entire program										
CO6	Plan appropriate teaching strategies, materials and assessments										
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	PS O1	PS O2	
2	CO1	2	3	3	2	2	2	2			
	CO2	1	3	1	1	3	1	2			
	CO3	3	2	3	3	2	2	3			
	CO4	1	1	2	2	3	3	1			
	CO5	3	3	3	2	1	2	1			
	CO6	2	3	2	1	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	Any other	Project/Term Paper/ Seminar/ Internship(PR)	
4	Approval	Academic Council Meeting									

UNIT - 1 : INTRODUCTION AND METHODOLOGY:

6

Aims and rationale, Policy background, Conceptual framework and terminology - Theories of learning - Curriculum - Teacher education - Conceptual framework, Research questions -Overview of methodology and Searching.

UNIT - 2 : THEMATIC OVERVIEW:

6

Pedagogical practices are being used by teachers in formal and informal classrooms in developing countries - Curriculum, Teacher education.

UNIT - 3 : EVIDENCE ON THE EFFECTIVENESS OF PEDAGOGICAL PRACTICES :-6

Methodology for the in depth stage: quality assessment of included studies - How can teacher education (curriculum and practicum) and the school curriculum and guidance materials best support effective pedagogy? Theory of change - Strength and nature of the body of evidence for effective pedagogical practices.

UNIT - 4 : PROFESSIONAL DEVELOPMENT:

6

Alignment with classroom practices and follow up support - Peer support - Support from the head teacher and the community - Curriculum and assessment - Barriers to learning: limited resources and large class sizes

UNIT - 5 : Research gaps and future directions:-

6

Research design - Contexts - Pedagogy - Teacher education - Curriculum and assessment - Dissemination and research impact.

TEXT BOOKS:

1. Ackers J, Hardman F (2001) Classroom interaction in Kenyan primary schools, Compare, 31 (2): 245-261.
2. Agrawal M (2004) Curricular reform in schools: The importance of evaluation, Journal of Curriculum Studies, 36 (3): 361-379.
3. Akyeampong K (2003) Teacher training in Ghana - does it count? Multi-site teacher education research project (MUSTER) country report 1. London: DFID.

REFERENCE BOOKS:-

1. Akyeampong K, Lussier K, Pryor J, Westbrook J (2013) Improving teaching and learning of basic maths and reading in Africa: Does teacher preparation count? International Journal of Educational Development, 33 (3): 272-282.
2. Alexander RJ (2001) Culture and pedagogy: International comparisons in primary education. Oxford and Boston: Blackwell.
3. Chavan M (2003) Read India: A mass scale, rapid, 'learning to read' campaign.

Course Coordinator

HOD

P18ACBA007	AUDIT COURSE : PERSONALITY DEVELOPMENT THROUGH LIFE ENLIGHTENMENT SKILLS	L	T	P	C
	Total Contact Hours – 30	2	0	0	0
	Prerequisite course – UG Level				
	Course Coordinator Name & Department:- Mr.Srinivasan/Dept.of Business Administration				
COURSE OBJECTIVES:- To become a person with stable mind, pleasing personality and determination					
COURSE OUTCOMES (COs)					
CO1	Identify the way to achieve the highest goal happily				
CO2	Review to awaken wisdom for learners				
CO3	Schedule to study of Shrimad-Bhagwad-Geeta will help the student				
CO4	Developing his personality and achieve the highest goal in life				
CO5	Evaluate the person who has studied Geeta will lead the nation and mankind to peace and prosperity				
CO6	Propose to study of Neetishatakam will help in developing versatile personality of students				

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	PS O1	PS O2
2	CO1	1	1	2		3		3		1	2		
	CO2	1	1	3		1		2		2	1		
	CO3	1	1	2		1		2		3	1		
	CO4	1	1	1		1		1		3	1		
	CO5	1	1	3		1		2		2	1		
	CO6	1	1	2		1		3		1	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	Any other	Project/Term Paper/ Seminar/ Internship(PR)
4	Approval	Academic Council Meeting											

UNIT - 1 : HOLISTIC DEVELOPMENT OF PERSONALITY- I

6

Neetisatakam-Holistic development of personality : Verses- 19,20,21,22 (wisdom) - Verses- 29,31,32 (pride & heroism) - Verses- 26,28,63,65 (virtue) - Verses- 52,53,59 (don't's) - Verses- 71,73,75,78 (do's).

UNIT - 2 : BHAGWADGEETA:

6

Approach to day to day work and duties. ShrimadBhagwadGeeta: Chapter 2-Verses 41, 47,48. Chapter 3-Verses 13, 21, 27, 35.

UNIT - 3: BHAGWAD GEETA:-

6

ShrimadBhagwadGeeta: Chapter 6-Verses 5, 13, 17, 23, 35, Chapter 18-Verses 45, 46, 48.

UNIT - 4: BASIC KNOWLEDGE:

6

Statements of basic knowledge. ShrimadBhagwadGeeta: Chapter2-Verses 56, 62, 68. Chapter 12 - Verses 13,14, 15, 16,17, 18.

UNIT - 5: ROLE MODEL : -

6

Personality of Role model. Shrimad BhagwadGeeta: Chapter2-Verses 17, Chapter 3-Verses 36,37,42, - Chapter 4-Verses 18, 38,39 - Chapter18 – Verses 37,38,63.

TEXT BOOK:

1. P.Gopinath, "Bhartrihari's Three Satakam (Niti-sringar-vairagya)", Rashtriya Sanskrit Sansthanam, New Delhi.

REFERENCE BOOK:

1. “Srimad Bhagavad Gita” by Swami SwarupanandaAdvaita Ashram (Publication Department), Kolkata.
2. http://openlearningworld.com/section_personality_development.html

Course Coordinator

HOD



FACULTY OF ARTS & SCIENCE
DEPARTMENT OF MICROBIOLOGY

REGULATIONS 2018
&
CURRICULUM & SYLLABUS

CHOICE BASED CREDIT SYSTEM

(Applicable to the batches admitted from July 2018)

BHARATH INSTITUTE OF HIGHER EDUCATION AND RESEARCH
FACULTY OF ARTS AND SCIENCE
REGULATIONS 2018
CHOICE BASED CREDIT SYSTEM
(R2018)
POST-GRADUATE PROGRAMMES
M.A., M.Sc., & M.Com.
(Applicable to the batches admitted from July 2018)

1.0 PRELIMINARY DEFINITIONS AND NOMENCLATURE

In these Regulations:

- i. **“Programme”** means P.G Programme, that is M.A., M.Sc, & M.Com Degree Programme
- ii. **“Course”** means Theory or Practical subject that is normally studied in a semester, like Indian Writing in English and Commonwealth Literature, Literature and Cognitive Sciences, etc.
- iii. **“Head of the Institution”** means the Dean of the Faculty who is responsible for all academic activities of the Arts and Science for implementation of relevant Rules and Regulations.
- iv. **“University”** means Bharath Institute of Higher Education & Research (BIHER)

2.0 PROGRAMMES OFFERED, MODES OF STUDY AND ADMISSION REQUIREMENTS

2.1 P.G. PROGRAMMES OFFERED: M.A., M.Sc., M.Com.,

The various specializations offered and its input requirements are given in Table 1.

TABLE – 1: ELIGIBILITY CRETERIA

S.NO.	COURSE	SUBJECT	ELIGIBILITY
POST GRADUATE COURSES			
1.	M.A. English	English	B.A. English or B.A.& B.Sc. with part-II English
2.	M.A.Tamil Literature	Tamil Literature	Bachelor's degree with Tamil under Part-I or B.A./B.Litt. with Tamil as the main branch of Study
3.	M.Com.	Commerce	B.Com. / B.B.A. / B.B.M. / B.A. Corporate Secretary ship / B.A. Cooperation / B.A. Business Economics / B.Sc Mathematics with Accountancy and Costing or Banking as

			Allied / Ancillary subjects. or B.Sc. Statistics or B.Sc. Computer Science
4.	M. Sc.	Mathematics	B.Sc. Mathematics or B.Sc. Applied Science
5.	M.Sc. Statistics	Statistics	B.Sc. Statistics or B.Sc. Mathematics with Statistics as an Ancillary/allied subject.
6.	M.Sc. Biotechnology	Biotechnology	B.Sc.Biology/Botany/Zoology/ B.VSc./ Microbiology/Chemistry/Bioch emistry / Physics/Agriculture/B.E./B.Tec h.(Biotech)/MBBS/BDS/Biotec hnology
7.	M.Sc	Physics	B.Sc. Physics or B.Sc. BSc Triple major with Allied Mathematics

3.0 MODES OF STUDY

3.1 Full-Time

Candidates admitted under 'Full-Time' should be available in the College / Institution during the entire complete working hours for the curricular, co-curricular and extra-curricular activities assigned to them.

3.2. Credit Banking

Some of the courses may be credited by enrolling for short term courses (during week days or weekends or evenings), which are offered for a small group of 15 to 25 participants and conducted by BIST. Further instruction will be through electronic and other media. Such short-term courses will be specially notified by BIST as eligible for credit banking.

4.0 ADMISSION REQUIREMENTS:

4.1 Candidates for admission to the first semester of the Master's Degree Programme shall be required to have passed an appropriate Degree Examination of BIST as specified in Table 1 or any other examination of any University or authority accepted by the Board of Management of BIHER as equivalent thereto.

4.2 However, the Board of Management of the University may decide to restrict admission in any particular year to candidates having a subset of qualifications prescribed in Table1.

4.3 Notwithstanding the qualifying examination the candidate might have passed, he/she shall have a minimum level of proficiency in the appropriate programme / courses as prescribed by the Board of Management of the University from time to time.

4.4 Eligibility conditions for admission such as the class obtained the number of attempts in qualifying examination and physical fitness will be as prescribed by the Board of Management of the University from time to time.

5.0 DURATION OF THE PROGRAMMES:

5.1 The minimum period for completion of the M.A, M.Com &M.Sc shall be four (4) semesters/ two (2) years and a maximum period of eight (8) semesters/ four (4) years.

5.2 In exceptional circumstance a further extension of two more semesters/one year shall be granted. During the extended period the student shall be considered as a private candidate and also not be eligible for ranking.

5.3 Each semester shall normally consist of 90 working days or 450 hours. The Head of the Department/Dean of the faculty shall ensure that every teacher imparts instruction as per the number of periods specified in the syllabus and that the teacher teaches the full content of the specified syllabus for the course being taught. End-semester examination will ordinarily follow immediately after the last working day of the semester.

6.0 STRUCTURE OF THE PROGRAMMES

6.1 Every Programme will have curricula with syllabi consisting of theory and practical courses.

6.2 Outline of Choice Based Credit System

a. Major Core Courses (MC): Courses which should compulsorily be studied by a candidate as core requirement are termed as Programme Major Core courses.

b. Major Elective Courses (ME): Generally a course which can be chosen from a pool of courses for specializing in a specific area within the discipline/domain of the core curriculum.

c. Open Elective Courses (OE): a course which can be chosen from a pool of courses supportive to the discipline or which provides an extended scope or which enables an exposure to some other discipline/subject/domain or a course that would improve his/her employability such as advanced technology courses offered by the industries or a course which the student thinks that would add value for his/her career nurtures the candidate's proficiency/skill.

d. Projects & Research (PR): Project work/Dissertation and Internship, Technical Seminar and Comprehension.

e. Audit Courses (AC):

6.3 The total number credit shall be within the range of 87-93 for all PG programmes.

Structure of the Curriculum

Sl. No.	Category	Range of Credits	
		Min	Max
1	Major Core (MC)	65	68
2	Major Elective (ME)	9	12
3	Open Elective (OE)	3	3
4	Project, Seminars, Internship, etc (PR)	10	10
5	Audit Course	-	-
Total Credits		87	93

6.4 Credit Assignment

Each course is assigned certain number of credits based on the following:

Contact period per week	Credits
1 Lecture period	1
1 tutorial Periods	1
2 Laboratory Periods (also for EE Courses like Seminar/project work/case study/etc.)	1

Seminar and Industrial Training are also given 1 to 2 credits depending on the amount of time allotted based on the specific requirement of the branch concerned.

6.5 Each semester curriculum shall normally have a blend of theory courses not exceeding 7 and practical courses not exceeding 3.

6.6 Four weeks of practical training will correspond to one credit, and applicable to all modes of study.

6.7 The number of Credits to be earned for the successful completion of the programme shall be as specified in the Curriculum of the respective specialization of the P.G. Programme

6.8 To help the students to take up special research areas in their project work and to enable a department to introduce a new elective in latest emerging areas in the curriculum, “Special Elective” may be offered. Candidate may be permitted to enroll for a “Special Elective” up to a maximum of 3 credits during the period of his /her study, provided the detailed syllabus of this /course is recommended by the Head of the Department through the head of the Institution, before the commencement of the semester in which the Special Elective course is introduced. This may be brought to the Board of Studies of the Faculty concerned for ratification.

6.9 The medium of instruction, examinations and project report will be English.

7.0 COURSE ENROLLMENT AND REGISTRATION

7.1 Each student, on admission shall be assigned to a Faculty Advisor (vide clause 9) who shall advise and counsel the student about the details of the academic programme and the choice of courses considering the student’s academic background and career objectives.

7.2 Every student shall enroll for the course of the succeeding semester in the current semester. However, the student shall confirm the enrollment by registering for the courses within the first five working days after the commencement of the concerned semester.

7.3 After registering for a course, a student shall attend the classes, satisfy the attendance requirements, earn Continuous Assessment marks and appear for the End Semester Examinations.

7.4 Each student on admission shall register for all the courses prescribed in the curriculum in the student's first Semester of study.

7.5 The enrollment for all the courses of the Semester II onwards will commence 10 working days prior to the last working day of Semester I. The student shall confirm the enrollment by registering for the courses within the first five working days after the commencement of the Semester.

7.6 The student shall enroll for the courses with the guidance of the student's Faculty Advisor. If the student wishes, the student may drop or add courses (vide clause 7.8) within five working days after the commencement of the concerned semester and complete the registration process duly authorized by the Faculty Advisor.

7.7 The courses that a student registers in a particular semester may include

- i.** Courses of the current semester.
- ii.** The core (Theory/Lab) courses that the student has not cleared in the previous semesters.
- iii.** Elective courses which the student failed (either the same elective or a different elective instead)

7.8 Flexibility to Drop courses

7.8.1 A student has to earn the total number of credits specified in the curriculum of the respective Programme of study in order to be eligible to obtain the degree.

7.8.2 The student has the option of dropping existing courses in a semester during registration. Total number of credits of such courses cannot exceed 3.

8.0 ATTENDANCE REQUIREMENTS FOR COMPLETION OF THE SEMESTER

8.1 A Candidate who has fulfilled the following conditions shall be deemed to have satisfied the requirements for completion of a semester:

8.1.1 Every student is expected to earn at least 75% attendance.

8.1.2 However, a candidate who could secure attendance between 65% and 74% only in one particular semester due to medical reasons (hospitalization / accident / specific illness) is given exemptions of 10% of attendance on production of Medical Certificate.

8.1.3 Students who go for participating in Seminar or Conference will be given on duty permission. The candidate shall submit the on duty participation certificate to the HOD who will in turn recommend and submit to the Head of the Institution for the approval. The approved certificates will be forwarded to the Controller of Examinations for record.

8.1.4 Candidates who do not satisfy the clauses 8.1.2 and 8.1.3 will not be permitted to write the End-Semester Examinations of the subject and are not permitted to go to the next semester, the detained semester should be repeated in the next academic year. When a student fulfills the requirement of overall attendance in a semester as per the clause 8.1.2 and 8.1.3 but fails to fulfill the attendance requirement for some of the courses, such courses should be repeated in the next academic year when offered.

9.0 FACULTY ADVISOR

To help the students in planning their courses of study and for general advice on the academic programme, the Head of the Department of the student will attach a certain number of students to a teacher of the Department who shall function as Faculty advisor for those students throughout their period of study. Such Faculty Advisor shall advise the students and monitor the courses taken by the students, check the attendance and progress of the students attached to him/her and counsel them periodically. If necessary, the faculty advisor may also discuss with or inform the parents about the progress of these students.

10.0 CLASS COMMITTEE

There shall be a class committee for each semester for each programme of study.

10.1 The class committee for a class under a particular programme is constituted by the Head of the Department.

10.2 The class committee shall be constituted on the first working day of any semester or earlier.

10.3 A class committee consists of teachers of the concerned class, student representatives (usually 2 boys and 2 girls), Faculty Advisor and a chairperson who is not normally teaching the class,. The function of the class committee include

- Solving problems experienced by students in the class room and in the laboratories.
- Clarifying the regulations of the degree programme and the details of rules
- Informing the student representatives, the academic schedule including the dates of assessments and the syllabus coverage for each assessment.
- Analyzing the performance of the students of the class after each test and finding the ways and means of solving the problems, if any.
- The committee shall device suitable methods for improving the performance of slow learners identified.

10.4 The Head of the Institution may participate in any class committee of the institution.

10.5 The chairperson is required to prepare the minutes of every meeting, submit the same to Head of the Institution within two days of the meeting and arrange to circulate it among the concerned students and teachers. If there are some points in the minutes requiring action by the institution, the same shall be brought to the notice of the Head of the Institution by the chairperson of the class committee through respective HODs.

10.6 The first meeting of the class committee shall be held within one week from the date of commencement of the semester, in order to inform the students about the nature and weightage of assessments within the framework of the Regulations. Two or three subsequent meetings may be held at suitable intervals. During these meetings the student members representing the entire class, shall meaningfully interact and express the opinions and suggestions of the class students to improve the effectiveness of the teaching-learning process.

11.0 COURSE COMMITTEE FOR COMMON COURSES

Each common theory course offered to more than one group of students shall have a “Course Committee” comprising all the teachers teaching the common course with one of them nominated as Course Coordinator. The nomination of the course Coordinator shall be made by the Head of the Department / Head of the Institution depending upon whether all the teachers teaching the common course belong to a single department or to several departments. The ‘Course committee’ shall meet as often as possible and ensure uniform evaluation of the tests and arrive at a common scheme of evaluation for the tests. Wherever it is feasible, the course committee may also prepare a common question paper for the Assessment Test(s).

12.0 PROJECT WORK /THESIS /DISSERTATION

12.1 Project work/Thesis/Dissertation shall be carried out under the supervision of a qualified teacher in the concerned Department.

12.2 A candidate may, however, in certain cases, be permitted to work on projects in an Industrial/Research Organization, on the recommendations of the Dean, Faculty of Arts and Science with the approval of the Head of the Institution. In such cases, the project work shall be jointly supervised by a Supervisor of the Department and Scientist/eligible expert from the Organisation and the student shall meet the supervisor periodically and attend the review committee meetings in the Department for evaluating the progress

12.3 The project Report / thesis / dissertation report/ drawings prepared according to approved guidelines and fully signed by the supervisors and the Head of the Department shall be submitted to the Head of the department.

12.4 The deadline for submission of final Project / Thesis /Dissertation Report is one week prior to the last working day of the semester.

12.5 If a candidate fails to submit the project report /thesis report/dissertation on or before the specified deadline, he/she is deemed to have failed in the Project Work and shall re-enroll for the same in a subsequent semester

13.0 PROCEDURES FOR AWARDING MARKS FOR INTERNAL ASSESSMENT (IA)

13.1 Every teacher is required to maintain a ‘Attendance and Assesment record’ which consists of attendance marked in each lecture or practical or project work class, the test marks and the record of class work (topic covered), separately for each course. This should be submitted to the Head of the department periodically (at least three times in a semester) for checking the syllabus coverage and the records of test marks and attendance. The Head of department will put his signature and date after due verification. At the end of the semester the record should be verified by the Head of the institution who will keep this document in safe custody (for five years). The University or any inspection team appointed by the University may inspect the records of attendance and assessment of both current and previous semesters.

13.2 There will be two periodical tests, each carrying weightage of 7.5 marks and one model examination carrying weightage of 20 marks. The distribution of marks for various components for the Internal Assessment is shown below in the table:

S.No	Components for Internal Assessment	Syllabus Coverage for the test / exam	Duration of the test in Minutes.	Marks (max.)
01	Internal Test – I	2 Units of the Syllabus	90	7.5
02	Internal Test – II	Next 2 Units of the Syllabus	90	7.5
03	Model Test	Full Syllabus	180	20
04	Seminar/Assignment/ Online Test/Quiz	-	-	5
Total				40

13.3 Practical Courses

Every practical exercise / experiment in all practical courses will be evaluated based on the conduct of exercise / experiment and records maintained by the students. There will be at least one model practical examination.

The criteria for awarding marks for internal assessment are given in Table below:

Items	Marks (Maximum)
Observation	10
Record	10
Model Practical	30
Total	50

13.4 Theory Courses with Laboratory component:

There shall be three assessments (each 100 marks) during the semester two test for theory and one test for laboratory practical. The total marks obtained in the three assessments shall be reduced to 40 marks and rounded to the nearest integer.

13.5 Seminar

The seminar shall carry 100 marks and shall be evaluated through Continuous Assessment only. Every student is expected to present a minimum of 2 seminars per semester before the evaluation committee and for each seminar, marks can be equally apportioned. The three member committee appointed by the Head of the Department will evaluate the seminar and at the end of the semester the marks can be consolidated and taken as the final mark. The evaluation shall be based on the seminar paper / report (40%), presentation (40%) and response to the questions asked during presentation (20%).

13.6 Industrial / Practical Training / Internship

The Industrial / Practical Training shall carry 100 marks and shall be evaluated through Continuous Assessment only. At the end of Industrial / Practical training / Internship / Summer Project, the student shall submit a brief report on the training undergone and a certificate from the organization concerned. The evaluation will be made based on this report and a Viva-Voce Examination, conducted internally by a three member Departmental Committee constituted by the Head of the Department. Certificates (issued by the Organization) submitted by the student shall be attached to the mark list and sent to the Controller of Examinations by the Head of the Department.

13.7 Project Work

The evaluation of Project Work for Phase I and Phase II each shall be done independently in the respective semesters and marks shall be allotted as per the weightages given in Clause 13.7.1.

13.7.1 There shall be three assessments (each 100 marks) during the semester by a review committee. The student shall make presentation on the progress made before the committee. The Head of the Department shall constitute the review committee consisting of supervisor, project coordinator and another faculty member from the Department for each programme of study. The total marks obtained in the three assessments shall be reduced to 50 marks and rounded to the nearest integer. The marks are to be distributed as detailed below:

Internal (50 Marks)		
Review I	Review II	Review III
10	20	20

13.7.2 There shall be three assessments (each 100 marks) during the semester by a review committee. The student shall make presentation on the progress made before the committee. The Head of the Department shall constitute the review committee consisting of supervisor, project coordinator and another faculty member from the Department for each programme of study. The total marks obtained in the three assessments shall be reduced to 50 marks and rounded to the nearest integer.

14.0 MINIMUM REQUIREMENTS TO DO PROJECT / THESIS / DISSERTATION

14.1A candidate is permitted to enroll the Project Work if he/she has earned the minimum number of credits as 30

14.2 If the candidate has not earned the requisite minimum credits, he/she has to complete the arrears (at least to the extent of earning the minimum credits specified) and then enroll for the project work in the subsequent year (along with junior batch). The enrolling should be done not later than 3 weeks from the beginning of the project semester.

15.0 REQUIREMENTS FOR APPEARING FOR UNIVERSITY EXAMINATIONS

A candidate shall normally be permitted to appear for the semester Examinations of the current semester if he/she has satisfied the semester completion requirements and has registered for examination in all courses of the semester to enroll for more courses to improve his /her cumulative grade point average.

16.0 EXAMINATIONS

The examinations shall ordinarily be conducted between October and December during the odd semesters and between April and June in the even semesters. For the practical examinations (including project work), both internal and external examiners shall be appointed by the University. The maximum marks for each theory course shall be 100 comprising of 40 marks for internal assessment and 60 marks for the examinations conducted by the University. The maximum marks for each practical course shall be 100 comprising of 50 marks for internal assessment and 50 marks for the examinations conducted by the University.

17.0 END SEMESTER EXAMINATION

17.1 Theory

There shall be one end- Semester Examination of 3 hours duration in each lecture based course. The Board of Studies may fix the duration of exam, beyond 3 hours for certain courses, if necessary.

17.2 Practical Courses

End Semester examination for practical courses will be conducted jointly by one internal examiner and one external examiner appointed by the Controller of Examinations with the recommendation of the Head of the Dept.

17.3 Project work

17.3.1 The evaluation of the Project Work will be based on the project report submitted and a Viva-Voce Examination by a team consisting of internal examiner (other than the supervisor) and External Examiner. The external examiner

shall be appointed by the COE from the panel of examiners submitted by the HOD The marks are to be distributed as detailed below

External (50 Marks)		
Thesis Evaluation (External)	Viva – Voce(30 Marks)	
	External	Internal
20	15	15

17.3.2 If a student fails to submit the project report on or before the specified deadline, student is deemed to have failed in the Project Work and shall re-enroll for the same in a subsequent (next) semester.

17.3.3 A copy of the approved project report after the successful completion of viva-voice examinations shall be kept in the library of the University.

18.0 PASSING REQUIREMENTS

18.1 A candidate who secures not less than 50% of total marks prescribed for the course with a minimum of 50% of the marks prescribed for each of the course of the End-Semester University Examination in both theory and practical courses shall be declared to have passed in the examination.

18.2 If the candidate fails to secure a pass in a particular course as per 18.1, clause it is mandatory that the candidate shall register and re-appear for the examination in that course during the next semester when examination is conducted for that course; he /she should continue to register and reappear for the examination till he/she secures a pass. A candidate may redo a particular course including project work/ thesis for improving the internal assessment mark.

19.0. AWARD OF LETTER GRADES

All assessments of a course will be done on absolute marks basis. However, for the purpose of reporting the performance of a candidate, letter grades, each carrying certain points specified, will be awarded as per the range of total marks (out of 100) obtained by the candidate (Regular or Arrear), as detailed below:

Letter Grade		Grade Points	Marks Range
O	Outstanding	10	91 - 100
A+	Excellent	9	81 - 90
A	Very Good	8	71 – 80
B +	Good	7	61 – 70
B	Average	6	50 - 60
RA	Re-Appear	0	< 50
SA	Shortage of Attendance	0	-
W	Withdrawal	0	-

A student is deemed to have passed and acquired the corresponding credits in a particular course if he/she obtains any one of the following grades: “O”, “A+”, “A”, “B+”, “B”.

‘SA’ denotes shortage of attendance (as per clause 7) and hence prevention from writing the end semester examinations. ‘SA’ will appear only in the result sheet. “RA” denotes that the student has failed to pass in that course. “W” denotes withdrawal from the exam for the particular course. The grades RA and W will figure both in Marks Sheet as well as in Result Sheet). In both cases the student has to earn Continuous Assessment marks and appear for the End Semester Examinations. If the grade W is given to course, the attendance requirement need not be satisfied.

If the grade RA is given to a core theory course, the attendance requirement need not be satisfied, but if the grade RA is given to a **Laboratory Course/ Project work / Seminar and any other PR course**, the attendance requirements (vide clause 7) should be satisfied.

Grade sheet

After results are declared, Grade Sheets will be issued to each student which will contain the following details:

- The list of courses registered during the semester and the grade scored.
- The Grade Point Average (GPA) for the semester and
- The Cumulative Grade Point Average (CGPA) of all courses enrolled from first semester onwards.

GPA for a semester is the ratio of the sum of the products of the number of credits for courses acquired and the corresponding points to the sum of the number of credits for the courses acquired in the semester. CGPA will be calculated in a similar manner, considering all the

courses registered from first semester. RA grades will be excluded for calculating GPA and CGPA.

$$\text{GPA / CGPA} = \frac{\sum_{i=1}^n C_i \text{GP}_i}{\sum_{i=1}^n C_i}$$

where C_i is the number of Credits assigned to the course

GP_i is the point corresponding to the grade obtained for each course

n is number of all courses successfully cleared during the particular semester in the case of GPA and during all the semesters in the case of CGPA.

20.0 ELIGIBILITY FOR THE AWARD OF THE DEGREE

20.1 A student shall be declared eligible for the award of the degree if he/she has:

- Successfully passed all the courses as specified in the curriculum corresponding to his/her programme within the stipulated period.
- No disciplinary action is pending against him/her.
- Successfully completed the field visit/industrial training, if any as prescribed in the curriculum

20.2 The award of the degree must have been approved by the Board of Management.

21.0 CLASSIFICATION OF THE DEGREE AWARDED

21.1 First Class With Distinction

A candidate who qualifies for the award of the Degree (vide clause 19) having passed the examination in the courses in his /her first appearance within the specified minimum number of semester securing a CGPA of not less than 8.5 shall be declared to have passed the examination in First Class with Distinction. For this purpose the withdrawal from examination (vide clause 23) will not be considered

as an appearance. Further, the authorized break of study (vide clause 24.3) will not be counted for the purpose of classification.

21.2 First Class:

A candidate who qualifies for the award of the Degree (vide clause 20) having passed the examination in all the courses within the maximum period of eight (8) semesters and securing a CGPA of not less than 6.50 shall be declared to have passed the examination in First Class. For this purpose the authorized break of study (vide clause 24.3) will not be counted for the purpose of classification.

21.3 Second Class

All other candidates (not covered in clauses 21.1 and 21.2) who qualify for the award of the degree (vide Clause 20.0) within the maximum period of eight(8) semesters shall be declared to have passed the examination in Second Class

21.4 All other candidates (not covered in clauses 21.1, 21.2& 21.3) who qualify for the award of the degree during the extended period as per the clause 5.2 shall be considered as a private candidate and also not be eligible for ranking and they shall be eligible to get only a pass certificate.

21.5 A candidate who is absent in semester examination in a course / project work after having registered for the same shall be considered to have appeared in that examination for the purpose of classification.

22.0 METHODS FOR REDRESSAL OF GRIEVANCES IN EVALUATION

A candidate can apply for revaluation of his/her semester examination answer paper in a theory course, within 2 weeks from the declaration of results, on payment of a prescribed fee through proper application to the Controller of Examinations through the Head of Departments concerned. The Controller of Examinations will arrange for the revaluation and the results will be intimated to the candidate concerned through the Head of the Department. Revaluation is not permitted for practical courses, seminars, practical training and for project work/thesis /Dissertation.

23.0 PROVISION FOR WITHDRAWAL FROM EXAMINATION:

23.1 A candidate may for valid reasons and on prior application, be granted permission to withdraw from appearing for the examination of any course or courses of only one semester examinations in which withdrawal is sought.

23.2 Withdrawal application shall be valid only if the candidate is otherwise eligible to write the examination and if it is made within the prescribed number of days prior to the commencement of the examination in that course or courses and also recommended by the Head of the Department.

23.3 A candidate for valid reasons like sudden illness or accident or unexpected natural calamities not able to be present in the examination hall in time or absent for the examination may seek post permission for the withdrawal from the examination.

23.4 Withdrawal shall not be construed as an appearance for the eligibility of a candidate for First Class with Distinction.

24.0 TEMPORARY BREAK OF STUDY FROM A PROGRAMME

24.1 A candidate is not normally permitted to temporarily break the study. However, if a candidate intends to temporarily discontinue the programme in the middle for valid reasons (such as accident or hospitalization due to prolonged ill health) and to rejoin the programmes in a later semester he/she shall apply to the University in advance, in any case, not later than the last date for enrolling for the semester examinations of the semester in question, through the Head of the Department and Head the Institution stating the reasons therefore.

24.2 The candidates permitted to rejoin the programme after break of study shall be governed by the rules and Regulations in force at the time of rejoining.

24.3 The authorized break of study will not be counted for the duration specified for passing all the courses for the purpose of classification (vide Clause 24.1 and 24.2).

24.4 The total period for completion of the Programme reckoned from, the commencement of the first semester to which the candidate was admitted shall not exceed the maximum period specified in clause 5.1 irrespective of the period of break of study (vide clause 24.1) in order that he/she may be eligible for the award of the degree(vide clause 20).

24.5 If any student is detained for want of required attendance, progress and good conduct, the period spent in that semester shall not be considered as permitted 'Break of Study' and clause 23.3 is not applicable for this case

25.0 MALPRACTICE

If a student indulges in malpractice in any internal test/model examination/end semester examination, he/she shall be liable for punitive action as recommended by the Malpractice committee.

26.0 DISCIPLINE

Every student is required to observe disciplined and decorous behavior both inside and outside the Institute and not to indulge in any activity which will tend to bring down the prestige of the University/Institute. The Dean shall constitute a disciplinary committee consisting of Dean, Head of the departments to which the student concerned belongs, and the Head of another department to enquire into acts of indiscipline and notify the University about the disciplinary action recommended for approval.

27.0 REVISION OF REGULATIONS, CURRICULUM AND SYLLABI

The University may from time to time revise, amend or change the Regulations, Curricula, Syllabi and scheme of examinations through the Academic Council with the approval of Board of Management.

-----XXX-----

VISION

To provide an excellent academic and research platform for the benefit of students, to develop with research proficiency and acquire technological competence on par with human dignity and values, to nurture exceptional biotechnologists with immense potential to innovate, discover and disseminate the knowledge for the benefit of society and environment.

MISSION

- M1.** Create an exclusive learning environment through well planned laboratory facilities and wisdom process to facilitate the students to face the challenge of the scientific world.
- M2.** To explore basic science, applied science and lab science with an industry focus and to act collectively like enhancing, improving and supporting interdisciplinary research and training.
- M3.** To provide quality education in pursuit of knowledge, that establishes a strong foundation for understanding developments in the rapidly advancing field of microbiology and to provide ethical based value education by encouraging activities addressing the public needs.
- M4.** To provide the nation with highly trained professional who are able to implement the scientific principles for the benefit of mankind.

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

PEO1- CAREER ACHIEVEMENTS - Our microbiologists will apply the concepts of microbiology, microbial physiology, pathology and other allied aspects of life sciences to solve a wide array of problems in a global sector and to do so will create novel alternative technologies.

PEO2- PROFESSIONALISM - Our microbiologists will participate in person and group oriented professional programs aiding constructive thinking to deal with multidisciplinary projects.

PEO3- LIFE-LONG LEARNING - Our microbiologists will recognize the need for sustainment and foster their scientific ideas and engage in long term learning and work out the problems with innovation and modernized awareness

PEO4- SKILL - Our microbiologists will apply the acquired biotechnological practical skills, moral values for a successful professional career and also to excel in entrepreneurship, teaching, research and development.

PEO5- ETHICS - Our microbiologists will demonstrate the awareness on professional ethics and codes related to professional practice of current issues in relation to safety, health and sustainable ecosystem.

Consistency of PEOs with the mission

PEO STATEMENTS	MISSION OF THE DEPARTMENT			
	M1	M2	M3	M4
PEO1- Career Achievements	3	2	3	3
PEO2: Professionalism	3	2	2	3
PEO3: Life-long Learning	2	3	2	2
PEO4: Skill	3	3	2	3
PEO5: Ethics	2	2	2	3

Note: M1, M2, ...,Mn are distinct elements of Mission statement.

Enter correlation levels 1, 2 or 3 as defined below:

1: Slight (Low) 2: Moderate (Medium) 3: Substantial (High)

PROGRAMME OUTCOMES (POs):

On completion of degree in Microbiology, the students will have the ability

PO1. Critical Thinking

Apply the knowledge of theoretical and technical concepts in Biotechnology, Biochemistry and Microbiology by framing rational hypothesis, planning experiments, acquiring scientific data and exploring those both qualitatively and quantitatively using advanced technologies.

PO2. Effective Communication

Apply written and oral communication skills to effective outreach of the conceptual findings using intensive imaging, tables, flowcharts, and graphs, identify comprehensive experimental measures and make obvious of their solutions.

PO3. Social Interaction

Critically investigate the scientific contributions pertaining to the concepts in all forms of media, and discover pertinent approaches to resolving and reporting scientific problems.

PO4. Effective citizenship

Design a modern analytical tools/ software/ equipments applying all the relevant standards and with realistic constrictions comprising public health, safety, culture, society and environment.

PO5. Ethics

Adopt code of bioethics in professional as well as social context and exhibit exemplary professional, safety, cultural, ethical and legal behaviors in scientific contributions and decision making.

PO6. Environment and Sustainability

Understand the impact of the professional needs, solutions and adaptive thinking in relation to environmental context and sustainable development.

PO7. Self directed and Life-long learning

Be familiar with the urge for incessant learning and will prepare them to create, select, learn and apply appropriate techniques, resources, and advanced instrumentation/techniques to solve intricate biotechnological activities with clarity on the limitations.

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs):

PEO1. Knowledge

To provide in-depth knowledge about advanced concepts of microbiology and multidisciplinary biological sciences and further apply their practical skills to become technical expertise and build resolutions via their cutting edge research.

PEO2. Skills

To inculcate, facilitate, motivate and promote the conceptual information and scientific knowledge about microbes and core areas of biological sciences for the development of novel precise concepts, modern analytical tools/ software/ equipments for industrial applications and bioentrepreneurship.

PEO3. Attitude/Behaviour

To develop enthusiastic microbiologists with a well-built professional ethics and moral responsibilities that will optimistically affect their profession, community, society and Nation at large.

CURRICULUM & SYLLABUS
(Applicable to the batches admitted from July 2018)

I SEMESTER

S.No.	CATEGORY	SUB. CODE	SUBJECT	Total Contact Hrs	L	T	P	C
THEORY								
1.	MC	P18MCM101	Core I - General Microbiology	4	3	1	0	4
2.	MC	P18MCM102	Core II - Cell and Molecular biology	4	3	1	0	4
3.	MC	P18MCM103	Core III - Advanced Biochemistry	4	3	1	0	4
4.	ME		Major Elective – I	4	3	1	0	4
5.	ME		Major Elective – II	4	3	1	0	4
	PRACTICAL							
6.	MC	P18MCM11L1	Core IV -General Microbiology Lab	6	0	0	6	3
7.	MC	P18MCM11L2	Core V - Biochemistry and Molecular Biology	6	0	0	6	3
8.	EEC	P18PRM11S1	Technical Seminar	0	0	0	2	1
Total								

II SEMESTER

S.No.	CATEGORY	SUB. CODE	SUBJECT	Total Contact Hrs	L	T	P	C
THEORY								

1.	MC	P18MCM1201	Core VI - Soil Microbiology	4	3	1	0	4
2.	MC	P18MCM1202	Core VII -rDNA technology	4	3	1	0	4
3.	MC	P18MCM1203	Core VIII - Immunotechnology	5	3	1	0	4
4.	ME	P18MCM1204	Core IX - Genomics and Proteomics	4	3	1	0	4
5.	ME		Major Elective-III	5	3	1	0	4
PRACTICAL								
6.	MC	P18MCM12L1	Core X - Soil Microbiology Lab	4	0	6	3	0
7.	MC	P18MCM12L2	Core XI - Immunotechnology and rDNA technology Lab	6	0	6	3	0
8.	EEC	P18PRMI1V1	Internship		0	0	1	0
Total								

III SEMESTER

S.No.	CATEGORY	SUB. CODE	SUBJECT	Total Contact Hrs	L	T	P	C
THEORY								
1.	MC	P18MCM1301	Core XII - Research Methods in Biology	5	3	0	0	3
2.	MC	P18MCM1302	Core XIII - Fermentation Technology and Bioengineering	5	3	0	0	3
3.	MC	P18MCM1303	Core XIV - Food Processing Technology	4	3	1	0	4
4.	MC	P18MCM1304	Core XV- Medical Microbiology	4	3	1	0	4
5.	ME	P18MCM1305	Core XVI- Nanotechnology	4	3	1	0	4

6.								
	PRACTICAL							
7.	MC	P18MCMI3L1	Core XVII - Fermentation technology and Food technology Lab	4	0	0	6	3

IV SEMESTER

S.No.	CATEGOR Y	SUB. CODE	SUBJECT	Total Contact Hrs	L	T	P	C
THEORY								
1.	MC	P18MCMI401	Diagnostic Microbiology	5	4	0	0	4
2.	EEC		Open Elective	2	0	0	0	2
3.	HS	P18MCYO001	Stress Management by Yoga	4	3	1	0	4
4.	HS	P18PRMI4T1	Term paper	4	4	0	0	1
5.	HS	P18PRMI4P1	Project	2	1	0	2	8

LIST OF MAJOR ELECTIVE – I CHOOSE ANY ONE IN SEMESTER I

S.No.	Sub Code	Subjects	Total Contact Hrs	L	T	P	C

1	P18MEMI011	Major Elective – I: Metabolic Regulation	4	4	0	0	4
2	P18MEMI012	Major Elective – I: Enzyme Technology	4	4	0	0	4
3	P18MEMI013	Major Elective – I: Bioinstrumentation	4	4	0	0	4
Total			4	4	0	0	4

LIST OF MAJOR ELECTIVE – II
CHOOSE ANY ONE IN SEMESTER I

S.No.	Sub Code	Subjects	Total Contact Hrs	L	T	P	C
1	P18MEMI021	Major Elective – II: Industrial Biotechnology	4	4	0	0	4
2	P18MEMI022	Major Elective – II: Industrial Microbiology	4	4	0	0	4
3	P18MEMI023	Major Elective – II: Microbial Genetics	4	4	0	0	4
Total			4	4	0	0	4

LIST OF MAJOR ELECTIVE – III
CHOOSE ANY ONE IN SEMESTER II

S.No.	Sub Code	Subjects	Total Contact Hrs	L	T	P	C
1	P18MEMI031	Major Elective-III: Waste Management Technology	4	4	0	0	4
2	P18MEMI032	Major Elective-III: Microbial Physiology	4	4	0	0	4
3	P18MEMI033	Major Elective-III: Biostatistics	4	4	0	0	4
Total			4	4	0	0	4

LIST OF OPEN ELECTIVES
CHOOSE ANY ONE COURSE IN SEMESTER IV

S.No.	Sub Code	Subjects	Total Contact Hrs	L	T	P	C
1.	P18OEBA001	Advertising and Sales Management	2	0	0	0	2
2.	P18OEBA002	BPO Management	2	0	0	0	2
3.	P18OEBA003	Call Centre Management – Voice & Non Voice	2	0	0	0	2
4.	P18OEBA004	Customer Relationship Management	2	0	0	0	2
5.	P18OEBA005	Entrepreneurship Development	2	0	0	0	2
6.	P18OEBA006	Advanced Human Resource Management	2	0	0	0	2
7.	P18OEBA007	Logistics & Supply Chain Management	2	0	0	0	2
8.	P18OEBA008	Office Management	2	0	0	0	2
9.	P18OEVC001	Photography & Videography	2	0	0	0	2
10.	P18OEEN001	Soft Skills	2	0	0	0	2
11.	P18OEEN002	Mass Media and Communication	2	0	0	0	2
12.	P18OESC001	Computer Applications	2	0	0	0	2
13.	P18OESC002	Multimedia	2	0	0	0	2
14.	P18OESC003	Advanced Excel	2	0	0	0	2
15.	P18OESC004	Web Designing	2	0	0	0	2

16.	P18OESC005	Photoshop	2	0	0	0	2
17.	P18OESC006	Flash	2	0	0	0	2
18.	P18OESC007	Computer Hardware and Networking	2	0	0	0	2
19.	P18OESC008	Computer Programming	2	0	0	0	2
20.	P18OESC009	Office Automation Tools	2	0	0	0	2
21.	P18OEMI001	Clinical Microbiology	2	0	0	0	2
22.	P18OEMI002	Herbal Medicine	2	0	0	0	2
23.	P18OEPH001	Electrical Technician	2	0	0	0	2

FIRST SEMESTER

P18MCM1101	GENERAL MICROBIOLOGY	L	T	P	C
	Total Contact Hours – 60	3	1	0	4
	Prerequisite course – B.Sc. Biochemistry, Biotechnology, Microbiology and other related Life Science Subject.				
	Course Coordinator Name & Department: - Dr. J. Senthil & Microbiology				

COURSE OBJECTIVES: -

Learners will be familiar with the basics of microbiology concepts. Learners will understand the classification, characteristics, techniques, importance of microbes and their applications.

COURSE OUTCOMES (COs)

CO1	Recall the history, basics of microbiology and microscopy.
CO2	Recognize the classification of microbes based on physiological characteristics.
CO3	Apply various techniques in microbiology lab maintenance.
CO4	Apply the microbes based morphological studies using staining techniques.
CO5	Analyze the pathogenicity of microorganisms.
CO6	Analyze the the microbial diseases and their treatments.

Mapping of Course Outcomes with Program outcomes (POs)
(H/M/L indicates strength of correlation) H-High, M-Medium, L-Low

1	COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
2	CO1	H	M						H		
	CO2	H	M								
	CO3	H	M								
	CO4	H	M								
	CO5	H	M								

	CO6	H	M									
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											

UNIT I	12
Microscopy – Its principles and application in the field of Microbiology including the following: Dark field, Phase contrast, Fluorescence microscopy. TEM and SEM. Principles, operation and maintenance of: refrigerated and ultracentrifuges, Spectrophotometer. Lyophilizers. Staining methods – Simple, differential and special methods. Sterilization and disinfection methods and their quality control.	
UNIT II	12
Bacterial Anatomy, Structure, properties and biosynthesis cellular components of bacteria – Sporulation – Growth and nutrition –Nutritional requirements – Growth curve – Kinetics of growth – Batch culture – Synchronous growth – Measurement of growth and enumeration of cells – Pure culture techniques.	
UNIT III	12
Distribution of Algae - Thallus structure in algae - Reproduction in alga - Life cycle patterns in algae - Chlamydomonas – Volvox (Green algae) - Nostoc – Spirogyra (BGA) - Ectocarpus – Sargassum (Brown algae) - Poly siphonia – Batrachospermum (Red algae).	
UNIT IV	12
Staining techniques – Classification of stains, Theories and Mechanism of Gram staining, acid fast staining, Negative staining, Capsule staining, Flagella staining, Endospore staining.	
UNIT V	12
Common pathogenesis of bacteria, fungi and virus (Morphology, Biochemical characters, pathogenicity, treatment and preventive measures).	
TEXT BOOKS:	
1. Pelczar MJ, Chan ECS and Kreig NR. Microbiology, McGraw Hill, NewYork, 1999.	
2. Madigan MT, Martinko, JM and Parker J. Brock's Biology of Microorganisms, 9th ed., Prentice Hall, New Jersey press, 1999.	
REFERENCE BOOKS:	

1.	Prescott LM, Harley JP and Klein DA. Microbiology, McGraw Hill, New Delhi, 1999.
2.	Dubey RC and Maheswari DK. A Textbook of Microbiology, 1 st edition, S Chand & Co. Ltd., New Delhi, 2003.
Course Coordinator	HOD

P18MCM102	CELL AND MOLECULAR BIOLOGY	L	T	P	C
	Total Contact Hours – 60	3	1	0	4
	Prerequisite course – B.Sc. Biochemistry, Biotechnology, Microbiology and other related Life Science Subject.				
	Course Coordinator Name & Department: - Dr. J. Senthil & Microbiology				

COURSE OBJECTIVES: -

Learners will be familiar with the basics of cells, origin and evolution. Learners will understand the DNA structure and replication, synthesis of RNA and Protein.

COURSE OUTCOMES (COs)

CO1	Recall the history of cells, theory of cell biology and classification of cells.
CO2	Recognize the DNA repair mechanisms.
CO3	Apply the role of cell organelles in physiology.
CO4	Apply the knowledge of cell cycles and growth of cells.
CO5	Analyze the importance of gene expression and silencing.
CO6	Analyze the familiarity of phages and viruses.

Mapping of Course Outcomes with Program outcomes (POs)
(H/M/L indicates strength of correlation) H-High, M-Medium, L-Low

1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
2	CO1	H	M						H		
	CO2	H	M								
	CO3	H	M								
	CO4	H	M								
	CO5	H	M								

	CO6	H	M									
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											

UNIT I	12
An overview of cells – Origin and evolution of cells. Cell theory, classification of cells – Prokaryotic cells and eukaryotic cells. Comparison of prokaryotic and eukaryotic cells. Cell cycle – components in cell cycle control – cyclic-CDKs- check points in cell cycle – abnormalities in cell cycle.	
UNIT II	12
DNA replication, repair and recombination - unit of replication, enzymes involved, replication origin and replication fork, fidelity of replication, extra-chromosomal replications. DNA damage and repair mechanisms.	
UNIT III	12
RNA synthesis and processing: Transcription factors and machinery -formation of initiation complex, transcription activators and repressors, RNA polymerases, capping, elongation and termination. RNA processing - RNA editing, splicing, polyadenylation, RNA transport.	
UNIT IV	12
Protein synthesis - formation of initiation complex, elongation and termination – machineries and their regulation. Genetic code. Aminoacylation of tRNA, tRNA-identity, aminoacyl tRNA synthetase, translational proof-reading, translation inhibitors. Post-translational modification of proteins.	
UNIT V	12
Control of gene expression at transcription and translation level -Regulation of phages, viruses, prokaryotic and eukaryotic gene expression - Role of chromatin in regulating gene expression and gene silencing.	
TEXT BOOKS:	
1. Blackburn GM, Gait MJ. Nucleic acids in chemistry and biology, Oxford University Press, 1996.	
2. Hopkins NH, Roberts JW, Steitz JA and Weiner AM. Molecular biology of the gene, 4 th edition. Benjamin/Cummings Publishing Company, 1998.	

REFERENCE BOOKS:	
1.	Friedberg EC, Walker GC and Siede W. DNA Repair and Mutagenesis, ASM Press, 2005.
2.	Ajoy Paul. Text Book of Cell and Molecular Biology, Books & Allied (P) Ltd., Kolkata, 2007.
Course Coordinator	HOD

P18MCM103	ADVANCED BIOCHEMISTRY							L	T	P	C
	Total Contact Hours – 60							3	1	0	4
	Prerequisite course – B.Sc. Biochemistry, Biotechnology, Microbiology and other related Life Science Subject.										
	Course Coordinator Name & Department: - Dr. J. Senthil & Microbiology										
COURSE OBJECTIVES: -											
Learners will be familiar with the biomolecules. Learners will understand the classification, physical and chemical properties of each biological macromolecule.											
COURSE OUTCOMES (COs)											
CO1	Recall the basics of Carbohydrates and Protein.										
CO2	Recognize the mechanisms behind the macromolecules.										
CO3	Apply the role of lipids in biomembranes and biosynthesis.										
CO4	Apply the biological significance of double stranded DNA.										
CO5	Analyze the mechanism and conformational properties of polynucleotides.										
CO6	Analyze and develop the synthetic vitamins and hormones for the benefits of mankind.										
Mapping of Course Outcomes with Program outcomes (POs) (H/M/L indicates strength of correlation) H-High, M-Medium, L-Low											
1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
2	CO1	H	M						H	M	
	CO2	H	M								
	CO3	H	M								
	CO4	H	M								
	CO5	H	M								
	CO6	H	M								

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
Classification, chemical properties of carbohydrates, Chemistry and biological roles of polysaccharides. Structural elucidation of polysaccharides; Structure and role of proteoglycans, glycoproteins and glycolipids (gangliosides and lipopolysaccharides).	
UNIT II	12
Classification and physico-chemical properties of amino acids and peptides; Peptide bond; Primary, secondary, tertiary and quaternary structures of proteins; Ramchandranplot; Silk fibroin, coiled coils, collagen triple helix and hemoglobin; Denaturation and renaturation of proteins.	
UNIT III	12
Classification, structure and functions: Triglycerides; Phospholipids; Steroids and Terpenes; Lipoproteins: Structure and functions of lipoproteins; Role of lipids in biomembranes; Biosynthesis: Fatty acids; Triglycerides; Phospholipids; Sterols.	
UNIT IV	12
Structure of double stranded DNA (A, B and ZDNA). The biological significance of double strandedness; Sequence dependent variation in the shape of DNA. Physical properties of double stranded DNA. Types of RNAs and their biological significance. Topology of DNA, Conformational properties of polynucleotides, secondary and tertiary structural features and their analysis.	
UNIT V	12
Structure and properties of vitamins and hormones –Definition and nomenclature – biological availability – assessment of vitamins in nutritional status – vitamins B1,B12, K, E and niacin – Protein and peptide hormones – auxin, gibberellins, abscisic acid.	
TEXT BOOKS:	
1. Freidberg EC, Walker GC and Siede W. DNA Repair and Mutagenesis, ASM Press, 1995.	
2. Geoffrey L Zuba. Biochemistry, Wm. C. Brown Publishers, 4 th Edition, 1998.	

REFERENCE BOOKS:

1. Freifelder D. Molecular Biology, 2nd edition, Narosa Publishing House, 1996.
2. Campbell MK. Biochemistry, 3rd edition, Saunders College Publishing Harcourt Brace College Publishers, 1999.

Course Coordinator**HOD**

P18MCMII1L1	GENERAL MICROBIOLOGY LAB						L	T	P	C	
	Total Contact Hours – 45						0	0	6	3	
	Prerequisite course – B.Sc. Biochemistry, Biotechnology, Microbiology and other related Life Science Subject.										
	Course Coordinator Name & Department: - Dr. J. Senthil & Microbiology										
COURSE OBJECTIVES: -											
Learners will be familiar with the fundamental knowledge in microbial laboratory techniques. Learners will understand the microbial characteristics and identification of microbes in disease perspectives.											
COURSE OUTCOMES (COs)											
CO1	Differentiate the microbes based on morphology.										
CO2	Grasp the microscopic observation of microbes.										
CO3	Handle various instruments for culturing the microbes in lab.										
CO4	Measure the different medium level for exact microbial culture.										
CO5	Sketches the results and identifying the microbes.										
CO6	Perform the isolation and identification of microbes.										
Mapping of Course Outcomes with Program outcomes (POs) (H/M/L indicates strength of correlation) H-High, M-Medium, L-Low											
1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
2	CO1	H	M								H
	CO2	H	M								
	CO3	H	M								
	CO4	H	M								
	CO5	H	M								

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								

1. Principles and methods of sterilization.
2. Preparation of Media: Nutrient broth, Nutrient agar.
3. Isolation and pure culture of micro organisms from soil and water.
4. Maintenance of micro organisms – Agar slant.
5. Motility determination – Hanging drop method.
6. Staining methods: Simple, Gram staining, Spore.
7. Cultural characteristics of micro organisms and basal medium, selective medium and enriched medium.
8. Biochemical characterization of bacteria – Catalase and Oxidase test.
9. IMVIC test.
10. Urease and TSI test.
11. Study on bacterial extracellular enzymes – Starch hydrolysis.
12. Antibiotic sensitivity test (Kirby Bauer disc diffusion method).

TEXT BOOKS:

1. James T Stanley, Marvin P Bryant. Bergey's Manual of Systematic Bacteriology Vol. II, Nobert Fleming Springer Publishers, 1984.
2. Gerhardt P, Murray RG, Wood WA and Kreig NR. Methods of General and Molecular Bacteriology, American Society for Microbiology, Washington, 1994.

REFERENCE BOOKS:

1. Cappuccino and James G. Microbiology a laboratory manual, Addison Wesley Publishing Company Inc., 4th edition, England, California, 1996.
2. David R Brooke. Bergey's Manual of Systematic Bacteriology, Second edition, Vol.III, Eastern Halz, Springer Publication, 2009.

Course Coordinator

HOD

P18MCM11L2	BIOCHEMISTRY AND MOLECULAR BIOLOGY LAB	L	T	P	C
	Total Contact Hours – 45	0	0	6	3
	Prerequisite course – B.Sc. Biochemistry, Biotechnology, Microbiology and other related Life Science Subject.				
	Course Coordinator Name & Department: - Dr. J. Senthil & Microbiology				

COURSE OBJECTIVES: -

Learners will be familiar with the estimation process of biomolecules. Learners will understand the isolation of genomic DNA from various sources.

COURSE OUTCOMES (COs)

CO1	Perform the estimation of different macromolecules skillfully.
CO2	Operates the electrophoretic apparatus.
CO3	Handle various instruments related to molecular biological experiments.
CO4	Calibrates the values with reference range values.
CO5	Sketches and write the interpretation and inferences.

Mapping of Course Outcomes with Program outcomes (POs)
(H/M/L indicates strength of correlation) H-High, M-Medium, L-Low

1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
2	CO1	H	M						H		
	CO2	H	M						H		
	CO3	H	M						H		
	CO4	H	M						H	M	M
	CO5	H	M						H	M	M

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								

1. Estimation of protein by Lowry method.
2. Estimation of carbohydrate by Anthrone method.
3. Estimation of total amino acid by Ninhydrin method.
4. Estimation of serum cholesterol by Zaks method.
5. Estimation of chlorophyll.
6. Isolation of plant genomic DNA by Dellaporta method.
7. Isolation of genomic DNA from liver tissue.
8. Isolation of genomic DNA from bacteria.
9. Agarose gel electrophoresis
10. Quantitative analysis of DNA

TEXT BOOKS:

1. Wilson K Walker. Practical Biochemistry, Principles and Techniques, Cambridge University Press, 1995.
2. Wilson K and Walker J. Practical Biochemistry, 5th Edition, Cambridge University Press, 2000.

REFERENCE BOOKS:

1. Joseph Sambrook and David W Russell. Molecular Cloning: A Laboratory Manual, Third edition, Volume 1, 2 and 3, Cold Spring Harbor Laboratory Press, 2001.
2. Dr. Sarma PVGK. Molecular Biology, A Practical Manual Hardcover, MJP Publishers, 2017.

Course Coordinator

HOD

P18MCM1201	SOIL MICROBIOLOGY	L	T	P	C
	Total Contact Hours - 60	3	1	0	4
	Prerequisite course – B.Sc. Biochemistry, Biotechnology, Microbiology and other related Life Science Subject				
	Course Coordinator Name & Department: - Dr. V. Padmapriya & Microbiology				

COURSE OBJECTIVES: -

Learners will be familiar with the basic knowledge of soil microorganisms. Learners will understand the importance of biofertilizers in soil microbiology .

COURSE OUTCOMES (COs)

CO1	Recall the basic of soil microbes, types and their significance
CO2	Recognize the biogeochemical cycles
CO3	Apply the biofertilizers used in the modern agriculture
CO4	Analyze the lifecycle of the soil microbes
CO5	Evaluate the diseases of soil microbes and its treatments
CO6	Analyze the new biopesticides in microbiology

Mapping of Course Outcomes with Program outcomes (POs) (H/M/L indicates strength of correlation) H-High, M-Medium, L-Low

1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
2	CO1	H	M						H		
	CO2	H	M								
	CO3	H	M								
	CO4	H	M								
	CO5	H	M								
	CO6	H	M								

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

Properties of soil cultivation, types and signification of soil microbes - bacteria, fungi Actinomycetes, Algae, protozoa, nematode and virus – Factors affecting microbial population.

UNIT II

12

Biochemical cycle – carbon, phosphorus, nitrogen, biological - nitrogen fixation-nitrogen fixers, root nodules formation – Nitrogenase, Hydrogenase.

UNIT III

12

Microbial interaction between microbes – Neutralism, Commensalism, synergism, Mutualism, Amensalism, Symbiosis, competition, Parasitism and predators – interaction of microbes with plants - Rhizosphere and mycorrhiza - interaction of microbes-insects and rumen.

UNIT IV

12

Plant pathology – Bacterial disease - blight of rice, citrus canker - Fungal disease - red rot of sugarcane, wilt of cotton, Tikka leaf, root of groundnut

UNIT V

12

Biofertilizers - Rhizobium and Azotobacter, cyanobacteria, Azolla - mass multiplication and crop response, Biopesticides- Bacterial, fungal and viral.

TEXT BOOKS:

1. Subba Rao NS. Soil Microbiology, 4th Edition, Oxford & IBH Publishing Co. Pvt

Ltd., New Delhi, 1994

2. Mishra RR. Soil Microbiology, 1st Edition, CBS Publishers and Distributors, New Delhi, 2001.

REFERENCE BOOKS:

1. Rangaswami G and Mahadevan A, Diseases of crop plants in India, 4th Edition, Printice-Hall of India Pvt. Ltd., New Delhi, 2002.
2. Robert L Tate. Soil Microbiology, 1st Edition, John Wiley & Sons, Inc. New York, 2005.

Course Coordinator

HOD

P18MCM1202	rDNA TECHNOLOGY							L	T	P	C
	Total Contact Hours – 60							3	1	0	4
	Prerequisite course – B.Sc. Biochemistry, Biotechnology, Microbiology and other related Life Science Subject										
	Course Coordinator Name & Department: - Dr. V. Padmapriya & Microbiology										
COURSE OBJECTIVES: -											
Learners will be familiar with the basic of mutagenesis and recombination methods. Learners will understand the gene library, nucleic acid hybridization and blotting techniques.											
COURSE OUTCOMES (COs)											
CO1	Recall the basic genetic engineering experiments										
CO2	Recognize the recombination methods										
CO3	Apply and acquire knowledge in hybridization techniques										
CO4	Apply the recombinant technology in microbes for product formation.										
CO5	Analyze the applications of rDNA technology in plants, animals and industries.										
CO6	Analyze the new technologies in genetic engineering field.										
Mapping of Course Outcomes with Program outcomes (POs) (H/M/L indicates strength of correlation) H-High, M-Medium, L-Low											
1	COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
2	CO1	H	M							H	
	CO2	H	M								
	CO3	H	M								
	CO4	H	M								
	CO5	H	M								
	CO6	H	M								
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**

Gene as a unit of mutation and recombination. Mutagenesis, mutations and mutants biochemical basis of mutations, spontaneous and induced mutations, isolation of mutants, mutagenesis, reversion, suppression, genetic analysis of mutants. Recombination methods – conjugation and transformation.

UNIT II**12**

Enzymes in Genetic Engineering - DNA Polymerase, Polynucleotide kinase, T4 DNA ligase, Nick translation system, Terminal deoxynucleotidyl transferase, Reverse transcriptase Restriction endonucleases Type I & II. Vectors – plasmid, bacteriophage and other viral vectors, cosmids, Ti plasmid, yeast artificial chromosome

UNIT III**12**

Strategy of recombinant DNA technology; Gene library - Genomic library, cDNA library Cloning strategies - Use of linkers, adoptors, homopolymer tails – Nucleic acid hybridization - Colony hybridization, plaque hybridization; Blotting techniques - Southern, Northern, Western and dot blotting

UNIT IV**12**

PCR – principles, techniques and applications. Gene isolation, cloning and expression, DNA sequencing, oligonucleotide synthesis, Southern and Northern hybridization, FISH, RAPD, PCR-RFLP, STRR, LTRR. DNA fingerprinting and their applications for diagnosis of disease, site-directed mutagenesis, Gene silencing, Gene transfer technologies.

UNIT V**12**

DNA chips and microarray gene screen technology; site directed mutagenesis, transgenic animals and gene knockout techniques, cell culture based techniques Genetic diagnosis. Applications in medical field, biology, transgenic plants, transgenic animals, Recombinant vaccines development. Gene therapy molecular basis of genetic diseases, genetic counseling

TEXT BOOKS:

1. Peter J Russell, Genetics, 5th edition, Benjamin-Cummings Publishing Company, 1997
2. Bernard R. Glick and Jack J. Pasternak, Molecular Biotechnology, 2nd edition, ASM press, 2003

REFERENCE BOOKS:

1. Brown. T.A, Gene Cloning and DNA analysis, 2nd edition, ASM press, 2004.
2. Sandy Primrose, Principles of Gene Manipulation and Genomics, 7th edition, Black Well Publishers, 2006

P18MCM1203	IMMUNOTECHNOLOGY							L	T	P	C
	Total Contact Hours – 60							3	1	0	4
	Prerequisite course – B.Sc. Biochemistry, Biotechnology, Microbiology and other related Life Science Subject										
	Course Coordinator Name & Department: - Dr. V. Padmapriya & Microbiology										
COURSE OBJECTIVES: -											
Learners will be familiar with the basic immune systems. Learners will understand the antigen recognition, mode of activation of complement system and hyper sensitivity reactions.											
COURSE OUTCOMES (COs)											
CO1	Recall the basic of history and scope of immunology										
CO2	Recognize the principles and importance of biological macromolecules										
CO3	Apply knowledge in factors governing antigenicity										
CO4	Apply the principles of immunology.										
CO5	Analyze the molecular basis of antigen recognition, hypersensitivity and Ag-Ab reactions.										
CO6	Analyze its applications in treating human diseases.										
Mapping of Course Outcomes with Program outcomes (POs) (H/M/L indicates strength of correlation) H-High, M-Medium, L-Low											
1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
2	CO1	H	M						H		
	CO2	H	M								
	CO3	H	M								
	CO4	H	M								
	CO5	H	M								
	CO6	H	M								
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**

History and scope of immunology; Lymphoid tissues and organs. Types of immunity: Innate and acquired, active and passive. Cell mediated immunity and Humoral immunity. Kinetics of antibody production – primary and secondary antibody response.

UNIT II**12**

Haematopoiesis. Ontogeny, origin, development and differentiation of immune cells. Clonal selection theory. B-lymphocytes and their activation. Thymus derived lymphocytes, Antigen presenting cells, mechanism of T-cell activation. T Helper and T-cytotoxic cells, Natural killer cells, Dendritic cells, Langerhan cells, Macrophages, Microphages. Phagocytosis process. Structure and functions of Class I and II molecules. Major Histocompatibility Complex

UNIT III**12**

Immunoglobulins - structure, distribution and function. Generation of antibody diversity. Organisation and expression of immunoglobulin genes. Antigenicity: factors governing antigenicity. Antigen types, haptens, epitopes, adjuvants, carriers, bacterial, viral and tumour antigens, autoantigens, blood group antigens, T dependent, T independent antigens. Antigen antibody reactions. Factors governing antigen-antibody interactions: affinity, avidity, valency, cross reactivity

UNIT IV**12**

The complement systems: mode of activation, classical and alternate pathway Transplantation immunity - Organ transplantation and HLA tissue typing. Introduction to autoimmune disorders and immunology of infectious diseases

UNIT V**12**

Hypersensitivity reactions. Immunological tolerance. Immunosuppression. Immunotherapy. Hybridoma and monoclonals. Recombinant antibodies. DNA vaccines and Edible vaccines. Complement system and Autoimmune disorders.

TEXT BOOKS:

1. Roitt IM. Essential Immunology, Blackwell Scientific Publications, Oxford, 1998.
2. Abbas, A.K., Litchman, A.H., Pober. J.S. Cellular and Molecular Immunology, 2nd ed, W.B.Saunders, USA, 1994.

REFERENCE BOOKS:

1. Joshi KR, Osama NO. Immunology, Agrobios Ltd, India, 2000.
2. Rao CV. An Introduction to Immunology, Narosa Publishing House, India, 2002

Course Coordinator**HOD**

UNIT I**12**

Genomic and cDNA sequence: gene prediction rules – gene prediction softwares – human and Arabidopsis genome projects – mutations.

UNIT II**12**

Gene therapy - applications of genome – transgenic animals and plants – Pathway regulatory networks

UNIT III**12**

Introduction, Serial Analysis of Gene Expression, Microarray, Types of Microarrays, Microarray Fabrication, Microarray hybridization and detection, Microarray Image Processing and analysis, Expression ratios, Transformations of the Expression ratio, Data Normalization

UNIT IV**12**

Proteomics – protein separation - 2DE, protein identification – mass spectrometry. Protein chips. Applications of proteomics – Medical proteomics in disease diagnosis, pharmaceutical proteomics in drug development

UNIT V**12**

Discovering a drug - target identification and validation - identifying the lead compound - optimization of lead compound - chemical libraries

TEXT BOOKS:

1. Andreas D. Baxevanis and B. F. Francis Ouellette, Bioinformatics: A Practical Guide to the Analysis of Genes and Proteins, Wiley Interscience, 2004.
2. Twyman RM. Principles of Proteomics, Taylor & Francis group, BIOS Scientific Publishers, 2004

REFERENCE BOOKS:

1. Nawin C Mishra and Gunter Blobel. Introduction to Proteomics: Principles and Applications, Wiley, 2010.
2. Saraswathy N and Ramalingam P, Concepts and Techniques in Genomics and Proteomics, 1st edition, Woodhead Publishing, 2011.

P18MCM12L1	SOIL MICROBIOLOGY LAB				L	T	P	C			
	Total Contact Hours – 45				0	0	6	3			
	Prerequisite course – B.Sc. Biochemistry, Biotechnology, Microbiology and other related Life Science Subject										
	Course Coordinator Name & Department: - Dr. V. Padmapriya & Microbiology										
COURSE OBJECTIVES: -											
Learners will be familiar with the basic knowledge on soil microbes. Learners will understand the overall isolation and detection of various soil microbes.											
COURSE OUTCOMES (COs)											
CO1	Grasp the isolation and enumeration of microbes										
CO2	Perform the isolation of microbes from different soil and related samples										
CO3	Handle and perform sectioning of root nodules										
CO4	Differentiates the microbes producing enzymes from soil sample										
CO5	Measure and manipulates various biochemical tests										
Mapping of Course Outcomes with Program outcomes (POs) (H/M/L indicates strength of correlation) H-High, M-Medium, L Low											
1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
2	CO1	H	M								H
	CO2	H	M								
	CO3	H	M								
	CO4	H	M								
	CO5	H	M								
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									

1. Isolation and enumeration of soil microorganisms (Bacteria and fungi)
2. Sectioning of root nodules
3. Isolation of Rhizobium from root nodules
4. Isolation of Azotobacter/Azospirillum from soil
5. Ammonification test
6. Nitrification test
7. Denitrification test
8. Isolation of Cyanobacteria and photosynthetic bacteria from soil/water
9. Isolation of protease producing microbes from soil
10. Isolation of Phosphate solubilizing bacteria from soil

TEXT BOOKS:

1. Frankland JC, Latter PM and Poskitt JM. A Laboratory guide to soil microbiology, Institute of Terrestrial Ecology, Merlewood Research Station, Grange-over-Sands Cumbria, 1995.

REFERENCE BOOKS:

1. Subhashini Vallabhaneni. Soil Microbiology- A Laboratory Manual: Protocols and Techniques, Lap Lambert Academic Publishing, 2012.

Course Coordinator

HOD

P18MCMi2L2	IMMUNOTECHONOLGY & rDNA TECHNOLOGY LAB							L	T	P	C
	Total Contact Hours – 45							0	0	6	3
	Prerequisite course – B.Sc. Biochemistry, Biotechnology, Microbiology and other related Life Science Subject										
	Course Coordinator Name & Department: - Dr. V. Padmapriya & Microbiology										
COURSE OBJECTIVES: -											
Learners will be familiar with the immunological techniques. Learners will understand the diagnostic tests that are used in identifying diseases.											
COURSE OUTCOMES (COs)											
CO1	Handle various antigen antibody interaction techniques.										
CO2	Perform the blotting techniques.										
CO3	Calibrates the polymerase chain reaction.										
CO4	Manipulates the isolated DNA with the standard.										
CO5	Organizes and perform the Enzyme Linked Immune Sorbent Assay.										
Mapping of Course Outcomes with Program outcomes (POs) (H/M/L indicates strength of correlation) H-High, M-Medium, L-Low											
1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
2	CO1	H	M								H
	CO2	H	M								
	CO3	H	M								
	CO4	H	M								
	CO5	H	M								
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									

1. Immunodiffusion
2. Radial immunodiffusion
3. Rocket immunoelectrophoresis
4. Enzyme Linked Immuno Sorbent Assay
5. Isolation of peripheral blood mononuclear cells
6. Isolation of bacterial genomic DNA
7. Restriction enzyme digestion of PUC18 DNA
8. Ligation of DNA fragments with cloning vector
9. Polymerase chain reaction
10. Southern blotting

TEXT BOOKS:

1. Karp G. Cell and Molecular Biology – Concepts and Experiments, 6 th Edn., John Wiley and Sons., 1998.
2. Verma PS and Agarwal VK. Cell Biology (Cytology, Biomolecules, Molecular Biology), Paperback, S. Chand and Company Ltd., 2016.

REFERENCE BOOKS:

1. McLennan A, Bates A, Turner P and White M. Bios Instant Notes Molecular Biology, 4 th Edn., Taylor and Francis, 2012.
2. Cox MM, Doudna JA and O'Donnell M. Molecular biology: Principles and Practice, WH Freeman and Company, 2012.

Course Coordinator

HOD

P18MCMi301	RESEARCH METHODS IN BIOLOGY							L	T	P	C	
	Total Contact Hours – 60							3	1	0	4	
	Prerequisite course – B.Sc. Biochemistry, Biotechnology, Microbiology and other related Life Science Subject.											
	Course Coordinator Name & Department: - Dr. V. JanakiDevi & Microbiology											
COURSE OBJECTIVES: -												
Learners will be familiar with the research in life sciences. Learners will understand the data collection analysis and interpretation.												
COURSE OUTCOMES (COs)												
CO1	Remember the basic research concepts and its types.											
CO2	Understand the research topics related to society welfare and design a research using references.											
CO3	Apply appropriate methods for data/ sample collection with ethical clearance.											
CO4	Apply the data/samples using various methods.											
CO5	Analyze the results with previous related research studies.											
CO6	Analyze the results and interpret the value and predict the results.											
Mapping of Course Outcomes with Program outcomes (POs) (H/M/L indicates strength of correlation) H-High, M-Medium, L-Low												
1	COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	
2	CO1	H	M						H			
	CO2	H	M									
	CO3	H	M									
	CO4	H	M									
	CO5	H	M									
	CO6	H	M									
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**

Research- Meaning, Objectives and Motivation, Types of researches, Research process-steps. Criteria of good research. Data collection method- Primary data-observation method, Interview method, Secondary data.

UNIT II **12**

Need for Research Design, Features of good design, Important concepts relating to research designs, Types of Research Design, Basic Principles of Experimenting design, Developing a research plan.

UNIT III **12**

Interpretation-Technique and precaution in interpreting, Significance of report writing, Different steps in writing report, Layout of the research report. Writing research report. Case study.

UNIT IV **12**

Sampling Concepts for statistical analysis-Mean, median, standard deviation-standard error-ANNOVA, SPSS, R-program, Graph pad prism, origin software, sigma statistics, sigma plot.

UNIT V **12**

Legal and socio-economic impacts of biotech research-biosafety regulation-rDNA guidelines-issues involved in experimenting with animals-Experimental protocol approvals-contaminant level and environmental effects-impact of GM organisms and GM foods-IPR and patents.

TEXT BOOKS:

1. Gurumani N. Research Methodology for biological sciences, MJP publishers, Chennai, 2006
2. Kothari CR. Research Methodology-Methods and techniques, New Age publications, New Delhi, 2009.

REFERENCE BOOKS:

1. Paneerselvam R. Research Methodology, Prentice-Hall of India, New Delhi, 2004.
2. Ranjit Kumar. Research Methodology a step by step guide for beginners, 3rd edition, Sage publications, New Delhi 2011.

Course Coordinator

HOD

P18MCM1302	FERMENTATION TECHNOLOGY & BIOENGINEERING	L	T	P	C
	Total Contact Hours – 60	3	1	0	4
	Prerequisite course – B.Sc. Biochemistry, Biotechnology, Microbiology and other related Life Science Subject.				
	Course Coordinator Name & Department: - Dr. V. JanakiDevi & Microbiology				

COURSE OBJECTIVES: -

Learners will be familiar with the fermentation technology. Learners will understand to design a fermenter, standardize the conditions, value of products.

COURSE OUTCOMES (COs)

CO1	Recall the basics about fermentation and its types
CO2	Understand the specific fermenter and appropriate conditions for processing
CO3	Apply several techniques to maintain the condition and proper inoculum level in the fermenter
CO4	Apply the byproducts from the fermenter and purify the products
CO5	Analyze the samples by qualitative and quantitative methods
CO6	Analyze and develop a new technique to improve the fermentation products

Mapping of Course Outcomes with Program outcomes (POs)
(H/M/L indicates strength of correlation) H-High, M-Medium, L-Low

1	COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	H	PSO1	PSO2	PSO3
2	CO1	H	M									
	CO2	H	M									
	CO3	H	M									
	CO4	H	M									
	CO5	H	M									
	CO6	H	M									
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**

Fermentation processes, Screening and selection of microbial culture, strain development. Design and operation of Fermenters, Packed bed reactor, Fluidized bed reactor, Photobioreactor, Solid state fermenter and Bubble column reactor. Measurement of process parameters temperature, pressure and pH, DO, foam; Flow rate of liquid and gases; Automation (processes computerization).

UNIT II**12**

Media sterilization, Batch and continuous sterilization; fermenter sterilization, filter sterilization. Microbial growth kinetics: Microbial growth cycle, measurement of growth, Batch culture, continuous culture, fed-batch culture. Inoculum production and transfer.

UNIT III**12**

Down Stream processing techniques - Recovery of particulate matter, product isolation, distillation, centrifugation, whole broth processing, filtration, aqueous two-phase separation, solvent extraction, chromatography and electrophoresis.

UNIT IV**12**

Analysis of the final product - Protein-based contaminants and removal, Product potency, Determination of protein and amino acids. Peptide mapping, N-terminal sequencing, Analysis of secondary and tertiary structure. Detection of protein-based product impurities: rapid methods for detection of specific organisms and toxins (immunological/molecular methods).

UNIT V**12**

Production of aminoacids, Vitamins, Organic acids, Antibiotics and Recombinant protein production insulin. Microbial production and purification of lipase. Microbial exopolysaccharides (EPS). Production of cheese-cheddar, sauerkraut, probiotics, Baker's yeast, SCP. Mushroom cultivation. Production of wine and beer.

TEXT BOOKS:

1. Demain AL and Soloman INA. Mammal of Industrial Microbiology and Biotechnology, American society for Microbiology, Washington DC, 1986.
2. Cruger and Cruger. Industrial biotechnology, 2nd Ed, Sutherland MA Sinauer Associates, 1990

REFERENCE BOOKS:

1. Stanburry PF and Whitaker. Principles of fermentation technology, Pergamon Press, II Ed, Butterworth Heinemann-Elsevier, 2005
2. Belter PA, Cussler EL and Hu WS. Bio separation: Downstream processing for Biotechnology, John Wiley and Sons, 2003.

UNIT I **12**
Food processing industries in India, status, scope and categorization of food processing industries. Food safety, good manufacturing practice and quality assurance - HACCP and hurdle technology. Process control - Automatic and Computer based systems. Enzyme Technology - Application of enzymes in food processing.

UNIT II **12**
Food spoilage causes - biological changes - factors affecting bacterial growth and survival of microbes in food - Intrinsic and Extrinsic factors, Food borne diseases - bacterial and non bacterial agents, Fermented foods - Yoghurt, Cheese, Soy sauce, Sauerkraut, Bread and Idly.

UNIT III **12**
Processing and preservation by heat - Theory, Equipment and Effect on Foods - Blanching, Pasteurization, Sterilization, UHT Processing, Evaporation, Distillation, Extrusion, Baking, Roasting, Frying, Dielectric heating and Infrared heating. Retort processing of Ready to eat (RTE) products. Drying - water activity, Dehydration of fruits, vegetables, milk and animal products.

UNIT IV **12**
Processing and preservation by low temperature - Chilling, MAS, CAS, Freezing, Freeze drying and Freeze concentration. Food irradiation, Electromagnetic spectrum in food processing industry, ionizing and non-ionizing radiations - advantages and disadvantages.

UNIT V **12**
Coating, Enrobing, Dusting, Pan Coating and its types, Packaging - Theory, types of packaging materials, Printing and interactions. Filling and sealing of containers - Rigid, semi rigid, flexible containers and types of sealers, wrapping and labelling. Handling equipment for raw materials, ingredients and processing, waste management and disposal, storage and distribution.

TEXT BOOKS:

1. Adams MR and Mass MO. Food Microbiology, Second Edt., Royal Society of Chemistry, 1995.
2. Fellows PJ. Food Processing Technology - Principles and Practice, Second Edition, CRC Press, Woodhead Publishing Limited, Cambridge, England, 2000.

REFERENCE BOOKS:

1. Yin H Hui and Culberston JD. Handbook of Food Science, Technology and Engineering, CRC Press, 2006.
2. Desrosier NW and James N. The Technology of Food Preservation, AVI Publishers, 2007.

Course Coordinator

HOD

P18MCM1304	MEDICAL MICROBIOLOGY							L	T	P	C
	Total Contact Hours – 45							3	1	0	4
	Prerequisite course – B.Sc. Biochemistry, Biotechnology, Microbiology and other related Life Science Subject.										
	Course Coordinator Name & Department: - Dr. V. JanakiDevi & Microbiology										
COURSE OBJECTIVES: -											
Learners will be familiar with biotechnological application in medical aspects. Learners will understand the diseases, sample collection, diagnosis techniques and therapies.											
COURSE OUTCOMES (COs)											
CO1	Recall the basic of biotechnological applications in medical aspects										
CO2	Recognize the gene therapy techniques for cure the diseases										
CO3	Apply various mechanisms in assisted reproductive technology										
CO4	Analyze the genetic material for disease diagnosis and environmental monitoring										
CO5	Compare the samples using DNA technology in medical forensics										
CO6	Create the knowledge in recent trends in medical biotechnology										
Mapping of Course Outcomes with Program outcomes (POs) (H/M/L indicates strength of correlation) H-High, M-Medium, L-Low											
1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
2	CO1	H	M								
	CO2	H	M								
	CO3	H	M								
	CO4	H	M								
	CO5	H	M								
	CO6	H	M								
3	Category	Humanities & Social Studies (HS)	Basic Sciences (BS)	Engg Sciences (ES)	Professional Core	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
Normal microflora of human body: General attributes and virulence factors of bacteria causing infections - Host parasites relationship. Sample collection methods- Transport and storage (blood, urine, CSF, sputum and other biofluids)	
UNIT II	12
Bacterial pathogens: Classification, morphology, cultural characteristics, pathogenicity, laboratory diagnosis, treatment, prevention and control disease - <i>Staphylococcus</i> , <i>Streptococcus</i> , <i>Bacillus</i> , <i>Clostridium</i> , <i>E. coli</i> , <i>Pseudomonas</i> , <i>Salmonella</i> and <i>Vibrio</i> , <i>Brucella</i> , <i>Neisseriae</i> , <i>Enterobacteriaceae</i> etc.,	
UNIT III	12
Viral pathogens: Introduction of virus, Classification of virus, and pathogenicity of virus, Approaches to viral diagnosis, Serology, and laboratory diagnosis of viral infections – Hepatitis, Measles, Mumps and HIV, Enteriovirus - polio, Respiratory disease - Rhinovirus, Adenovirus, Oncogenic virus, Emerging viral infection etc.,	
UNIT IV	12
Fungal pathogens: – Laboratory diagnosis - Mycosis - superficial, subcutaneous, systemic infections- Cryptococcosis, Histoplasmosis, mucormycosis, pneumocystosis, superficial Candidosis and other subcutaneous infections.	
UNIT V	12
Protozoan parasites – fungal Pathogenecity and Laboratory diagnosis - <i>Entamoeba histolytica</i> , <i>Trichomonas</i> , <i>Plasmodium</i> . Helminthology Cestodes – <i>Taenia</i> , <i>Diphyllobothrium</i> , <i>Echinococcus</i> , Trematodes – <i>Schitoomes</i> , <i>Fasciola</i> . Namatodes – <i>Trichuris</i> , <i>Ancylostoma</i> , <i>Necator</i> . Ecotoparasites – Common arthropode etc.	
TEXT BOOKS:	
1. Ananathanarayanan R. and Jayaram Panicker C.K, "Text book of Microbiology". Orient longman,1994.	
2.Subash.C. and Parija, "Text book of Medical Parasitology", All India Publishers and Distributors, 2013.	
3.Jagdish Chander, "Text book of Medical Mycology" 4 th edition Mehta Publishers,2009.	
REFERENCE BOOKS:	
1.Geo. Brooks, Karen C. Carroll, Janet Butel and Stephen Morse. Jawetz Melnick & Adelbergs Medical Microbiology, 27th Edition.2016.	
2.Patricia Tille. Scott's Diagnostic Microbiology, 14th Edition.2016.	
3.David Greenwood. Medical Microbiology. First edition.2007.	
4.V Krishna. Textbook of Pathology. First edition.2004.	
Course Coordinator	
HOD	

P18MCBS305	NANOTECHNOLOGY							L	T	P	C
	Total Contact Hours – 60							3	1	0	4
	Prerequisite course – B.Sc. Biochemistry, Biotechnology, Microbiology and other related Life Science Subject.										
	Course Coordinator Name & Department: - Dr. V. JanakiDevi & Biotechnology										
COURSE OBJECTIVES: - Learners will be familiar with nanomaterial science. Learners will understand the nanoparticles synthesis, properties and applications.											
COURSE OUTCOMES (COs)											
CO1	Recall the basic history and future scope of nanotechnology										
CO2	Understand physical, chemical and biological methods for nanoparticle synthesis										
CO3	Apply the knowledge to develop new methods in particle size reduction and stabilization										
CO4	Apply the properties nanoparticles using various techniques										
CO5	Analyze the applications of nanoparticles in various fields										
CO6	Analyze nano based products and their toxicity effects										
Mapping of Course Outcomes with Program outcomes (POs) (H/M/L indicates strength of correlation) H-High, M-Medium, L-Low											
1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
2	CO1	H	M							M	H
	CO2	H	M								
	CO3	H	M								
	CO4	H	M								
	CO5	H	M								
	CO6	H	M								
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**

Scope and overview, length scales, history of nanotechnology, future of nanotechnology. Nanoparticles – size, shape, properties. Metal/metal oxide nanoparticles – polymer based nanomaterials - nano composites - carbon nano tubes - fullerenes – quantum dots – dendrimers.

UNIT II**12**

Synthesis of nanostructure: Physical methods - Chemical methods- Biological methods-Synthesis using microorganism and plant extracts. Characterization techniques- X-ray diffraction, Electron Microscopy -Scanning & Transmission, Energy dispersive analysis, Scanning Probe Microscopy, Atomic Force Microscopy, X-ray photo electron Spectroscopy, Fourier transform Infrared spectroscopy – Ultraviolet and visible spectroscopy– Thermogravimetric Analysis – Differential Scanning Calorimetry.

UNIT III**12**

Biosensors - optical biosensors based on nanoplasmonics, nanobiosensors. Nanorobotics in surgery. Nanocircuitry - S-layer proteins: structure, chemistry and assembly. DNA–protein nanostructures. DNA- gold-nanoparticle conjugates. Magnetic nanoparticles as contrast agents for MRI application and therapeutic application.

UNIT IV**12**

Activation and targeting of nanotechnology-based drug delivery systems- Metal/metal oxide and magnetic nanoparticles, polymer micelles, biodegradable polymers as drug carriers. Targeted drug delivery systems- Antibody conjugated nanoparticles. Ultrasound-responsive nanoparticles as drug and gene delivery carriers.

UNIT V**12**

Polymer-based nanocomposites for food packaging, Insecticides using nanotechnology, nano-fertilizers, Nano finishing in textiles (UV resistant, antibacterial, hydrophilic, self-cleaning, flame retardant finishes). Photocatalytic degradation of specific waterborne pollutants by nanomaterials. Toxicity and environmental risks of nanomaterials.

TEXT BOOKS:

1. Rao CN, Muller A, Cheetham AK. The Chemistry of Nanomaterials: Synthesis, Properties and Applications, Wiley, 2004.
2. David S Goodsell. Bionanotechnology, John Wiley & Sons, 2004.

REFERENCE BOOKS:

1. Brown.PJ and Stevens K. Nanofibers and Nanotechnology in Textiles. Woodhead Publishing Limited, Cambridge, 2007.
2. Pradeep T. Textbook of Nanoscience and Nanotechnology. McGraw Hill Education Private Ltd., 2012.

P18MCBS3L1	FERMENTATION TECHNOLOGY & FOOD TECHNOLOGY LAB							L	T	P	C
	Total Contact Hours – 45							0	0	6	3
	Prerequisite course – B.Sc. Biochemistry, Biotechnology, Microbiology and other related Life Science Subject.										
	Course Coordinator Name & Department: - Dr. V. JanakiDevi & Microbiology										
COURSE OBJECTIVES: -											
Learners will be familiar with the fermented food productions. Learners will understand the fermenter standardize the fermentation conditions, improvement of quality and quantity of fermented foods.											
COURSE OUTCOMES (COs)											
CO1	Recall the basics about fermented food products										
CO2	Select the specific fermentation method and appropriate conditions for processing										
CO3	Organizes and perform the production method sequentially										
CO4	Distinguish the byproducts from the fermenter and purify the products										
CO5	Fastens the skills to develop a new fermented food product										
Mapping of Course Outcomes with Program outcomes (POs) (H/M/L indicates strength of correlation) H-High, M-Medium, L-Low											
1	COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
2	CO1	H	M								
	CO2	H	M								
	CO3	H	M								
	CO4	H	M								
	CO5	H	M								
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									

1. Microbial analysis of food products – bacterial and fungal
2. Microbial spoilage of refrigerated food
3. Extracellular enzyme activities – cellulase, protease, lipase and phosphatase
4. Milk microbiology – direct microscopic count – standard plate count
5. Reductase test (resazurin/methylene blue)
6. Isolation of microbes from yoghurt, curd
7. Field trip to dairy, food industries, sewage treatment plants
8. Inoculum preparation for fermentation
9. Screening of antibiotic producing microorganisms from soil
10. Production of extracellular metabolites from actinomycetes
11. Production of industrially important enzymes by Submerged fermentation
(Any one enzyme)
12. Production of industrially important enzymes by Solid state fermentation
(Any one enzyme)

TEXT BOOKS:

1. Hui YH, Lisbeth Meunier Goddik, Jytte Josephsen, Wai Kit Nip, Peggy S Stanfield. Handbook of Food and Beverage Fermentation Technology, CRC Press, 2004.
2. Brian Mcneil and Linda MH. Practical Fermentation Technology, John Wiley & Sons, Ltd, England, 2008.

REFERENCE BOOKS:

1. Neway JO. Bioprocess Technology Fermentation Process Development of Industrial Organisms, T & F Publisher, 1989.
2. Janarthanan S. Practical Manual on Fermentation Technology, I.K International Publishing House Ltd, New Delhi, 2012.

SEMESTER IV

P18MCM1401	DIAGNOSTIC MICROBIOLOGY	L	T	P	C
	Total Contact Hours – 60	3	1	0	4
	Prerequisite course – B.Sc. Biochemistry, Biotechnology, Microbiology and other related Life Science Subject.				
	Course Coordinator Name & Department: - Dr. J. Senthil & Microbiology				

COURSE OBJECTIVES: -

Learners will be familiar with microbiological related diagnostic tests. Learners will understand the specimen collection methods, laboratory methods and causative agents of diseases.

COURSE OUTCOMES (COs)

CO1	Recall the pathogens and diseases.
CO2	Recognize the microscopic examination of specimens.
CO3	Apply the knowledge of serological tests for identifying fungi and parasites.
CO4	Apply knowldgd in the detection of viral antigens.
CO5	Analyze the importance of antigen antibody reactions.
CO6	Analyze and develop the antimicrobial drugs for wide range of pathogens.

Mapping of Course Outcomes with Program outcomes (POs) (H/M/L indicates strength of correlation) H-High, M-Medium, L-Low

1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
2	CO1	H	M								
	CO2	H	M								
	CO3	H	M								
	CO4	H	M								
	CO5	H	M								
	CO6	H	M								
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**

Selection, collection and transport of specimens – Blood, Urine, Sputum, CSF, Pus & Faeces – transport media and storage. Microscopic examination of specimen for Bacterial pathogens – simple, differential staining and motility. Identification of organisms - Biochemical reaction – Sugar fermentation test - Susceptibility testing – MIC, E test - reporting of results & interpretation.

UNIT II **12**

Serology – Antigen - antibody reactions – Agglutinations (blood grouping, WIDAL) RPR and Hemaagglutination. Precipitation (VDRL), Immunodiffusion – mono and double immunodiffusion, Immunoelectrophoresis (rocket, counter current). ELISA, Radioimmune assay (RIA). Advanced techniques – automated methods – ELISA, RIA. Quantitative study of Antigen - Antibody reactions. Immunosensors. CD4, CD8 cell counting, Western blot analysis for HIV.

UNIT III **12**

Laboratory methods in basic Mycology –Collection and transport of clinical specimens – Direct Microscopic examination, culture media and incubation, Serological tests for fungi – Antifungal susceptibility testing. Mycology: superficial infections- Dermatophytes- Microsporum – *Trichophyton*, *Epidermophyton*- *Madura mycosis*- Opportunistic fungal infections- *Candida albicans*., *Aspergillus sp*.

UNIT IV **12**

Laboratory methods for parasitic infections – Diagnostic techniques for faecal, gastrointestinal and urino-genital specimen. Parasitic diseases- *Entamoeba histolytica*, *Giardia*, *Taenia solium*, *Ascaris*, *Enterobius*, *Trichuris trichura*, *Plasmodium vivax*, *Wuchereria bancrofti*. Identification of Intestinal Protozoa – Amoeba, Blood protozoa – Malaria, Intestinal Helminthes: *Ascaris*, *Taenia*, *Entrobilus* and Blood Helminthes: *Wuchereria bancrofti*.

UNIT V **12**

Laboratory methods in basic Virology- Viral culture- Media and cells used – Specimen processing – isolation and identification of viruses. Detection of viral antigen (fluorescent antibody and solid phase immunoassays). Viral Serology. Special consideration- Hepatitis and AIDS. Antibiotics and chemotherapeutic agents- Mechanism of actions – Drug resistance – Antimicrobial susceptibility testing- Disc diffusion- Kirby Bauer method.

TEXT BOOKS:

1. Monica chees brough, "Medical laboratory manual for tropical countries", Elseiver Health Sciences, Butter worths, 1987.
- 2 Bailey and Scott's., "Diagnostic Microbiology", Eighth edition. The Mosby Company. 1990

REFERENCE BOOKS:

1. Abdul Khader, "Medical laboratory techniques", First edition. Frontline Publications, Hyderabad , 2003.
2. Connie Mahon, Donald Lehman, "Text book of Diagnostic microbiology"6th Edition, Elseiver,2018.

MAJOR ELECTIVES

P18MEMI011	MAJOR ELECTIVE-I: METABOLIC REGULATION	L	T	P	C
	Total Contact Hours – 60	3	1	0	4
	Prerequisite course – B.Sc. Biochemistry, Biotechnology, Microbiology and other related Life Science Subject.				
	Course Coordinator Name & Department: - Dr. J. Senthil & Microbiology				

COURSE OBJECTIVES: -

Learners will be familiar with the metabolism of biomolecules. Learners will understand the biosynthesis, biodegradation of each biological macromolecules and metabolic disorders.

COURSE OUTCOMES (COs)

CO1	Remember the basics of Carbohydrates, Lipids and Nucleic acids.
CO2	Understand the metabolisms behind the macromolecules.
CO3	Apply the role of lipids and aminoacid degradation in eukaryotes.
CO4	Analyze the biological significance of nucleic acids.
CO5	Analyze the importance of regulation and salvage pathways.
CO6	Analyze the familiarity regarding purine and pyrimidine disorders.

Mapping of Course Outcomes with Program outcomes (POs) (H/M/L indicates strength of correlation) H-High, M-Medium, L-Low

Correlation of POs with Program Outcomes Correlation: H = High, M = Medium, L = Low												
1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	
2	CO1	H	M						H			
	CO2	H	M									
	CO3	H	M									
	CO4	H	M									
	CO5	H	M									
	CO6	H	M									
3	Category	Humanities & Social Studies (HS)	Basic Sciences	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**
Aerobic and anaerobic pathways: Glycolysis and its regulation, Gluconeogenesis and its regulation. TCA cycle, amphibolic & anaplerotic reactions. Electron Transport chain, Oxidative phosphorylation, & production of ATP, balance sheet of glucose oxidation, Oxidative stress, Pentose phosphate pathway (HMP shunt) & its regulation.

UNIT II **12**
Beta – oxidations of saturated & unsaturated fatty acids. Biosynthesis of fatty acids – Acetyl-CoA carboxylase reaction, Fatty acid synthase complex, biosynthesis of palmitate, energetics, Regulation of fatty acid biosynthesis. Biosynthesis of triacyl glycerols, Biosynthesis of cholesterol, regulation.

UNIT III **12**
Overview of amino acid synthesis. Biosynthesis of non-essential amino acids and its regulation. Biodegradation of amino acids – deamination, transamination, decarboxylation, urea cycle including its regulation.

UNIT IV **12**
De novo synthesis of purine and pyrimidine nucleotides, regulation and salvage pathways. Digestion of nucleic acids, degradation of purine and pyrimidine nucleotides. Inhibitors of nucleotide metabolism.

UNIT V **12**
Disorders of amino acids metabolism, phenylketonuria, alkaptonuria, maple syrup urine disease, homocystinuria and Hartnup's disease. Disorders of purine and pyrimidine metabolism – Lesch - Nyhan syndrome, Gout, and SCID.

TEXT BOOKS:

1. Freifelder D. Molecular Biology, 2nd edition, Narosa Publishing House, 1996.
2. Campbell MK. Biochemistry, 3rd edition, Saunders College Publishing Harcourt Brace College Publishers, 1999.

REFERENCE BOOKS:

1. Geoffrey L Zubay. Biochemistry, Wm C Brown Publishers, 4th Edition, 1998.
2. David W Martin, Peter A Mayes and Victor W Rodwell. Harper's Review of Biochemistry, LANGE Medical Publications, 1983.

P18MEMI012	MAJOR ELECTIVE-I: ENZYME TECHNOLOGY							L	T	P	C
	Total Contact Hours – 60							3	1	0	4
	Prerequisite course – B.Sc. Biochemistry, Biotechnology, Microbiology and other related Life Science Subject.										
	Course Coordinator Name & Department: - Dr. J. Senthil & Microbiology										
COURSE OBJECTIVES: - Learners will be familiar with the enzyme systems and kinetics. Learners will understand the classification, properties of enzymes and enzyme assays.											
COURSE OUTCOMES (COs)											
CO1	Remember the definition, classification and properties of enzymes.										
CO2	Understand the role of enzyme kinetics.										
CO3	Apply the enzymatic concept in working of biosensors.										
CO4	Analyze the biphasic systems of enzymes.										
CO5	Analyze the importance of enzymatic assays.										
CO6	Analyze the diseases using assay kits										
Mapping of Course Outcomes with Program outcomes (POs) (H/M/L indicates strength of correlation) H-High, M-Medium, L-Low											
1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
2	CO1	H	M						H		
	CO2	H	M								
	CO3	H	M								
	CO4	H	M								
	CO5	H	M								
	CO6	H	M								
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**
Introduction-Classification and nomenclature of enzyme –Properties of enzymes –Enzyme purification-selection-isolation and homogenization-separation and purification –gel filtration ,Ion exchange chromatography-Isoelectric focussing - test for purity and catalytic activity-Active site titrations, examples of purification of enzymes.

UNIT II **12**
Enzyme stability-folding and unfolding state-kinetic stability-methods for enzyme stability-enzyme modification, stabilizing agents-concentration-Immobilization-enzyme reactors.

UNIT III **12**
Biosensor-Introduction- components and working of biosensors-categories of biosensors-types of biosensors-Colorimetric-potentiometric-Amperometric-Optical-Pizeo-electric and immune chemical biosensors.

UNIT IV **12**
Biphasic system-aqueous two phase system-aqueous organic biphasic system-Enzyme engineering-solvent engineering/Synzyme - polyfunctional enzymes-coenzyme regenerating system.

UNIT V **12**
Enzyme assay-Spectrophotometric-Radio isotope-Manometric methods-Substrate assays-Immuno assays-Radio immuno assays-Fluorescence-Photoluminescence based immune assay-Delayed enhanced Lanthanide fluorescence immunoassay-Applications of enzymes.

TEXT BOOKS:

1. Robert A Copeland. Enzymes - A Practical Introduction to Structure, Mechanism, and Data Analysis, 2nd edition, Wiley Publishers, 2004.
2. Harwey W Blanch and Douglas S Clark. Biochemical Engineering, CRC Press, 1995.

REFERENCE BOOKS:

1. Berger SL and Kimmel AR. Methods in Enzymology, Vol.152, Academic Press, 1987.
2. Martin F Chaplin, Bucke C. Enzyme technology, Cambridge University Press, 1990.

P18MEMI013	MAJOR ELECTIVE-I: BIOINSTRUMENTATION							L	T	P	C
	Total Contact Hours – 60							3	1	0	4
	Prerequisite course – B.Sc. Biochemistry, Biotechnology, Microbiology and other related Life Science Subject.										
	Course Coordinator Name & Department: - Dr. J. Senthil & Microbiology										
COURSE OBJECTIVES: - Learners will be familiar with the instruments that are used in the bio research field. Learners will understand the principles and operating mechanisms of these bio instruments.											
COURSE OUTCOMES (COs)											
CO1	Remember the centrifugation and electrophoresis concepts.										
CO2	Understand the different chromatographic techniques.										
CO3	Apply the blotting techniques in daily laboratory experimental needs.										
CO4	. Apply the ELISA, Uv-Vis specs for diagnosis										
CO5	Analyze the spectroscopic techniques										
CO6	Analyze radioisotopes and their biological applications.										
Mapping of Course Outcomes with Program outcomes (POs) (H/M/L indicates strength of correlation) H-High, M-Medium, L-Low											
1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
2	CO1	H	M							H	
	CO2	H	M								
	CO3	H	M								
	CO4	H	M								
	CO5	H	M								
	CO6	H	M								
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**
Sedimentation Principle, Types of rotors, Preparative and Analytical Centrifuges, Density Gradient Centrifugation, Differential centrifugation.

UNIT II **12**
Theory and Application of Paper Chromatography, TLC, Gel Filtration Chromatography, Ion Exchange Chromatography, Affinity Chromatography, GLC and HPLC.

UNIT III **12**
Theory and Application of PAGE, Agarose Gel Electrophoresis 2DE, Iso-electric Focusing, Immuno diffusion, Immuno Electrophoresis, ELISA, RIA, Southern, Northern and Western Blotting.

UNIT IV **12**
Theory and Application of UV and Visible Spectroscopy, Fluorescence Spectroscopy, MS, NMR, ESR, Atomic Absorption Spectroscopy.

UNIT V **12**
Introduction to Radioisotopes and their Biological Applications, Radioactive Decay – Types and Measurement, Principles and Applications of GM Counter, Solid and Liquid Scintillation Counter, Autoradiography, RIA.

TEXT BOOKS:

1. Skoog and West. Principle of Instrumental Analysis, Saunders College Publications, 1998.
2. Walker J and Wilson K. Principles and Techniques of Practical Biochemistry, 5th Ed. Cambridge University Press, 2000.

REFERENCE BOOKS:

1. Veerakumari L. Bioinstrumentation, MJP Publishers, India, 2006.
2. John G Webster. Bioinstrumentation, Third edition, Wiley Publisher, 2007.

Course Coordinator

HOD

UNIT I	12
Fermentation - Bacterial, Fungal and Yeast, Biochemistry of fermentation. Traditional and Modern Biotechnology - A brief survey of organisms, processes, products. Basic concepts of upstream and downstream processing in Bioprocess, Process flow sheeting - block diagrams, pictorial representation.	
UNIT II	12
Primary Metabolites- Production of commercially important primary metabolites like organic acids, amino acids, alcohols and vitamins.	
UNIT III	12
Secondary Metabolites- Production processes for various classes of secondary metabolites: Antibiotics and Steroids.	
UNIT IV	12
Production of Industrial Enzymes, Biopesticides, Biofertilizers, Biopreservatives, Biopolymers Biodiesel, Cheese, Beer, SCP & Mushroom culture. Bioremediation.	
UNIT V	12
Production of recombinant proteins having therapeutic and diagnostic applications, vaccines. Bioprocess strategies in Plant Cell and Animal Cell culture.	

TEXT BOOKS:

1. Kumar HD. A Textbook on Biotechnology, 2nd Edition, East West Press Pvt. Ltd., 1998.
2. Cruger Wulf and Anneliese Crueger. Biotechnology: A Textbook of Industrial Microbiology, 2nd Edition, Panima Publishing, 2000.

REFERENCE BOOKS:

1. Ratledge Colin and Bjorn Kristiansen. Basic Biotechnology, 2nd Edition, Cambridge University Press, 2001.
2. Prescott SC and Cecil G Dunn. Industrial Microbiology, Agrobios, India, 2005.

P18MEMI022	MAJOR ELECTIVE-II: INDUSTRIAL MICROBIOLOGY	L	T	P	C
	Total Contact Hours – 60	3	1	0	4
	Prerequisite course – B.Sc. Biochemistry, Biotechnology, Microbiology and other related Life Science Subject.				
	Course Coordinator Name & Department: - Dr. J. Senthil & Microbiology				

COURSE OBJECTIVES: -

Learners will be familiar with the production of various beneficial products. Learners will understand the production and application of fermented products, sterilization methods and fermentation methods.

COURSE OUTCOMES (COs)

CO1	Remember the industrially important microorganisms.
CO2	Understand the microbial role in fermentation process.
CO3	Apply the microbes in the production of fermented products.
CO4	Apply new methods in the design of bioreactors.
CO5	Analyze the production of enzymes, antibiotics, beverages, organic acids
CO6	Analyze the importance of fermented vegetables, SCP and probiotics.

Mapping of Course Outcomes with Program outcomes (POs) (H/M/L indicates strength of correlation) H-High, M-Medium, L-Low

1	COs/Pos	PO1	PO2	PO3		PO4		PO5	PO6	PO7	PSO1	PSO2	PSO3
2	CO1	H	M									H	
	CO2	H	M										
	CO3	H	M										
	CO4	H	M										
	CO5	H	M										
	CO6	H	M										
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**
Introduction to fermentation– the range of fermentation process. The development of industrial fermentation industry. The component parts of a fermentation process. Industrial important organisms-Isolation and preservation- and strain improvement.

UNIT II **12**
Development of inoculums-Upstream processing media for industrial fermentation. Downstream processing – Removal of microbial cells and solid matter, foam separation, precipitation, filtration, centrifugation, cell disruptions, liquid – liquid extraction, chromatography membrane process.

UNIT III **12**
Kinetics-batch, fed batch and continuous process: Sterilization methods –batch sterilization, continuous sterilization of medium and air. Solid state and submerged: aerobic and anaerobic fermentation. Development of inoculum for yeast, bacterial mycelia and vegetative fungal process.

UNIT IV **12**
Industrial production of beverages –wine, beer; microbial production organic acids (Vinegar, lactic acid, citric acid), enzymes (amylase and protease) and antibiotics (penicillin). Fermented vegetables, SCP. Probiotics and prebiotics foods.

UNIT V **12**
Types and design of bioreactor : Construction material, Basic components –Agitator, aerator, valves and stream stirrer glands. Fermentor-Air lift, stirred tank ,tower, fluidized bed, packed bed , pulsed, photo reactors, PFR.

TEXT BOOKS:

1. Prescott and Dunn S. Industrial biotechnology, The AVI Publishing Component. Inc., 4th Edition, USA, 1982.
2. Stanbury PF, Whittaker A and Hall SJ. Principles of fermentation, Elsevier, 3rd edition, 1995.

REFERENCE BOOKS:

1. Joc MM, Sivakumar PK and Sukesh. An Introduction to Industrial Microbiology, Chand Publishing, 2010.
2. Casida LEJR. Industrial Microbiology, Second Edition, New Age International (P) Ltd. Publishers, New Delhi, 2011.

P18MEMI023	MAJOR ELECTIVE-II: MICROBIAL GENETICS							L	T	P	C
	Total Contact Hours – 60							3	1	0	4
	Prerequisite course – B.Sc. Biochemistry, Biotechnology, Microbiology and other related Life Science Subject.										
	Course Coordinator Name & Department: - Dr. J. Senthil & Microbiology										
COURSE OBJECTIVES: - Learners will be familiar with DNA replication, damage mechanism and mutation. Learners will understand the gene transfer mechanisms.											
COURSE OUTCOMES (COs)											
CO1	Remember the DNA, RNA structure and its types.										
CO2	Understand the plasmid and its role as vectors.										
CO3	Apply different tests to detect the mutants.										
CO4	Apply new methods for gene transfer.										
CO5	Analyze the transcription and translation process.										
CO6	Analyze the importance of gene transfer mechanisms										
Mapping of Course Outcomes with Program outcomes (POs) (H/M/L indicates strength of correlation) H-High, M-Medium, L-Low											
1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
2	CO1	H	M						H		
	CO2	H	M								
	CO3	H	M								
	CO4	H	M								
	CO5	H	M								
	CO6	H	M								
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**
Chromosome organization in Microbial Cells, structure and function of DNA, RNA & its types. Extrachromosomal DNA (Plasmid).

UNIT II **12**
DNA replication in prokaryotes - Meselson-Stahl experiment, Mechanism and enzymology of replication, DNA and RNA polymerase enzymes structure, Rolling circle replication.

UNIT III **12**
Mutation - types of mutation - spontaneous and induced - mutagen and mutagenesis. Detection of mutants, Ames test. DNA repair mechanism.

UNIT IV **12**
Transcription in prokaryotes - Translation of proteins. Regulation of gene expression in prokaryotes -Lac operon. Genetic code.

UNIT V **12**
Genetic exchange - Transformation, Conjugation and Transduction (Specialized and Generalized). Transposons.

TEXT BOOKS:

1. David R Hyde. Genetics and Molecular Biology, Special Indian Edition, Tata McGraw Hill P. Ltd., New Delhi, 1996.
2. Klug WS and Cummings MR. Essentials of Genetics, Mentics Hail, New Jersey, 1999.

REFERENCE BOOKS:

1. Peter Paolella. Introduction to Molecular Biology, First edition, Tata McGraw-Hill P. Ltd., New Delhi, 2010.
2. Gardner EJ, Simmons MJ and Snusted DP. Principles of Genetics, S'h edition, John Wiley & Sons, NY, 1991.
3. Ajoy Paul. Text Book of Cell and Molecular Biology, 1st Ed., Books Allied (P) Ltd., Kolkata, 2007.

P18MEMI031	MAJOR ELECTIVE-III: WASTE MANAGEMENT TECHNOLOGY	L	T	P	C
	Total Contact Hours – 60	3	1	0	4
	Prerequisite course – B.Sc. Biochemistry, Biotechnology, Microbiology and other related Life Science Subject				
	Course Coordinator Name & Department: - Dr. V. Padmapriya & Microbiology				

COURSE OBJECTIVES:-

Learners will be familiar with the biomedical waste and bioremediation. Learners will understand different kinds of wastes and treatment.

COURSE OUTCOMES (COs)

CO1	Remember the classification, disposal and recycling methods
CO2	Understand the wastes and treatment measures
CO3	Apply the management of different types of wastes
CO4	Apply technologies for bioremediation
CO5	Analyze the basic principles and techniques of waste characterization and treatment.
CO6	Analyze the disposal and recycling techniques.

Mapping of Course Outcomes with Program outcomes (POs)
(H/M/L indicates strength of correlation) H-High, M-Medium, L-Low

1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
2	CO1	H	M								
	CO2	H	M								
	CO3	H	M								
	CO4	H	M								
	CO5	H	M								
	CO6	H	M								
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 **7**
Introduction: Definition and Classification- Disposal methods: Land fill and Incineration – Recycling methods: biological reprocessing and Energy recovery-. Avoidance and Reduction Methods- Waste handling and Transport – Waste management Concepts.

UNIT II **10**
Introduction- Waste Consistency- Waste Management Function: Production ,Collection, Storage, Treatment , Transfer, Utilization- Waste Management system Design – Waste Management System: Dairy Waste, Beef Waste, Swine Waste, Poultry Waste, Other animal – Municipal and Industrial Sludge- Food Processing – Agri Chemical Waste Management- Handling..

UNIT III **10**
Introduction- Overview – Characterization of Medical Waste- Waste Generation Methodology – Sterilization- Chemical Disinfection – Thermal Inactivation- Irradiation- Microwave Treatment – Grinding and Shredding – Compaction- Current Practice – Standards.

UNIT IV **10**
Paper and Pulp Industry – Leather Industry – Cement Industry – Chemical Industry – fertilizer Industry – Pharmaceutical Industry – Textile industry – Iron and Steel industry – Mining Industry – Lignite industry – Petroleum Industry – Nuclear Industry.

UNIT V **8**
Bioremediation – Phyto-remediation- Recycling of Plastic and Paper.

TEXT BOOK

1. Agricultural Waste Management Hand Book, USDA, 3rd Ed, 2005.
2. Indu Shekhar Thakur, Industrial Biotechnology Problems and Remedie, 6th Ed, 2006.

REFERENCE BOOKS

1. Lawrence K Wang, Nazik K Shammass and Yung Tse Hung. Advances in Hazardous Industrial Waste Treatment, CRC Press, Taylor & Francis group, 2008.

Course Coordinator

HOD

P18MEMI032	MAJOR ELECTIVE-III: MICROBIAL PHYSIOLOGY							L	T	P	C
	Total Contact Hours – 60							3	1	0	4
	Prerequisite course – B.Sc. Biochemistry, Biotechnology, Microbiology and other related Life Science Subject										
	Course Coordinator Name & Department: - Dr. V. Padmapriya & Microbiology										
COURSE OBJECTIVES: - Learners will be familiar with the basic knowledge about microbial metabolism and nutrients consumption. Learners will understand the growth phase and antimicrobial resistance of microbes.											
COURSE OUTCOMES (COs)											
CO1	Remember the basics of microbial physiology										
CO2	Understand the mechanisms in metabolic pathways										
CO3	Apply the metabolic pathways in energy production										
CO4	Analyze the role of photosynthesis in energy production										
CO5	Analyze the role of antimicrobial resistance capacity										
CO6	Analyze the metabolism in various microbes										
Mapping of Course Outcomes with Program outcomes (POs) (H/M/L indicates strength of correlation) H-High, M-Medium, L-Low											
1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
2	CO1	H	M						H		
	CO2	H	M								
	CO3	H	M								
	CO4	H	M								
	CO5	H	M								
	CO6	H	M								
3	Category	Humanities & Social Studies (HS)	Basic Sciences	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 **8**
Basic concepts of metabolism – Nutritional types- Nutritional types of microorganisms uptake of nutrients to the cell- Active transport and Passive transport.

UNIT II **10**
Different phases of growth – Growth curve - generation time – factors influencing the microbial growth- pH, Temperature, pressure, salt concentration, nutrients – continuous growth and synchronous growth - Diauxic growth.

UNIT III **10**
Metabolism- pathways role in microbial growth- EMP-HMP-ED Pathways – TCA cycle- electron transport chain – oxidative photophosphorylation and substrate level photophosrylation.

UNIT IV **9**
Control of microbial growth by antiseptis-antimicrobial drugs and antibiotics-antimicrobial resistance.

UNIT V **8**
Photosynthesis –oxygenic and an oxygenic, carbon dioxide fixation–Biosynthesis of bacterial cell wall- biosynthesis of amino acids (Glutamic acid) –Bioluminescence.

TEXT BOOKS:

1. Harold Anthony Harper, David W Martin, Peter A Mayes and Victor W Rodwell. Harper's review of biochemistry, Lange Medical Publications, 1983.
2. Albert G Moat and John W Foster, Microbial Physiology, 3rd revised edition, Wiley-Blackwell, 1995.

REFERENCE BOOKS:

1. Prescott LM, Harley JP and Klein DN. Microbiology, 4th edition, McGraw Hill Companies, New York, 1999.
2. Gerard J Tortora, Berdell R Funke and Christine L Case. Microbiology, Benjamin Cummings, 2003.

P18MEMI033	MAJOR ELECTIVE-III: BIOSTATISTICS						L	T	P	C	
	Total Contact Hours – 60						3	1	0	4	
	Prerequisite course – B.Sc. Biochemistry, Biotechnology, Microbiology and other related Life Science Subject										
	Course Coordinator Name & Department: - Dr. V. Padmapriya & Microbiology										
COURSE OBJECTIVES: -											
Learners will be familiar with the biostatistical tools. Learners will understand the measures of central tendency, correlation and regression analysis and probability.											
COURSE OUTCOMES (COs)											
CO1	Remember the basic in biostatistics										
CO2	Understand the measures of central tendency - Mean, Median, Mode										
CO3	Apply the correlation and regression table.										
CO4	Analyze the probability, poisson and normal distributions										
CO5	Analyze the statistical interferences										
CO6	Analyze the results and interpret the values.										
Mapping of Course Outcomes with Program outcomes (POs)											
(H/M/L indicates strength of correlation) H-High, M-Medium, L-Low											
1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
2	CO1	H	M							H	
	CO2	H	M								
	CO3	H	M								
	CO4	H	M								
	CO5	H	M								
	CO6	H	M								
3	Category	Humanities & Social Studies (HS)	Basic Sciences	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**
Statistics - scope, collection, classification, tabulation of Statistical data-Diagrammatic and graphical representation of data-Bar diagram (simple, multiple and subdivided)-Pie diagram. Frequency diagram, histogram, frequency polygon and frequency curve line graphs..

UNIT II **9**
Measures of central tendency; Arithmetic mean-definition-computation for different types of data(ungrouped and discrete and continuous frequency distributions)-other measures such as median, mode, geometric mean, harmonic mean and weighed average may be defined-computation for different types of data(ungrouped and discrete and continuous frequency distributions).

UNIT III **9**
Correlation and regression-correlation table-coefficient of correlation-z transformation-regression-relation between regression and correlation.

UNIT IV **9**
Probability –Probability distributions-Binomial (Gaussian distribution) and negative binomial, compound and multinomial distribution. Poisson distribution-Normal distribution-graphic representation-frequency curve and its characteristics-measures of central value, dispersion, coefficient of variation.

UNIT V **9**
Statistical Interference –Testing of hypothesis-Null hypothesis-Type I and Type II errors. Test of significance of large and small samples based on Normal, t, z distributions with regards to mean, variance, proportions and Correlation coefficient-chi- square test of goodness of fit.

TEXT BOOKS:

1. Zar JH. Bio statistical methods, Prentice Hall, International Edition, 1984.
2. Daniel WW. Biostatistics, John Wiley Sons, New York, 1987.

REFERENCE BOOKS:

1. Warren J, Gregoru E, Grant R. Statistical Methods in Bioinformatics,1st edition, Springer, 2004.
2. Ronald Forthofer, Eun Lee, Mike Hernandez. Biostatistics- A Guide to Design, Analysis and Discovery, 2nd Edition, Academic Press, 2006.

OPEN ELECTIVES

P18OEBA001	ADVERTISING AND SALES MANAGEMENT					L	T	P	C		
	Total Contact Hours – 30					2	0	0	2		
	Prerequisite course –UG Level										
	Course Coordinator Name & Department:- T Manjiniprakash/BBA										
COURSE OBJECTIVES: - ● Identify the terms and concepts that are commonly used in promotion and advertising. ● Demonstrate preparation to comprehend the basic advertising. ● Give the relationship which underlines these terms and concepts 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.											
	COURSE OUT COMES (COs)										
CO1	Students gain basic knowledge of Advertising its functions, roles and development of advertising.										
CO2	Know about Advertising design and its strategies.										
CO3	Expose on Advertising, media and about its types.										
CO4	To forecast sales and its techniques used in management.										
CO5	Students were enriched about salesmanship, sales planning, budgeting.										
CO6	Develop an advertising plan and present and defend it persuasively.										
Mapping of Course Outcomes with Program outcomes (POs) (H/M/Lindicates strength of correlation) H-High, M-Medium, L-Low											
1	COs/ POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
2	CO1	L	M						M	L	
	CO2	H	L								
	CO3	L	H								
	CO4	H	L								
	CO5	L	M								
	CO6	M	L								
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 Advertising- Definition -Roles of Advertising- Functions of Advertising- Steps in Development of Advertisement	
UNIT – II	6
Advertising Design- Appeals- Structure of an Advertisement - Message Strategies - Cognitive strategy- Executional Strategies-Creating Advertising- Advertising Effectiveness.	
UNIT – III	6
Advertising Media - Merit and demerits- Kinds of Advertising - Advertising Media- print media - Broadcasting media- Non-media advertising- online advertising.	
UNIT – IV	6
Sales Management - Defining - Objectives -Strategies- Sales Executives – Functions - Qualities - Sales Presentation Techniques - Emerging Trends in Sales Management.	
UNIT – V	6
Selling Concept - Objectives- scope and techniques of Salesmanship- Sales Planning- Importance – process- Sales Budget- Objectives-uses of sales Budget.	
TEXT BOOKS	
1. Advertising & promotion: George E.Belch, THM	
2. Advertising Management, Dr. Varma&Aggarwal, kingBooks	
REFERENCES:	
1. Sales promotion and advertising management by M .N.Mishra. Himalaya Publication.	
2. Advertising and sales management by SanjeevChauhan (Astha publication)	
3. Anderson, Hair, Bush: Professional Sales Management, McGraw Hill, Singapore.	
T Manjiniprakash	
Course Coordinator	HOD

P18OEBA002	BPO MANAGEMENT					L	T	P	C		
	Total Contact Hours – 30					2	0	0	2		
	Prerequisite course – UG Level										
	Course Coordinator Name & Department:- .P.Srinivasan/ Business Administration										
COURSE OBJECTIVES: - - To familiarize the students with the basic fundamentals of BPO industry - To impart knowledge on BPO industry - To enable the students on the concept of various decisions in Business Process Outsourcing											
	COURSE OUT COMES (COs)										
CO1	Develop a strategic understanding of the concepts of BPO’s and its benefits										
CO2	Explaining various models used in functioning of BPO’s and Trends.										
CO3	Describe the opportunities and challenges in Human Resources BPO										
CO4	Analyzes about call centers its functions, processes and classifications										
CO5	Developing efficiency in understanding the customers and capabilities in handling calls.										
CO6	To understand the future trends in BPO industry										
Mapping of Course Outcomes with Program outcomes (POs) (H/M/Lindicates strength of correlation) H-High, M-Medium, L-Low											
1	COs/ Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO 1	PSO 2	PSO3
2	CO1	H	M						M	L	
	CO2	H	L								
	CO3	H	M								
	CO4	M	H								
	CO5	M	M								
	CO6	L	M								
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 – Meaning – definition - Basics - Benefits - BPO Models - - BPO Companies in India.	
UNIT-II	6
Healthcare BPO – Structure of the American Healthcare Sector – Activity Profile –Future Trends and Threats – Case Study – Cbay Systems.	
UNIT – III	6
Human Resource BPO – Reasons for outsourcing HR – Activities involved in HR BPO – HR Outsourcing Trends – Career in HR BPO – Emerging BPO Domains – Media and Entertainment BPO – Publishing BPO.	
UNIT – IV	6
Call Centres – Functions – Processes – classifications – Telemarketing – Tele selling – Preparing for a Job – Approach – Training – Selection Process.	
UNIT – V	6
Improving Efficiency – Handling Calls – Team Player – Pleasing the Customers –	
Converse efficiently – Reducing stress.	
TEXT BOOKS:	
1.BPO Industry in India by S K Awasthi by Jain Book	
2.Business Process Outsourcing: Its Prospects and Challenges by Barua.	
REFERENCE BOOKS	
i) SudhindraMokhasi(2009) ,BPO – Sutra : True stories from India’s BPO and call centres, -Rupa& Co.	
ii) Kulkarni, Sarika.(2005), Business process outsourcing – Delhi, Jaico Publishing House.	
iii) Shikapur, Deepak(2004), BPO Digest. Ameya Inspiring Books.	
Mr.P.Srinivasan	
CourseCoordinator	HOD

P18OEBA003	CALL CENTER MANAGEMENT- Voice and Non Voice						L	T	P	C	
	Total Contact Hours –30						2	0	0	2	
	Prerequisite course – UG Level										
	Course Coordinator Name & Department:-A.Jhoncy / BBA										
COURSE OBJECTIVES:- • Develop and motivate a call centre team. • Get the most out of call monitoring technology and prepare effective management reports. • React to and plan for operational bottlenecks. • Give meaningful feedback to call-centre agents and set achievable goals and targets. • Students will learn about the roles and methods of different kinds of call centers. They will apply this by designing their own call center and trying to anticipate customer needs.											
	COURSE OUT COMES (COs)										
CO1	Gaining a basic knowledge about call centers its functioning and classifications.										
CO2	To know about handling the Issues and problems related to calls in a efficient manner.										
CO3	Gives knowledge of technical communications, speech process and educate conversation of oral skills.										
CO4	Students acquire knowledge towards pre-interview about Interview questions and answering techniques										
CO5	Analyses fully about the medias of communications.										
CO6	Demonstrate awareness of the pragmatics of call center planning and operation										
Mapping of Course Outcomes with Program outcomes (POs) (H/M/Lindicates strength of correlation) H-High, M-Medium, L-Low											
1	COs/ Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO 1	PSO 2	PSO3
2	CO1	M	H						M	H	
	CO2	M	H								
	CO3	L	H								
	CO4	L	H								
	CO5	M	H								
	CO6	L	H								
3	Category	Humanities & Social Studies	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**
Call centers – Meaning – Functions – Processes - Classifications – Tele selling – Types of call centers.

UNIT – II **6**
Improving Efficiency – Handling calls – Team Players – Components and working of call center – Issues and problems.

UNIT – III **6**
Nature of Technical communication: Stages of communication – Nature of Technical Communication - The speech process – Conversation and Oral skills.

UNIT – IV **6**
Job Interview: Pre – Interview preparation techniques – Interview questions – Answering Strategies – Frequently asked Interview questions.

UNIT – V **6**
Communication media – Telephone – Fax – Internet – Email – Video conferencing.

TEXT BOOKS

1. Brad Cleveland - Call Center Management on Fast Forward: Succeeding in the New Era of Customer Relationships (3rd Edition) Third Edition,
2. Mr. Thomas Anthony Laird - Advice from a Call Center Geek: Rethinking Call Center Operations,

REFERENCE BOOKS

1. W. Stallings “Data and Computer Communication” Pearson Education, 5 Edition, 2001.
2. M. AshrajRizvi,” Effective Technical Communication”, Tata McGraw – Hill Education, 2005.
3. R.S.N.Pillai&Bagavathi – Modern commercial correspondence.

A.Jhoncy

Course Coordinator

HOD

UNIT – I	6
CRM – Introduction – Definition – Need for CRM – Customer satisfaction – Customer loyalty – Product Marketing – Direct Marketing-	
UNIT – II	6
Customer learning relationship – Key stages of CRM - Force driving CRM – Benefits of CRM – Growth of CRM Market in India – Key principles of CRM.	
UNIT – III	6
CRM – Program – Ground work for effective use of CRM – Components of CRM – Types of CRM.	
UNIT – IV	6
CRM Process - Frame work – Governance process- Performance evaluation process.	
UNIT – V	6
Use of Technology in CRM – Call center process – CRM Technology tools – Implementation – Requirements analysis – selection of CRM Package – reasons and failure of CRM.	
TEXT BOOK	
1. Kristin Anderson & Carol Kerr – Customer Relationship Management – McGrawHill 2002	
2.Sheth – Customer Relationship Management – McGraw Hill Edition 1 st Edition 2000	
REFERENCE BOOK	
1. Dr. P .Sheela Rani – Customer Relationship Management – Margham Publication.	
2. K. Balasubramaniam – Customer Relationship Management – GIGO Publication, 2005.	
3. Dr. Ravi Kalakota E – business – Road map for success, Pearson education Asia, 2000.	
Dr.D.ArunKumar	
CourseCoordinator	HOD

UNIT – I	6
Introduction to Entrepreneurship: Meaning and concept of entrepreneurship - the history of entrepreneurship development - role of entrepreneurship in economic development	
UNIT – II	6
The Entrepreneur: Meaning of entrepreneur - the skills required to be an entrepreneur, and role models, mentors and support system.	
UNIT – III	6
Business Opportunity Identification: Business ideas, methods of generating ideas - legal form of new venture, protection of intellectual property -marketing the new venture.	
UNIT – IV	6
Preparing a Business Plan: Meaning - significance of a business plan - components -feasibility study.	
UNIT – V	6
Financing the New Venture: Importance - types of ownership securities - venture capital - types of debt securities -determining ideal debt-equity mix - financial institutions and banks.	
TEXT BOOK	
1. Robert D. Hisrich, Mathew J Manimala, Michael P Peters, Dean A Shepherd, “Entrepreneurship”, 9e,McGraw Hill Education, 2014.	
2. Peter F. Drucker, “Innovation and Entrepreneurship”,Harper Collins, 2009.	
REFERENCE BOOK	
1. John Bessant, Joe Tidd, “Innovation and Entrepreneurship”,2e,Wiley India Private Limited, 2012.	
2. Robin Lowe, Sue Marriott,"Enterprise: Entrepreneurship and Innovation: Concepts,Contexts and Commercialization"1e,Routledge, 2012.	
3. VeeraBhadrappaHavinal – Management Entrepreneurship – New Age International Publishers.	
Course Coordinator	HOD

UNIT – I	6
Human Resource Function- Human Resource Philosophy – Changing environments of HRM – Strategic human resource management – Role of HR Managers.	
UNIT – II	6
Recruitment & Placement: Sources, Developing and using application forms - IT and online recruitment - Selection process, basic testing concepts - types of test - work samples & simulation - selection techniques – interview - Designing & conducting the effective interview - computer aided interview.	
UNIT – III	6
Training & Development: Employee Orientation- Training process- Need analysis- Training techniques- special purpose training- Performance appraisal: Methods - Problem and solutions - MBO approach - Performance appraisal in practice.	
UNIT – IV	6
Basic Compensation & Pay plans - factors determining pay rate - Current trends in compensation - Computerized job evaluation - financial incentives - benefits - Insurance benefits - retirement benefits – welfare measure	
UNIT – V	6
Trade unions - Discipline administration - grievances handling - Labour Welfare: Importance & Implications of labour legislations - Employee health.	
TEXT BOOKS	
1. Dr. R.Venkatapathy& Assissi Menacheri, Industrial Relations &Labour Welfare, Adithya Publications, CBE, 2001. 5. Robert L.Gibson and Marianne H.Mitchell, Introduction to Counseling and Guidance, VI edition, PHI, 2005	
2. L.M. Prasad – Human Resource Management – S. Chand & Sons – 2007.	
REFERENCEBOOKS	
1. Gary Dessler & Biju Varrkey, "Human Resource Management, 15th edition.Pearson.	
2. David A. DeCenzo& Stephen P.Robbins, Personnel/Human Resource Management, Third edition, PHI/Pearson.	
3. VSP Rao, Human Resource Management: Text and cases, First edition, Excel Books, New Delhi - 2000.	
4. P.Srinivasan Human Resource Management", Seventh edition, Prentice-Hall of India P.Ltd., Pearson.	
D.K.Sowmiyalakshmi	
Course Coordinator	HOD

UNIT –I	6
Logistics management and Supply Chain management - Definition, Evolution, Importance. The concepts of logistics. Logistics relationships -Functional applications - Logistics Organization - Logistics in different industries.	
UNIT –I	6
Logistics Activities: – objectives, solution. Customer Service, Warehousing and Material Storage, Material Handling, information handling and procurement Transportation and Packaging - Reverse Logistics - Global Logistics	
UNIT-III	6
Fundamentals of Supply Chain - Development of SCM - Strategic Supply Chain Management and Key components -Drivers of Supply Chain Performance – key decision areas – External Drivers of Change.	
UNIT-IV	6
Supply Chain Drivers and Design Drivers of supply chain performance: Framework for structuring Facilities warehouse – Inventory – Transportation – Information - Sourcing, and Pricing – Revenue management.	
UNIT-V	6
Demand and Inventory Aggregate Planning in a Supply Chain: role - strategies Implementation Responding to predictable variability in supply chain – Types of supply chains - creating responsive supply chains lean	
TEXT BOOKS	
1. Supply Chain Management: Ronald H. Ballou, Samir K. Srivastava, Pearson Education Ltd, Jan 2007.	
2. Supply Chain Management: Anil Sinha, McGraw Hill Education, August 2011.	
REFERENCE BOOKS	
1. Logistics and Supply Chain Management: Martin Christopher, Pearson Education Ltd, 2016.	
2. Supply Chain Management: Sunil Chopra, Peter Meindl, Dharma Virus Kalra, Pearson Education Ltd, 2016.	
3. Supply Chain And Logistics Management: V. Anandaraj, S. Kumaran, IshankaSaikira, Airwalk Publication, Jan 2018.	
T.Manjiniprakash.	
Course Coordinator	HOD

P18OEBA008	OFFICE MANAGEMENT					L	T	P	C		
	Total Contact Hours – 30					2	0	0	2		
	Prerequisite course – UG Level										
	Course Coordinator Name & Department:- D.K.Sowmiyalakshmi /BBA										
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.											
	COURSE OUT COMES (COs)										
CO1	To make them understand office management and duties of an office manager										
CO2	To give an idea about proper filing and indexing of office documents										
CO3	To understand the principles of record management and different types of records in business organization.										
CO4	To enable them to aware about safety hazardous and steps to improve office safety.										
CO5	To introduce different measures of office work										
CO6	Create an ideas about office management										
Mapping of Course Outcomes with Program outcomes (POs) (H/M/Lindicates strength of correlation) H-High, M-Medium, L-Low											
1	COs/ Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO 1	PSO 2	PSO3
2	CO1	H	H						H		
	CO2	M	M								
	CO3	M	H								
	CO4	L	H								
	CO5	H	H								
	CO6	H	M								
3	Category	Humanities & Social Studies	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: Meaning, functions and importance of office management; office management and organization. Principles of office management and organization.Principal departments of modern office.	
UNIT-II	6
Office Manager: qualities of office manager. The authorities and responsibilities of an office manager. Office accommodation: Selection of site. Office layout.Environment and working conditions.	
UNIT-III	6
Office equipment's - Reproduction equipment - Typewriter - Duplicators - Photo Copier - Communication Equipment - Intercom - Telephone - Use of Computers in Office Management Office System - Procedure - Routine - And methods - Paper work in office Filling functions.	
UNIT-IV	6
Office Communication: Various means of communication- Their use, Correspondence through Internet - Office Correspondence -Central vs. Departmental Correspondence - Handling Mail - Postal Services - Oral written - Internal and external communication - Records Management Types - Forms Controls - Principles - Foremost -Continuous stationery	
UNIT-V	6
Office Supervisor - Meaning and characteristics of Supervisor - Status - Place and Role of Supervisor - Effective Supervisor - Qualification - skill of Supervisor.	
TEXT BOOKS	
1. Modern Office Management: N. D Sharma, And Publishers, Jan 2006.	
2. Office Management: Prashansa K. Ghosh, S. Chand & Sons, Jan 2010	
REFERENCE BOOKS	
1. Office Management: R.S.N Pillai&Bhagavathi, S. Chandler & Come, Dec 2010.	
2. Office Management: R. Nangia, G. K Gupta, Crescent Publishing House.	
3. Office Management: Dr. R. K Chopra, PriyankaGauri, Himalaya Publishing House, Jan 2017.	
4. Of Non-Trading Organization-Receipts And Payment Account- Income And Expenditure Account	
D.K.Sowmiyalakshmi	
Course Coordinator	HOD

P18OEVC001	PHOTOGRAPHY AND VIDEOGRAPHY						L	T	P	C	
	Total Contact Hours – 45						2	0	0	2	
	Prerequisite – UG Level										
	Course Coordinator Name & Department:- L.Rakesh– Dept of Visual Communication										
COURSE OBJECTIVES											
- To understand the fundamentals of Photography and Videography - To examine the technical factors of indoor and outdoor photography and Videography - To enable the students to equip themselves to become a photography and Videography professionals.											
	COURSE OUT COMES (COs)										
CO1	Can analyze the fundamentals of Photography and Videography										
CO2	Understanding of the camera operations										
CO3	Evaluating the lighting										
CO4	Can be aware of the wrong exposures										
CO5	Can promote various types of photography and Videography										
CO6	Understanding the concept of photo-journalism										
Mapping of Course Outcomes with Program outcomes (POs)											
(H/M/Lindicates strength of correlation) H-High, M-Medium, L-Low											
1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
2	CO1	H	M								
	CO2	H	M								
	CO3	H	M								
	CO4	H	M								
	CO5	H	M								
	CO6	H	M								
3	Category	Humanities & Social Studies	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
Human Eye and Camera. Basics of Camera (aperture, shutter speed, focal length, f-stop, depth of field etc.) Camera operations, Introduction to Television Production, Types of telecasting, Television Crew, an overview of direction.	
UNIT-II:	6
Types of Still and video cameras. Types of Lenses. Visual Perception, Art direction, floor management- indoor & outdoor, production management, budget preparation. Locations: Indoor, set, on-sights sets, - Outdoor on-sight sets, blue matte. Etc.,	
UNIT-III:	6
Understanding lighting-indoor and outdoor, Exposing and Focusing, Types of lighting, Natural and Artificial Lights, Controlling lights, Exposure Meters. Camera techniques & operation, Framing, shots & movements (wide, medium, close ups, shadow, zoom, pan, tilt, aerial etc.),	
UNIT-IV:	6
Photography for advertising-Consumer and industrial. Usage of various types of camera lenses (Normal, Tele, Zoom etc.), usages of various filters (day ,night, colour correcting filter, diffusion filter), objectives TV lighting, various types of Lights (baby, Junior, Senior, etc.,)	
UNIT- V:	6
Basics of photo-journalism, Photo-features, Photo - essays, Writing captions, Visual story telling. Planning a shoot-studio, location, set props and casting.Colour temperature, lighting for different situations (interviews, indoor, out-door), types of lighting (Back, Front, full, semi, etc.,)	
TEXT BOOKS:	
1.The Art of Photography: A Personal Approach to Artistic Expression, Barnbaum, Bruce, Rocky Nook.	
2.Photography Demystified: Your Guide to Gaining Creative Control, David McKay, Photography Inc.	
3. Television Productions: A History of All Series and Pilots, by <u>Jon Abbott</u> , Publisher: McFarland & Company (May 13, 2009)	
4. Production Management for TV and Film: The Professional's Guide, Methuen Drama (August 1, 2010)	
REFERENCE BOOKS:	
1.The Photographer's Eye,Szarkowski, John, The Museum of Modern Art, New York (Publisher)	
2.Creative Composition: Digital Photography Tips and Techniques, Davis, Harold, Wiley	
3.From Concept to Screen: An Overview of Film and Television Production, Robert Benedetti, Pearson; 1 edition (June 11, 2001)	
4.The Television Handbook, Routledge, Holland, P (1998)	
Course Coordinator	HOD

P18OEEN001	SOFT SKILLS						L	T	P	C	
	Total Contact Hours – 30						2	0	0	2	
	Prerequisite – UG 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 OUT COMES (COs)										
CO1	Remember the personal as well as professionals goals of the students										
CO2	Understand the manners during professional meetings										
CO3	Apply the confidence and fluency in speaking English.										
CO4	Analyze the learners to fine-tune their linguistic skill with communication globally										
CO5	Evaluate the excellence in both personal and professional life										
CO6	Create the performance of learners at placement interviews and other recruitment procedures.										
Mapping of Course Outcomes with Program outcomes (POs) (H/M/Lindicates strength of correlation) H-High, M-Medium, L-Low											
1	COs/ Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO 1	PSO 2	PSO3
2	CO1	H	H						H		
	CO2	H	H								
	CO3	H	H								
	CO4	H	L								
	CO5	H	L								
	CO6	H	H								
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- LISTENING / VIEWING	6
Listening and note-taking – Listening to telephonic conversations – Ted talks – Inspiring Speeches – Watching documentaries on personalities, places, socio-cultural events, TV news programmes and discussions to answer different kinds questions, viz., identifying key idea and comprehension questions... so on.	
UNIT II- SPEAKING	6
Elements of presentation skills-Structure of presentation-presentation tools- mock interviews – group discussion – introducing one self and others – welcome address and proposing a vote of thanks- role play – debating.	
UNIT III - READING	6
Different genres of text (literature, media, technical) for comprehension – Reading strategies like note-making – reading graphs, charts and graphic organizer – Sequencing sentences – reading online sources like e-books, e-journals and e-newspapers.	
UNIT IV - WRITING	6
Resume/Report preparation/Letter Writing-Structuring the resume-comprehension-Describing charts and tables – writing for media on current events.	
UNIT V- PROJECT	6
Gender injustice: Dowry-Violence against women -Sexual Harassment -Eve teasing-Female infanticide-Prostitution. Social problem: Poverty-unemployment-Child Labour-Terrorism-Drug abuse-Alcoholism-Corruption. Industrial problem: Work and Labour organization-Elements-Principles-Staff and Functional Activities. Industrial Conflict: Strikes-Disputes-Grievances-Industrial development in India-Steps in Automation process-Industrial policy-Liberation.	
TEXT BOOKS	
1 .Rizvi ashraf ,Effective Technical Communication , Tata amcgraw Hill Education Private Ltd,New Delhi,2011.	
2. Townsend Roz , Presentation skills for the upwardly mobile , Emerald Publishers.	
REFERENCE BOOKS	
1. T.M.Farhathullah, communication skills for Technical students, Orient Longman Ltd,2002.	
2. Andree J Rutherford, Basic communication skills for Technology, Pearson Education,Asia (Singapore) Pte.Ltd, Banglore , 2001.	
Course Coordinator	HOD

P18OEEN002	MASS MEDIA AND COMMUNICATION						L	T	P	C		
	Total Contact Hours – 30						2	0	0	2		
	Prerequisite – UG Level											
	Course coordinator :- Dr.P.AROCKIA NATHAN Dept of English											
COURSE OBJECTIVES : To impart students with the efficient knowledge of important events in through literature												
	COURSE OUT COMES (COs)											
CO1	Remember the art of writing, report and editing											
CO2	Understand the skills of writing											
CO3	Apply the Role & importance in social change											
CO4	Analyze the social structure of Indian society											
CO5	Evaluate the growth & development of communication and media											
CO6	Create the interpreting the meaning from the text											
Mapping of Course Outcomes with Program outcomes (POs) (H/M/Lindicates strength of correlation) H-High, M-Medium, L-Low												
1	COs/ Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	
2	CO1	H	L						H	M	L	
	CO2	H	L									
	CO3	H	L									
	CO4	H	L									
	CO5	H	L									
	CO6	H	L									
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 -Communication and Media	6
Communication & Media: Definition, meaning and concept.	
Different types of communication: verbal and written	
Scope and Process of Mass Media & Communication	
UNIT II -History of Mass media	6
History of the development of electric media in India: Radio & TV	
Role of media in society, Impact of media on audience,	
Media effects, limitations and different form of media.	
UNIT- III- Role & Responsibilities	6
Role and responsibilities of journalist, ethics, careers,	
Media management, Media laws in India, and freedom of press	
Qualities and Responsibilities of a reporter	
UNIT IV -Theories & Principles	6
Theories and Principles of Editing	
Communication and theories of social change,	
Role of media in social change, Development communication	
UNIT V-Technology & Development	6
Changing trends of mass communication under the process of globalization	
Technology in the development of media.	
TEXT BOOKS	
1. Vivian, John, Mass Media & communication Boston, Massachusetts : Pearson Allyn and Bacon, c.2008.	
2. Stovall, James Glen, Writing for the mass media, New Jersey : Pearson Education, Inc., c.2012	
REFERENCE BOOKS:	
1. Parthasarathy, Rangaswami, journalism in India, sterling Publisher pvt. Ltd. New Delhi.	
2. D.S. Mehta. Mass communication and Journalism in India New Delhi, Allied Publishers, 2011	
Course Coordinator	HOD

P18OESC001	COMPUTER APPLICATIONS					L	T	P	C		
	Total Contact Hours – 30					2	0	0	2		
	Prerequisite course – UG Level										
	Course Coordinator Name & Department:- Dr. S.Thiru Nirai Senthil / 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 OUT COMES (COs)										
CO1	Gain knowledge in fundamental computer applications										
CO2	Understand the concept of input device functions										
CO3	Identify 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) (H/M/L indicates strength of correlation) H-High, M-Medium, L-Low											
1	COs/ Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO 1	PSO2	PSO3
2	CO1	H	L							H	
	CO2	H	L								
	CO3	H	L								
	CO4	H	L								
	CO5	H	L								
	CO6	H	L								
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	Approv		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,2010.	
2. Alexis Leon & Mathews Leon, “Fundamentals of Information Technology”, Vikas Publishing House, New Delhi,2009.	
REFERENCE BOOKS:	
1. Rajeev Mathur, “Dos Quick Reference”, Galgotia Publications.	
Course Coordinator	HOD

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 to multimedia”,1998.	
2. Mohammad Dastbaz, “Designing Interactive Multimedia Systems”,2002.	
Reference Books	
1. Bohdan O. Szuprowicz, “Multimedia Networking”,1995.	
2. Stephen McGloughlin, “Multimedia on the web”,1997.	
Course Coordinator	HOD

P18OESC003	ADVANCED EXCEL						L	T	P	C	
	Total Contact Hours – 30						24	0	0	2	
	Prerequisite course – UG Level										
	Course Coordinator Name & Department:- S.Anupriya / BCA										
COURSE OBJECTIVES:- To identify the various functions in Excel Sheet											
	COURSE OUT COMES (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) (H/M/Lindicates strength of correlation) H-High, M-Medium, L-Low											
1	COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO 1	PSO 2	PSO 3
2	CO1	H	L								H
	CO2	H	L								
	CO3	H	L	M	M						
	CO4	H	L	M	M						
	CO5	H	L	M	M						
	CO6	H	L	M	M						
3	Category	Humanities & Social Studies	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 Subtotals , 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” ,A Press, 2015 edition.	
REFERENCE BOOKS	
hn Walkenbach, “Microsoft Excel 2013 Bible”, Wiley Publications, 2013.	
Course Coordinator	HOD

P18OESC004	WEB DESIGNING					L	T	P	C		
	Total Contact Hours – 30					2	0	0	2		
	Prerequisite course – UG Level										
	Course Coordinator Name & Department:- V.Ramya/BCA										
COURSE OBJECTIVES:- To Understand the basic web designing concepts.											
	COURSE OUT COMES (COs)										
CO1	Gain knowledge in web basics and server side scripting.										
CO2	Execute the HTML coding.										
CO3	Apply hyper links between webpages										
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) (H/M/L indicates strength of correlation) H-High, M-Medium, L-Low											
1	COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
2	CO1	H	L								H
	CO2	H									
	CO3	H									
	CO4	H									
	CO5	H	L								
	CO6	H	L								
3	Category	Humanities & Social Studies	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,2010.	
4. T. A Powell, “Complete Reference HTML (Third Edition)”, TMH, 2002.	
Course Coordinator	HOD

P18OESC005	PHOTOSHOP						L	T	P	C	
	Total Contact Hours – 30						2	0	0	2	
	Prerequisite course – UG 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 OUT COMES (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	Gain knowledge in Working with layers.										
CO6	Create a real time application using 3D image and Animation.										
Mapping of Course Outcomes with Program outcomes (POs) (H/M/Lindicates strength of correlation) H-High, M-Medium, L-Low											
1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO 1	PSO 2	PSO3
2	CO1	H	L								H
	CO2	H	-								
	CO3	H	-								
	CO4	H	-								
	CO5	H	L								
	CO6	H	L								
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 back ground.	
UNIT II	6
Photoshop program window-titlebar, menu bar, option bar, image window, image title bar, status bar, ruler, palettes ,tool box, 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 tool box: 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.	
TEXT BOOKS	
1. Reema Thareja ,”Fundamentals of Computers”,Oxford University Press,2014.	
REFERENCE BOOKS	
1. Photoshop: Beginner's Guide for Photoshop - Digital Photography, Photo Editing, Color	
2. Adobe Creative Team ,”Adobe Photoshop Class Room in a Book”,2014.	
Course Coordinator	HOD

P18OESC006	FLASH					L	T	P	C		
	Total Contact Hours – 30					2	0	0	2		
	Prerequisite course – UG Level										
	Course Coordinator Name & Department:- N.Mathimagal/ BCA										
COURSE OBJECTIVES:- Learners can identify methods appropriate for Basic Animation. Apply methods to design with flash.											
	COURSE OUT COMES (COs)										
CO1	Understand in 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) (H/M/Lindicates strength of correlation) H-High, M-Medium, L-Low											
1	COs/ Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
2	CO1	H	L								H
	CO2	H	-								
	CO3	H	-								
	CO4	H									
	CO5	H	L								
	CO6	H	L								
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 twining , 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.	
Course Coordinator	HOD

P18OESC007	COMPUTER HARDWARE AND NETWORKING						L	T	P	C	
	Total Contact Hours – 30						2	0	0	2	
	Prerequisite course – UG Level										
	Course Coordinator Name & Department:- V.Ramya/BCA										
COURSE OBJECTIVES:- Learners familiar with the basic concepts of Microprosesser,Controller, Server and to demonstrate the traditional imperative design of CPUs, cards, PCs and BIOS.											
	COURSE OUT COMES (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) (H/M/Lindicates strength of correlation) H-High, M-Medium, L-Low											
1	COs/ Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO 1	PSO2	PSO3
2	CO1	H	L						H	M	L
	CO2	H	L								
	CO3	H	L								
	CO4	H	L								
	CO5	H	L								
	CO6	H	L								
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, October 2013.	
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

P18OESC008	COMPUTER PROGRAMMING					L	T	P	C		
	Total Contact Hours – 30					2	0	0	2		
	Prerequisite course – UG Level										
	Course Coordinator Name & Department:- S.Anupriya/ BCA										
COURSE OBJECTIVES:- Learners understand the basic concepts of C programming. Practice the use of conditional and looping statements. Implement arrays, functions and pointers. Gain skills to handle strings and files.											
	COURSE OUT COMES (COs)										
CO1	Understand the concept of data types, loops, functions, array, pointers, string, structures and files.										
CO2	Design flow-chart, algorithm and program logic.										
CO3	Analyze problems, errors and exceptions.										
CO4	Apply programming concepts to compile and debug c programs to find solutions.										
CO5	Gain knowledge to use Function, Pointers, Structures, Unions & preprocessor directives										
CO6	Construct programs that demonstrate effective use of C.										
Mapping of Course Outcomes with Program outcomes (POs) (H/M/Lindicates strength of correlation) H-High, M-Medium, L-Low											
1	COs/ Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO 1	PSO 2	PSO3
2	CO1	H	L								H
	CO2	H	L								
	CO3	H	L	M				H			
	CO4	H	L	M				H			
	CO5	H	L	M				H			
	CO6	H	L	M				H			
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. Pradip Dey, Manas Ghosh, “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	

P18OESC009		OFFICE AUTOMATION TOOLS					L	T	P	C	
		Total Contact Hours – 30					2	0	0	2	
		Prerequisite course – UG Level									
		Course Coordinator Name & Department:- V.Brindha/BCA									
COURSE OBJECTIVES:- Learners understand the basic concepts of word, Excel, Power Point.											
	COURSE OUT COMES (COs)										
CO1	Understand the text manipulations for word documents.										
CO2	Analyze the templates and mail merge concepts.										
CO3	Apply the cell editing, formulae, built in functions used in the Excel Sheet.										
CO4	Develop the power point slide designs and backgrounds.										
CO5	Develop the graphics and animations using wizards.										
CO6	Create a document and apply various formatting techniques										
Mapping of Course Outcomes with Program outcomes (POs) (H/M/L indicates strength of correlation) H-High, M-Medium, L-Low											
1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO 1	PSO 2	PSO3
2	CO1	H	L								H
	CO2	H	L								
	CO3	H	L	M				H			
	CO4	H	L	M				H			
	CO5	H	L	M				H			
	CO6	M	L	M				H			
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”, Universe Publications,2012.	
Course Coordinator	HOD

U18OEMI001	CLINICAL MICROBIOLOGY						L	T	P	C	
	Total Contact Hours – 30						2	0	0	2	
	Prerequisite course – Under graduate degree in any discipline										
	Course Coordinator Name & Department:- Dr. J. Senthil & Microbiology										
COURSE OBJECTIVES:- Learners will be familiar with microbiological related diagnostic techniques. Learners will understand the microbial morphology, structure, characters, classification, diseases and diagnostic tests.											
	COURSE OUT COMES (COs)										
CO1	Recall the general classification of microbes.										
CO2	Recognize the different specimen collection methods and staining methods.										
CO3	Apply different diagnostic tests to identify the diseases.										
CO4	Apply the role of human pathogens in causing diseases.										
CO5	Analyze the importance of antimicrobial compounds.										
CO6	Analyze and develop new antimicrobial drugs and antibiotics against wide range of pathogens.										
Mapping of Course Outcomes with Program outcomes (POs) (H/M/L indicates strength of correlation) H-High, M-Medium, L-Low											
1	COs/ Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO 1	PSO 2	PSO3
2	CO1	H	M						H		
	CO2	H	M								
	CO3	H	M								
	CO4	H	M								
	CO5	H	M								
	CO6	H	M								
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							

General introduction about clinical microbiology, Sterilization and Disinfection., Culture Media preparation, Staining Methods, Collection and Transportation of Specimen - General Principles, Containers, Rejection, Samples - Urine, Faeces, Sputum, Pus, Body fluids, Swab, Blood, Disposal of Laboratory/Hospital Waste.	
UNIT II	6
General characters and classification of bacteria, Characteristics - Growth and maintenance of Bacteria, Pathogenicity and diagnosis of bacterial pathogens, antimicrobial compounds against clinical pathogens.	
UNIT III	6
Morphology and structure of fungi - Classification of fungi - Nutrition and cultivation of fungus - Cutaneous & Sub cutaneous and Systemic Mycosis - Lab diagnosis of fungal Infections - Opportunistic fungal infections.	
UNIT IV	6
General characters of viruses. - Classification of viruses. - Lab diagnosis of viral infections. - Cultivation of viruses. - Bacteriophages - Retro viruses - HIV, Hepatitis virus, Pox virus . - Picorna virus - Polio. - Orthomyxo virus - Influenza. - Arbo virus - Chikungunya, Dengue. - Herpes and Adeno virus.	
UNIT V	6
Definition - parasitism, host, vectors etc. Classification of Parasites, Phylum Protozoa- general Pathogenic and non pathogenic protozoa, Phylum Nematelminthes/Round words (Nematoda), Phylum Platyhelminthes - class - Cestoda, class - Trematoda, Lab diagnosis of parasitic infections.	
TEXT BOOKS:	
1. Monica Chees Brough. Medical laboratory manual for tropical countries, Elsevier Health Sciences, Butter worths, 1987.	
2. Bailey and Scott. Diagnostic Microbiology, Eighth edition, The Mosby Company, 1990.	
REFERENCE BOOKS:	
1. Keith Struthers K. Clinical Microbiology, 2 nd Edition, CRC Press, 2017.	
2. Jennie Wilson. Clinical Microbiology -An Introduction for Healthcare Professional,	
8 th Edition, Bailleire Tindall, 2000.	
Course Coordinator	HOD

U18OEMI002	HERBAL MEDICINE						L	T	P	C	
	Total Contact Hours – 30						2	0	0	2	
	Prerequisite course – Under graduate degree in any discipline										
	Course Coordinator Name & Department:- Dr. J. Senthil & Microbiology										
COURSE OBJECTIVES:- Learners will be familiar with medicinal herbs. Learners will understand the importance of herbal drugs and herbal therapies.											
	COURSE OUT COMES (COs)										
CO1	Recall the herbal medicines used in daily life.										
CO2	Recognize the different methods of herbal extraction and its types.										
CO3	Apply various herbal medicines in curing the diseases.										
CO4	Analyze the role of herbs in drug discovery.										
CO5	Evaluate the importance and toxicity studies of herbal extracts.										
CO6	Create and develop new drugs from wide range of medicinal plants available worldwide.										
Mapping of Course Outcomes with Program outcomes (POs) (H/M/L indicates strength of correlation) H-High, M-Medium, L-Low											
1	COs/ Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO 1	PSO 2	PSO 3
2	CO1	H	M						H		
	CO2	H	M								
	CO3	H	M								
	CO4	H	M								
	CO5	H	M								
	CO6	H	M								
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 of Herbal drug, Importance of Herbal therapies, Herbs used as nutraceuticals and healing agents. Making and using herbal medicines for common ailments like cold, skin infections and Diarrhea; Analytical Profiles of selected herbs.	
UNIT II	6
General methods of extraction, types and principles of extractions - merits and demerits, selection of suitable extraction methods, purification and recovery of solvents	
UNIT III	6
Different methods for isolation and estimation of phyto-constituents from medicinal herbs like <i>Mucuna pruriens</i> , <i>Garcinia combogia</i> , Green tea, <i>Hypericum species</i> etc.	
UNIT IV	6
Qualitative and Quantitative estimation of standardized extracts by HPTLC, Biological standardization -Pharmacological screening of herbal extracts and Microbiological evaluation of herbal extracts, Toxicity studies of herbal extracts.	
UNIT V	6
Herbal drugs acting on brain and nervous system – Rheumatoid arthritis – Psychoactive drugs – Depressants, Stimulants, hallucinogens – sources, effects, basic mechanism of action.	
TEXT BOOKS:	
1. Indian Herbal Pharmacopoeia, Vol.1 & 2, RRL, 1 DMA, 1998, 2000.	
2. Kokate CK, Purohit and Gokhale. Text book of Pharmacognosy, 4 th edition, Nirali Prakashan, 1996.	
REFERENCE BOOKS:	
1. Toxicology and Clinical Pharmacology of Herbal Products, Melanie Johns Cupp.	
2. Choudhary RD. Herbal drug industry, 1 st edition, Eastern publisher, New Delhi, 1996.	
Course Coordinator	HOD

P18OEPH001	ELECTRICAL TECHNICIAN						L	T	P	C	
	Total Contact Hours - 30						2	0	0	2	
	Prerequisite – B.Sc Physics										
	Course Coordinator Name & Department:- – Dr. S.Anandhi / Physics										
OBJECTIVES: Students will have an appreciation on the electrical systems and electrical equipment typically used in the Oil and Gas production plant.											
	COURSE OUT COMES (COs)										
CO1	Analyze and solve routine technical problems related to electrical systems by applying mathematics and science principles.										
CO2	Explain how to used electrical tools, operate and maintain specific equipment in the Oil and Gas production plant										
CO3	Explain how to perform corrective and preventive maintenance in electrical tasks.										
CO4	Understand the work on electrical systems safely and efficiently.										
CO5	Understand the electrical system and electrical equipment used in the Oil and Gas production plant.										
CO6	To execute the principle and how to working process of the transformer and classification of transformer										
Mapping of Course Outcomes with Program outcomes (POs) (H/M/Lindicates strength of correlation) H-High, M-Medium, L-Low											
1	COs/ Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO 2	PSO3
2	CO1	H	H						H		
	CO2	H	H								
	CO3	M	M								
	CO4	M	H								
	CO5	H	H								
	CO6	H	H								
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
Basic Principle Of Petroleum - Overview of Oil and Gas Processing -Wellhead Platform and Equipment	
UNIT –II	6
Introduction to Instrumentation -P & ID Drawing -Introduction to Distributed Control System (DCS)	
UNIT –III	6
Safety in Electrical Maintenance - Batteries and Chargers -Reading Electrical Diagrams - Cables and Conductors - Terminations and Splices - Motor Branch Circuit Protections	
UNIT –IV	6
Three Phase AC Induction Motors - AC Generator Maintenance -Fire & Gas Detection and Safety Systems and SIS -DC Generator -Construction& Principle- Types-Series,- Shunt & Compound Generator- EMF equation, Characteristics - (OCC & LCC). Armature reactions,- commutation Efficiency, Regulation & Applications. DC Motor-Construction& Principle. Types- Series, Shunt & Compound Motors. Characteristics curve-Applications. Necessity of starter- Construction and Working of- starters (3 point& 4 point). Speed control of DC Shunt-motor (armature & Field control. Traction System.- Trouble shooting –Care and maintenance.	
UNIT-V	6
Transformer –Principle -Construction- Classification of Transformers - EMF equation ,rating - Loading, Losses & Efficiency Regulation. Parallel Operation- Cooling methods, Transformer- oil testing. Care and maintenance,- Protective devices. Tap Changer – ON load and OFF- load. Auto transformer, Instrument- Transformer- CT & PT. Welding Transformer.	
TEXT BOOKS	
1. Fundamental Electrical circuits by Charles K.Alexandeer and Matthew NO Sadiku(2003)	
2. Fundamental of Digital circuits 3 rd edition by Kumar A Anandh	
Course Coordinator	HOD

P18ACEN001	AUDIT COURSE : ENGLISH FOR RESEARCH PAPER WRITING	L	T	P	C
	Total Contact Hours – 30	2	0	0	0
	Prerequisite course – UG Level				

		Course Coordinator Name & Department:- Mr.V.C.Jain/Department of English										
COURSE OBJECTIVES:- Understand the skills needed when writing a Title Ensure the good quality of paper at very first-time submission.												
	COURSE OUT COMES (COs)											
CO1	Recognize to prepare and Plan the word order, breaking of long sentences, structural formation of paragraph and being concise without any ambiguities.											
CO2	Describe how to write abstract and introduction to any topic or project.											
CO3	Relate the skills require for the discussions and conclusions.											
CO4	Express the quality of paper and time management in writing skills.											
CO5	Categorize the useful phrase and how to ensure the paper is as good.											
CO6	Prepare the oral presentation in class using effective delivery strategies.											
Mapping of Course Outcomes with Program outcomes (POs) (H/M/Lindicates strength of correlation) H-High, M-Medium, L-Low												
1	COs/ Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	
2	CO1		H	L					H			
	CO2		H	L								
	CO3		H	L								
	CO4		H	L								
	CO5		H	L								
	CO6		H	L								
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 PLANNING AND PREPARATION :

6

Planning and Preparation - word order - breaking up long sentences, structuring, paragraphs and sentences, being concise and removing redundancy, avoiding ambiguity and vagueness.

UNIT-II ABSTRACT**6**

Clarifying who did what - highlighting your findings - hedging and criticizing - paraphrasing and plagiarism - sections of a paper - abstracts - introduction.

UNIT -III DISCUSSION AND CONCLUSION**6**

Review of the literature - methods - results - discussion - conclusions, the final check - key skills are needed when writing a title - key skills are needed when writing an abstract - key skills are needed when writing an introduction - skills needed when a review of the literature.

UNIT –IV WRITING SKILLS**6**

Skills are needed when writing the methods - skills needed when writing the results - skills are needed when writing the discussion - skills are needed when writing the conclusions.

UNIT –V QUALITY AND TIME MAINTAINANCE**6**

Useful phrases - how to ensure paper is as good as it could possibly be the first -time submission.

TEXT BOOKS :

1. Goldbort R (2006) Writing for Science, Yale University Press (Available on Google Books).
2. Day R(2006), How to Write and Publish a Scientific Paper, Cambridge University Press.

REFERENCE:

1. HighmanN, Handbook of Writing for the Mathematical Sciences, SIAM, Highman's Book, 1st, Edition, 1998.
2. Adrian Wallwork, English for Writing Research Papers, Springer New York Dordrecht
3. Heidelberg London, 2nd Edition, 2011.

Course Coordinator**HOD**

P18ACCE002	DISASTER MANAGEMENT	L	T	P	C
	Total Contact Hours – 30	2	0	0	0
	Prerequisite course – UG Level				
	Course Coordinator Name & Department:- Mr.V.C.Jain/Department of				

		English									
COURSE OBJECTIVES:-											
Understand the skills needed when writing a Title Ensure the good quality of paper at very first-time submission.											
		COURSE OUT COMES (COs)									
CO1		Recognize to prepare and Plan the word order, breaking of long sentences, structural formation of paragraph and being concise without any ambiguities.									
CO2		Describe how to write abstract and introduction to any topic or project.									
CO3		Relate the skills require for the discussions and conclusions.									
CO4		Express the quality of paper and time management in writing skills.									
CO5		Categorize the useful phrase and how to ensure the paper is as good.									
CO6		Prepare the oral presentation in class using effective delivery strategies.									
Mapping of Course Outcomes with Program outcomes (POs) (H/M/L indicates strength of correlation) H-High, M-Medium, L-Low											
1	COs/ Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO 1	PSO 2	PSO3
2	CO1						H				
	CO2						H				
	CO3						H				
	CO4						H				
	CO5						H				
	CO6						H				
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 INTRODUCTION:**6**

Disaster : Definition - Factors and Significance - Difference between Hazard and Disaster - Natural and Manmade Disasters - Difference - Nature - Types and Magnitude.

UNIT – II REPERCUSSIONS OF DISASTERS AND HAZARDS:**6**

Economic Damage - Loss Of Human And Animal Life - Destruction Of Ecosystem - Natural Disasters: Earthquakes - Volcanisms - Cyclones - Tsunamis - Floods - Droughts And Famines - Landslides And Avalanches - Man-made disaster.

UNIT –III DISASTER PRONE AREAS IN INDIA:**6**

Study Of Seismic Zones - Areas Prone To Floods And Droughts - Landslides And Avalanches - Areas Prone To Cyclonic And Coastal Hazards With Special Reference To Tsunami - Post-Disaster Diseases And Epidemics.

UNIT -IV DISASTER PREPAREDNESS AND MANAGEMENT**6**

Preparedness: Monitoring Of Phenomena Triggering A Disaster Or Hazard - Evaluation Of Risk: Application Of Remote Sensing, Data From Meteorological And Other Agencies - Media Reports: Governmental And Community Preparedness.

UNIT -V RISK ASSESSMENT**6**

Disaster Risk: Concept And Elements - Disaster Risk Reduction, Global And National Disaster Risk Situation - Techniques Of Risk Assessment - Global Co- Operation In Risk Assessment And Warning, People's Participation In Risk Assessment - Strategies for Survival.

TEXT BOOKS:

1. R. Nishith, Singh AK, “Disaster Management in India: Perspectives, issues and strategies “New Royal book Company.
2. Sanskrit for Beginners by Dr. M. Narasimhacharyand Dr.S. Ramaratnam, N&R Publications, Chennai & New Delhi.

REFERENCE:

1. Sahni, PardeepEt.Al. (Eds.),” Disaster Mitigation Experiences And Reflections”, Prentice Hall Of India, New Delhi.
2. Goel S. L. , Disaster Administration And Management Text And Case Studies” ,Deep &Deep Publication Pvt. Ltd., New Delhi.

Course Coordinator**HOD**

P18ACEN003		AUDIT COURSE : SANSKRIT FOR TECHNICAL KNOWLEDGE					L	T	P	C	
		Total Contact Hours – 30					2	0	0	0	
		Prerequisite course – UG Level									
		Course Coordinator Name & Department:- Ms.Subathra / Dept. of English									
COURSE OBJECTIVES:- Learners will get a working knowledge in illustrious Sanskrit, the scientific language in the world.											
	COURSE OUT COMES (COs)										
CO1	Define the learning of Sanskrit to improve brain functioning										
CO2	Review the Learning of Sanskrit to develop the logic in mathematics, science & other subjects enhancing the memory power										
CO3	Practice the engineering scholars equipped with Sanskrit will be able to explore the huge knowledge from ancient literature										
CO4	Identify the uses of basic Sanskrit language										
CO5	Estimate Ancient Sanskrit literature about science & technology can be understood										
CO6	Develop the projects either individual or group on presentations.										
Mapping of Course Outcomes with Program outcomes (POs) (H/M/Lindicates strength of correlation) H-High, M-Medium, L-Low											
1	COs/ Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
2	CO1		H	L							
	CO2		H	L							
	CO3		H	L							
	CO4		H	L							
	CO5		H	L							
	CO6		H	L							
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 INTRODUCTION:**6**

Alphabets, Consonants, Nouns Declensions; Nominative, Accusative(singular, dual and plural)

UNIT - II BASIC OF SANSKRIT LITERATURE:**6**

Instrumental case, Dative, Ablative, and Indeclinables, verbal conjugation: first person, second person, third person: Present Tense.

UNIT – III FUNDAMENTALS OF SANSKRIT ARCHITECTURE:**6**

Genitive, locative and Vocative Absolute, Masculine Gender, Feminine Gender and Neuter Gender.

UNIT -IV VERBAL CONJUGATION:**6**

Verbal Conjugation: Past Tense and Future Tense Declensions ending in Rāmaḥ, Kaviḥ, Bhānuḥ, Mātr , Mālā

UNIT - V TRANSLATION:**6**

Translation of simple sentences, Stories & selected Subhashitas

TEXT BOOKS:

1. Abhyaspustakam– Dr.Vishwas, Samskrita-Bharti Publication, New Delhi.
2. Sanskrit for Beginners by Dr. M. Narasimhacharyand Dr.S. Ramaratnam, N&R Publications, Chennai & New Delhi.

REFERENCE :

1. Teach Yourself Sanskrit Prathama Deeksha-VempatiKutumbshastri, Rashtriya Sanskrit Sansthanam, New Delhi Publication.
2. India's Glorious Scientific Tradition” Suresh Soni, Ocean books (P) Ltd., New Delhi.

Course Coordinator**HOD**

P18ACBA004	AUDIT COURSE : VALUE EDUCATION						L	T	P	C		
	Total Contact Hours – 30						2	0	0	0		
	Prerequisite course – UG Level											
	Course Coordinator Name & Department:- Mr.Srinivasan/ Dept. of Business Administration											
COURSE OBJECTIVES:- Our objectives are to promote a new understanding and framework help learners to achieve positive and purposeful lives for themselves and their communities through engaging with values to guide and inform their behaviour.												
	COURSE OUT COMES (COs)											
CO1	Identify and describe feelings of self-worth that arise through striving for personal success in physical activity and sport											
CO2	Demonstrate the tolerance of other people's abilities during physical activity and sport											
CO3	Generalize the Values,attitudes that they need to develop in their class programmes											
CO4	Choose the essential steps to become good leaders.											
CO5	Select their role and contribution to the nation building.											
CO6	Prepare to understand value of education and self- development											
Mapping of Course Outcomes with Program outcomes (POs) (H/M/Lindicates strength of correlation) H-High, M-Medium, L-Low												
1	COs/ Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO 1	PSO2	PSO3	
2	CO1				H			L				
	CO2				H			L				
	CO3				H			L				
	CO4				H			L				
	CO5				H			L				
	CO6				H			L				
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.

UNIT-II: 6
Family values - Components, structure and responsibilities of family - Neutralization of anger - Adjustability - Threats of family life - Status of women in family and society - Caring for needy and elderly - Time allotment for sharing ideas and concerns.

UNIT-III: 6
Ethical values - Professional ethics - Mass media ethics - Advertising ethics - Influence of ethics on family life - psychology of children and youth - Leadership qualities - Personality development.

UNIT-IV: 6
Social values - Faith, service and secularism - Social sense and commitment - Students and Politics - Social awareness, Consumer awareness, Consumer rights and responsibilities - Redressal mechanisms.

UNIT-V: 6
Effect of international affairs on values of life/ Issue of Globalization - Modern warfare - Terrorism. Environmental issues - mutual respect of different cultures, religions and their beliefs.

TEXT BOOKS:

1. T. Anchukandam and J. Kuttainimathathil (Ed) Grow Free Live Free, Krisitu Jyoti Publications, Bangalore (1995).
2. Mani Jacob (Ed) Resource Book for Value Education, Institute for Value Education, New Delhi 2002.

REFERENCE:

1. DBNI, NCERT, SCERT, Dharma Bharti National Institute of Peace and Value Education, Secunderabad, 2002.
2. Daniel and Selvamony - Value Education Today, (Madras Christian College, Tambaram and ALACHE, New Delhi, 1990)
3. S. Ignacimuthu - Values for Life - Better Yourself Books, Mumbai, 1991.
4. .M.M.M.Mascaronhas Centre for Research Education Science and Training for Family Life \Promotion - Family Life Education, Bangalore, 1993.

Course Coordinator

HOD

P18ACW005	AUDIT COURSE : CONSTITUTION OF INDIA					L	T	P	C		
	Total Contact Hours – 30					2	0	0	0		
	Prerequisite course – UG Level										
	Course Coordinator Name & Department:- Mr.Prakash/Dept. of Law										
COURSE OBJECTIVES:- To Understand the premises informing the twin themes of liberty and freedom from a civil rights perspective.											
	COURSE OUT COMES (COs)										
CO1	Underline to address the growth of Indian opinion regarding modern Indian intellectuals										
CO2	Express the constitutional role and entitlement to civil and economic rights										
CO3	Utilize the emergence of nationhood in the early years of Indian nationalism.										
CO4	Distinguish the role of socialism in India										
CO5	Judge the commencement of the Bolshevik Revolution										
CO6	Predict its impact on the initial drafting of the Indian Constitution										
Mapping of Course Outcomes with Program outcomes (POs) (H/M/L indicates strength of correlation) H-High, M-Medium, L-Low											
1	COs/ Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO 1	PSO2	PSO3
2	CO1				H			L			
	CO2				H			L			
	CO3				H			L			
	CO4				H			L			
	CO5				H			L			
	CO6				H			L			
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 HISTORY OF MAKING OF THE INDIAN CONSTITUTION: 6
History - Drafting Committee, (Composition & Working)

UNIT -II PHILOSOPHY OF THE INDIAN CONSTITUTION: 6

Preamble - Salient Features - Directive Principles of State Policy - Fundamental Duties.

UNIT - III CONTOURS OF CONSTITUTIONAL RIGHTS & DUTIES: 6

Fundamental Rights - Right to Equality - Right to Freedom - Right against Exploitation - Right to Freedom of Religion - Cultural and Educational Rights - Right to Constitutional Remedies.

UNIT -IV ORGANS OF GOVERNANCE: 6

Parliament - Composition - Qualifications and Disqualifications - Powers and Functions - Executive President - Governor - Council of Ministers - Judiciary, Appointment and Transfer of Judges, Qualifications - Powers and Functions.

UNIT - V LOCAL ADMINISTRATION & ELECTION COMMISSION : 6

District's Administration head: Role and Importance - Introduction, Mayor and role of Elected Representative CEO of Municipal Corporation - Pachayati raj: Introduction, PRI: Zila Pachayat - Elected officials and their roles - Introduction of Election Commission - Election Commission: Role and Functioning - Chief Election Commissioner and Election Commissioners - State Election Commission: Role and Functioning - Institute and Bodies for the welfare of SC/ST/OBC and women.

TEXT BOOKS:

1. The Constitution of India, 1950 (Bare Act), Government Publication.
2. Dr. S. N. Busi, Dr. B. R. Ambedkar framing of Indian Constitution, 1st Edition, 2015.

REFERENCE:

1. M. P. Jain, Indian Constitution Law, 7th Edn., Lexis Nexis, 2014.
2. D.D. Basu, Introduction to the Constitution of India, Lexis Nexis, 2015.

Course Coordinator

HOD

P18ACBA006	AUDIT COURSE : PEDAGOGY STUDIES					L	T	P	C		
	Total Contact Hours – 30					2	0	0	0		
	Prerequisite course – UG Level										
	Course Coordinator Name & Department:- Dr.Arunkumar / Dept. of Business Administration										
COURSE OBJECTIVES:- To inform programme design and policy making undertaken by the DfID, other agencies and researchers.											
	COURSE OUT COMES (COs)										
CO1	List common training so everyone teaches from the same curriculum										
CO2	Describe to learners what is expected of them										
CO3	Illustrate the teacher education (curriculum and practicum) and the school curriculum and guidance materials best support effective pedagogy.										
CO4	Inspect the review existing evidence on the review topic to inform programme design.										
CO5	Assess how the outcomes of a single course align with larger outcomes for an entire program										
CO6	Plan appropriate teaching strategies, materials and assessments										
Mapping of Course Outcomes with Program outcomes (POs) (H/M/Lindicates strength of correlation) H-High, M-Medium, L-Low											
1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO 1	PSO 2	PSO3
2	CO1		H	L							
	CO2		H	L							
	CO3		H	L							
	CO4		H	L							
	CO5		H	L							
	CO6		H	L							
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 INTRODUCTION AND METHODOLOGY:**6**

Aims and rationale, Policy background, Conceptual framework and terminology - Theories of learning - Curriculum - Teacher education - Conceptual framework, Research questions - Overview of methodology and Searching.

UNIT - II THEMATIC OVERVIEW:**6**

Pedagogical practices are being used by teachers in formal and informal classrooms in developing countries - Curriculum, Teacher education.

UNIT III EVIDENCE ON THE EFFECTIVENESS OF PEDAGOGICAL PRACTICES :-

Methodology for the in depth stage: quality assessment of included studies - How can teacher education (curriculum and practicum) and the school curriculum and guidance materials best support effective pedagogy? Theory of change - Strength and nature of the body of evidence for effective pedagogical practices.

UNIT - 4 : PROFESSIONAL DEVELOPMENT:**6**

Alignment with classroom practices and follow up support - Peer support - Support from the head teacher and the community - Curriculum and assessment - Barriers to learning: limited resources and large class sizes

UNIT - 5 : Research gaps and future directions:-**6**

Research design - Contexts - Pedagogy - Teacher education - Curriculum and assessment - Dissemination and research impact.

TEXT BOOKS:

1. Ackers J, Hardman F (2001) Classroom interaction in Kenyan primary schools, Compare, 31 (2): 245-261.
2. Agrawal M (2004) Curricular reform in schools: The importance of evaluation, Journal o Curriculum Studies, 36 (3): 361-379.
3. Akyeampong K (2003) Teacher training in Ghana - does it count? Multi-site teacher education
4. research project (MUSTER) country report 1. London: DFID.

REFERENCE:

1. Akyeampong K, Lussier K, Pryor J, Westbrook J (2013) Improving teaching and learning of basic maths and reading in Africa: Does teacher preparation count? International Journal Educational Development, 33 (3): 272–282.
3. Alexander RJ (2001) Culture and pedagogy: International comparisons in primary education. Oxford and Boston: Blackwell.
4. Chavan M (2003) Read India: A mass scale, rapid, ‘learning to read’ campaign.

Course Coordinator**HOD**

P18ACBA007	AUDIT COURSE : PERSONALITY DEVELOPMENT THROUGH LIFE ENLIGHTENMENT SKILLS						L	T	P	C	
	Total Contact Hours – 30						2	0	0	0	
	Prerequisite course – UG Level										
	Course Coordinator Name & Department:- Mr.Srinivasan/Dept.of Business Administration										
COURSE OBJECTIVES:- To become a person with stable mind, pleasing personality and determination											
	COURSE OUT COMES (COs)										
CO1	Identify the way to achieve the highest goal happily										
CO2	Review to awaken wisdom for learners										
CO3	Schedule to study of Shrimad-Bhagwad-Geeta will help the student										
CO4	Developing his personality and achieve the highest goal in life										
CO5	Evaluate the person who has studied Geeta will lead the nation and mankind to peace and prosperity										
CO6	Propose to study of Neetishatakam will help in developing versatile personality of students										
Mapping of Course Outcomes with Program outcomes (POs) (H/M/Lindicates strength of correlation) H-High, M-Medium, L-Low											
1	COs/ Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO 1	PSO 2	PSO 3
2	CO1		H					H			
	CO2		H					L			
	CO3		H					H			
	CO4		H					L			
	CO5		L					H			
	CO6		H					H			
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 HOLISTIC DEVELOPMENT OF PERSONALITY- I**6**

Neetisatakam-Holistic development of personality : Verses- 19,20,21,22 (wisdom) - Verses- 29,31,32 (pride & heroism) - Verses- 26,28,63,65 (virtue) - Verses- 52,53,59 (don't's) - Verses- 71,73,75,78 (do's).

UNIT - II BHAGWADGEETA:**6**

Approach to day to day work and duties. ShrimadBhagwadGeeta: Chapter 2-Verses 41, 47,48. Chapter 3- Verses 13, 21, 27, 35.

UNIT - III BHAGWAD GEETA:-**6**

ShrimadBhagwadGeeta: Chapter 6-Verses 5, 13, 17, 23, 35, Chapter 18-Verses 45, 46, 48.

UNIT – IV BASIC KNOWLEDGE:**6**

Statements of basic knowledge. ShrimadBhagwadGeeta: Chapter2-Verses 56, 62, 68. Chapter 12 - Verses 13,14, 15, 16,17, 18.

UNIT – V ROLE MODEL : -**6**

Personality of Role model. Shrimad BhagwadGeeta: Chapter2-Verses 17, Chapter 3-Verses 36,37,42, - Chapter 4-Verses 18, 38,39 - Chapter18 – Verses 37,38,63.

TEXT BOOK:

1. P.Gopinath, “Bhartrihari’s Three Satakam (Niti-sringar-vairagya)”, Rashtriya Sanskrit Sansthanam, New Delhi.
2. Ackers J, Hardman F (2001) Classroom interaction in Kenyan primary schools, Compare, 31 (2): 245-261.

REFERENCE :

1. Srimad Bhagavad Gita by Swami SwarupanandaAdvaita Ashram (Publication Department), a. Kolkata.
2. Agrawal M (2004) Curricular reform in schools: The importance of evaluation, Journal o Curriculum Studies, 36 (3): 361-379.

Course Coordinator**HOD**

CURRICULUM AND SYLLABUS (R 2018)
M.Sc – CHEMISTRY (I – IV SEMESTERS)

SEMESTER- I

Sl No.	CATEGORY	SUB.CODE	SUBJECT	Total Contact Hrs	L	T	P	C
THEORY								
1.	MC	P18MCCH101	Core 1: Quantum Chemistry, Group Theory And Electrochemistry	6	4	2	0	4
2.	MC	P18MCCH102	Core 2: Solid State, Bonding And Polymeric Inorganic Compounds	6	4	2	0	4
3.	MC	P18MCCH103	Core 3: Organic Reaction Mechanism And Stereochemistry	6	4	2	0	4
PRACTICAL								
4.	MC	P18MCCH1L1	Core 4: Organic Chemistry - Practical – I	6	0	0	6	3
5.	MC	P18MCCH1L2	Core 5: Inorganic Chemistry- Practical – II	6	0	0	6	3
Total Credits				30	12	6	12	18

SEMESTER - II

Sl No.	CATEGORY	SUB.CODE	SUBJECT	Total Contact Hrs	L	T	P	C
THEORY								
1.	MC	P18MCCH201	Core 6: Principles of Molecular Spectroscopy	5	4	1	0	4
2.	MC	P18MCCH202	Core 7: Coordination Chemistry And Bio-Inorganic Chemistry	5	4	1	0	4
3.	MC	P18MCCH203	Core 8: Conformational Analysis, Reagents and Organic Synthesis	5	4	1	0	4
4.	MC	P18MCCH204	Core 9: Green Chemistry	5	4	1	0	4
5.	ME	P18MECH011	Major Elective – I - Industrial Chemistry	4	4	0	0	4
PRACTICAL								
6.	MC	P18MCCH2L1	Core 10: Physical Chemistry - Practical – I II	6	0	0	6	3
7.	EEC	P18PRCH2P1	Internship Program	0	0	0	0	1
Total Credits				30	20	4	6	24

SEMESTER - III

Sl No.	CATEGORY	SUB.CODE	SUBJECT	Total Contact Hrs	L	T	P	C
THEORY								
1.	MC	P18MCCH301	Core 11: Chemical Thermodynamics, Equilibria And Quantum Mechanics	5	4	1	0	4
2.	MC	P18MCCH302	Core 12: Analytical Chemistry	5	4	1	0	4
3.	MC	P18MCCH303	Core 13: Applications of Spectroscopy and Magnetism	5	4	1	0	4
4.	MC	P18MCCH304	Core 14: Physical Methods in Chemistry	5	4	1	0	4
5.	ME	P18MECH023	Major Elective – II - Food Chemistry	4	4	0	0	4
PRACTICAL								
6.	MC	P18MCCH3L1	Core 15: Gravimetric Analysis and Inorganic Preparation Practical – IV	6	0	0	6	3
7.	EEC	P18PRCH2P1	Audit Course	0	0	0	0	1
	Total Credits			30	20	4	6	24

SEMESTER - IV

Sl No.	CATEGORY	SUB.CODE	SUBJECT	Total Contact Hrs	L	T	P	C
THEORY								
1.	MC	P18MCCH401	Core 16: Chemical Kinetics, Surface Chemistry	5	4	1	0	4
2.	MC	P18MCCH402	Core 17: Nuclear Chemistry And Photochemistry	5	4	1	0	4
3.	MC	P18MCCH031	Major Elective - III	4	4	0	0	4
4.			Open Elective	2	2	0	0	2
5.		P18MCYO001	Stress Management by Yoga	2	2	0	0	1
		P18PRCH3T1	Term Paper	0	0	0	0	1
PRACTICAL								
6.	MC	P18MCCH4L1	Core 18: Analytical practical - V	6	0	0	6	3
7.	EC	P18PRCH4P1	Core 19: Project	6	0	0	6	8
	Total Credits			30	16	2	12	27

CHOICES FR CORE ELECTIVES

SUB. CODE	SUBJECT	L	T	P	C
ELECTIVE - I					
P18MECH011	Industrial Chemistry	4	2	0	4
P18MECH012	Textile Chemistry	4	2	0	4
P18MECH013	Dairy Chemistry	4	2	0	4
ELECTIVE – II					
P18MECH021	Biological Chemistry	4	2	0	4
P18MECH022	Medicinal Chemistry	4	2	0	4
P18MECH023	Food Chemistry	4	2	0	4
ELECTIVE – III					
P18MECH031	Polymer & Plastics	4	0	0	4
P18MECH032	Spectroscopic techniques	4	0	0	4
P18MECH033	Pharmaceutical chemistry	4	0	0	4

Open Elective

S.No.	Sub.Code	Subject	Total No.Hours	L	T	P	C
1.	P18OEBA001	Advertising and Sales Management	2	2	0	0	2
2.	P18OEBA002	BPO Management	2	2	0	0	2
3.	P18OEBA003	Call Centre Management – Voice & Non Voice	2	2	0	0	2
4.	P18OEBA004	Customer Relationship Management	2	2	0	0	2
5.	P18OEBA005	Entrepreneurship Development	2	2	0	0	2
6.	P18OEBA006	Advanced Human Resource Management	2	2	0	0	2
7.	P18OEBA007	Logistics & Supply Chain Management	2	2	0	0	2
8.	P18OEBA008	Office Management	2	2	0	0	2
9.	P18OEVC001	Photography & Videography	2	2	0	0	2
10.	P18OEEN001	Soft Skills	2	2	0	0	2
11.	P18OEEN002	Mass Media and Communication	2	2	0	0	2
12.	P18OESC001	Computer Applications	2	2	0	0	2
13.	P18OESC002	Multimedia	2	2	0	0	2
14.	P18OESC003	Advanced Excel	2	2	0	0	2
15.	P18OESC004	Web Designing	2	2	0	0	2
16.	P18OESC005	Photoshop	2	2	0	0	2
17.	P18OESC006	Flash	2	2	0	0	2
18.	P18OESC007	Computer Hardware and Networking	2	2	0	0	2
19.	P18OESC008	Computer Programming	2	2	0	0	2
20.	P18OESC009	Office Automation Tools	2	2	0	0	2
21.	P18OEMI001	Clinical Microbiology	2	2	0	0	2
22.	P18OEMI002	Herbal Medicine	2	2	0	0	2
23.	P18OEPH001	Electrical Technician	2	2	0	0	2

SEMESTER- I

P18MCCH101	Core 1: Quantum Chemistry, Group Theory And Electrochemistry							L	T	P	C
	Total Contact Hours - 75							4	2	0	4
	Prerequisite B.Sc., Chemistry level										
	Course Coordinator Name & Department:- – Dr. P. Paulraj / Chemistry										
COURSE OBJECTIVES:- To make the students learn about the chemistry from the basic and understood all theoretical background with all concepts understands thoroughly.											
COURSE OUTCOMES (COs)											
CO1	Gain the knowledge about the basic Mathematics and Fundamentals of Quantum Chemistry										
CO2	Understand about the theoretical concepts of Quantum Mechanics of Simple Systems										
CO3	Apply its properties and uses of Quantum Chemistry										
CO4	Analyze the detail about the Principles of Group Theory										
CO5	Evaluate the importance and Applications of Group Theory										
CO6	Create the real time applications of Chemistry in day today life.										
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	PS O1	PS O2	
2	CO1	2	3	3	1	1	1	3			
	CO2	3	3	1	2	2	3	3			
	CO3	2	2	2	2	3	2	3			
	CO4	3	3	1	1	1	2	3			
	CO5	2	3	3	2	2	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)	Any other	Project/Term Paper/ Seminar/ Internship (PR)		
					✓						
4	Approval	47 th Academic Council Meeting									

UNIT-I: Basic Mathematics and Fundamentals of Quantum Chemistry 15

Introduction to quantum mechanics - Black body radiation, photoelectric effect, de Broglie equation and its verification, Interpretation of Bohr's first postulate in terms of wave nature of electron, Heisenberg Uncertainty principle; Setting up the Schrödinger equation,

operators, algebra of operators, linear operators, setting up operators of linear momentum, angular momentum, kinetic energy and total energy of systems.

UNIT–IV: Principles of Group Theory

15

Introduction - groups, subgroups, classes, Group multiplication table; Molecular symmetry, symmetry elements and operations—products of symmetry operations; classes of symmetry operations and point group classification of molecules. Representations of groups: matrix representation of symmetry operations, reducible and irreducible representations; Statement of Great Orthogonality theorem; character tables and their construction

UNIT–V: Applications of Group Theory

15

Symmetry and chemical bonding: Formulating SALC's with projection operators, formation of hybrid orbitals in molecules like BF_3 , $[\text{PtCl}_4]^{2-}$ and CH_4 , Molecular orbital theory for C_{2v} (H_2O or NO^{2-}) and T_d compounds - selection rules for electronic transitions in carbonyl chromophore.

UNIT–IV: Electrochemistry-I

15

Mean ion activity and activity coefficient of electrolytes in solution - ion association - ionic strength - Debye-Hückel theory and Debye-Hückel limiting law - its validity and limitations - strong and weak electrolytes - Debye theory of electrolytic conductance - Debye-Hückel-Onsager equation - verification and limitations - electrochemical cells and applications of standard redox potentials.

UNIT–V: Electrochemistry-II

15

The electrical double layer - polarizable and non-polarizable interfaces - structure of electrical double layer - double layer models - Helmholtz, Guoy-Chapman and Stern models.

Kinetics of electrode processes - current-potential curve - Butler-Volmer relation and its approximations - symmetry factor and transfer coefficient - Tafel equation - charge transfer resistance - Nernst equation from Butler-Volmer equation - primary and secondary batteries - fuel cells - corrosion and its prevention methods.

Text books

1. K.V.Raman, Group Theory and its Applications to Chemistry, Tata McGraw-Hill, 1990.
2. A.K.Chandra, Introductory Quantum Chemistry, Tata McGraw-Hill, 2nd Edn.
3. D.R.Crow, Principles and applications of Electro Chemistry, Chapman & Hall.
4. V.Ramakrishnan and M.S.Gopinathan, Group Theory in Chemistry, Vishal, 1988.

Reference Books

1. Biophysics, ed., W.Hoppe, W.Lohmann, H.Markl, H.Uiegler, Springer-Verlag, 1983.
2. Quantum Chemistry, McQuarrie A. D., Viva Books, India, First Indian Edition (2003) ISBN-81-7649-423-2.
3. D.R.Crow, Principles and applications of Electro Chemistry, Chapman & Hall.
4. K.J.Laidler, Chemical Kinetics, Tata-McGraw Hill. J. Moore, Physical Chemistry, 5th Edn., Orient Longman.

CourseCoordinator

HOD

P18MCCH102	Core 2: Solid State, Bonding And Polymeric Inorganic Compounds						L	T	P	C	
	Total Contact Hours - 75						4	2	0	4	
	Prerequisite course – B.Sc., Chemistry level										
	Course Coordinator Name & Department:- – Mrs. K. Kalpana / Chemistry										
COURSE OBJECTIVES:- To make the students learn about the chemistry from the basic and understood all theoretical background with all concepts understands thoroughly.											
COURSE OUTCOMES (COs)											
CO1	Gain the knowledge about the properties and uses of solid state, bonding and polymeric inorganic compounds										
CO2	Understand about the theoretical concepts of Diffraction Methods										
CO3	Apply its properties and uses of Covalent Bonding										
CO4	Analyze the detail about the Metallic Bonding										
CO5	Evaluate the importance of Polymeric Inorganic Compounds										
CO6	Create the real time applications of Chemistry in day today life.										
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	PS O1	PS O2	
2	CO1	2	3	3	1	2	1	3			
	CO2	2	3	1	2	3	3	3			
	CO3	2	2	3	3	3	2	3			
	CO4	3	3	1	1	1	3	3			
	CO5	2	3	3	2	2	2	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	47 th Academic Council Meeting									

UNIT–I: Solid State Structure

15

Close packing of atoms and ions – HCP and BCC types of packing – voids, radius ratio derivation and its influence on structures. Representative structures of AB and AB₂ types of compounds: rock salt, calcium chloride, wurtzite, zinc blende, rutile, fluorite, antiferite, cadmium iodide and nickel arsenide. Structure of graphite, diamond and spinels - normal and inverse types -perovskite structures.

UNIT – II: Diffraction Methods**15**

Crystallographic point groups – space groups – screw axis and glide plane – seven crystal systems and Bravais lattice – Miller indices – interplanar distances in orthogonal crystal systems – X-ray diffraction studies – powder and rotating crystal methods – systematic absences and lattice types – data analysis for cubic system – electron diffraction by gases – principles and measurements – determination of structures – comparison between electron, neutron and X-ray diffractions.

UNIT–III: Covalent Bonding**15**

VB approach to bonding – Concept of hybridisation and structure of molecules. VSEPR theory – shapes of molecules. MO approach to covalent bonding – symmetry and overlap of atomic orbitals – symmetry of molecular orbitals – sigma, pi and delta bondings – energy levels in homo and hetero nuclear diatomic systems – bond length, bond order and bond energy – ionic character in a covalent bond. The concept of multicentre bonding. Structure and bonding in fluorine and oxygen compounds of xenon, di- and tri-nuclear clusters of rhenium halides, diborane and tetraborane.

UNIT–IV: Metallic Bonding**15**

Drude Lorentz model merits and demerits – Sommerfeld model – Band theory – formation of Brillouin zones – conductors and insulators – semiconductors – Hall effect – photoconductivity – superconductors, Point-, line- and plane defects in solids – Stoichiometric and non-stoichiometric defects – Frenkel and Schottky defects. Effect of imperfections on physical properties like electrical conductivity, thermal, optical and magnetic phenomena.

UNIT–V: Polymeric Inorganic Compounds**15**

Isopoly and heteropoly acids – Structure and bonding of 6- and 12 – isopoly and heteropoly anions – Structure of silicates – applications of Pauling's rule of electrovalence – one-, two- and three- dimensional silicates – Synthesis and structure of ring and cage compounds – borazine, phosphazine, carboranes and sulfur-nitrogen compounds.

Text books

1. R.S.Drago, "Physical Methods in Inorganic Chemistry", Van Nostrand Reinhold, 2nd Edn. 1968.
2. B.N.Figgis and J.Lewis, "The Magneto Chemistry of Complex Compounds" in "Modern Coordination Chemistry", Edn Lewis & Wilkins PP-400-454, Interscience
3. A.I.Vogel, "A text book of Quantitative Inorganic Analysis, ELBS, 3rd Edn. 1969.
4. J.E.Huhey, Inorganic Chemistry, Harper and Rao 3rd Edition Edn. 1983.

Reference Books

1. F.A.Cotton and G.Wilkinson, "A Text book of Advanced Inorganic Chemistry" 3rd Edn. Wiley, 1972.
2. P.J. Wheatley, "Determination of Molecular Structure", Oxford, 2nd Edn., 1961.
3. B.N.Figgis and J.Lewis, "The Magneto Chemistry of Complex Compounds" in "Modern Coordination Chemistry", Edn Lewis & Wilkins PP-400-454, Interscience, N.Y. 1967.

Course Coordinator**HOD**

P18MCCH103	Core 3: Organic Reaction Mechanism And Stereochemistry						L	T	P	C
	Total Contact Hours - 75						4	2	0	4
	Prerequisite B.Sc., Chemistry level									
	Course Coordinator Name & Department:- – Dr. G. Padmapriya / Chemistry									
COURSE OBJECTIVES:- To make the students learn about the chemistry from the basic and understood all theoretical background with all concepts understands thoroughly.										
COURSE OUTCOMES (COs)										
CO1	Gain the knowledge about the organic reaction mechanism and stereochemistry									
CO2	Understand about the theoretical concepts of Introduction to stereochemistry									
CO3	Apply its properties and uses of Aliphatic substitution reactions									
CO4	Analyze the detail about the Aromatic substitution reactions									
CO5	Evaluate the importance of Elimination and addition reactions									
CO6	Create the real time applications of Chemistry in day today life.									
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	PS O1	PS O2
2	CO1	2	3	3	1	2	1	3		
	CO2	3	3	1	2	2	3	3		
	CO3	3	2	2	3	3	2	3		
	CO4	2	2	2	3	1	3	3		
	CO5	2	3	3	2	2	2	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	47 th Academic Council Meeting								

UNIT-I: Determination of reaction mechanism

15

Factors affecting the strength of acids and bases – Bronsted and Lewis concepts of acids and bases - Guidelines to propose a reasonable reaction mechanism – Energy profile, intermediate, transition state – kinetic and thermodynamic control – Hammond postulate – methods of determining reaction mechanism – kinetic methods – primary and secondary kinetic isotopic effect – non kinetic methods – isotope labeling, crossover experiment, trapping of intermediates, stereochemical studies.

UNIT-II: Introduction to stereochemistry**15**

Concepts of chirality – recognition of symmetry elements – necessary and sufficient condition for optical activity – chirality about a center – specification of configuration by Cahn Ingold and Prelog rule – compounds with more than one chiral centre – calculation of number of stereoisomers – *erthyo* and *threo* nomenclature – inter-conversion of sawhorse, Fisher and Newman projections – Concept of axial chirality – R and S nomenclature for axially chiral molecules. Geometrical isomerism – *E* and *Z* nomenclature – determination of configuration of geometrical isomers by physical and chemical methods.

UNIT-III: Aliphatic substitution reactions**15**

Distinction between nucleophile and a base – S_N1 and S_N2 mechanisms – kinetic and stereochemical features – ion pair mechanism – effects of substrate structure, nature of nucleophile, solvent polarity, leaving group ability on the course of the reactions – S_Ni reaction – Neighboring group participation – Allylic and vinylic substitution. Mechanism of aliphatic electrophilic substitution reactions – S_E1 , S_E2 and S_{Ei} mechanisms.

UNIT-IV: Aromatic substitution reactions**15**

The concept of aromaticity – Huckel's rule and identifying aromaticity in various carbocyclic and charged species – nonaromatic and antiaromatic systems – effects of aromaticity on bond length and resonance energies – ring current effects – chemistry of fullerenes, annulenes and heteroannulenes. Mechanism of aromatic electrophilic substitution reactions – *pi* and *sigma* complexes – nitration, halogenation, sulfonation, Friedel Crafts alkylation and acylation reactions, Reimer Tiemann reaction – orientation and reactivity - partial rate factors. -Aromatic nucleophilic substitution reactions – S_NAr , S_N1 and benzyne mechanisms – Chichibabin reaction - linear free energy relationship – Hammett equation – significance of *sigma* and *rho* – Taft equation.

UNIT-V: Elimination and addition reactions**15**

$E1$, $E2$ and $E1CB$ mechanisms - structure and solvent effects - orientation of double bonds – regio and stereoselectivities – *cis*elimination reactions – competition between elimination and substitution. Regio and stereochemistry of addition of halogens and halogeno acids to carbon carbon multiple bonds – hydroboration – addition to carbonyl bond – Aldol, Perkin, Stobbe, Dieckmann condensations, Reformatsky, Grignard, Mannich reactions – Micheal addition – Formation and applications of enamines – Stork enamine reaction – mechanisms of ester hydrolysis

Text books

1. J. March, Advanced Organic Chemistry, 4th Edn. John Wiley, New York, 1992.
2. P. Sykes, A Guide book to Mechanisms in Organic Chemistry, 6th Edn., Longmans Scientific and Technical, Essex, 1986.
3. F. S. Gould, Mechanism and Structure in Organic Chemistry, Holt, New York, 1959.
4. T. H. Lowry and K. S. Richardson, Mechanism and theory in Organic Chemistry, Harper and Row, New York, 1976.

Reference Books

1. T. W. G. Solomons, Organic Chemistry, 6th Edn., John Wiley, New York, 1996.
2. G. W. Loudon, "Organic Chemistry", 3rd edn. Benjamin-Cummings, 1995.
3. F. A. Carey and R. J. Sundberg, Advanced Organic Chemistry, Part A and Part B, 3rd Edn., Plenum press, New York, 1990.

CourseCoordinator					HOD					
P18MCCH1L1	Core 4: Organic Chemistry Practical					L	T	P	C	
	Total Contact Hours - 75					0	0	6	3	
	Prerequisite B.Sc., Chemistry level									
	Course Coordinator Name & Department:- – Dr G. Padmapriya / Chemistry									
COURSE OBJECTIVES:- To make the students learn about the chemistry from the basic and understood all theoretical background with all concepts understands thoroughly.										
COURSE OUTCOMES (COs)										
CO1	Gain the knowledge about the need of chemistry practical and its toxicity									
CO2	Understand about the uses of experiments in our day today life									
CO3	Apply and know about its importance of chemical played important role									
CO4	Analyze the detail about practical importance to be aware of the concepts from the basis.									
CO5	Evaluate the importance of handling and precision of experimental skills									
CO6	Create the real time applications of Chemistry in day today life.									
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	PS O1	PS O2
2	CO1	3	3	3	1	1	1	3		
	CO2	2	3	1	3	2	2	3		
	CO3	2	2	3	2	2	2	3		
	CO4	3	2	1	1	3	3	3		
	CO5	3	3	3	3	2	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	47 th Academic Council Meeting								

ORGANIC CHEMISTRY PRACTICALS

- Organic analysis – Separation of two component mixture and identification of components by chemical and spectral methods – (about 4 – 5 mixtures)
- Organic double stage preparation – (about 5 – 6)
- Estimation of ketone, carboxylic acid and glucose

- d) Extraction of natural products such as Caffeine, embelin, atranorin and lecanoric acid

TEXT BOOKS:

1. Vogel, A.I. A Textbook of Quantitative Inorganic Analysis, ELBS. 1978
2. Ahluwalia, V.K. & Aggarwal, R. Comprehensive Practical Organic Chemistry: Preparation and Quantitative Analysis, University Press (2000).
3. Khosla, B. D.; Garg, V. C. & Gulati, A. Senior Practical Physical Chemistry, R. Chand & Co.: New Delhi (2011).
4. Garland, C. W.; Nibler, J. W. & Shoemaker, D. P. Experiments in Physical Chemistry 8th Ed.; McGraw-Hill: New York (2003).
5. Sundaram, Krishnan, Raghavan, Practical Chemistry (Part II), S. Viswanathan Co. Pvt., 1996.
6. N.S. Ganapragasam and G. Ramamurthy, Organic Chemistry – Lab manual, S. Viswanathan Co. Pvt., 1998.

REFERENCE BOOKS:

1. Halpern, A. M. & McBane, G. C. Experimental Physical Chemistry 3rd Ed.; W.H. Freeman & Co.: New York (2003).
2. Mann, F.G. & Saunders, B.C. Practical Organic Chemistry, Pearson Education (2009)
3. Furniss, B.S.; Hannaford, A.J.; Smith, P.W.G.; Tatchell, A.R. Practical Organic Chemistry, 5th Ed., Pearson (2012)
4. Ahluwalia, V.K. & Dhingra, S. Comprehensive Practical Organic Chemistry: Qualitative Analysis, University Press (2000).
5. Vogel's Text Book of Quantitative Chemical Analysis. 5th Edi., ELBS/Longman England, 1989.

CourseCoordinator

HOD

P18MCCH1L2	Core 5: Inorganic Chemistry Practicals						L	T	P	C
	Total Contact Hours - 75						0	0	6	3
	Prerequisite B.Sc., Chemistry level									
	Course Coordinator Name & Department:- – Dr P. Paulraj / Chemistry									
COURSE OBJECTIVES:- To make the students learn about the chemistry from the basic and understood all theoretical background with all concepts understands thoroughly.										
COURSE OUTCOMES (COs)										
CO1	Gain the knowledge about the need of chemistry practical and its toxicity									
CO2	Understand about the uses of experiments in our day today life									
CO3	Apply and know about its importanceof chemical played important role									
CO4	Analyze the detail about practical importance to be aware of the concepts from the basis.									
CO5	Evaluate the importance of handling and precision of experimental skills									
CO6	Create the real time applications of Chemistry in day today life.									
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	PS O1	PS O2
2	CO1	3	3	3	1	3	1	3		
	CO2	2	3	3	3	2	2	3		
	CO3	2	3	3	3	2	3	3		
	CO4	2	2	1	1	3	3	3		
	CO5	3	3	3	3	2	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	47 th Academic Council Meeting								

INORGANIC CHEMISTRY PRACTICALS

Practical – A : Qualitative Analysis

Less common metal ions – Tl, Se, Te, Ce, W, Ti, Zr, Th, V, U, Li (two metal ions in cationic and anionic forms)

Practical – B : Quantitative Analysis

- a) EDTA titrations : Zn(II), Mg(II), Cu(II) and Ni(II)
- b) Redox titrations : Fe(II) vs. Ce(IV) , Fe(II) vs dichromate, NO_2^- vs Ce(IV)
- c) Spectrophotometric methods of analysis : Fe(II) , Cu(II) , Mn(II) and Cr(III)

TEXT BOOKS:

7. Vogel, A.I. A Textbook of Quantitative Inorganic Analysis, ELBS. 1978
8. Ahluwalia, V.K. & Aggarwal, R. Comprehensive Practical Organic Chemistry: Preparation and Quantitative Analysis, University Press (2000).
9. Khosla, B. D.; Garg, V. C. & Gulati, A. Senior Practical Physical Chemistry, R. Chand & Co.: New Delhi (2011).
10. Garland, C. W.; Nibler, J. W. & Shoemaker, D. P. Experiments in Physical Chemistry 8th Ed.; McGraw-Hill: New York (2003).
11. Sundaram, Krishnan, Raghavan, Practical Chemistry (Part II), S. Viswanathan Co. Pvt., 1996.
12. N.S. Ganapragasam and G. Ramamurthy, Organic Chemistry – Lab manual, S. Viswanathan Co. Pvt., 1998.

REFERENCE BOOKS:

6. Halpern, A. M. & McBane, G. C. Experimental Physical Chemistry 3rd Ed.; W.H. Freeman & Co.: New York (2003).
7. Mann, F.G. & Saunders, B.C. Practical Organic Chemistry, Pearson Education (2009)
8. Furniss, B.S.; Hannaford, A.J.; Smith, P.W.G.; Tatchell, A.R. Practical Organic Chemistry, 5th Ed., Pearson (2012)
9. Ahluwalia, V.K. & Dhingra, S. Comprehensive Practical Organic Chemistry: Qualitative Analysis, University Press (2000).
10. Vogel's Text Book of Quantitative Chemical Analysis. 5th Edi., ELBS/Longman England, 1989.

CourseCoordinator

HOD

SEMESTER-II

P18MCCH201	Core 6: Principles of molecular spectroscopy						L	T	P	C
	Total Contact Hours - 75						4	1	0	4
	Prerequisite B.Sc., Chemistry level									
	Course Coordinator Name & Department:- – Mrs. K. Kalpana / Chemistry									
COURSE OBJECTIVES:- To make the students learn about the chemistry from the basic and understood all theoretical background with all concepts understands thoroughly.										
COURSE OUTCOMES (COs)										
CO1	Gain the knowledge about the Microwave Spectroscopy and Infrared Spectroscopy									
CO2	Understand about the Raman, Electronic and Fluorescence Spectroscopy									
CO3	Apply its properties and uses of Nuclear Magnetic Resonance Spectroscopy-I									
CO4	Analyze the detail about the Nuclear Magnetic Resonance Spectroscopy-II									
CO5	Evaluate the Electron Spin/Paramaganetic Resonance Spectroscopy									
CO6	Create the real time applications of Chemistry in day today life.									
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	PS O1	PS O2
2	CO1	2	3	3	1	2	1	3		
	CO2	3	2	2	2	3	3	3		
	CO3	2	3	2	3	3	2	3		
	CO4	2	2	3	3	3	3	3		
	CO5	2	2	3	2	2	1	3		
	CO6	3	3	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	47 th Academic Council Meeting								

UNIT-I: Introduction, Microwave Spectroscopy and Infrared Spectroscopy 15

Electromagnetic radiation - interaction of electromagnetic radiation with molecules - types of molecular spectroscopy - factors affecting line width and intensity - signal to noise ratio and resolving power - absorption and emission spectroscopy - Microwave Spectroscopy - Rotation of molecules - rotational spectra of rigid rotator, intensities of rotational lines, effect of isotopic substitution - rotational spectrum of non-rigid rotator - linear & symmetric top molecules - Stark effect - Applications of microwave spectroscopy - determination of

bond length, bond angle dipole moment and atomic mass from microwave spectra - Infrared Spectroscopy: vibrating diatomic molecule - harmonic and anharmonic oscillators - diatomic vibrating rotator - vibrations of polyatomic molecules - molecular vibrations, types of molecular vibrations, rotational vibrational spectra of linear and symmetric top molecules.

UNIT-II: Raman, Electronic and Fluorescence Spectroscopy **15**

Raman spectroscopy- classical and quantum theory of Raman effect- rotational Raman spectra- linear, symmetric top molecules-vibrational Raman spectra- Raman activity of vibrations, rule of mutual exclusion, polarizability ellipsoids- rotational Fine structures- Resonance Raman and Laser Raman spectroscopy- Electronic Spectra of diatomic molecules- The Born-Oppenheimer approximation, vibrational coarse structure: progressions, intensity of vibrational-electronic spectra: Franck-Condon principle, dissociation energy and dissociation products, rotational fine structure of electronic-vibration transitions, Fortrat diagram -predissociation. Fluorescence and phosphorescence – Jablonski diagram – Fluorescence spectroscopy – FRET.

UNIT-III: Nuclear Magnetic Resonance Spectroscopy-I **15**

Nuclear spin states and NMR active nuclei, nuclear magnetic moments- mechanism of resonance absorption- population of nuclear spin states, proton NMR- interaction of spin magnetic moment of a proton with external magnetic moment, chemical shift and shielding. nuclear spins in a magnetic field - Zeeman effect -Larmor precession -resonance phenomenon -bloch equations -spin - lattice and spin-spin relaxation times -nuclear shielding and chemical shift -spin-spin coupling – basic principles of FT NMR -inversion recovery and CPMG sequenced for T_1 and T_2 measurements.

UNIT-IV: Nuclear Magnetic Resonance Spectroscopy-II **15**

Analysis of complex NMR spectra -chemical equivalence, chemical environment, spin-spin splitting, coupling constant, geminal, vicinal, long-range, trans, aromatic, allylic coupling, factors influencing coupling constant, splitting of nmr signals- AB, AX and AMX types -Overhauser effect - NMR of paramagnetic compounds -relaxation by paramagnetic ions in solution - INDOR, CIDNP - 2 Dimensional NMR - Pulse sequences - NMR in solids -magic angle spinning -chemical shift anisotropy - NMR Imaging - MRI.

UNIT-V: Electron Spin/Paramagnetic Resonance Spectroscopy **15**

Electron spin - Electronic Zeeman effect – Presentation of the spectrum-EPR spectrum of hydrogen atom (first order treatment) - g factors - Hyperfine splitting: nuclear spin ($I = 1/2, 1, 3/2, 5/2$) interaction with electron spin - hyperfine coupling constants - EPR spectra of organic radicals (AA and AB type) - EPR spectra of heteronuclear compounds - McConnell's relation – Introduction to multi-electron systems: zero field splitting – multi-electron systems-Kramer's degeneracy - Applications of EPR spectra for inorganic compounds - anisotropy in the hyperfine coupling constant - EPR instrumentation.

TEXT BOOKS:

1. Fundamentals of Molecular Spectroscopy, C.N.Banwell, Tata McGraw-Hill, 3rd Edn.

REFERENCE BOOKS:

1. R.Chang, Basic Principles of Spectroscopy, McGraw Hill

P18MCCH202	Core 7: Coordination Chemistry And Bio-Inorganic Chemistry						L	T	P	C
	Total Contact Hours - 75						4	1	0	4
	Prerequisite B.Sc., Chemistry level									
	Course Coordinator Name & Department:- – Dr. P. Paulraj / Chemistry									
COURSE OBJECTIVES:- To make the students learn about the chemistry from the basic and understood all theoretical background with all concepts understands thoroughly.										
COURSE OUTCOMES (COs)										
CO1	Gain the knowledge about the Chemistry of Coordination Compounds									
CO2	Understand about the Inorganic Reaction Mechanisms									
CO3	Apply its properties and uses of Organometallics									
CO4	Analyze the detail about the Pi-acceptor Complexes									
CO5	Evaluate the importance of co-ordination and bio-inorganic compounds									
CO6	Create the real time applications of Chemistry in day today life.									
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	PS O1	PS O2
2	CO1	2	3	3	1	1	2	3		
	CO2	3	3	2	2	2	3	3		
	CO3	2	2	2	2	2	2	3		
	CO4	2	2	1	2	1	2	3		
	CO5	2	3	3	2	2	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	47 th Academic Council Meeting								

UNIT-I: Chemistry of Coordination Compounds**15**

Werner's coordination theory-Isomerism in coordination compounds – types of ligands and chelate effect – stability constant determination. VB theory and CFT - Splitting of d-orbitals under different geometries – CFSE – evidence for CFSE – structure of spinels – factors affecting CFSE – spectrochemical series – Jahn-Teller distortion – M.O. theory of bonding – sigma and π -bonding in coordination compounds.

UNIT–II: Inorganic Reaction Mechanisms**15**

Electron transfer reactions: Outer-sphere and inner sphere electron transfer reactions – The Marcus theory – non-complementary reactions – synthesis of coordination compounds by electron transfer reactions.

Substitution reactions : substitution reactions of square planar complexes of Pt(II) and other d^8 metal complexes – significance of trans-effect – substitution reactions of octahedral complexes – acid and base hydrolysis reactions – anation reactions – synthesis of coordination compounds by substitution reactions.

Molecular rearrangements and reactions of coordinated ligands – the template effect and macrocyclic ligands.

UNIT–III: Organometallics**15**

Metal alkyl and aryls – 18 electron rule – olefin and acetylene complexes – Zeise's salt – Dewar-Chatt approach to bonding in ethylene and acetylene complexes – cyclopentadiene, benzene and cyclobutadiene complexes of transition metals – their preparations, bonding and reactions. Homogeneous catalysis involving organometallics: oxidative addition and reductive elimination reactions – hydrogenation, isomerization and hydroformylation of olefins – carbonylation of methanol, oxidation of olefins (Wacker's process) - heterogeneous catalysis – Ziegler-Natta catalysis.

UNIT–IV: Pi-acceptor Complexes**15**

Synthesis, structure and bonding of mono nuclear and poly-nuclear carbonyls – nitrosyl complexes – dinitrogen complexes – metal carbonylato complexes, carbonyl hydrides and complex metal cyanides.

UNIT–V: Bioinorganic Chemistry**15**

Metalloporphyrins – chlorophyll, hemoglobin and myoglobin – structure and function of hemoglobin cytochromes. Metalloenzymes, enzyme action inhibition and restoration – carboxypeptidase-A and carbonic anhydrase – Vitamin B_{12} and B_{12} coenzymes. Metalloproteins – non-heme iron proteins – rubredoxin and ferredoxin – copper proteins and their classification – nitrogenases, their structure and function. Metal ions in biology – sodium ion pump – metal poisons and chelating agents in medicine

TEXT BOOKS:

1. F.A.Cotton and G.Wilkinson, "A Text book of Advanced Inorganic Chemistry" 3rd Edn. Wiley, 1972.
2. R.C.Evans, "An Introduction to Crystal Chemistry"
3. J.C.BalorEdts. "Comprehensive Inorganic Chemistry, Vol. IV & V, Academic Press, 1979.
4. P.J. Wheatley, "Determination of Molecular Structure", Oxford, 2nd Edn., 1961

REFERENCE BOOKS:

1. T.C.Wadington, "Non-aqueous Solvents," Nelson, 1969.
2. K.F.Purcell and J.C.Kotz, "Inorganic Chemistry, Holt Saunders, 1977.
3. A.I.Vogel, "A text book of Quantitative Inorganic Analysis, ELBS, 3rd Edn. 1969.
4. J.E.Huhey, Inorganic Chemistry, Harper and Rao 3rd Edition Edn. 1983

CourseCoordinator**HOD**

P18MCCH203	Core 8: Conformational Analysis, Reagents And Organic Synthesis						L	T	P	C
	Total Contact Hours - 75						4	1	0	4
	Prerequisite B.Sc., Chemistry level									
	Course Coordinator Name & Department:- – Dr. G. Padmapriya / Chemistry									
COURSE OBJECTIVES:- To make the students learn about the chemistry from the basic and understood all theoretical background with all concepts understands thoroughly.										
COURSE OUTCOMES (COs)										
CO1	Gain the knowledge about the Conformational analysis									
CO2	Understand about the Dynamic stereochemistry									
CO3	Apply its properties and uses of Reagents in organic synthesis									
CO4	Analyze the detail about the Molecular rearrangements									
CO5	Evaluate the importance of Organic Synthesis									
CO6	Create the real time applications of Chemistry in day today life.									
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	PS O1	PS O2
2	CO1	2	3	3	1	1	3	3		
	CO2	3	3	1	3	2	3	3		
	CO3	2	2	2	2	3	2	3		
	CO4	3	2	1	1	3	3	3		
	CO5	3	3	3	2	2	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	47 th Academic Council Meeting								

UNIT-I: Conformational analysis

15

Restricted rotation in C-C bonds – conformation of n-butane – conformational isomers –conformational free energy – population of conformers – influence of dipole dipole repulsion, van der Waals forces – intramolecular hydrogen bonding on the stability of conformers. Cyclohexanes – stability and isomerism in mono and di substituted cyclohexanes

– flexible forms – A^{1,2} strain and A^{1,3} strain – conformation of cyclohexanone and 2-halocyclohexanones – alkyl ketone effects – anomeric effect. Conformation of decalin, perhydrophenanthrene and perhydroanthracene.

UNIT–II: Dynamic stereochemistry

15

Conformation and reactivity in acyclic systems – steric and stereoelectronic effects – *cis* elimination, E2 elimination, intramolecular rearrangements – neighbouring group participation. Cyclohexyl systems - esterification – oxidation - Substitution reaction - E2 elimination - intramolecular rearrangements – neighbouring group participation – formation and cleavage of epoxide. Reactivity in decalyl systems- reactions of enols and enolates.

UNIT–III: Reagents in organic synthesis

15

Use of the following reagents in organic synthesis: Complex metal hydrides, Gilman's reagent, Lithium diisopropylamide, dicyclohexylcarbodiimide, trimethylsilyl iodide, tri-*n*-butyltin hydride, Osmium tetroxide, DDQ, Merrifield resin, Wilkinson's catalyst and Baker's yeast. Woodward Prevost hydroxylation, Peterson synthesis, Collins reagent, Samarium iodide, NBS, Olah reagent, AIBN, CAN, Raney Ni, Sharpless asymmetric epoxidation – 1,3-dithiane.

UNIT–IV: Molecular rearrangements

15

Migratory aptitudes – nucleophilic, electrophilic and free radical rearrangements – intermolecular and intramolecular rearrangements – Wagner Meerwein, pinacol-pinacolone, benzil-benzilic acid, Schmidt, Hoffmann, Lossen, Curtius, Fries, Beckmann, Favorski, Stevens, Neber rearrangements

UNIT–V: Organic Synthesis

15

Importance of synthesis – carbon-carbon bond making reactions – functional group modifications – retrosynthetic analysis – synthons and synthetic equivalents – nucleophilic, electrophilic, electroneutral and free radical synthons – retron, partial retron and super retron - Chiron – umpolung – protection and deprotection – product, chemo, regio and stereoselectivities. One and two group disconnections – Diels Alder reactions – Robinson annulation method – 1,2- 1,3- 1,4- 1,5- and 1,6- difunctional compounds.

TEXT BOOKS:

1. P.S.Kalsi, Spectroscopy of Organic Compounds, 3rd Edn., New Age International, New Delhi, 1998.
2. W.Kemp Organic Spectroscopy, ELBS, 2nd Edn., 1987.
3. Y.R.Sharma, Elementary Organic Absorption Spectroscopy, Chand & Co, 1986
4. J.D.Roberts and M.C.Caserio, "Basic Principles of Organic (Polymer) Chemistry", 2nd Edn., Benjamin, New York, 1977.
5. R.T.Morrison and B.N.Boyd, "Organic Chemistry", 6th Edn., Prantice-Hall of India, New Delhi, 1975.

REFERENCE BOOKS:

1. C.H.Depuy and D.L.Chapman, Molecular Reactions and Photochemistry, Prentice Hall, 1975
2. T.L.Gilchrist and R.C.Storr, Organic Reactions and Orbital Symmetry, 2nd Edn., Cambridge, 1972.
3. R.E.Lehr and A.P.Marchand, Orbital Symmetry, A problem solving approach, Academic Press, New York, 1972.
4. A.L.Bellamy, An introduction to conservation of orbital symmetry, Longmann, 1975

CourseCoordinator					HOD					
U18MCCH204	CORE- 9 - GREEN CHEMISTRY					L	T	P	C	
	Total Contact Hours - 75					4	1	0	4	
	Prerequisite – B.Sc Chemistry level									
	Course Coordinator Name & Department:- – D.G. Padmapriya / Chemistry									
COURSE OBJECTIVES:- To make the students learn about the chemistry from the basic and understood all theoretical background with all concepts understands thoroughly.										
COURSE OUTCOMES (COs)										
CO1	Gain the knowledge about the properties and uses of chemistry in our life									
CO2	Understand about the theoretical concepts of Agricultural purposes									
CO3	Apply its properties and uses of Energy sources									
CO4	Analyze the detail about the gaseous state, postulates and importance of Renewable sources									
CO5	Evaluate the importance of Industrial case studies									
CO6	Create the real time applications of Chemistry in day today life.									
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	PS O1	PS O2
2	CO1	2	3	3	1	3	2	3		
	CO2	3	3	1	2	2	3	3		
	CO3	2	2	3	2	3	2	3		
	CO4	2	2	2	2	1	2	3		
	CO5	2	3	3	2	2	3	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	47 th Academic Council Meeting								

UNIT I: Principles & Concept of Green Chemistry

15

Introduction –Concept and Principles-development of Green Chemistry- Atom economy reactions –rearrangement reactions , addition reactions- atom uneconomic-sublimation elimination-Wittig reactions-toxicity measures- Need of Green Chemistry in our day to day life.

UNIT II: Measuring and Controlling Environmental Performance

15

Importance of measurement – lactic acid production-safer Gasoline – introduction to life cycle assessment-four stages of Life Cycle Assessment (LCA) –Carbon foot printing-green process Matrics-eco labels -Integrated Pollution and Prevention and Control(IPPC)-REACH (Registration, Evaluation, Authorization of Chemicals).

UNIT III: Emerging Green Technology and Alternative Energy Sources 15

Design for Energy efficiency-Photochemical reactions- Advantages-Challenge faced by photochemical process. Microwave technology on Chemistry- Microwave heating – Microwave assisted reactions- Sono chemistry and Green Chemistry –Electrochemical Synthesis-Examples of Electrochemical synthesis.

UNIT IV: Renewable Resources 15

Biomass –Renewable energy – Fossil fuels-Energy from Biomass-Solar Power- Other forms of renewable energy-Fuel Cells-Alternative economics-Syngas economy- hydrogen economy-Bio refinery chemicals from fatty acids-Polymer from Renewable Resources – Some other natural chemical resources.

UNIT V: Industrial Case Studies 15

Methyl Methacrylate (MMA)-Greening of Acetic acid manufacture-Vitamin C-Leather manufacture –Types of Leather –Difference between Hide and Skin-Tanning –Reverse tanning – Vegetable tanning –Chrome tanning-Fat liquoring –Dyeing –Application- Polyethylene- Ziegler Natta Catalysis-Metallocene Catalysis-Eco friendly Pesticides-Insecticides.

TEXT BOOKS:

1. Mike Lancaster, Green Chemistry and Introductory text, II Edition.
2. P.T .Anastas and J.C Warner, Green Chemistry theory and Practice, Oxford University press, Oxford (1988).
3. P. Tundo et al., Green Chemistry, Wiley –Blackwell, London (2007).
4. Protti D.Dondi et.al., Green Chemistry.

REFERENCE BOOKS:

1. T.E Graedel, Streamlined Life cycle Assessment, Prentice Hall, New Jersey (1998).
2. V.K. Ahluwalia, Methods and Reagents of Green Chemistry: An Introduction by Green Chemistry.

CourseCoordinator

HOD

P18MCCH2L1	Core 10: Practical – III - Physical Chemistry Practical							L	T	P	C
	Total Contact Hours - 75							0	0	6	3
	Prerequisite B.Sc., Chemistry level										
	Course Coordinator Name & Department:- – Dr. G. Padmapriya / Chemistry										
COURSE OBJECTIVES:- To make the students learn about the chemistry from the basic and understood all theoretical background with all concepts understands thoroughly.											
COURSE OUTCOMES (COs)											
CO1	Gain the knowledge about the need of chemistry practical and its toxicity										
CO2	Understand about the uses of experiments in our day today life										
CO3	Apply and know about its importanceof chemical played important role										
CO4	Analyze the detail about practical importance to be aware of the concepts from the basis.										
CO5	Evaluate the importance of handling and precision of experimental skills										
CO6	Create the real time applications of Chemistry in day today life.										
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	PS O1	PS O2	
2	CO1	3	3	3	1	1	2	3			
	CO2	2	3	1	3	2	2	3			
	CO3	2	2	3	2	2	2	3			
	CO4	2	2	2	2	2	3	3			
	CO5	3	2	3	3	2	2	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)		Any other	Project/Term Paper/ Seminar/ Internship (PR)	
4	Approval	47 th Academic Council Meeting									

1. General Experiments:

1.1 Kinetics of acid-catalysed hydrolysis of an ester

- 1.2 Determination of partition coefficient of I_2 between CCl_4 and H_2O , formation constant of the KI_3 complex, and determination of unknown KI concentration
- 1.3 Study of adsorption isotherms and determination of unknown concentration

2. Electrochemistry Experiments:

Conductometry Experiments

- 2.1 Measurement of conductivity and interpretation
- 2.2 Conductometric Titrations
- 2.3 Determination of dissociation constant of a weak acid
- 2.4 Determination of solubility product of a sparingly soluble salt

Potentiometry Experiments

- 2.5 Potentiometric titrations
- 2.6 Determination of pH of a buffer
- 2.7 Determination of solubility product and pK_a
3. Phase diagram - three component system
4. Selected spectrophotometric and spectrofluorometric experiments.

TEXT BOOKS:

1. Vogel, A.I. A Textbook of Quantitative Inorganic Analysis, ELBS. 1978
2. Ahluwalia, V.K. & Aggarwal, R. Comprehensive Practical Organic Chemistry: Preparation and Quantitative Analysis, University Press (2000).
3. Khosla, B. D.; Garg, V. C. & Gulati, A. Senior Practical Physical Chemistry, R. Chand & Co.: New Delhi (2011).
4. Garland, C. W.; Nibler, J. W. & Shoemaker, D. P. Experiments in Physical Chemistry 8th Ed.; McGraw-Hill: New York (2003).
5. Sundaram, Krishnan, Raghavan, Practical Chemistry (Part II), S. Viswanathan Co. Pvt., 1996.
6. N.S. Ganapragasam and G. Ramamurthy, Organic Chemistry – Lab manual, S. Viswanathan Co. Pvt., 1998.

REFERENCE BOOKS:

1. Halpern, A. M. & McBane, G. C. Experimental Physical Chemistry 3rd Ed.; W.H. Freeman & Co.: New York (2003).
2. Mann, F.G. & Saunders, B.C. Practical Organic Chemistry, Pearson Education (2009)
3. Furniss, B.S.; Hannaford, A.J.; Smith, P.W.G.; Tatchell, A.R. Practical Organic Chemistry, 5th Ed., Pearson (2012)
4. Ahluwalia, V.K. & Dhingra, S. Comprehensive Practical Organic Chemistry: Qualitative Analysis, University Press (2000).
5. Vogel's Text Book of Quantitative Chemical Analysis. 5th Edi., ELBS/Longman England, 1989.

Course Coordinator

HOD

SEMESTER III

P18MCCH301	Core 11: Chemical Thermodynamics, Equilibria And Quantum Mechanics							L	T	P	C
	Total Contact Hours - 75							4	1	0	4
	Prerequisite B.Sc., Chemistry level										
	Course Coordinator Name & Department:- – Dr. P. Paulraj / Chemistry										
COURSE OBJECTIVES:- To make the students learn about the chemistry from the basic and understood all theoretical background with all concepts understands thoroughly.											
COURSE OUTCOMES (COs)											
CO1	Gain the knowledge about the Equilibrium Thermodynamics and Non-equilibrium Thermodynamics										
CO2	Understand about the Statistical Thermodynamics										
CO3	Apply its properties and uses of Chemical and Phase Equilibria										
CO4	Analyze the detail about the Quantum Mechanics of Simple Systems										
CO5	Evaluate the importance of Applications of Quantum Chemistry										
CO6	Create the real time applications of Chemistry in day today life.										
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	PS O1	PS O2	
2	CO1	2	3	3	1	2	3	3			
	CO2	3	3	3	2	2	3	3			
	CO3	2	2	2	2	3	2	3			
	CO4	3	2	3	3	3	2	3			
	CO5	3	3	3	2	2	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)		Any other	Project/Term Paper/ Seminar/ Internship (PR)	
					✓						
4	Approval	47 th Academic Council Meeting									

UNIT–I: Equilibrium Thermodynamics and Non-equilibrium Thermodynamics 15

General review of enthalpy, entropy and free energy concepts - second law of thermodynamics - concept of entropy - Gibbs function- Gibbs- Helmholtz equation- Maxwell

relations - genesis of third law and its limitations-thermodynamics of systems of variable compositions-partial molar quantities and their determination - chemical potential - Gibbs-Duhem equation - Gibbs-Duhem-Margules equation - fugacity and its determination - choice of state - Non-equilibrium thermodynamics - conservation of mass and energy-entropy production - entropy production in chemical reactions-entropy production and entropy flow in open systems - Onsager's theory - validity and its verification - non-equilibrium states - irreversible thermodynamics of biological systems.

UNIT-II: Statistical Thermodynamics

15

Combinatory rule - probability theorem - permutations and combinations - concept of ensembles energy states and energy levels - macro-states and micro-states - Maxwell-Boltzmann statistics - thermodynamic probability, Sterling's approximation, Lefrange's undetermined multiplier, distribution functions - Partition function and thermodynamic functions- molar partition function- entropy and third law - separation of partition function-translational, rotational, vibrational and electronic partition functions, combined partition function- equilibrium constant and partition function. Quantum statistics - Bose-Einstein and Fermi-Dirac statistics - photon gas -degeneracy and Bose Einstein condensation, application to liquid He - negative Kelvin temperature.

UNIT-III: Chemical and Phase Equilibria

15

Reaction free energy/ reaction potential - reaction isotherm and direction of spontaneity - Standard reaction free energy - its calculation from thermochemical, electrochemical and equilibrium data - Temperature coefficient of reaction free energy and equilibrium constant. Gibbs phase rule - its thermodynamic derivation - application of phase rule to three component systems - Formation of one pair, two pairs and three pairs of partially miscible liquids - Systems composed of two solids and a liquid - Common ion effect – Salting out.

UNIT-IV: Quantum Mechanics of Simple Systems

15

Writing the Hamiltonian for H and He atoms- eigen functions and eigen values, proving that linear momentum and angular momentum operators are linear, Hermitian operator and its properties, commutator theorem and its converse, Expansion theorem; Postulates of quantum mechanics. The Schrödinger wave equation- particles in 1D and 3D boxes, harmonic oscillator, rigid rotator, Hydrogen atom, Hydrogen orbital - Time dependent Schrödinger wave equation- Approximation methods - Perturbation Theory (first order and non-degenerate), The Variation method, linear variation principle, Helium - Hartree-Fock self-consistent field method.

UNIT-V: Applications of Quantum Chemistry

15

Chemical bonding- VB & MO theory as applied to H_2^+ , Conjugated hydrocarbons and Aromatic hydrocarbons, Huckel MO theory - Molecular Spectroscopy and quantum mechanics- Born Oppenheimer approximation, Schrodinger equation for rotational, vibrational and electronic components and their selection rules.

TEXT BOOKS:

1. P.W.Atkins, Physical Chemistry, 5th Edn., Oxford, International Student Edition, 1994.
2. Fermi, Enrico (1956). Thermodynamics (New ed.). Dover Publications.
3. Ruelle, David (1978). Thermodynamic formalism : the mathematical structures of classical equilibrium statistical mechanics.

REFERENCE BOOKS:

1. Van Ness, H. C. (1983). Understanding Thermodynamics. Dover Publication.
2. Callen, Herbert (1985). Thermodynamics and an Introduction to Themostatistics (2nd ed.). New York: John Wiley & Sons.

P18MCCH302	Core 12: ANALYTICAL CHEMISTRY							L	T	P	C
	Total Contact Hours - 75							4	1	0	4
	Prerequisite B.Sc., Chemistry level										
	Course Coordinator Name & Department:- – Mrs. K. Kalpana / Chemistry										
COURSE OBJECTIVES:- To make the students learn about the chemistry from the basic and understood all theoretical background with all concepts understands thoroughly.											
COURSE OUTCOMES (COs)											
CO1	Gain the knowledge about the Errors in Chemical Analysis										
CO2	Understand about the Spectral and Thermal techniques										
CO3	Apply its properties and uses of Chromatographic techniques and Mass spectrometry										
CO4	Analyze the detail about the Electroanalytical techniques										
CO5	Evaluate the importance of Advanced Chemical Analysis										
CO6	Create the real time applications of Chemistry in day today life.										
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	PS O1	PS O2	
2	CO1	2	3	3	1	2	1	3			
	CO2	3	3	1	2	3	3	3			
	CO3	2	2	2	2	3	2	3			
	CO4	2	2	2	2	2	2	3			
	CO5	3	3	3	2	2	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	47 th Academic Council Meeting									

UNIT-I: Errors in Chemical Analysis

15

Systematic and random errors- Distribution of experimental results. Statistical treatment- standard deviation, variance, confidence limits, application of statistics to data treatment and evaluation, student-t and f tests, detection of gross errors, rejection of a result-Q test, estimation of detection limits. Least square method, correlation coefficient and its determination.

UNIT-II: Spectral and Thermal techniques

15

Instrumentation of UV-Vis, AAS, AES and spectrofluorimetry. Types of optical instruments, components of optical instruments-sources, monochromators, detectors- sample preparations-

applications in quantitative analyses. IR spectrometry: instrumentation designs-various types of sources, monochromators, sample cell considerations, different methods of sample preparations, FTIR instruments Principles, instrumentation and applications of Thermogravimetry (TG), Differential Thermal Analysis (DTA) and Differential Scanning Calorimetry (DSC).

UNIT – III: Chromatographic techniques and Mass spectrometry 15

Principles of chromatography: TLC, column. Principles and Instrumentation of HPLC, GC, GC-MS Mass spectrometry: basic principles – molecular ion peak – parent peak – fragments – meta stable ion – isotope peaks – determination of molecular weight and molecular formula – fragmentation pattern of simple organic molecules – McLafferty rearrangement – retro Diels Alder reaction.

UNIT–IV: Electroanalytical techniques 15

Instrumentation - different types of electrodes - two electrode and three electrode cell setup, importance of supporting electrolyte, mass transport processes - General classification of electro analytical techniques. Potentiometry - ion selective electrodes and measurement of open circuit potential. Coulometry- Controlled potential coulometry, constant current coulometry, Determination of number of transferred electrons and methods for determination of the thickness of electrodeposits. Voltammetry techniques – Polarography - Cyclic voltammetry – Pulse techniques (Normal pulse, Differential pulse and square wave)-stripping voltammetry: Anodic, cathodic and adsorptive. Chronopotentiometry and chronoamperometry.

UNIT–V: Advanced Chemical Analysis 15

Principle, instrumentation and applications of PES (UPS and XPS), Auger electron spectroscopy, Electron microscopy (SEM and TEM), EDAX and SPM (STM and AFM).

TEXT BOOK:

1. Introduction to Instrumental Analysis by R. D. Broun, Mc Graw Hill (1987)
2. Instrumental methods of chemical analysis by H. willard, L.Meritt, J.A. Dean and F.A. settle. Sixth edition CBS (1986)
3. Fundamentals of Analytical Chemistry, 6th edition, D.A. Skoog, D.M. West and F.J. Holler, Saunders college publishing. 8
4. Principles of Instrumental Analysis, Skkog, Holler, Nieman, (Sixth Ed.)

REFERENCE BOOKS:

1. Vogel's Textbook of Quantitative analysis 6th Ed.
2. Modern analytical techniques in the pharmaceutical and bio analysis By Dr. Istvan Bak (Book Available Online).
3. Preparative chromatography Chrome Ed. book series, Raymond P. W. Scott (free e book available on internet)
4. Extraction technique in analytical science, John R. Dean, Wiley (2009)
5. Practical HPLC method Development, Snyder, Kirkiand, Glajch, Wiley India Pvt. Ltd.

Course Coordinator

HOD

P18MCCH303	Core 13: Applications of Spectroscopy And Magnetism						L	T	P	C
	Total Contact Hours - 75						4	1	0	4
	Prerequisite B.Sc., Chemistry level									
	Course Coordinator Name & Department:- – Mrs. S. Vinitha / Chemistry									
COURSE OBJECTIVES:- To make the students learn about the chemistry from the basic and understood all theoretical background with all concepts understands thoroughly.										
COURSE OUTCOMES (COs)										
CO1	Gain the knowledge about the UV-vis spectra of metal complexes and organic compounds									
CO2	Understand about the theoretical concepts of IR and Raman spectroscopy									
CO3	Apply its properties and uses of NMR spectroscopy									
CO4	Analyze the detail about the Mossbauer and NQR spectroscopy									
CO5	Evaluate the importance of Magnetism									
CO6	Create the real time applications of Chemistry in day today life.									
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	PS O1	PS O2
2	CO1	2	3	3	1	1	1	3		
	CO2	3	3	1	2	3	3	3		
	CO3	2	2	2	2	3	3	3		
	CO4	2	3	1	1	1	2	3		
	CO5	2	3	3	3	2	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	47 th Academic Council Meeting								

UNIT-I: UV-vis spectra of metal complexes and organic compounds 15

Term symbols for atoms and ions – splitting of orbitals and terms in crystal fields – characteristics of d-d transitions – energy levels – Orgel and Tanabe-Sugano diagram – effect of Jahn-Teller distortion and spin-orbit coupling on absorption spectra – crystal field spectra of transition metal complexes – calculation of $10Dq$ and B' for Co(II) (O_h) and Ni(II) (O_h) complexes– spectral properties of lanthanide complexes. Charge transfer spectra of halide, cyanide and bipyridine complexes (octahedral, square planar and tetrahedral complexes).

The Woodward-Fieser rules – calculation of $\lambda_{\max}$ for dienes, enones and polyenes – Use of UV spectroscopy in distinguishing geometrical isomers

UNIT-II: IR and Raman spectroscopy

15

Molecular vibrations, fundamentals, overtones, combination and difference bands – coupling of vibrations – Fermi resonance – Application of IR in Organic chemistry- characteristic group frequencies – Finger print region Combined application of IR and Raman spectra for structural elucidation of N_2O , ClF_3 , ClO_4^- and NO_3^- ; Group theoretical approach to find the IR and Raman active vibrations of simple compounds– Effect of coordination upon ligand vibrations of H_2O , CNS^- , NO_3^- , CN^- & SO_4^{2-} .

UNIT-III: NMR spectroscopy

15

Application NMR spectroscopy in the structural analysis of organic compounds – Uses of parameters like chemical shifts (both proton and carbon) and coupling constant – Uses of DEPT, J-resolved, H,H-COSY, C,H-COSY, HMBC and NOESY spectra; lanthanide shift reagents in NMR, Solving structural problems using NMR

Application of NMR in the structural elucidation of inorganic compounds – ^{31}P NMR spectra of P_4S_3 , H_3PO_3 , H_3PO_2 and HPF_2 ; ^{19}F NMR spectra of ClF_3 , BrF_5 and equimolar mixture of TiF_6^{2-} and TiF_4 in ethanol– Fluxional behavior of molecules – ^{10}B and ^{11}B resonance studies.

UNIT-IV: Mossbauer and NQR spectroscopy

15

Theory of Mossbauer spectroscopy – Doppler effect – isomer shift – quadrupole splitting – magnetic hyperfine splitting – application of MB spectroscopy to inorganic compounds

NQR: Energies of quadrupole resonance – effect of a magnetic field on the spectra – relationship between electric field gradient and molecular structure – the interpretation of $e^2\text{Qq}$ data – effects of the crystal lattice on the magnitude of $e^2\text{Qq}$ – structural information from NQR spectra.

UNIT – V: Magnetism

15

Types of magnetic behavior – expression for Bohr magneton, spin and orbital magnetic moments - Derivation of the expression $\mu_{\text{eff}} = 2.84 (\chi_{\text{M}} \cdot T)^{1/2}$ – determination of magnetic susceptibility by Gouy method – Calculation of magnetic moment from experimental data – magnetic properties of free ions – Effect of ligand field on orbital contribution – magnetic behavior of complexes with A, E and T ground terms – Temperature independent paramagnetism – spin-orbit coupling constant from spectral and magnetic moment data – magnetic properties of 3d, 4d and 4f ions – anti-ferromagnetic and ferrimagnetic interactions.

TEXT BOOK:

1. Introduction to Instrumental Analysis by R. D. Broun, Mc Graw Hill (1987)
2. Instrumental methods of chemical analysis by H. Willard, L. Merritt, J.A. Dean and F.A. Settle. Sixth edition CBS (1986)
3. Fundamentals of Analytical Chemistry, 6th edition, D.A. Skoog, D.M. West and F.J. Holler, Saunders college publishing. 8
4. Principles of Instrumental Analysis, Skkog, Holler, Nieman, (Sixth Ed.)

REFERENCE BOOKS:

1. Vogel's Textbook of Quantitative analysis 6th Ed.
2. Modern analytical techniques in the pharmaceutical and bio analysis By Dr. Istvan Bak (Book Available Online).
3. Preparative chromatography Chrome Ed. book series, Raymond P. W. Scott (free e book available on internet)
4. Extraction technique in analytical science, John R. Dean, Wiley (2009)

Course Coordinator

HOD

P18MCCH304	Core 14: Physical methods in Chemistry						L	T	P	C	
	Total Contact Hours - 75						4	1	0	4	
	Prerequisite B.Sc., Chemistry level										
	Course Coordinator Name & Department:- – Dr. P. Paulraj / Chemistry										
COURSE OBJECTIVES:- To make the students learn about the chemistry from the basic and understood all theoretical background with all concepts understands thoroughly.											
COURSE OUTCOMES (COs)											
CO1	Gain the knowledge about the Spectroscopy										
CO2	Understand about the theoretical concepts of mass Spectroscopy										
CO3	Apply its properties and uses of Photo Spectroscopy										
CO4	Analyze the detail about the Thermo chemistry										
CO5	Evaluate the importance of Chromatography Spectroscopy										
CO6	Create the real time applications of Chemistry in day today life.										
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	PS O1	PS O2	
2	CO1	2	3	3	3	3	3	3			
	CO2	2	2	3	2	2	3	3			
	CO3	2	2	3	2	3	2	3			
	CO4	3	3	1	3	1	2	3			
	CO5	3	3	3	2	2	3	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	47 th Academic Council Meeting									

UNIT I: SPECTROSCOPY

15

Interaction of matter with radiation - Einstein's theory of transition probability - Rotational spectroscopy of rigid rotator - non rigid rotator - diatomic and polyatomic molecules. Electronic spectra – progressions and Sequences, selection rules, Franck – Condon principle, Solvent effects, Types of electronic transition.

UNIT II: MASS SPECTROSCOPY

15

Introduction, ion production- EI, CI, FD and FAB, factors affecting fragmentation, ion analysis abundance. Mass spectral fragmentation of organic compounds, common functional groups, molecular ion peak, metastable peak, Mc Lafferty rearrangement. Nitrogen rule. High resolution mass spectrometry. Examples of mass spectral fragmentation of organic compounds with respect to their structure determination.

UNIT III: Photochemistry**15**

Absorption of light and nature of electronic spectra - electronic transition - Frank-Condon principle - Selection rules - Photodissociation, Predissociation, Photochemical reactions: Photoreduction, photooxidation, photodimerization, photochemical substitution, photoisomerization -Photochemistry of environment: Green-house effect - Joblonski diagram - Photophysical process in electronically excited molecules by different types of pathways - Fluorescence - Phosphorescence - Internal conversion- Intersystem crossing - Quantum yield - Photosensitization -Chemiluminences

UNIT IV: Electro analytical Methods and Thermogravimetry**15**

ORD & CD: Principle- Circular birefringence -Circular dichroism - Cotton effect - Types of ORD curves-Applications of Cotton effect curves/plain dispersion curves - Octant rule - Applications for determination of conformation and configuration –Chromatography: Definition - Classifications - Principle - Practice of adsorption, partition, paper, Thin-layer, HPLC and Gas chromatographic techniques

UNIT V: ORD/CD/Chromatography**15**

Voltammetry: Principles - Voltammograms - Equation of voltamogram - Modified Voltametric Methods - DPV - Cyclic Voltammetry - Amperometry - Coulometry: Different methods - Coulometric titrations - Conductometric titrations - Anodic/cathodic stripping voltammetry-Thermogravimetry: TGA/DTA/DSC Instrumentation - Applications.

TEXT BOOK:

1. Introduction to Instrumental Analysis by R. D. Broun, Mc Graw Hill (1987)
2. Instrumental methods of chemical analysis by H. willard, L.Meritt, J.A. Dean and F.A. settle. Sixth edition CBS (1986)
3. Fundamentals of Analytical Chemistry, 6th edition, D.A. Skoog, D.M. West and F.J. Holler, Saunders college publishing. 8
4. Principles of Instrumental Analysis, Skkog, Holler, Nieman, (Sixth Ed.)

REFERENCE BOOKS:

1. Vogel's Textbook of Quantitative analysis 6th Ed.
2. Modern analytical techniques in the pharmaceutical and bio analysis By Dr. Istvan Bak (Book Available Online).
3. Preparative chromatography Chrome Ed. book series, Raymond P. W. Scott (free e book available on internet)
4. Extraction technique in analytical science, John R. Dean, Wiley (2009)

Course Coordinator**HOD**

U18MCCH6L1	CORE - 15 - MAJOR PRACTICAL - VI						L	T	P	C
	Total Contact Hours - 75						0	0	6	3
	Prerequisite – B.Sc., Chemistry level									
	Course Coordinator Name & Department:- – Dr. P. Paulraj / Chemistry									
COURSE OBJECTIVES:- To make the students learn about the chemistry from the basic and understood all theoretical background with all concepts understands thoroughly.										
COURSE OUTCOMES (COs)										
CO1	Gain the knowledge about the need of chemistry practical and its toxicity									
CO2	Understand about the uses of experiments in our day today life									
CO3	Apply and know about its importanceof chemical played important role									
CO4	Analyze the detail about practical importance to be aware of the concepts from the basis.									
CO5	Evaluate the importance of handling and precision of experimental skills									
CO6	Create the real time applications of Chemistry in day today life.									
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	PS O1	PS O2
2	CO1	3	3	3	3	1	1	3		
	CO2	2	3	1	3	2	2	3		
	CO3	2	2	3	2	2	2	3		
	CO4	3	3	3	1	3	3	3		
	CO5	2	3	3	3	2	3	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	47 th Academic Council Meeting								

GRAVIMETRIC ANALYSIS:

1. Estimation of Lead as lead chromate.
2. Estimation of Barium as barium chromate.
3. Estimation of Nickel as Nickel -DMG complex.
4. Estimation of Copper as copper (I) thiocyanate

5. Estimation of Magnesium as magnesiumoxinate
6. Estimation of Barium as barium sulphate.
7. Estimation of Iron as Iron (III) oxide.

TEXT BOOKS:

1. Vogel, A.I. A Textbook of Quantitative Inorganic Analysis, ELBS. 1978
2. Ahluwalia, V.K. & Aggarwal, R. Comprehensive Practical Organic Chemistry: Preparation and Quantitative Analysis, University Press (2000).
3. Khosla, B. D.; Garg, V. C. & Gulati, A. Senior Practical Physical Chemistry, R. Chand & Co.: New Delhi (2011).
4. Garland, C. W.; Nibler, J. W. & Shoemaker, D. P. Experiments in Physical Chemistry 8th Ed.; McGraw-Hill: New York (2003).
5. Sundaram, Krishnan, Raghavan, Practical Chemistry (Part II), S. Viswanathan Co. Pvt., 1996.
6. N.S. Ganapragasam and G. Ramamurthy, Organic Chemistry – Lab manual, S. Viswanathan Co. Pvt., 1998.

REFERENCE BOOKS:

1. Halpern, A. M. & McBane, G. C. Experimental Physical Chemistry 3rd Ed.; W.H. Freeman & Co.: New York (2003).
2. Mann, F.G. & Saunders, B.C. Practical Organic Chemistry, Pearson Education (2009)
3. Furniss, B.S.; Hannaford, A.J.; Smith, P.W.G.; Tatchell, A.R. Practical Organic Chemistry, 5th Ed., Pearson (2012)
4. Ahluwalia, V.K. & Dhingra, S. Comprehensive Practical Organic Chemistry: Qualitative Analysis, University Press (2000).
5. Vogel's Text Book of Quantitative Chemical Analysis. 5th Edi., ELBS/Longman England, 1989.

Course Coordinator

HOD

SEMESTER IV

P18MCCH401	Core 16: Chemical Kinetics, Surface Chemistry						L	T	P	C
	Total Contact Hours - 75						4	1	0	4
	Prerequisite B.Sc., Chemistry level									
	Course Coordinator Name & Department:- – Dr. P. Paulraj / Chemistry									
COURSE OBJECTIVES:- To make the students learn about the chemistry from the basic and understood all theoretical background with all concepts understands thoroughly.										
COURSE OUTCOMES (COs)										
CO1	Gain the knowledge about the concepts of Chemical Kinetics									
CO2	Understand about the nature of Catalysis and Surface Chemistry									
CO3	Apply its properties and uses of Macromolecules and Kinetics of Polymerization									
CO4	Analyze the detail about the Properties of Polymers									
CO5	Evaluate the importance of Fabrication and Patterning Nanostructures									
CO6	Create the real time applications of Chemistry in day today life.									
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	PS O1	PS O2
2	CO1	2	3	3	1	1	1	3		
	CO2	3	3	3	2	2	3	3		
	CO3	2	3	2	2	3	2	3		
	CO4	2	3	1	3	3	2	3		
	CO5	2	3	3	2	2	3	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	47 th Academic Council Meeting								

UNIT-I: Chemical Kinetics

15

Basic kinetic concepts - Theories of reaction rates-collision theory - transition State theory - salt effect - temperature effects, Arrhenius equation, chemical interpretation of activation parameters, microscopic reversibility - Lindemann, Hinshel wood, RRR, RRKM and Slater

treatments - fast reaction kinetics - survey of methods for very fast reactions - stopped flow methods - chemical relaxation methods - flash photolysis.

UNIT-II: Catalysis and Surface Chemistry **15**

Homogenous catalysis - activation barrier - Hammett acid-base catalysis - rate of acid and base catalysis - acidity function. Enzyme catalysis: Brief introduction on enzymes - advantages - Michaelis-Menton kinetics - Lineweaver Burk plot - enzymatic inhibitor. Heterogenous catalysis: Adsorption, physisorption and chemisorptions, Langmuir and BET adsorption, Gibbs adsorption isotherm, insoluble surface films, electrokinetic phenomena, zeta potential. Surface active agents - classification, micellization, hydrophobic interaction, CMC and factors affecting CMC, counter-ion binding to micelles - thermodynamics of micellization - reverse micelles.

UNIT-III: Macromolecules and Kinetics of Polymerization **15**

Overview of polymers - structure and classification of polymers - kinetics and mechanism of free radical and ionic polymerizations - degree of polymerization - condensation and coordination polymerizations - Zeigler-Natta polymerization - copolymerization - molecular weight of polymers - number and weight average molecular weights - determination of molecular weight - light scattering and viscosity methods - gel permeation chromatography.

UNIT-IV: Properties of Polymers **15**

Polyesters, silicones, rubbers and fibers - properties of polymers - rheology and solubility - physical states and transition - crystallinity - glass transition temperature - factors influencing T_g , crystallinity in polymers - amorphous polymers - plasticization - vulcanization, reinforcement and elastomers - conducting polymers - electrical and optical properties - mechanism of electrical conduction in polymers - conducting polymers/filler composite - applications and limitations.

UNIT-V: Fabrication and Patterning Nanostructures **15**

Preparation of nanostructures: Nucleation and particle growth-sol process, sol-gel process, chemical co-precipitation, hydrothermal/solvothermal synthesis, pyrolysis, vapor deposition - Techniques of nanofabrication: Types of lithography – application of lithography - Self-assembly for nanofabrication: Nontemplated self-assembly, templated self-assembly, self-assembled monolayers (SAMs) - preparation of SAMs, mechanisms of assembly, SAMs as surface layers - Surface modification of nanoparticles, characterization techniques-SEM, TEM, HRTEM, AFM, SAXS, LDI-MS, STM.

TEXT BOOKS:

1. Chemical Kinetics by Keith Laidler, Harper and Row, 1995.
2. Chemical Kinetics: The study of reaction rates in solution by Kenneth A. Connors, VCH, 1990
3. Billmeyer, F. W. Textbook of Polymer Science, John Wiley & Sons, Inc.
4. Nanobiotechnology by Subbiah balagi, MJP Publishers, India (2010).

REFERENCES BOOKS:

1. Electrochemistry by Carl H. Hamann, Andrew Hamnett and Wolf Vielstich, Wiley VCH, 1998.
2. Gowariker, V. R.; Viswanathan, N. V. & Sreedhar, J. Polymer Science, New Age International (P) Ltd. Pub.

3. Introduction to nanotechnology by C.P. Poole, Jr & F. J. Owens, John Wiley and Sons (2009).

Course Coordinator

HOD

P18MCCH402	Core 17: Nuclear Chemistry And Photochemistry						L	T	P	C
	Total Contact Hours - 75						4	1	0	4
	Prerequisite B.Sc., Chemistry level									
	Course Coordinator Name & Department:- – Mrs. K. Kalpana / Chemistry									
COURSE OBJECTIVES:- To make the students learn about the chemistry from the basic and understood all theoretical background with all concepts understands thoroughly.										
COURSE OUTCOMES (COs)										
CO1	Gain the knowledge about the concepts of Nuclear Chemistry									
CO2	Understand about the theoretical concepts of Principles of Photochemistry									
CO3	Apply its concepts of Inorganic Photochemistry									
CO4	Analyze the detail about the concepts of Organic Photochemistry									
CO5	Evaluate the importance of concepts of Pericyclic reactions									
CO6	Create the real time applications of Chemistry in day today life.									
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	PS O1	PS O2
2	CO1	2	3	3	2	1	1	3		
	CO2	3	3	1	2	2	3	3		
	CO3	2	2	2	2	3	2	3		
	CO4	3	2	2	2	2	2	3		
	CO5	3	3	3	2	2	2	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	47 th Academic Council Meeting								

UNIT-I: Nuclear Chemistry

15

Properties of nucleus – different types of nuclear forces – liquid drop model, shell model of nucleus – nuclear reactions induced by charged particles – Q value – nuclear reaction cross section, significance and determination – theory of nuclear fission – reactor and its components – production of feed materials for nuclear reactors – disposal of radioactive wastes – nuclear fusion, stellar energy. Application of radioisotopes in agriculture, industry and medicine – neutron activation analysis.

UNIT–II: Principles of Photochemistry

15

Absorption of light by molecules – Reaction paths of electronically excited molecules - Fluorescence and phosphorescence – Jablonski diagram – Physical properties of the electronically excited molecules: Excited state dipole moments, Excited state pKa and redox potentials – Life time of excited state molecules- Stern-Volmer equation and its application – Photosensitization - Chemiluminescence – Quantum yield and actinometry.

UNIT–III: Inorganic Photochemistry

15

Elementary ideas on the photosystems I and II - Photochemistry of Cr(III), Co(III), Ru(II), Pt(II) and Pt(IV) complexes – photoaquation – photoanation – photoisomerisation – photo redox reactions – charge transfer photochemistry – photosensitisation – solar energy conversion – photogalvanic cell – water splitting.

UNIT–IV: Organic Photochemistry

15

Thermal vs photochemical reactions –energy transfer reactions - sensitized reactions – Photochemical reactions of ketones and enones – Norrish type I and type II reactions – Paterno-Buchi reaction - isomerisation of olefins – di-*pi*-methane rearrangement – photochemical reduction and photochemical oxidations –oxidative couplings – photochemistry of arenes.

UNIT–V: Pericyclic reactions

15

Definition – electrocyclic, cycloaddition and sigmatropic reactions – Orbital correlation diagram, state correlation diagram, frontier orbital theory and aromatic transition state approach – endoselectivity and regiochemistry in Diels-Alder reactions- Cope and Claisen rearrangements.

TEXT BOOKS:

1. J.E.Huhey, Inorganic Chemistry, Harper and Rao 3rd Edition Edn. 1983..
2. W.Kemp Organic Spectroscopy, ELBS, 2nd Edn., 1987.
3. P.S.Kalsi, Spectroscopy of Organic Compounds, 3rd Edn., New Age Int, New Delhi, 1998.
4. S.M.Muherjee and S.P.Singh, Pericyclic Reactions, Macmillan, 1976.

REFERENCE BOOKS:

1. Physical and Theoretical Chemistry, C.D.George, P.M.Thomas and C.D.Joseph (1966).
2. Text Book of Physical Chemistry, P.L.Soni, O.P.Dharmara, U.N. Dash, Sultan Chand & Sons, New Delhi.
3. Principles of Physical Chemistry, B.R.Puri, L.R.Sharma, M.S.Pathania, Shoban Lal Nagin Chand & Co. New Delhi.

ELECTIVE PAPERS I

P18MECH011	ELECTIVE – 1 – INDUSTRIAL CHEMISTRY						L	T	P	C
	Total Contact Hours - 75						4	0	0	4
	Prerequisite – B.Sc., Chemistry level									
	Course Coordinator Name & Department:- – Mrs. S. Vinitha / Chemistry									
COURSE OBJECTIVES:- To make the students learn about the chemistry from the basic and understood all theoretical background with all concepts understands thoroughly.										
COURSE OUTCOMES (COs)										
CO1	Gain the knowledge about the generation of energy from various types of fuels.									
CO2	Understand about the chemicals in improvement of agricultural crops									
CO3	Apply its employed for purification of water for industry and home									
CO4	Analyze the detail about the Pollution occurring from various sources and resulting toxic effects									
CO5	Evaluate the concepts involved in the pollutant technology									
CO6	Create the real time applications of Chemistry in day today life.									
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	PS O1	PS O2
2	CO1	2	3	3	1	1	1	3		
	CO2	3	2	1	2	2	3	3		
	CO3	2	2	2	2	3	2	3		
	CO4	3	2	1	2	2	2	3		
	CO5	2	3	2	2	2	2	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	47 th Academic Council Meeting								

UNIT-1: INDUSTRIAL FUELS

15

Energy: Sources: non-renewable, classification of fuels: solid, liquid and gaseous. Calorific value of fuels and its determination - **Solid fuels:** Coal: types – properties and uses – lignite, sub-bituminous coal, bituminous coal and anthracite. Coking and non-coking coal - **Liquid fuels:** Refining of crude petroleum and uses of fractions. Hydrodesulphurisation. Cracking: thermal and catalytic (fixed bed and fluidised bed cataylsis). Octane number. Production and uses of tetraethyl lead, ETBE and MTBE - **Gaseous fuels:** Natural gas and gobar gas: production, composition and uses., Gobar electric cell.

UNIT-2: CHEMISTRY AND AGRICULTURE

15

Fertilizers: NPK, representation, superphosphate, triple superphosphate, uses of mixed fertilizers - Micronutrients and their role, biofertilizers, plant growth hormones – **Pesticides:** Classification of pesticides with examples - Insecticides; stomach poisons, contact insecticides, fumigants. Manufacture and uses of insecticides. DDT, BHC (gamma isomer) pyrethrin - Mention of aldrin, dieldrin, endrin and pentachlorophenol (and its Na salts) and Biopesticides - Herbicides: Manufacture of 2,4-D and 2,4,5-T - Fungicides: Preparation of Bordeaux mixture. Mention of lime-sulphur, creosote oil and formula - **Sugar industry:** Double sulphitation process. Refining and grading of sugar. Saccharin: synthesis and use as a sugar substitute - aspartame. Ethanol: manufacture from molasses by fermentation.

UNIT-3: WATER TREATMENT

15

Introduction: Sources of water. Hardness of water-temporary or carbonate hardness, permanent hardness or non-carbonate hardness. Units of hardness, disadvantages of hard water – In domestic, in industry and in steam generation in boilers. Effect of iron and manganese in water - Estimation of hardness – EDTA method – Estimation of total hardness – O. Hehner's method or alkali titration method - **Water softening methods:** Industrial purpose Lime – soda process, Zeolite process; Ion-exchange - Demineralisation – deionization process. Mixed – bed deionization - Domestic purpose - Removal of suspended impurities. Removal of microorganism – Chlorination – Break point chlorination. Reverse osmosis. Desalination - Waste water treatment

UNIT-4: POLLUTION AND CHEMICAL TOXICOLOGY

15

Pollution: Air pollution - Acid rain. Green house effect (global warming), ozone layer depletion - photochemical oxidants. Control of air pollution. Water pollution – organic pollutants, Chemical oxygen demand (COD), Biological oxygen demand (BOD), total organic carbon. International standards for water and air quality and regulations - **Chemical toxicology:** Effect of toxic chemicals on enzymes. Lead, mercury and cyanide pollution and their biochemical effects. Carbon monoxide, sulfur dioxide, oxides of nitrogen, ozone – biochemical effects - **Quality control:** ISI specification. Patent: Purpose and procedures.

UNIT-5: SEMINAR TOPICS

15

Glass, Cement, Dyes, Paints, Special paints, Lubricants and greases, Refractories, Abrasives, Plastics, Perfumes and flavoring industries, Fermentation industries, Explosives, Pulp and paper industries, Rubber industries, Pharmaceutical industries, Food and food products industries, Photographic product industries, Ceramic industries, Petrochemicals.

TEXT BOOKS:

1. Norris Shreve, R. and Joseph a. Brink, Jr. Chemical Process Industries, 4th Ed.; Mc Graw Hill Kogakusha, Ltd: 1977.
2. Subba rao, n. S. Biofertilizers in Agriculture; Oxford and IBH Publishing Co.: New Delhi, 1982.
3. Jain, P. C. And Jain, M. Engineering Chemistry, 10th Ed.; Dhanpat Rai And Sons: Delhi, 1993

REFERENCE BOOKS

1. Kamaraj, p.; Jeyalakshmi, R. And Narayanan, V. Chemistry in Engineering and Technology; Sudhandhira Publications: Chennai, 2001.
2. Kuriakose, j. C. And rajaram, j. Chemistry in Engineering and Technology. Vol 2.; Tata Mc Graw Hill: New Delhi, 1988.

Course Coordinator

HOD

P18MECH012	ELECTIVE – 1 – Textile Chemistry						L	T	P	C
	Total Contact Hours - 75						4	0	0	4
	Prerequisite B.Sc., Chemistry level									
	Course Coordinator Name & Department:- – Dr. G. Padmapriya / Chemistry									
COURSE OBJECTIVES:- To make the students learn about the chemistry from the basic and understood all theoretical background with all concepts understands thoroughly.										
COURSE OUTCOMES (COs)										
CO1	Gain the knowledge about the concepts of Flavanoids and carbohydrates									
CO2	Understand about the theoretical concepts Terpenoids and alkaloids									
CO3	Apply its properties and uses of concepts Steroids									
CO4	Analyze the detail about the concepts Antibiotics, vitamins and prostaglandins									
CO5	Evaluate the concepts Aminoacids, proteins and nucleic acids									
CO6	Create the real time applications of Chemistry in day today life.									
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	PS O1	PS O2
2	CO1	2	3	3	1	1	1	3		
	CO2	3	3	1	2	2	3	3		
	CO3	2	2	2	3	3	2	3		
	CO4	2	3	2	1	3	2	3		
	CO5	3	2	2	2	2	3	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	47 th Academic Council Meeting								

UNIT I:

1. Fibre theory –polymers and polymerization-Morphology of fibres – Molecular arrangements in fibres.

2. General classification of fibres-chemical structure, production, properties and uses of the following natural fibres (a) natural cellulosic fibres (cotton and jute) (b) natural protein fibre (wool and silk).

UNIT II:

Chemical structure, production, properties and uses of the following synthetic fibres. (i) Man made cellulosic fibres (Rayon, modified cellulosic fibres) (ii) Man made protein fibres (Azions) (iii) Poly amide fibres (different types of nylons) (iv) Poly ester fibres (v) Acrylic fibres and (vi) Olefin fibres.

UNIT III:

Impurities in raw cotton and grey cloth, wool and silk- general principles of the

removal – Scouring – bleaching – Desizing – Kierboiling- Chemicking –Chemical and machinery use- Degumming and Bleaching of silk Scouring and Bleaching of wool.

UNIT IV:

Dyeing – Classification of dyes and their properties- applications – direct, basic, sulphur and azoic dyes on cotton. Application of Vat and solubilised vat dyes on cotton and viscose. Mordant mineral colours and black. Application of vegetable and other colour to cotton.

UNIT V:

Dyeing of wool and silk –Fastness properties of dyed materials – dyeing of nylon, terylene and other synthetics - Finishes given to fabrics- Mechanical finishes on cotton, wool and silk, method used process of mercerizing –Anti-crease and Anti-shrink finishes – Water proofing.

TEXT BOOKS:

1. Chemical Technology of fibrous Materials – F.sadov, M.Horchagin and A.Matetshy, Mir Publishers.
2. The Identification of Textile Fibres – Bruno Nuntak.

REFERENCE BOOKS:

3. Introduction to Textile Science -3rd edition, Maryory L.Joseph. B.Sc. Chemistry (Colleges) 2007-08 revised Page 34 of 57

Course Coordinator

HOD

P18MECH013	ELECTIVE – 1 – Diary Chemistry						L	T	P	C
	Total Contact Hours - 75						4	0	0	4
	Prerequisite B.Sc., Chemistry level									
	Course Coordinator Name & Department:- – Dr. P. Paulraj / Chemistry									
COURSE OBJECTIVES:- To make the students learn about the chemistry from the basic and understood all theoretical background with all concepts understands thoroughly.										
COURSE OUTCOMES (COs)										
CO1	Gain the knowledge about the concepts of Flavanoids and carbohydrates									
CO2	Understand about the concepts Terpenoids and alkaloids									
CO3	Apply its properties and uses of Steroids									
CO4	Analyze the detail about the Antibiotics, vitamins and prostaglandins									
CO5	Evaluate the importance of Aminoacids, proteins and nucleic acids									
CO6	Create the real time applications of Chemistry in day today life.									
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	PS O1	PS O2
2	CO1	2	3	3	1	1	1	3		
	CO2	3	3	1	2	2	3	3		
	CO3	2	2	2	2	3	2	3		
	CO4	2	2	2	2	2	2	3		
	CO5	2	3	3	2	2	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	47 th Academic Council Meeting								

UNIT I:

15

Milk: Definition-General composition of milk-physical properties of milk- colour, odour, acidity-natural and developed, specific gravity-Recknagel effect viscosity and conductivity, factors affecting the gross competition of milk, physico-Chemical change taking place in milk due to processing parameters-boiling pasteurization- sterilization and homogenization. Adulterants, preservatives and neutralizers-example and their detection.Estimation of fat, specific gravity, acidity and total solids in milk.

UNIT II:

15

Milk lipids-terminology and definitions classification – saponifiable (triglycerodes) and unsaponifiable matters (sterols and cholesterol) phospholipids-structure and properties (Lecithin and Cephalin) Milk fat constants-refractive index-saponification number, Iodine number, R.M.number, R.M number and polenske number - Milk proteins-Chemistry of proteins in general structure-N-terminal and Cterminal, hydrogen bond, disulphide bond and salt linkages, outlines of primary, secondary and tertiary structure of proteins. Physical properties of milk proteins-Electrical properties and hydration, solubility.Reaction of milk properties with formaldehyde and ninhydrin. Non-protein nitrogen constituents of milk, effect of heat on milk protein, milk enzyme and functions - Milk carbohydrate-Lactose-Its structure, solubility, hydrolysis, Oxidation and reduction, Estimation of lactose in milk - Milk vitamins-water and soluble vitamins, effect of heat and light on vitamins - Ash and mineral matters in milk.

UNIT III :

15

Creams: Definition-composition-chemistry of creaming process-gravitational and centrifugal methods of separation of cream-Factors influencing cream separation (Mention the factors only)-Cream neutralization. Estimation of fat in cream.**Butter:** Definition-% composition-manufacture-Estimation of fat, acidity, salt and moisture content-Desi butter.**Ghee:** Major constituents-common adulterants added to ghee and their detection-rancidity-definition-types (hydrolytic, oxidative and ketonic) prevention-antioxidants and synergists (natural and synthetic)-Measurements.

UNIT IV :Fermented milk products:

15

Fermentation of milk-definition, conditions, cultured milk-definition of culture-examples, conditions, types-cultured cream-cultured butter milk-Bulgaricus milk-acidophillus milk-yogurt. Racteriophage-definition and its function.**Indigenous products:** Definition percentage composition-preparation-physicochemical changes take place during khoa-making-khoa sweet-Gulabjamum, chana sweet-Rossogolla-ingredients and preparation.**Ice cream:** Definition-percentage composition-types-iungredients neededmanufacture of ice-cream stabilizers-emulsifiers and their role.

UNIT V : Milk powder:

15

Definition-need for making powder-drying process-spray drying, drum drying, jet drying and foam drying-principles involved in each. Manufacture of whole milk powder by spray drying process-keeping quality of milk powder.**Dairy Detergents:** Definition-characteristics-classification-washing procedure (modern method) sterilization-chloramin-T and hypochlorite solution.

TEXT BOOKS:

1. Outlines of Diary Technology-Sukumar De
2. Principles of Dairy Chemistry-Robert Jenness & S.Patorm.
3. Indian Diary products-K.S. Rangappa and K.T. Achaya.

REFERENCE BOOKS

4. Modern Diary Products-L.M. Lampert.
5. Principles of Dairy processing-Warner.

Course Coordinator

HOD

ELECTIVE PAPERS II

P18MECH021	ELECTIVE – 2 – Biological Chemistry						L	T	P	C
	Total Contact Hours - 75						4	0	0	4
	Prerequisite B.Sc., Chemistry level									
	Course Coordinator Name & Department:- – Dr. P. Paulraj / Chemistry									
COURSE OBJECTIVES:- To make the students learn about the chemistry from the basic and understood all theoretical background with all concepts understands thoroughly.										
COURSE OUTCOMES (COs)										
CO1	Gain the knowledge about the concepts of aminoacis and proteins									
CO2	Understand the theoretical concepts about the mechanism of enzymes and co-enzymes									
CO3	Apply its properties and uses of Nucleic acids									
CO4	Analyze the detail about the gaseous state, postulates and importance of Lipids									
CO5	Evaluate the importance of Carbohydrates									
CO6	Create the real time applications of Chemistry in day today life.									
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	PS O1	PS O2
2	CO1	2	3	3	3	1	3	3		
	CO2	3	3	1	2	2	3	3		
	CO3	2	3	3	2	3	2	3		
	CO4	3	3	1	1	3	2	3		
	CO5	3	3	3	2	2	3	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	47 th Academic Council Meeting								

Unit-I: Amino acids and proteins

15

Classification and structure of amino acids, configuration of amino acids, acid-base properties and isoelectric point, separation of amino acids, peptide bonds, disulfide linkages, proteins classification based on solubility, shape, composition and function, structure of

proteins, determination of the primary structure of a protein, secondary, tertiary and quaternary structures, protein denaturation.

Unit-II: Enzymes, co-enzymes and their mechanism of action **15**

Enzymes, Classification, kinetics, inhibition, mechanisms of enzyme action, cofactors as derived from vitamins, co-enzymes, prosthetic, prosthetic group and apoenzymes, structure and biological functions of coenzyme-A, thiamine pyrophosphate, pyridoxal phosphate, NAD⁺, NADP⁺, FAD, lipoic acid, overview of reactions catalysed by the above cofactors.

Unit-III: Nucleic acids **15**

Nature of genetic material, structure of purine and pyrimidine, nucleotides and nucleosides, types of nucleic acids, structure of DNA, properties of nucleic acids, -T_m, denaturation and renaturation, hypo and hyperchromicity, basic ideas on replication, transcription and translation, determination of the base sequence of DNA.

Unit-IV: Lipids **15**

Fatty acids classification, nomenclature, structure and properties of fatty acids - structure and function of prostaglandins, tri-acyl glycerol, structure and functions of phospholipids, spingomyelin, plasmalogens, structure and function of glycolipids, cholesterol.

Unit-V: Carbohydrates **15**

Classification of carbohydrates, stereo isomerism and optical isomerism of sugars, mutarotation, occurrence, structure and biological importance of mono, di and polysaccharides, an introduction to mucopolysaccharides, reactions of carbohydrates due to the presence of hydroxyl, aldehyde and ketone groups.

TEXT BOOKS:

1. D. L. Nelson, M. M. Cox, Lehninger Principles of Biochemistry, 5thEd., W. H. Freeman; New York, USA, 2005.
2. R. K. Murray, D. K. Grammer, Harper's Biochemistry, 29th Ed., McGraw Hill, Lange Medical Books, United Kingdom, 2009.

REFERENCES BOOKS:

1. J.L. Jain, S. Jain, N. Jain, Fundamentals of Biochemistry, S. Chand & Company. India, 2013.
2. P. Y. Bruice, Organic Chemistry, 5th Ed., Pearson, 2014.

Course Coordinator

HOD

P18MECH022	ELECTIVE – 2 – Medicinal Chemistry						L	T	P	C	
	Total Contact Hours - 75						4	0	0	4	
	Prerequisite B.Sc., Chemistry level										
	Course Coordinator Name & Department:- – Dr. P. Paulraj / Chemistry										
COURSE OBJECTIVES:-											
To make the students learn about the chemistry from the basic and understood all theoretical background with all concepts understands thoroughly.											
COURSE OUTCOMES (COs)											
CO1	Gain the knowledge about the properties and uses of Drug Design										
CO2	Understand about the theoretical concepts of Pharmacodynamics Chemistry										
CO3	Apply its properties and uses of Antibiotics and Antiinfective Drugs										
CO4	Analyze the detail about the Psychoactive Drugs										
CO5	Evaluate the importance of Therapeutic Agents, SAR and Their mode of Actions										
CO6	Create the real time applications of Chemistry in day today life.										
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	PS O1	PS O2	
2	CO1	2	3	3	1	1	1	3			
	CO2	3	3	1	2	2	3	3			
	CO3	2	2	2	2	3	2	3			
	CO4	3	3	2	2	2	2	3			
	CO5	2	2	3	2	2	2	3			
	CO6	2	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	47 th Academic Council Meeting									

UNIT-I - Drug Design:

15

Development of new drugs, procedures followed in drug design, concepts of lead compound and lead modification, concepts of prodrugs and soft drugs, structure-activity relationship (SAR), factors affecting bioactivity, resonance, inductive effect, isosterism bioisosterism, spatial considerations. Theories of drug activity: occupancy theory, rate theory, induced fit theory. Quantitative structure activity relationship. History and development of QSAR. Concepts of drug receptors. Elementary treatment of drug receptor interactions. PhysicoChemical parameters: lipophilicity, partition coefficient, electronic ionization

constants, steric, Free-Wilson analysis, Hansch analysis relationships between Free-Wilson and Hansch analysis.

UNIT-II - Pharmacokinetics and Pharmacodynamics:

15

Pharmacokinetics: Introduction to drug absorption, disposition, elimination using pharmacokinetics. Important pharmacokinetic parameters in defining drug disposition and in therapeutics. Mention of uses of pharmacokinetics in drug development process. Pharmacodynamics: Introduction, elementary treatment of enzyme stimulation, enzyme inhibition, sulphonamides, membrane active drugs, drug metabolism, xenobiotics, biotransformation. Significance of drug metabolism in medicinal chemistry.

UNIT-III - Antibiotics and Antiinfective Drugs:

15

Antibiotics: Structure, SAR and biological action of antibiotics. Examples: penicillin: penicillin G, penicillin V, ampicillin, amoxycillin, chloramphenicol, cephalosporin, tetracycline and streptomycin. Sulfonamides: Structure, SAR and mode of action of sulfonamides, sulfonamide inhibition and probable mechanisms of bacterial resistance to sulfonamides. Examples: sulfadiazine, sulfofurazole, acetyl sulfafurazole, Sulfaguanidine, Phthalylsulfo acetamide, Mafenide. Sulphonamide related compounds Dapsone. Local antiinfective drugs: Introduction and general mode of action. Examples: sulphonamides, furazolidone, nalidixic acid, ciprofloxacin, norfloxacin, chloroquin and primaquin

UNIT-IV - Psychoactive Drugs:

15

Introduction, neurotransmitters, CNS depressants and stimulants. SAR and Mode of actions. Central Nervous System Depressant: General anaesthetics. Sedatives & Hypnotics: Barbiturates and Benzodiazepines. Anticonvulsants: Barbiturates, Oxazolindiones, Succinimides, Phenacemide and Benzodiazepines. Psychotropic Drugs: The neuroleptics (Phenothiazines and butyrophenones), antidepressants (Monoamine oxidase inhibitors and Tricyclic antidepressants) and anti-anxiety agents (Benzodiazepines). Central Nervous System Stimulants: Strychnine, Purines, Phenylethylamine, analeptics, Indole ethylamine derivatives,

UNIT-V - Therapeutic Agents, SAR and Their mode of Actions:

15

Antineoplastic Agents: Cancer chemotherapy, role of alkylating agents and antimetabolites in treatment of cancer. Mention of carcinolytic antibiotics and mitotic inhibitors. Biological action of mechlorethamine, cyclophosphamide, melphalan, uracil, and 6-mercaptopurine. Cardiovascular Drugs: Antihypertensive and hypotensive drugs, antiarrhythmic agents, vasopressor drug Direct acting arteriolar dilators. Biological action of methyl dopa, propranolol hydrochloride, amyl nitrate, sorbitrate, verapamil, Atenolol. Antihistaminic agents: Ethylene diamine derivatives, amino alkyl ether analogues, cyclic basic chain analogues. Antifertility agents: General antifertility agents. Diuretics: Mercurial diuretic, Non mercurial diuretics (Thiazides, carbonic-anhydrase inhibitors, xanthine derivatives, pyrimidine diuretics and osmotic diuretics).

TEXT BOOKS:

1. An Introduction to Medicinal Chemistry, Graham L. Patrick.
2. Medicinal Chemistry: Principles and Practice Edited by F.D. King.

REFERENCES BOOKS:

1. Introduction to Medicinal Chemistry, Alex Gringuage.

Course Coordinator

HOD

P18MECH023	ELECTIVE–2–FOOD CHEMISTRY						L	T	P	C
	Total Contact Hours - 75						4	0	0	4
	Prerequisite: B.Sc., Chemistry									
	Course Coordinator Name & Department:- – Dr. P. Paulraj / Chemistry									
COURSE OBJECTIVES:- To make the students learn about the chemistry from the basic and understood all theoretical background with all concepts understands thoroughly.										
COURSE OUTCOMES (COs)										
CO1	Gain the knowledge about the Introduction of Food Chemistry									
CO2	Understand about the theoretical concepts of Constituents of Foods									
CO3	Apply its properties and uses of Foods and its Additives									
CO4	Analyze the detail about the Nutrition and Balanced Diet									
CO5	Evaluate the importance of Food Adulteration and Hygiene									
CO6	Create the real time applications of Chemistry in day today life.									
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	PS O1	PS O2
2	CO1	3	3	3	1	1	3	3		
	CO2	2	2	3	2	2	3	3		
	CO3	2	2	2	2	3	2	3		
	CO4	3	3	1	3	3	2	3		
	CO5	2	3	3	2	2	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	47 th Academic Council Meeting								

UNIT I: INTRODUCTION

15

Food: source, functions of food – food groups – food guide – basic five food groups, usage of the food guide – food in relation to health – objectives of cooking - **Water:** Purification processes – Ion exchangers, reverse osmosis, activated charcoal treatment. Use of chlorination, ozone, and UV light disinfection. Specification of drinking water. Water borne diseases – microbiological examination. Sources and detection - **Milk:** Composition and effectiveness as a diet. Fat content in milk, whole and skimmed - Effect of cooking and heat

processing of milk – pasteurization. Preservation of milk - Deep freeze preservation, dairy products – cheese, butter, ghee and kova. Spray drying technique – milk powder, infant food preparation. Lactose intolerance Milk substitutes – vegetable milk. Toned milk.

UNIT 2: CONSTITUENTS OF FOODS

15

Proteins: amino acids – peptides – proteins, modification of food products through heat processing .Effect of cooking – steaming or cooking under pressure of legumes - Enzymes: Nomenclature, classification – Apo, holo and coenzymes. Enzymes used in food processing - **Carbohydrates:** Classification, structure and reactions of monosaccharides, glucose, fructose, structure of sucrose, maltose, lactose and starch. Artificial sweetening agents.

UNIT 3: FOODS AND FOOD ADDITIVES:

15

Food additives: Artificial sweeteners – saccharin, cyclamate, aspartame – food flavours – esters, aldehydes and heterocyclic compounds. Antioxidants. Food colours – changes in cooking..Restricted use. Spurious colours. Emulsifying agents, preservatives – leavening agents. Baking powder – Yeast. Taste enhancers – MSG-vinegar - **Modern food:** Mushroom cultivation and types, spirulina composition. Snack foods - Production of bread, bun and biscuits. Raw materials, methods and machinery required - Candy manufacturing. Caramellisation. Fast foods. Instant foods. Dehydrated foods - Oleoresin of spices. Condiments.

UNIT 4: NUTRITION AND BALANCED DIET

15

Nutrition – calorific value of food stuff – RQ of food (Respiratory quotient of food) – basal metabolic rate – factors influencing BMR, specific dynamic action (SDA) of food - **Thermogenic effect** – energy requirements of individuals – diet and its components – the protein requirements – biological value of proteins, supplementary value of proteins. Diseases associated with protein malnutrition - Nutritional value of carbohydrates. – Fibers in the diet, dietary sugars – nutritional aspects of lipids.

UNIT 5: FOOD ADULTERATION AND HYGIENE

15

Adulterants: Common adulterants in different foods – milk and milk products, vegetable oils, and fats, spices and condiments, cereals, pulses, sweetening agents and beverages. Contamination with toxic chemicals – pesticides and insecticides. Principles involved in the analysis of detection and prevention of food adulteration - **Microbial growth:** growth curve of bacteria. Effect of environmental factors on growth of microorganisms. pH, water activity, oxygen availability temperature – beneficial effect of micro organisms Food borne illness – bacteria, virus, moulds and parasites. (Any two illness each) - **Food preservation and processing :** Food deterioration, methods of preservation and processing - **Quality control:** Specifications and standards: PFA, FPO, FDA, drug license, WHO standards, ISI specifications, packing and label requirements, essential commodities act, consumer protection act. AGMARK.

TEXT BOOKS:

1. Swaminathan M. Advanced Text Book on Food and Nutrition , Volume I and II Printing and Publishing Co., Ltd., Bangalore. 1993.
2. Swaminathan m. Text book on Food Chemistry, Printing and Publishing Co., Ltd., Bangalore. 1993.

REFERENCE BOOKS

3. Norman N. Potter ,Food Science, CBS Publishers And Distributors, New Delhi. 1994.

Course Coordinator

HOD

ELECTIVE PAPERS III

P18MCCH031	ELECTIVE – 3 - POLYMER CHEMISTRY						L	T	P	C
	Total Contact Hours - 60						4	0	0	4
	Prerequisite: II B.Sc., Chemistry									
	Course Coordinator Name & Department:- – Dr. P. Paulraj / Chemistry									
COURSE OBJECTIVES:- To make the students learn about the chemistry from the basic and understood all theoretical background with all concepts understands thoroughly.										
COURSE OUTCOMES (COs)										
CO1	Gain the knowledge about the introduction of polymer									
CO2	Understand about the method of polymerization									
CO3	Apply its properties and uses of polymer degradation									
CO4	Analyze the detail about the Industrial polymers									
CO5	Evaluate the importance of polymer processing									
CO6	Create the real time applications of Chemistry in day today life.									
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	PS O1	PS O2
2	CO1	2	3	3	1	1	1	3		
	CO2	3	3	1	2	2	3	3		
	CO3	2	2	2	2	3	2	3		
	CO4	3	3	1	1	1	2	3		
	CO5	2	3	3	2	2	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	47 th Academic Council Meeting								

UNIT 1 : INTRODUCTION TO POLYMER

12

Monomers, Oligomers, Polymers and their characteristics - Classification of polymers : Natural synthetic, linear, cross linked and network; plastics, elastomers, fibres, Homopolymers and Co-polymers - Bonding in polymers : Primary and secondary bond forces in polymers ; cohesive energy and decomposition of polymers - Determination of Molecular mass of polymers: Number Average molecular mass (M_n) and Weight average molecular

mass (Mw) of polymers and determination by (i) viscosity (ii) Light scattering method (iii) Gel Permeation Chromatography (iv) osmometry and ultracentrifuging.

Self study:

Molecular weight determination of high polymers by different methods.

UNIT 2 : KINETICS AND MECHANISM FOR POLYMERIZATION 12

Chain growth polymerization : Cationic, anionic, free radical polymerization, Stereo regular polymers : Ziegler Natta polymers - Polycondensation-non catalysed, acid catalysed polymerization, molecular weight – distribution - Step growth polymers

Self study: Degrees of polymerization

UNIT 3 : TECHNIQUES OF POLYMERIZATION 12

Bulk, Solution, Emulsion, Suspension, Melt polycondensation, solution polycondensation interfacial and gas phase polymerization - Types of Polymer Degradation, Thermal degradation, mechanical degradation, photodegradation, Photo stabilizers.

Self study: Solid and gas phase polymerization

UNIT 4 : INDUSTRIAL POLYMERS: 12

Raw material, preparation, fibre forming polymers, elastomeric material - Thermoplastics : Polyethylene, Polypropylene, polystyrene, Polyacrylonitrile, Poly Vinyl Chloride, Poly tetrafluoro ethylene, nylon and polyester - Thermosetting Plastics : Phenol formaldehyde and expoxide resin - Elastomers : Natural rubber and synthetic rubber - Buna - N, Buna-S and neoprene - Conducting Polymers : Elementary ideas ; examples : poly sulphur nitriles, poly phenylene, polypyrrole and poly acetylene.

Self study: Poly methylmethacrylate, polyimides, polyamides, polyurethanes, polyureas, polyethylene and polypropylene glycols

UNIT 5 : INTRODUCTION TO POLYMER PROCESSING : 12

Compounding: Polymer Additives: Fillers, Plasticizers antioxidants and thermal stabilizers fire retardants and colourants - Processing Techniques: Calendaring, die casting, compression moulding, injection moulding, blow moulding, extrusion moulding and reinforcing.

Self study: Film casting, Thermoforming, Foaming.

TEXT BOOKS :

1. V.R. Gowariker, Polymer Science, Wiley Eastern, 1995.
2. G.S. Misra, Introductory Polymer Chemistry, New Age International (Pvt) Limited, 1996.

REFERENCE BOOKS:

1. F. N. Billmeyer, Textbook of Polymer Science, Wiley Interscience, 1971.
2. Kumar and S. K. Gupta, Fundamentals and Polymer Science and Engineering, Tata McGraw-Hill, 1978.

Course Coordinator

HOD

P18MCCH032	ELECTIVE-3-SPECTROSCOPIC TECHNIQUES						L	T	P	C
	Total Contact Hours - 60						4	0	0	4
	Prerequisite – B.Sc., Chemistry Level									
	Course Coordinator Name & Department:- – Mrs. S. Vinitha / Chemistry									
COURSE OBJECTIVES:- To make the students learn about the chemistry from the basic and understood all theoretical background with all concepts understands thoroughly.										
COURSE OUTCOMES (COs)										
CO1	Gain the knowledge about the introduction of chemical kinetics									
CO2	Understand about the theoretical concepts of catalyst									
CO3	Apply its introduction of molecular spectroscopy									
CO4	Analyze the detail about the uses and importance of the spectral techniques									
CO5	Evaluate the importance of concepts involved in the photochemistry									
CO6	Create the real time applications of Chemistry in day today life.									
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	PS O1	PS O2
2	CO1	2	3	3	1	1	3	3		
	CO2	3	3	1	2	3	3	3		
	CO3	3	2	2	3	3	2	3		
	CO4	3	3	2	3	1	2	3		
	CO5	3	3	3	2	3	3	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	47 th Academic Council Meeting								

UNIT I: CHEMICAL KINETICS

12

Concept of rate of reactions – factors influencing rate of reaction – Rate law, rate constant, order and molecularity of reactions – differential and integral forms of rate equations for zero, first and second order reactions – third and fractional order reactions (no derivation) – half life period – pseudo first order reactions - Methods for the determination of order of reactions – integration method, differentiation method, graphical method, half-life method, and Oswald's isolation method - Experimental methods involved in the following kinetics of reactions: titrimetry, monometry, polarimetry, dilatometry and spectrophotometric techniques with examples

UNIT II - CATALYSIS

12

Acid–base catalysis – types and mechanisms – primary salt effect in ionic reactions - Enzyme catalysis – Characteristics of enzymes – factors affecting enzyme catalysis – derivation of Michaelis-Menton equation - Surface Chemistry – mechanism of catalytic action – unstable intermediate compound formation theory – adsorption or contact theory. Catalytic promoters and poisons - Adsorption isotherms – derivation of Freundlich and Langmuir adsorption isotherms – use of B.E.T. isotherm in surface area determination (derivation not required).

UNIT III - MOLECULAR SPECTROSCOPY I

12

Various types of spectra and the energy changes - Microwave spectroscopy – theory of rotational spectra of diatomic molecules – Stark effect – symmetric top molecules and asymmetric top molecules – isotopic effect – applications. calculation of bond length – its limitations - Infrared spectroscopy – theory of vibration-rotation spectra – types of vibration – force constant - Raman spectroscopy – Raman effect – theory – pure rotational Raman spectra – vibrational Raman spectra – comparison of IR and Raman spectra – structural determinations of simple molecules.

UNIT IV - MOLECULAR SPECTROSCOPY II

12

UV and Visible spectroscopy – Vibrational Coarse structure – Frank Condon Principle – The Fortrat diagram – Pre-dissociation - NMR spectroscopy – basic principles – chemical shift and spin-spin coupling – coupling constant – chemical shift reagents. ESR spectroscopy – basic principles – hyperfine splitting - Mass spectrometry – basic principles of mass spectrum – molecular peak, base peak, metastable peak – fragmentation – nitrogen rule – determination of molecular formulae with examples – identification of alcohols, aldehydes, aromatic hydrocarbons.

UNIT V – PHOTOCHEMISTRY

12

Classification of photochemical reactions – Jablonski diagram – Characteristics of photochemical reactions – comparison with thermochemical reactions – Laws of photochemistry – quantum yield – examples of reactions of simple and high quantum yield – primary and secondary processes photochemical chain reactions hydrogen–chlorine reaction –Photosensitization – chemiluminescence – photosynthesis – photodimerisation of anthracene. Fluorescence and phosphorescence – quenching of fluorescence and Stern–Volmer equation - Interaction of high–energy radiation with matter – radiolysis of water – hydrated electron.

TEXT BOOKS:

1. Physical and Theoretical Chemistry, C.D.George, P.M.Thomas and C.D.Joseph (1966).
2. Text Book of Physical Chemistry, P.L.Soni, O.P.Dharmara, U.N. Dash, Sultan Chand & Sons, New Delhi.

REFERENCE BOOKS:

3. Principles of Physical Chemistry, B.R.Puri, L.R.Sharma, M.S.Pathania, Shoban Lal Nagin Chand & Co. New Delhi.

Course Coordinator**HOD**

P18MCCH033	ELECTIVE – 3 – PHARMACEUTICAL CHEMISTRY						L	T	P	C
	Total Contact Hours - 60						4	0	0	4
	Prerequisite B.Sc., Chemistry level									
	Course Coordinator Name & Department:- – Mrs. S. Vinitha / Chemistry									
COURSE OBJECTIVES:- To make the students learn about the chemistry from the basic and understood all theoretical background with all concepts understands thoroughly.										
COURSE OUTCOMES (COs)										
CO1	Gain the knowledge about the basics of pharmaceutical chemistry									
CO2	Understand about the antibiotics and their activity.									
CO3	Apply its analgesic and antipyretic activities.									
CO4	Analyze the detail about the activities of anaesthetics and local anaesthetics.									
CO5	Evaluate the importance of clinical chemistry.									
CO6	Create the real time applications of Chemistry in day today life.									
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	PS O1	PS O2
2	CO1	2	1	3	1	1	1	3		
	CO2	3	3	1	2	2	3	3		
	CO3	3	2	3	2	3	2	3		
	CO4	3	3	2	1	1	2	3		
	CO5	3	3	3	2	2	1	3		
	CO6	3	3	1	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	47 th Academic Council Meeting								

UNIT I: Basics of Pharmaceutical Chemistry

12

Definitions – the terms – drugs, pharmacology, pharmacy, chemotherapy, therapeutics – pharmacologically active principles in plants – first aid – important rules of first aids, cuts, fractures, bleeding for blood, maintaining breathing burns and first aid box – tuberculosis (T.B.), jaundice, piles, typhoid, malaria, cholera – causes – symptoms, diagnosis – prevention and treatment – medicinally important compounds of iron – ferrous gluconate, ferrous sulphate and ferric ammonium citrate.

UNIT II: Antibiotics

12

Definition – introduction – classification and biological actions – penicillin, chloramphenicol, streptomycin and tetracycline – structure, properties and therapeutic uses – chemical structure and pharmacological activity – effect of unsaturation, chain length, isomerism, halogens, amino groups, hydroxyl groups and acid groups.

UNIT III:

12

Analgesic and Antipyretics Narcotic analgesic – analgesic action of morphine – derivatives of morphine – heroin and apomorphine – synthetic analgesics – pethidine, methadone – nonnarcotic analgesic – aspirin, paracetamol and phenacetin – analgin – preparation, properties and uses – ibuprofen and ketoprofen – structure and uses.

UNIT IV:

12

Anaesthetics and Local Anaesthetics Characteristics of anaesthetics – classification of anaesthetics – general anaesthetics – volatile anaesthetics – ether, chloroform and halothane – advantages and disadvantages – non-volatile anaesthetics (intravenous anaesthetics) – methohexitone and propanidid – structure and uses – cocaine and amethocaine – structure and uses – benzocaine and procaine – structure, synthesis and uses.

UNIT V:

12

Clinical Chemistry Determination of sugar (glucose) in serum – o-toluidine method – diagnostic test for sugar in urine – Benedict's test – detection of diabetes – detection of cholesterol in urine – detection of anaemia – estimation of haemoglobin (Hb concentration) – red cell count.

TEXT BOOKS:

1. Jayashree Ghosh, A Text Book of Pharmaceutical Chemistry; 5th Ed., S. Chand and Company Ltd., New Delhi, 2014.
2. S. Lakshmi; Pharmaceutical Chemistry; 1st Ed., S. Chand and Company Ltd., New Delhi, 1995.

REFERENCES BOOKS:

1. Bhagavathi Sundari; Applied Chemistry; 1st Ed., MJP Publishers, Chennai, 2006.

Course Coordinator**HOD**

OPEN ELECTIVE

P18OEBA001	ADVERTISING AND SALES MANAGEMENT						L	T	P	C
	Total Contact Hours – 30						2	0	0	2
	Prerequisite course –UG Level									
	Course Coordinator Name & Department:- T Manjiniprakash/BBA									
COURSE OBJECTIVES: - - Identify the terms and concepts that are commonly used in promotion and advertising. - Demonstrate preparation to comprehend the basic advertising. - Give the relationship which underlines these terms and conceptsTo 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.										
COURSE OUTCOMES (COs)										
CO1	Students gain basic knowledge of Advertising its functions, roles and development of advertising.									
CO2	Know about Advertising design and its strategies.									
CO3	Expose on Advertising, media and about its types.									
CO4	To forecast sales and its techniques used in management.									
CO5	Students were enriched about salesmanship, sales planning, budgeting.									
CO6	Develop an advertising plan and present and defend it persuasively.									
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	PS O1	PS O2
2	CO1	1	1	2	2	2	3	3		
	CO2	1	1	2	2	2	2	3		
	CO3	1	1	2	2	2	3	3		
	CO4	1	1	2	2	3s	3	3		
	CO5	1	1	2	3	2	2	3		
	CO6	1	1	2	2	2	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 Advertising- Definition -Roles of Advertising- Functions of Advertising- Steps in Development of Advertisement	
Unit – II	6
Advertising Design- Appeals- Structure of an Advertisement - Message Strategies - Cognitive strategy- Executional Strategies-Creating Advertising- Advertising Effectiveness.	
Unit–III	6
Advertising Media - Merit and demerits- Kinds of Advertising - Advertising Media- print media - Broadcasting media- Non-media advertising- online advertising.	
Unit – IV	6
Sales Management - Defining - Objectives -Strategies- Sales Executives – Functions - Qualities - Sales Presentation Techniques - Emerging Trends in Sales Management.	
Unit - V	6
Selling Concept - Objectives- scope and techniques of Salesmanship- Sales Planning- Importance – process- Sales Budget- Objectives-uses of sales Budget.	

Text book

1. Advertising & promotion: George E.Belch, THM
2. Advertising Management, Dr. Varma&Aggarwal, kingBooks

References:

1. Sales promotion and advertising management by M .N.Mishra. Himalaya Publication.
2. Advertising and sales management by SanjeevChauhan (Astha publication)
3. Anderson, Hair, Bush: Professional Sales Management, McGraw Hill, Singapore.

Course Coordinator

HOD

P18OEBA002	BPO MANAGEMENT						L	T	P	C	
	Total Contact Hours – 30						2	0	0	2	
	Prerequisite course – UG Level										
	Course Coordinator Name & Department:- .P.Srinivasan/ Business Administration										
COURSE OBJECTIVES: - - To familiarize the students with the basic fundamentals of BPO industry - To impart knowledge on BPO industry - To enable the students on the concept of various decisions in Business Process Outsourcing											
COURSE OUTCOMES (COs)											
CO1	Develop a strategic understanding of the concepts of BPO’s and its benefits										
CO2	Explaining various models used in functioning of BPO’s and Trends.										
CO3	Describe the opportunities and challenges in Human Resources BPO										
CO4	Analyzes about call centers its functions, processes and classifications										
CO5	Developing efficiency in understanding the customers and capabilities in handling calls.										
CO6	To understand the future trends in BPO industry										
Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low											
	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	
	CO1	3	2	1	2	2	1	2			
	CO2	3	1	2	1	3	2	1			
	CO3	3	2	1	2	2	1	2			
	CO4	2	3	2	1	2	1	3			
	CO5	2	2	1	2	1	3	2			
	CO6	1	2	2	3	1	2	1			
3	Category	Humanities & Social Studies (HS)	Basic Sciences (BS)	Enngsciencs(E S)	Professional	Professional Core (PC)	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 – Meaning – definition - Basics - Benefits - BPO Models - - BPO Companies in India.	
UNIT-II	6
Healthcare BPO – Structure of the American Healthcare Sector – Activity Profile –Future Trends and Threats – Case Study – Cbay Systems.	
UNIT - III	6
Human Resource BPO – Reasons for outsourcing HR – Activities involved in HR BPO – HR Outsourcing Trends – Career in HR BPO – Emerging BPO Domains – Media and Entertainment BPO – Publishing BPO.	
UNIT – IV	6
Call Centres – Functions – Processes – classifications – Telemarketing – Tele selling – Preparing for a Job – Approach – Training – Selection Process.	
UNIT – V	6
Improving Efficiency – Handling Calls – Team Player – Pleasing the Customers – Converse efficiently – Reducing stress.	

TEXT BOOKS:

- 1.BPO Industry in India by S K Awasthi by Jain Book
- 2.Business Process Outsourcing: Its Prospects and Challenges by Barua.

REFERENCE BOOKS

- i) SudhindraMokhasi(2009) ,BPO – Sutra : True stories from India’s BPO and call centres, -Rupa& Co.
- ii) Kulkarni, Sarika.(2005), Business process outsourcing – Delhi, Jaico Publishing House.
- iii) Shikapur, Deepak(2004), BPO Digest. Ameya Inspiring Books.

Mr.P.Srinivasan

CourseCoordinator

HOD

P18OEBA003	CALL CENTER MANAGEMENT-Voice and Non Voice						L	T	P	C
	Total Contact Hours –30						2	0	0	2
	Prerequisite course – UG Level									
	Course Coordinator Name & Department:-A.Jhony / BBA									
COURSE OBJECTIVES:- - Develop and motivate a call centre team. - Get the most out of call monitoring technology and prepare effective management reports. - React to and plan for operational bottlenecks. - Give meaningful feedback to call-centre agents and set achievable goals and targets. - Students will learn about the roles and methods of different kinds of call centers. They will apply this by designing their own call center and trying to anticipate customer needs.										
COURSE OUTCOMES (COs)										
CO1	Gaining a basic knowledge about call centers its functioning and classifications.									
CO2	To know about handling the Issues and problems related to calls in a efficient manner.									
CO3	Gives knowledge of technical communications, speech process and educate conversation of oral skills.									
CO4	Students acquire knowledge towards pre-interview about Interview questions and answering techniques									
CO5	Analyses fully about the medias of communications.									
CO6	Demonstrate awareness of the pragmatics of call center planning and operation									
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	PS O1	PS O2
	CO1	1	3	3	1	1	1	3		
	CO2	1	3	3	2	2	1	3		
	CO3	1	3	3	2	1	1	3		
	CO4	1	3	2	2	1	1	3		
	CO5	1	3	2	1	1	1	3		
	CO6	1	3	3	2	1	1	3		
	Category	Humanities & Social Studies (HS)	Basic Sciences (BS)	Engg Sciences (ES)	Professional Core	Core Elective	Non-Major Elective (NE)	Open Elective (OE)	Any other	Project/Term Paper/ Seminar/ Internship(PR)
								✓		
4	Approval	Academic Council Meeting								

UNIT – I	6
Call centers – Meaning – Functions – Processes - Classifications – Tele selling – Types of call centers.	
UNIT – II	6
Improving Efficiency – Handling calls – Team Players – Components and working of call center – Issues and problems.	
UNIT – III	6
Nature of Technical communication: Stages of communication – Nature of Technical Communication - The speech process – Conversation and Oral skills.	
UNIT – IV	6
Job Interview: Pre – Interview preparation techniques – Interview questions – Answering Strategies – Frequently asked Interview questions.	
UNIT – V	6
Communication media – Telephone – Fax – Internet – Email – Video conferencing.	

TEXT BOOKS

1. Brad Cleveland - Call Center Management on Fast Forward: Succeeding in the New Era of Customer Relationships (3rd Edition) Third Edition,
2. Mr. Thomas Anthony Laird - Advice from a Call Center Geek: Rethinking Call Center Operations,

REFERENCE BOOKS

1. W. Stallings “Data and Computer Communication” Pearson Education, 5 Edition, 2001.
2. M. AshrajRizvi,” Effective Technical Communication”, Tata McGraw – Hill Education, 2005.
3. R.S.N.Pillai&Bagavathi – Modern commercial correspondence.

A.Jhoncy

Course Coordinator

HOD

P18OEBA004	CUSTOMER RELATIONSHIP MANAGEMENT						L	T	P	C
	Total Contact Hours – 30						2	0	0	2
	Prerequisite course – UG Level									
	Course Coordinator Name & Department:- Dr.DArun Kumar /BBA									
COURSE OBJECTIVES: - - To Popularizethe students with the basic fundamentals of CRM. - To improve knowledge & skills on Customer relationship of Marketing strategy. - To develop the students on the concept of Customer service.										
COURSE OUTCOMES (COs)										
CO1	To popularize with the basicsof CRM.									
CO2	Can increase awareness about Customer relationship.									
CO3	Able to be aware of the concept of Customer service.									
CO4	Can respond to the concept of Customer needs.									
CO5	Develop confidence in the practical aspects of Customer Satisfaction									
CO6	Identify the main Customer Expectations.									
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	PO 2	PO3	PO4	PO5	PO6	PO7	PS O1	PS O2
2	CO1	1	1	1	1	1	1	3		
	CO2	1	1	1	2	2	2	3		
	CO3	1	1	3	1	3	1	3		
	CO4	1	1	2	1	1	2	3		
	CO5	1	1	2	1	1	1	3		
	CO6	1	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

CRM – Introduction – Definition – Need for CRM – Customer satisfaction – Customer loyalty – Product Marketing – Direct Marketing-

UNIT – II

6

Customer learning relationship – Key stages of CRM - Force driving CRM – Benefits of CRM – Growth of CRM Market in India – Key principles of CRM.

UNIT - III

6

CRM – Program – Ground work for effective use of CRM – Components of CRM – Types of CRM.

UNIT - IV

6

CRM Process - Frame work – Governance process- Performance evaluation process.

UNIT

–

V

6

Use of Technology in CRM – Call center process – CRM Technology tools – Implementation – Requirements analysis – selection of CRM Package – reasons and failure of CRM.

TEXT BOOK

1. Kristin Anderson & Carol Kerr – Customer Relationship Management – McGrawHill 2002
2. Sheth – Customer Relationship Management – McGraw Hill Edition 1st Edition 2000

REFERENCE BOOK

1. Dr. P .Sheela Rani – Customer Relationship Management – Margham Publication.
2. K. Balasubramaniam – Customer Relationship Management – GIGO Publication, 2005.
3. Dr. Ravi Kalakota E – business – Road map for success, Pearson education Asia, 2000.

Dr.D.ArunKumar

CourseCoordinator

HOD

P18OEBA005	ENTREPRENEUR DEVELOPMENT						L	T	P	C
	Total Contact Hours – 30						2	0	0	2
	Prerequisite course – UG Level									
	Course Coordinator Name & Department:- Dr.DArun Kumar /BBA									
COURSE OBJECTIVES: - - To make publicity on the students with the basic fundamentals of Entrepreneur Development - To improve knowledge & skills on Entrepreneurship. - To develop the students on the concept of Entrepreneurial skills.										
COURSE OUTCOMES (COs)										
CO1	To popularize with the basicsof Entrepreneur development.									
CO2	Can increase awareness about Entrepreneurship.									
CO3	Able to be aware of the concept of Entrepreneurial skills.									
CO4	Can respond to the concept of Entrepreneurial knowledge.									
CO5	Develop confidence in the practical aspects of Business Opportunity.									
CO6	Identify the main Innovations in Entrepreneurial Development.									
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	PO 2	PO3	PO4	PO5	PO6	PO7	PS O1	PS O2
2	CO1	1	1	1	1	1	1	3		
	CO2	1	1	1	2	2	2	3		
	CO3	1	1	3	1	3	1	3		
	CO4	1	1	2	1	1	2	3		
	CO5	1	1	2	1	1	1	3		
	CO6	1	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

Introduction to Entrepreneurship: Meaning and concept of entrepreneurship - the history of entrepreneurship development - role of entrepreneurship in economic development

UNIT – II 6

The Entrepreneur: Meaning of entrepreneur - the skills required to be an entrepreneur, and role models, mentors and support system.

UNIT – III 6

Business Opportunity Identification: Business ideas, methods of generating ideas - legal form of new venture, protection of intellectual property -marketing the new venture.

UNIT – IV 6

Preparing a Business Plan: Meaning - significance of a business plan - components -feasibility study.

UNIT – V 6

Financing the New Venture: Importance - types of ownership securities - venture capital - types of debt securities -determining ideal debt-equity mix - financial institutions and banks.

TEXT BOOK

1. Robert D. Hisrich, Mathew J Manimala, Michael P Peters, Dean A Shepherd, “Entrepreneurship”, 9e, McGraw Hill Education, 2014.
2. Peter F. Drucker, “Innovation and Entrepreneurship”, Harper Collins, 2009.

REFERENCE BOOK

1. John Bessant, Joe Tidd, “Innovation and Entrepreneurship”, 2e, Wiley India Private Limited, 2012.
2. Robin Lowe, Sue Marriott, "Enterprise: Entrepreneurship and Innovation: Concepts, Contexts and Commercialization" 1e, Routledge, 2012.
3. Veera Bhadrappa Havinal – Management Entrepreneurship – New Age International Publishers.

Dr.D.ArunKumar

CourseCoordinator

HOD

P18OEBA006	ADVANCE HUMAN RESOURCE MANAGEMENT	L	T	P	C
	Total Contact Hours – 30	2	0	0	2
	Prerequisite course – UG Level				
	Course Coordinator Name & Department:- P.Srinivasan / BBA				

COURSE OBJECTIVES:-

- Today's competitive business environment owes its success to effective management of its human resource.
- The quality of the organization's employees, their attitude, behavior and satisfaction with their jobs, and their behavior towards ethics and values and a sense of fair treatment all impact the firm's productivity, level of customer service, reputation, and survival.
- The students of human resources management must aware of basic aspects of human resource management to understand the functioning of human resource management in an organizational setting.
- Students gained knowledge in the present day human resources development practice by incorporate themselves in the changing environment of HRM.

COURSE OUTCOMES (COs)

CO1	Identify how firms gain a sustainable competitive advantages through people
CO2	To be aware of the responsibility managers of have concerning human resource management
CO3	Identify the importance of change management.
CO4	To implement basics compensation and performance appraisal
CO5	Importance of labour welfare and grievance handling for employment
CO6	Understand the importance of Employee participation and Relations.

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	PS O1	PS O2
2	CO1	1	3	3	1	2	1	3		
	CO2	1	2	3	2	1	2	3		
	CO3	1	2	3	2	2	3	3		
	CO4	1	3	2	1	1	3	3		
	CO5	1	2	3	2	2	1	3		
	CO6	1	2	2	2	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

Human Resource Function- Human Resource Philosophy – Changing environments of HRM
– Strategic human resource management – Role of HR Managers.

UNIT – II **6**

Recruitment & Placement: Sources, Developing and using application forms - IT and online recruitment - Selection process, basic testing concepts - types of test - work samples & simulation - selection techniques – interview - Designing & conducting the effective interview - computer aided interview.

UNIT – III **6**

Training & Development: Employee Orientation- Training process- Need analysis- Training techniques- special purpose training- Performance appraisal: Methods - Problem and solutions - MBO approach - Performance appraisal in practice.

UNIT – IV **6**

Basic Compensation & Pay plans - factors determining pay rate - Current trends in compensation - Computerized job evaluation - financial incentives - benefits - Insurance benefits - retirement benefits – welfare measure

UNIT – V **6**

Trade unions - Discipline administration - grievances handling - Labour Welfare: Importance & Implications of labour legislations - Employee health.

TEXT BOOKS

1. Dr. R.Venkatapathy&AssissiMenacheri, Industrial Relations &Labour Welfare, Adithya Publications, CBE, 2001. 5. Robert L.Gibson and Marianne H.Mitchell, Introduction to Counseling and Guidance, VI edition, PHI, 2005
- 2.
3. L.M. Prasad – Human Resource Management – S. Chand & Sons – 2007.

REFERENCEBOOKS

1. Gary Dessler, "
2. zo& Stephen P.Robbins, Personnel/Human Resource Management, Third edition, PHI/Pearson.
3. VSP Rao, Human Resource Management: Text and cases, First edition, Excel Books, New Delhi - 2000.
4. P.SrinivasanHuman Resource Management", Seventh edition, Prentice-Hall of India P.Ltd., Pearson.

David A. DeCen

D.K.SOWMIYALAKSHMI

Course Coordinator

HOD

P18OEBA007	LOGISTICS & SUPPLY CHAIN MANAGEMENT							L	T	P	C
	Total Contact Hours – 30							2	0	0	2
	Prerequisite course: UG Level										
	Course Coordinator Name & Department:- T.Manjiniprakash / BBA										
COURSE OBJECTIVES:- - To make the students to understand the usefulness of logistics and supply chain. - This document lists the course’s major subject areas and the knowledge, comprehension, application, analysis, synthesis and evaluation skills that they are designed to impart. - Identify the sources of cost in a supply chain. - Define inventory and types of inventory in a supply chain. - Define transportation cost and identify the factors that contribute to this cost. - Calculate inventory cost and transportation cost for a logistics problem. - Define fixed and variable cost. - Understand the economies of scale in transportation and inventory cost											
• COURSE OUTCOMES (COs)											
CO1	Identify and Analyze Business Models, Business Strategies and corresponding Competitive Advantage.										
CO2	Formulate and implement Warehouse Best Practices and Strategies.										
CO3	Plan Warehouse and Logistics operations for optimum utilization of resources										
CO4	Apply logistics and purchasing concepts to improve supply chain operations										
CO5	Apply quality management tools for process improvement										
CO6	Create an ideas about logistics and supply chain 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	1	1	2	1	1	1	3			
	CO2	1	2	3	3	2	3	3			
	CO3	1	1	3	3	3	3	3			
	CO4	1	1	2	3	1	2	3			
	CO5	1	2	2	1	1	1	3			
	CO6	1	1	3	2	3	3	3			
3	Category	Humanities & Social Studies (HS)	Basic Sciences (BS)	Engg Sciences (ES)	Professional Core	Core Elective	Non-Major Elective (NE)	Open Elective (OE)	Any other	Project/Term Paper/ Seminar/ Internship(PR)	
								✓			
4	Approval	Academic Council Meeting									

UNIT –I**6**

Logistics management and Supply Chain management - Definition, Evolution, Importance. The concepts of logistics. Logistics relationships - Functional applications - Logistics Organization - Logistics in different industries.

UNIT –II**6**

Logistics Activities: – objectives, solution. Customer Service, Warehousing and Material Storage, Material Handling, information handling and procurement Transportation and Packaging - Reverse Logistics - Global Logistics

UNIT-III**6**

Fundamentals of Supply Chain - Development of SCM - Strategic Supply Chain Management and Key components - Drivers of Supply Chain Performance – key decision areas – External Drivers of Change.

UNIT-IV**6**

Supply Chain Drivers and Design Drivers of supply chain performance: Framework for structuring Facilities warehouse – Inventory – Transportation – Information - Sourcing, and Pricing – Revenue management.

UNIT-V**6**

Demand and Inventory Aggregate Planning in a Supply Chain: role - strategies Implementation Responding to predictable variability in supply chain – Types of supply chains - creating responsive supply chains lean

TEXT BOOKS

1. Supply Chain Management: Ronald H. Ballou, Samir K. Srivastava, Pearson Education Ltd, Jan 2007.
2. Supply Chain Management: Anil Sinha, McGraw Hill Education, August 2011.

REFERENCE BOOKS

1. Logistics And Supply Chain Management: Martin Christopher, Pearson Education Ltd, 2016.
2. Supply Chain Management: Sunil Chopra, Peter Meindl, Dharma Virus Kalra, Pearson Education Ltd, 2016.
3. Supply Chain And Logistics Management: V. Anandaraj, S. Kumaran, Ishanka Saikira, Airwalk Publication, Jan 2018.

T.Manjiniprakash.

Course Coordinator

HOD

P18OEBA008	OFFICE MANAGEMENT						L	T	P	C
	Total Contact Hours – 30						2	0	0	2
	Prerequisite course – UG Level									
	Course Coordinator Name & Department:- D.K.Sowmiyalakshmi /BBA									
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.										
COURSE OUTCOMES (COs)										
CO1	To make them understand office management and duties of an office manager									
CO2	To give an idea about proper filing and indexing of office documents									
CO3	To understand the principles of record management and different types of records in business organization.									
CO4	To enable them to aware about safety hazardous and steps to improve office safety.									
CO5	To introduce different measures of office work									
CO6	Create an ideas about office 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	PO 2	PO3	PO4	PO5	PO6	PO7	PS O1	PS O2
2	CO1	1	1	1	1	2	1	3		
	CO2	1	1	1	2	2	2	3		
	CO3	1	1	3	1	3	1	3		
	CO4	1	1	2	1	1	2	3		
	CO5	1	1	2	1	3	1	3		
	CO6	1	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

Introduction: Meaning, functions and importance of office management; office management and organization. Principles of office management and organization. Principal departments of modern office.

UNIT-II

6

Office Manager: qualities of office manager. The authorities and responsibilities of an office manager. Office accommodation: Selection of site. Office layout. Environment and working conditions.

UNIT-III

6

Office equipment's - Reproduction equipment - Typewriter - Duplicators - Photo Copier - Communication Equipment - Intercom - Telephone - Use of Computers in Office Management Office System - Procedure - Routine - And methods - Paper work in office Filling functions.

UNIT-IV

6

Office Communication: Various means of communication- Their use, Correspondence through Internet - Office Correspondence -Central vs. Departmental Correspondence - Handling Mail - Postal Services - Oral written - Internal and external communication - Records Management Types - Forms Controls - Principles - Foremost -Continuous stationery

UNIT-V

6

Office Supervisor - Meaning and characteristics of Supervisor - Status - Place and Role of Supervisor - Effective Supervisor - Qualification - skill of Supervisor.

TEXT BOOKS

1. Modern Office Management: N. D Sharma, And Publishers, Jan 2006.
2. Office Management: Prashansa K. Ghosh, S. Chand & Sons, Jan 2010

REFERENCE BOOKS

1. Office Management: R.S.N Pillai&Bhagavathi, S. Chandler & Come, Dec 2010.
2. Office Management: R. Nangia, G. K Gupta, Crescent Publishing House.
3. Office Management: Dr. R. K Chopra, PriyankaGauri, Himalaya Publishing House, Jan 2017.
4. Of Non-Trading Organization-Receipts And Payment Account- Income And Expenditure Account

D.K.Sowmiyalakshmi

CourseCoordinator

HOD

P18OEVC001	PHOTOGRAPHY AND VIDEOGRAPHY						L	T	P	C
	Total Contact Hours – 45						2	0	0	2
	Prerequisite – UG Level									
	Course Coordinator Name & Department:- L.Rakesh – Dept of Visual Communication									
COURSE OBJECTIVES - To understand the fundamentals of Photography and Videography - To examine the technical factors of indoor and outdoor photography and Videography - To enable the students to equip themselves to become a photography and Videography professionals.										
COURSE OUTCOMES (COs)										
CO1		Can analyze the fundamentals of Photography and Videography								
CO2		Understanding of the camera operations								
CO3		Evaluating the lighting								
CO4		Can be aware of the wrong exposures								
CO5		Can promote various types of photography and Videography								
CO6		Understanding the concept of photo-journalism								
	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	1	3	2	1	2	2	1		
	CO3	2	1	3	1	2	1	3		
	CO4	2	2	3	1	2	3	1		
	CO5	2	1	1	1	1	1	1		
	CO6	3	3	3	3	3	3	3		
3	Category	Humanities & Social Studies	Basic Sciences (BS)	Engg Sciences (ES)	Professional Core (PC)	Core Elective (CE)	Non-Major Elective	Open Elective (OE)	Any other	
					✓					
4	Approval	Academic Council Meeting								

UNIT-I:

6

Human Eye and Camera. Basics of Camera (aperture, shutter speed, focal length, f-stop, depth of field etc.,) Camera operations, Introduction to Television Production, Types of telecasting, Television Crew, an overview of direction.

UNIT-II:**6**

Types of Still and video cameras. Types of Lenses. Visual Perception, Art direction, floor management- indoor & outdoor, production management, budget preparation. Locations: Indoor, set, on-sights sets, - Outdoor on-sight sets, blue matte. Etc.,

UNIT-III:**6**

Understanding lighting-indoor and outdoor, Exposing and Focusing, Types of lighting, Natural and Artificial Lights, Controlling lights, Exposure Meters. Camera techniques & operation, Framing, shots & movements (wide, medium, close ups, shadow, zoom, pan, tilt, aerial etc.),

UNIT-IV:**6**

Photography for advertising-Consumer and industrial. Usage of various types of camera lenses (Normal, Tele, Zoom etc.), usages of various filters (day ,night, colour correcting filter, diffusion filter), objectives TV lighting, various types of Lights (baby, Junior, Senior, etc.,)

UNIT- V:**6**

Basics of photo-journalism, Photo-features, Photo - essays, Writing captions, Visual story telling. Planning a shoot-studio, location, set props and casting.Colour temperature, lighting for different situations (interviews, indoor, out-door), types of lighting(Back, Front, full, semi, etc.,)

TEXT BOOKS:

1. The Art of Photography: A Personal Approach to Artistic Expression, Barnbaum, Bruce, Rocky Nook
2. Photography Demystified: Your Guide to Gaining Creative Control, David McKay, Photography Inc.
3. Television Productions: A History of All Series and Pilots, by [Jon Abbott](#), Publisher: McFarland & Company (May 13, 2009)
4. Production Management for TV and Film: The Professional's Guide, Methuen Drama (August 1, 2010)

REFERENCE BOOKS:

1. The Photographer's Eye, Szarkowski, John, The Museum of Modern Art, New York (Publisher)
2. Creative Composition: Digital Photography Tips and Techniques, Davis, Harold, Wiley
3. From Concept to Screen: An Overview of Film and Television Production, Robert Benedetti, Pearson; 1 edition (June 11, 2001)
4. The Television Handbook, Routledge, Holland, P (1998)

Course Coordinator**HOD**

Sub. code :	Subject name : SOFT SKILLS						L	T	P	C
	Total Contact Hours – 30						2	0	0	2
	P18OEEN001						Prerequisite – UG 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 confidence and fluency in speaking English.								
CO4		Analyze the learners to fine-tune their linguistic skill with communication globally								
CO5		Evaluate the excellence in both personal and professional life								
CO6		Create the performance of learners at placement interviews and other recruitment procedures.								
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	PS O1	PS O2
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	Academic Council Meeting								

UNIT I- LISTENING / VIEWING

6

Listening and note-taking – Listening to telephonic conversations – Ted talks – Inspiring Speeches – Watching documentaries on personalities, places, socio-cultural events, TV

news programmes and discussions to answer different kinds questions, viz., identifying key idea and comprehension questions... so on.

UNIT II- SPEAKING

6

Elements of presentation skills-Structure of presentation-presentation tools- mock interviews – group discussion – introducing one self and others – welcome address and proposing a vote of thanks- role play – debating.

UNIT III - READING

6

Different genres of text (literature, media, technical) for comprehension – Reading strategies like note-making – reading graphs, charts and graphic organizer – Sequencing sentences – reading online sources like e-books, e-journals and e-newspapers.

UNIT IV – WRITING

6

Resume/Report preparation/Letter Writing-Structuring the resume-comprehension- Describing charts and tables – writing for media on current events.

UNIT V- PROJECT

6

Gender injustice: Dowry-Violence against women -Sexual Harassment -Eve teasing-Female infanticide-Prostitution. **Social problem:** Poverty-unemployment-Child Labour-Terrorism-Drug abuse-Alcoholism-Corruption. **Industrial problem:** Work and Labour organization-Elements-Principles-Staff and Functional Activities. **Industrial Conflict:** Strikes-Disputes-Grievances-Industrial development in India-Steps in Automation process-Industrial policy-Liberation.

Text books

1. Rizvi ashraf ,Effective Technical Communication , Tata amcgraw Hill Education Private Ltd,New Delhi,2011.
2. Townsend Roz , Presentation skills for the upwardly mobile , Emerald Publishers .

Reference

1. T.M.Farhathullah, communication skills for Technical students, Orient Longman Ltd,2002.
2. Andree J Rutherford, Basic communication skills for Technology, Pearson Education,Asia (Singapore) Pte.Ltd, Banglore , 2001.

Course Coordinator

HOD

Sub. code : P18OEEN002	Sub name: MASS MEDIA AND COMMUNICATION						L	T	P	C
	Total Contact Hours – 30						2	0	0	2
	Prerequisite – UG Level									
	Course coordinator :- Dr.P.AROCKIA NATHAN Dept of English									
COURSE OBJECTIVES : To impart students with the efficient knowledge of important events in through literature										
COURSE OUTCOMES (COs)										
CO1	Remember the art of writing, report and editing									
CO2	Understand the skills of writing									
CO3	Apply the Role & importance in social change									
CO4	Analyze the social structure of Indian society									
CO5	Evaluate the growth & development of communication and media									
CO6	Create the interpreting the meaning from the text									
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	PS O1	PS O2
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	Academic Council Meeting								

UNIT I -Communication and Media	6
Communication & Media: Definition, meaning and concept. Different types of communication: verbal and written Scope and Process of Mass Media & Communication	
UNIT II -History of Mass media	6
History of the development of electric media in India: Radio & TV Role of media in society, Impact of media on audience, Media effects, limitations and different form of media.	
UNIT- III- Role & Responsibilities	6
Role and responsibilities of journalist, ethics, careers, Media management, Media laws in India, and freedom of press Qualities and Responsibilities of a reporter	
UNIT IV -Theories & Principles	6
Theories and Principles of Editing Communication and theories of social change, Role of media in social change, Development communication	
UNIT V-Technology & Development	6
Changing trends of mass communication under the process of globalization Technology in the development of media.	

Text Books

1. Vivian, John, Mass Media & communication Boston, Massachusetts : Pearson Allyn and Bacon, c.2008.
2. Stovall, James Glen, Writing for the mass media, New Jersey : Pearson Education, Inc., c.2012

Reference Books:

1. Parthasarathy, Rangaswami, journalism in India, sterling Publisher pvt. Ltd. New Delhi.
2. D.S. Mehta. Mass communication and Journalism in India New Delhi, Allied Publishers, 2011

Course Coordinator

HOD

P18OESC001	COMPUTER APPLICATIONS						L	T	P	C
	Total Contact Hours – 30						2	0	0	2
	Prerequisite course – UG Level									
	Course Coordinator Name & Department:- Dr. S.Thiru Nirai Senthil / 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	Identify 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	PS O1	PS O2
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,2010.
2. Alexis Leon & Mathews Leon, “Fundamentals of Information Technology”, Vikas Publishing House, New Delhi,2009.

REFERENCE BOOKS:

1. Rajeev Mathur, “Dos Quick Reference”, Galgotia Publications.

Course Coordinator

HOD

P18OESC002	MULTIMEDIA						L	T	P	C
	Total Contact Hours – 30						2	0	0	2
	Prerequisite course – UG Level									
	Course Coordinator Name & Department:- Dr. S.Thiru Nirai Senthil / BCA									
COURSE OBJECTIVES:- To Understand 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	PS O1	PS O2
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 to multimedia”,1998.
2. Mohammad Dastbaz, “Designing Interactive Multimedia Systems”,2002.

Reference Books

1. Bohdan O. Szuprowicz, “Multimedia Networking”,1995.
2. Stephen McGloughlin, “Multimedia on the web”,1997.

Course Coordinator

HOD

P18OESC003	ADVANCED EXCEL						L	T	P	C
	Total Contact Hours – 30						2	0	0	2
	Prerequisite course – UG Level									
	Course Coordinator Name & Department:- S.Anupriya / 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	PS O1	PS O2
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 Subtotals , 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 Goldmeyer, “Advanced Excel Essentials” ,A Press, 2015 edition.

Reference Books

1. John Walkenbach, “Microsoft Excel 2013 Bible”, Wiley Publications,2013.

Course Coordinator**HOD**

P18OESC004	WEB DESIGNING						L	T	P	C
	Total Contact Hours – 30						2	0	0	2
	Prerequisite course – UG Level									
	Course Coordinator Name & Department:- V.Ramya/BCA									
COURSE OBJECTIVES:- To Understand the basic web designing concepts.										
COURSE OUTCOMES (COs)										
CO1	Gain knowledge in web basics and server side scripting.									
CO2	Execute the HTML coding.									
CO3	Apply hyper links between webpages									
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	PS O1	PS O2
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, 2010.
4. T. A Powell, “Complete Reference HTML (Third Edition)”, TMH, 2002.

Course Coordinator

HOD

P18OESC005	PHOTOSHOP						L	T	P	C
	Total Contact Hours – 30						2	0	0	2
	Prerequisite course – UG 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	Gain knowledge in 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	PS O1	PS O2
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 back ground.

UNIT II**6**

Photoshop program window-titlebar, menu bar, option bar, image window, image title bar, status bar, ruler, palettes ,tool box, 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 tool box: 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.

Text Books

1. Reema Thareja ,”Fundamentals of Computers”,Oxford University Press,2014.

Reference Books

1. Photoshop: Beginner's Guide for Photoshop - Digital Photography, Photo Editing, Color
2. Adobe Creative Team ,”Adobe Photoshop Class Room in a Book”,2014.

Course Coordinator**HOD**

P18OESC006	FLASH						L	T	P	C
	Total Contact Hours – 30						2	0	0	2
	Prerequisite course – UG Level									
	Course Coordinator Name & Department:- N.Mathimagal/ BCA									
COURSE OBJECTIVES:- Learners can identify methods appropriate for Basic Animation. Apply methods to design with flash.										
COURSE OUTCOMES (COs)										
CO1	Understand inWorking 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	PS O1	PS O2
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 twining , 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.

Course Coordinator**HOD**

P18OESC007	COMPUTER HARDWARE AND NETWORKING						L	T	P	C
	Total Contact Hours – 30						2	0	0	2
	Prerequisite course – UG Level									
	Course Coordinator Name & Department:- V.Ramya/BCA									
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	PS O1	PS O2
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, October 2013.

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**

P18OESC008	COMPUTER PROGRAMMING						L	T	P	C
	Total Contact Hours – 30						2	0	0	2
	Prerequisite course – UG Level									
	Course Coordinator Name & Department:- S.Anupriya/ BCA									
COURSE OBJECTIVES:- Learners understand the basic concepts of C programming. Practice the use of conditional and looping statements. Implement arrays, functions and pointers. Gain skills to handle strings and files.										
COURSE OUTCOMES (COs)										
CO1	Understand the concept of data types, loops, functions, array, pointers, string, structures and files.									
CO2	Design flow-chart, algorithm and program logic.									
CO3	Analyze problems, errors and exceptions.									
CO4	Apply programming concepts to compile and debug c programs to find solutions.									
CO5	Gain knowledge to use Function, Pointers, Structures, Unions & preprocessor directives									
CO6	Construct programs that demonstrate effective use of C.									
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	PS O1	PS O2
2	CO1	3	3	1	1	1	1	3		
	CO2	3	3	1	2	2	2	3		
	CO3	3	2	3	1	3	2	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. Pradip Dey, Manas Ghosh, “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**

P18OESC009	OFFICE AUTOMATION TOOLS						L	T	P	C
	Total Contact Hours – 30						2	0	0	2
	Prerequisite course – UG Level									
	Course Coordinator Name & Department:- V.Brindha/BCA									
COURSE OBJECTIVES:- Learners understand the basic concepts of word, Excel, Power Point.										
COURSE OUTCOMES (COs)										
CO1	Understand the text manipulations for word documents.									
CO2	Analyze the templates and mail merge concepts.									
CO3	Apply the cell editing, formulae, built in functions used in the Excel Sheet.									
CO4	Develop the power point slide designs and backgrounds.									
CO5	Develop the graphics and animations using wizards.									
CO6	Create a document and apply various formatting 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	PS O1	PS O2
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”, Universe Publications,2012.

Course Coordinator**HOD**

U18OEMI001	CLINICAL MICROBIOLOGY						L	T	P	C
	Total Contact Hours – 30						2	0	0	2
	Prerequisite course – Under graduate degree in any discipline									
	Course Coordinator Name & Department:- Dr. J. Senthil & Microbiology									
COURSE OBJECTIVES:- Learners will be familiar with microbiological related diagnostic techniques. Learners will understand the microbial morphology, structure, characters, classification, diseases and diagnostic tests.										
COURSE OUTCOMES (COs)										
CO1	Recall the general classification of microbes.									
CO2	Recognize the different specimen collection methods and staining methods.									
CO3	Apply different diagnostic tests to identify the diseases.									
CO4	Analyze the role of human pathogens in causing diseases.									
CO5	Evaluate the importance of antimicrobial compounds.									
CO6	Create and develop new antimicrobial drugs and antibiotics against wide range of pathogens.									
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	PS O1	PS O2
2	CO1	3	2	1	1	2	1	2		
	CO2	3	2	1	1	2	2	3		
	CO3	3	3	2	2	2	1	3		
	CO4	3	2	1	2	2	2	2		
	CO5	3	3	2	3	3	2	3		
	CO6	3	3	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

6

General introduction about clinical microbiology, Sterilization and Disinfection., Culture Media preparation, Staining Methods, Collection and Transportation of Specimen - General Principles, Containers, Rejection, Samples - Urine, Faeces, Sputum, Pus, Body fluids, Swab, Blood, Disposal of Laboratory/Hospital Waste.

UNIT II

6

General characters and classification of bacteria, Characteristics - Growth and maintenance of Bacteria, Pathogenicity and diagnosis of bacterial pathogens, antimicrobial compounds against clinical pathogens.

UNIT III

6

Morphology and structure of fungi - Classification of fungi - Nutrition and cultivation of fungus - Cutaneous & Sub cutaneous and Systemic Mycosis - Lab diagnosis of fungal Infections - Opportunistic fungal infections.

UNIT IV

6

General characters of viruses. - Classification of viruses. - Lab diagnosis of viral infections. - Cultivation of viruses. - Bacteriophages - Retro viruses - HIV, Hepatitis virus, Pox virus . - Picorna virus - Polio. - Orthomyxo virus - Influenza. - Arbo virus - Chikungunya, Dengue. - Herpes and Adeno virus.

UNIT V

6

Definition - parasitism, host, vectors etc. Classification of Parasites, Phylum Protozoa- general Pathogenic and non pathogenic protozoa, Phylum Nematelminthes/Round worms (Nematoda), Phylum Platyhelminthes - class - Cestoda, class - Trematoda, Lab diagnosis of parasitic infections.

TEXT BOOKS:

1. Monica Chees Brough. Medical laboratory manual for tropical countries, Elsevier Health Sciences, Butter worths, 1987.
2. Bailey and Scott. Diagnostic Microbiology, Eighth edition, The Mosby Company, 1990.

REFERENCE BOOKS:

1. Keith Struthers K. Clinical Microbiology, 2nd Edition, CRC Press, 2017.
2. Jennie Wilson. Clinical Microbiology -An Introduction for Healthcare Professional, 8th Edition, Bailyère Tindall, 2000.

Course Coordinator

HOD

U18OEMI002		HERBAL MEDICINE						L	T	P	C
		Total Contact Hours – 30						2	0	0	2
		Prerequisite course – Under graduate degree in any discipline									
		Course Coordinator Name & Department:- Dr. J. Senthil & Microbiology									
COURSE OBJECTIVES:-											
Learners will be familiar with medicinal herbs. Learners will understand the importance of herbal drugs and herbal therapies.											
COURSE OUTCOMES (COs)											
CO1	Recall the herbal medicines used in daily life.										
CO2	Recognize the different methods of herbal extraction and its types.										
CO3	Apply various herbal medicines in curing the diseases.										
CO4	Analyze the role of herbs in drug discovery.										
CO5	Evaluate the importance and toxicity studies of herbal extracts.										
CO6	Create and develop new drugs from wide range of medicinal plants available worldwide.										
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	PS O1	PS O2	
2	CO1	3	2	2	2	3	2	2			
	CO2	3	3	2	2	3	2	3			
	CO3	3	3	2	2	3	3	3			
	CO4	3	2	1	1	2	1	2			
	CO5	3	3	3	3	3	3	3			
	CO6	3	3	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**6**

Definition of Herbal drug, Importance of Herbal therapies, Herbs used as nutraceuticals and healing agents. Making and using herbal medicines for common ailments like cold, skin infections and Diarrhea; Analytical Profiles of selected herbs.

UNIT II**6**

General methods of extraction, types and principles of extractions - merits and demerits, selection of suitable extraction methods, purification and recovery of solvents

UNIT III**6**

Different methods for isolation and estimation of phyto-constituents from medicinal herbs like *Mucuna pruriens*, *Garcinia combogia*, Green tea, *Hypericum species* etc.

UNIT IV**6**

Qualitative and Quantitative estimation of standardized extracts by HPTLC, Biological standardization -Pharmacological screening of herbal extracts and Microbiological evaluation of herbal extracts, Toxicity studies of herbal extracts.

UNIT V**6**

Herbal drugs acting on brain and nervous system – Rheumatoid arthritis – Psychoactive drugs – Depressants, Stimulants, hallucinogens – sources, effects, basic mechanism of action.

TEXT BOOKS:

1. Indian Herbal Pharmacopoeia, Vol.1 & 2, RRL, 1 DMA, 1998, 2000.
2. Kokate CK, Purohit and Gokhale. Text book of Pharmacognosy, 4th edition, Nirali Prakashan, 1996.

REFERENCE BOOKS:

1. Toxicology and Clinical Pharmacology of Herbal Products, Melanie Johns Cupp.
2. Choudhary RD. Herbal drug industry, 1st edition, Eastern publisher, New Delhi, 1996.

Course Coordinator**HOD**

P18OEPH001	ELECTRICAL TECHNICIAN						L	T	P	C
	Total Contact Hours - 30						2	0	0	2
	Prerequisite – B.Sc Physics									
	Course Coordinator Name & Department:- – Dr. S.Anandhi / Physics									
OBJECTIVES: Students will have an appreciation on the electrical systems and electrical equipment typically used in the Oil and Gas production plant.										
COURSE OUTCOMES (COs)										
CO1	Analyze and solve routine technical problems related to electrical systems by applying mathematics and science principles.									
CO2	Explain how to used electrical tools, operate and maintain specific equipment in the Oil and Gas production plant									
CO3	Explain how to perform corrective and preventive maintenance in electrical tasks.									
CO4	Understand the work on electrical systems safely and efficiently.									
CO5	Understand the electrical system and electrical equipment used in the Oil and Gas production plant.									
CO6	To execute the principle and how to working process of the transformer and classification of transformer									
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	PS O1	PS O2
2	CO1	3	3	2	2	3	1	3		
	CO2	3	3	3	3	2	3	3		
	CO3	2	2	3	2	1	2	3		
	CO4	2	3	1	1	3	2	3		
	CO5	3	3	3	2	2	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	Academic Council Meeting								

UNIT-I **6**
Basic Principle Of Petroleum - Overview of Oil and Gas Processing -Wellhead Platform and Equipment

UNIT –II **6**
Introduction to Instrumentation -P & ID Drawing -Introduction to Distributed Control System (DCS)

UNIT –III **6**
Safety in Electrical Maintenance - Batteries and Chargers -Reading Electrical Diagrams - Cables and Conductors - Terminations and Splices - Motor Branch Circuit Protections

UNIT –IV **6**
Three Phase AC Induction Motors - AC Generator Maintenance -Fire & Gas Detection and Safety Systems and SIS -DC Generator -Construction& Principle-Types-Series,- Shunt & Compound Generator- EMF equation, Characteristics - (OCC & LCC). Armature reactions,- commutation Efficiency, Regulation & Applications. DC Motor- Construction& Principle. Types- Series, Shunt & Compound Motors. Characteristics curve-Applications. Necessity of starter- Construction and Working of- starters (3 point& 4 point). Speed control of DC Shunt-motor (armature & Field control. Traction System.- Trouble shooting –Care and maintenance.

UNIT-V **6**
Transformer –Principle -Construction- Classification of Transformers - EMF equation ,rating - Loading, Losses & Efficiency Regulation. Parallel Operation- Cooling methods, Transformer- oil testing. Care and maintenance,- Protective devices. Tap Changer – ON load and OFF- load. Auto transformer, Instrument-Transformer- CT & PT. Welding Transformer.

TEXT BOOKS

1. Fundamental Electrical circuits by Charles K.Alexandeer and Matthew NO Sadiku(2003)

REFERENCE BOOKS:

1. Fundamental of Digital circuits 3rd edition by Kumar A Anandh

Course Coordinator

HOD

BHARATH INSTITUTE OF HIGHER EDUCATION AND RESEARCH
FACULTY OF ARTS & SCIENCE
DEPARTMENT OF PHYSICS (PG Curriculum)

Degree	Batch	Dept	Sem	FT-code	Subject	Cr
PG	2018	PS	1	P18MCPH101	CORE-1: MATHEMATICAL PHYSICS-I	4
PG	2018	PS	1	P18MCPH102	CORE-2: CLASSICAL MECHANICS	4
PG	2018	PS	1	P18MCPH103	CORE-3: QUANTUM MECHANICS	4
PG	2018	PS	1	P18MCPH1L1	CORE-4: GENERAL PHYSICS LABORATORY -I	3
PG	2018	PS	1	P18MCPH1L2	CORE-5: ELECTRONICS LABORATORY -I	3
PG	2018	PS	1	P18MEPH011	MAJOR ELE- I: SOLAR PHOTOVOLTAIC TECHNOLOGY	4
PG	2018	PS	1	P18MEPH012	MAJOR ELE- I: FIBER OPTICS	
PG	2018	PS	1	P18MEPH013	MAJOR ELE- I: THINFILM TECHNOLOGY	
PG	2018	PS	2	P18MCPH201	CORE-6: MATHEMATICAL PHYSICS – II	4
PG	2018	PS	2	P18MCPH202	CORE-7: ELECTROMAGNETIC THEORY	4
PG	2018	PS	2	P18MCPH203	CORE-8: STATISTICAL MECHANICS	4
PG	2018	PS	2	P18MCPH2L1	CORE-9: GENERAL PHYSICS LABORATORY - II	3
PG	2018	PS	2	P18MCPH2L2	CORE-10: ELECTRONICS LABORATORY - II	3
PG	2018	PS	2	P18MEPH021	MAJOR ELE-I I: CRYSTAL PHYSICS & X-RAY DIFFRACTION	4
PG	2018	PS	2	P18MEPH022	MAJOR ELE-I I: PHOTONICS	
PG	2018	PS	2	P18MEPH023	MAJOR ELE-I I: MAGNETISM	
PG	2018	PS	2	P18EEPH1V1	INTERNSHIP PROGRAM	1
PG	2018	PS	3	P18MCPH301	CORE 11: SOLID STATE PHYSICS	4
PG	2018	PS	3	P18MCPH302	CORE 12: ATOMIC AND MOLECULAR SPECTROSCOPY	4
PG	2018	PS	3	P18MCPH303	CORE 13: NUCLEAR AND PARTICLE PHYSICS	4
PG	2018	PS	3	P18MCPH304	CORE 14: NUMERICAL METHODS IN “C” PROGRAMMING	4
PG	2018	PS	3	P18MCPH3L1	CORE 15: GENERAL PHYSICS LABORATORY - III	3
PG	2018	PS	3	P18MEPH3L2	CORE-16: ELECTRONICS LABORATORY - III	3
PG	2018	PS	3	P18ACEN001	AUDIT COURSE ENGLISH FOR RESEARCH PAPER WRITING	0
				P18ACCE002	DISASTER MANAGEMENT	
				P18ACEN003	SANSKRIT FOR TECHNICAL KNOWLEDGE	
				P18ACBA004	VALUE EDUCATION	
				P18ACLW005	CONSTITUTION OF INDIA	
				P18ACBA006	PEDAGOGY STUDIES	
				P18ACBA007	PERSONALITY DEVELOPMENT THROUGH LIFE ENLIGHTENMENT SKILLS	
PG	2018	PS	4	P18MCPH401	CORE-17: ELECTRONICS	4
PG	2018	PS	4	P18MCPH402	CORE-18: MICROCONTROLLER-8086 & INSTRUMENTATION	4
PG	2018	PS	4	P18MEPH031	MAJOR ELE III: NANOSCIENCE AND NANOTECHNOLOGY	4

PG	2018	PS	4	P18MEPH032	MAJOR ELE III:LASER AND APPLICATIONS	
PG	2018	PS	4	P18MEPH033	MAJOR ELE III:ASTRONOMY & ASTROPHYSICS	
PG	2018	PS	4		OPEN ELECTIVE	2
			4	P18MCYO001	STRESS MANAGEMENT BY YOGA	0
PG	2018	PS	4	P18PRPH4T1	TERM PAPER	1
PG	2018	PS	4	P18PRPH4P1	PROJECT WORK	8
					TOTAL	90

P18MCPH101	MATHEMATICAL PHYSICS – I							L	T	P	C
	Total Contact Hours - 60							3	1	0	4
	Prerequisite – B.Sc Physics										
	Course Coordinator Name & Department:- – Dr. S.Anandhi / Physics										
COURSE OBJECTIVES: To introduce basic mathematical topics necessary to understand and appreciate various physical laws of nature.											
COURSE OUTCOMES (COs)											
CO1	Gain knowledge about vector analysis and associated theorems										
CO2	Learn about Orthogonal and special coordinates systems										
CO3	Learn about special type of matrices that are relevant in physics										
CO4	Learn different ways of solving first and second order differential equations										
CO5	Gain knowledge in probability distributions and theorems										
CO6	To execute and learn about the equation such as Legendre equations – Frobenius method – Bessel equation.										
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	PS O2	PS O3
2	CO1	H	H						H		
	CO2	H	H								
	CO3	M	M								
	CO4	M	H								
	CO5	H	H								
	CO6	H	H								
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 VECTOR ANALYSIS**12**

Definition of vectors – scalar and vector product – triple products – gradient, divergence, curl – vector integration – Gauss's theorem – Green's theorem – Stoke's theorem – Dirac delta function – Helmholtz theorem

UNIT II CURVED COORDINATES, TENSORS**12**

Orthogonal coordinates – differential vector operators: gradient, divergence, curl – special coordinate systems: rectangular, spherical, cylindrical – tensors of rank two – contraction, direct product – quotient rule.

UNIT III LINEAR ALGEBRA**12**

Determinants – matrices – inner product, direct product – orthogonal matrices – Euler angles – symmetry properties – relation to tensors – Pauli matrices – eigenvalue equation and diagonalization – Cayley-Hamilton theorem – functions of matrices – Hermitian matrices.

UNIT IV ORDINARY DIFFERENTIAL EQUATIONS**12**

First order equation – second order homogeneous equation – Wronskian – second solution – inhomogeneous equation – forced oscillation and resonance – power series method – Hermite and Legendre equations – Frobenius method – Bessel equation.

UNIT V PROBABILITY**12**

Definition – basic theorems – permutation and combination – method of counting – random variables – binomial and Poisson distributions – normal distribution – central limit theorem

TEXT BOOK:

1. G. B. Arfken and H.J. Weber, Mathematical Methods for Physicists, 5th edition, Academic Press (2001).
2. E. Kreyszig, Advanced Engineering Mathematics, 8th edition, John Wiley & Sons Inc. (1999).
3. Mathematical Methods in the Physical Sciences, 3rd edition, Mary L. Boas, Wiley-India (2011).
4. M. D. Greenberg, Advanced Engineering Mathematics, 2nd Edition, PHI, NJ, 1998

REFERENCE BOOKS

1. L.A. Pipes and L.R. Harvill, Applied Mathematics for Engineers and Physicists, McGraw-Hill (1970) and Gregory Paul Bertoni (Feb 29, 2008)

P18MCPH102	CLASSICAL MECHANICS							L	T	P	C
	Total Contact Hours - 60							3	1	0	4
	Prerequisite – B.Sc Physics										
	Course Coordinator Name & Department:- – Dr. S.Anandhi / Physics										
COURSE OBJECTIVES : The course aims to develop an understanding of simplified treatments of many complex problems in classical mechanics.											
COURSE OUTCOMES (COs)											
CO1	Gain knowledge about Newton’s laws of motion to solve advanced problems involving the dynamic motion of classical mechanical systems										
CO2	Learn about differential calculus and other advanced mathematical techniques pertaining to the development of Lagrangian and Hamiltonian formulations of classical mechanics.										
CO3	Solve the dynamical problems using conservation laws.										
CO4	Learn Hamiltonian equations and Poisson brackets.										
CO5	Gain knowledge in special theory of relativity										
CO6	Understand the simplification treatment of various solutions in classical mechanics										
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	PS O2	PS O3
2	CO1	H	H						H		
	CO2	H	H								
	CO3	M	M								
	CO4	M	H								
	CO5	H	H								
	CO6	H	H								
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 LAGRANGIAN AND HAMILTONIAN FORMULATION

12

Mechanics of a system of particles – constraints – Lagrangian equation of motion from D'Alembert's and Hamilton's principles – conservation of linear momentum, energy and angular momentum – applications of the Lagrangian formalism.

UNIT II CENTRAL FORCE PROBLEM

12

Reduction to an one body problem – equation of motion and first integrals – one dimensional problems and classification of orbits – Kepler problem – scattering in a central potential – Rutherford formula – scattering cross section – transformation to laboratory frames.

UNIT III RIGID BODY AND OSCILLATING SYSTEM

12

Elements of rigid-body dynamics – Euler angles – symmetric top and applications – small oscillations – normal mode analysis – normal modes of a linear tri-atomic molecule – forced oscillations – effect of dissipative forces on free and forced oscillations – damped driven pendulum.

UNIT IV HAMILTONIAN FORMULATION

12

Legendre transformation – Hamiltonian equations of motion – cyclic coordinates – phase space and Liouville's theorem – Poisson brackets.

UNIT V SPECIAL THEORY OF RELATIVITY

12

Inertial frames – principle and postulate of relativity – Lorentz transformations – length contraction, time dilation and the Doppler effect – velocity addition formula – four-vector notation – energy-momentum – four-vector for a particle – relativistic invariance of physical laws.

TEXT BOOK:

1. H. Goldstein, C. Poole and J. Safko, Classical Mechanics, 3rd edition, Addison & Wesley (2000).
2. W. Greiner, Classical Mechanics, Springer-Verlag (2003).
3. W. Greiner, Classical Mechanics – Point particles and Relativity, Springer (1989).
4. Classical Mechanics, Rana and Joag, Tata McGraw-Hill Education
5. Classical Mechanics, J. C. Upadhyaya, Himalaya Publishing House, 2007

REFERENCE BOOKS

1. I.C. Percival and D. Richards, Introduction to Dynamics, Cambridge University Press (1983).
 2. J.V. Jose and E.J. Saletan, Classical Dynamics: A Contemporary Approach, Cambridge University Press (1998).
- E.T. Whittaker, A Treatise on the Analytical Dynamics of Particles and Rigid Bodies, 4th edition, Cambridge University Press (1989).

P18MCPH103	QUANTUM MECHANICS								L	T	P	C
	Total Contact Hours – 60								3	1	0	4
	Prerequisite – B.Sc Physics											
	Course Designed by – Department of Physics											
COURSE OBJECTIVES: The course aims to develop an understanding of simplified treatments of many complex problems in classical mechanics.												
COURSE OUTCOMES (COs)												
CO1	Gain knowledge about Newton’s laws of motion to solve the various problems											
CO2	Learn about differential calculus and other advanced mathematical techniques pertaining to the development of Lagrangian and Hamiltonian formulations of classical mechanics.											
CO3	Solve the dynamical problems using conservation laws.											
CO4	Learn Hamiltonian equations and Poisson brackets.											
CO5	Gain knowledge in special theory of relativity											
CO6	To learn about advanced problems involving the dynamic motion of classical mechanical systems											
Mapping of Course Outcomes with Program outcomes (POs) (H/M/L indicates strength of correlation) H-High, M-Medium, L-Low												
1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PS O3	
2	CO1	H	H						H			
	CO2	H	H									
	CO3	M	M									
	CO4	M	H									
	CO5	H	H									
	CO6	H	H									
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 SCHRODINGER EQUATION

12

Inadequacy of classical theory – de-Broglie hypothesis of matter waves – Heisenberg's uncertainty relation – Schrödinger's wave equation – physical interpretation and conditions on wave function – eigenvalues and eigenfunctions – particle in a square-well potential – potential barrier – tunneling.

UNIT II OPERATORS AND EIGENFUNCTIONS

12

Linear operator – orthogonal systems and Hilbert space – expansion in eigenfunctions – Hermitian operators – canonical commutation – commutations and uncertainty principle – state with minimum uncertainty

UNIT III SOLVABLE PROBLEMS

12

Harmonic oscillator – operator method – Schrödinger equation for spherically symmetric potentials – angular momentum operator – condition on solutions and eigenvalues – spherical harmonics – rigid rotor – radial equation of central potential – hydrogen atom – degenerate states.

UNIT IV ANGULAR MOMENTUM AND SPIN

12

Eigenvalues of angular momentum $\mathbf{J}$ – matrix representation of $\mathbf{J}$ – electron spin – Stern – Gerlach experiment – Zeeman effect – addition of angular momentum – Clebsch-Gordan coefficients – identical particles with spin – Pauli's exclusion principle.

UNIT V APPROXIMATION METHODS

12

Perturbation theory for non-degenerate states – removal of degeneracy – Stark effect – variation method – WKB approximation – Bohr-Sommerfeld quantum condition – perturbative solution for transition amplitude – selection rules – Fermi Golden rule – scattering of a particle by a potential.

TEXT BOOK:

1. P.M. Mathews and K. Venkatesan, A Textbook of Quantum Mechanics, Tata McGraw Hill (1976).
2. J.L. Powell and B. Crasemann, Quantum Mechanics, Narosa Publishing House (1993).
3. J.J. Sakurai, Modern Quantum Mechanics, Addison-Wesley (1999).
4. Quantum Mechanics, Aruldas, Prentice Hall of India (2006).

REFERENCE BOOKS

1. L.I. Schiff, Quantum Mechanics, McGraw-Hill (1968).
2. D.J. Griffiths, Introduction to Quantum Mechanics, Pearson Education (2005).
3. N. Zettili, Quantum Mechanics: Concepts and Applications, John Wiley (2009).
4. L.D. Landau and E.M. Lifshitz, Quantum Mechanics (Non-relativistic Theory), 3rd edition, Elsevier (2011).

P18MCPH1L1	GENERAL PHYSICS LABORATORY							L	T	P	C
	Total Contact Hours – 45							3	1	0	4
	Prerequisite – B.Sc Physics										
	Course Designed by – Department of Physics										
COURSE OBJECTIVES: To introduce the basic concepts of physics through hands on experience and impart experimental skill to students.											
COURSE OUTCOMES (COs)											
CO1	Understand the fundamental physics behind many scientific discoveries through hands on experience.										
CO2	Applying theoretical knowledge in practical experiments										
CO3	Developing technical skills to collect data and analyze the results										
CO4	Understand the internal properties of given material										
CO5	To resolve the equations, data's and graphs with real-time experiments										
CO6	To gain the knowledge of instrumentation techniques										
Mapping of Course Outcomes with Program outcomes (POs) (H/M/L indicates strength of correlation) H-High, M-Medium, L-Low											
1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PS O3
2	CO1	H	H						H		
	CO2	H	H								
	CO3	M	M								
	CO4	M	H								
	CO5	H	H								
	CO6	H	H								
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									

- 1.. Hall Effect in Semiconductor
2. Non-Destructive Testing – Ultrasonics
3. Two Probe Method for Resistivity Measurement
4. Wavelength Measurement of Laser using Diffraction Grating
5. Numerical Aperture of an Optical Fiber
6. Electron Spin Resonance
7. Specific Heat Capacity of Solids
8. Half Shade Polarimeter and Strain Viewer
9. Michelson Interferometer
10. Acoustic Diffraction

TEXT BOOK:

1. General Physics Laboratory Manual, Department of Physics.

REFERENCE BOOKS

1. R.A. Dunlap, Experimental Physics: Modern Methods, Oxford University Press, New Delhi (1988).
2. E.V. Smith, Manual for Experiments in Applied Physics, Butterworths (1970).
3. D. Malacara (ed.), Methods of Experimental Physics, Series of Volumes, Academic Press Inc. (1988).

P18MCPH1L2	ELECTRONICS LABORATORY -I						L	T	P	C	
	Total Contact Hours – 45						3	1	0	4	
	Prerequisite – B.Sc Physics										
	Course Designed by – Department of Physics										
OBJECTIVES: To introduce the various concepts of basic electronics and circuits through hands on experience..											
COURSE OUTCOMES (COs)											
CO1	Analyze the significance of laws involved in electric circuits										
CO2	Understand the basics of operational amplifier										
CO3	To learn about the basics to construct and solve the mathematical equation.										
CO4	Apply the principles of electronics in day to life										
CO5	To design and construct the electrical and electronics circuits and interpret the results.										
CO6	Apply the characteristics of electronic devices in practicals										
Mapping of Course Outcomes with Program outcomes (POs) (H/M/L indicates strength of correlation) H-High, M-Medium, L-Low											
1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
2	CO1	H	H						H		
	CO2	H	H								
	CO3	M	M								
	CO4	M	H								
	CO5	H	H								
	CO6	H	H								
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									

LIST OF EXPERIMENTS

1. Solving Simultaneous Equations
2. Voltage Controlled Oscillator
3. Op-Amp Arithmetic Operations
4. Op-Amp Square, Ramp Generator and Wien Bridge Oscillator
5. Op-Amp Precision Full Wave Rectifier
6. Multiplexer and De-multiplexer
7. Regulated Power Supply using IC 723
8. UJT-Characteristics of Relaxation Oscillator
9. Logarithmic and Anti-logarithmic Amplifier
10. Phase Shift Oscillator

TEXT BOOK:

1. Electronics Laboratory Manual, Department of Physics, NITT.

REFERENCE BOOKS

1. B.K. Jones, Electronics for Experimentation and Research, Prentice-Hall (1986).
2. P.B. Zbar, A.P. Malvino and M.A. Miller, Basic Electronics: A Text-Lab Manual, Tata Mc-Graw Hill, New Delhi (1994).

P18MCPH201	MATHEMATICAL PHYSICS – II						L	T	P	C	
	Total Contact Hours – 60						3	1	0	4	
	Prerequisite – B.Sc Physics										
	Course Designed by – Department of Physics										
COURSE OBJECTIVES: To introduce basic mathematical topics necessary to understand and appreciate various physical laws of nature..											
COURSE OUTCOMES (COs)											
CO1	Gain knowledge about Fundamental concepts of mathematical series and theorem										
CO2	Learn about complex variable for an Cauchy equations and Cauchy's residue theorem										
CO3	Understand about functions of matrices										
CO4	Learn Introduction to group theory										
CO5	Gain knowledge differential equations an Poisson equation										
CO6	Understand and apply the green function to solve the various problems										
Mapping of Course Outcomes with Program outcomes (POs) (H/M/L indicates strength of correlation) H-High, M-Medium, L-Low											
1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PS O3	PS O3
2	CO1	H	H						H		
	CO2	H	H								
	CO3	M	M								
	CO4	M	H								
	CO5	H	H								
	CO6	H	H								
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 INFINITE SERIES**12**

Fundamental concepts – convergence test: Cauchy's ratio test, Gauss's test – alternating series – algebra of series – Taylor expansion – Binomial theorem – power series – asymptotic series – Stirling's formula.

UNIT II COMPLEX ANALYSIS**12**

Functions of complex variable – derivative and Cauchy-Riemann equation – line integral – Cauchy's integral theorem – Cauchy's integral formula – Laurent series – Cauchy's residue theorem – poles – evaluation of residues – evaluation of definite integrals.

UNIT III INTEGRAL TRANSFORMS**12**

Determinants – matrices – inner product, direct product – orthogonal matrices – Euler angles – symmetry properties – relation to tensors – Pauli matrices – eigenvalue equation and diagonalization – Cayley-Hamilton theorem – functions of matrices – Hermitian matrices.

UNIT IV GROUP THEORY**12**

Introduction to group theory – generators of continuous groups – rotation groups and angular momentum – $SU(2)$ - $SO(3)$ homomorphisms – orbital angular momentum – discrete groups – character table – irreducible representation.

UNIT V PARTIAL DIFFERENTIAL EQUATIONS**12**

Vibrating string – D'Alembert's solution of wave equation – diffusion equation – solution by Fourier series – Poisson equation – method of separation of variables – Green's function method.

TEXT BOOK:

1. G. B. Arfken and H.J. Weber, Mathematical Methods for Physicists, 5th edition, Academic Press (2001).
2. E. Kreyszig, Advanced Engineering Mathematics, 8th edition, John Wiley & Sons Inc. (1999).
3. Mathematical Methods in the Physical Sciences, 3rd edition, Mary L. Boas, Wiley-India (2011).

REFERENCE BOOKS

1. L.A. Pipes and L.R. Harvill, Applied Mathematics for Engineers and Physicists, McGraw-Hill (1970) and Gregory Paul Bertoni (Feb 29, 2008)

UNIT I ELECTROSTATICS**12**

Electric field – divergence and curl – electric potential – conductors – Laplace equation (1D, 2D and 3D) – uniqueness theorem – separation of variables: Cartesian and spherical coordinates – field of an electric dipole – polarization – Gauss's law in dielectrics – linear dielectrics – energy density – boundary value problems

UNIT II MAGNETOSTATICS**12**

Lorentz force – magnetic induction – electric current – equation of continuity – Biot-Savart law – magnetic potential – magnetization – Ampere's law in magnetized material – energy density – linear and nonlinear media.

UNIT III MAXWELL'S EQUATIONS**12**

Faraday's law – generalization of Ampere's law – Maxwell's equations – boundary conditions – scalar and vector potentials – gauge invariance – electromagnetic energy – Poynting's theorem.

UNIT IV ELECTROMAGNETIC WAVES**12**

Electromagnetic wave equation (without source) – solution of 3D wave equation – propagation of EM waves in non-conducting media – waves in conducting media – polarization.

UNIT V WAVES IN BOUNDED REGION**12**

Reflection and refraction at the boundary of non-conducting media – Fresnel's coefficients – Brewster's angle and critical angle – reflection from a conducting plane – wave guide – TE and TM waves – rectangular wave guide.

TEXT BOOK:

1. D. J. Griffiths, Introduction to Electrodynamics, Prentice Hall of India, 3rd edition (1999).
2. J.R. Reitz, F.J. Milford and R.W. Christy, Foundations of Electromagnetic Theory, 4th edition, Pearson (2010).

REFERENCE BOOKS

1. J.D. Jackson, Classical Electrodynamics, Wiley-India, 3rd edition (2011).
2. E.C. Jordan and K.G. Balmain, Electromagnetic Waves and Radiating Systems, 2nd edition, Prentice Hall of India (1998).
3. W. Greiner, Classical Electrodynamics, 3rd edition, Springer (2010).
4. L.D. Landau and E.M. Lifshitz, Electrodynamics of Continuous Media, 2nd edition, Elsevier (2008).

P18MCPH203	STATISTICAL MECHANICS							L	T	P	C
	Total Contact Hours – 60							3	1	0	4
	Prerequisite – B.Sc Physics										
	Course Designed by – Department of Physics										
COURSE OBJECTIVES : To learn the connection between macroscopic and microscopic state of a system of large number of particles.											
COURSE OUTCOMES (COs)											
CO1	Gain knowledge about thermodynamic relations of laws										
CO2	Learn about theory of ensembles										
CO3	Understand various properties of matter and radiation in thermal equilibrium through appropriate statistics.										
CO4	Understand Solid State Physics.										
CO5	Gain knowledge Reflection and refraction at the boundary of region										
CO6	To remember the various concepts of mathematical functions										
Mapping of Course Outcomes with Program outcomes (POs) (H/M/L indicates strength of correlation) H-High, M-Medium, L-Low											
1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PS O3
2	CO1	H	H						H		
	CO2	H	H								
	CO3	M	M								
	CO4	M	H								
	CO5	H	H								
	CO6	H	H								
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 THERMODYNAMICS

12

Ideal gas law – exact differentials – first law, internal energy, heat capacity – second law, Carnot's cycle, Carnot's theorem, absolute temperature – Clausius theorem, entropy – thermodynamic potentials, Maxwell's relations – chemical potential – third law.

UNIT II THEORY OF ENSEMBLES

12

Postulates: phase space, microstates, density of states, ensemble average – Liouville's theorem – microcanonical ensemble – quantum phase space – canonical ensemble – partition function (N particle) – ideal gas law – grand canonical ensemble.

UNIT III MAXWELL-BOLTZMANN STATISTICS

12

Boltzmann system (identical, distinguishable particles) – Maxwell-Boltzmann distribution – Lagrange's multipliers – partition function (single particle) – thermodynamics of gases – equipartition theorem – paramagnetic susceptibility.

UNIT IV BOSE-EINSTEIN STATISTICS

12

Principle of indistinguishability – Bosons – Bose-Einstein distribution – Planck's law of radiation – Stefan's law – Einstein model of phonons (semi-classical) – Debye's theory of heat capacity of solids.

UNIT V FERMI-DIRAC STATISTICS

12

Fermions – Fermi-Dirac distribution – Fermi energy – electron gas in metals – thermionic emission – Pauli paramagnetism

TEXT BOOK:

1. M.W. Zeemansky and R.H. Dittman, Heat and Thermodynamics, 8th edition, Mc-Graw Hill (2011).
2. K. Huang, Statistical Mechanics, 2nd edition, Wiley India (2010).
3. F.W. Sears and G.L. Salinger, Thermodynamics, Kinetic Theory and Statistical Thermodynamics, 3rd edition, Narosa Publishing House (1998).

REFERENCE BOOKS

1. Enrico Fermi, Thermodynamics, Dover (1956).
2. R.K. Pathria and Paul D. Beale, Statistical Mechanics, 3rd edition, Academic Press (2011).
3. F. Reif, Fundamentals of Statistical and Thermal Physics, International Students edition, Tata McGraw-Hill (1988).
4. S.J. Blundell and K.M. Blundell, Concepts in Thermal Physics, Oxford University Press (2006).
5. L.D. Landau and E.M. Lifshitz, Statistical Physics – Part I, 3rd edition, Elsevier (2010).

P18MCPH2L1	GENERAL PHYSICS LABORATORY -II						L	T	P	C	
	Total Contact Hours – 45						3	1	0	4	
	Prerequisite – B.Sc Physics										
	Course Designed by – Department of Physics										
COURSE OBJECTIVES: To introduce the basic concepts of physics through hands on experience and impart experimental skill to students.											
COURSE OUTCOMES (COs)											
CO1	Understand the fundamental physics behind many scientific discoveries through hands on experience.										
CO2	Apply knowledge of mathematics and physics fundamentals and an instrumentation to arrive solution for various problems.										
CO3	Understand the application side of the experiments										
CO4	Use of basic laws to study the spectral properties and optical properties of the given prism and grating. .										
CO5	Understand the usage of basic laws and theories to determine various properties of the materials given.										
CO6	Analyze the detail about practical importance to be aware of the concepts from the basis.										
Mapping of Course Outcomes with Program outcomes (POs) (H/M/L indicates strength of correlation) H-High, M-Medium, L-Low											
1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PS O3
2	CO1	H	H						H		
	CO2	H	H								
	CO3	M	M								
	CO4	M	H								
	CO5	H	H								
	CO6	H	H								
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									

LIST OF EXPERIMENTS

1. Vacuum Pumps – Low Pressure Measurement and Determination of Pumping Speed
2. Zeeman effect
3. Hydrogen Spectra and Rydberg Constant
4. Forbe's Method – Thermal Conductivity of Metal
5. Kundt's Tube
6. Solar-Cell Characteristics
7. Magnetic Susceptibility of Liquids – Quincke's Method
8. Curie Temperature of Magnetic Materials
9. Dielectric Constant and Curie Temperature of Ferroelectric Ceramics
10. Hysteresis (B – H Curve)
11. Helmholtz Galvanometer
12. Faraday Effect
13. Millikan Oil Drop Experiment – e/m of Electron
14. Determination of Planck's Constant
15. Cornu's Method – Determination of Elastic Constants of Transparent Materials.

TEXT BOOK:

1. General Physics Laboratory Manual, Department of Physics.

REFERENCE BOOKS

1. R.A. Dunlap, Experimental Physics: Modern Methods, Oxford University Press, New Delhi (1988).
2. E.V. Smith, Manual for Experiments in Applied Physics, Butterworths (1970).
3. D. Malacara (ed.), Methods of Experimental Physics, Series of Volumes, Academic Press Inc. (1988).

P18MCPH2L2	ELECTRONICS LABORATORY -II							L	T	P	C
	Total Contact Hours – 45							3	1	0	4
	Prerequisite – B.Sc Physics										
	Course Designed by – Department of Physics										
COURSE OBJECTIVES: To introduce the various concepts of basic electronics and circuits through hands on experience..											
COURSE OUTCOMES (COs)											
CO1	Understand the fundamental physics behind electronic circuits used in many modern devices through hands on experience.										
CO2	Learn about different circuits										
CO3	Learn about amplifier in CE										
CO4	Learn about the electrical circuits										
CO5	Gain knowledge in digital electrical circuits										
CO6	How to create electronic circuits used in many modern devices through hands on experience.										
Mapping of Course Outcomes with Program outcomes (POs) (H/M/L indicates strength of correlation) H-High, M-Medium, L-Low											
1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
2	CO1	H	H						H		
	CO2	H	H								
	CO3	M	M								
	CO4	M	H								
	CO5	H	H								
	CO6	H	H								
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									

LIST OF EXPERIMENTS

1. Astable and monostable Multivibrator using IC555
2. Combinational Logic Circuit Design
3. IC 555 timer – Schmitt Trigger
4. Wien's Bridge oscillator using operational amplifier
5. Characteristics of Photo Diode, Photo Transistor, LDR, LED
6. Series and Parallel Resonant Circuits
7. Silicon Diode as a Temperature Sensor
8. RC Coupled CE amplifier – Two stages with feedback – Frequency response and voltage gain
9. Push-pull amplifier using complementary – symmetry transistors power gain and frequency response.
10. Active filters – low pass and high pass-first and second order frequency response and roll off rate.

TEXT BOOK:

1. Electronics Laboratory Manual, Department of Physics, NITT.

REFERENCE BOOKS

1. B.K. Jones, Electronics for Experimentation and Research, Prentice-Hall (1986).
2. P.B. Zbar, A.P. Malvino and M.A. Miller, Basic Electronics: A Text-Lab Manual, Tata Mc-Graw Hill, New Delhi (1994).

MAJOR ELECTIVE

P18MEPH011	SOLAR PHOTOVOLTAIC TECHNOLOGY							L	T	P	C
	Total Contact Hours – 60							3	1	0	4
	Prerequisite – B.Sc Physics										
	Course Designed by – Department of Physics										
COURSE OBJECTIVES: To introduce the basic physics and technology of photovoltaic science and systems for solar energy harnessing											
COURSE OUTCOMES (COs)											
CO1	Gain knowledge about solar energy and its solar radiation										
CO2	Learn about basic of semiconductor										
CO3	Learn about semiconductor based solar cells										
CO4	Understand the Characterization and Analysis										
CO5	Gain knowledge about designing of solar cells										
CO6	To study and learn about the application of solar photovoltaic technology										
Mapping of Course Outcomes with Program outcomes (POs) (H/M/L indicates strength of correlation) H-High, M-Medium, L-Low											
1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PS O2	PS O3
2	CO1	H	H						H		
	CO2	H	H								
	CO3	M	M								
	CO4	M	H								
	CO5	H	H								
	CO6	H	H								
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										

Unit – I The Sun Light**12**

World Energy scenario – Advantages and challenges of solar energy harnessing - Source of radiation – solar constant– solar intensity at earth's surface – direct and diffuse radiation – apparent motion of sun-solar insolation data – solar charts – measurement of diffuse, global and direct solar radiation: pyrheliometer, pyranometer, pyregeometer, net pyradiometer-sunshine recorder.

Unit – II: Semiconductors**12**

Crystals structures, atomic bonding, energy band diagram – direct & indirect band gap – p & n doping and carrier concentration – intrinsic & extrinsic semiconductor – compound semiconductors – diffusion and drift of carriers, continuity equation – optical absorption – carrier recombination – effect of temperature – p-n junction in equilibrium conditions – p-n junction in non-equilibrium condition – p-n junction under illumination

UNIT -III Semiconductors for Solar Cell**12**

Silicon: preparation of metallurgical, electronic and solar grade silicon - *Production of single crystal silicon*: Czokralski (CZ) and Float Zone (FZ) method – imperfections – carrier doping and lifetime – Germanium – compound semiconductors – growth & characterization – amorphous materials – transparent conducting oxides – anti-reflection principles and coatings – organic materials.

UNIT -IV Characterization and Analysis**12**

Device isolation & analysis – ideal cell under illumination – solar cell parameters short circuit current, open circuit voltage, fill factor, efficiency; optical losses, electrical losses, surface recombination velocity, quantum efficiency – measurements of solar cell parameters; I-V curve & L-I-V characteristics, internal quantum yield measurements – effects of series and parallel resistance and temperature.

UNIT -V Design of Solar Cells**12**

Upper limits of solar cell parameters – losses in solar cells – Solar Cell design: Design for High I_{sc} – Design for High V_{oc} – Design for High FF – Si based solar cell Technology: process flow of commercial Si Cell Technologies – high efficiency Si Solar cells. Thin film solar cell technologies: Common features of thin film Technologies – Si technology – CdTe, CIGS, Epitaxial Si. Other technologies: DSSC.

TEXT BOOKS

1. Solar Photovoltaics: Fundamentals, Technologies And Applications 2nd ed., Chetan Singh Solanki, PHI, New Delhi (2011).
2. Semiconductors for solar cells, H. J. Moller, Artech House Inc., MA, USA (1993).
3. Solar Cells: Operating principles, Technology and Systems Applications, Martin Green, UNSW, Australia (1997).

REFERENCE BOOKS

1. Solar Cells and their Applications, Larry D. Partain (ed.), John Wiley and Sons, New York (1995).
2. J. Nelson, The Physics of Solar Cells, Imperial College Press (2006).
3. Photovoltaic Materials, Richard H. Bube, Imperial College Press (1998)

P18MEPH012	FIBER OPTICS								L	T	P	C
	Total Contact Hours – 60								3	1	0	4
	Prerequisite – B.Sc Physics											
	Course Designed by – Department of Physics											
COURSE OBJECTIVES: Fiber optics sensors are widely used and students are exposed to fundamentals, design principles, characteristics and applications of fiber optic sensors.												
COURSE OUTCOMES (COs)												
CO1	Gain knowledge about total internal reflection and refraction											
CO2	Learn about fundamentals of Fiber optic loss and gain.											
CO3	Learn about optical fiber phase interferometers.											
CO4	Learn different polarization modulation sensors.											
CO5	Gain knowledge in Wavelength distribution											
CO6	Understand the total internal reflection and refraction											
Mapping of Course Outcomes with Program outcomes (POs) (H/M/L indicates strength of correlation) H-High, M-Medium, L-Low												
1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PS O3	
2	CO1	H	H						H			
	CO2	H	H									
	CO3	M	M									
	CO4	M	H									
	CO5	H	H									
	CO6	H	H									
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**

Introduction – plane polarized wave – propagation of a light through a quarter wave plate – reflections at a plane interface – Brewster angle – total internal reflection-interference- refraction – concept of coherence – diffraction of Gaussian beam.

UNIT II**12**

Fiber optic fundamentals – numerical aperture – attenuation in optical fibers – pulsed dispersion in step index optical fiber – loss mechanisms – absorptive loss – radiative loss- principle of optical waveguides – characteristics of fibers – pulsed dispersion in planar optical waveguide – modes in planar waveguides – TE,TM modes – propagation characteristics of step index and graded index optical fibers

UNIT III**12**

Intensity-modulated sensors – transmission concept – reflective concept – micro bending concept-intrinsic concepts – transmission and reflection with other optical effects – source of error and compensation schemes – phase modulation mechanisms in optical fibers- optical fiber interferometers – optical fiber phase sensors for mechanical variables – the optical fiber sagnac interferometer – optical fiber interferometric sensors.

UNIT IV**12**

Frequency modulation in optical fiber sensors – introduction – optical fiber Doppler system – development of the basic concepts. Polarization modulation in fiber sensors- introduction – optical activity – Faraday rotation – electro-gyration – electro-optic effect- kerr effect – photoelastic effect – polarization modulation sensors.

UNIT V**12**

Wavelength distribution sensor – introduction – techniques for colour modulation – colour probes – Bragg grating concept – introduction – fabrication – application.

REFERENCE BOOKS

1. Optoelectronics, Endel Uiga, PH, 1995
2. D.A. Krohn, Fiber Optic Sensors: Fundamentals and Applications, 2nd edition, Instrument Society of America (1992).
3. B. Culshaw, Optical Fiber Sensing and Signal Processing, Peter Peregrinus Ltd. (1984).
4. Djafar K.Mynbaev and Lowell L.Scheiner, Fiber-Optic Communications Technology, Peason Education Asia (2001).

P18MEPH013	THIN FILM TECHNOLOGY						L	T	P	C	
	Total Contact Hours – 60						3	1	0	4	
	Prerequisite – B.Sc Physics										
	Course Designed by – Department of Physics										
COURSE OBJECTIVES: To cater the post graduate students about fundamental and applications of thin films.											
COURSE OUTCOMES (COs)											
CO1	Gain knowledge about Preparation of Thin-films										
CO2	Learn about types of nucleation kinetic theory										
CO3	Learn about Characterization of X-ray diffraction , photoluminescence and UV-Vis-IR spectrophotometer										
CO4	Understand the experimental technique for the properties of thin film										
CO5	Gain knowledge about Applications of Optoelectronic devices: LED, LASER and Solar cell										
CO6	To learn about the spectroscopy techniques										
Mapping of Course Outcomes with Program outcomes (POs) (H/M/L indicates strength of correlation) H-High, M-Medium, L-Low											
1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PS O2	PS O3
2	CO1	H	H						H		
	CO2	H	H								
	CO3	M	M								
	CO4	M	H								
	CO5	H	H								
	CO6	H	H								
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: Preparation of Thin-films**12**

Kinetic aspects of gases in a vacuum chamber – classifications of vacuum ranges – production of vacuum – pressure measurement in vacuum systems – thin film (epitaxy) – definition – types of epitaxy. *Different Growth Techniques*: Liquid phase epitaxy, vapour phase epitaxy, molecular beam epitaxy, metal organic vapour phase epitaxy, sputtering (RF & DC), pulsed laser deposition. *Thickness Measurement*: Microbalance technique, photometry, ellipsometry, interferometry.

Unit – II: Kinetics of Thin films**12**

Nucleation Kinetics: types of nucleation – kinetic theory of nucleation – energy formation of a nucleus – critical nucleation parameters; spherical and non-spherical (cap, disc and cubic shaped). *Growth Kinetics*: Kinetics of binary (GaAs, InP, etc.), ternary ($\text{Al}_{1-x}\text{Ga}_x\text{As}$, $\text{Ga}_{1-x}\text{In}_x\text{P}$, $\text{InAs}_{1-x}\text{Px}$, etc.) and quaternary ($\text{Ga}_{1-x}\text{In}_x\text{As}_{1-y}\text{Py}$, etc.) semiconductors – derivation of growth rate and composition expressions.

UNIT III: Characterization**12**

X-ray diffraction – photoluminescence – UV-Vis-IR spectrophotometer – Atomic Force Microscope – Scanning Electron Microscope – Hall effect – Vibrational Sample Magnetometer – Secondary Ion Mass Spectrometry – X-ray Photoemission Spectroscopy.

UNIT IV Properties of Thin films**12**

Dielectric properties – experimental technique for the determination of dielectric properties – optical properties – experimental technique for the determination of optical constants – mechanical properties – experimental technique for the determination of mechanical properties of thin films – magnetic and superconducting properties.

UNIT V Applications**12**

Optoelectronic devices: LED, LASER and Solar cell – Micro Electromechanical Systems (MEMS) – Fabrication of thin film capacitor – application of ferromagnetic thin films; data storage, Giant Magnetoresistance (GMR) – sensors – fabrication and characterization of thin film transistor and FET – quantum dot.

Text Books

1. A. Goswami, Thin Film Fundamentals, New Age international (P) Ltd. Publishers, New Delhi (1996).

Reference Books

1. K.L. Chopra, Thin Film Phenomena, McGraw- Hill book company New York, (1969).
2. Ludminla Eckertova, Physics of Thin Films, Plenum press, New York (1977).
3. Hari Singh Nalwa (ed.), Hand Book of Thin Films, Vol. 1 – 5, Academic Press (2002)

P18MEPH021	CRYSTAL PHYSICS AND X-RAY DIFFRACTION							L	T	P	C
	Total Contact Hours – 60							3	1	0	4
	Prerequisite – B.Sc Physics										
	Course Designed by – Department of Physics										
COURSE OBJECTIVES: To lean the concept of basics in crystal physics and x-ray diffraction.											
COURSE OUTCOMES (COs)											
CO1	Gain knowledge about crystal system										
CO2	Learn about production of X-rays										
CO3	Learn about reciprocal lattice vectors and unit cells										
CO4	Understand about the reciprocal lattice vectors and reciprocal lattice vectors										
CO5	Gain knowledge experiment and analysis for an data collection										
CO6	To learn about the structure of solid materials										
Mapping of Course Outcomes with Program outcomes (POs) (H/M/L indicates strength of correlation) H-High, M-Medium, L-Low											
1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PS O3
2	CO1	H	H						H		
	CO2	H	H								
	CO3	M	M								
	CO4	M	H								
	CO5	H	H								
	CO6	H	H								
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 GEOMETRY OF CRYSTALS

12

Introduction – lattice – crystal systems – symmetry – primitive and non-primitive cells – lattice directions and planes – unit cells of hcp and ccp structures – constructing crystals – interstitial structures – some simple ionic and covalent structures - Representing crystals in projection – crystal planes – stacking faults and twins – stereographic projection

Unit – II: DIFFRACTION AND X- RAYS

12

Diffraction – Bragg's law – diffraction methods – scattering by electrons, atoms, unit cell - Introduction to X-rays – electromagnetic radiation – continuous spectrum – characteristic spectrum – absorption – filters – production of X-rays – detection of X-rays – safety precautions – Contributions of Laue, Bragg and Ewald to X-ray diffraction

UNIT III: CRYSTAL SYMMETRY

12

Symmetry of the fourteen Bravais lattices – coordination of Bravais lattice points – space filling polyhedra – thirty two crystal classes – centres and inversion axes of symmetry – crystal symmetry and properties – translation symmetry elements – space groups – Bravais lattices, space groups and crystal structures – Quasiperiodic crystals or crystalloids

UNIT IV LATTICE REPRESENTATIONS

12

Indexing lattice directions – lattice planes – Miller indices – zones – zone axes – zone law – transforming Miller indices and zone axes symbols – reciprocal lattice vectors – reciprocal lattice unit cells – for cubic crystals – proofs of some geometric relationships using reciprocal lattice vectors – Addition rule – reciprocal lattice vectors – d spacing of lattice planes.

UNIT V XRD - EXPERIMENT AND ANALYSIS

12

Powder diffraction geometry - Powder sample preparation and data collection - indexing - peaks-shape profiles and angular dependence - powder-pattern simulation - Rietveld refinement - Single-crystal sample preparation, data collection, data reduction, structure determination and structure refinement

REFERENCES:

1. C. Hammond, The basics of Crystallography and diffraction, Oxford university press, New York (2009).
2. Fundamentals of Powder Diffraction and Structural Characterization of Materials, Peter Y. Zavalij, Maryland, USA
2. B.D. Cullity, Elements of X-ray diffraction, Addison Wesley, Massachusetts (1956).
3. C. Suryanarayana, M.G. Norton, X-ray diffraction – A practical approach, Plenum press, New York (1998).
4. C. Kittel, Introduction to solid state physics, 7th Ed., Wiley India, New Delhi (2004)

P18MEPH022	PHOTONICS						L	T	P	C	
	Total Contact Hours – 60						3	1	0	4	
	Prerequisite – B.Sc Physics										
	Course Designed by – Department of Physics										
OBJECTIVES: Recall and recount the optical properties of semiconductor light sources and detectors- expand the theory and applications of the confinement of light in waveguides and fibres.											
COURSE OUTCOMES (COs)											
CO1	Gain knowledge about one, Two- and three-dimensional photonic crystals.										
CO2	Learn about diodes and semiconductor photon sources										
CO3	Learn about Electro-optics of devices										
CO4	Learn about second and Third-order nonlinear optics.										
CO5	Understand about the Ultrafast linear optics Pulse detection										
CO6	To learn about the optical devices and its properties										
Mapping of Course Outcomes with Program outcomes (POs) (H/M/L indicates strength of correlation) H-High, M-Medium, L-Low											
1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PS O3
2	CO1	H	H						H		
	CO2	H	H								
	CO3	M	M								
	CO4	M	H								
	CO5	H	H								
	CO6	H	H								
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 PHOTONICS - CRYSTAL AND GUIDED WAVE OPTICS **12**

Optics of dielectric layered media, One-dimensional photonic crystals, Two- and three-dimensional photonic crystals, Planar-mirror waveguides, Planar dielectric waveguides, Two-dimensional waveguides, Photonics-crystal waveguides, Optical coupling waveguides, Sub-wavelength metal waveguides (Plasmonics), Guided rays, Guided waves, Attenuation and dispersion, Holey and photonic-crystal fibres

Unit – II: SEMICONDUCTOR PHOTON SOURCES AND DETECTORS **12**

Light-emitting diodes, Semiconductor optical amplifiers, Laser diodes, Quantum-confined and micro cavity lasers, Photodetectors, Photoconductors, Photodiodes, Avalanche photodiodes, array detectors and noise in photodetectors

UNIT III: ACOUSTO AND ELECTRO OPTICS **12**

Interaction of light and sound-Acousto-optic devices-Acousto-optics of anisotropic media-Principles of electro-optics-Electro-optics of anisotropic media-Electro-optics of liquid crystals-Photo refractivity-Electro absorption

UNIT IV NONLINEAR OPTICS **12**

Nonlinear optical media-Second-order nonlinear optics-Third-order nonlinear optics-Second-order nonlinear optics: coupled wave theory-Third-order nonlinear optics: coupled wave theory-Anisotropic nonlinear media-Dispersive nonlinear media

UNIT V ULTRAFAST OPTICS **12**

Pulse characteristics-Pulse shaping and compression-Pulse propagation in optical fibers-Ultrafast linear optics-Ultrafast nonlinear optics-Pulse detection

REFERENCES:

1. Saleh B E A and M C Teich, “Fundamentals of Photonics”, John Wiley, New York, 1991.
2. Pal B P (Ed.), “Guided Wave Optical Components and Devices”, Academic Press, 2006.
3. Smith F G and T A King., “Optics and Photonics”, John Wiley, Chichester, 2000.
4. Thyagarajan K and A Ghatak, “Nonlinear Optics in Encyclopedia of Modern Optics (Editors: Bob Guenther et al)”, Elsevier Ltd., 2005.

P18MEPH023	MAGNETISM							L	T	P	C
	Total Contact Hours – 60							3	1	0	4
	Prerequisite – B.Sc Physics										
	Course Designed by – Department of Physics										
COURSE OBJECTIVES: To lean the concept of basics in crystal physics and x-ray diffraction											
COURSE OUTCOMES (COs)											
CO1	Gain knowledge about Magnetic material										
CO2	Learn about magnetism										
CO3	Learn about thin film and multilayer										
CO4	Understand about manufacturing magnetic material										
CO5	Gain knowledge about different types magnetic material										
CO6	To remember the different types of magnetism and its properties										
Mapping of Course Outcomes with Program outcomes (POs) (H/M/L indicates strength of correlation) H-High, M-Medium, L-Low											
1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PS O2
2	CO1	H	H						H		
	CO2	H	H								
	CO3	M	M								
	CO4	M	H								
	CO5	H	H								
	CO6	H	H								
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 INTRODUCTION TO MAGNETISM **12**

Basic terms and units, Origin of magnetic moment and dipole, Classification of magnetic materials, Magnetism in atoms, Atomic diamagnetism, Atomic paramagnetism, Hund's rule

Unit – II: SOLID STATE MAGNETISM **12**

Model of Free Electrons, Pauli Paramagnetism, Spontaneously spin split states, magnetism of 3d Transition Metals and Alloys. Transport in magnetic materials: Magnetotransport in metals, Anisotropic magnetoresistance, Giant magnetoresistance, Colossal Magnetoresistance

UNIT III: MAGNETIC INTERACTIONS **12**

Direct exchange, Indirect exchange. Collective Magnetism: Ferromagnetism, Antiferromagnetism, Ferrimagnetisms, Helical Order, Spin Glasses

UNIT IV BROKEN SYMMETRY **12**

Different models of magnetic behavior, phase transition and magnetic excitations. Magnetic anisotropies and induced magnetic anisotropy. Low dimensional Magnetism: Magnetic nanoparticles, Superparamagnetism, Magnetic nano wires, Thin films and multilayer

UNIT V MAGNETIC MEASUREMENTS **12**

Measurement of susceptibility, Magnetization measurement, Vibrating Sample Magnetometer, SQUID Magnetometer, Magneto-Optic-Kerr effect

TEXT BOOKS:

1. Magnetism in Condensed Matter, Stephen Blundell, Oxford University, 2001
2. Fundamentals of Magnetism, Mathias Getzlaff, Springer-Verlag Berlin Heidelberg, 2008
3. Magnetism and Magnetic Materials, J. M. D. Coey, Cambridge University Press, 2009

REFERENCE BOOKS:

1. Introduction To Magnetic Materials, B. D. Cullity and C. D. Graham, John Wiley & Sons, Inc., Hoboken, New Jersey, 2009.
2. Magnetism: Materials and Applications, Edited by Etienne du TREMOLET de LACHEISSERIE, Damien GIGNOUX, Michel SCHLENKER, Springer, 2008.
3. Theory of Magnetism by Yoshida, Springer

P18MCPH301	SOLID STATE PHYSICS							L	T	P	C
	Total Contact Hours - 60							3	1	0	4
	Prerequisite course – B.Sc Physics										
	Course Coordinator Name & Department:- – Dr. S.Anandhi / Physics										
COURSE OBJECTIVES:- Students will have an appreciation on the physics and properties of different types of materials such as conductors, semiconductors, dielectric, magnetic and superconducting.											
COURSE OUTCOMES (COs)											
CO1	Understand the mechanical properties of solid matter and connect these to bond type and classify solid state matter according to their band gaps										
CO2	Explain how diffraction of electromagnetic waves on solid matter can be used to obtain lattice structure with they conduct current with appreciate how electrons and holes behave in semiconductors, and explain how they conduct current										
CO3	Explain how a lattice vibrates at finite temperature, and how these vibrations determine the heat capacity and conduction										
CO4	Understand the basic physics behind dia, para and ferromagnetism and Explain simple theories for conduction of heat and electrical current in metals										
CO5	Know what superconductivity is and qualitatively relate it to lattice vibrations and the density of state.										
CO6	To understand the fundamentals and concepts in solid state physics in the modern society										
Mapping of Course Outcomes with Program outcomes (POs) (H/M/L indicates strength of correlation) H-High, M-Medium, L-Low											
1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
2	CO1	H	H						H		
	CO2	H	H								
	CO3	M	M								
	CO4	M	H								
	CO5	H	H								
	CO6	H	H								
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 INTRODUCTION SOLIDS

12

Introduction Solids – crystalline and amorphous – crystal structure and symmetries – reciprocal lattice – defects and dislocations – Brillouine Zone – *types of bonds*: vander Waals, covalent, ionic and metallic – atomic scattering factor – geometric structure factor – electrons in a periodic potential – X-ray diffraction – liquid crystals.

Unit – II: Conductors, Semiconductors and Dielectrics

12

Conductors: Free electron theory – classical and quantum theory, band theory of solids – effective mass of electron – Kronig-Penney model – Bloch theorem – Hall effect – thermopower. *Semiconductors*: Types – carrier and Fermi level statistics for intrinsic and extrinsic semiconductors – electrical conductivity. *Dielectrics*: Types of polarization – frequency dependence of polarization – local electric field – dielectric constant and polarizability – Clausius-Mossotti equation, piezo and ferroelectricity.

Unit – III: Transport and Thermodynamic Studies

12

Lattice vibrations – concept and momentum of phonons – vibrations of mono and di-atomic lattices, heat capacity – Einstein and Debye models – Dulong and Petit's law – Weidemann-Franz law – electronic heat capacity – experimental heat capacity of metals – resistivity – residual resistivity ratio – experimental electrical resistivity of metals – Matthiessen's rule – Magnetoresistance – Giant and colossal magnetoresistance.

Unit – IV: Magnetism

12

Magnetic terminologies – types of magnetism – dia, para, ferro, ferri and anti-ferromagnetism – Hund's rules – Curie-Weiss law – Langevin's classical and quantum theories of dia and para magnetism – Weiss theory of ferromagnetism – Heisenberg model of exchange interaction – concept of domain and hysteresis – antiferro and ferrimagnetism – theories.

Unit – V: Superconductivity

12

Superconductivity – Meissner and isotope effect – thermodynamical and optical properties – supercurrents and penetration depth – London's equations – BCS model conventional – unconventional – critical field – types of superconductors – metal-to-insulator transition – flux quantization – vortex lattice – high T_c superconductors – Josephson Junctions – AC and DC – superfluidity

TEXT BOOKS

1. Charles Kittel, Introduction to Solid State Physics, Wiley Eastern, 5th edition, (1983).
2. T.H.K. Barron and G.K. White, Heat capacity and Thermal Expansion at Low Temperatures, Kluwer Academic/Plenum Publishers, New York (1999).
3. N.W. Ashcroft and N.D. Mermin, Solid State Physics, Cengage Learning (2010).
4. Ali Omar, Elementary Solid State Physics, Pearson Education India (1999).
5. J.S. Blakemore, Solid State Physics, 2nd edition, Cambridge University Press (1974).

REFERENCE BOOKS

1. B.S. Saxena, R.C. Gupta, P.N.Saxena, Fundamentals of solid state physics, PragatiPrakashan, 7th edition (1999).
2. A.J. Dekker, Solid State Physics, Prentice Hall of India (1971).
3. Helmut Kronmüller, Stuart Parkin, Handbook of Magnetism and Advanced Magnetic Materials, Wiley (2007)
4. Laurent-Patrick Lévy. Magnetism and superconductivity , Springer (2000).

P18MCPH302	ATOMIC AND MOLECULAR SPECTROSCOPY							L	T	P	C
	Total Contact Hours - 60							3	1	0	4
	Prerequisite course – B.Sc Physics										
	Course Coordinator Name & Department:- – Dr. S.Anandhi / Physics										
COURSE OBJECTIVES:- Students will have an appreciation on the physics and properties of different types of materials such as structure of atoms and molecules .											
COURSE OUTCOMES (COs)											
CO1	Understand basics of atomic and molecular physics making possible to use them for diagnostics of plasmas by means of optical spectroscopy.										
CO2	Understand and study about the basic principle of the spectroscopy										
CO3	Understand and learn about the electronic energy of diatomic molecules - symmetry properties of molecular orbital's.										
CO4	Explain the advantages of Fourier Transform infrared spectroscopy over conventional infrared spectroscopy and how to determine whether the molecular vibrations of a tri-atomic molecule are Raman spectroscopy.										
CO5	Analyze and obtain practical experiences at laboratory measurements of typical spectra as well as at solutions of typical problems from atomic and molecular spectroscopy.										
CO6	To learn about the general structure of diatomic molecules, electronic states, vibrational and rotational energy of diatomic molecules with polyatomic molecules Molecular spectra										
Mapping of Course Outcomes with Program outcomes (POs) (H/M/L indicates strength of correlation) H-High, M-Medium, L-Low											
1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
2	CO1	H	H						H		
	CO2	H	H								
	CO3	M	M								
	CO4	M	H								
	CO5	H	H								
	CO6	H	H								
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 ATOMIC SPECTRA

12

Quantum states of electron in atoms – hydrogen atom spectrum – electron spin – Stern Gerlach Experiment – spin-orbit interaction – Lande interval rule – two electron systems – LS-JJ coupling schemes – fine structure – spectroscopic terms and selection rules – hyperfine structure – exchange symmetry of wave function – Pauli's exclusion principle – periodic table.

UNIT – II ATOMS IN EXTERNAL FIELDS AND RESONANCE SPECTROSCOPY

12

Zeeman and Paschen Back Effect of one and two electron systems – selection rules – Stark effect – inner shell vacancy – X-ray – Auger transitions – Compton Effect – NMR – basic principles – classical and quantum mechanical description – spin-spin and spin-lattice relaxation times – magnetic dipole coupling – chemical shift – Knight shift – ESR – basic principles – nuclear interaction and hyperfine structure – g-factor – zero field splitting.

UNIT – III MICROWAVE SPECTROSCOPY AND IR SPECTROSCOPY

12

Rotational spectra of diatomic molecules – rigid rotator – effect of isotopic substitution – non-rigid rotator – rotation spectra of polyatomic molecules – linear, symmetric top and asymmetric top molecules – experimental techniques – diatomic vibrating rotator – linear, symmetric top molecule – analysis by infrared techniques – characteristic and group frequencies

UNIT – IV RAMAN SPECTROSCOPY

12

Raman effect – quantum theory of Raman effect – rotational Raman spectra – vibrational Raman spectra – Raman spectra of polyatomic molecules – Raman spectrometer – hyper- Raman effect – experimental techniques.

UNIT – V ELECTRONIC SPECTROSCOPY

12

Electronic spectra of diatomic molecules – Frank-Condon principle – dissociation energy and dissociation products – rotational fine structure of electronic vibration transitions – Fortrat Diagram – predissociation.

TEXT BOOKS

1. C.N. Banwell, Fundamentals of Molecular Spectroscopy, 4th edition, McGraw-Hill, New York (2004).
2. G. Aruldas, Molecular Structure and Spectroscopy, Prentice Hall of India, New Delhi (2002).

REFERENCE BOOKS

1. Manas Chanda, Atomic Structure and Chemical Bond, Tata McGraw-Hill, New Delhi (2003).
2. Arthur Beiser, Concepts of Modern Physics, 6th edition, Tata McGraw-Hill, New Delhi (2003).
3. B.P. Straughan & S. Walker, Spectroscopy: Vol. I, Chapman and Hall (1976).
4. G.M Barrow, Introduction to Molecular Spectroscopy, McGraw Hill (1986).

P18MCPH303	NUCLEAR AND PARTICLE PHYSICS							L	T	P	C
	Total Contact Hours - 60							3	1	0	4
	Prerequisite course – B.Sc Physics										
	Course Coordinator Name & Department:- – Dr. S.Anandhi / Physics										
COURSE OBJECTIVES:- To about the fundamentals of nuclear and particle physics and understand the applications of nuclear and particle physics..											
COURSE OUTCOMES (COs)											
CO1	Understand the fundamental of nuclear and particle physics and how forces arise from virtual particle exchange										
CO2	Understand the structure of nuclei, and simple nuclear models such as the liquid drop model and the shell model and how to use the techniques in scattering theory which are relevant in nuclear physics and partial waves										
CO3	Understand and how to determine which hadron decays would or would not be consistent with the quark content of the Standard Model, with parity violation/conservation, with energy-momentum conservation, etc.										
CO4	Demonstrate a knowledge of fundamental aspects of the structure of the nucleus, radioactive decay, nuclear reactions and the interaction of radiation and matter										
CO5	Analyze the key features of nuclear fission and fusion and their applications										
CO6	Understand the main types of nuclear decays, and with models for calculating these and the associated selection rules;										
Mapping of Course Outcomes with Program outcomes (POs) (H/M/L indicates strength of correlation) H-High, M-Medium, L-Low											
1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO 1	PSO2	PSO3
2	CO1	H	H						H		
	CO2	H	H								
	CO3	M	M								
	CO4	M	H								
	CO5	H	H								
	CO6	H	H								
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 NUCLEAR PROPERTIES AND FORCES

12

Nuclear radius and charge distribution – angular momentum – parity – electromagnetic moments-isospin – binding energy – nature of the nuclear force – Yukawa's hypothesis – Deuteron and its properties – properties of nuclear forces – spin dependence – internucleon potential – charge independence and charge symmetry-polarization

UNIT – II NUCLEAR MODELS

12

Liquid drop model – semi empirical mass formula – shell model – experimental evidence – magic numbers – spin-orbit coupling – angular momentum of the energy states – magnetic moments and Schmidt lines – electric quadrupole moments – excited states – collective model – nuclear vibration and rotation.

UNIT – III RADIOACTIVITY

12

Measurements of lifetimes – multipole moments – theoretical prediction of decay constants – selection rules – angular correlations – internal conversion – Geiger-Nuttal law – barrier penetrations applied to alpha decay and beta decay – simple theory – Kurie plots – comparative half life – selection rules – internal conversion

UNIT – IV NUCLEAR REACTIONS

12

Reaction dynamics – Q-equation – theory of nuclear reaction – reaction cross sections- Rutherford cross section – compound nucleus reactions– direct reactions – resonance reaction – fission process – energy in fission and absorption cross section – neutron sources–fusion fundamentals – Lawson criterion – solar fusion.

UNIT – V ELEMENTARY PARTICLES

12

Classification of elementary particles – types of interactions – conservation laws –momentum-parity and spin – isospin – baryon and lepton numbers – Gell-Mann-Nishijima relationship – mesons and baryons – CPT invariance – detection and properties of neutrino – concept of antiparticles – tau-theta puzzle – neutral kaon – quark model.

TEXT BOOKS

1. Nuclear Physics, D. C. Tyl, Himalaya Publishing House
2. Nuclear Structure, vol.I and Vol.IIA. Bohr and B. R. Mottelson, Benjamin, Reading, MA
3. Kenneth S. Krane, Introductory Nuclear Physics, John Wiley & Sons, New York (1988).
4. D. Griffiths, Introduction to Elementary Particles, Harper and Row, New York (1987).

REFERENCE BOOKS

1. B. L. Cohen, Concepts of Nuclear Physics, Mc-Graw Hill, New York (1971).
2. I. Kaplan, Nuclear Physics, Addison-Wesley, London (1977).
3. D. H. Perkins, Particle Astrophysics, Oxford University Press, New York (2003)
4. Samuel S. M. Wong, Introductory Nuclear Physics, Wiley, Weinheim (2004).

P18MCPH304	NUMERICAL METHODS IN 'C' PROGRAMMING							L	T	P	C
	Total Contact Hours - 60							3	1	0	4
	Prerequisite course – B.Sc Physics										
	Course Coordinator Name & Department:- – Dr. S.Anandhi / Physics										
COURSE OBJECTIVES:- To introduce various numerical and computational techniques useful to handle complex problems.											
COURSE OUTCOMES (COs)											
CO1	Demonstrate understanding of common numerical methods and how they are used to obtain approximate solutions to otherwise intractable mathematical problems										
CO2	Understand and derive numerical methods for various mathematical operations and tasks, such as interpolation, differentiation, integration, the solution of linear and nonlinear equations, and the solution of differential equations										
CO3	Understand and how apply numerical methods to obtain approximate solutions to mathematical problems										
CO4	Understand and study about the concept of mathematics i.d. linear algebra equations										
CO5	Analyze and How to use numerical methods for solving a problem and locate and use good mathematical software.										
CO6	To learn about the main types of Roots equation, ordinary differential and linear algebra, advanced method of numerical method in programming										
Mapping of Course Outcomes with Program outcomes (POs) (H/M/L indicates strength of correlation) H-High, M-Medium, L-Low											
1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
2	CO1	H	H						H		
	CO2	H	H								
	CO3	M	M								
	CO4	M	H								
	CO5	H	H								
	CO6	H	H								
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 ROOTS OF EQUATIONS**12**

Bracketing and bisection – false position method – Newton-Raphson method – iteration methods – acceleration of convergence – polynomial equations – complex roots and Muller method-parallel computing program

UNIT – II INTERPOLATION AND INTEGRATION**12**

Introduction – Lagrange and Newton interpolations – least square fitting – rational approximation – numerical differentiation – numerical integration – trapezoidal rule, Simpson's rule.

UNIT – III LINEAR ALGEBRA**12**

System of linear equations – Gauss elimination method – pivoting method – triangularization (LU) method – eigenvalues and eigenvectors – Jacobi method for symmetric matrix – Rutishauser LU method for arbitrary matrices

UNIT – IV ORDINARY DIFFERENTIAL EQUATIONS**12**

Single step methods – Runge-Kutta (fourth order) methods: fixed and controlled step size – Predictor-Corrector method – system of first order ODEs – finite difference method – finite element method.

UNIT – V ADVANCED METHODS**12**

Introduction to parallel computing – numerical operations in parallel computing – roots of an equation – interpolation and integration – system of linear equations – artificial neural network – learning

TEXT BOOKS

1. Samuel D. Conte and Carl de Boor, Elementary Numerical Analysis, 3rd edition, Tata McGraw-Hill (2010).
2. M.K. Jain, S.R.K. Iyengar, R.K. Jain, Numerical Methods for Scientific and Engineering Computation, New Age International (1993).
3. Srimantha Pal, Numerical Methods, Oxford University Press (2009).

REFERENCE BOOKS

1. W.H. Press, S.A. Teukolsky, W.T. Vetterling and B.P. Flannery, Numerical Recipes in C: The Art of Scientific Computing, Cambridge University Press (1992).

P18MCPH3L1	GENERAL PHYSICS LABORATORY - III							L	T	P	C
	Total Contact Hours - 48							1	0	3	4
	Prerequisite course – B.Sc Physics										
	Course Coordinator Name & Department:- – Dr. S.Anandhi / Physics										
COURSE OBJECTIVES:- To introduce the basic concepts of various advanced experimental techniques used in research through hands on experience and the basic principles, instrumentation and applications of analytical technique.											
COURSE OUTCOMES (COs)											
CO1	Apply knowledge of mathematics and physics fundamentals and an instrumentation to arrive solution for various problems.										
CO2	To understand the knowledge in the scientific methods and learn the process of measuring different Physical variables										
CO3	Understand and Development skills in arranging and handling different measuring instruments										
CO4	Analyze the experimental errors in various physical measurements and to plan / suggest on how the contributions could be made of the same order, so as to minimize the errors										
CO5	Explain the Principles of digital electronics and various communication systems										
CO6	To understand knowledge about the fundamentals of electronic components, devices, transducers										
Mapping of Course Outcomes with Program outcomes (POs) (H/M/L indicates strength of correlation) H-High, M-Medium, L-Low											
1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
2	CO1	H	H						H		
	CO2	H	H								
	CO3	M	M								
	CO4	M	H								
	CO5	H	H								
	CO6	H	H								
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									

LIST OF EXPERIMENTS

1. X-Ray Diffraction – Determination of lattice parameters of a crystalline solid
2. UV-Vis Spectrophotometer – Determination of absorption coefficient and bandgap
3. FTIR Spectrometer – Determination of vibration levels in a compound
4. Superconductivity – Determination of transition temperature
5. Contact Angle Measurement
6. G.M. Counter
7. Thin Film Deposition and Measurement of Electrical Conductivity – Four Probe Method
8. . Ellipsometer – Determination of n and k of a material

TEXT BOOS

1. Physics practical manual , Department of physics,

REFERENCE BOOKS

1. L.A. Leventhal, Micro Computer Experimentation with the Intel SDK-85 (1980).
2. Learning MATLAB – The MathWorks, Inc (1999).
3. Kenneth L. Ashley, Analog Electronics with LabVIEW, Pearson Education (2003)

P18MCPH3L2	ELECTRONICS LABORATORY -III							L	T	P	C
	Total Contact Hours - 48							1	0	3	4
	Prerequisite course – B.Sc Physics										
	Course Coordinator Name & Department:- – Dr. S.Anandhi / Physics										
COURSE OBJECTIVES:- To understand the digital electronics circuits and how to write the programme addressing modes & instruction set of microprocessor etc.,											
COURSE OUTCOMES (COs)											
CO1	Explain the working of different types of feedback amplifiers & oscillators										
CO2	How to write the Mathematical operations using MATLAB program										
CO3	Knowledge and demonstrate programming proficiency using the various addressing modes and data transfer instructions of the target microprocessor and microcontroller.										
CO4	To learn about the Electronic circuit using microprocessor and to study the working process of , OP-amp, special diodes										
CO5	An ability to use the techniques, skills, and modern science and technology tools necessary for science and engineering technology practice										
CO6	To understand knowledge about the fundamentals of electronic components, devices, transducers										
Mapping of Course Outcomes with Program outcomes (POs) (H/M/L indicates strength of correlation) H-High, M-Medium, L-Low											
1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
2	CO1	H	H						H		
	CO2	H	H								
	CO3	M	M								
	CO4	M	H								
	CO5	H	H								
	CO6	H	H								
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									

LIST OF EXPERIMENTS

1. MATLAB-1: Matrix operations
2. MATLAB-2: Digital Signal Processing
3. MATLAB-3: Solving Ordinary Differential Equations
4. Microprocessor-1: Stepper Motor Interface
5. Microprocessor-2: Traffic Control
6. Microprocessor-3: Interfacing Display
7. Microprocessor-4: Interfacing with Voltmeter
8. Labview-1: Operational Amplifier Circuits
9. Labview-2: Simulation of Diode characteristics
10. Labview-3: Design of Op-Amp AC Characteristics
11. Labview-4: Construction of OPAMP
12. Labview-5: Design of 555 Timer Chip Astable Circuit

TEXT BOOKS

1. Kenneth L. Ashley, Analog Electronics with LabVIEW, Pearson Education (2003)

REFERENCE BOOKS

1. L.A. Leventhal, Micro Computer Experimentation with the Intel SDK-85 (1980).
2. Learning MATLAB – The MathWorks, Inc (1999).

P18MCPH401	ELECTRONICS								L	T	P	C
	Total Contact Hours - 60								3	2	0	4
	Prerequisite course – B.Sc Physics											
	Course Coordinator Name & Department:- – Dr. S.Anandhi / Physics											
COURSE OBJECTIVES:- To impart a diversified knowledge on circuit analysis, the semiconductor devices, FETs, operational amplifiers and digital circuits and their applications												
COURSE OUTCOMES (COs)												
CO1	Execute the basic concept of electronics circuit using op-amp, oscillator and digital circuits											
CO2	Understand the operational characteristics of Semiconductor devices.											
CO3	Understand the basic model of BJT and FET.											
CO4	Explain the working of different types of feedback amplifiers & oscillators.											
CO5	An ability to identify, formulate, and solve complex engineering problems by applying principles of science, and mathematic											
CO6	An ability to develop and conduct appropriate experimentation, analyze and interpret data to draw the circuits											
Mapping of Course Outcomes with Program outcomes (POs) (H/M/L indicates strength of correlation) H-High, M-Medium, L-Low												
1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	
2	CO1	H	H						H			
	CO2	H	H									
	CO3	M	M									
	CO4	M	H									
	CO5	H	H									
	CO6	H	H									
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 SEMICONDUCTOR AND SPECIAL DIODES

12

Introduction to semiconductor - Bandgap - forbidden energy gap - valence and conduction bands- types of semiconductor - energy band diagram and fermi level - PN junction barrier voltage across the junction. Schottky barrier diode – varactor diode-photodiode – solar cell – photodiodes and transistors – light emitting diode – semiconductor laser – UJT – opto-couplers

UNIT – II BIPOLAR TRANSISTOR AMPLIFIERS AND FETS

12

Biasing characteristics of junction transistors – analysis using re model-fixed bias-voltage divider bias-emitter bias – direct coupled transistor amplifiers – single stage transistor amplifier – frequency response – feed back in amplifiers – effect of negative feedback in amplifiers – FETs – different types-low and high frequency FETs, frequency response of FET – applications

UNIT-III OSCILLATORS

12

Oscillator principle – oscillator types – frequency stability, RC oscillators – phase shift oscillator – Wein bridge oscillator – LC tunable oscillators – limitations – multivibrators – monostable and astable – 555 IC timer – sine wave and triangular wave generation – crystal oscillators and their applications.

UNIT – IV OPERATIONAL AMPLIFIERS

12

Basis of operational amplifier – characteristics – CMRR – inverting and non-inverting modes- sum and difference amplifiers – integrating and differentiating circuits – feedback types – current to voltage (ICVS) and voltage to current (VCIS) conversion — op-amp application – instrumentation amplifiers – low pass and high pass active filters.

UNIT – V DIGITAL CIRCUITS

12

Logic gates: De Morgan's law, binary adder, comparators, decoders, multiplexers. *Flip-flops:* RS flip-flop, JK flip-flop, JK master-slave flip-flops, T flip-flop, D flip-flop. Shift registers – synchronous and asynchronous counters – registers – A/D and D/A conversion.

TEXT BOOKS

1. J. Milman and C.C. Halkias, Electronic Devices and Circuits, McGraw-Hill (1981).
2. Albert Malvino, David J Bates, Electronics Principles, Tata McGraw-Hill (2007).
3. R.J. Higgins, Electronics with Digital and Analogue Integrated Circuits, Prentice Hall (1983).

REFERENCE BOOKS

1. R. L. Boylsted and L. Nashelsky, Electronic Device and Circuits, Pearson Education (2003).
2. C.L Wadhwa, Network Analysis and Synthesis, New Age International Publishers, (2007).
3. G.B. Calyton, Operation Amplifiers, ELBS (1980).

P18MCPH402	MICROCONTROLLER AND INSTRUMENTATION							L	T	P	C
	Total Contact Hours - 60							3	2	0	4
	Prerequisite course – B.Sc Physics										
	Course Coordinator Name & Department:- – Dr. S.Anandhi / Physics										
COURSE OBJECTIVES:- Students will study the major characteristics of measurement systems and errors involved in them and understanding related to production and measurement of low temperatures and high pressure with read various spectroscopic techniques and detectors. To study the Architecture of 8085 & 8051 and study the addressing modes & instruction set of 8085 & 8051.											
COURSE OUTCOMES (COs)											
CO1	Study different methods available for measurement of passive elements like resistance, inductance & capacitance and solving problems										
CO2	An ability to use the techniques, skills, and modern science and technology tools necessary for science and engineering technology practice.										
CO3	knowledge and demonstrate programming proficiency using the various addressing modes and data transfer instructions of the target microprocessor and microcontroller.										
CO4	Compare accepted standards and guidelines to select appropriate Microprocessor (8085 & 8086) and Microcontroller to meet specified performance requirements.										
CO5	Evaluate assembly language programs and download the machine code that will provide solutions real-world control problems.										
CO6	An ability to develop analyze and interpret data to draw the circuits										
Mapping of Course Outcomes with Program outcomes (POs) (H/M/L indicates strength of correlation) H-High, M-Medium, L-Low											
1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO1	PSO2
2	CO1	H	H						H		
	CO2	H	H								
	CO3	M	M								
	CO4	M	H								
	CO5	H	H								
	CO6	H	H								
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 GENERALIZED CHARACTERISTICS OF INSTRUMENTS 12

Static characteristics: accuracy, precision, repeatability, reproducibility, resolution, sensitivity, linearity, drift, span, range. Dynamic characteristics: transfer function, zero order instruments, and first order instruments – step, ramp, frequency responses – second order instruments – step-ramp response – dead time elements. Types of Errors: gross, systematic, random.

UNIT – II THERMAL SYSTEMS 12

Temperature scales – liquefaction of gases, achieving low temperature – design of cryostats. High temperature furnaces: resistance, induction and arc furnaces – high temperature measurements – pyrometers – total and selective radiation pyrometers – optical pyrometer.

UNIT – III DETECTORS AND SPECTROSCOPY 12

Detectors: pyroelectric, thermoelectric, photoconducting, photoelectric, photomultiplier, scintillation types of detectors, photon counters. Spectroscopy: principles of atomic absorption spectroscopy – instrumentation – single and double beam spectrometers –theory and components of nuclear quadrupole resonance technique – applications

UNIT - IV ARCHITECTURE OF MICROCONTROLLER 8051 12

Introduction –comparison between microprocessor and microcontroller-architecture of 8051-key features of 8051- memory organization- data and program memory-internal RAM organization-special function registers-control registers-I/O port-counters and timers- interrupt structures.

UNIT –V PROGRAMMING THE MICROCONTROLLER 8051 12

Instruction set of 8051-arithmetic, logical, data, movable, jump and call instructions-addressing modes-immediate, register, direct and indirect addressing modes-assembly language programming-simple program to illustrate arithmetic and logical operations –sum of numbers, biggest and smallest numbers in an array- software time delay system.

TEXT BOOKS

1. A.K. Sawhney and PuneetSawhney, A Course in Mechanical Measurement and Instrumentation, DhanpatRai&Sons, New Delhi 2000.
2. Dennis Roddy and John Coolen, Electronic communication, 4th edition, PHI private Ltd., (1999). (Unit – II)
3. C.S. Rangan, G.R. Sharma and V.S.V. Mani, Instrumentation Devices and Systems, Tata McGraw-Hill (1983).
4. H.H. Willard, L.L. Merrit and John A. Dean, Instrumental Methods of Analysis, 6th edition, CBS Publishers & Distributors (1986).

REFERENCE BOOKS

- 1 . D.V.S. Murty, Transducers and Instrumentation, Prentice – Hall of India (P) Ltd., New Delhi (1995).

2. Ernest O. Doebelin, Measurement System Applications and Design, McGraw Hill International Book Company, Singapore (1983).
3. Ramesh S Goankar, Micro processor Architecture, Programming & Applications with the 8085, Penram International Publishing (India) Pvt. Ltd., Fourth Edition, 2002
4. . Kenneth J. Ayala, The 8051 Microcontroller, Edition3 ,PublisherCengage Learning, 2004
5. Mazidi,The 8051 Microcontroller And Embedded Systems ,2nd Edition, PublisherPearson Education India, 2007

MAJOR ELECTIVE

P18MEPH031	NANOSCIENCE AND NANOTECHNOLOGY							L	T	P	C
	Total Contact Hours - 60							3	1	0	4
	Prerequisite course – B.Sc Physics										
	Course Coordinator Name & Department:- – Dr. S.Anandhi / Physics										
COURSE OBJECTIVES:- To impart the basic knowledge on nanoscience and technology which includes the exotic properties of materials at nanoscale, various techniques available for the processing and characterization of nanostructured materials, applications in selected fields such as magnetic recording technology, electronics and biomedical field.											
COURSE OUTCOMES (COs)											
CO1	Demonstrate knowledge on the physics, chemistry, biology, quantum confinement and photonics of nanomaterials										
CO2	Demonstrate an ability to synthesis and characterize the nanomaterials.										
CO3	Demonstrate an ability to visualize and work on laboratory and multidisciplinary tasks including nanometrology, material science, physics, chemistry and nanobiotechnology.										
CO4	Demonstrate their skills for synthesis, processing and handle imaging equipments to analyze nanomaterials.										
CO5	Understanding of impact of nanomaterials on the society including environment, health and ecosystem.										
CO6	To study and execute the application nanotechnology										
Mapping of Course Outcomes with Program outcomes (POs) (H/M/L indicates strength of correlation) H-High, M-Medium, L-Low											
1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
2	CO1	H	H						H		
	CO2	H	H								
	CO3	M	M								
	CO4	M	H								
	CO5	H	H								
	CO6	H	H								
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 NANOMATERIALS AND STRUCTURES **12**

Nanomaterials – types: nanowires, nanotubes, fullerenes, quantum dots, Dendrimers, nanocomposites– properties – Methods of preparation: top-down, bottom-up.

UNIT – II CHARACTERIZATION TOOLS **12**

Electron Microscopy Techniques – SEM, TEM, X ray methods – optical methods – fluorescenceMicroscopy – single molecule surface enhanced resonance – Raman spectroscopy – Atomic ForceMicroscopy – MRI STM and SPM.

UNIT – III NANOMAGNETISM **12**

Mesoscopic magnetism – *magnetic measurements*: miniature Hall detectors, integrated DC SQUID Microsusceptometry – magnetic recording technology, biological magnets.

UNIT – IV NANO ELECTRONICS AND INTEGRATED SYSTEMS **12**

Basics of nanoelectronics – single electron transistor – quantum computation – parallel architecturefor nanosystem – nanolithography – basic and integrated structures – MEMS and NEMS – dynamicsof NEMS – limits of integrated electronics

UNIT – V BIOMEDICAL APPLICATIONS OF NANOTECHNOLOGY **12**

Biological structures and functions – biomolecular motors – drug delivery systems – organic-inorganic nanohybrids – inorganic carriers – nanofluidics.

Text Books

1. Jan Korvink and Andreas Greiner, Semiconductors for Micro and Nanotechnology – an Introduction for Engineers, Weinheim Cambridge: Wiley-VCH (2001).
2. N John Dinardo and Weinheim Cambridge, Nanoscale Characterisation of Surfaces & Interfaces, 2nd edition, Wiley-VCH (2000).
3. Introduction to Nanotechnology, C.P. Poole and F.J. Ownes, Wiley_India (2007).

Reference Books

1. G Timp (ed), Nanotechnology, AIP Press, Springer (1999).
2. M. Wilson, K. Kannangara, G. Smith, M. Simmons and B. Raguse, Nanotechnology: Basic Sciences and Energy Technologies, Overseas Press (2005).
3. Nano: The Essentials, T. Pradeep, Mc-Graw Hill India (2007).

P18MEPH032	LASERS AND APPLICATIONS							L	T	P	C
	Total Contact Hours - 60							3	1	0	4
	Prerequisite course – B.Sc Physics										
	Course Coordinator Name & Department:- – Dr. S.Anandhi / Physics										
COURSE OBJECTIVES:- To introduce basics and usage of laser in science and industry.											
COURSE OUTCOMES (COs)											
CO1	To study the knowledge on basic concept of LASER and its applications										
CO2	Execute the requirements for a system to act as a laser.										
CO3	Differentiate the various types of lasers and their means of excitation										
CO4	Relate the structure and properties of lasers to their performance and intended applications										
CO5	Demonstrate competence in the use of various procedures and instruments for the assembly and characterization of laser systems. And Apply the scientific process in the conduct and reporting of experimental investigations										
CO6	Demonstrate an awareness of the safety responsibilities involved in working with lasers										
Mapping of Course Outcomes with Program outcomes (POs) (H/M/L indicates strength of correlation) H-High, M-Medium, L-Low											
1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO2	PSO2	PSO3
2	CO1	H	H						H		
	CO2	H	H								
	CO3	M	M								
	CO4	M	H								
	CO5	H	H								
	CO6	H	H								
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 PROPERTIES AND TYPES OF LASERS **12**

Laser Fundamentals: spontaneous and stimulated emission, Einstein coefficients, population inversion – Properties: temporal and spatial coherence, directionality – Types: ruby laser, helium-neon laser, CO₂ laser, dye lasers, semiconductor lasers.

UNIT – II HOLOGRAPHY **12**

Spatial frequency filtering – holography – applications of holography – HNDD (Holographic Non-Destructive Testing) – holographic storage – optical disk storage – laser speckle and speckle meteorology – SNDD (Speckle Non-Destructive Testing).

UNIT – III FIBRE OPTICS **12**

Optical fibre principle – types of fibres – properties – fiber optical communication – fibre amplifiers, fiber-optic sensors: intensity-phase polarization and frequency dependent techniques.

UNIT – IV LASERS IN SCIENCE **12**

Saturation spectroscopy – excited state spectroscopy – nonlinear spectroscopy – time domain and its applications – stimulated Raman emission – laser fusion – isotope separation – medical applications, photo-chemical applications

UNIT – V LASERS IN INDUSTRY **12**

Materials processing – drilling, cutting, welding – alloying – glazing – ablation – laser chemical vapour deposition (LCVD) – laser thermal deposition – hardening, annealing – laser tracking – lidar.

TEXT BOOKS

1. K. Thyagarajan and A.K. Ghatak, Lasers Theory and Applications, Mcmillan (1981).
2. K. Koebner (ed.), Industrial Applications of Lasers, Wiley (1984).

REFERENCE BOOKS

1. J.T. Cuxon and D.E. Parker, Industrial Lasers and their Applications, Prentice Hall (1985).
2. B. Culshaw, Optical Fiber Sensing and Signal Processing, Peter Peregrinus Ltd. (1984).
3. F.C. Appard, Fiber Optics Handbook, McGraw-Hill (1989).

P18MEPH033	ASTRONOMY & ASTROPHYSICS								L	T	P	C
	Total Contact Hours - 60								3	2	0	4
	Prerequisite course – B.Sc Physics											
	Course Coordinator Name & Department:- – Dr. S.Anandhi / Physics											
COURSE OBJECTIVES:- Student will be learn about to Motions in the Sky, Stars: Birth, Life, & Death Galaxies & Black Holes, Cosmology: From the Big Bang to the Present Day												
COURSE OUTCOMES (COs)												
CO1	Learn fundamental concepts in astrophysics that will equip you to better understand new scientific discoveries made in the coming years and decades											
CO2	List astrophysical relevant radiation mechanisms, and identify them											
CO3	Discuss the properties of degenerate matter and the outcome of stellar evolution for stars of different mass											
CO4	Understand astrophysics as a way to describe our real physical world											
CO5	Analyse the techniques and methods used to gain new knowledge in physics and astronomy											
CO6	Understand the concepts in astrophysics and astronomically new scientific discoveries made in futures											
Mapping of Course Outcomes with Program outcomes (POs) (H/M/L indicates strength of correlation) H-High, M-Medium, L-Low												
1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	
2	CO1	H	H						H			
	CO2	H	H									
	CO3	M	M									
	CO4	M	H									
	CO5	H	H									
	CO6	H	H									
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 INTRODUCTORY ASTRONOMY

12

History of Astronomy; Overview of the major constituents of the universe; Solar System, Planets - laws of motion of planets, inner planets, outer planets; Extrasolar planets- Methods of detection of extrasolar planets; Black body radiation-specific intensity, luminosity; Basics of radiative transfer-emission coefficient, absorption coefficient, source function

UNIT –II THE HEAVENS ABOVE CELESTIAL SPHERE AND TIME CONSTELLATIONS.

12

The celestial sphere. Coordinate systems: Equatorial, ecliptic system. Seasons, Sidereal, Apparent and Mean solar time. Calendar. Julian date. Stellar Distances and Magnitudes Distance scale in astronomy. Determination of distances to planets and stars. Magnitude scale. Atmospheric extinction. Absolute magnitudes and distance modulus

UNIT –III OUR SOLAR SYSTEM

12

Theories of formation of the Solar System. The Sun Photosphere, chromosphere and corona of the Sun. Sun spots and magnetic fields on the sun. Solar activity, solar wind. Planets and their Satellites Surface features, atmospheres and magnetic fields of Earth, Moon and Planets. Satellites and rings of planets. Asteroids, Meteors, Meteorites and Comets.

UNIT -IV STARS

12

What are they? Stars. Spectral classification. Energy generation in stars. Basics of Star formation & Evolution. The HR diagram. Super dense objects - White dwarfs, Neutron stars & Pulsars. Black holes.

UNIT- V

12

The milky way galaxy & galaxies beyond structure of the milky way galaxy, What are galaxies? Different types of galaxies. Hubble's classification. Structure, size & mass of the Milky Way galaxy. Position of our Sun and its motion around the galactic centre. Cosmology The expanding universe. Cosmological models: Big Bang and Steady State models. Dark matter.

TEXT BOOKS

1. Frank H. Shu: The Physical Universe-An Introduction to Astronomy.
2. K D Abhyankar: Astrophysics of the Solar System.
3. Baidyanath Basu: Introduction to Astrophysics. 7. Jayant Narlikar: Structure of Univer

REFERENCE BOOKS

1. H. Karttunen, P Kroger, H Oja, M Poutanen & K. J. Donner editors. Fundamental Astronomy.
2. W.M.Smart: Foundations of Astronomy.

P18PRPH4P1	PROJECT WORK AND VIAVOCE								L	T	P	C
	Total Contact Hours - 120								0	0	9	9
	Prerequisite course – B.Sc Physics											
	Course Coordinator Name & Department:- – Dr. S.Anandhi / Physics											
COURSE OBJECTIVES: To guide the students such a way that the they carry out a comprehensive work on the chosen topic which will stand them in good stead as they face real life situations . The project work so chosen by the student shall culminate in gaining of major design experience in the related area of specialization. To simulate real life situations related to the program and impart adequate training so that confidence to face and tackle any problem in the field is developed in the college itself.												
COURSE OUTCOMES (COs)												
CO1	List out the concept and objectives, nature, types and methods of project.											
CO2	To develop a scientific approach in solving problems related to physics											
CO3	To Practice the research design, and methodology											
CO4	To study the characterization and synthesized material											
CO5	Measure the major findings, suggestions and conclusion											
CO6	Design the model for project report.											
Mapping of Course Outcomes with Program outcomes (POs) (H/M/L indicates strength of correlation) H-High, M-Medium, L-Low												
1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	
2	CO1	H	H						H			
	CO2	H	H									
	CO3	M	M									
	CO4	M	H									
	CO5	H	H									
	CO6	H	H									
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										

Topics in Physics will be assigned to each group of students by the staff coordinator guiding the project. The project work is to be carried out at the department or any other organization approved by the staff coordinator and the HoD. Review meeting will be conducted once in a month. Viva Voce presentation will be conducted by the HoD, internal examiner and the staff coordinator guiding the project.

Marks

Dissertation	150
Viva- Voce Examination	50

Course Coordinator**HOD**

P18ACEN001	AUDIT COURSE ENGLISH FOR RESEARCH PAPER WRITING
P18ACCE002	DISASTER MANAGEMENT
P18ACEN003	SANSKRIT FOR TECHNICAL KNOWLEDGE
P18ACBA004	VALUE EDUCATION
P18ACBW005	CONSTITUTION OF INDIA
P18ACBA006	PEDAGOGY STUDIES
P18ACBA007	PERSONALITY DEVELOPMENT THROUGH LIFE ENLIGHTENMENT SKILLS
OPEN ELECTIVE	
STRESS MANAGEMENT BY YOGA	
TERM PAPER	

OPEN ELECTIVE – I

P18OEBA001	ADVERTISING AND SALES MANAGEMENT					L	T	P	C		
	Total Contact Hours – 60					4	0	0	4		
	Prerequisite course –UG Level										
	Course Coordinator Name & Department:- T Manjiniprakash/BBA										
COURSE OBJECTIVES: - - Identify the terms and concepts that are commonly used in promotion and advertising. - Demonstrate preparation to comprehend the basic advertising. - Give the relationship which underlines these terms and conceptsTo 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.											
COURSE OUTCOMES (COs)											
CO1	Students gain basic knowledge of Advertising its functions, roles and development of advertising.										
CO2	Know about Advertising design and its strategies.										
CO3	Expose on Advertising, media and about its types.										
CO4	To forecast sales and its techniques used in management.										
CO5	Students were enriched about salesmanship, sales planning, budgeting.										
CO6	Develop an advertising plan and present and defend it persuasively.										
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	PS O1	PS O2	PS O3
2	CO1	L	M						M	L	
	CO2	H	L								
	CO3	L	H								
	CO4	H	L								
	CO5	L	M								
	CO6	M	L								

3	Category	Humanities & Social Studies (HS)	Basic Sciences (BS)	Engg Sciences (ES)	Professional 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

Introduction to Advertising- Definition -Roles of Advertising- Functions of Advertising-Steps in Development of Advertisement

UNIT – II

12

Advertising Design- Appeals- Structure of an Advertisement - Message Strategies - Cognitive strategy- Executional Strategies-Creating Advertising- Advertising Effectiveness.

UNIT–III

12

Advertising Media - Merit and demerits- Kinds of Advertising - Advertising Media- print media - Broadcasting media- Non-media advertising- online advertising.

UNIT – IV

12

Sales Management - Defining - Objectives -Strategies- Sales Executives – Functions -Qualities - Sales Presentation Techniques - Emerging Trends in Sales Management.

UNIT – V

12

Selling Concept - Objectives- scope and techniques of Salesmanship- Sales Planning- Importance – process- Sales Budget- Objectives-uses of sales Budget.

Text book

1. Advertising & promotion: George E.Belch, THM
2. Advertising Management, Dr. Varma&Aggarwal, kingBooks

References:

1. Sales promotion and advertising management by M .N.Mishra. Himalaya Publication.
2. Advertising and sales management by SanjeevChauhan (Astha publication)
3. Anderson, Hair, Bush: Professional Sales Management, McGraw Hill, Singapore.

T Manjiniprakash

Course Coordinator

HOD

P18OEBA002	BPO MANAGEMENT						L	T	P	C	
	Total Contact Hours – 60						4	0	0	4	
	Prerequisite course – UG Level										
	Course Coordinator Name & Department:- .P.Srinivasan/ Business Administration										
COURSE OBJECTIVES: - - To familiarize the students with the basic fundamentals of BPO industry - To impart knowledge on BPO industry - To enable the students on the concept of various decisions in Business Process Outsourcing											
COURSE OUTCOMES (COs)											
CO1	Develop a strategic understanding of the concepts of BPO’s and its benefits										
CO2	Explaining various models used in functioning of BPO’s and Trends.										
CO3	Describe the opportunities and challenges in Human Resources BPO										
CO4	Analyzes about call centers its functions, processes and classifications										
CO5	Developing efficiency in understanding the customers and capabilities in handling calls.										
CO6	To understand the future trends in BPO industry										
Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low											
	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PS01	PS02	PS03
	CO1	H	M						M	L	
	CO2	H	L								
	CO3	H	M								
	CO4	M	H								
	CO5	M	M								
	CO6	L	M								

3	Category	Humanities & Social Studies (HS)	Basic Sciences (BS)	Engineering (ES)	Profession Professional Core	Non- Major	Open Elective (OE)	Any other	Project/Term Paper/ Seminar/ Internship(PR)
							✓		
4	Approval	Academic Council Meeting							

UNIT – I

Business Process Outsourcing – Meaning – definition - Basics - Benefits - BPO Models - - BPO Companies in India.

12

UNIT-II

Healthcare BPO – Structure of the American Healthcare Sector – Activity Profile –Future Trends and Threats – Case Study – Cbay Systems.

12

UNIT - III

Human Resource BPO – Reasons for outsourcing HR – Activities involved in HR BPO – HR Outsourcing Trends – Career in HR BPO – Emerging BPO Domains – Media and Entertainment BPO – Publishing BPO.

12

UNIT – IV

Call Centres – Functions – Processes – classifications – Telemarketing – Tele selling – Preparing for a Job – Approach – Training – Selection Process.

12

UNIT – V

Improving Efficiency – Handling Calls – Team Player – Pleasing the Customers – Converse efficiently – Reducing stress.

12

TEXT BOOKS:

- 1.BPO Industry in India by S K Awasthi by Jain Book
- 2.Business Process Outsourcing: Its Prospects and Challenges by Barua.

REFERENCE BOOKS

1. SudhindraMokhasi(2009) ,BPO – Sutra : True stories from India's BPO and call centres, - Rupa& Co.
2. Kulkarni, Sarika.(2005), Business process outsourcing – Delhi, Jaico Publishing House.
3. Shikapur, Deepak(2004), BPO Digest. Ameya Inspiring Books.

Mr.P.Srinivasan

Course Coordinator

HOD

P18OEBA003	CALL CENTER MANAGEMENT-Voice and Non Voice						L	T	P	C	
	Total Contact Hours –60						4	0	0	4	
	Prerequisite course – UG Level										
	Course Coordinator Name & Department:-A.Jhoncy / BBA										
COURSE OBJECTIVES:- • Develop and motivate a call centre team. • Get the most out of call monitoring technology and prepare effective management reports. • React to and plan for operational bottlenecks. • Give meaningful feedback to call-centre agents and set achievable goals and targets. • Students will learn about the roles and methods of different kinds of call centers. They will apply this by designing their own call center and trying to anticipate customer needs.											
COURSE OUTCOMES (COs)											
CO1	Gaining a basic knowledge about call centers its functioning and classifications.										
CO2	To know about handling the Issues and problems related to calls in a efficient manner.										
CO3	Gives knowledge of technical communications, speech process and educate conversation of oral skills.										
CO4	Students acquire knowledge towards pre-interview about Interview questions and answering techniques										
CO5	Analyses fully about the medias of communications.										
CO6	Demonstrate awareness of the pragmatics of call center planning and operation										
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	PS O1	PS O2	PS O3
	CO1	M	H						M	H	
	CO2	M	H								
	CO3	L	H								
	CO4	L	H								
	CO5	M	H								
	CO6	L	H								

	Category	Humanities & Social Studies (HS)	Basic Sciences (BS)	Engineering (ES)	Professional	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

Call centers – Meaning – Functions – Processes - Classifications – Tele selling – Types of call centers.

UNIT – II

12

Improving Efficiency – Handling calls – Team Players – Components and working of call center – Issues and problems.

UNIT – III

12

Nature of Technical communication: Stages of communication – Nature of Technical Communication - The speech process – Conversation and Oral skills.

UNIT – IV

12

Job Interview: Pre – Interview preparation techniques – Interview questions – Answering Strategies – Frequently asked Interview questions.

UNIT – V

12

Communication media – Telephone – Fax – Internet – Email – Video conferencing.

TEXT BOOKS

1. Brad Cleveland - Call Center Management on Fast Forward: Succeeding in the New Era of Customer Relationships (3rd Edition) Third Edition,
2. Mr. Thomas Anthony Laird - Advice from a Call Center Geek: Rethinking Call Center Operations,

REFERENCE BOOKS

1. W. Stallings “Data and Computer Communication” Pearson Education, 5 Edition, 2001.
2. M. AshrajRizvi,” Effective Technical Communication”, Tata McGraw – Hill Education, 2005.
3. R.S.N.Pillai&Bagavathi – Modern commercial correspondence.

A.Jhoney

Course Coordinator

HOD

P18OEBA004	CUSTOMER RELATIONSHIP MANAGEMENT							L	T	P	C
	Total Contact Hours – 60							4	0	0	4
	Prerequisite course – UG Level										
	Course Coordinator Name & Department:- Dr.D Arun Kumar /BBA										
COURSE OBJECTIVES: - - To Popularize the students with the basic fundamentals of CRM. - To improve knowledge & skills on Customer relationship of Marketing strategy. - To develop the students on the concept of Customer service.											
COURSE OUTCOMES (COs)											
CO1	To popularize with the basics of CRM.										
CO2	Can increase awareness about Customer relationship.										
CO3	Able to be aware of the concept of Customer service.										
CO4	Can respond to the concept of Customer needs.										
CO5	Develop confidence in the practical aspects of Customer Satisfaction										
CO6	Identify the main Customer Expectations.										
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	PO 2	PO3	PO4	PO5	PO6	PO7	PS O1	PS O2	PS O3
2	CO1	M	L						M	L	
	CO2	L	L								
	CO3	M	L								
	CO4	L	L								
	CO5	M	H								
	CO6	H	L								
3	Category	Humanities & Social Studies (HS)	Basic Sciences (BS)	Engg Sciences (ES)	Professional	Core Elective (CE)	Non-Major Elective (NE)	Open Elective (OE)	Project/Term Paper/ Seminar/ Internship(PR)		
								✓			
4	Approval	Academic Council Meeting									

UNIT – I **12**

CRM – Introduction – Definition – Need for CRM – Customer satisfaction – Customer loyalty – Product Marketing – Direct Marketing-

UNIT – II **12**

Customer learning relationship – Key stages of CRM - Force driving CRM – Benefits of CRM – Growth of CRM Market in India – Key principles of CRM.

UNIT – III **12**

CRM – Program – Ground work for effective use of CRM – Components of CRM – Types of CRM.

UNIT - IV **12**

CRM Process - Frame work – Governance process- Performance evaluation process.

UNIT–V **12**

Use of Technology in CRM – Call center process – CRM Technology tools – Implementation – Requirements analysis – selection of CRM Package – reasons and failure of CRM.

TEXT BOOK

1. Kristin Anderson & Carol Kerr – Customer Relationship Management – McGrawHill 2002
2. Sheth – Customer Relationship Management – McGraw Hill Edition 1st Edition 2000

REFERENCE BOOK

1. Dr. P .Sheela Rani – Customer Relationship Management – Margham Publication.
2. K. Balasubramaniam – Customer Relationship Management – GIGO Publication, 2005.
3. Dr. Ravi Kalakota E – business – Road map for success, Pearson education Asia, 2000.

Dr.D.ArunKumar

Course Coordinator

HOD

P18OEBA005	ENTREPRENEURSHIP DEVELOPMENT						L	T	P	C	
	Total Contact Hours – 60						4	0	0	4	
	Prerequisite course – UG Level										
	Course Coordinator Name & Department:- Dr.DArun Kumar /BBA										
COURSE OBJECTIVES: - - To make publicity on the students with the basic fundamentals of Entrepreneur Development - To improve knowledge & skills on Entrepreneurship. - To develop the students on the concept of Entrepreneurial skills.											
COURSE OUTCOMES (COs)											
CO1	To popularize with the basics of Entrepreneur development.										
CO2	Can increase awareness about Entrepreneurship.										
CO3	Able to be aware of the concept of Entrepreneurial skills.										
CO4	Can respond to the concept of Entrepreneurial knowledge.										
CO5	Develop confidence in the practical aspects of Business Opportunity.										
CO6	Identify the main Innovations in Entrepreneurial Development.										
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	PO 2	PO3	PO4	PO5	PO6	PO 7	PS O1	PS O2	PS O3
2	CO1	L	L						M	L	
	CO2	L	M								
	CO3	L	L								
	CO4	L	L								
	CO5	L	L								
	CO6	L	L								
3	Category	Humanities & Social Studies (HS)	Basic Sciences (BS)	Engg Sciences (ES)	Professional Core Elective (CE)	Non-Major Elective (NE)	Open Elective (OE)	Project/Term Paper/ Seminar/ Internship(PR)			
							✓				
4	Approval	Academic Council Meeting									

UNIT – I **12**

Introduction to Entrepreneurship: Meaning and concept of entrepreneurship - the history of entrepreneurship development - role of entrepreneurship in economic development

UNIT – II **12**

The Entrepreneur: Meaning of entrepreneur - the skills required to be an entrepreneur, and role models, mentors and support system.

UNIT – III **12**

Business Opportunity Identification: Business ideas, methods of generating ideas - legal form of new venture, protection of intellectual property -marketing the new venture.

UNIT – IV **12**

Preparing a Business Plan: Meaning - significance of a business plan - components - feasibility study.

UNIT – V **12**

Financing the New Venture: Importance - types of ownership securities - venture capital - types of debt securities -determining ideal debt-equity mix - financial institutions and banks.

TEXT BOOK

1. Robert D. Hisrich, Mathew J Manimala, Michael P Peters, Dean A Shepherd, “Entrepreneurship”, 9e, McGraw Hill Education, 2014.
2. Peter F. Drucker, “Innovation and Entrepreneurship”, Harper Collins, 2009.

REFERENCE BOOK

1. John Bessant, Joe Tidd, “Innovation and Entrepreneurship”, 2e, Wiley India Private Limited, 2012.
2. Robin Lowe, Sue Marriott, "Enterprise: Entrepreneurship and Innovation: Concepts, Contexts and Commercialization" 1e, Routledge, 2012.
3. VeeraBhadrapaHavinal – Management Entrepreneurship – New Age International Publishers.

Dr.D.ArunKumar

CourseCoordinator

HOD

OPEN ELECTIVE – II

P18OEBA006	HUMAN RESOURCE MANAGEMENT					L	T	P	C		
	Total Contact Hours – 60					4	0	0	4		
	Prerequisite course – UG Level										
	Course Coordinator Name & Department:- P.Srinivasan / BBA										
COURSE OBJECTIVES:-											
• Today’s competitive business environment owes its success to effective management of its human resource. • The quality of the organization’s employees, their attitude, behavior and satisfaction with their jobs, and their behavior towards ethics and values and a sense of fair treatment all impact the firm’s productivity, level of customer service, reputation, and survival. • The students of human resources management must aware of basic aspects of human resource management to understand the functioning of human resource management in an organizational setting. • Students gained knowledge in the present day human resources development practice by incorporate themselves in the changing environment of HRM.											
COURSE OUTCOMES (COs)											
CO1	Identify how firms gain a sustainable competitive advantages through people										
CO2	To be aware of the responsibility managers of have concerning human resource management										
CO3	Identify the importance of change management.										
CO4	To implement basics compensation and performance appraisal										
CO5	Importance of labour welfare and grievance handling for employment										
CO6	Understand the importance of Employee participation and Relations.										
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	PS O1	P S	P S
2	CO1	H	H						M	O 2	O 3
	CO2	M	M								
	CO3	L	H								
	CO4	M	L								
	CO5	M	M								
	CO6	H	H								

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**

Human Resource Function- Human Resource Philosophy – Changing environments of HRM – Strategic human resource management – Role of HR Managers.

UNIT – II **12**

Recruitment & Placement: Sources, Developing and using application forms - IT and online recruitment - Selection process, basic testing concepts - types of test - work samples & simulation - selection techniques – interview - Designing & conducting the effective interview - computer aided interview.

UNIT – III **12**

Training & Development: Employee Orientation- Training process- Need analysis- Training techniques- special purpose training- Performance appraisal: Methods - Problem and solutions - MBO approach - Performance appraisal in practice.

UNIT – IV **12**

Basic Compensation & Pay plans - factors determining pay rate - Current trends in compensation - Computerized job evaluation - financial incentives - benefits - Insurance benefits - retirement benefits – welfare measure

UNIT – V **12**

Trade unions - Discipline administration - grievances handling - Labour Welfare: Importance & Implications of labour legislations - Employee health.

TEXT BOOKS

1. Dr. R.Venkatapathy&AssissiMenacheri, Industrial Relations &Labour Welfare, Adithya Publications, CBE, 2001. 5. Robert L.Gibson and Marianne H.Mitchell, Introduction to Counseling and Guidance, VI edition, PHI, 2005
2. L.M. Prasad – Human Resource Management – S. Chand & Sons – 2007.

REFERENCEBOOKS

1. Gary Dessler, "

2. zo& Stephen P.Robbins, Personnel/Human Resource Management, Third edition, PHI/Pearson.
3. VSP Rao, Human Resource Management: Text and cases, First edition, Excel Books, New Delhi - 2000.
4. P.SrinivasanHuman Resource Management", Seventh edition, Prentice-Hall of India P.Ltd., Pearson.

David A. DeCen

P.Srinivasan

Course Coordinator

HOD

P18OEBA007	LOGISTICS & SUPPLY CHAIN MANAGEMENT					L	T	P	C		
	Total Contact Hours – 60					4	0	0	4		
	Prerequisite course: UG Level										
	Course Coordinator Name & Department:- T.Manjiniprakash / BBA										
COURSE OBJECTIVES:- - To make the students to understand the usefulness of logistics and supply chain. - This document lists the course’s major subject areas and the knowledge, comprehension, application, analysis, synthesis and evaluation skills that they are designed to impart. - Identify the sources of cost in a supply chain. - Define inventory and types of inventory in a supply chain. - Define transportation cost and identify the factors that contribute to this cost. - Calculate inventory cost and transportation cost for a logistics problem. - Define fixed and variable cost. - Understand the economies of scale in transportation and inventory cost											
• COURSE OUTCOMES (COs)											
CO1	Identify and Analyze Business Models, Business Strategies and corresponding Competitive Advantage.										
CO2	Formulate and implement Warehouse Best Practices and Strategies.										
CO3	Plan Warehouse and Logistics operations for optimum utilization of resources										
CO4	Apply logistics and purchasing concepts to improve supply chain operations										
CO5	Apply quality management tools for process improvement										
CO6	Create an ideas about logistics and supply chain 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	PSO3
2	CO1	H	H						H		
	CO2	H	M								
	CO3	M	M								
	CO4	L	M								
	CO5	H	M								
	CO6	M	H								

3	Category	Humanities & Social Studies (HS)	Basic Sciences (BS)	Engg Sciences (ES)	Professiona I Core	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

Logistics management and Supply Chain management - Definition, Evolution, Importance. The concepts of logistics. Logistics relationships - Functional applications - Logistics Organization - Logistics in different industries.

UNIT –II

12

Logistics Activities: – objectives, solution. Customer Service, Warehousing and Material Storage, Material Handling, information handling and procurement Transportation and Packaging - Reverse Logistics - Global Logistics

UNIT-III

12

Fundamentals of Supply Chain - Development of SCM - Strategic Supply Chain Management and Key components - Drivers of Supply Chain Performance – key decision areas – External Drivers of Change.

UNIT-IV

12

Supply Chain Drivers and Design Drivers of supply chain performance: Framework for structuring Facilities warehouse – Inventory – Transportation – Information - Sourcing, and Pricing – Revenue management.

UNIT-V

12

Demand and Inventory Aggregate Planning in a Supply Chain: role - strategies Implementation Responding to predictable variability in supply chain – Types of supply chains - creating responsive supply chains lean

TEXT BOOKS

1. Supply Chain Management: Ronald H. Ballou, Samir K. Srivastava, Pearson Education Ltd, Jan 2007.
2. Supply Chain Management: Anil Sinha, McGraw Hill Education, August 2011.

REFERENCE BOOKS

1. Logistics And Supply Chain Management: Martin Christopher, Pearson Education Ltd, 2016.
2. Supply Chain Management: Sunil Chopra, Peter Meindl, Dharma Virus Kalra, Pearson Education Ltd, 2016.
3. Supply Chain And Logistics Management: V. Anandaraj, S. Kumaran, IshankaSaikira, Airwalk Publication, Jan 2018.

T.Manjiniprakash.

Course Coordinator

HOD

P18OEBA008	OFFICE MANAGEMENT						L	T	P	C	
	Total Contact Hours – 60						4	0	0	4	
	Prerequisite course – UG Level										
	Course Coordinator Name & Department:- D.K.Sowmiyalakshmi /BBA										
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.											
COURSE OUTCOMES (COs)											
CO1	To make them understand office management and duties of an office manager										
CO2	To give an idea about proper filing and indexing of office documents										
CO3	To understand the principles of record management and different types of records in business organization.										
CO4	To enable them to aware about safety hazardous and steps to improve office safety.										
CO5	To introduce different measures of office work										
CO6	Create an ideas about office 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	PO 2	PO3	PO4	PO5	PO6	PO7	PS O1	P S	P S
2	CO1	H	H						H	O 2	O 3
	CO2	M	M								
	CO3	M	H								
	CO4	L	H								
	CO5	H	H								
	CO6	H	M								
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**

Introduction: Meaning, functions and importance of office management; office management and organization. Principles of office management and organization. Principal departments of modern office.

UNIT-II **12**

Office Manager: qualities of office manager. The authorities and responsibilities of an office manager. Office accommodation: Selection of site. Office layout. Environment and working conditions.

UNIT-III **12**

Office equipment's - Reproduction equipment - Typewriter - Duplicators - Photo Copier - Communication Equipment - Intercom - Telephone - Use of Computers in Office Management Office System - Procedure - Routine - And methods - Paper work in office Filling functions.

UNIT-IV **12**

Office Communication: Various means of communication- Their use, Correspondence through Internet - Office Correspondence -Central vs. Departmental Correspondence - Handling Mail - Postal Services - Oral written - Internal and external communication - Records Management Types - Forms Controls - Principles - Foremost -Continuous stationery

UNIT-V **12**

Office Supervisor - Meaning and characteristics of Supervisor - Status - Place and Role of Supervisor - Effective Supervisor - Qualification - skill of Supervisor.

TEXT BOOKS

1. Modern Office Management: N. D Sharma, And Publishers, Jan 2006.
2. Office Management: Prashansa K. Ghosh, S. Chand & Sons, Jan 2010

REFERENCE BOOKS

1. Office Management: R.S.N Pillai&Bhagavathi, S. Chandler & Come, Dec 2010.
2. Office Management: R. Nangia, G. K Gupta, Crescent Publishing House.
3. Office Management: Dr. R. K Chopra, PriyankaGauri, Himalaya Publishing House, Jan 2017.
4. Of Non-Trading Organization-Receipts And Payment Account- Income And Expenditure Account

D.K.Sowmiyalakshmi

CourseCoordinator

HOD

P180EVC001	PHOTOGRAPHY AND VIDEOGRAPHY							L	T	P	C	
	Total Contact Hours – 60							4	0	0	4	
	Prerequisite – UG Level											
	Course Coordinator Name & Department:- P. Nagarajan, Dept of Visual Communication											
COURSE OBJECTIVES												
- To understand the fundamentals of Photography and Videography - To examine the technical factors of indoor and outdoor photography and Videography - To enable the students to equip themselves to become a photography and Videography professionals.												
COURSE OUTCOMES (COs)												
CO1	Can analyze the fundamentals of Photography and Videography											
CO2	Understanding of the camera operations											
CO3	Evaluating the lighting											
CO4	Can be aware of the wrong exposures											
CO5	Can promote various types of photography and Videography											
CO6	Understanding the concept of photo-journalism											
	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	H	PSO1	PSO2	PSO3
2	CO1	H	M									
	CO2	H	M									
	CO3	H	M									
	CO4	H	M									
	CO5	H	M									
	CO6	H	M									
3	Category	Humanities & Social Studies	Basic Sciences (BS)	Engg Sciences (ES)	Professional Core (PC)	Core Elective (CE)	Non-Major Elective (NE)	Open Elective (OE)		*		Any other
4	Approval	Academic Council Meeting										

UNIT-I:**12**

Human Eye and Camera. Basics of Camera (aperture, shutter speed, focal length, f-stop, depth of field etc.,) Camera operations, Introduction to Television Production, Types of telecasting, Television Crew, an overview of direction.

UNIT-II:**12**

Types of Still and video cameras. Types of Lenses. Visual Perception, Art direction, floor management- indoor & outdoor, production management, budget preparation. Locations: Indoor, set, on-sights sets, - Outdoor on-sight sets, blue matte. Etc.,

UNIT-III:**12**

Understanding lighting-indoor and outdoor, Exposing and Focusing, Types of lighting, Natural and Artificial Lights, Controlling lights, Exposure Meters. Camera techniques & operation, Framing, shots & movements (wide, medium, close ups, shadow, zoom, pan, tilt, aerial etc.,),

UNIT-IV:**12**

Photography for advertising-Consumer and industrial. Usage of various types of camera lenses (Normal, Tele, Zoom etc.,), usages of various filters (day ,night, colour correcting filter, diffusion filter), objectives TV lighting, various types of Lights (baby, Junior, Senior, etc.,)

UNIT- V:**12**

Basics of photo-journalism, Photo-features, Photo - essays, Writing captions, Visual story telling. Planning a shoot-studio, location, set props and casting. Colour temperature, lighting for different situations (interviews, indoor, out-door), types of lighting(Back, Front, full, semi, etc.,)

TEXT BOOKS:

- 1.The Art of Photography: A Personal Approach to Artistic Expression, Barnbaum, Bruce, Rocky Nook
- 2.Photography Demystified: Your Guide to Gaining Creative Control, David McKay, Photography Inc.
3. Television Productions: A History of All Series and Pilots, by JonAbbott, Publisher: McFarland & Company (May 13, 2009)
- 4.Production Management for TV and Film: The Professional's Guide, Methuen Drama (August 1, 2010)

REFERENCE BOOKS:

- 1.The Photographer's Eye,Szarkowski, John, The Museum of Modern Art, New York (Publisher)
- 2.Creative Composition: Digital Photography Tips and Techniques, Davis, Harold, Wiley
- 3.From Concept to Screen: An Overview of Film and Television Production, Robert Benedetti, Pearson; 1 edition (June 11, 2001)
- 4.The Television Handbook, Routledge, Holland, P (1999)

Course Coordinator

HOD

P18OEEN001	SOFT SKILLS							L	T	P	C
	Total Contact Hours – 30							2	0	0	2
	Prerequisite – Higher Secondary Level										
	Course coordinator name & Dept: Mrs. Caroline– English										
COURSE OBJECTIVES:- To effectively complement the already existing Hard Skills so that the combination becomes a winning blend that could project the candidate’s true worth in proper perspective.											
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										
Mapping of Course Outcomes with Program outcomes (POs) (H/M/L indicates strength of correlation) H-High, M-Medium, L-Low											
1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PS O3
2	CO1	H	H						H		
	CO2	H	H								
	CO3	H	H								
	CO4	H	L								
	CO5	H	L								
	CO6	H	H								

3	Category	Humanities & Social Studies (HS)	Basic Sciences	Engg Sciences (ES)	Professional Core	Core Elective	Non-Major Elective	Open Elective (OE)	Any other	Project/Term Paper/Seminar/Internship
								✓	✓	
4	Approval	Academic Council Meeting								

UNIT I- LISTENING / VIEWING

6

Listening and note-taking – Listening to telephonic conversations – Ted talks – Inspiring Speeches – Watching documentaries on personalities, places, socio-cultural events, TV news programmes and discussions to answer different kinds questions, viz., identifying key idea and comprehension questions... so on.

UNIT II- SPEAKING

6

Elements of presentation skills-Structure of presentation-presentation tools- mock interviews – group discussion – introducing one self and others – welcome address and proposing a vote of thanks- role play – debating.

UNIT III - READING

6

Different genres of text (literature, media, technical) for comprehension – Reading strategies like note-making – reading graphs, charts and graphic organizer – Sequencing sentences – reading online sources like e-books, e-journals and e-newspapers.

UNIT IV - WRITING

6

Resume/Report preparation/Letter Writing-Structuring the resume-comprehension-Describing charts and tables – writing for media on current events.

UNIT V- PROJECT

6

Gender injustice: Dowry-Violence against women -Sexual Harassment -Eve teasing-Female infanticide-Prostitution. **Social problem:** Poverty-unemployment-Child Labour-Terrorism-Drug abuse-Alcoholism-Corruption. **Industrial problem:** Work and Labour organization-Elements-Principles-Staff and Functional Activities. **Industrial Conflict:** Strikes-Disputes-Grievances-Industrial development in India-Steps in Automation process-Industrial policy-Liberation.

Text books

- 1 .Rizvi ashraf ,Effective Technical Communication , Tata amcgraw Hill Education Private Ltd,New Delhi,2011.
2. Townsend Roz , Presentation skills for the upwardly mobile , Emerald Publishers .

Reference

1. T.M.Farhathullah, communication skills for Technical students, Orient Longman Ltd,2002.

2. Andree J Rutherford, Basic communication skills for Technology, Pearson Education,Asia (Singapore) Pte.Ltd, Banglore , 2001.

Course Coordinator

HOD

P18OEEN002	MASS MEDIA AND COMMUNICATION							L	T	P	C
	Total Contact Hours – 30							2	0	0	2
	Prerequisite – UG Level										
	Course coordinator & Dept :- Dr.P.AROCKIA NATHAN - English										
COURSE OBJECTIVES : To impart students with the efficient knowledge of important events in through literature											
COURSE OUTCOMES (COs)											
CO1	Remember the art of writing, report and editing										
CO2	Understand the skills of writing										
CO3	Apply the Role & importance in social change										
CO4	Analyze the social structure of Indian society										
CO5	Evaluate the growth & development of communication and media										
CO6	Create the interpreting the meaning from the text										
Mapping of Course Outcomes with Program outcomes (POs) (H/M/L indicates strength of correlation) H-High, M-Medium, L-Low											
1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PS O2
2	CO1	H	L						H		
	CO2	H									
	CO3	H	L								
	CO4	H	L								
	CO5	H									
	CO6	H	L								
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 -Communication and Media **6**

Communication & Media: Definition, meaning and concept.

Different types of communication: verbal and written

Scope and Process of Mass Media & Communication

UNIT II -History of Mass media **6**

History of the development of electric media in India: Radio & TV

Role of media in society, Impact of media on audience,

Media effects, limitations and different form of media.

UNIT- III- Role & Responsibilities **6**

Role and responsibilities of journalist, ethics, careers,

Media management, Media laws in India, and freedom of press

Qualities and Responsibilities of a reporter

UNIT IV -Theories & Principles **6**

Theories and Principles of Editing

Communication and theories of social change,

Role of media in social change, Development communication

UNIT V-Technology & Development **6**

Changing trends of mass communication under the process of globalization

Technology in the development of media.

Text Books

1. Vivian, John, Mass Media & communication Boston, Massachusetts : Pearson Allyn and Bacon, c.2008.
2. Stovall, James Glen, Writing for the mass media, New Jersey : Pearson Education, Inc., c.2012

Reference Books:

1. Parthasarathy, Rangaswami, journalism in India, sterling Publisher pvt. Ltd. New Delhi.
2. D.S. Mehta. Mass communication and Journalism in India New Delhi, Allied Publishers, 2011

Course Coordinator

HOD

P18OESC001	COMPUTER APPLICATIONS						L	T	P	C	
	Total Contact Hours – 30						2	0	0	2	
	Prerequisite course – UG Level										
	Course Coordinator Name & Department:- Dr. S.Thiru Nirai Senthil / 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	Identify 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	PSO 2	PSO 3
2	CO1	H	L							H	
	CO2	H	L								
	CO3	H	L								
	CO4	H	L								
	CO5	H	L								
	CO6	H	L								
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**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,2010.
2. Alexis Leon & Mathews Leon, “Fundamentals of Information Technology”, Vikas Publishing House, New Delhi,2009.

REFERENCE BOOKS:

1. Rajeev Mathur, “Dos Quick Reference”, Galgotia Publications.

Course Coordinator**HOD**

P18OESC002	MULTIMEDIA							L	T	P	C
	Total Contact Hours – 30							2	0	0	2
	Prerequisite course – UG Level										
	Course Coordinator Name & Department:- Dr. S.Thiru Nirai Senthil / BCA										
COURSE OBJECTIVES:- To Understand 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	PSO3
2	CO1	H	L								H
	CO2	H	-								
	CO3	H	-								
	CO4	H	L								
	CO5	H	L								
	CO6	H	L								
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									

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 to multimedia",1998.
2. Mohammad Dastbaz, "Designing Interactive Multimedia Systems",2002.

Reference Books

1. Bohdan O. Szuprowicz, "Multimedia Networking",1995.
2. Stephen McGloughlin, "Multimedia on the web",1997.

Course Coordinator

HOD

P18OESC003	ADVANCED EXCEL							L	T	P	C
	Total Contact Hours – 30							2	0	0	2
	Prerequisite course – UG Level										
	Course Coordinator Name & Department:- S.Anupriya / 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	PSO 2	PSO 3
2	CO1	H	L								H
	CO2	H	L								
	CO3	H	L	M	M						
	CO4	H	L	M	M						
	CO5	H	L	M	M						
	CO6	H	L	M	M						
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**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 Subtotals , 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” ,A Press, 2015 edition.

Reference Books

1. John Walkenbach, “Microsoft Excel 2013 Bible”, Wiley Publications,2013.

Course Coordinator**HOD**

P18OESC004	WEB DESIGNING							L	T	P	C
	Total Contact Hours – 30							2	0	0	2
	Prerequisite course – UG Level										
	Course Coordinator Name & Department:- V.Ramya/BCA										
COURSE OBJECTIVES:- To Understand the basic web designing concepts.											
COURSE OUTCOMES (COs)											
CO1	Gain knowledge in web basics and server side scripting.										
CO2	Execute the HTML coding.										
CO3	Apply hyper links between webpages										
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	PSO 2	PSO 3
2	CO1	H	L								H
	CO2	H									
	CO3	H									
	CO4	H									
	CO5	H	L								
	CO6	H	L								
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 **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, 2010.
4. T. A Powell, “Complete Reference HTML (Third Edition)”, TMH, 2002.

Course Coordinator

HOD

P18OESC005	PHOTOSHOP						L	T	P	C	
	Total Contact Hours – 30						2	0	0	2	
	Prerequisite course – UG 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	Gain knowledge in 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	PSO 2	PSO 3
2	CO1	H	L								H
	CO2	H	-								
	CO3	H	-								
	CO4	H	-								
	CO5	H	L								
	CO6	H	L								
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**6**

Introduction to Adobe photoshop, Getting started with photoshop, creating and saving a document in photoshop, page layout and back ground.

UNIT II**6**

Photoshop program window-titlebar, menu bar, option bar, image window, image title bar, status bar, ruler, palettes ,tool box, 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 tool box: 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.

Text Books

1. Reema Thareja ,”Fundamentals of Computers”,Oxford University Press,2014.

Reference Books

1. Photoshop: Beginner's Guide for Photoshop - Digital Photography, Photo Editing, Color
2. Adobe Creative Team ,”Adobe Photoshop Class Room in a Book”,2014.

Course Coordinator**HOD**

P18OESC006	FLASH							L	T	P	C
	Total Contact Hours – 30							2	0	0	2
	Prerequisite course – UG Level										
	Course Coordinator Name & Department:- N.Mathimagal/ BCA										
COURSE OBJECTIVES:-											
Learners can identify methods appropriate for Basic Animation. Apply methods to design with flash.											
COURSE OUTCOMES (COs)											
CO1	Understand inWorking 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	PSO 2	PSO 3
2	CO1	H	L								H
	CO2	H	-								
	CO3	H	-								
	CO4	H									
	CO5	H	L								
	CO6	H	L								
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 **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 twining , 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.

Course Coordinator

HOD

P18OESC007	COMPUTER HARDWARE AND NETWORKING						L	T	P	C	
	Total Contact Hours – 30						2	0	0	2	
	Prerequisite course – UG Level										
	Course Coordinator Name & Department:- V.Ramya/BCA										
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	PSO 2	PSO 3
2	CO1	3	3	1	1	1	1	3	H		
	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/	
								✓			
4	Approval	Academic Council Meeting									

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, October 2013.

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

P18OESC008	COMPUTER PROGRAMMING						L	T	P	C	
	Total Contact Hours – 30						2	0	0	2	
	Prerequisite course – UG Level										
	Course Coordinator Name & Department:- S.Anupriya/ BCA										
COURSE OBJECTIVES:- Learners understand the basic concepts of C programming. Practice the use of conditional and looping statements. Implement arrays, functions and pointers. Gain skills to handle strings and files.											
COURSE OUTCOMES (COs)											
CO1	Understand the concept of data types, loops, functions, array, pointers, string, structures and files.										
CO2	Design flow-chart, algorithm and program logic.										
CO3	Analyze problems, errors and exceptions.										
CO4	Apply programming concepts to compile and debug c programs to find solutions.										
CO5	Gain knowledge to use Function, Pointers, Structures, Unions & preprocessor directives										
CO6	Construct programs that demonstrate effective use of C.										
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	PSO 2	PSO 3
2	CO1	H	L						H		
	CO2	H	L								
	CO3	H	L	M				H			
	CO4	H	L	M				H			
	CO5	H	L	M				H			
	CO6	H	L	M				H			
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. Pradip Dey, Manas Ghosh, “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’s Outlines, 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

P18OESC009	OFFICE AUTOMATION TOOLS						L	T	P	C	
	Total Contact Hours – 30						2	0	0	2	
	Prerequisite course – UG Level										
	Course Coordinator Name & Department:- V.Brindha/BCA										
COURSE OBJECTIVES:- Learners understand the basic concepts of word, Excel, Power Point.											
COURSE OUTCOMES (COs)											
CO1	Understand the text manipulations for word documents.										
CO2	Analyze the templates and mail merge concepts.										
CO3	Apply the cell editing, formulae, built in functions used in the Excel Sheet.										
CO4	Develop the power point slide designs and backgrounds.										
CO5	Develop the graphics and animations using wizards.										
CO6	Create a document and apply various formatting 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	PSO 2	PSO 3
2	CO1	H	L								H
	CO2	H	L								
	CO3	H	L	M				H			
	CO4	H	L	M				H			
	CO5	H	L	M				H			
	CO6	H	L	M				H			
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 (PPI)	
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”, Universe Publications,2012.

Course Coordinator**HOD**

U18OEMI001	CLINICAL MICROBIOLOGY							L	T	P	C
	Total Contact Hours – 30							2	0	0	2
	Prerequisite course – Under graduate degree in any discipline										
	Course Coordinator Name & Department:- Dr. J. Senthil & Microbiology										
COURSE OBJECTIVES:- Learners will be familiar with microbiological related diagnostic techniques. Learners will understand the microbial morphology, structure, characters, classification, diseases and diagnostic tests.											
COURSE OUTCOMES (COs)											
CO1	Recall the general classification of microbes.										
CO2	Recognize the different specimen collection methods and staining methods.										
CO3	Apply different diagnostic tests to identify the diseases.										
CO4	Apply the role of human pathogens in causing diseases.										
CO5	Analyze the importance of antimicrobial compounds.										
CO6	Analyze and develop new antimicrobial drugs and antibiotics against wide range of pathogens.										
Mapping of Course Outcomes with Program Outcomes (POs) (H/M/L indicates strength of correlation) H-High, M-Medium, L Low											
1	COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PS O1	PS O2	PSO3
2	CO1	H	M						H		
	CO2	H	M								
	CO3	H	M								
	CO4	H	M								
	CO5	H	M								
	CO6	H	M								
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
General introduction about clinical microbiology, Sterilization and Disinfection., Culture Media preparation, Staining Methods, Collection and Transportation of Specimen - General Principles, Containers, Rejection, Samples - Urine, Faeces, Sputum, Pus, Body fluids, Swab, Blood, Disposal of Laboratory/Hospital Waste.	
UNIT II	6
General characters and classification of bacteria, Characteristics - Growth and maintenance of Bacteria, Pathogenicity and diagnosis of bacterial pathogens, antimicrobial compounds against clinical pathogens.	
UNIT III	6
Morphology and structure of fungi - Classification of fungi - Nutrition and cultivation of fungus - Cutaneous & Sub cutaneous and Systemic Mycosis - Lab diagnosis of fungal Infections - Opportunistic fungal infections.	
UNIT IV	6
General characters of viruses. - Classification of viruses. - Lab diagnosis of viral infections. - Cultivation of viruses. - Bacteriophages - Retro viruses - HIV, Hepatitis virus, Pox virus . - Picorna virus - Polio. - Orthomyxo virus - Influenza. - Arbo virus - Chikungunya, Dengue. - Herpes and Adeno virus.	
UNIT V	6
Definition - parasitism, host, vectors etc. Classification of Parasites, Phylum Protozoa-general Pathogenic and non pathogenic protozoa, Phylum Nematelminthes/Round words (Nematoda), Phylum Platyhelminthes - class - Cestoda, class - Trematoda, Lab diagnosis of parasitic infections.	
TEXT BOOKS:	
1. Monica Chees Brough. Medical laboratory manual for tropical countries, Elsevier Health Sciences, Butter worths, 1987.	
2. Bailey and Scott. Diagnostic Microbiology, Eighth edition, The Mosby Company, 1990.	
REFERENCE BOOKS:	
1. Keith Struthers K. Clinical Microbiology, 2 nd Edition, CRC Press, 2017.	
2. Jennie Wilson. Clinical Microbiology -An Introduction for Healthcare Professional, 8 th Edition, Bailleire Tindall, 2000.	
Course Coordinator	HOD

U18OEMI002	HERBAL MEDICINE						L	T	P	C		
	Total Contact Hours – 30						2	0	0	2		
	Prerequisite course – Under graduate degree in any discipline											
	Course Coordinator Name & Department:- Dr. J. Senthil & Microbiology											
COURSE OBJECTIVES:- Learners will be familiar with medicinal herbs. Learners will understand the importance of herbal drugs and herbal therapies.												
COURSE OUTCOMES (COs)												
CO1	Recall the herbal medicines used in daily life.											
CO2	Recognize the different methods of herbal extraction and its types.											
CO3	Apply various herbal medicines in curing the diseases.											
CO4	Analyze the role of herbs in drug discovery.											
CO5	Evaluate the importance and toxicity studies of herbal extracts.											
CO6	Create and develop new drugs from wide range of medicinal plants available worldwide.											
Mapping of Course Outcomes with Program Outcomes (POs) (H/M/L indicates strength of correlation) H-High, M-Medium, L Low												
1	COs/POs	PO1	PO2	PO3	PO4	PO5	PO6		PO7	PS O1	PSO2	PSO3
2	CO1									H		
	CO2											
	CO3											
	CO4											
	CO5											
	CO6											
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 of Herbal drug, Importance of Herbal therapies, Herbs used as nutraceuticals and healing agents. Making and using herbal medicines for common ailments like cold, skin infections and Diarrhea; Analytical Profiles of selected herbs.	
UNIT II	6
General methods of extraction, types and principles of extractions - merits and demerits, selection of suitable extraction methods, purification and recovery of solvents	
UNIT III	6
Different methods for isolation and estimation of phyto-constituents from medicinal herbs like <i>Mucuna pruriens</i> , <i>Garcinia combogia</i> , Green tea, <i>Hypericum species</i> etc.	
UNIT IV	6
Qualitative and Quantitative estimation of standardized extracts by HPTLC, Biological standardization -Pharmacological screening of herbal extracts and Microbiological evaluation of herbal extracts, Toxicity studies of herbal extracts.	
UNIT V	6
Herbal drugs acting on brain and nervous system – Rheumatoid arthritis – Psychoactive drugs – Depressants, Stimulants, hallucinogens – sources, effects, basic mechanism of action.	
TEXT BOOKS:	
1. Indian Herbal Pharmacopoeia, Vol.1 & 2, RRL, 1 DMA, 1998, 2000.	
2. Kokate CK, Purohit and Gokhlae. Text book of Pharmacognosy, 4 th edition, Nirali Prakashan, 1996.	
REFERENCE BOOKS:	
1. Toxicology and Clinical Pharmacology of Herbal Products, Melanie Johns Cupp.	
2. Choudhary RD. Herbal drug industry, 1 st edition, Eastern publisher, New Delhi, 1996.	
Course Coordinator	HOD

UNIT-I	6
Basic Principle Of Petroleum - Overview of Oil and Gas Processing -Wellhead Platform and Equipment	
UNIT –II	6
Introduction to Instrumentation -P & ID Drawing -Introduction to Distributed Control System (DCS)	
UNIT –III	6
Safety in Electrical Maintenance - Batteries and Chargers -Reading Electrical Diagrams - Cables and Conductors - Terminations and Splices - Motor Branch Circuit Protections	
UNIT –IV	6
Three Phase AC Induction Motors - AC Generator Maintenance -Fire & Gas Detection and Safety Systems and SIS -DC Generator -Construction& Principle- Types-Series,- Shunt & Compound Generator- EMF equation, Characteristics - (OCC & LCC). Armature reactions,- commutation Efficiency, Regulation & Applications. DC Motor- Construction& Principle. Types- Series, Shunt & Compound Motors. Characteristics curve-Applications. Necessity of starter- Construction and Working of- starters (3 point& 4 point). Speed control of DC Shunt-motor (armature & Field control. Traction System.- Trouble shooting –Care and maintenance.	
UNIT-V	6
Transformer –Principle -Construction- Classification of Transformers - EMF equation ,rating - Loading, Losses & Efficiency Regulation. Parallel Operation- Cooling methods, Transformer- oil testing. Care and maintenance,- Protective devices. Tap Changer – ON load and OFF- load. Auto transformer, Instrument- Transformer- CT & PT. Welding Transformer.	
TEXT BOOKS	
1. Fundamental Electrical circuits by Charles K.Alexandeer and Matthew NO Sadiku(2003)	
2. Fundamental of Digital circuits 3 rd edition by Kumar A Anandh	
Course Coordinator	HOD

Syllabus- MCA

I SEMESTER

[illegible]

II SEMESTER

[illegible]

V SEMESTER

[illegible]

VI SEMESTER

S.NO	CATEGORY	SUB.CODE	SUBJECT	L	T	P	C
1.	MC	P18MCCA6P2	PROJECT PHASE – II	0	0	24	12
Total Credits							12

TOTAL CREDITS FOR THE PROGRAMME: 131

CHOICES FOR CORE ELECTIVES

SUB.CODE	SUBJECT	L	T	P	C
PROGRAM ELECTIVE – I					
P18MECA011	GRID AND CLOUD COMPUTING	3	1	0	4
P18MECA012	MOBILE COMMUNICATION	4	0	0	4
P18MECA013	COMPUTER ARCHITECTURE	4	0	0	4
PROGRAM ELECTIVE – II					
P18MECA021	NETWORK SECURITY	4	0	0	4
P18MECA022	IMAGE PROCESSING	4	0	0	4
P18MECA023	MACHINE LEARNING TECHNIQUES	3	1	0	4
PROGRAM ELECTIVE – III					
P18MECA031	SOFTWARE TESTING	4	0	0	4
P18MECA032	AD HOC NETWORKS	4	0	0	4
P18MECA033	BIG DATA ANALYTICS	4	0	0	4

CHOICES FOR OPEN ELECTIVES

SUB.CODE	SUBJECT	L	T	P	C
OPEN ELECTIVE – I					
P18OEBA001	ADVERTISING AND SALES MANAGEMENT	4	0	0	4
P18OEBA002	BPO MANAGEMENT	4	0	0	4
P18OEBA003	CALL CENTRE MANAGEMENT – VOICE & NON VOICE	4	0	0	4
P18OEBA004	CUSTOMER RELATIONSHIP MANAGEMENT	4	0	0	4
P18OEBA005	ENTREPRENEURSHIP DEVELOPMENT	4	0	0	4
OPEN ELECTIVE – II					
P18OEBA006	HUMAN RESOURCE MANAGEMENT	4	0	0	4
P18OEBA007	LOGISTICS & SUPPLY CHAIN MANAGEMENT	4	0	0	4
P18OEBA008	OFFICE MANAGEMENT	4	0	0	4
P18OEVC001	PHOTOGRAPHY & VIDEOGRAPHY	4	0	0	4

AUDIT COURSES I & II

SL.NO.	CODE NO.	COURSE TITLE	CONTACT PERIODS	L	T	P	C
1	P18ACEN001	English for Research Paper Writing	2	2	0	0	0
2	P18ACCE002	Disaster Management	2	2	0	0	0
3	P18ACEN003	Sanskrit for Technical Knowledge	2	2	0	0	0
4	P18ACBA004	Value Education	2	2	0	0	0
5	P18ACW005	Constitution of India	2	2	0	0	0
6	P18ACBA006	Pedagogy Studies	2	2	0	0	0
7	P18MCYO001	Stress Management by Yoga	2	2	0	0	0
8	P18ACBA007	Personality Development through Life Enlightenment Skills	2	2	0	0	0

SEMESTER- I

P18MCCA101	PROGRAMMING IN C AND UNIX	L	T	P		C
	Total Contact Hours – 60	3	1	0		4
	Prerequisite – UG Level					
	Course Coordinator Name & Department:					

OBJECTIVES

- Understand the basic concepts of C programming. Practice the use of conditional and looping statements. Implement arrays, functions and pointers. Gain skills to handle strings and files.

COURSE OUTCOMES (COs)

CO1	Remember the fundamentals basics of C
CO2	Understand the concept of structures and pointers
CO3	Analyze Dynamic storage allocation
CO4	Apply various Unix functions
CO5	Illustrate the file operations & shell programming
CO6	Analyze an real time application using C and UNIX Program

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

(2/3 indicates strength of correlation) 3 - High, 2 - Medium, 1 - Low											
1	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2 H	PSO3
2	CO1	H	L								
	CO2	H	L								
	CO3	H	L								
	CO4	H	L								
	CO5	H	L								
	CO6	H	L								
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 INTRODUCTION**12**

Basic Elements of C – Data types – Operators – Control Statements – Branching – Looping, Nested Control Structures – Prototypes and Functions – Parameter passing methods – Recursion – Storage classes – Library Functions – Arrays – Passing arrays to functions – Multi – dimensional arrays – Strings operations – enumerated data types.

UNIT – II STRUCTURES**12**

Structures – user defined Data Types – Union – Nested Structure, Passing Structure to functions – Pointer concept – Declaration – accessing variable through pointer – initializing pointer variable – pointers and functions – pointers and arrays – example programs using pointers with function, arrays– command line arguments – self referential structures.

UNIT – III DYNAMIC MEMORY ALLOCATION**12**

Dynamic memory allocation –file handling – file pointer – high level file operations – opening and closing of file – creating, processing and updating on files – simple file handling programs.

UNIT – IV INTRODUCTION TO UNIX**12**

Introduction to Unix – Unix components – Unix files – file attributes and permission – standard I/O – redirection – pipes and filters – grep and stream editor – process and signal commands.

UNIT – V SHELL PROGRAMMING**12**

Shell programming – Shell variables – Control Structures – Arithmetic in Shell programming – Debugging Scripts – Structure of an AWK script – AWK control Structures – Functions in AWK – Executing AWK scripts with the shell.

TEXT BOOKS:

1. E.Balagurusamy , “Programming in ASNSI C” 4th Edition, Tata McGraw Hill, Delhi.
2. Behrouz A. Forouzan, Richard F. Gilberg , “Unix and shell Programming”

REFERENCE BOOKS:

1. Byron S Gottfried, “Schaum’s Outlines Programming with C”, 4th Edition, PHI, New Delhi, 2006.
2. J.R. Hanly and E.B. Koffman, “Problem solving and program design in C”, 4th Edition, Pearson Education India, Delhi, 2005.
3. B.A. Fozougar, R.Failberg, “Unix and shell programming”, Thomson, 2003

Course Coordinator**HOD**

P18MCCA102	DIGITAL LOGIC AND FUNDAMENTALS							L	T	P	C
	Total Contact Hours – 60							3	1	0	4
	Prerequisite – UG Level										
	Course Coordinator Name & Department:										
COURSE OBJECTIVES:- Understanding fundamental principles of digital electronics, semiconductor memories, A/D and D/A converters											
COURSE OUTCOMES (COs)											
CO1	Remember knowledge in conversion techniques in number systems										
CO2	Comprehend the concept of Logic gates and Boolean algebra										
CO3	Describe the different Combinational circuits.										
CO4	Demonstrate the networks of combinatorial, digital logic elements										
CO5	Illustrate concept of flip flops and design of counters										
CO6	Analyze an real time application in Registers, Counters										
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	PSO3
2	CO1	H	L						H		
	CO2	H	L								
	CO3	H	L								
	CO4	H	L								
	CO5	H	L								
	CO6	H	L								
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 SYSTEMS**12**

Number systems – Conversion from one number to another – Compliments – Binary codes – Binary logic – Logic gates – Truth tables. Boolean Algebra – Axioms – Simplification of Boolean functions – Karnaugh Map method (up to 5 variables) – Tabulation method.

UNIT II: COMBINATIONAL CIRCUITS**12**

Adders – Sub tractors – Code Converter – Multilevel NAND and NOR circuits – Binary parallel Adder – Decimal Adder - Decoders – Encoders – Multiplexes – Demultiplexer – Design of circuits using Multiplexers/Decoders.

UNIT III: SEQUENTIAL CIRCUITS**12**

Flip Flops – RS, JK,D and T Flip Flops –Excitation Table - Registers – Shift Registers – Counters – Ripple Counters – Synchronous Counters – Design of Counters.

UNIT IV: MEMORY UNIT**12**

Basic memory structure-ROM- PROM- EPROM- EEPROM, RAM-Static and Dynamic RAM- Programmable Logic Devices- Programmable Logic Array- Field Programmable gate array

UNIT V: ACCUMULATOR**12**

Accumulator – Design of Accumulator – Computer configuration – Instruction and Data formats – Instruction sets – Timing and Control – Execution of instruction – Design of computer – Hardwired control – PLA Control and Microprogram control.

TEXT BOOKS:

1. M.M. Mano, “Digital Logic Computer Design”, Pearson Education.
2. AnandKumar, “Fundamentals of Digital Circuits”, Fourth edition

REFERENCE BOOKS:

1. Givone, “Digital Principles Design”, Tata McGraw Hill, New Delhi. 2002.
2. ADMKNV. Rajaraman, “Fundamental of Computers, Third Edition”, PHI, New Delhi. 2002.
3. T.C. Bartee, “Computer Architecture and Logical Design”, Mc Graw Hill.1991

Course Coordinator**HOD**

P18MCCA103	SOFTWARE ENGINEERING AND METHODOLOGY						L	T	P	C	
	Total Contact Hours – 60						4	0	0	4	
	Prerequisite – UG Level										
	Course Coordinator Name & Department:										
COURSE OBJECTIVES:- To understand and practice the various fields such as analysis, design, development, testing of software engineering.											
COURSE OUTCOMES (COs)											
CO1	Remember different software models & its phases.										
CO2	Understand the concept risk analysis and management										
CO3	Describe the software requirements and arrive at an appropriate software design.										
CO4	Demonstrate an real time application using software engineering principles										
CO5	Illustrate the Software Testing tools										
CO6	Analyze the quality assurance procedures and standards during software development.										
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	PSO3
2	CO1	H	L							H	
	CO2	H	L								
	CO3	H	H								
	CO4	H	L								
	CO5	L	L								
	CO6	H	L								
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 INTRODUCTION**12**

Software Engineering paradigms - Waterfall life cycle Model, spiral Model, Prototype Model, 4th generation techniques – Planning – cost estimation – Organization structure – Software Project scheduling, Risk analysis and Management – Requirements and specification – Rapid prototyping.

UNIT –II SOFTWARE DESIGN**12**

Abstraction Modularity – Software architecture – cohesion, coupling – various design concepts and notation Real time and distributed system design – Documentation Data flow oriented design – Jackson system development – Design for reuse – Programming Standards.

UNIT –III SOFTWARE METRICS**12**

Scope – Classification of Metrics – Measuring process and product attributes – Direct and indirect measures – Reliability – Software Quality Assurance – Standards.

UNIT –IV SOFTWARE TESTING AND MAINTENANCE**12**

Software Testing fundamentals – Software testing Strategies – Black Box Testing, white Box Testing, system testing – Testing tools – Test case Management – Software Maintenance organization Maintenance report – Types of Maintenance.

UNIT–V SOFTWARE CONFIGURATION MANAGEMENT(SCM)&CASE TOOLS**12**

Need for SCM – version control – SCM Process – Software configuration – taxonomy – Case repository – Features.

TEXT BOOK:

1. Roger. S. Pressman, “Software Engineering, & Practitioner Approach”. 5th edition,
2. Fairly, “Software Engineering Concepts” McGraw Hill 1985.

REFERENCE BOOKS:

1. Sommerville, I “Software Engineering”, 5th edition.
2. K.K.Agarwal & Yokesh singh “Software Engineering”, 2001.
3. Stevenson.C. “Software Engineering Productivity”,1995.
4. Reference:www.nptel.ac.in/http://tosem.acm.org

Course Coordinator**HOD**

P18MCCA104	MICROPROCESSOR BASED SYSTEM DESIGN							L	T	P	C
	Total Contact Hours – 60							3	1	0	4
	Prerequisite – UG Level										
	Course Coordinator Name & Department:										
COURSE OBJECTIVES:- To understand the architecture and programming of 8085 microprocessor. To introduce the interfacing of peripheral devices with 8085 microprocessor.											
COURSE OUTCOMES (COs)											
CO1	Knowledge in basic functions of a microprocessor										
CO2	Understand the instruction sets										
CO3	Describe the use of various general purpose interfacing devices.										
CO4	Demonstrate the Programmable timer and Counter										
CO5	Illustrate the various management of microprocessors										
CO6	Analyze an real time application programs using different types of processor										
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	PO8	PO9	PO10
2	CO1	H	L								
	CO2	H	L								
	CO3	L	L								
	CO4	H	L								
	CO5	H	L								
	CO6	H	H								
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 INTRODUCTION	12
Introduction to 8085 Microprocessor-8086 Architecture-Functional Diagram – Register Organization-Memory Segmentation-Memory address-physical memory organization-Physical memory organization-Signal Description of 8086- Minimum and maximum mode signals- Timing diagram.	
UNIT - II 8086 BASED SYSTEM DESIGN	12
Standard program structures - simple programs - Jumps - While do - repeat - until - delay loops. Strings - Procedures -Macros - Instruction Descriptions Assembler Directives.	
UNIT-III INTERRUPT HANDLING	12
8086 Microcomputer - Observing Bus Signals - minimum mode system - Trouble shooting -8086 interrupts - Interrupts Applications - Programmable times / Counter Interrupt controller.	
UNIT-IV INTERFACING CONCEPTS	12
Parallel Ports-Handshaking - Interfacing Digital Devices-Analog Interfacing - Industrial Control.	
UNIT-V MEMORY MANAGEMENT	12
DMA - DRAMS - Cache Memories - Co-processors - EDA Tools - 80286, 80386 and 80486 Microprocessors.	

TEXT BOOKS:

1. S.Ghoshal, “Microprocessor System Design”
2. David J.Comer “Microprocessor Based system design”- Ten International Edition.

REFERENCE BOOKS:

1. Yu-Cheng Liu, Glen A. Gibson -"Microcomputer Systems: The 8086/ 8088 family", Prentice Hall of India Private limited, 2001.
2. "Microprocessor Data Hand Book", BPB Publications, Revised Edition 2000, compiled by A. K. Jain
3. Barry B. Brey, "Programming the 80286, 80386, 80486 and Pentium - Based Personal Computer", Prentice Hall of India Private Limited.

Course Coordinator

HOD

P18NCMA105	MATHEMATICS FOR COMPUTER APPLICATION							L	T	P	C
	Total Contact Hours – 60							3	1	0	4
	Prerequisite –Mathematics Studied in Under Graduate										
	Course Coordinator Name & Department:Mr.V.Nandakumar/Mathematics										
COURSE OBJECTIVES:- Learners will be familiar with basic definitions. Learners will understand the basic theorems and its applications To equip students with adequate knowledge of Mathematics to formulate problems and solve them analytically or numerically											
COURSE OUTCOMES (COs)											
CO1	Interpret the basics of Mathematical logic.										
CO2	Understand the concept of set theory.										
CO3	Estimate the algorithm and Solvable techniques for roots of the equations.										
CO4	Compute the different types of Numerical Differentiation Problems										
CO5	Analyze the techniques in Numerical Integration equations										
CO6	Inference: the real life applications for different types of relations and functions in Algebraic Structures.										
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	PSO3
2	CO1	H	L						H	L	M
	CO2	H	L								
	CO3	H	L								
	CO4	H	L								
	CO5	H	L								
	CO6	H	L								
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:**MATHEMATICAL LOGIC:****12**

Statement Calculus – Connectives – normal forms – predicate Calculus - Theory of inference for statement calculus – Predicate calculus including theory of inference.

UNIT II:**SET THEORY:****12**

Basic concepts of set theory – relations and ordering – functions – recursion.

UNIT III:**ALGEBRAIC STRUCTURES:****12**

Semi groups – Monoids – grammars and languages – groups and subgroups- polish experiments and their compilation.

UNIT IV:**ROOTS OF EQUATIONS:****12**

Graphical Method – bisection Method – False position Method – Newton Raphson method – Secant method. Algebraic equations: Elimination – Gauss Jordan – LU Decomposition – Matrix Inverse – Gauss Seidel.

UNIT V:**NUMERICAL DIFFERENTIATION – INTEGRATION:****12**

Trapezoidal Rule – Simpson's Rule – Romberg Integration – Differential equations: Taylor's method – Euler's method – Runge Kutta 2nd and 4th order methods. Milne Predictor – corrector.

TEXT BOOK

1. Rudolf Lidl and Gunter Pilz, Applied Abstract Algebra, Springer-Verlag, New York, 1984.

REFERENCE BOOK(S)

1. Williams E. Boyce and Richard C. Di Prima, Elementary differential equations and boundary value problems, John Wiley and sons, New York, 1967.

2. George F Simmons, Differential equations with applications and historical notes, Tata McGraw Hill, New Delhi, 1974

3. S.Wiitala, Discrete Mathematics- A Unified Approach, McGraw Hill Book Co.

P18MCCA1L2	LAB – II MICROPROCESSOR LAB							L	T	P	C	
	Total Contact Hours – 30							0	0	4	2	
	Prerequisite – UG Level											
	Course Coordinator Name & Department:											
COURSE OBJECTIVES:- Learners will be familiar with Using 8086 Microprocessor Kit/MASM software.												
COURSE OUTCOMES (COs)												
CO1	Remember simple programs using 8086 microprocessor kit											
CO2	Understand programs using instruction set											
CO3	Describe sorting & searching programs											
CO4	Demonstrate the concept of functions											
CO5	Illustrate strings using 8086 microprocessors											
CO6	Analyze real time application programs using 8086 processor development tools											
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	H	PSO1	PSO2	PSO3
2	CO1	H	L									
	CO2	L	L									
	CO3	H	L									
	CO4	H	H									
	CO5	H	L									
CO6	H	L										
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										

S.NO	LIST OF PROGRAMS(Using 8086 Microprocessor Kit/MASM software)
1.	Multiple addition/subtraction of signed numbers
2.	Computing LCM
3.	Computing GCD of N numbers
4.	Insertion Sort
5.	Selection Sort.
6.	Linear Search.
7.	Matrix Multiplication.
8.	Computing Factorial.
9.	Computing NCR.
10.	Computing Fibonacci Series.
11.	Finding Memory Size.
12.	Clearing Screen
13.	Moving String of Characters on CRT
14.	Checking Password.
15.	Displaying Command Line parameter

Course Coordinator

HOD

P18MCCA1L1	LAB – I PROGRAMMING IN C LAB							L	T	P	C
	Total Contact Hours – 30							0	0	4	2
	Prerequisite – UG Level										
	Course Coordinator Name & Department:										
OBJECTIVES											
Understand the basic concepts of C programming. Practice the use of conditional and looping statements. Implement arrays, functions and pointers. Gain skills to handle strings and files.											
COURSE OUTCOMES (COs)											
CO1	Remember the effective use of C statements.										
CO2	Understand the matrix operations.										
CO3	Describe C features including arrays, structures, pointers and files.										
CO4	Demonstrate to handle functions.										
CO5	Illustrate the concept of database using structure and pointers.										
CO6	Analyze a real time application by handling file operations.										
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	PSO3
2	CO1	H	L							H	
	CO2	H	L								
	CO3	H	L								
	CO4	H	L								
	CO5	H	L								
	CO6	H	L								
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									

S.NO	LIST OF PROGRAMS
1.	Determining whether the given number is prime or not
2.	Pascal's Triangle
3.	String Manipulation
4.	Matrix Multiplication
5.	Finding determinant of a Matrix
6.	Finding inverse of a Matrix
7.	Checking for Tautologies and Contradictions
8.	Euclidean's Algorithm for finding GCD
9.	Generating Permutation
10.	Computing Combinations
11.	Creating database for telephone number and related operations. Use structures.
12.	Creating database for Web page addresses and related operations. Use pointers.
13.	File processing
14.	Finding roots of Quadratic equations

Course Coordinator

HOD

P18MCCA201	OBJECT ORIENTED PROGRAMMING IN C++						L	T	P	C	
	Total Contact Hours – 60						3	1	0	4	
	Prerequisite – UG Level										
	Course Coordinator Name & Department:										
COURSE OBJECTIVES:- Learners will be familiar with the basic programming in C++ concepts and to demonstrate the differences between traditional imperative design and object-oriented design.											
COURSE OUTCOMES (COs)											
CO1	Remember program using class object concepts										
CO2	Comprehend OOPs concepts inheritance and polymorphism										
CO3	Describe to handle functions, constructors and destructor.										
CO4	Demonstrate the use problem-solving techniques.										
CO5	Illustrate generic classes using template concepts.										
CO6	Analyze real time application using C++										
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	PSO3
2	CO1	H	L							H	
	CO2	H	L								
	CO3	H	L								
	CO4	H	L								
	CO5	H	L								
	CO6	H	L								
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 : INTRODUCTION**12**

Introduction about OOPS – Data types – Operators – Control Statements – Looping, Branching – Functions. Pointers.

UNIT II : CLASSES AND OBJECTS**12**

Classes and Objects – Nested or Inner Classes – Constructors – Destructors – Inline functions – Friends functions – This Operators

UNIT III : INHERITANCE**12**

Inheritance – Single – Multiple – Multilevel – Hybrid – Hierarchical

UNIT IV : POLYMORPHISMS**12**

Polymorphisms – Overloading – Functions – Operators – Virtual Functions – Pure Virtual Functions.

UNIT V : TEMPLATES AND FILE HANDLING**12**

Exception Handling - Templates – Functions template and Class templates – Files.

TEXT BOOKS:

1. Herbert Schildt ,C++ “The Complete Reference “, III Edition , 1999.
2. Brett D.Mclaughlin,Gray Police,Dave West “Head First Object Oriented Analysis And Design” First Edition.

REFERENCE BOOKS

1. Schaum’s Outlines , “Programming with C++” , II edition, Tata McGraw Hill 2002.
2. BjaPN Stroustrup, “The C++ Programming language” Third Edition, Addison Wesley , 2000
3. <https://www.whoishostingthis.com>

Course Coordinator**HOD**

P18MCCA202	DATA STRUTCURES AND ALGORITHMS							L	T	P	C
	Total Contact Hours – 60							3	1	0	4
	Prerequisite – UG Level										
	Course Coordinator Name & Department:										
COURSE OBJECTIVES:-											
Learners will be familiar with basic data structure and algorithm analysis. Learners will understand the applications of data structure & able to apply the problem solving techniques using data structure.											
COURSE OUTCOMES (COs)											
CO1	Remember the fundamental data structure										
CO2	Understand the concept of algorithmic design and implementation										
CO3	Describe suitable data structure for developing a real time application										
CO4	Demonstrate the algorithm for its complexity and performance										
CO5	Illustrate data structures and algorithms on which file structures and data bases are based										
CO6	Analyze an real time application using a suitable data structure										
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	PSO3
2	CO1	H	H								H
	CO2	H	L								
	CO3	H	L								
	CO4	L	H								
	CO5	H	L								
	CO6	H	L								
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 INTRODUCTION	12
Introduction - Lists - Stacks - Queues - Linear data structure, Array and Linked lists - Implementation – Applications	
UNIT-II TREES	12
Preliminaries- Binary Trees-The Search tree-ADT-Binary search Trees- AVL Trees-Sets and maps in the standard Library.	
UNIT-III SORTING	12
Sorting - Insertion sort - Quick sort - Merge sort - Heap sort - Sorting on several keys - External sorting.	
UNIT – IV GRAPHS	12
Graphs representation - Traversal - Topological tables and files - Sorting - Applications - Representation - Making techniques - Files - Sequential - Index sequential - Random access organization - implementation.	
UNIT-V : ALGORITHM ANALYSIS AND DESIGN	12
Algorithms - Time and space complexity - Sorting - Design techniques - Knapsack - Traveling salesman - Graph coloring - Squeezing.	

TEXT BOOKS:

1. Kruse R. L., Leung BP Tondo C. L., "Data Structures and program design in C", PHI. 1995.
2. Granville Barnett and Luca Dell'Amico "Data structures and Algorithms", First edition

REFERENCES:

1. Bills Horowitz, Sahni & Dinesh Mehta "Fundamental of data structures in C++", Galgotia, 1999.
2. Tanenbaum A. S., Langsam Y., Augenstein M.J. "Data structures using C", PHI, 1992.
3. Jean, Paul Tremblay, Paul. G Sorenson, "An introduction to data structures with application", Tata McGraw Hill, 1995.
4. <https://www.geeksforgeeks.org/datastructure>

Course Coordinator

HOD

P18MCCA203	OPERATING SYSTEMS							L	T	P	C
	Total Contact Hours – 60							4	0	0	4
	Prerequisite – UG Level										
	Course Coordinator Name & Department:										
COURSE OBJECTIVES:- Learners having knowledge in basics of any computer system can understand the functions of system with the help of an operating system. The purpose of this course is providing a clear understanding of the concepts that underlie operating systems											
COURSE OUTCOMES (COs)											
CO1	Remember the fundamental concepts to gain knowledge about an operating system and the role it plays										
CO2	Comprehend the high-level structure of operating systems, applications, and the relationship between the process and its management.										
CO3	Describe the behaviour of the different process scheduling and recovery from the deadlock										
CO4	Demonstrate memory management and learn about different techniques to manage										
CO5	Illustrate the concept of Virtual memory and file systems										
CO6	Analyze different types of I/O system and ensuring security and authentication										
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	PSO3
2	CO1	H	L						H		
	CO2	H	L								
	CO3	H	L								
	CO4	H	L								
	CO5	H	L								
	CO6	H	L								
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 INTRODUCTION**12**

Multiprogramming – Time Sharing – Distributed system – Real Time systems – I/O structure – Dual Mode operation – Hardware protection – General System architecture – OS services – system calls – System programs – system design and implementation.

UNIT –II PROCESS MANAGEMENT**12**

Process concept – Concurrent process – Scheduling concept – CPU Scheduling algorithms –Multiple Processor scheduling.

UNIT –III PROCESS SYNCHRONIZATION**12**

Critical section – Synchronization hardware – semaphores Classical Problems of synchronization – Inter – process communication – Deadlock – Characterization, Prevention, Avoidance, and Detection.

UNIT –IV STORAGE MANAGEMENT**12**

Swapping, Single and Multiple Partition allocation – Paging – Segmentation – Paged Segmentation Virtual Memory – Demand Paging – Page replacement algorithm- Thrashing – Secondary storage Management Disk structure – Free Space Management – Allocation methods – Disk scheduling – Performance and reliability improvements – storage hierarchy.

UNIT –V FILES AND PROTECTION**12**

File system organization, File operations – Access Methods – Consistency semantics-Directory structure organization – File Protection – Implementation issues – Security – Encryption – Case Study – UNIX and Windows NT – Introduction to distributed OS design.

TEXT BOOKS:

1. Silberschatz and Galvin , “Operating System Concepts”, 4th Edition Addison Wesley Publishing co, 1995.
2. Milankovic . M “Operating System Concepts and Design”, 2nd Edition, McGraw Hill, 1992.

REFERENCE BOOKS:

1. Deital , “An Introduction to Operating System”, Addison Wesley Publishing Co.,1985.
- Gray Nutt, “Operating System”, A. Modern Perspective – 2000

Course Coordinator**HOD**

P18NCMA205	STATISTICS FOR COMPUTER APPLICATIONS							L	T	P	C
	Total Contact Hours – 60							3	1	0	4
	Prerequisite –Mathematics Studied in Under Graduate										
	Course Coordinator Name & Department:Mr.V.Nandakumar/Mathematics										
COURSE OBJECTIVES:-											
Learners will be familiar with basic definitions. Learners will understand the basic theorems and its applications. To equip students with adequate knowledge of Mathematics to formulate problems and solve them analytically or numerically.											
COURSE OUTCOMES (COs)											
CO1	Interpret the knowledge in a Statistics background										
CO2	Understand the detailed concept of Exponential distribution										
CO3	Estimate the concepts of least squares – Regression lines.										
CO4	Analyze the design of experiments										
CO5	Solve the small & Large sample tests problems										
CO6	Inference the real life applications for ANOVA CRD – RBD – LSD.										
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	PSO3
2	CO1	H	L						H	L	M
	CO2	H	L								
	CO3	H	L								
	CO4	H	L								
	CO5	H	L								
	CO6	H	L								
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: INTROUCTION**12**

Random Experiments – Probability – Baye’s theorem – Random variables – Expectation – Variance – Chebychev’s Inequality.

UNIT II: DISTRIBUTION**12**

Bivariate distribution – conditional and marginal Distributions – Standard Distributions: Binomial, geometric – Poisson- uniform- Normal –Exponential distribution.

UNIT III: CORRELATION & REGRESSION**12**

Introduction to correlation – Measures of Fitting of curves using method of least squares – Regression lines.

UNIT IV: TESTING OF HYPOTHESIS**12**

Sampling techniques – tests of hypotheses- small & Large sample tests – t test - Chi square test – F test.

UNIT V: ANALYSIS OF VARIENCE**12**

ANOVA – introduction – one way and two way methods – Design of experiments – CRD – RBD – LSD.

TEXT BOOKS:

1. Probability and statistics with reliability, Queueing and computer Science Applications –Trivedi K.S- Prentice Hall India 1994.

REFERENCE BOOKS:

1. Mood A.M , “Introduction to mathematical statistics”, Graybill F. and Boes – Mcgraw hill 1974
2. Arnoid Allen, “Probability, Statistics and Queueing theory with computer science applications”, 1978.
3. A.Singaravelu , “Computer oriented statistical methods”, - A.R Publications
4. Basinab A.P, “Elements of Probability and statistics”, TMH 1993.

Course Coordinator**HOD**

P18MCCA2L1	DATA STRUTCURES LAB							L	T	P	C
	Total Contact Hours – 30							0	0	4	2
	Prerequisite – UG Level										
	Course Coordinator Name & Department:										
COURSE OBJECTIVES:- Learners will be familiar with the basic programming in C++ concepts and to gain knowledge to create real time application.											
COURSE OUTCOMES (COs)											
CO1	Remember the fundamental of data structure										
CO2	Comprehend Single and multi dimensional array data structure										
CO3	Describe the programs for Stack and Queue Operations										
CO4	Demonstrate and implement the expressions for real time applications										
CO5	Illustrate the Linked list operations.										
CO6	Analyze the use of different searching and sorting methods for 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	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
2	CO1	H	L								H
	CO2	H	L								
	CO3	H	L								
	CO4	H	L								
	CO5	H	L								
	CO6	H	L								
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									

S.NO	LIST OF PROGRAMS
1.	Implementation of Single Dimensional Arrays.
2.	Implementation of Multi Dimensional Arrays.
3.	Implementation of Stack (Using Arrays)
4.	Implementation of Stack (Using Pointers)
5.	Implementation of Queue (Using Arrays)
6.	Implementation of Queue (Using Pointers)
7.	Implementation of Circular Queue (using Arrays and Pointers)
8.	Infix to Postfix Expression Conversion
9.	Evaluation of Postfix Expressions
10.	Singly Linked List
11.	Doubly Linked List
12.	Circular Linked List
13.	Binary Tree Traversals (Preorder, Inorder, Postorder)
14.	Depth First Search

Course Coordinator

HOD

P18MCCA2L2	OPERATING SYSTEMS LAB							L	T	P	C
	Total Contact Hours – 30							0	0	4	2
	Prerequisite – UG Level										
	Course Coordinator Name & Department:										
COURSE OBJECTIVES:- Learners will gain knowledge to implement process management, CPU scheduling and IPC											
COURSE OUTCOMES (COs)											
CO1	Implement Inter Process Communication (IPC)										
CO2	Develop program to implement wait & signal using Semaphores										
CO3	Simulate Deadlock detection										
CO4	Implement process scheduling algorithms										
CO5	Simulate Producer – Consumer problem with limited buffers										
CO6	Create an application to simulate various operating system concepts										
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	P O3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
2	CO1	H	L						H		
	CO2	H	L								
	CO3	H	L								
	CO4	H	L								
	CO5	H	L								
	CO6	H	L								
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									

S.NO	LIST OF PROGRAMS
1.	Inter Process Communication (IPC) using Message Queues.
2.	IPC Using Pipes
3.	Implementation of wait and Signal using counting Semaphores
4.	Atomic Counter update problem
5.	Implementation of wait and Signal using counting Semaphores
6.	Atomic Counter update problem
7.	Signaling processes
8.	Deadlock detection (for process passing messages)
9.	Process scheduling FCFS
10.	Process Scheduling: Least Frequency used.
11.	Process Scheduling: Round Robin
12.	Producer – Consumer problem with limited buffers

SEMESTER III

P18MCCA301	PROGRAMMING IN JAVA						L	T	P	C	
	Total Contact Hours – 60						3	1	0	4	
	Prerequisite – UG Level										
	Course Coordinator Name & Department:										
COURSE OBJECTIVES:- Learners will be familiar with the basic programming in JAVA concepts and the ability to write a computer program to solve specified problems											
COURSE OUTCOMES (COs)											
CO1	Remember the basic concepts of object-oriented programming										
CO2	Understand knowledge to develop a program using classes and objects										
CO3	Describe Java SDK environment to create, debug and run simple Java programs										
CO4	Demonstrate the programming concept to create packages										
CO5	Illustrate Java streams & file operations										
CO6	Analyze an real time application using AWT controls										
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	PSO3
2	CO1	H	L							H	
	CO2	H	L								
	CO3	H	L								
	CO4	H	L								
	CO5	H	L								
	CO6	H	L								
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 INTRODUCTION	12
Java features – Benefits – Applications – Data types – Expressions – Conditional and iteration executions – References – Arrays – Garbage Collection - Run time environment.	
UNIT-II JAVA OBJECT MODEL	12
Classes – Variables - Methods – Constructors – Access specifies – Inheritance – interface – Packages – Strings – Dynamic binding.	
UNIT-III EXCEPTIONS AND THREADS	12
Exceptions and Errors – Exception classes – Run time Exception – Uncompact Exception – Finally Block – User Defined Exception – Creating Threads – Controlling Threads – Multithreading – Thread Properties – Thread groups.	
UNIT-IV JAVA I/O	12
Java streams – File class – Serialization – Applets.	
UNIT-V AWT	12
AWT controls – Panel – Layout Managers – Event Handling – Event Listener – Dialog box – Menus – Graphics context.	

TEXT BOOKS:

1. Java 2: “The Complete Reference”, 3rd Edition – TMGH – 1999 P.Naughton and H.Schildt.
2. “Java Secrets” IDG Book World.

REFERENCE BOOKS:

1. Joseph. L. Weber- “Using Java 2-EEE “-Prentice Hall of India – 1998.
Patrick Henry Winston & Sundar Narsimbhan “Onto Java “- Addison Wesley - 1996

Course Coordinator

HOD

P18MCCA302	DESIGN ANALYSIS OF ALGORITHMS							L	T	P	C
	Total Contact Hours – 60							3	1	0	4
	Prerequisite – UG Level										
	Course Coordinator Name & Department:										
COURSE OBJECTIVES:- Learners will understand asymptotic notations. Gain knowledge in Divide and Conquer method, Dynamic programming, Back tracking & Branch and Bound problem and able to apply for real time applications.											
COURSE OUTCOMES (COs)											
CO1	Remember the basic concepts of time and space complexity										
CO2	Understand the concepts of Divide and Conquer method for Sorting										
CO3	Describe shortest path problem using Dynamic programming										
CO4	Demonstrate Ability to solve 8 queens problem and graph coloring using backtracking										
CO5	Illustrate the Handle Travelling Salesman problem using Branch and Bound method										
CO6	Analyze real time application by applying these methods and finding it performance and complexity										
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	PSO3
2	CO1	H	L								
	CO2	H	L								
	CO3	H	L								
	CO4	H	L								
	CO5	H	L								
	CO6	H	L								
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: INTRODUCTION**12**

Fundamentals of algorithmic problem solving – Important problem types – Fundamentals of the analysis of algorithm efficiency – analysis frame work – Asymptotic notations – Mathematical analysis for recursive and non-recursive algorithms.

UNIT II: DIVIDE AND CONQUER METHOD AND GREEDY METHOD**12**

Divide and conquer methodology – Merge sort – Quick sort – Binary search – Binary tree traversal – Strassen's matrix multiplication – Greedy method – Prim's algorithm – Kruskal's algorithm – Dijkstra's algorithm.

UNIT III: DYNAMIC PROGRAMMING**12**

Single source shortest paths – Multi stage graphs – 0/1Knapsack problem – String editing.

UNIT IV: BACKTRACKING**12**

Backtracking – 8-Queens problem – Hamiltonian circuit problem – Subset sum problem – Graph coloring

UNIT V: BRANCH AND BOUND AND NP-HARD, COMPLETE PROBLEMS**12**

Branch and bound – General method – Traveling salesman problem - P & NP problems – NP-complete problems – Approximation algorithms for NP-hard problems

Text Book:

1. Ellis Horowitz, Sartaj Sahni and S. Rajasekaran "Fundamentals of computer Algorithms" Universities Press 2nd Edition 2007.

Reference Book:

1. Thomas H.Cormen, Charles E.Leiserson, Ronald L.Rivest, "Introduction to algorithms" Prentice Hall 1990.

Course Coordinator**HOD**

P18MCCA304	PROGRAMMING IN PYTHON							L	T	P	C
	Total Contact Hours – 60							3	1	0	4
	Prerequisite – UG Level										
	Course Coordinator Name & Department:										
COURSE OBJECTIVES:- Learners will understand about python basics and how to use concept in Python programs.											
COURSE OUTCOMES (COs)											
CO1	Remember the Use of if-else statements and switch-case statements to write programs in Python to tackle any decision-making scenario										
CO2	Understand Object-oriented programming to create an entire Python project using objects and classes										
CO3	Store and retrieve information using variables										
CO4	Describe the cost-effective robust applications using the latest Python trends and technologies										
CO5	Demonstrate Debugging & develop application that connect with database										
CO6	Analyze systems entire web development process using various tools										
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	PO8	PO9	PO10
2	CO1	H	L								
	CO2	H	L								
	CO3	H	L								
	CO4	H	L								
	CO5	H	L								
	CO6	H	L								
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: INTRODUCTION TO PYTHON PROGRAMMING **12**

Introduction : History – Features - Python Programming - Terminology – Interpreter and Compiler - Conversing with Python – Building blocks of Program - Variables – Expressions – Data types - Statements – Operators - Order of Operations -Complex number - Editors in Python - Errors and Exceptions – Example Python Programs.

UNIT – II: CORE ELEMENTS OF PYTHON PROGRAMMING **12**

Input and Output Statements – Format Converter – Sequences - String – Tuples List – Iteration – Looping – Control flow – Array – Array Methods – Multi Dimensional Array- Functions.

UNIT – III: OBJECT ORIENTED PROGRAMMING **12**

Managing Larger Program – Using Objects – Constructor – Destructor - Encapsulation – Python Objects – Classes as Type – Object Life Cycle – Many Instances - Inheritance.

UNIT – IV: DATABASES AND SQL **12**

Database concepts – Database browser for SQLite – Creating a Database Table – Structure Query language – Spidering Twitter using a Database – Basic Data modeling – Programming with multiple Tables : Constraints in Database Table – Retrieve and / or Insert a record – Sorting the Friends Relationship.

UNIT – V: WEB SERVICES **12**

XML – Parsing XML – Looping through nodes – JSON(Java Script Object Notation) – Parsing JSON – API(Application Programming Interface) – Google GeoCoding Web Services – Security and API Usage .

TEXT BOOK

- 1.Python for Everybody: Exploring Data in Python - 2016 by Charles R. Severance

REFERENCE BOOK

- 1.Learning To Program with Python by Richard L Halterman
- 2.Python Programming : A Modular Approach with Graphics, Database, Mobile and Web Applications, Based on Python 3. x First Edition - Sheetal Taneja, Naveen Kumar)

Course Coordinator

HOD

P18NCBC303	FINANCIAL AND MANAGEMENT ACCOUNTING							L	T	P	C								
	Total Contact Hours – 45							3	1	0	4								
	Prerequisite course – UG Level																		
	Course Coordinator Name &Department:-Dr.S.Kamaraj/Commerce & Economics																		
COURSE OBJECTIVES:- To understand the basic principles of double entry system and preparation of balance sheet.																			
COURSE OUTCOMES (COs)																			
CO1	Recall the principle of Accounting, Trial balance, Financial Statement																		
CO2	Report the Marginal Costing, Cost Volume profit ,Budgeting																		
CO3	Operate the Capital Investment, ARR Method,																		
CO4	Determine the Net Present Value Method, Discount cash flow method																		
CO5	Predict Making of Break even analysis and Budget forecasting																		
CO6	Compare the Trading ,Profit &loss account, Balance 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	PS O1	PS O2	PSO3						
2	CO1	H	M																
	CO2			H				H											
	CO3	H		M															
	CO4								H	M									
	CO5					H													
	CO6			H															
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: FINAL ACCOUNTS

12

Principles of Accounting: Principles of double entry -Assets and Liabilities - Accounting records and systems - Trial balance and preparation of financial statements - Trading, Manufacturing, Profit and Loss accounts, Balance Sheet including adjustments(Simple problems only).

UNIT II:RATIO ANALYSIS**12**

Analysis and Interpreting Accounts and Financial Statements: Ratio analysis - Use of ratios in interpreting the final accounts (trading accounts and loss a/c and balance sheet) - final accounts to ratios as well as ratios to final accounts.

UNIT III: MARGINAL COSTING**12**

Break-even analysis and Marginal Costing: Meaning of variable cost and fixed cost - Cost-Volume-Profit analysis – calculation of breakeven point, Profit planning, sales planning and other decision – making analysis involving break - even analysis - Computer Accounting and algorithm.(differential cost analysis to be omitted)

UNIT IV: BUDGET FORECASTING**12**

Budget/Forecasting: preparation of and Characteristics of functional budgets, Production, sales, Purchases, cash and flexible budgets.

UNIT V : CAPITAL BUDGETING**12**

Project Appraisal: Method of capital investment decision making: Payback method , ARR method - Discounted cash flows - Net Present values - Internal rate of return - Sensitivity analysis - Cost of capital.

TEXT BOOKS

1. Shukla M.C. & T.S. Grewal, 1991, Advanced Accounts, S.Chand& Co. New Delhi.
2. Gupta R.L. & M. Radhaswamy, 1991, Advanced Accounts Vol. II, Sultan Chand & Sons, New Delhi.
3. Man Mohan & S.N. Goyal, 1987, Principles of Management Accounting, Arya Sahithya Bhawan.

REFERENCE BOOK

1. T.S. Reddy & Hari Prasad Reddy – Management Accounting – Margham Publications, Chennai.2014
2. R C Sekhar and A V Rajagopalan , Management Accounting , oxford university press, 20
3. S.P. Gupta – Management Accounting – Sultan Chand & Sons, New Delhi. 2010

Course Coordinator**HOD**

P18MCCA3L1	PROGRAMMING IN JAVA LAB							L	T	P	C	
	Total Contact Hours – 30							0	0	4	2	
	Prerequisite – UG Level											
	Course Coordinator Name & Department:											
COURSE OBJECTIVES:- Ability to develop application using java SDK environment, AWT and Applet												
COURSE OUTCOMES (COs)												
CO1	Remember the simple java program using OOPs concepts											
CO2	Understand the use of an interface and implement predefined classes.											
CO3	Describe packages and apply exception handling in real time application											
CO4	Demonstrate the concept of thread											
CO5	Illustrate applications using AWT and Applet.											
CO6	Analyze and handle Frames & Layout											
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	PSO3	
2	CO1	H	H							H		
	CO2	H	L									
	CO3	H	L									
	CO4	L	H									
	CO5	H	L									
	CO6	H	L									
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										

S.NO	LIST OF PROGRAMS
1.	Determining the order of numbers generated randomly using Random Class.
2.	Implementation of Point Class for Image manipulation
3.	Usage of Calendar Class and manipulation
4.	String Manipulation using Char Array
5.	Database Creation for string e-mail address and manipulation
6.	Usage of Vector Classes
7.	Implementing Thread based applications and Exception Handling (Synchronization and a synchronization)
	APPLETS
8.	Working with frames and various controls.
9.	Working with Dialogs and Menus
10.	Working with Panel and Layout

Course Coordinator

HOD

P18MCCA3L2	PROGRAMMING IN PYTHON LAB							L	T	P	C
	Total Contact Hours – 30							0	0	4	2
	Prerequisite – UG Level										
	Course Coordinator Name & Department:										
COURSE OBJECTIVES:- Learners will understand about python basics and how to use concept in Python programs.											
COURSE OUTCOMES (COs)											
CO1	Remember decision making statements										
CO2	Understand Object-oriented programming to create an entire Python project using objects and classes										
CO3	Describe Handling arrays and command line arguments										
CO4	Demonstrate cost-effective robust applications using the latest Python trends and technologies										
CO5	Illustrate Debugging & develop application that connect with database										
CO6	Analyze applications using Pygame										
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	PSO3
2	CO1	H	L							H	
	CO2	H	L								
	CO3	H	L								
	CO4	H	L								
	CO5	H	L								
	CO6	H	L								
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									

S.NO	LIST OF PROGRAMS
1.	Compute the GCD of two numbers.
2.	Find the square root of a number (Newton's method)
3.	Exponentiation (power of a number)
4.	Find the maximum of a list of numbers
5.	Linear search and Binary search
6.	Selection sort, Insertion sort
7.	Merge sort
8.	First n prime numbers
9.	Multiply matrices
10.	Programs that take command line arguments (word count)
11.	Find the most frequent words in a text read from a file
12.	Simulate elliptical orbits in Pygame
13.	Simulate bouncing ball in Pygame

Course Coordinator

HOD

SEMESTER IV

P18MCCA401	DATABASE TECHNOLOGY						L	T	P	C	
	Total Contact Hours – 60						3	1	0	4	
	Prerequisite course – UG Level										
	Course Coordinator Name & Department:-										
COURSE OBJECTIVES:- Learners will gain knowledge in basics of Database Technology,file management and transaction processing											
COURSE OUTCOMES (COs)											
CO1	Remember the fundamental elements of relational database management										
CO2	Understand the basic concepts of relational data model, entity-relationship model, Relational database design, relational algebra and SQL.										
CO3	Describe the various ER-models and object oriented model to represent simple database application scenarios										
CO4	Demonstrate the storage and file structure for a database										
CO5	Illustrate and improve the database design by normalization.										
CO6	Analyze the database system architecture.										
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	PS O1	PS O2	PSO3
2	CO1	H	L								H
	CO2	H	L								
	CO3	H	L								
	CO4	H	L								
	CO5	H	L								
	CO6	H	L								
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: INTROUDCTION**12**

Database concepts / basic concepts / constraints / keys ER diagram / reduction or ER schema / UML/ design of an ER database schema / relational model / relational algebra / views / relational database / SQL / structure / set quotation / sub queries / join relation / DDL / DML / embedded SQL,QBE.

UNIT II: INTEGRITY AND SECURITY**12**

Integrity & security / domain constraints / referential integrity / assertion / triggers / authorization in SQL / relational database design / 1, 2, 3, 4, BCNF normal forms / decomposition

UNIT III: OBJECT RELATIONAL DATA MODEL**12**

Object relational data model / nested relations / complex types / inheritance / reference / types / querying with complex / types / functions & procedures / object oriented versus object relational / intro to xml concepts.

UNIT IV: STORAGE AND FILE STRUCTURE**12**

Storage and file structure / physical storage media / file organization, data dictionary storage, query processing / selection operation / sorting / join operation transaction / concepts / state / atomicity and amiability / Serialisability / transaction definition in sql / concurrency control / protocols / protocols / deadlock handling

UNIT V: SYSTEM ARCHITECTURE**12**

Database system architecture / centralized & client server architecture / server system architecture / case study / oracle.

TEXT BOOK:

1. Silberschatz, H.F. Korth and S. Sudharshan, 2006, Database System Concepts, 5th Edition, Tata McGraw Hill, New Delhi.

REFERENCE BOOKS:

1. Silbersehatz, h.f. korth and sudharshan / database system concepts / iv ed / mcgraw hill
2. Jeffrey .d. ullman / principles of database systems / galgotia
3. C.J.date / an introduction to database system / 3 ed

Course Coordinator**HOD**

P18MCCA402	WEB TECHNOLOGY						L	T	P	C	
	Total Contact Hours – 60						4	0	0	4	
	Prerequisite course – UG Level										
	Course Coordinator Name & Department:-										
COURSE OBJECTIVES:- Learners will be familiar with the basic concepts of web technology and Understand the various steps in designing a creative and dynamic website.											
COURSE OUTCOMES (COs)											
CO1	Remember the basic internet concepts										
CO2	Understand the dynamic and interactive web pages										
CO3	Describe and create Events and functions in java script										
CO4	Demonstrate the fundamentals of xml										
CO5	Illustrate the use of vb script functions										
CO6	Analyze with data base for real time application.										
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	PS O1	PS O2	PSO3
2	CO1	H	L							H	
	CO2	H	L								
	CO3	H	H								
	CO4	L	L								
	CO5	H	L								
	CO6	H	L								
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: INTRODUCTION

12

Basic Web Concepts - How the web server works – static web pages-Dynamic web pages-How scripting languages work – Server side scripting Language – Client Side Scripting – Introduction to Common HTML

UNIT II: HTML

12

Links and Addressing –Linking in HTML –Images and Anchor –HTML and Images –HTML Image Basics – ALT Attributes – Image Alignment – HSPACE and VSPACE – HEIGHT and WIDTH –Layout with Tables – Introduction Tables – Simple Tables – ROWSPAN and COLSPAN – Tables for Layout– Frames – Simple Frame Example-Forms – Form Controls-Text Controls-Additional <Input> Type- New and Emerging Form Elements – <Button Elements>- Labels.

UNIT III: JAVA SCRIPT

12

Core Java Script – Variables-Constant – Expressions Conditions- Relational Operators- Data Types – FlowControl – Functions-Objects – Data type Conversion & Equality – Windows and Frames – Forms and data.

UNIT IV: XML

12

Characteristics of Markup Languages- Examples of Markup Languages-What is XML – The data revolution-Breaking beyond data display-Well Formed Documents - Valid Documents - Writing DTDs - Styling XML – XSL.

UNIT V: VB SCRIPT

12

VB Script- Operators- Math Functions-Date and Functions-Unsupported array functions and statements-Unsupported string functions, statements and constructs-String Constants-Conversion Functions-Unsupported Conversion Functions.

TEXT BOOKS

1. Professional Java Script 2nd Edition – April 2002 (Chapter 2,4,5)
2. Eric Ladd, Jim O'Donnel –“**Using HTML 4, XML and JAVA**”-Prentice Hall of India - 1999.

REFERENCE BOOKS

1. “**Web Server Programming** “– Nail Grey –Wiley Publications –2004.
2. HTML BLOCK BOOK.
3. Professional IBM Websphere 5.0 – Tim Francis , Eric Harness –SPD Publications –2003

Course Coordinator

HOD

P18MCCA403	SOFTWARE PROJECT MANAGEMENT						L	T	P	C	
	Total Contact Hours – 60						4	0	0	4	
	Prerequisite course – UG Level										
	Course Coordinator Name & Department:-										
COURSE OBJECTIVES:- Learners will understand basic project management skills with a strong emphasis on issues and problems associated with delivering successful IT projects											
COURSE OUTCOMES (COs)											
CO1	Remember what is a product, project and process is.										
CO2	Understand Product Development Life Cycle										
CO3	Describe the Goal and Scope of the Software Project										
CO4	Demonstrate the software project development process.										
CO5	Illustrate the scheduling algorithm for software project management										
CO6	Analyze real time software with quality assurance and its 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	PS O1	PS O2	PS O3
2	CO1	H	L						H		
	CO2	H	L								
	CO3	H	L								
	CO4	H	L								
	CO5	H	L								
	CO6	H	L								
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: INTRODUCTION**12**

Introduction to Competencies - Product Development Techniques - Management Skills - Product Development Life Cycle - Software Development Process and models - The SEI CMM - International Organization for Standardization.

UNIT II: DOMAIN PROCESSES**12**

Managing Domain Processes - Project Selection Models - Project Portfolio Management - Financial Processes - Selecting a Project Team - Goal and Scope of the Software Project - Project Planning - Creating the Work Breakdown Structure - Approaches to Building a WBS - Project Milestones - Work Packages - Building a WBS for Software.

UNIT III: SOFTWARE DEVELOPMENT**12**

Tasks and Activities - Software Size and Reuse Estimating - The SEI CMM - Problems and Risks - Cost Estimation - Effort Measures - COCOMO: A Regression Model - COCOMO II - SLIM: A Mathematical Model - Organizational Planning - Project Roles and Skills Needed.

UNIT IV: SCHEDULING ACTIVITIES**12**

Project Management Resource Activities - Organizational Form and Structure - Software Development Dependencies - Brainstorming - Scheduling Fundamentals - PERT and CPM - Leveling Resource Assignments - Map the Schedule to a Real Calendar - Critical Chain Scheduling.

UNIT V: QUALITY ASSURANCE**12**

Quality: Requirements – The SEI CMM - Guidelines - Challenges - Quality Function Deployment - Building the Software Quality Assurance - Plan - Software Configuration Management: Principles - Requirements - Planning and Organizing - Tools - Benefits - Legal Issues in Software - Case Study.

TEXT BOOK:

1. Robert T. Futrell, Donald F. Shafer, Linda I. Safer, “Quality Software Project Management”, Pearson Education, Asia, 2002.

REFERENCE BOOKS:

1. Pankaj Jalote, “Software Project Management in Practice”, Addison Wesley, 2002.
2. Hughes, “Software Project Management, 3/E”, Tata McGraw-Hill, 2004.

Course Coordinator**HOD**

P18MCCA4 L1	WEB TECHNOLOGY LAB						L	T	P	C	
	Total Contact Hours – 30						0	0	4	2	
	Prerequisite course – UG Level										
	Course Coordinator Name & Department:-										
COURSE OBJECTIVES:- Learners will gain knowledge to handle basic web concepts and to create a dynamic website.											
COURSE OUTCOMES (COs)											
CO1	Remember the basic internet concepts using html.										
CO2	Understand dynamic and interactive web pages.										
CO3	Describe web pages using CSS										
CO4	Demonstrate Events and functions in java script										
CO5	Illustrate Dynamic HTML to create website										
CO6	Analyze application using HTML tags and JavaScript.										
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	PS O1	PS O2	PS O3
2	CO1	H	L							H	
	CO2	H	L								
	CO3	H	L								
	CO4	H	L								
	CO5	H	L								
	CO6	H	L								
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									

S.NO	LIST OF PROGRAMS
1.	Create a simple page introducing your-self, how old you are, what you do, what you like and dislike. Modify the introduction to include a bullet list of what you do and put a list on the 5 things you like most and dislike is numbered lists. Create another page about your favorite hobby, and link it to (and from) your main page. Center something, and put a quote on one of your pages.
2.	Put an existing image on a web page. Create a table, use a heading and at least one use of row span / col span. Colour a page and some text within the page. Link to another site.
3.	Create a new file called index.html.
4.	a. Put the normal HTML document structure tags in the file.
5.	b. Give a title.
6.	c. At the bottom of the page (i.e. the last thing between the body tags) put the following:
7.	A horizontal rule.
8.	A link to your email-address (with your name between the tag); remember to put the link to your email address within address tags.
8.	A line break.
9.	The Date (I have this same structure at the bottom of this page)
10.	Above this Block (which is called the footer), put a title in heading tags.

Course Coordinator

HOD

P18MCCA4L2	SOFTWARE DEVELOPMENT LAB						L	T	P	C	
	Total Contact Hours – 30						0	0	4	2	
	Prerequisite course – UG Level										
	Course Coordinator Name & Department:-										
COURSE OBJECTIVES:-											
Learners to provide basic project management skills with a strong emphasis on issues and problems associated with delivering successful IT projects.											
COURSE OUTCOMES (COs)											
CO1	Remember SRS document, design document &test cases										
CO2	Understand the lifecycle for a software product.										
CO3	Describe the quality and performance of software.										
CO4	Demonstrate the project development process.										
CO5	Illustrate the development life cycle for various applications.										
CO6	Analyze a real time project for the client.										
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	PS O1	PS O2	PS O3
2	CO1	H	L						H		
	CO2	H	L								
	CO3	H	L								
	CO4	H	L								
	CO5	H	L								
	CO6	H	L								
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									

S.NO	LIST OF PROGRAMS
1.	Library Information Processing.
2.	Students Mark Sheet Processing.
3.	Telephone Directory maintenance.
4.	Gas Booking and delivery system.
5.	Electricity Bill Processing.
6.	Bank Transactions.
7.	Pay Roll Processing.
8.	Inventory
9.	Question Database and conducting Quiz.
10.	Purchase Order Processing.

Course Coordinator

HOD

SEMESTER V

P18MCCA501	MULTIMEDIA SYSTEMS						L	T	P	C	
	Total Contact Hours – 60						4	0	0	4	
	Prerequisite course – UG Level										
	Course Coordinator Name & Department:-										
COURSE OBJECTIVES:- Learners gain the ability to create quality animation performance through a creative and professional portfolio using principles of animation, drawing, design, artistic expertise and innovation. Learners will have refined communications skills and the adaptability to work within a dynamic animation community.											
COURSE OUTCOMES (COs)											
CO1	Remember a significant knowledge on fundamental and advanced aspects of animation, video and informational graphics.										
CO2	Understand the fundamental tools of multimedia										
CO3	Describe and interpret Multimedia data.										
CO4	Demonstrate the different components of multimedia										
CO5	Illustrate the vector graphics and 2D animations, making use of various tools and animation techniques provided by Flash										
CO6	Analyze multimedia software skills at an intermediate level to complete projects using audio, text and visual imagery.										
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	PS O1	PS O2	PS O3
2	CO1	H	L							H	
	CO2	H	L								
	CO3	H	L								
	CO4	H	L								
	CO5	H	L								
	CO6	H	L								
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: INTRODUCTION

12

Definitions - CD - Rom and the multimedia highway - where to use multimedia - Introduction - to making multimedia : The stages of a project - What you need - Multimedia skills and Training : The team - Macintosh and windows production platforms: Macintosh versus PC - The Macintosh platform - The windows Multimedia PC Platform - Networking Macintosh and windows computers - Hardware peripherals - Connection - Memory and stage Devices - Input Devices-Output Hardware - Communication Devices.

UNIT II: FUNDAMENTAL TOOLS OF MULTIMEDIA

12

Basic Tools - Text editing and word processing Tools- OCR Software - Painting and Drawing Tools - 3-D Modeling and Animation Tools - Image - Editing Tools - Sound Editing Tools - Animation, Video and Digital Movie Tools - Helpful Accessories- Making Instant Multimedia - Linking Multimedia Objects - Office - Suites - Word Processors - Spreadsheets - Databases - Presentation Tools - Multimedia Authoring Tools: Types of Authoring Tools - cards -and- Page - Based Authoring Tools - Icon - Based Authoring Tools - Time Based Authoring Tools-Object - Oriented Authoring Tools - Cross Platform Authoring Notes.

UNIT III: COMPONENTS OF MULTIMEDIA

12

Text: The Power of meaning: About fonts and Faces - Using Text in Multimedia - Computers and text - Font Editing and Design Tools - Hypermedia and Hypertext -Sound: The Power of Sound- Multimedia System Sounds - MIDI Versus Digital Audio -Digital Audio -Making MIDI Audio - Audio File formats - Working with sound on the Macintosh - Notation Interchange file Format (NIFF) - Adding sound to your multimedia Project - Toward Professional sound : The Red Book standard - Production Tips.

UNIT IV: IMAGES- AND ANIMATION

12

Images: Making still Images - colours - Image File formats - Animation: The Power of Motion - Principles of Animation - Making Animations that work - Video: Using Video - How Video works Broadcast Video standards - Integrating Computers and Television - shooting and Editing video - Video Tips - Recording formats -Digital Video.

UNIT V: PROJECT PLANNING AND MAINTENANCE

12

Planning and Costing: Project Planning - Estimating - REPs and Bit Proposals - Designing and producing - Designing - Producing - Content and Talent: Acquiring content - Using content created by others - Using Talent - Delivering : Testing - Preparing for Delivery - Delivering on CD-Rom - Compact Disc Technology - Wrapping It up - Delivering on the World wide web.

TEXT BOOKS:

1. Tay Vaughan - "Multimedia Making it Work" - Fourth Edition Tata McGraw Hill Edition -1999.
2. Walterworth John A - "Multimedia Technologies and Application"-Ellies Horwod Ltd - London - 1991.

REFERENCE BOOKS:

1. John F Korgel Buford -"Multimedia Systems"-ACM press, 2001
2. Rajneesh Agarwal, Bharath Bhushan Tiwari – Excel books,2000
3. Erik Holsinger-“How Multimedia works”, Ziff davis Press 1994.

Course Coordinator

HOD

P18MCCA502	COMPUTER NETWORKS							L	T	P	C
	Total Contact Hours – 60							4	0	0	4
	Prerequisite course – UG Level										
	Course Coordinator Name & Department:-										
COURSE OBJECTIVES:-											
Learners will gain knowledge in computer networks and concentrates on building a firm foundation for understanding Data Communications and Networks.											
COURSE OUTCOMES (COs)											
CO1	Remember the layers of OSI and TCP/IP networks.										
CO2	Understand the solution for the error control and flow control problems.										
CO3	Describe the working principles of IP layer and its routing algorithms.										
CO4	Demonstrate the functionalities of transport layer protocols and its congestion control mechanism.										
CO5	Illustrate the functionalities of application layer protocols.										
CO6	Analyze network security and cryptography										
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	PS O1	PS O2	PS O3
2	CO1	H	L						H		
	CO2	H	L								
	CO3	H	L								
	CO4	H	L								
	CO5	H	L								
	CO6	H	L								
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: INTRODUCTION**12**

Introduction – Network Hardware – Software – Reference Models – OSI and TCP/IP models – Example networks: Internet, ATM, Ethernet and Wireless LANs - Physical layer – Theoretical basis for data communication - guided transmission media.

UNIT II: WIRELESS TRANSMISSION**12**

Wireless transmission - Communication Satellites – Telephones structure –local loop, trunks and multiplexing, switching. Data link layer: Design issues – error detection and correction.

UNIT III: DATA LINK LAYER**12**

Elementary data link protocols - sliding window protocols – Data Link Layer in the Internet - Medium Access Layer – Channel Allocation Problem – Multiple Access Protocols.

UNIT IV: NETWORK LAYER**12**

Network layer - design issues - Routing algorithms - Congestion control algorithms – IP protocol – IP Address – Internet Control Protocol.

UNIT V: TRANSPORT LAYER**12**

Transport layer - design issues - Connection management - Addressing, Establishing & Releasing a connection – Simple Transport Protocol – Internet Transport Protocol (TCP) - Network Security: Cryptography.

Recommended Texts

1. S.Tanenbaum, 2003, Computer Networks, Fourth Edition, - Pearson Education, Inc, (Prentice hall of India Ltd), Delhi.

Reference Books

1. B. Forouzan, 1998, Introduction to Data Communications in Networking, Tata McGraw Hill, New Delhi.
2. F. Halsall, 1995, Data Communications, Computer Networks and Open Systems, Addison Wesley.
3. D. Bertsekas and R. Gallager, 1992, Data Networks, Prentice hall of India, New Delhi.
4. Lamarca, 2002, Communication Networks, Tata McGraw Hill, New Delhi.

Course Coordinator**HOD**

P18MCCA503	PROGRAMMING IN ASP.NET							L	T	P	C
	Total Contact Hours – 60							3	1	0	4
	Prerequisite course – UG Level										
	Course Coordinator Name & Department:-										
COURSE OBJECTIVES:- Learners will be familiar with basics of the ASP .NET. Learners will understand the design and implementation of the complete applications over the web											
COURSE OUTCOMES (COs)											
CO1	Remember the basic concepts of developing and creating ASP .Net Applications										
CO2	Understand the usage of web controls and forms										
CO3	Describe the development products of Microsoft Visual Studio.Net® products										
CO4	Demonstrate the implementation and connect the automated system to a database stored on a										
CO5	Illustrate how to link and publish Visual Studio.Net® applications to reflect a web application.										
CO6	Analyze an real time application using ASP .NET										
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	PS O1	PS O2	PS O3
2	CO1	H	L							H	
	CO2	H	L								
	CO3	H	L								
	CO4	H	L								
	CO5	H	L								
	CO6	H	L								
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: INTRODUCTION TO .NET FRAMEWORK**12**

Genesis of .Net – Features of .Net - .Net binaries – Microsoft Intermediate Language – Meta Data - .Net types and .net name spaces – Common Language Runtime – Common Type System – Common Language Specification - .Net Applications using command line compiler and visual studio .net IDE.

UNIT II: BASICS OF ASP. NET**12**

Introducing ASP.NET – Creating and deploying ASP .NET applications – Web forms – Web controls – working with events – Rich web controls – Custom web controls – Validation controls – Debugging ASP .NET pages.

UNIT III: ADVANCED ASP .NET**12**

ASP .NET configuration – Business objects – HTTP Handlers – Caching in ASP .NET – ASP .NET security – Localizing ASP .NET applications – Deployment projects.

UNIT IV BUILDING WEB SERVICES**12**

Introduction to web services – Web services Infrastructure – SOAP – Building a web service – Deploying and publishing web services – Finding web services – Consuming web services.

UNIT V ADO .NET**12**

Basics of ADO .NET – Changes from ADO – Data Table – Data Views – Data Set – Data Relation Type – ADO .NET Managed Providers – OLEDB and SQL Managed Providers – OLEDB Data Adapter Type.

TEXT BOOKS:

1. Andrew Troelsen – “**C# and the .Net Platform**” – Apress – 2001.(Unit I and II)
2. Mridula Parihar, et. al. – “**ASP .NET Bible**” – Wiley-dreamtech India Pvt. Ltd. – 2002.

REFERENCE BOOKS:

1. David S. Platt – “**Introducing .Net**” – Microsoft Press – 2002.
2. Alex Homer et. al. – “**Professional ASP .NET 1.1**” – Wiley-dreamtech India Pvt. Ltd. – 2004.
3. Rebecaa M. Riordan – “**ADO .Net step by step**” - Microsoft Press.

Course Coordinator**HOD**

P18MCCA5L1	LAB – IX PROGRAMMING ASP.NET LAB						L	T	P	C	
	Total Contact Hours – 30						0	0	4	2	
	Prerequisite course – UG Level										
	Course Coordinator Name & Department:-										
COURSE OBJECTIVES:- Giving the learners the insights of the Internet programming and how to design and implement complete applications over the web											
COURSE OUTCOMES (COs)											
CO1	Remember the basic concept of console applications like string manipulation, exception handling.										
CO2	Understand the technical code to implement windows applications										
CO3	Describe .Net application using command line compplier.										
CO4	Demonstrate the web forms application project.										
CO5	Illustrate web applications that connect database and events										
CO6	Analyze web pages using ASP .NET										
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	PS O1	PS O2	PS O3
2	CO1	H	L							H	
	CO2	H	L								
	CO3	H	L								
	CO4	H	L								
	CO5	H	L								
	CO6	H	L								
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									

S.No	List of Experiments
1	Working with MSIL, Metadata and Namespace
2	Usage of CLR, CTS and CLS.
3	.Net application using command line compiler.
4	.Net application using visual studio .net IDE.
5	Simple ASP .Net Applications.
6	Creating web forms application project.
7	Usage of web controls.c
8	Working with events
9	Usage of Rich web controls.
10	Usage of validation controls

Course Coordinator

HOD

VI SEMESTER

S.NO	CATEGORY	SUB.CODE	SUBJECT	L	T	P	C
1.	MC	P18MCCA6P2	PROJECT PHASE – II	0	0	24	12
Total Credits							12

MAJOR ELECTIVE - I

P18MECA011	GRID AND CLOUD COMPUTING	L	T	P	C
	Total Contact Hours – 60	3	1	0	4
	Prerequisite course – Computer Networks, Distributed Computing and Data ware Housing and Data Mining.				
	Course Coordinator Name & Department:-				

COURSE OBJECTIVES:-

1. Identify the technical foundations of cloud systems architectures.
2. Analyze the problems and solutions to cloud application problems.
3. Apply principles of best practice in cloud application design and management.
4. Identify and define technical challenges for cloud applications and assess their importance.

COURSE OUTCOMES (COs)

CO1	Remember the fundamental principles of distributed computing.
CO2	Understand how the distributed computing environments known as Grids can be built from lower level services.
CO3	Describe the importance of virtualization in distributed computing and how this has enabled the development of Cloud Computing.
CO4	Demonstrate the Cloud Security Challenges and Risks
CO5	Illustrate the cloud computing model using Parallel and Distributed Programming Paradigms
CO6	Analyze and demonstrate the concept of virtualization in cloud.

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	PS O1 H	PS O2	PS O3
2	CO1	H	L										
	CO2	H	L										
	CO3	H	H										
	CO4	H	L										
	CO5	L	L										
	CO6	H	L										
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: GRID COMPUTING

12

Introduction - Definition and Scope of grid computing, Computational and Data Grids, Current Grid Activities – Overview of Grid Business Areas, Grid Applications, Grid Computing Anatomy- Concept of Virtual Organization, Grid Architecture- Fabric layer, Connectivity layer, Resource Layer, Collective Layer, Application Layer, Layered Grid Architecture

UNIT II: CLOUD ARCHITECTURE AND MODEL

12

Technologies for Network Based system-System Models for Distributed and Cloud Computing-NIST Cloud Computing Reference ArchitectureCloud models: Characteristics-Cloud Services-Cloud Models (IaaS, PaaS, SaaS)-Public vs. Private Cloud-Cloud Solutions-Cloud ecosystem-Service Management-Computing on demand.

UNIT III: CLOUD INFRASTRUCTURE

12

Architectural Design of compute and Storage Clouds-Layered Cloud Architecture Development-Design Challenges-Inter Cloud Resource Management-Resource Provisioning and Platform Deployment-Global Exchange of Cloud Resources.

UNIT IV: PROGRAMMING MODEL

12

Parallel and Distributed Programming Paradigms-Map Reduce-Twister and Iterative Map Reduce-Hadoop Library from Apache-Mapping Applications-Programming Support-Google App Engine, Amazon AWS-Cloud Software Environments-Eucalyptus, Open Nebula, Open Stack, Aneka, CloudSim.

UNIT V: SECURITY IN THE CLOUD

12

Security Overview-Cloud Security Challenges and Risks-Software-as-a-Service-Security Security Governance-Risk Management-Security Monitoring-Security Architecture Design-Data Security-Application Security-Virtual Machine Security-Identity Management and Access Control-Autonomic Security.

TEXTBOOKS:

1. Joshy Joseph & Craig Fellenstein, “Grid Computing”, PHI, PTR-2003(UNIT I)
2. Kai Hwang, Geoffrey C Fox, Jack G Dongarra “Distributed and Cloud Computing ,From parallel processing to the Internet of Things” Morgan Kaufmann Publishers, 2012(Unit-II to Unit-V)

REFERENCE BOOKS:

1. John W. Rittinghouse and James F. Ransome, “Cloud Computing Implementation, Management and Security”, CRC Press, 2010
2. Toby Velte, Anthony Velte, Robert Elsenpeter, “Cloud Computing, A Practical Approach”, TMH, 2009.
3. Kumar Saurabh, “Cloud Computing –Insights into New-Era Infrastructure “, Wiley India, 2011
4. George Reese, “Cloud Applications Architectures: Building Applications and Infrastructure in the Cloud” O’Reilly.
5. <https://benzology.files.wordpress.com/2013/05/grid-computing-joshy-joseph-ebook.pdf>
6. http://cloudipedia.com/files/2009/11/cloud_computing_made_easy.pdf

Course Coordinator

HOD

P18MECA012	MOBILE COMMUNICATION						L	T	P	C	
	Total Contact Hours – 60						4	0	0	4	
	Prerequisite course – UG Level										
	Course Coordinator Name & Department:-										
COURSE OBJECTIVES:- Learners gain knowledge in Network management for mobile and wireless networks											
COURSE OUTCOMES (COs)											
CO1	Remember the basic concepts and features of mobile networks.										
CO2	Comprehend the knowledge in the working of wireless communication protocols.										
CO3	Describe and analyze the Multiplexing concepts in medium access control										
CO4	Demonstrate broadcast systems										
CO5	Illustrate and apply the concept of Wireless ATM										
CO6	Analyze Mobile Network layer & Adhoc networks										
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	PS O1	PS O2	PS O3
2	CO1	H	L							H	
	CO2	H	L								
	CO3	H	L								
	CO4	H	L								
	CO5	H	L								
	CO6	H	L								
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: INTRODUCTION**12**

Introduction of Mobile Communication - Application - History - Market for Mobile Communications - Open Research topics - Simplified Reference Model - Overview - Wireless Transmission - Frequencies for Radio Transmission - Signal - Antennas - Signal Propagation - Multiplexing - Modulation - Spread Spectrum - Cellular Systems.

UNIT II: MEDIUM ACCESS CONTROL**12**

Medium Access Control - Motivation for Specialized MAC - SDMA - FDMA - TDMA - CDMA - Comparisons - GSM - DECT - TETRA - UMTS and IMT - 2000 - Satellite Systems - History Applications - Basics - Routing- Localization - Handover.

UNIT III: BROADCAST SYSTEMS**12**

Broadcasting Systems - Overview - Cyclic Repetition - Digital audio Broadcasting - Digital Video Broadcasting - Wireless LAN - Infrared Vs Radio Transmission - Infrastructure and Ad hoc networks - IEEE 802.11 - HIPERLAN - Bluetooth.

UNIT IV: WIRELESS ATM**12**

Wireless ATM - Motivation - Working group- WATM Reference model - Functions - Radio access layer - Handover- Location Management - Addressing - Quality of Service - Access Point layer- Handover- Location Management - Addressing - Quality of Service - Access Point control Protocol.

UNIT V: MOBILE NETWORK LAYERS**12**

Mobile Network Layer- Mobile IP - Dynamic host Configuration Protocol - Ad hoc Networks - Mobile Transport layer - Transitional TCP - Indirect TCP - Snooping TCP - Mobile TCP - Transmissions - Transaction - Support for Mobility.

TEXT BOOKS:

1. "Mobile Communications" - Jochen Schiller, Pearson Education Asia Publication.

REFERENCE BOOK:

1. William C. Y Lee, "Mobile Cellular Telecommunication system"- McGraw Hill International Edition, 1990.
2. T. S. Rapport, "Wireless Communication" prentice hall NJ 2002

Course Coordinator**HOD**

P18MECA013	COMPUTER ARCHITECTURE						L	T	P	C	
	Total Contact Hours – 60						4	0	0	4	
	Prerequisite course – UG Level										
	Course Coordinator Name & Department:-										
COURSE OBJECTIVES:- Learners will gain knowledge in the basic organization and architecture of digital computers.											
COURSE OUTCOMES (COs)											
CO1	Remember the organization and working principle of computer hardware components.										
CO2	Understand the concept of Pipeline and its types										
CO3	Describe the concept to design a hardware component										
CO4	Demonstrate the various Input/ Output Operations & its data transfer										
CO5	Illustrate the architecture design of a computer & its type of memory										
CO6	Analyze design real time application using parallel architecture & pipelining concepts										
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	PS O1	PS O2	PS O3
2	CO1	H	L						H		
	CO2	H	L								
	CO3	H	L								
	CO4	H	L								
	CO5	H	L								
	CO6	H	L								
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: INTRODUCTION TO DIGITAL DESIGN **12**
Digital Computers - Logic Gates - Boolean Algebra - Combinational Circuits - Address Flip Flops - Sequential Circuits - Integrated Circuits - Decoders - Multiplexers- Registers - Counters.

UNIT II: COMPUTER ORGANIZATION **12**
Basics - Instruction Codes - Timing Control - Instruction Cycle - Memory Reference Instruction - Input /Output - Design of Basic Computer. Addressing Modes - ALU design - Control Design - Hardware Control unit - Processor Design.

UNIT III: MEMORY **12**
RAM - ROM -Cache Memory - Associative Memories - Virtual Memory - Memory Management.

UNIT IV: INPUT-OUTPUT ORGANIZATION **12**
Peripheral Devices- Standard I/O interfaces - Asynchronous Data transfer interrupt - DMA
- Serial Communication - I/O Processor- Storage device.

UNIT V: ADVANCED ARCHITECTURE **12**
Parallel architecture - Pipelining – Multiprocessors

TEXT BOOKS:

1. M. Morris Mano -"Computer System Architecture" - 3rd edition. PHI 1999

REFERENCE BOOKS:

1. John P Hayes, "Computer Architecture and Organization", Mc Graw Hill, 3rd edition, 1999
2. V C. Hamacher, Z .G. Vraesic, S. G. Zaky, "Computer Organization", Tata McGraw Hill. 1996.
3. Vincent P Heuring Harry F Jordan, "Computer system Design and Architecture", Addison Westey, 1999. '
4. David A. Patterson and John L. Henessy, "Computer Organization and Design", Harcourt as PTE Ltd, 2nd edition 1999.
5. Thomas c Bartee, "Computer Architecture and Logic Design", International Edition 1991, McGraw Hill

Course Coordinator

HOD

MAJOR ELECTIVE - II

P18MECA021	NETWORK SECURITY							L	T	P	C
	Total Contact Hours – 60							4	0	0	4
	Prerequisite – UG Level										
	Course Coordinator Name & Department:-										
COURSE OBJECTIVES:- Writing a basic article on network security is something like writing a brief introduction to flying a commercial airliner. Much must be omitted, and an optimistic goal is to enable the reader to appreciate the skills required.											
COURSE OUTCOMES (COs)											
CO1	Remember data communication system, components and the purpose of layered architecture.										
CO2	Understand the functionality of each layer of OSI and TCP/IP reference model.										
CO3	Describe the data link layer and network layer protocols.										
CO4	Demonstrate the functions of transport layer protocols.										
CO5	Illustrate of Layered architecture using network security.										
CO6	Analyze an real time application firewall design principles										
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	PSO3
2	CO1	H	L						H		
	CO2	H	L								
	CO3	H	L								
	CO4	H	L								
	CO5	H	L								
	CO6	H	L								
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 : INTRODUCTION **12**

Attacks - Services - Mechanisms - Conventional Encryption - Classical And Modern Techniques – Encryption Algorithms - Confidentiality.

UNIT II : PUBLIC KEY ENCRYPTION **12**

RSA - Elliptic Curve Cryptography - Number Theory Concepts

UNIT III : MESSAGE AUTHENTICATION **12**

Hash Functions - Digest Functions - Digital Signatures - Authentication Protocols

UNIT IV : NETWORK SECURITY PRACTICE **12**

Authentication, Applications - Electronic Mail Security - IP Security - Web Security.

UNIT V : SYSTEM SECURITY **12**

Intruders – Viruses – Worms – Firewalls Design Principles – Trusted Systems.

TEXT BOOK:

1. Stallings, Cryptography & Network Security - Principles & Practice, Prentice Hall, 3rd Edition 2002.

REFERENCE BOOKS:

1. Bruce, Schneier, Applied Cryptography, 2nd Edition, Toha Wiley & Sons, 1996.
2. Man Young Rhee, “Internet Security”, Wiley, 2003.
3. Pfleeger & Pfleeger, “Security in Computing”, Pearson Education, 3rd Edition, 2003

Course Coordinator

HOD

P18MECA022	IMAGE PROCESSING							L	T	P	C
	Total Contact Hours – 60							4	0	0	4
	Prerequisite – UG Level										
	Course Designed by – Dept of Computer Applications										
COURSE OBJECTIVES:- Learners will gain knowledge in the applications of image processing.											
COURSE OUTCOMES (COs)											
CO1	Remember the fundamentals of image processing										
CO2	Understand image formation and the role human visual system plays in perception of gray and color image data.										
CO3	Describe suitable applications of image processing in industry, medicine, and defense.										
CO4	Demonstrate the signal processing algorithms and techniques in image enhancement and image restoration.										
CO5	Acquire an appreciation for the image processing issues and techniques and be able to apply these techniques to real world problems.										
CO6	Analyze an real time applications using image processing problems and 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	PS O1	PS O2	PS O3
2	CO1	H	L								
	CO2	H	L								
	CO3	H	L								
	CO4	H	L								
	CO5	H	L								
	CO6	H	L								
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: FUNDAMENTALS OF IMAGE PROCESSING :**12**

Image Acquisition, Image Model, Sampling, Quantization, Relationship between pixels, distance measures, connectivity, Image Geometry, Photographic film. Histogram: Definition, decision of contrast basing on histogram, operations basing on histograms like image stretching, image sliding, Image classification. Definition and Algorithm of Histogram equalization.

UNIT II : IMAGE TRANSFORMS :**12**

A detail discussion on Fourier Transform, DFT, FFT, properties A brief discussion on WALSH Transform, WFT, HADAMARD Transform, DCT. **IMAGE ENHANCEMENT :** (by SPATIAL Domain Methods) Arithmetic and logical operations, pixel or point operations, size operations - Smoothing filters-Mean, Median, Mode filters – Comparative study - Edge enhancement filters – Directional filters, Sobel, Laplacian, Robert, KIRSCH Homogeneity & DIFF Filters, Prewitt filter, Contrast Based edge enhancement techniques. – Comparative study - Low Pass filters, High Pass filters, sharpening filters. – Comparative Study - Comparative study of all filters - Color image processing.

UNIT III: IMAGE ENHANCEMENT:**12**

(By FREQUENCY Domain Methods) -design of Low pass, High pass, EDGE Enhancement, smoothing filters in Frequency Domain. Butterworth filter, Homomorphic filters in Frequency Domain Advantages of filters in frequency domain, comparative study of filters in frequency domain and spatial domain.

IMAGE COMPRESSION: DEFINITION: A brief discussion on – Run length encoding, contour coding, Huffman code, compression due to change in domain, compression due to quantization Compression at the time of image transmission. Brief discussion on:- Image Compression standards.

UNIT IV : IMAGE SEGMENTATION:**12**

Definition, characteristics of segmentation. Detection of Discontinuities, Thresholding Pixel based segmentation method. Region based segmentation methods – segmentation by pixel aggregation, segmentation by sub region aggregation, histogram based segmentation, split and merge technique. Use of motion in segmentation (spatial domain technique only)

UNIT V: MORPHOLOGY:-**12**

Dilation, Erosion, Opening, closing, Hit-and-Miss transform, Boundary extraction, Region filling, connected components, thinning, Thinning, skeletons, Pruning Extensions to Gray – Scale Images Application of Morphology in I.P

TEXT BOOK:

Digital Image Processing, Rafael C. Gonzalez and Richard E. Woods Addison Wesley

REFERENCE BOOKS:

1. Fundamentals of Electronic Image Processing by Arthyr – R – Weeks, Jr. (PHI)
2. Image processing, Analysis, and Machine vision by Milan Sonka vaclan Halavac Roger Boyle, Vikas Publishing House.

P18MECA023	MACHINE LEARNING TECHNIQUES							L	T	P	C
	Total Contact Hours – 60							3	1	0	4
	Prerequisite – UG Level										
	Course Designed by – Dept of Computer Applications										
COURSE OBJECTIVES:- 1.To develop skills of using recent machine learning software for solving practical problems. 2.To gain experience of doing independent study and research											
COURSE OUTCOMES (COs)											
CO1	Remember the theory underlying machine learning										
CO2	Understand theory underlying machine learning										
CO3	Describe algorithms to learn linear and non-linear models										
CO4	Demonstrate reinforcement learning techniques for real life problems										
CO5	Illustrate data clustering algorithms										
CO6	Analyze algorithms to learn tree and rule-based models										
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	PSO3
2	CO1	H	L								
	CO2	H	L								
	CO3	H	L								
	CO4	H	L								
	CO5	H	L								
	CO6	H	L								
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 FOUNDATIONS OF LEARNING

12

Components of learning – learning models – geometric models – probabilistic models – logic models – grouping and grading – learning versus design – types of learning – supervised – unsupervised – reinforcement – theory of learning – feasibility of learning – error and noise – training versus testing – theory of generalization – generalization bound – approximation-generalization tradeoff – bias and variance – learning curve

UNIT-II LINEAR MODELS

12

Linear classification – univariate linear regression – multivariate linear regression – regularized regression – Logistic regression – perceptrons – multilayer neural networks – learning neural networks structures – support vector machines – soft margin SVM – going beyond linearity – generalization and overfitting – regularization – validation

UNIT-III DISTANCE-BASED MODELS

12

Nearest neighbor models – K-means – clustering around medoids – silhouettes – hierarchical clustering – k-d trees – locality sensitive hashing – non-parametric regression – ensemble learning – bagging and random forests – boosting – meta learning

UNIT-IV TREE AND RULE MODELS

12

Decision trees – learning decision trees – ranking and probability estimation trees – regression trees – clustering trees – learning ordered rule lists – learning unordered rule lists – descriptive rule learning – association rule mining – first-order rule learning

UNIT-V REINFORCEMENT LEARNING

12

Passive reinforcement learning – direct utility estimation – adaptive dynamic programming – temporal difference learning – active reinforcement learning – exploration – learning an action-utility function – Generalization in reinforcement learning – policy search – applications in game playing – applications in robot control

REFERENCES:

1. Y. S. Abu-Mostafa, M. Magdon-Ismail, and H.-T. Lin, —Learning from Data, AML Book Publishers, 2012.
2. P. Flach, —Machine Learning: The art and science of algorithms that make sense of data, Cambridge University Press, 2012.
3. K. P. Murphy, —Machine Learning: A probabilistic perspective, MIT Press, 2012.
4. M. Mohri, A. Rostamizadeh, and A. Talwalkar, —Foundations of Machine Learning, MIT Press, 2012.
5. C. M. Bishop, —Pattern Recognition and Machine Learning, Springer, 2007.
6. D. Barber, —Bayesian Reasoning and Machine Learning, Cambridge University Press, 2012

Course Coordinator

HOD

MAJOR ELECTIVE III

P18MECA031		SOFTWARE TESTING						L	T	P	C
		Total Contact Hours – 60						4	0	0	4
		Prerequisite – UG Level									
		Course Designed by – Dept of Computer Applications									
COURSE OBJECTIVES:- To Study the concepts of Software Testing , Process, Criteria, Strategies and Methods											
COURSE OUTCOMES (COs)											
CO1	Remember software Testing and Engineering Methods										
CO2	Understand the design and Conduct a Software test process for testing Projects.										
CO3	Describe software test automation, define and develop a test tool to support test automation.										
CO4	Demonstrate Various communication Methods and Skills to communicate with their Teammates										
CO5	Illustrate an real time application using test metrics										
CO6	Analyze various software testing problems and solve these problem										
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	PS O1	PS O2	PS O3
2	CO1	H	L								
	CO2	H	L								
	CO3	H	L								
	CO4	H	L								
	CO5	H	L								
	CO6	H	L								
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**12**

Software Testing – Role of Software Testing – A structural approach to Testing – Test strategy – Methods for developing Test strategy – Testing Methodology.

UNIT 2: LIFE CYCLE TESTING APPROACH**12**

Test plan – Requirement Testing – Walk through test tool – Risk Matrix test tool – Testing for requirement phase and Design phase – Design review test tool – Test data Volume test tools.

UNIT 3: INSTALLATION**12**

Installation Phase Testing – Tools for Acceptance Test - Software Acceptance process – Software maintenance – Methodologies for Testing – Testing and Change Installation .

UNIT 4: TESTING METHODES**12**

Tools and Techniques – Cost Estimation for Testing – Testing phase life cycle – Point accumulation tracking system – Performance analysis of Testing – Inspection plan and Test plan documents.

UNIT 5: TESTING STRATEGIES**12**

Rapid Prototype – Spiral Testing – Tool Selection process – Structural system testing – Documentation of Test Result – Test effectiveness evaluation – Test measurement process – Test metrics.

TEXT BOOK:

1. William Perry “Effective Methods of Software Testing”, John Wiley & sons USA, 1995
2. Ron Patton, “Software Testing”, Tech media.

Course Coordinator**HOD**

P18MECA032	ADHOC NETWORKS							L	T	P	C
	Total Contact Hours – 60							4	0	0	4
	Prerequisite – UG Level										
	Course Designed by – Dept of Computer Applications										
COURSE OBJECTIVES:- Each device in a MANET is free to move independently in any direction, and will therefore change its links to other devices frequently. Each must forward traffic unrelated to its own use, and therefore be a <u>router</u>											
COURSE OUTCOMES (COs)											
CO1	Remember the view of Ad hoc Wireless Networks and Mobile communication.										
CO2	Understand the classifications of routing protocols and wireless routing protocols										
CO3	Describe the classifications of QoS solutions										
CO4	Demonstrate TCP and Network security in ad-hoc networks										
CO5	Illustrate about multicast routing techniques for knowledge representation.										
CO6	Analyze the Secure routing in Ad Hoc wireless networks.										
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	PSO3
2	CO1	H	L						H		
	CO2	H	L								
	CO3	H	L								
	CO4	H	L								
	CO5	H	L								
	CO6	H	L								
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)	Project/Term Paper/ Seminar/ Internship (PR)		
					✓						
4	Approval	Academic Council Meeting									

UNIT I : INTRODUCTION

12

Introduction-Fundamentals of Wireless Communication Technology - The Electromagnetic Spectrum - Radio Propagation Mechanisms - Characteristics of the Wireless Channel - IEEE 802.11a,b Standard – Origin Of Ad hoc: Packet Radio Networks - Technical Challenges - Architecture of PRNETs - Components of Packet Radios – Ad hoc Wireless Networks -What Is an Ad Hoc Network? Heterogeneity in Mobile Devices - Wireless Sensor Networks - Traffic Profiles - Types of Ad hoc Mobile Communications - Types of Mobile Host Movements - Challenges Facing Ad Hoc Mobile Networks-Ad hoc wireless Internet

UNIT II : AD HOC ROUTING PROTOCOLS

12

Introduction - Issues in Designing a Routing Protocol for Ad Hoc Wireless Networks - Classifications of Routing Protocols -Table-Driven Routing Protocols - Destination Sequenced Distance Vector (DSDV) - Wireless Routing Protocol (WRP) - Cluster Switch Gateway Routing (CSGR) - Source-Initiated On-Demand Approaches - Ad Hoc On-Demand Distance Vector Routing (AODV) - Dynamic Source Routing (DSR) - Temporally Ordered Routing Algorithm (TORA) - Signal Stability Routing (SSR) -Location-Aided Routing (LAR) - Power-Aware Routing (PAR) - Zone Routing Protocol (ZRP)

UNIT III : MULTICAST ROUTING IN AD HOC NETWORKS

12

Introduction - Issues in Designing a Multicast Routing Protocol - Operation of Multicast Routing Protocols - An Architecture Reference Model for Multicast Routing Protocols -Classifications of Multicast Routing Protocols - Tree-Based Multicast Routing Protocols- Mesh-Based Multicast Routing Protocols - Summary of Tree-and Mesh-Based Protocols - Energy-Efficient Multicasting - Multicasting with Quality of Service Guarantees - Application-Dependent Multicast Routing - Comparisons of Multicast Routing Protocols

UNIT IV : TRANSPORT LAYER, SECURITY PROTOCOLS

12

Introduction - Issues in Designing a Transport Layer Protocol for Ad Hoc Wireless Networks - Design Goals of a Transport Layer Protocol for Ad Hoc Wireless Networks -Classification of Transport Layer Solutions - TCP Over Ad Hoc Wireless Networks -Other Transport Layer Protocols for Ad Hoc Wireless Networks - Security in Ad Hoc Wireless Networks - Network Security Requirements - Issues and Challenges in Security Provisioning - Network Security Attacks - Key Management - Secure Routing in Ad Hoc Wireless Networks

UNIT V : QoS AND ENERGY MANAGEMENT

12

Introduction - Issues and Challenges in Providing QoS in Ad Hoc Wireless Networks -Classifications of QoS Solutions - MAC Layer Solutions - Network Layer Solutions - QoS Frameworks for Ad Hoc Wireless Networks Energy Management in Ad Hoc Wireless Networks –Introduction - Need for Energy Management in Ad Hoc Wireless Networks - Classification of Energy Management Schemes - Battery Management Schemes - Transmission Power Management Schemes - System Power Management Schemes

TEXT BOOK:

1. C. Siva Ram Murthy and B.S. Manoj “Ad Hoc Wireless Networks: Architectures and Protocols”, Prentice Hall PTR,2004

REFERENCE BOOKS:

1. C.K. Toh, Ad Hoc Mobile Wireless Networks: Protocols and Systems, Prentice Hall PTR ,2001
2. Charles E. Perkins, Ad Hoc Networking, Addison Wesley, 2000

Course Coordinator

HOD

P18MECA033	BIG DATA ANALYTICS							L	T	P	C
	Total Contact Hours – 60							4	0	0	4
	Prerequisite –Data Structures, Data Ware Housing and Data Mining										
	Course Designed by – Dept of Computer Applications										
OBJECTIVES											
The basics of Analytics – Concepts, Data preparation – merging, managing missing numbers sampling, Data visualization, Basic statistics.											
COURSE OUTCOMES (COs)											
CO1	Remember Data appliance and Integration tools.										
CO2	Understand the data analysis.										
CO3	Describe working knowledge stream data model and architecture.										
CO4	Demonstrate Algorithm, Patterns and Visualizations										
CO5	Illustrate knowledge framework and applications										
CO6	Analyze an real time application using big data										
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	PSO3
2	CO1	H	L								
	CO2	H	L								
	CO3	H	L								
	CO4	H	L								
	CO5	H	L								
	CO6	H	L								
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 INTRODUCTION TO BIG DATA

12

Analytics – Nuances of big data – Value – Issues – Case for Big data – Big data options Team challenge – Big data sources – Acquisition – Nuts and Bolts of Big data. Features of Big Data -Security, Compliance, auditing and protection - Evolution of Big data – Best Practices for Big Data Analytics - Big data characteristics - Volume, Veracity, Velocity, Variety – Data Appliance and Integration tools – Green plum – Informatics.

UNIT- II DATA ANALYSIS

12

Evolution of analytic scalability – Convergence – parallel processing systems – Cloud computing –grid computing – map reduce – enterprise analytic sand box – analytic data sets – Analytic Methods –analytic tools – Cognos – Micro strategy - Pentaho. Analysis approaches – Statistical significance –business approaches – Analytic innovation – Traditional approaches – Iterative

UNIT- III STREAM COMPUTING

12

Introduction to Streams Concepts – Stream data model and architecture - Stream Computing, Sampling data in a stream – Filtering streams – Counting distinct elements in a stream – Estimating moments – Counting oneness in a window – Decaying window – Real time Analytics Platform(RTAP)applications IBM Infosphere – Big data at rest – Infosphere streams – Data stage – Statistical analysis– Intelligent scheduler – Infosphere Streams.

UNIT- IV PREDICTIVE ANALYTICS AND VISUALIZATION

12

Predictive Analytics – Supervised – Unsupervised learning – Neural networks – Kohonen models –Normal – Deviations from normal patterns – Normal behaviours – Expert options – Variable entry -Mining Frequent item sets - Market based model – Apriori Algorithm – Handling large data sets in Main memory – Limited Pass algorithm – Counting frequent item sets in a stream – Clustering Techniques –Hierarchical – K- Means – Clustering high dimensional data Visualizations - Visual data analysis techniques, interaction techniques; Systems and applications.

UNIT- V FRAMEWORKS AND APPLICATIONS

12

IBM for Big Data – Map Reduce Framework - Hadoop – Hive - – Sharding – NoSQL Databases - S3 - Hadoop Distributed file systems – Hbase – Impala – Analyzing big data with twitter – Big data for Ecommerce– Big data for blogs.

TEXT BOOKS:

1. Frank J Ohlhorst, “Big Data Analytics: Turning Big Data into Big Money”, Wiley and SAS BusinessSeries, 2012.
2. Colleen Mccue, “Data Mining and Predictive Analysis: Intelligence Gathering and Crime Analysis”,Elsevier, 2007
3. Michael Berthold, David J. Hand,” Intelligent Data Analysis”, Springer, 2007.

REFERENCES:

1. AnandRajaraman and Jeffrey David Ullman, Mining of Massive Datasets, Cambridge UniversityPress, 2012.
2. <http://www.mosaic.geo-strategies.com/wp-content/uploads/2013/10/Big-Data-for-Dummies.pdf>

Course Coordinator

HOD

\\OPEN ELECTIVE – I

P18OEBA001	ADVERTISING AND SALES MANAGEMENT						L	T	P	C	
	Total Contact Hours – 60						4	0	0	4	
	Prerequisite course –UG Level										
	Course Coordinator Name & Department:- T Manjiniprakash/BBA										
COURSE OBJECTIVES: - - Identify the terms and concepts that are commonly used in promotion and advertising. - Demonstrate preparation to comprehend the basic advertising. - Give the relationship which underlines these terms and conceptsTo 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.											
COURSE OUTCOMES (COs)											
CO1	Students gain basic knowledge of Advertising its functions, roles and development of advertising.										
CO2	Know about Advertising design and its strategies.										
CO3	Expose on Advertising, media and about its types.										
CO4	To forecast sales and its techniques used in management.										
CO5	Students were enriched about salesmanship, sales planning, budgeting.										
CO6	Develop an advertising plan and present and defend it persuasively.										
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	PS O1	PS O2	PS O3
2	CO1	L	M						M	L	
	CO2	H	L								
	CO3	L	H								
	CO4	H	L								
	CO5	L	M								
	CO6	M	L								
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
Introduction to Advertising- Definition -Roles of Advertising- Functions of Advertising-Steps in Development of Advertisement	
UNIT – II	12
Advertising Design- Appeals- Structure of an Advertisement - Message Strategies - Cognitive strategy- Executional Strategies-Creating Advertising- Advertising Effectiveness.	
UNIT– III	12
Advertising Media - Merit and demerits- Kinds of Advertising - Advertising Media- print media - Broadcasting media- Non-media advertising- online advertising.	
UNIT - IV	12
Sales Management - Defining - Objectives -Strategies- Sales Executives – Functions -Qualities - Sales Presentation Techniques - Emerging Trends in Sales Management.	
UNIT - V	12
Selling Concept - Objectives- scope and techniques of Salesmanship- Sales Planning- Importance – process- Sales Budget- Objectives-uses of sales Budget.	

Text book

1. Advertising & promotion: George E.Belch, THM
2. Advertising Management, Dr. Varma&Aggarwal, kingBooks

References:

1. Sales promotion and advertising management by M .N.Mishra. Himalaya Publication.
2. Advertising and sales management by SanjeevChauhan (Astha publication)
3. Anderson, Hair, Bush: Professional Sales Management, McGraw Hill, Singapore.

T Manjiniprakash

Course Coordinator

HOD

P18OEBA002	BPO MANAGEMENT						L	T	P	C	
	Total Contact Hours – 60						4	0	0	4	
	Prerequisite course – UG Level										
	Course Coordinator Name & Department:- .P.Srinivasan/ Business Administration										
COURSE OBJECTIVES: - - To familiarize the students with the basic fundamentals of BPO industry - To impart knowledge on BPO industry - To enable the students on the concept of various decisions in Business Process Outsourcing											
COURSE OUTCOMES (COs)											
CO1	Develop a strategic understanding of the concepts of BPO’s and its benefits										
CO2	Explaining various models used in functioning of BPO’s and Trends.										
CO3	Describe the opportunities and challenges in Human Resources BPO										
CO4	Analyzes about call centers its functions, processes and classifications										
CO5	Developing efficiency in understanding the customers and capabilities in handling calls.										
CO6	To understand the future trends in BPO industry										
Mapping of Course Outcomes with Program outcomes (POs) (1/2/3 indicates strength of correlation) 3-High, 2-Medium, 1-Low											
	COs/Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	P S O 1	P S O 2	PS O3
	CO1	H	M						M	L	
	CO2	H	L								
	CO3	H	M								
	CO4	M	H								
	CO5	M	M								
	CO6	L	M								
3	Category	Humanities & Social Studies (HS)	Basic Sciences (BS)	Enngsciences(ES)	Professional Core (PC)	Professional Core (PC)	Non-Major Elective (NE)	Open Elective (OE)	Any other	Project/Term Paper/ Seminar/ Internship(PR)	
								✓			
4	Approval	Academic Council Meeting									

UNIT-I

12

Business Process Outsourcing – Meaning – definition - Basics - Benefits - BPO Models - - BPO Companies in India.

UNIT-II

12

Healthcare BPO – Structure of the American Healthcare Sector – Activity Profile –Future Trends and Threats – Case Study – Cbay Systems.

UNIT - III

12

Human Resource BPO – Reasons for outsourcing HR – Activities involved in HR BPO – HR Outsourcing Trends – Career in HR BPO – Emerging BPO Domains – Media and Entertainment BPO – Publishing BPO.

UNIT – IV

12

Call Centres – Functions – Processes – classifications – Telemarketing – Tele selling – Preparing for a Job – Approach – Training – Selection Process.

UNIT – V

12

Improving Efficiency – Handling Calls – Team Player – Pleasing the Customers – Converse efficiently – Reducing stress.

TEXT BOOKS:

- 1.BPO Industry in India by S K Awasthi by Jain Book
- 2.Business Process Outsourcing: Its Prospects and Challenges by Barua.

REFERENCE BOOKS

1. SudhindraMokhasi(2009) ,BPO – Sutra : True stories from India’s BPO and call centres, -Rupa& Co.
2. Kulkarni, Sarika.(2005), Business process outsourcing – Delhi, Jaico Publishing House.
3. Shikapur, Deepak(2004), BPO Digest. Ameya Inspiring Books.

Mr.P.Srinivasan

Course Coordinator

HOD

P18OEBA003	CALL CENTER MANAGEMENT-Voice and Non Voice						L	T	P	C	
	Total Contact Hours –60						4	0	0	4	
	Prerequisite course – UG Level										
	Course Coordinator Name & Department:-A.Jhoncy / BBA										
COURSE OBJECTIVES:- - Develop and motivate a call centre team. - Get the most out of call monitoring technology and prepare effective management reports. - React to and plan for operational bottlenecks. - Give meaningful feedback to call-centre agents and set achievable goals and targets. - Students will learn about the roles and methods of different kinds of call centers. They will apply this by designing their own call center and trying to anticipate customer needs.											
COURSE OUTCOMES (COs)											
CO1	Gaining a basic knowledge about call centers its functioning and classifications.										
CO2	To know about handling the Issues and problems related to calls in a efficient manner.										
CO3	Gives knowledge of technical communications, speech process and educate conversation of oral skills.										
CO4	Students acquire knowledge towards pre-interview about Interview questions and answering techniques										
CO5	Analyses fully about the medias of communications.										
CO6	Demonstrate awareness of the pragmatics of call center planning and operation										
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	PS O1	PS O2	PS O3
	CO1	M	H						M	H	
	CO2	M	H								
	CO3	L	H								
	CO4	L	H								
	CO5	M	H								
	CO6	L	H								
	Category	Humanities & Social Studies (HS)	Basic Sciences (BS)	Engg Sciences (ES)	Professiona	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
Call centers – Meaning – Functions – Processes - Classifications – Tele selling – Types of call centers.	
UNIT – II	12
Improving Efficiency – Handling calls – Team Players – Components and working of call center – Issues and problems.	
UNIT – III	12
Nature of Technical communication: Stages of communication – Nature of Technical Communication - The speech process – Conversation and Oral skills.	
UNIT – IV	12
Job Interview: Pre – Interview preparation techniques – Interview questions – Answering Strategies – Frequently asked Interview questions.	
UNIT – V	12
Communication media – Telephone – Fax – Internet – Email – Video conferencing.	

TEXT BOOKS

1. Brad Cleveland - Call Center Management on Fast Forward: Succeeding in the New Era of Customer Relationships (3rd Edition) Third Edition,
2. Mr. Thomas Anthony Laird - Advice from a Call Center Geek: Rethinking Call Center Operations,

REFERENCE BOOKS

1. W. Stallings “Data and Computer Communication” Pearson Education, 5 Edition, 2001.
2. M. AshrajRizvi,” Effective Technical Communication”, Tata McGraw – Hill Education, 2005.
3. R.S.N.Pillai&Bagavathi – Modern commercial correspondence.

A.Jhoncy

Course Coordinator

HOD

P18OEBA004	CUSTOMER RELATIONSHIP MANAGEMENT						L	T	P	C	
	Total Contact Hours – 60						4	0	0	4	
	Prerequisite course – UG Level										
	Course Coordinator Name & Department:- Dr.D Arun Kumar /BBA										
COURSE OBJECTIVES: - - To Popularize the students with the basic fundamentals of CRM. - To improve knowledge & skills on Customer relationship of Marketing strategy. - To develop the students on the concept of Customer service.											
COURSE OUTCOMES (COs)											
CO1	To popularize with the basics of CRM.										
CO2	Can increase awareness about Customer relationship.										
CO3	Able to be aware of the concept of Customer service.										
CO4	Can respond to the concept of Customer needs.										
CO5	Develop confidence in the practical aspects of Customer Satisfaction										
CO6	Identify the main Customer Expectations.										
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	PS O1	PS O2	PS O3
2	CO1	M	L						M	L	
	CO2	L	L								
	CO3	M	L								
	CO4	L	L								
	CO5	M	H								
	CO6	H	L								
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**
CRM – Introduction – Definition – Need for CRM – Customer satisfaction – Customer loyalty – Product Marketing – Direct Marketing-

UNIT – II **12**
Customer learning relationship – Key stages of CRM - Force driving CRM – Benefits of CRM – Growth of CRM Market in India – Key principles of CRM.

UNIT – III **12**
CRM – Program – Ground work for effective use of CRM – Components of CRM – Types of CRM.

UNIT - IV **12**
CRM Process - Frame work – Governance process- Performance evaluation process.

UNIT – V **12**
Use of Technology in CRM – Call center process – CRM Technology tools – Implementation – Requirements analysis – selection of CRM Package – reasons and failure of CRM.

TEXT BOOK

1. Kristin Anderson & Carol Kerr – Customer Relationship Management – McGrawHill 2002
2. Sheth – Customer Relationship Management – McGraw Hill Edition 1st Edition 2000

REFERENCE BOOK

1. Dr. P .Sheela Rani – Customer Relationship Management – Margham Publication.
2. K. Balasubramaniam – Customer Relationship Management – GIGO Publication, 2005.
3. Dr. Ravi Kalakota E – business – Road map for success, Pearson education Asia, 2000.

Dr.D.ArunKumar

CourseCoordinator

HOD

P18OEBA005	ENTREPRENEURSHIP DEVELOPMENT						L	T	P	C									
	Total Contact Hours – 60						4	0	0	4									
	Prerequisite course – UG Level																		
	Course Coordinator Name & Department:- Dr.DArun Kumar /BBA																		
COURSE OBJECTIVES: - - To make publicity on the students with the basic fundamentals of Entrepreneur Development - To improve knowledge & skills on Entrepreneurship. - To develop the students on the concept of Entrepreneurial skills.																			
COURSE OUTCOMES (COs)																			
CO1	To popularize with the basics of Entrepreneur development.																		
CO2	Can increase awareness about Entrepreneurship.																		
CO3	Able to be aware of the concept of Entrepreneurial skills.																		
CO4	Can respond to the concept of Entrepreneurial knowledge.																		
CO5	Develop confidence in the practical aspects of Business Opportunity.																		
CO6	Identify the main Innovations in Entrepreneurial Development.																		
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	PS O1	PS O2	PS O3						
2	CO1	L	L								M	L							
	CO2	L	M																
	CO3	L	L																
	CO4	L	L																
	CO5	L	L																
	CO6	L	L																
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**
Introduction to Entrepreneurship: Meaning and concept of entrepreneurship - the history of entrepreneurship development - role of entrepreneurship in economic development

UNIT – II **12**
The Entrepreneur: Meaning of entrepreneur - the skills required to be an entrepreneur, and role models, mentors and support system.

UNIT – III **12**
Business Opportunity Identification: Business ideas, methods of generating ideas - legal form of new venture, protection of intellectual property -marketing the new venture.

UNIT – IV **12**
Preparing a Business Plan: Meaning - significance of a business plan - components -feasibility study.

UNIT – V **12**
Financing the New Venture: Importance - types of ownership securities - venture capital - types of debt securities -determining ideal debt-equity mix - financial institutions and banks.

TEXT BOOK

1. Robert D. Hisrich, Mathew J Manimala, Michael P Peters, Dean A Shepherd, “Entrepreneurship”, 9e, McGraw Hill Education, 2014.
2. Peter F. Drucker, “Innovation and Entrepreneurship”, Harper Collins, 2009.

REFERENCE BOOK

1. John Bessant, Joe Tidd, “Innovation and Entrepreneurship”, 2e, Wiley India Private Limited, 2012.
2. Robin Lowe, Sue Marriott, "Enterprise: Entrepreneurship and Innovation: Concepts, Contexts and Commercialization" 1e, Routledge, 2012.
3. VeeraBhadrappa Havinal – Management Entrepreneurship – New Age International Publishers.

Dr.D.ArunKumar

CourseCoordinator

HOD

OPEN ELECTIVE – II

P18OEBA006	HUMAN RESOURCE MANAGEMENT	L	T	P	C
	Total Contact Hours – 60	4	0	0	4
	Prerequisite course – UG Level				
	Course Coordinator Name & Department:- P.Srinivasan / BBA				

COURSE OBJECTIVES:-

- Today's competitive business environment owes its success to effective management of its human resource.
- The quality of the organization's employees, their attitude, behavior and satisfaction with their jobs, and their behavior towards ethics and values and a sense of fair treatment all impact the firm's productivity, level of customer service, reputation, and survival.
- The students of human resources management must aware of basic aspects of human resource management to understand the functioning of human resource management in an organizational setting.
- Students gained knowledge in the present day human resources development practice by incorporate themselves in the changing environment of HRM.

COURSE OUTCOMES (COs)

CO1	Identify how firms gain a sustainable competitive advantages through people
CO2	To be aware of the responsibility managers of have concerning human resource management
CO3	Identify the importance of change management.
CO4	To implement basics compensation and performance appraisal
CO5	Importance of labour welfare and grievance handling for employment
CO6	Understand the importance of Employee participation and Relations.

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	PS O1	PS O2	PS O3
2	CO1	H	H							M		
	CO2	M	M									
	CO3	L	H									
	CO4	M	L									
	CO5	M	M									
	CO6	H	H									
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

Human Resource Function- Human Resource Philosophy – Changing environments of HRM – Strategic human resource management – Role of HR Managers.

UNIT – II

12

Recruitment & Placement: Sources, Developing and using application forms - IT and online recruitment - Selection process, basic testing concepts - types of test - work samples & simulation - selection techniques – interview - Designing & conducting the effective interview - computer aided interview.

UNIT – III

12

Training & Development: Employee Orientation- Training process- Need analysis- Training techniques- special purpose training- Performance appraisal: Methods - Problem and solutions - MBO approach - Performance appraisal in practice.

UNIT – IV

12

Basic Compensation & Pay plans - factors determining pay rate - Current trends in compensation - Computerized job evaluation - financial incentives - benefits - Insurance benefits - retirement benefits – welfare measure

UNIT – V

12

Trade unions - Discipline administration - grievances handling - Labour Welfare: Importance & Implications of labour legislations - Employee health.

TEXT BOOKS

1. Dr. R.Venkatapathy&AssissiMenacheri, Industrial Relations &Labour Welfare, Adithya Publications, CBE, 2001. 5. Robert L.Gibson and Marianne H.Mitchell, Introduction to Counseling and Guidance, VI edition, PHI, 2005
2. L.M. Prasad – Human Resource Management – S. Chand & Sons – 2007.

REFERENCEBOOKS

1. Gary Dessler, "
2. zo& Stephen P.Robbins, Personnel/Human Resource Management, Third edition, PHI/Pearson.
3. VSP Rao, Human Resource Management: Text and cases, First edition, Excel Books, New Delhi - 2000.
4. P.SrinivasanHuman Resource Management", Seventh edition, Prentice-Hall of India P.Ltd., Pearson.

David A. DeCen

D.K.SOWMIYALAKSHMI

Course Coordinator

HOD

P18OEBA007	LOGISTICS & SUPPLY CHAIN MANAGEMENT						L	T	P	C	
	Total Contact Hours – 60						4	0	0	4	
	Prerequisite course: UG Level										
	Course Coordinator Name & Department:- T.Manjiniprakash / BBA										
COURSE OBJECTIVES:- • To make the students to understand the usefulness of logistics and supply chain. • This document lists the course’s major subject areas and the knowledge, comprehension, application, analysis, synthesis and evaluation skills that they are designed to impart. • Identify the sources of cost in a supply chain. • Define inventory and types of inventory in a supply chain. • Define transportation cost and identify the factors that contribute to this cost. • Calculate inventory cost and transportation cost for a logistics problem. • Define fixed and variable cost. • Understand the economies of scale in transportation and inventory cost											
• COURSE OUTCOMES (COs)											
CO1	Identify and Analyze Business Models, Business Strategies and corresponding Competitive Advantage.										
CO2	Formulate and implement Warehouse Best Practices and Strategies.										
CO3	Plan Warehouse and Logistics operations for optimum utilization of resources										
CO4	Apply logistics and purchasing concepts to improve supply chain operations										
CO5	Apply quality management tools for process improvement										
CO6	Create an ideas about logistics and supply chain 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	PS O1	PS O2	PS O3
2	CO1	H	H						H		
	CO2	H	M								
	CO3	M	M								
	CO4	L	M								
	CO5	H	M								
	CO6	M	H								
3	Category	Humanities & Social Studies (HS)	Basic Sciences (BS)	Engg Sciences (ES)	Professional I Core	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**

Logistics management and Supply Chain management - Definition, Evolution, Importance. The concepts of logistics. Logistics relationships - Functional applications - Logistics Organization - Logistics in different industries.

UNIT –II **12**

Logistics Activities: – objectives, solution. Customer Service, Warehousing and Material Storage, Material Handling, information handling and procurement Transportation and Packaging - Reverse Logistics - Global Logistics

UNIT-III **12**

Fundamentals of Supply Chain - Development of SCM - Strategic Supply Chain Management and Key components - Drivers of Supply Chain Performance – key decision areas – External Drivers of Change.

UNIT-IV **12**

Supply Chain Drivers and Design Drivers of supply chain performance: Framework for structuring Facilities warehouse – Inventory – Transportation – Information - Sourcing, and Pricing – Revenue management.

UNIT-V **12**

Demand and Inventory Aggregate Planning in a Supply Chain: role - strategies Implementation Responding to predictable variability in supply chain – Types of supply chains - creating responsive supply chains lean

TEXT BOOKS

1. Supply Chain Management: Ronald H. Ballou, Samir K. Srivastava, Pearson Education Ltd, Jan 2007.
2. Supply Chain Management: Anil Sinha, McGraw Hill Education, August 2011.

REFERENCE BOOKS

1. Logistics And Supply Chain Management: Martin Christopher, Pearson Education Ltd, 2016.
2. Supply Chain Management: Sunil Chopra, Peter Meindl, Dharma Virus Kalra, Pearson Education Ltd, 2016.
3. Supply Chain And Logistics Management: V. Anandaraj, S. Kumaran, Ishanka Saikira, Airwalk Publication, Jan 2018.

T.Manjiniprakash.

Course Coordinator

HOD

P18OEBA008	OFFICE MANAGEMENT						L	T	P	C									
	Total Contact Hours – 60						4	0	0	4									
	Prerequisite course – UG Level																		
	Course Coordinator Name & Department:- D.K.Sowmiyalakshmi /BBA																		
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.																			
COURSE OUTCOMES (COs)																			
CO1	To make them understand office management and duties of an office manager																		
CO2	To give an idea about proper filing and indexing of office documents																		
CO3	To understand the principles of record management and different types of records in business organization.																		
CO4	To enable them to aware about safety hazardous and steps to improve office safety.																		
CO5	To introduce different measures of office work																		
CO6	Create an ideas about office 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	PS O1	PS O2	PS O3					
2	CO1	H	H									H							
	CO2	M	M																
	CO3	M	H																
	CO4	L	H																
	CO5	H	H																
	CO6	H	M																
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**

Introduction: Meaning, functions and importance of office management; office management and organization. Principles of office management and organization. Principal departments of modern office.

UNIT-II **12**

Office Manager: qualities of office manager. The authorities and responsibilities of an office manager. Office accommodation: Selection of site. Office layout. Environment and working conditions.

UNIT-III **12**

Office equipment's - Reproduction equipment - Typewriter - Duplicators - Photo Copier - Communication Equipment - Intercom - Telephone - Use of Computers in Office Management Office System - Procedure - Routine - And methods - Paper work in office Filling functions.

UNIT-IV **12**

Office Communication: Various means of communication- Their use, Correspondence through Internet - Office Correspondence -Central vs. Departmental Correspondence - Handling Mail - Postal Services - Oral written - Internal and external communication - Records Management Types - Forms Controls - Principles - Foremost -Continuous stationery

UNIT-V **12**

Office Supervisor - Meaning and characteristics of Supervisor - Status - Place and Role of Supervisor - Effective Supervisor - Qualification - skill of Supervisor.

TEXT BOOKS

1. Modern Office Management: N. D Sharma, And Publishers, Jan 2006.
2. Office Management: Prashansa K. Ghosh, S. Chand & Sons, Jan 2010

REFERENCE BOOKS

1. Office Management: R.S.N Pillai&Bhagavathi, S. Chandler & Come, Dec 2010.
2. Office Management: R. Nangia, G. K Gupta, Crescent Publishing House.
3. Office Management: Dr. R. K Chopra, PriyankaGauri, Himalaya Publishing House, Jan 2017.
4. Of Non-Trading Organization-Receipts And Payment Account- Income And Expenditure Account

D.K.Sowmiyalakshmi

CourseCoordinator

HOD

P180EVC001	PHOTOGRAPHY AND VIDEOGRAPHY							L	T	P	C
	Total Contact Hours – 60							4	0	0	4
	Prerequisite – UG Level										
	Course Coordinator Name & Department:- L.Rakesh – Dept of Visual Communication										
COURSE OBJECTIVES											
- To understand the fundamentals of Photography and Videography - To examine the technical factors of indoor and outdoor photography and Videography - To enable the students to equip themselves to become a photography and Videography professionals.											
COURSE OUTCOMES (COs)											
CO1		Can analyze the fundamentals of Photography and Videography									
CO2		Understanding of the camera operations									
CO3		Evaluating the lighting									
CO4		Can be aware of the wrong exposures									
CO5		Can promote various types of photography and Videography									
CO6		Understanding the concept of photo-journalism									
	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	PSO3
2	CO1	H	M								
	CO2	H	M								
	CO3	H	M								
	CO4	H	M								
	CO5	H	M								
	CO6	H	M								
3	Category	Humanities & Social Studies	Basic Sciences (BS)	Engg Sciences (ES)	Professional Core (PC)	Core Elective (CE)	Non-Major Elective (NE)	Open Elective (OE)	Any other		
					✓						
4	Approval	Academic Council Meeting									

UNIT-I: 12

Human Eye and Camera. Basics of Camera (aperture, shutter speed, focal length, f-stop, depth of field etc.,) Camera operations, Introduction to Television Production, Types of telecasting, Television Crew, an overview of direction.

UNIT-II: 12

Types of Still and video cameras. Types of Lenses. Visual Perception, Art direction, floor management-indoor & outdoor, production management, budget preparation. Locations: In-door, set, on-sights sets, - Outdoor on-sight sets, blue matte. Etc.,

UNIT-III: 12

Understanding lighting-indoor and outdoor, Exposing and Focusing, Types of lighting, Natural and Artificial Lights, Controlling lights, Exposure Meters. Camera techniques & operation, Framing, shots & movements (wide, medium, close ups, shadow, zoom, pan, tilt, aerial etc.,),

UNIT-IV: 12

Photography for advertising-Consumer and industrial. Usage of various types of camera lenses (Normal, Tele, Zoom etc.,), usages of various filters (day ,night, colour correcting filter, diffusion filter), objectives TV lighting, various types of Lights (baby, Junior, Senior, etc.,)

UNIT- V: 12

Basics of photo-journalism, Photo-features, Photo - essays, Writing captions, Visual story telling. Planning a shoot-studio, location, set props and casting. Colour temperature, lighting for different situations (interviews, indoor, out-door), types of lighting(Back, Front, full, semi, etc.,)

TEXT BOOKS:

- 1.The Art of Photography: A Personal Approach to Artistic Expression, Barnbaum, Bruce, Rocky Nook
- 2.Photography Demystified: Your Guide to Gaining Creative Control, David McKay, Photography Inc.
3. Television Productions: A History of All Series and Pilots, by [Jon Abbott](#), Publisher: McFarland & Company (May 13, 2009)
- 4.Production Management for TV and Film: The Professional's Guide, Methuen Drama (August 1, 2010)

REFERENCE BOOKS:

- 1.The Photographer's Eye, Szarkowski, John, The Museum of Modern Art, New York (Publisher)
- 2.Creative Composition: Digital Photography Tips and Techniques, Davis, Harold, Wiley
- 3.From Concept to Screen: An Overview of Film and Television Production, Robert Benedetti, Pearson; 1 edition (June 11, 2001)
- 4.The Television Handbook, Routledge, Holland, P (1998)

AUDIT COURSE

P18ACEN001	AUDIT COURSE : ENGLISH FOR RESEARCH PAPER WRITING								L	T	P	C
	Total Contact Hours – 30								2	0	0	0
	Prerequisite course – UG Level											
	Course Coordinator Name & Department:-											
COURSE OBJECTIVES:- Understand the skills needed when writing a Title Ensure the good quality of paper at very first-time submission.												
COURSE OUTCOMES (COs)												
CO1	Recognize to prepare and Plan the word order, breaking of long sentences, structural formation of paragraph and being concise without any ambiguities.											
CO2	Describe how to write abstract and introduction to any topic or project.											
CO3	Relate the skills require for the discussions and conclusions.											
CO4	Express the quality of paper and time management in writing skills.											
CO5	Illustrate the useful phrase and how to ensure the paper is as good.											
CO6	Prepare the oral presentation in class using effective delivery strategies.											
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	PS O2	PSO3	
2	CO1		H	L								
	CO2		H	L								
	CO3		H	L								
	CO4		H	L								
	CO5		H	L								
	CO6		H	L								
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: PLANNING AND PREPARATION :**6**

Planning and Preparation - word order - breaking up long sentences, structuring, paragraphs and sentences, being concise and removing redundancy, avoiding ambiguity and vagueness.

UNIT-2 : ABSTRACT**6**

Clarifying who did what - highlighting your findings - hedging and criticizing - paraphrasing and plagiarism - sections of a paper - abstracts - introduction.

UNIT -3 : DISCUSSION AND CONCLUSION**6**

Review of the literature - methods - results - discussion - conclusions, the final check - key skills are needed when writing a title - key skills are needed when writing an abstract - key skills are needed when writing an introduction - skills needed when a review of the literature.

UNIT -4 : WRITING SKILLS**6**

Skills are needed when writing the methods - skills needed when writing the results - skills are needed when writing the discussion - skills are needed when writing the conclusions.

UNIT -5: QUALITY AND TIME MAINTAINANCE**6**

Useful phrases - how to ensure paper is as good as it could possibly be the first -time submission.

TEXT BOOKS :

1. Goldbort R (2006) Writing for Science, Yale University Press (Available on Google Books).
2. Day R(2006), How to Write and Publish a Scientific Paper, Cambridge University Press.

REFERENCE BOOKS :

1. HighmanN, Handbook of Writing for the Mathematical Sciences, SIAM, Highman's Book, 1st, Edition, 1998.
2. Adrian Wallwork, English for Writing Research Papers, Springer New York Dordrecht Heidelberg London, 2nd Edition, 2011.

P18ACCE002	AUDIT COURSE : DISASTER MANAGEMENT								L	T	P	C
	Total Contact Hours – 30								2	0	0	0
	Prerequisite course – UG Level											
	Course Coordinator Name & Department:- Ms.Jhoncy/ Dept. of Business Administration											
COURSE OBJECTIVES:- Develop an understanding of standards of humanitarian response and practical relevance in specific types of disasters and conflict situations.												
COURSE OUTCOMES (COs)												
CO1	Remember the key concepts in disaster risk reduction and humanitarian response.											
CO2	Understand the disaster risk reduction and humanitarian response policy from multiple perspectives.											
CO3	Illustrate the standards of humanitarian response.											
CO4	Criticize the practical relevance in specific types of disasters and conflict situations.											
CO5	Evaluate the strengths and weakness of disaster management approaches.											
CO6	Predict the planning and programming in different countries, particularly their home country or the countries they work .											
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	PS O1	PS O2	PS O3	
2	CO1						H					
	CO2						H					
	CO3						H					
	CO4						H					
	CO5						H					
	CO6						H					
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	47 th Academic Council Meeting										

UNIT - : INTRODUCTION:**6**

Disaster : Definition - Factors and Significance - Difference between Hazard and Disaster - Natural and Manmade Disasters - Difference - Nature - Types and Magnitude.

UNIT - 2 : REPERCUSSIONS OF DISASTERS AND HAZARDS:**6**

Economic Damage - Loss Of Human And Animal Life - Destruction Of Ecosystem - Natural Disasters: Earthquakes - Volcanisms - Cyclones - Tsunamis - Floods - Droughts And Famines - Landslides And Avalanches - Man-made disaster.

UNIT -3 : DISASTER PRONE AREAS IN INDIA:**6**

Study Of Seismic Zones - Areas Prone To Floods And Droughts - Landslides And Avalanches - Areas Prone To Cyclonic And Coastal Hazards With Special Reference To Tsunami - Post-Disaster Diseases And Epidemics.

UNIT -4 : DISASTER PREPAREDNESS AND MANAGEMENT**6**

Preparedness: Monitoring Of Phenomena Triggering A Disaster Or Hazard - Evaluation Of Risk: Application Of Remote Sensing, Data From Meteorological And Other Agencies - Media Reports: Governmental And Community Preparedness.

UNIT -5 : RISK ASSESSMENT**6**

Disaster Risk: Concept And Elements - Disaster Risk Reduction, Global And National Disaster Risk Situation - Techniques Of Risk Assessment - Global Co- Operation In Risk Assessment And Warning, People's Participation In Risk Assessment - Strategies for Survival.

TEXT BOOKS:

1. R. Nishith, Singh AK, "Disaster Management in India: Perspectives, issues and strategies "New Royal book Company.

REFERENCE BOOKS:

1. Sahni, PardeepEt.Al. (Eds.)," Disaster Mitigation Experiences And Reflections", Prentice Hall Of India, New Delhi.
2. Goel S. L. , Disaster Administration And Management Text And Case Studies" ,Deep &Deep Publication Pvt. Ltd., New Delhi.

P18ACEN003	AUDIT COURSE : SANSKRIT FOR TECHNICAL KNOWLEDGE							L	T	P	C
	Total Contact Hours – 30							2	0	0	0
	Prerequisite course – UG Level										
	Course Coordinator Name & Department:- Ms.Subathra / Dept. of English										
COURSE OBJECTIVES:- Learners will get a working knowledge in illustrious Sanskrit, the scientific language in the world.											
COURSE OUTCOMES (COs)											
CO1	Remember the learning of Sanskrit to improve brain functioning										
CO2	Review the Learning of Sanskrit to develop the logic in mathematics, science & other subjects enhancing the memory power										
CO3	Practice the engineering scholars equipped with Sanskrit will be able to explore the huge knowledge from ancient literature										
CO4	Identify the uses of basic Sanskrit language										
CO5	Estimate Ancient Sanskrit literature about science & technology can be understood										
CO6	Develop the projects either individual or group on presentations.										
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	PS O1	PS O2	PS O3
2	CO1		H	L							
	CO2		H	L							
	CO3		H	L							
	CO4		H	L							
	CO5		H	L							
	CO6		H	L							
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

Alphabets, Consonants, Nouns Declensions; Nominative, Accusative(singular, dual and plural)

UNIT - 2 : BASIC OF SANSKRIT LITERATURE: 6

Instrumental case, Dative, Ablative, and Indeclinables, verbal conjugation: first person, second person, third person: Present Tense.

UNIT - 3 : FUNDAMENTALS OF SANSKRIT ARCHITECTURE: 6

Genitive, locative and Vocative Absolute, Masculine Gender, Feminine Gender and Neuter Gender.

UNIT -4 : VERBAL CONJUGATION: 6

Verbal Conjugation: Past Tense and Future Tense Declensions ending in Rāmaḥ, Kaviḥ, Bhānuḥ, Mātr , Mālā

UNIT - 5 : TRANSLATION: 6

Translation of simple sentences, Stories & selected Subhashitas

TEXT BOOKS:

1. “Abhyaspustakam” – Dr.Vishwas, Samskrita-Bharti Publication, New Delhi.
2. Sanskrit for Beginners by Dr. M. Narasimhacharyand Dr.S. Ramaratnam, N&R Publications, Chennai & New Delhi.

REFERENCE BOOKS :

1. “Teach Yourself Sanskrit” Prathama Deeksha-VempatiKutumbshastri, Rashtriya Sanskrit Sansthanam, New Delhi Publication.
2. “India’s Glorious Scientific Tradition” Suresh Soni, Ocean books (P) Ltd., New Delhi.

Course Coordinator

HOD

P18ACBA004	AUDIT COURSE : VALUE EDUCATION								L	T	P	C
	Total Contact Hours – 30								2	0	0	0
	Prerequisite course – UG Level											
	Course Coordinator Name & Department:- Mr.Srinivasan/ Dept. of Business Administration											
COURSE OBJECTIVES:- Our objectives are to promote a new understanding and framework help learners to achieve positive and purposeful lives for themselves and their communities through engaging with values to guide and inform their behaviour.												
COURSE OUTCOMES (COs)												
CO1	Remember and describe feelings of self-worth that arise through striving for personal success in physical activity and sport											
CO2	Demonstrate the tolerance of other people's abilities during physical activity and sport											
CO3	Generalize the Values, attitudes that they need to develop in their class programmes											
CO4	Choose the essential steps to become good leaders.											
CO5	Select their role and contribution to the nation building.											
CO6	Prepare to understand value of education and self- development											
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	PSO3	
2	CO1				H			L				
	CO2				H			L				
	CO3				H			L				
	CO4				H			L				
	CO5				H			L				
	CO6				H			L				
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	47 th Academic Council Meeting										

UNIT-I:**6**

Value Education - Definition - relevance to present day - Concept of Human Values - self introspection - Self esteem.

UNIT-II:**6**

Family values - Components, structure and responsibilities of family - Neutralization of anger - Adjustability - Threats of family life - Status of women in family and society - Caring for needy and elderly - Time allotment for sharing ideas and concerns.

UNIT-III:**6**

Ethical values - Professional ethics - Mass media ethics - Advertising ethics - Influence of ethics on family life - psychology of children and youth - Leadership qualities - Personality development.

UNIT-IV:**6**

Social values - Faith, service and secularism - Social sense and commitment - Students and Politics - Social awareness, Consumer awareness, Consumer rights and responsibilities - Redressal mechanisms.

UNIT-V:**6**

Effect of international affairs on values of life/ Issue of Globalization - Modern warfare - Terrorism. Environmental issues - mutual respect of different cultures, religions and their beliefs.

TEXT BOOKS:

1. T. Anchukandam and J. Kuttanimathathil (Ed) Grow Free Live Free, Krisitu Jyoti Publications, Bangalore (1995).
2. Mani Jacob (Ed) Resource Book for Value Education, Institute for Value Education, New Delhi 2002.

REFERENCE BOOKS:

1. DBNI, NCERT, SCERT, Dharma Bharti National Institute of Peace and Value Education, Secunderabad, 2002.
2. Daniel and Selvamony - Value Education Today, (Madras Christian College, Tambaram and ALACHE, New Delhi, 1990)
3. S. Ignacimuthu - Values for Life - Better Yourself Books, Mumbai, 1991.
4. M.M.M.Mascaronhas Centre for Research Education Science and Training for Family Life Promotion - Family Life Education, Bangalore, 1993.

Course Coordinator**HOD**

P18ACW005	AUDIT COURSE : CONSTITUTION OF INDIA							L	T	P	C
	Total Contact Hours – 30							2	0	0	0
	Prerequisite course – UG Level										
	Course Coordinator Name & Department:- Mr.Prakash/Dept. of Law										
COURSE OBJECTIVES:- To Understand the premises informing the twin themes of liberty and freedom from a civil rights perspective.											
COURSE OUTCOMES (COs)											
CO1	Underline to address the growth of Indian opinion regarding modern Indian intellectuals										
CO2	Express the constitutional role and entitlement to civil and economic rights										
CO3	Utilize the emergence of nationhood in the early years of Indian nationalism.										
CO4	Distinguish the role of socialism in India										
CO5	Judge the commencement of the Bolshevik Revolution										
CO6	Predict its impact on the initial drafting of the Indian Constitution										
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	PS O1	PS O2	PS O3
2	CO1			H				L			
	CO2			H				L			
	CO3			H				L			
	CO4			H				L			
	CO5			H				L			
	CO6			H				L			
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 : HISTORY OF MAKING OF THE INDIAN CONSTITUTION: 6

History - Drafting Committee, (Composition & Working)

UNIT -2 : PHILOSOPHY OF THE INDIAN CONSTITUTION: 6

Preamble - Salient Features - Directive Principles of State Policy - Fundamental Duties.

UNIT - 3 : CONTOURS OF CONSTITUTIONAL RIGHTS & DUTIES: 6

Fundamental Rights - Right to Equality - Right to Freedom - Right against Exploitation - Right to Freedom of Religion - Cultural and Educational Rights - Right to Constitutional Remedies.

UNIT -4 : ORGANS OF GOVERNANCE: 6

Parliament - Composition - Qualifications and Disqualifications - Powers and Functions - Executive President - Governor - Council of Ministers - Judiciary, Appointment and Transfer of Judges, Qualifications - Powers and Functions.

UNIT - 5 : LOCAL ADMINISTRATION & ELECTION COMMISSION : 6

District's Administration head: Role and Importance - Introduction, Mayor and role of Elected Representative CEO of Municipal Corporation - Pachayati raj: Introduction, PRI: Zila Pachayat - Elected officials and their roles - Introduction of Election Commission - Election Commission: Role and Functioning - Chief Election Commissioner and Election Commissioners - State Election Commission: Role and Functioning - Institute and Bodies for the welfare of SC/ST/OBC and women.

TEXT BOOKS:

1. The Constitution of India, 1950 (Bare Act), Government Publication.
2. Dr. S. N. Busi, Dr. B. R. Ambedkar framing of Indian Constitution, 1st Edition, 2015.

REFERENCE BOOKS:

1. M. P. Jain, Indian Constitution Law, 7th Edn., Lexis Nexis, 2014.
2. D.D. Basu, Introduction to the Constitution of India, Lexis Nexis, 2015.

Course Coordinator

HOD

P18ACBA006	AUDIT COURSE : PEDAGOGY STUDIES							L	T	P	C
	Total Contact Hours – 30							2	0	0	0
	Prerequisite course – UG Level										
	Course Coordinator Name & Department:- Dr.Arunkumar / Dept. of Business Administration										
COURSE OBJECTIVES:- To inform programme design and policy making undertaken by the Dfid, other agencies and researchers.											
COURSE OUTCOMES (COs)											
CO1	List common training so everyone teaches from the same curriculum										
CO2	Describe to learners what is expected of them										
CO3	Illustrate the teacher education (curriculum and practicum) and the school curriculum and guidance materials best support effective pedagogy.										
CO4	Inspect the review existing evidence on the review topic to inform programme design.										
CO5	Assess how the outcomes of a single course align with larger outcomes for an entire program										
CO6	Plan appropriate teaching strategies, materials and assessments										
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	PS O1	PS O2	PS O3
2	CO1		H	L							
	CO2		H	L							
	CO3		H	L							
	CO4		H	L							
	CO5		H	L							
	CO6		H	L							
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 AND METHODOLOGY:**6**

Aims and rationale, Policy background, Conceptual framework and terminology - Theories of learning - Curriculum - Teacher education - Conceptual framework, Research questions -Overview of methodology and Searching.

UNIT - 2 : THEMATIC OVERVIEW:**6**

Pedagogical practices are being used by teachers in formal and informal classrooms in developing countries - Curriculum, Teacher education.

UNIT - 3 : EVIDENCE ON THE EFFECTIVENESS OF PEDAGOGICAL PRACTICES :-6

Methodology for the in depth stage: quality assessment of included studies - How can teacher education (curriculum and practicum) and the school curriculum and guidance materials best support effective pedagogy? Theory of change - Strength and nature of the body of evidence for effective pedagogical practices.

UNIT - 4 : PROFESSIONAL DEVELOPMENT:**6**

Alignment with classroom practices and follow up support - Peer support - Support from the head teacher and the community - Curriculum and assessment - Barriers to learning: limited resources and large class sizes

UNIT - 5 : Research gaps and future directions:-**6**

Research design - Contexts - Pedagogy - Teacher education - Curriculum and assessment - Dissemination and research impact.

TEXT BOOKS:

1. Ackers J, Hardman F (2001) Classroom interaction in Kenyan primary schools, Compare, 31 (2): 245-261.
2. Agrawal M (2004) Curricular reform in schools: The importance of evaluation, Journal o Curriculum Studies, 36 (3): 361-379.
3. Akyeampong K (2003) Teacher training in Ghana - does it count? Multi-site teacher education research project (MUSTER) country report 1. London: DFID.

REFERENCE BOOKS:-

1. Akyeampong K, Lussier K, Pryor J, Westbrook J (2013) Improving teaching and learning of basic maths and reading in Africa: Does teacher preparation count? International Journal Educational Development, 33 (3): 272–282.
2. Alexander RJ (2001) Culture and pedagogy: International comparisons in primary education. Oxford and Boston: Blackwell.
3. Chavan M (2003) Read India: A mass scale, rapid, ‘learning to read’ campaign.

P18MCYO001	STRESS MANAGEMENT BY YOGA						L	T	P	C	
	Total Contact Hours – 30						2	0	0	0	
	Prerequisite course – UG Level										
	Course Coordinator Name & Department:- Dr.K.Rajakumari/Dept.of.CS										
COURSE OBJECTIVES:- After undergoing the course the participants will be able to Perform yogic exercises, asanas, breathing exercises (pranayam) & meditation techniques for keeping good health.											
COURSE OUTCOMES (COs)											
CO1	Introduction to Yoga as Science of living. Usefulness of Yoga. Principles of Yoga. Introduction to Patanjali's (a scientist of inner science), Yoga Sutra (Classic book on Yoga) and eight steps & limbs of Yoga. Importance of discipline in life.										
CO2	Importance and description of abstentions (yam) Rules (niyam), the first two steps of Yoga. Description and importance of five virtues to be followed in daily life. Brief introduction to six cleaning processes (shatkarma) & its usefulness in yoga.										
CO3	Yogic exercises – an introduction. Influence and benefits of asans on one's outlook. Principles, rules & important aspects to be followed.										
CO4	Energy (Prana) and Energy Body (Pranic body) – an introduction. Modern Science and Prana. Important rules of yogic breathing (pranayam). Necessity of Pranayam. Introduction of simple paranayams.										
CO5	Art & Science of relaxation. Physical manifestation of mental tension. Mechanics of relaxation techniques. The root cause of tension. Mysteries of mind. Functions of mind. Mind as mental computer.										
CO6	What is inward looking (Pratayahar). Importance of Pratyahar. Concentration (Dharan), Meditation (Dhyaan) and total solution (samadhi). Importance of meditation for development of higher mental power.										
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	PS O1	PS O2	PS O3
2	CO1							H			
	CO2							H			
	CO3							H			
	CO4							H			
	CO5							H			
	CO6							H			
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	47 th Academic Council Meeting									

UNIT I:-

6

Meaning and definition of Yoga – aims & objectives of yoga – misconception about yoga. Historical perspective on yoga – yoga before the time of Patanjali (Indus valley civilization, Vedas, Brahmnas, Upanishads, Epics, Puranas). Contributions of Patanjali and Thirumular to yoga. Yoga practices and other systems of exercises.

UNIT II:-

6

Schools of Yoga: Bhakthi Yoga, Jnana Yoga, Karma Yoga, Kundalini Yoga, Mantra Yoga, Hatha Yoga, Raja Yoga. Eight Limbs of Yoga: Yama, Niyama, Asana, Pranayama, Pratyahara, Dharana, Dhyana & Samathi. General principles of practicing Asana, Pranayama, Meditation, Kriyas Bandhas and Mudra.

UNIT III:-

6

Classification of Asanas - Meditative Asanas – Relaxative Asanas – Cultural Asanas. - safety measure and precautions while performing asanas. Pranayama – different phases in Pranayama practices: Puraka (Inhalation), Kumbhaka (Retention) and Recaka (Exhalation), - safety measures and precautions while performing pranayama. Meditation - Its techniques & benefits. Practicing methods and benefits of Kriyas, Bandha and Mudra.

UNIT IV:-

6

Impact of Yoga on Muscular system, Respiratory System, Circulatory system, Nervous system, Digestive system and Endocrine system

UNIT V:-

6

Yoga and development of Social qualities of personality – Co-operation – Simplicity – Tolerance – Social adjustments – Yoga and personal efficiency. Improvement of personal efficiency through yoga.

REFERENCE BOOKS:-

1. Author's guide, (2003). Yoga – The Science of Holistic living. Chennai: Vivekananda Kendra Prakashana trust
2. Chandrasekaran, K., (1999) Sound Health through Yoga. Sedapatti: Prem Kalyan Publications.
3. Maguire, Imelda., (2005) Yoga for a Healthy Body. London: Greenwich Editions.
4. Mariayyah, P., (2000). Suriyanamaskar. Perunthurai: Jaya Publishing House.
5. Tummers, Nanette. E., (2009) Teaching Yoga for Life. Champaign: Human Kinetics.

P18ACBA007	AUDIT COURSE : PERSONALITY DEVELOPMENT THROUGH LIFE ENLIGHTENMENT SKILLS							L	T	P	C
	Total Contact Hours – 30							2	0	0	0
	Prerequisite course – UG Level										
	Course Coordinator Name & Department:- Mr.Srinivasan/Dept.of Business Administration										
COURSE OBJECTIVES:- To become a person with stable mind, pleasing personality and determination											
COURSE OUTCOMES (COs)											
CO1	Identify the way to achieve the highest goal happily										
CO2	Review to awaken wisdom for learners										
CO3	Schedule to study of Shrimad-Bhagwad-Geeta will help the student										
CO4	Developing his personality and achieve the highest goal in life										
CO5	Evaluate the person who has studied Geeta will lead the nation and mankind to peace and prosperity										
CO6	Propose to study of Neetishatakam will help in developing versatile personality of students										
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	PS O1	PS O2	PS O3
2	CO1		H					H			
	CO2		H					L			
	CO3		H					H			
	CO4		H					L			
	CO5		L					H			
	CO6							H			
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 : HOLISTIC DEVELOPMENT OF PERSONALITY- I**6**

Neetisatakam-Holistic development of personality : Verses- 19,20,21,22 (wisdom) - Verses- 29,31,32 (pride & heroism) - Verses- 26,28,63,65 (virtue) - Verses- 52,53,59 (don't's) - Verses- 71,73,75,78 (do's).

UNIT - 2 : BHAGWADGEETA:**6**

Approach to day to day work and duties. ShrimadBhagwadGeeta: Chapter 2-Verses 41, 47,48. Chapter 3-Verses 13, 21, 27, 35.

UNIT - 3: BHAGWAD GEETA:-**6**

ShrimadBhagwadGeeta: Chapter 6-Verses 5, 13, 17, 23, 35, Chapter 18-Verses 45, 46, 48.

UNIT - 4: BASIC KNOWLEDGE:**6**

Statements of basic knowledge. ShrimadBhagwadGeeta: Chapter2-Verses 56, 62, 68. Chapter 12 - Verses 13,14, 15, 16,17, 18.

UNIT - 5: ROLE MODEL : -**6**

Personality of Role model. Shrimad BhagwadGeeta: Chapter2-Verses 17, Chapter 3-Verses 36,37,42, - Chapter 4-Verses 18, 38,39 - Chapter18 – Verses 37,38,63.

TEXT BOOK:

1. P.Gopinath, “Bhartrihari’s Three Satakam (Niti-sringar-vairagya)”, Rashtriya Sanskrit Sansthanam, New Delhi.

REFERENCE BOOK:

1. “Srimad Bhagavad Gita” by Swami SwarupanandaAdvaita Ashram (Publication Department), Kolkata.
2. http://openlearningworld.com/section_personality_development.html

Course Coordinator**HOD**

CURRICULUM

M.A. English-2019

I SEMESTER

S.N o.	Category	Sub Code	Sub Name	Total Contact Hrs	L	T	P	C
THEORY								
1	MC	P18MCEN101	Chaucer and Elizabethan Age	6	4	0	0	4
2	MC	P18MCEN102	Neo Classical Age	6	4	0	0	4
3	MC	P18MCEN 103	Romantic Age and Victorian Age	6	4	0	0	4
4	MC	P18MCEN 104	Lingo Literary Studies	6	4	0	0	4
MAJOR ELECTIVE-I (Any one)								
5	ME	P18MEEN011	Thinking and Cognition	6	4	0	0	4
	ME	P18MEEN012	Environmental Literature					
	ME	P18MEEN013	Contemporary literature					
				30	Total Credits : 20			

SEMESTER II

S.No.	Category	Sub Code	Sub Name	Total Contact Hrs	L	T	P	C
THEORY								
1	MC	P18MCEN201	Twentieth Century British Literature	5	4	0	0	4
2	MC	P18MCEN202	American Literature	5	4	0	0	4
3	MC	P18MCEN203	Indian Writing in English and Commonwealth Literature	5	4	0	0	4
4	MC	P18MCEN204	Language and Linguistics	5	4	0	0	4
5	MC	P18MCEN205	Translations	5	4	0	0	4

MAJOR ELECTIVE-II (Any one)								
6	ME	P18MEEN021	Literary Analysis Approaches and Applications	5	4	0	0	4
7	ME	P18MEEN022	World Classics in Translation					
8	ME	P18MEEN023	History through literature					
				30	Total Credits : 24			

SEMESTER III

S.No.	Category	Sub Code	Sub Name	Total Contact Hrs	L	T	P	C
THEORY								
1	MC	P18MCEN 301	Copy Editing	5	4	0	0	4
2	MC	P18MCEN 302	Shakespeare	5	4	0	0	4
3	MC	P18MCEN 303	English Language Teaching and Computer Aided Language Learning	5	4	0	0	4
4	MC	P18MCEN 304	Literary Theory and Criticism	5	4	0	0	4
5	MC	P18MCEN 305	Literary and Cognitive Sciences	5	4	0	0	4
AUDIT COURSE								
1	AC	P18ACEN001	English for Research Paper Writing					
2	AC	P18ACCE002	Disaster Management					
3	AC	P18ACEN003	Sanskrit for Technical Knowledge					
4	AC	P18ACBA004	Value Education					0
5	AC	P18ACW005	Constitution of India					
6	AC	P18ACBA006	Pedagogy Studies					

7	AC	P18ACBA007	Personality Development through Life Enlightenment Skills					
MAJOR ELECTIVE-III (Any one)								
6	ME	P18MEEN031	Public Speaking and Journalism	5	4	0	0	4
7	ME	P18MEEN032	Myth and Mythology					
8	ME	P18MEEN033	Post-modern literature					
				30	Total Credits : 24			

SEMESTER IV

S.N o.	Category	Sub Code	Sub Name	Total Contact Hrs	L	T	P	C
THEORY								
1	MC	P18MCEN401	Soft Skills Through Literature	5	4	0	0	4
2	MC	P18MCEN 402	Research Methodology	5	4	0	0	4
MAJOR ELECTIVE-IV (Any one)								
3	ME	P18MEEN041	Post-colonial theory and Literature	5	4	0	0	4
4	ME	P18MEEN042	Indian Literatures in Translation					
5	ME	P18MEEN043	Modern English Grammar					
6			OPEN ELECTIVE	5	2	0	0	2
7		P18PREN4T1	Term Paper		1	0	0	1
8	PR	P18PREN4P1	Project Work	10	0	0	18	9
				30	Total Credits : 24			

CHAUCER AND ELIZABETHAN AGE

P18MCEN101	CHAUCER AND ELIZABETHAN AGE							L	T	P	C
	Total Contact Hours – 60							4	0	0	4
	Prerequisite course – UG level English										
	Course Coordinator & Dept :Dr.P.AROCKIA NATHAN & English										
COURSE OBJECTIVES:- . To make the students learn the details of Chaucer’s contribution, Understand the basic characteristics, plot, theme and poetic devices appreciate the beauty, summarize and Critically analyze the prescribed literature											
COURSE OUTCOMES (COs)											
CO1	Remember the details of Chaucer’s contribution										
CO2	Understand the basic characteristics of Chaucer’s literature										
CO3	Apply the beauty of Chaucer’s literature and interpret it										
CO4	Analyze the plot, theme and poetic devices used										
CO5	Critically evaluate the prescribed literature										
CO6	Summarize the prescribed literature and interpret its connotative meaning										
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	PO2	PO3	PO4	PO5	PO6	PO7	PS O1	PSO2	PS O3
2	CO1	H	L						H		
	CO2	H	L								
	CO3	H	L								
	CO4	H	L								
	CO5	H	L								
	CO6	H	L								
3	Category	Humanities & Social Studies	Basic Sciences (BS)	Engg Sciences (ES)	Professional Core (PC)	Core Elective (CE)	Open Elective (OE)	Any other		Project/Term Paper/ Seminar/ Internship (PR)	
					✓						
4	Approval	47 th Academic Council Meeting									

UNIT – I TALES 12

Chaucer – Prologue to Canterbury Tales – Author Biography – Theme - - Annotations Summary – Character analysis – Critical analysis

UNIT – II METAPHYSICAL POEM 12

John Donne – The Sun Rising and Valediction Forbidding Mourning - Author Biography – Theme – Poetic devices - Annotations - Summary –Critical analysis

UNIT – III POEM 12

Sonnet, Ballad and Lyric– Definitions – analysis of poetic devices- annotations; **Spenser – Prothalamion** - Author Biography – Theme - Annotations Summary – Character analysis – Critical analysis; **Surrey – Of Soote Season**- Author Biography – Theme - - Annotations Summary – Character analysis – Critical analysis; **Wyatt – I find no peace and all my war is done** - Author Biography – Theme - - Annotations Summary – Character analysis – Critical analysis; **Sydney –The Nightingale as soon as April bringeth** - Author Biography – Theme - Annotations Summary – Character analysis – Critical analysis; **Marlowe – The Passionate Shepherd to His Love** - Author Biography – Theme - - Annotations Summary – Character analysis – Critical analysis; **Ballads - Sir Patrick Spenser**- Author Biography – Theme - Annotations Summary – Character analysis – Critical analysis

UNIT – IV TRAGIC PLAY 12

Ben Johnson – The Alchemist- Author Biography - Plot – Theme - Summary – Character analysis – Critical analysis; **John Webster – The Duchess of Malfi** - Author Biography - Plot – Theme - Summary – Character analysis – Critical analysis

UNIT V ESSAY 12

Francis Bacon’s Essays – Of Ambition, Of Love, Of Studies - Author Biography - Plot – Theme - Character analysis – Summary – Critical analysis; **The Gospel according to St. Mark** - Theme - Character analysis – Summary – Critical analysis

TEXT BOOKS:

1. Prof.Coghill, Geoffrey Chaucer, “Canterbury Tales”, Penguin Classics, 1977
2. Edmund Spenser, “Epithalamion and Prothalamion”, Penguin Classics, 1979
3. Paulo Coelho, “The Alchemist”, Harper Collins Publisher, 2012
4. John Webster, “The Duchess of Malfi”, Dover Thrift editions, 1999

REFERENCE BOOKS:

1. John Donne, “The Complete Poetry and Selected Prose of John Donne”, Modern Library Classics, 2001
2. The Gospel According to St. Mark, Hardpress Publishing, 2012

NEO-CLASSICAL AGE

P18MCEN102	NEO-CLASSICAL AGE							L	T	P	C
	Total Contact Hours – 60							4	0	0	4
	Prerequisite course – UG level English										
	Course Coordinator Dept :Mrs.B.CAROLINE & English										
COURSE OBJECTIVES:-. To expose to classical tradition of Neo-classical Age, understand the literary expressions Neo – classical literature and critically analyze the prescribed literature.											
COURSE OUTCOMES (COs)											
CO1	Remember the 18 th century literature and the Neo classical literature										
CO2	Understand the socio-political-cultural issues during the post Shakespearean era										
CO3	Apply the skills of communication of Restoration period										
CO4	Analyze the Greek and Roman literary models										
CO5	Evaluate the social conditions during the time period										
CO6	Critically develop the idea of thinking through poems and fiction of Neo classical age										
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	PO2	PO3	PO4	PO5	PO6	PO7	PS O1	PSO2	PS O3
2	CO1	H	L						H		
	CO2	H	L								
	CO3	H	L								
	CO4	H	L								
	CO5	H	L								
	CO6	H	L								
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	47 th Academic Council Meeting									

UNIT – I EPIC **12**

Milton – Paradise Lost Book IX - Author Biography – Theme – Poetic devices - Annotations - Summary –Critical analysis

UNIT – II POEM **12**

Marvell – To His Coy Mistress - Paradise Lost Book IX - Author Biography – Theme – Poetic devices - Annotations - Summary –Critical analysis; **Dryden –McFlecknoe - Paradise LostBook IX** - Author Biography – Theme – Poetic devices - Annotations - Summary –Critical analysis; **Pope – The Rape of the Lock - Paradise Lost Book IX** - Author Biography – Theme – Poetic devices - Annotations - Summary –Critical analysis

UNIT – III COMEDY OF MANNERS **12**

Goldsmith – She Stoops to Conquer - Author Biography - Plot – Theme - Character analysis – Summary – Critical analysis; **Sheridan – The School for Scandal** - Author Biography - Plot – Theme - Character analysis – Summary – Critical analysis

UNIT – IV ESSAY **12**

Addison – From the Coverly Papers – 1.Sir Roger at Church – 2.Sir Roger at Assizes - Author Biography - Theme – Summary – Critical analysis; **Jonathan Swift – Gulliver’s Travels** - Author Biography - Theme – Summary – Critical analysis

UNIT – V NOVEL **12**

Daniel Defoe – Moll Flanders - Author Biography - Plot – Theme - Summary – Character analysis – Critical analysis; **Jonathan Swift – Battle of the Books** - Author Biography - Plot – Theme - Summary – Character analysis – Critical analysis

TEXT BOOKS:

1. John Milton, John Leonard, “Paradise Lost”, Penguin Classics, 2003
2. Richard Brinsley, Sheridan, “The School for Scandal”, Dover Thrift Editions, 1991
3. Jonathan Swift, “Gulliver’s Travels”,Penguin Classics, 2003

REFERENCE BOOKS

1. Jonathan Swift, “Battle of the Books”,OtbeBookPublishing, 2017
2. Daniel Defoe, “Moll Flanders”, Atlantic Publishers and Distributors Pvt. Ltd., 2012
3. Goldsmith, “She Stoops to Conquer”, Peacock Books, 2019

Course Coordinator

HOD

ROMANTIC AND VICTORIAN AGE

P18MCEN103		ROMANTIC AND VICTORIAN AGE							L	T	P	C
		Total Contact Hours – 60							4	0	0	4
		Prerequisite course – UG level English										
		Course Coordinator Dept :Mrs.D.THILAGAM & English										
COURSE OBJECTIVES:- To make the students learn the basics of ever-changing trends and communication, know the poetic devices, attain confidence in speech, reading and writing complexities, and critically analyze the prescribed literature												
COURSE OUTCOMES (COs)												
CO1		Remember the influence of Romanticism in literature										
CO2		Understand the development of Victorian society –economically, socially, politically and religiously										
CO3		Execute the theory of romanticism in poetry										
CO4		Analyze the texts that reflects the socio-cultural interest of the period										
CO5		Evaluate the prescribed literary texts in the light of Romantic and Victorian society										
CO6		Critically create the Romantic and Victorian age in literature										
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	PO2	PO3	PO4	PO5	PO6	PO7	PS O1	PSO2	PS O3	
2	CO1	H	L						H			
	CO2	H	L									
	CO3	H	L									
	CO4	H	L									
	CO5	H	L									
	CO6	H	L									
3	Category	Humanities & Social Studies	Basic Sciences (BS)	Engg Sciences (ES)	Professional Core (PC)	Core Elective (CE)	Non-Mech	Open Elective (OE)	Any other		Project/Term Paper/ Seminar/ Internship (DP)	
					✓							
4	Approval	47 th Academic Council Meeting										

UNIT – I LYRICAL BALLADS

12

Coleridge – The Rime of the Ancient Mariner - Author Biography – Theme - Summary – Analysis of poetic devices - Annotations - Critical analysis; **Shelley – Ode to the Westwind** - Author Biography – Theme - Summary – Analysis of poetic devices - Annotations - Critical analysis; **Wordsworth – Tintern Abbey** - Author Biography – Theme - Summary – Analysis of poetic devices - Annotations - Critical analysis; **Keats – Ode to a Nightingale** - Author Biography – Theme - Summary – Analysis of poetic devices - Annotations - Critical analysis

UNIT – II DRAMATIC MONOLOGUE

12

Tennyson – Ulysses - Author Biography – Theme - Summary – Analysis of poetic devices - Annotations - Critical analysis; **Browning – My Last Duchess** - Author Biography – Theme - Summary – Analysis of poetic devices - Annotations - Critical analysis; **Arnold – The Dover Beach** - Author Biography – Theme - Summary – Analysis of poetic devices - Annotations - Critical analysis; **Rossetti – Blessed Damozel** - Author Biography – Theme - Summary – Analysis of poetic devices - Annotations - Critical analysis

UNIT – III ESSAY

12

Charles Lamb – Dissertation upon a Roast Pig - Author Biography - Theme – Summary – Critical analysis; **Arnold – Sweetness and Light** - Author Biography - Theme – Summary – Critical analysis; **William Hazlitt – My First Acquaintance with Poets** - Author Biography - Theme – Summary – Critical analysis; **Carlyle – On Shakespeare (The Hero as Poet)** - Author Biography - Theme – Summary – Critical analysis

UNIT – IV PLAY

12

Wilde – Lady Windermere’s Fan - Author Biography - Plot – Theme - Character analysis – Summary – Critical analysis

UNIT- V NOVEL

12

Jane Austen – Emma - Author Biography - Plot – Theme - Character analysis – Summary – Critical analysis; **Emily Bronte – Wuthering Heights** - Author Biography - Plot – Theme - Character analysis – Summary – Critical analysis; **Charles Dickens – A Tale of Two Cities** - Author Biography - Plot – Theme - Character analysis – Summary – Critical analysis

TEXT BOOKS:

1. Jane Austen, “Emma”, Om Books International, 2019
2. Emily Bronte, “Wuthering Heights”, Fingerprint Publishing, 2013
3. Charles Dickens, “A Tale of Two Cities”, Om Books International, 2017

REFERENCE BOOKS:

1. Coleridge, “The Rime of the Ancient Mariner, Kubla Khan, Christabel, and the Conversation Poems”, Digireads.com, 2009
2. A Study Guide for Alfred Lord Tennyson's Alfred Lord Tennyson's Ulysses, Gale, Study Guides, 2017

Course Coordinator

HOD

LINGO – LITERARY STUDIES

P18MCEN104	LINGO – LITERARY STUDIES							L	T	P	C
	Total Contact Hours – 60							4	0	0	4
	Prerequisite course – UG level English										
	Course Coordinator & Dept : Ms.A.ANNIE CHRISTY & English										
COURSE OBJECTIVES: To exposethe various genres in the field of cinema, understand the themes and characters and their social impact or message, analyze various techniques to appreciate the artistic quality of visual work and critically analyze the impact that history, politics and technology have upon the films											
COURSE OUTCOMES (COs)											
CO1	Remember all the techniques, genres, production, technical & cast details of all the movies.										
CO2	Understand the plot and themes of the movies and artistic quality of visual work.										
CO3	Sketch the main and supporting characters.										
CO4	Analyze, compare & contrast the plot of the movies with reality or facts.										
CO5	Evaluate and justify any given hypotheses relevant to the movies.										
CO6	Critically analyze the impact that history, politics and technology have upon films.										
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	PO2	PO3	PO4	PO5	PO6	PO7	PS O1	PSO2	PS O3
2	CO1	H	L						H		
	CO2	H	L								
	CO3	H	L								
	CO4	H	L								
	CO5	H	L								
	CO6	H	L								
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/
					✓						
4	Approval	47 th Academic Council Meeting									

MOVIES CHOSEN FOR THE COURSE:

UNIT - I

THE BRAVE HEART - HISTORY 12

UNIT - II

WATERLOO BRIDGE - FLASHBACK NARRATION 12

UNIT - II

A BEAUTIFUL MIND-BIOGRAPHY 12

UNIT – IV

WALL E – ANTI – UTOPIAN 12

UNIT - V

AVATAR – ECO CRITICISM 12

TEACHING AND TESTING

1. Analyze various techniques and genres, to attain proper understanding.
2. Analyze various techniques to appreciate the artistic quality of literature.
3. Analyze various techniques to appreciate the artistic quality of visual work.
4. Demonstrate an understanding of the impact that history, politics and technology have had and continue to have upon the film.

UNDERSTAND STUDENT PERSPECTIVES:

1. The students will view texts with understanding and analyze and appreciate what he or she has read or seen.
2. Students will participate actively and ask for clarification.
3. They will integrate with scholars and support their opinions.
4. They will synthesize the lecture, discussion and text materials to view the history, society and art of the world.
5. They will respect each other's personal beliefs and be committed to help each other.

Course Coordinator

HOD

MAJOR ELECTIVE – I

THINKING AND COGNITION

P18M EEN011		THINKING AND COGNITION							L	T	P	C
		Total Contact Hours – 60							4	0	0	4
		Prerequisite course – UG level English										
		Course Coordinator & Dept : Mr.S.ANGEL & English										
COURSE OBJECTIVES: To orient the students on thinking and cognition process, attain confidence in speech, reading and writing,without any complex, realize the value of thinking and cognition for good communication, analyze and realize the value of literature on thinking and cognition												
COURSE OUTCOMES (COs)												
CO1		Remember the goals and consequences of critical thinking										
CO2		Understand the values that comes from both individual thinking and group-based thinking										
CO3		Apply the strategic planning and scenario planning and the requisites										
CO4		Analyze basic sense of thinking and developing cognitive abilities										
CO5		Evaluate the critical and creative thinking towards more in-depth texts										
CO6		Create the basic understanding of psychological research methods.										
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	PO2	PO3	PO4	PO5	PO6	PO7	PS O	PSO2	PS O3	
2	CO1	H	L						H			
	CO2	H	L									
	CO3	H	L									
	CO4	H	L									
	CO5	H	L									
	CO6	H	L									
3	Category	Humanities & Social Studies (HS)	Basic Sciences (BS)	Engg Sciences (ES)	Professional Core (PC)	Core Elective (CE)	Open Elective (OE)		Any other		Project/Term Paper/ Seminar/ Internship (PR)	
						✓						
4	Approval	47 th Academic Council Meeting										

Nature of Thinking – Pages 8 to 23 –Thinking - concepts – nature –significance
Framework for thinking – structure

UNIT – II METHOD OF THINKING 12

Six thinking hats method- concepts – nature – significance - Framework for thinking

UNIT – III PSYCHOLOGY 12

Cognitive, Psychological Foundations of narrative experiences - Pages 33 to 52

UNIT – IV Neuro Linguistic Programming (NLP) 12

Neurolinguistic Programming Pages 125 to 131, Approaches and Methods in Language Teaching

UNIT – V 12

Approaches and Methods in Language Teaching

Grammar Translation Method - Audio Lingual Method - Bilingual Method - Competency based language learning.

TEXT BOOKS:

1. David Mosley et al., “A Handbook for teaching& Learning”, Cambridge University Press, 2001
2. Edward de Bono, “Six thinking hats method”, Back Bay Books; Revised and Updated ed. Edition, 1999

REFERENCE BOOKS:

1. Bono Edward De, “Lateral Thinking”, Penguin Books, 1990
2. David Herman, “Richard J. Gerorig and Giovanna Egidi in Narrative Theory and Cognitive Sciences”, Stanford, Calif.: CSLI Publications, c2003.

Course Coordinator

HOD

ENVIRONMENTAL LITERATURE

P18MEEN012		ENVIRONMENTAL LITERATURE							L	T	P	C
		Total Contact Hours – 60							4	0	0	4
		Prerequisite course – UG level English										
		Course Coordinator & Dept: Mr.S.KUMARESAN & English										
COURSE OBJECTIVES: To advocate the students with the significance of environment and to acknowledge the representation of environment in Literature.												
COURSE OUTCOMES (COs)												
CO1		Remember to understand the importance of Environment										
CO2		Understand the value of ecology, and ecological portrayal through literature										
CO3		Apply a critical view of deteriorating ecology										
CO4		Analyze to think over the resolving techniques to save nature										
CO5		Evaluate the power of nature through history										
CO6		Create critical essays and literature to overcome the obstacles to preserve and conserve the 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	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PS O1	PSO2	PS O3	
2	CO1	H	L						H			
	CO2	H	L									
	CO3	H	L									
	CO4	H	L									
	CO5	H	L									
	CO6	H	L									
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 (PRI)		
						✓						
4	Approval	47 th Academic Council Meeting										

UNIT-I- KEY CONCEPTS

12

Ecology– Eco-centrism – Biocentrism-Global warming-Species extinction-Ecological exploitation – Deforestation- Afforestation -Endangered species – Conservation –preservation – Pollution- Pollutants

UNIT-II - POETRY

12

Birches-Robert Frost – Author Biography -Theme –Poetic devices – Annotations - Summary – Critical analysis; **Michael-William Wordsworth** – Author Biography -Theme –Poetic devices – Annotations - Summary – Critical analysis; **God Made the Country-William Cowper** –Author Biography -Theme –Poetic devices – Annotations - Summary – Critical analysis; **Our Casuarina Tree-Toru Dutt** - Author Biography -Theme –Poetic devices – Annotations - Summary – Critical analysis

UNIT – III- PROSE

12

Walden; Chapters (1-3)-Henry Thoreau – Author Biography - Plot – Theme – Summary – Critical analysis; **The Environmental Imagination-Lawrence Buell**- Author Biography - Plot – Theme – Summary – Critical analysis; **Ecology without Nature- Timothy Morton** - Author Biography - Plot – Theme – Summary – Critical analysis

UNIT-IV- NOVELS

12

Heat- Arthur Herzog - Author Biography - Plot – Theme - Character analysis – Summary – Critical analysis; **The Year of the Flood-Margaret Atwood** - Author Biography - Plot – Theme - Character analysis – Summary – Critical analysis

UNIT – V- ESSAYS

12

State of the Species – CharlesC. Mann - Author Biography - Theme – Summary – Critical analysis; **Summer on the lakes-Margaret Fuller** - Author Biography - Theme – Summary – Critical analysis

TEXTBOOKS:

1. Greg Garrard, “Ecocriticism”,Routledge, 2004
2. Arthur Herzog, “Heat”, Tudor Publishing Company, 1989
3. Robert Frost, “Birches”, Forgotten Books, 2016
4. Margaret Fuller, “Summer on the lakes”,CreatespaceIndependent Publishing Platform, 2017)

REFERENCE BOOKS:

1. Lawrence Buell, “The Environmental Imagination: Thoreau, Nature Writing, and the Formation of American Culture”, Belknap Press: An Imprint of Harvard University Press, 1996

Course Coordinator

HOD

CONTEMPORARY LITERATURE

P18MEEN013	CONTEMPORARY LITERATURE								L	T	P	C
	Total Contact Hours – 60								4	0	0	4
	Prerequisite course – UG level English											
	Course Coordinator & Dept: Ms.E.REKHA & English											
COURSE OBJECTIVES : To familiarize students with Contemporary style of theories and criticism and to sharpen their mind for close and critical analysis												
COURSE OUTCOMES (COs)												
CO1	Remember the characteristics of Contemporary literature											
CO2	Understand the modern theories and apply it on texts											
CO3	Apply the texts with the help of the theories											
CO4	Analyze the interpret literary texts and write essays											
CO5	Evaluate the works and identifying the difference between texts											
CO6	Create the literature and summarizing it											
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	PO2	PO3	PO4	PO5	PO6	PO7	PS O1	PSO2	PS O3	
2	CO1	H	L						H			
	CO2	H	L									
	CO3	H	L									
	CO4	H	L									
	CO5	H	L									
	CO6	H	L									
3	Category	Humanities & Social Studies (HS)	Basic Sciences (BS)	Engg Sciences (ES)	Professional Core (PC)	Core Elective (CE)	Non-Major	Open Elective (OE)	Any other		Project/Term Paper/ Seminar/ Internship (PR)	
						✓						
4	Approval	47 th Academic Council Meeting										

UNIT-I – LITERARY THEORY 12

New criticism - New historicism - Russian formalism - Archetypal criticism – Post-modernism – Post-colonialism

UNIT-II- LITERARY THEORY 12

Feminism, -Marxism – Structuralism- Post-structuralism - Psychoanalytic criticism

UNIT-III- PROSE 12

Ideology and Ideological state apparatuses- Louis Althusser - Author Biography – Theme – Summary – Critical analysis; **Anatomy of criticism- Northrop Frye** - Author Biography - Theme – Summary – Critical analysis

UNIT-IV- LITERARY CONCEPTS 12

Diaspora Theories – Structure - sign and Play- Jacques Derrida

UNIT-V- NOVEL 12

Black skin White masks- Frantz Fanon

TEXT BOOKS:

1. Frantz Fanon, “Black skin White masks”, Grove Press (US); 1967.
2. Nayar, “Contemporary Literary and Cultural Theory: From Structuralism to Ecocriticism”, Pearson Education, 2009

REFERENCE BOOKS:

1. Lawrence J Trudeau, “Contemporary Literary Criticism”,Gale Research Inc., 2015.
2. Peter Barry, “Beginning Theory: An Introduction to Literary and Cultural theory”; Viva Books Private Limited; 2018

Course Coordinator

HOD

MAJOR CORE

P18MCEN201	TWENTIETH CENTURY BRITISH LITERATURE							L	T	P	C
	Total Contact Hours – 60							4	0	0	4
	Prerequisite course – UG level English										
	Course Coordinator & Dept : Mrs.S.SUBATHRA & English										
COURSE OBJECTIVES : To sensitize students to changes in Twentieth Century, understand the techniques in Literature, comprehend and critically analyze the given literature											
COURSE OUTCOMES (COs)											
CO1	Remember to understand the techniques in Twentieth century Literature										
CO2	Understand to rethink the portrayal of twentieth century British society										
CO3	Apply the representation of twentieth century British history through literature										
CO4	Analyze the knowledge of modernism, appreciate the literature										
CO5	Evaluate to interpret texts at the back ground of British society										
CO6	Create to summarize 20 th century British literature texts										
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	PO2	PO3	PO4	PO5	PO6	PO7	PS O1	PSO2	PS O3
2	CO1	H	L						H		
	CO2	H	L								
	CO3	H	L								
	CO4	H	L								
	CO5	H	L								
	CO6	H	L								
3	Category	Humanities & Social Studies (HS)	Basic Sciences (BS)	Engg Sciences (ES)	Professional Core (PC)	Core Elective (CE)	Non-Major Elective (NME)	Open Elective (OE)	Any other		Project/Term Paper/ Seminar/ Internship (PR)
					✓						
4	Approval	47 th Academic Council Meeting									

UNIT – I POETRY **12**

T.S. Eliot – The Love Song of Alfred Prufrock - Author Biography -Theme –Poetic devices – Annotations - Summary – Critical analysis; **W.B.Yeats – The Second Coming** - Author Biography -Theme –Poetic devices – Annotations - Summary – Critical analysis

UNIT -II HISTORICAL POETRY **12**

Hopkins- The Wreck of the Deutchland - Author Biography -Theme –Poetic devices – Annotations - Summary – Critical analysis; **SeamusHeaney- The Tollungdman** - Author Biography -Theme –Poetic devices – Annotations - Summary – Critical analysis

UNIT-III ONE ACT PLAYS **12**

Beckett – Waiting for Godot - Author Biography - Plot – Theme - Character analysis – Summary – Critical analysis; **Osborne – Look Back in Anger** - Author Biography - Plot – Theme - Character analysis – Summary – Critical analysis

UNIT-IV ESSAYS **12**

Orwell- Politics in the English Language - Author Biography – Theme – Summary – Critical analysis

UNIT-VNOVELS **12**

D.H.Lawrence – Sons and lovers - Author Biography - Plot – Theme - Character analysis – Summary – Critical analysis; **Woolf - Mrs. Dalloway** - Author Biography - Plot – Theme - Character analysis – Summary – Critical analysis

TEXT BOOKS:

1. Beckett, “Waiting for Godot”,Paw Prints, 2008
2. Woolf, “MrsDalloway”, Bibliotech Press, 2018

REFERENCE BOOKS:

1. Osborne, “Look Back in Anger”,Unique Publishers, 4 edition, 2016
2. D.H.Lawrence, “Sons and lovers”,Maple Press, 1ST edition, 2010

AMERICAN LITERATURE

P18MCEN202		AMERICAN LITERATURE						L	T	P	C
		Total Contact Hours – 60						4	0	0	4
		Prerequisite course – UG level English									
		Course Coordinator : Mrs.D.THILAGAM & English									
COURSE OBJECTIVES : To make the students know American Literature, understand its characteristics, comprehend and critically analyze the given literature											
COURSE OUTCOMES (COs)											
CO1		Remember to know the influence of American society in literature									
CO2		Understand the development of American society –economically, socially, politically and religiously									
CO3		Apply the beauty of literature in various forms and genres									
CO4		Analyze the texts that reflects the socio-cultural interest of the period									
CO5		Critically evaluate the American literature									
CO6		Create the prescribed literary texts in the light of American 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	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PS O1	PSO2	PS O3
2	CO1	H	L						H		
	CO2	H	L								
	CO3	H	L								
	CO4	H	L								
	CO5	H	L								
	CO6	H	L								
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 (PRI)	
					✓						
4	Approval	47 th Academic Council Meeting									

UNIT - I DISCOVERY **12**

Walt Whitman – Passage to India - Author Biography -Theme –Poetic devices – Annotations - Summary – Critical analysis; **Emily Dickinson – Success is counted Sweetest** - Author Biography -Theme –Poetic devices – Annotations - Summary – Critical analysis

UNIT - II CHAOS **12**

Robert Frost – The Road not taken - Author Biography -Theme –Poetic devices – Annotations - Summary – Critical analysis; **Silviya Plath – The Daddy** - Author Biography -Theme –Poetic devices – Annotations - Summary – Critical analysis

UNIT- III SEARCHING FOR REALITY **12**

O’Neil – Long Day’s Journey into the Night - Author Biography - Plot – Theme - Character analysis – Summary – Critical analysis; **Marsha Narman – Night Mother** - Author Biography - Plot – Theme - Character analysis – Summary – Critical analysis

UNIT- IV ESSAY **12**

Emerson – Self-reliance - Author Biography - Theme – Summary – Critical analysis;
Thoreau – Walden (chapters 1 & 2) - Author Biography– Theme — Summary – Critical analysis

UNIT -V NOVEL **12**

Herman Melville – Moby Dick - Author Biography - Plot – Theme - Character analysis – Summary – Critical analysis; **John Steinbeck - Grapes of Wrath** - Author Biography - Plot – Theme - Character analysis – Summary – Critical analysis

TEXT BOOKS:

1. Emerson, “Self-reliance”,Createspace Independent Pub., 2009
2. Thoreau, “Walden”,Forgotten Books,2018
3. Herman Melville, “Moby Dick”, Fingerprint Publishing, 2015
4. John Steinbeck, “Grapes of Wrath”, Penguin Classics, 2006

REFERENCE BOOKS:

1. Walt Whitman, “Passage to India”, Createspace Independent Publishing Platform, 2019
2. Marsha Narman, “Night Mother”,Hill and Wang Publisher, 1983
3. O’Neil, “Long Day’s Journey into the Night”, Nick Hern Books, 1991
4. Emily Dickinson,“Success is counted Sweetest”, Gale, Study Guides, 2017

INDIAN WRITING IN ENGLISH AND COMMON WEALTH LITERATURE

P18MCEN203		INDIAN WRITING IN ENGLISH AND COMMON WEALTH LITERATURE							L	T	P	C
		Total Contact Hours – 60							4	0	0	4
		Prerequisite course – UG level English										
		Course Coordinator : Ms.A.ANNIE CHRISTY & English										
COURSE OBJECTIVES : To make the students know common wealth literature and understand its characteristics, comprehend and critically analyze the given literature												
COURSE OUTCOMES (COs)												
CO1		Remember the author explain Indian writing English &common wealth literature										
CO2		Understand the characteristics involved in texts										
CO3		Apply the consequence of Indian writing English and common wealth literature										
CO4		Analyze the importance of the texts.										
CO5		Evaluate the plot and team of literature in texts										
CO6		Create the summary of the texts .										
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	PO2	PO3	PO4	PO5	PO6	PO7	PS O1	PSO2	PS O3	
2	CO1	2	2	1	2	2	1	2	H			
	CO2	2	2	1	2	2	1	2				
	CO3	2	2	1	2	2	1	2				
	CO4	2	2	1	2	2	1	2				
	CO5	2	2	1	2	2	1	2				
	CO6	2	2	1	2	2	1	2				
3	Category	Humanities & Social Studies (HS)	Basic Sciences (BS)	Engg Sciences (ES)	Professional Core (PC)	Core Elective (CE)	Non-Major Elective (NIE)	Open Elective (OE)	Any other		Project/Term Paper/ Seminar/ Internship (PRI)	
					✓							
	4	Approval	47 th Academic Council Meeting									

UNIT - I NATIVE VS MODERN

12

Aurobindo – Thought the Paraclete - Author Biography -Theme –Poetic devices – Annotations - Summary – Critical analysis; **NissimEzekiel – Farewell to Miss Pushpa**
A.D.Hope – Australia - Author Biography -Theme –Poetic devices – Annotations - Summary – Critical analysis

UNIT - II DEATH AND DECAY

12

Tagore – Gitanjali - Author Biography -Theme –Poetic devices – Annotations - Summary – Critical analysis; **DereckWalott – Ruins of a Great House** - Author Biography -Theme –Poetic devices – Annotations - Summary – Critical analysis

UNIT - III ONE ACT PLAY

12

GirishKarnad – Nagamandala - Author Biography - Plot – Theme - Character analysis – Summary – Critical analysis; **Wole Soyinka – The Lion and the Jewel** - Author Biography - Plot – Theme - Character analysis – Summary – Critical analysis

UNIT-IV HERITAGE

12

Nehru- The Discovery of India (Chapter-4) - Author Biography - Theme - Character sketch – Summary – Critical analysis; **V,S.Naipual – India : A Wounded Civilization** - Author Biography - Theme - Character sketch – Summary – Critical analysis

Unit-V NOVEL

12

Salman Rushdie – Midnight’s Children - Author Biography - Plot – Theme - Character analysis – Summary – Critical analysis; **Chinua Achebe – Things Fall Apart** - Author Biography - Plot – Theme - Character analysis – Summary – Critical analysis

TEXT BOOKS:

1. Gitanjali by Tagore,RupaPublisher, 2002
2. Wole Soyinka, “The lion and the Jewel”,Oxford University Press, 2009
3. Chinua Achebe, “Things Fall Apart”,Penguin Books, 2001

REFERENCE BOOKS:

1. Nehru, “The Discovery of India”, Penguin India Publisher, 2008
2. KarnadGirish, “Three Plays: Naga-Mandala, Hayavadana, Tughlaq”, Oxford University Press, 1997
3. V,S.Naipual, “India:A Wounded Civilization”, Picador, 2010

LANGUAGE AND LINGUISTICS

P18MCEN204		LANGUAGE AND LINGUISTICS							L	T	P	C
		Total Contact Hours – 60							4	0	0	4
		Prerequisite course – UG level English										
		Course Coordinator & Dept : Mr.S.ANGEL & English										
COURSE OBJECTIVES : To enable students know the growth and development of language studies, the link with society, culture and literature, and attain confidence in speech, reading and writing , without any complex												
COURSE OUTCOMES (COs)												
CO1		Remember the nuances of English language										
CO2		Understand and integrate the acquired knowledge of the lexical, grammatical structure and the theories involved.										
CO3		Apply and analyze the theories and remember the concepts in speech sounds										
CO4		Analyze and evaluate various theories, concepts of language and linguistics										
CO5		Evaluate the approaches to linguistics and its branches										
CO6		Create the four basic skills of English 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	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PS O1	PSO2	PS O3	
2	CO1	H	L						H			
	CO2	H	L									
	CO3	H	L									
	CO4	H	L									
	CO5	H	L									
	CO6	H	L									
3	Category	Humanities & Social Studies (HSS)	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 (OPR)	
					✓							
4	Approval	47 th Academic Council Meeting										

UNIT-I INTRODUCTION **12**

The history of English Language - The descent of the English language, The old English period, The middle English period, The Renaissance and after

UNIT- II PHONETICS **12**

Phonology
Transcription, Accent, Rhythm, Assimilation and Intonation

UNIT – III STRUCTURES **12**

Morphology
Semantics, Discourse Analysis,

UNIT- IV LINGUISTICS **12**

Socio Linguistics

Language varieties, Society, and culture

UNIT-V COMMON PERSPECTIVE **12**

Language and Literature

TEXT BOOKS:

1. F.T.Wood,“An outline history of English Language”, Laxmi Publications, 2014
2. George Yule,“The Study of Language”, Fifth Edition, Cambridge University Press,2014

REFERENCE BOOKS:

1. Dr. R. L. Varshney,“An Introductory Text Book of Linguistics and Phonetics; Students Store , Bareilly, 1986
2. Adrian Akmajian& others, “Linguistics - An introduction to Language and Communication”, MIT Press, 2001

Course Coordinator

HOD

TRANSLATIONS

P18MCEN205		TRANSLATIONS							L	T	P	C
		Total Contact Hours – 60							4	0	0	4
		Prerequisite course – UG level English										
		Course Coordinator & Dept : Mr.S.ANGEL & English										
COURSE OBJECTIVES : To make the students learn the basics of translations, know the basic concepts followed by various writers while translating literature												
COURSE OUTCOMES (COs)												
CO1		Remember about various aspects and nuances of translation										
CO2		Understand the value of translated Literature										
CO3		Apply to confront the various theories of Translation										
CO4		Analyze an insight towards translation										
CO5		Evaluate the complex nature of Translation										
CO6		Create to translate the literary texts from English to mother tongue and vice versa										
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	PO2	PO3	PO4	PO5	PO6	PO7	PS O1	PSO2	PS O3	
2	CO1	H	L						H			
	CO2	H	L									
	CO3	H	L									
	CO4	H	L									
	CO5	H	L									
	CO6	H	L									
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 (PRI)	
					✓							
4	Approval	47 th Academic Council Meeting										

UNIT I: POEM **12**

Selections from Kabir (3 poems translated by A. K. Mehrotra) - Author Biography - Theme – Poetic devices – Annotations - Summary – Critical analysis of translation

UNIT II: SHORT STORIES **12**

BalachandraNemade: Cocoon - Author Biography - Plot – Theme - Character analysis – Summary – Critical analysis of translation, **IsmatChughtai: The Veil (A Chughtai Collection- Women Unlimited)** - Author Biography - Plot – Theme - Character analysis – Summary – Critical analysis of translation

UNIT III: NOVEL **12**

U. R Ananthamurthy: Samskara - Author Biography - Plot – Theme - Character analysis – Summary – Critical analysis of translation

UNIT IV: PLAY **12**

Vijay Tendulkar: GhasiramKotwal - Author Biography - Plot – Theme - Character analysis – Summary – Critical analysis of translation

UNIT –VSWADESHI MOVEMENT **12**

Tagore: Home and the World - Author Biography - Plot – Theme - Character analysis – Summary – Critical analysis of translation

TEXT BOOKS:

1. H.M. Williams, Indo-Anglican Literature, 1800-1970: A Survey (1976)
2. P.France, The Oxford Guide to Literature in English Translation (Oxford, 2000)
3. Vijay Tendulkar, “GhasiramKotwal”, Worldview Publications, 2015

REFERENCE BOOKS:

1. Kuhiwczak&Littau, “Companion to Translation Studies”, OrientBlackswan Pvt. Ltd., 2007
2. E Grossman, “Why Translation Matters”, OrientBlackswan Pvt. Ltd., 2010
3. Gargesh&Goswami, “Translation and Interpreting”, OrientBlackswan Pvt. Ltd., 2007

MAJOR ELECTIVE II

LITERARY ANALYSIS APPROACHES AND APPLICATIONS

P18MEEN021	LITERARY ANALYSIS APPROACHES& APPLICATIONS								L	T	P	C
	Total Contact Hours – 60								4	0	0	4
	Prerequisite course – UG level English											
	Course Coordinator :Mr.S.KUMARESAN & English											
COURSE OBJECTIVES : To orient students in the basics of literary interpretation, train them comprehend the given literature or audio – visual media, write reviews, user manuals, advertisements, creative writing etc.												
COURSE OUTCOMES (COs)												
CO1	Remember the basic interpretation of literary analyses											
CO2	Understand the nature of literary analysis approaches & applications											
CO3	Apply the content of audio –visual media and methodology											
CO4	Analyze the book review of literature											
CO5	Evaluate the technical writing of literature											
CO6	Create the summary of the texts											
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	PO2	PO3	PO4	PO5	PO6	PO7	PS O1	PSO2	PS O3	
2	CO1	H	L						H			
	CO2	H	L									
	CO3	H	L									
	CO4	H	L									
	CO5	H	L									
	CO6	H	L									
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	47 th Academic Council Meeting										

UNIT- I CRITICAL REVIEW 12

Practical criticism – Rhythm – Fiction – Prose;

Fiction – Heart of Darkness - by Conrad

Bleak house – by Charles Dickens

Prose – Extract from Arnold’s Culture, and Anarchy - Extracts from Swift’s The Battle of the Books

UNIT – II BOOK REVIEW 12

Book Review – A Book Review Written by Students on a book of his or her own choice

UNIT- III PREPARING PAMPLETS 12

User Manual – Mobile phone, Two – wheeler etc.

UNIT-IV ADVERTISING 12

Advertising - Academic programmes, Computer etc.

UNIT – V METHODOLOGY 12

Technical Writing – Basics

TEXT BOOKS:

1. Conrad, “Heart of Darkness”,Maple Press Publication, 2011
2. Arnold Mathew,“Culture, and Anarchy”, Oxford University Press, 2009
3. Charles Dickens, “Bleak House”,Penguin Publisher, 2011
4. SwiftJonathan, “The Battle of the Books”, Createspace Independent Pub., 2014

REFERENCE BOOKS:

1. I. A. Richard, “Practical Criticism:A Study of Literary Judgement”, Read Books Publisher, 2017
2. Basu, Technical Writing, Prentice Hall India Learning Private Limited, 2007

Course Coordinator

HOD

WORLD CLASSICS IN TRANSLATION

P18MEEN022	WORLD CLASSICS IN TRANSLATION							L	T	P	C
	Total Contact Hours – 60							4	0	0	4
	Prerequisite course – UG level English										
	Course Coordinator Dept : Ms.E.REKHA & English										
COURSE OBJECTIVES : To gives a comprehensive knowledge of the literary works produced all over the world in different languages made available in English through translation											
COURSE OUTCOMES (COs)											
CO1	Remember the facts of history through literature										
CO2	Understanding the aesthetic sense of diverse culture and society										
CO3	Apply to comprehend the didactic purpose of literature										
CO4	Analyze the techniques of translation in literature										
CO5	Evaluate the knowledge of conventional writing										
CO6	Create various literary texts from mother tongue to English and vice versa										
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	PO2	Po3	PO4	PO5	PO6	PO7	PS O1	PSO2	PS O3
2	CO1	H	L						H		
	CO2	H	L								
	CO3	H	L								
	CO4	H	L								
	CO5	H	L								
	CO6	H	L								
3	Category	Humanities & Social Studies	Basic Sciences (BS)	Engg Sciences (ES)	Professional Core (PC)	Core Elective (CE)	Non-Major Elective (NIE)	Open Elective (OE)	Any other		Project/Term Paper/ Seminar/ Internship (PR)
						✓					
4	Approval	47 th Academic Council Meeting									

UNIT-I **12**

Oedipus Rex– Sophocles - Author Biography -Theme –Poetic devices – Annotations - Summary – Critical analysis of translation; **The Illiad– Homer** - Author Biography -Theme –Poetic devices – Annotations - Summary – Critical analysis of translation

UNIT-II **12**

Odyssey(Book 1-4) – Homer - Author Biography -Theme –Poetic devices – Annotations - Summary – Critical analysis of translation; **Shakuntalam–Kalidasa** - Author Biography -Theme – Poetic devices – Annotations - Summary – Critical analysis of translation

UNIT-III **12**

Thirukkural (translated version of Rajaji selection) - Author Biography -Theme –Poetic devices – Annotations - Summary – Critical analysis of translation

UNIT-IV **12**

Crime and Punishment – Fyodor Dostoevsky - Author Biography - Plot – Theme - Character analysis – Summary – Critical analysis of translation; **Don Quixote –Miguel De Cervantes** - Author Biography - Plot – Theme - Character analysis – Summary – Critical analysis of translation

UNIT-V **12**

Republic (Book-IX) – Plato - Author Biography - Plot – Theme - Character analysis – Summary – Critical analysis of translation; **Agamemnon – Aeschylus** - Author Biography - Plot – Theme - Character analysis – Summary – Critical analysis of translation

TEXT BOOKS:

1. Crime and Punishment – Fyodor Dostoevsky, translated by Richard Pevear, OM Books Publisher, 2015.
2. HarmetRagunathan, Ed., Classics In Translation: Volume:1, Greek Literature, Wisconsin UP, 1959
3. Miguel De Cervantes,“Don Quixote “, Maple Press; First edition, 2013

REFERENCE BOOKS:

1. The Odyssey –Homer, translated by Robert Fagles, Penguin Publisher, 2003
2. Classics in Translation (Vol 16); John Hopkins, University Press; 196

HISTORY THROUGH LITERATURE

P18MEEN023		HISTORY THROUGH LITERATURE							L	T	P	C
		Total Contact Hours – 60							4	0	0	4
		Prerequisite course – UG level English										
		Course Coordinator Dept : Ms.A.ANNIE CHRISTY & English										
COURSE OBJECTIVES: To imparts students with the efficient knowledge of important events in through literature.												
COURSE OUTCOMES (COs)												
CO1		Remember to understand the timeless significance of the texts										
CO2		Understand the scope of history in literature										
CO3		Apply to analyze the literary texts according to the ages										
CO4		Analyze the impacts of history in literature										
CO5		Evaluate the literature through facts										
CO6		Critically create the importance of history through literature										
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	PO2	PO3	PO4	PO5	PO 6	PO7	PS O1	PSO2	PS O3	
2	CO1	H	L						H			
	CO2	H	L									
	CO3	H	L									
	CO4	H	L									
	CO5	H	L									
	CO6	H	L									
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 (PPI)	
						✓						
4	Approval	47 th Academic Council Meeting										

UNIT –I **12**

Charles Dickens – Great Expectations - Author Biography - Plot – Theme - Character analysis – Summary – Critical analysis; **Thomas Hardy -The Return of the Native** - Author Biography - Plot – Theme - Character analysis – Summary – Critical analysis

UNIT-II **12**

Mathew Arnold- Dover Beach - Author Biography -Theme –Poetic devices – Annotations - Summary – Critical analysis; **William Blake-Lamb and Tyger** - Author Biography -Theme –Poetic devices – Annotations - Summary – Critical analysis

UNIT-III **12**

Andrew Marvel–The Definition of Love - Author Biography -Theme –Poetic devices – Annotations - Summary – Critical analysis; **Andrew Marvel-To His Coy Mistress** - Author Biography -Theme –Poetic devices – Annotations - Summary – Critical analysis

UNIT-IV **12**

George Eliot-Mill on the Floss - Author Biography - Plot – Theme - Character analysis – Summary – Critical analysis; **William Golding-Lord of the flies** - Author Biography - Plot – Theme - Character analysis – Summary – Critical analysis

UNIT-V **12**

William Wordsworth-Tintern Abbey - Author Biography -Theme –Poetic devices – Annotations - Summary – Critical analysis; **Robert Browning- Andrea del Sarto** - Author Biography -Theme – Poetic devices – Annotations - Summary – Critical analysis

TEXT BOOKS:

1. Charles Dickens, “Great Expectations”, Amazing Reads, 2010
2. George Eliot, “Mill on the Floss”, Finger Print Publisher, 2016
3. William Golding, “Lord of the flies”, Atlantic Publisher, 2016

REFERENCE BOOKS:

1. Roland Carter and John Mcray, “The Routledge History of Literature in English”, Taylor and Francis; 2016
2. Ian Mackean, “The Essentials of Literature in English”Holder Education, 2005

Course Coordinator

HOD

COPY EDITING

P18MCEN301	COPY EDITING							L	T	P	C
	Total Contact Hours – 60							4	0	0	4
	Prerequisite course – UG level English										
	Course Coordinator & Dept : Mrs.S.SUBATHRA & English										
COURSE OBJECTIVES : To make the students learn the significance of copy editing, understand the various techniques to apply the techniques in proof checking their project											
COURSE OUTCOMES (COs)											
CO1	Remember the various methods of copy editing										
CO2	Understand their skill in copy editing techniques										
CO3	Apply the significance of copy editing & the legal aspects involved										
CO4	Analyze the various symbols used for copy editing										
CO5	Evaluate the text and edit it accordingly										
CO6	Create the knowledge of copy editing to comprehend any form of literature										
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	PO2	PO3	PO4	PO5	PO6	PO7	PS O1	PSO2	PS O3
2	CO1	H	L						H		
	CO2	H	L								
	CO3	H	L								
	CO4	H	L								
	CO5	H	L								
	CO6	H	L								
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	47 th Academic Council Meeting									

UNIT – I INTRODUCTION **12**

1. What is copy editing?
2. Hard copy
3. Author generated camera ready copy
4. Copy editing on screen.

UNIT – II TECHNIQUES **12**

Preliminary copy editing
Briefing the designer

UNIT –III PATTERN **12**

Preparing Text for typesetter
Various legal aspects
Numbering system

UNIT – IV EDITING **12**

Proof correction – Symbols used to show correction

TEXT BOOK:

1. William Strunk, “The Elements of Style”, Rockland Press, 2017
2. Butcher, “Copy Editing”, South Asia Edition, Cambridge University Press, 2006

REFERENCE BOOKS:

1. Suzanne Gilad, “Copy Editing and Proof Reading for Dummies”, John Wiley & Son Publisher, 2007

Course Coordinator

HOD

SHAKESPEARE

P18MCEN302		SHAKESPEARE							L	T	P	C
		Total Contact Hours – 60							4	0	0	4
		Prerequisite course – UG level English										
		Course Coordinator & Dept : Dr.P.AROCKIA NATHAN & English										
COURSE OBJECTIVES : To make the students understand the greatness of Shakespeare as a master craftsman in the genre, appreciate the original and creative use of language and read, enjoy and appreciate the poetry and his plays												
COURSE OUTCOMES (COs)												
CO1		Remember the beauty of Shakespeare’s language and his contribution .										
CO2		Understand psychological insights through characters										
CO3		Apply the literature and experience enhancement in critical reading										
CO4		Analyze the connotative and contextual meaning										
CO5		Evaluate literature and critically analyze it										
CO6		Create to trace the transformation of contextual meanings through history.										
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	PO2	PO3	PO4	PO5	PO6	PO7	PS O1	PSO2	PS O3	
2	CO1	H	L						H			
	CO2	H	L									
	CO3	H	L									
	CO4	H	L									
	CO5	H	L									
	CO6	H	L									
3	Category	Humanities & Social Studies	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	47 th Academic Council Meeting										

UNIT – I TRAGEDY

12

Macbeth -Author Biography - Plot – Theme - Character analysis – Summary – Critical analysis

UNIT – II COMEDY

12

As you like it - Author Biography - Plot – Theme - Character analysis – Summary – Critical analysis

UNIT - III HISTORICAL

12

Richard – II - Author Biography - Plot – Theme - Character analysis – Summary – Critical analysis

UNIT – IV SONNET

12

Sonnet 30, 60, 130- Author Biography -Theme –Poetic devices – Annotations - Summary – Critical analysis

UNIT – V THEATRE

12

Elizabethan Theatre - The Elizabethan Theatre in London including the Globe Theatre - The plays - the drama - the people - the actors - the events and the history; **Shakespeare's style** - a stage wasn't just one type of space - an indoor theater - a royal palace - or, for a company on tour, the courtyard of an inn - men and boys played all the characters, male and female – music - luxurious costumes of the leading characters

TEXT BOOKS:

Shakespeare, “Macbeth”,Atlantic Publisher, 2019

Shakespeare, “As you like it”,Unique Publisher, 2014

Shakespeare, “Richard – II”,Unique Publisher, 2018

REFERENCE BOOKS:

1. Shakespeare – The Complete Work; Wilco Publishing House, Mumbai, India. 2011
2. Brown, John Russell, “Shakespeare and His Comedies”,Routledge Pub., 2004.

Course Coordinator

HOD

ENGLISH LANGUAGE TEACHING AND COMPUTER AIDED LANGUAGE LEARNING

P18MCEN303	ENGLISH LANGUAGE TEACHING AND COMPUTER AIDED LANGUAGE LEARNING							L	T	P	C
	Total Contact Hours – 60							4	0	0	4
	Prerequisite course – UG level English										
	Course Coordinator & Dept : Mrs.D.THILAGAM & English										
COURSE OBJECTIVES : To make the students know Major language trends in twentieth century Language Teaching, using Software, and CALL											
COURSE OUTCOMES (COs)											
CO1	Remember major language trends in twentieth century Language Teaching										
CO2	Understand the techniques in teaching language skills to ESL learners										
CO3	Apply the various methods of teaching English										
CO4	Analyze the significance of using computer technology in teaching English										
CO5	Evaluate the use smart class, internet and online teaching techniques										
CO6	Create the technology efficiently in teaching the LSRW skills in English										
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	PO2	PO3	PO4	PO5	PO6	PO7	PS O1	PSO2	PS O3
2	CO1	H	L						H		
	CO2	H	L								
	CO3	H	L								
	CO4	H	L								
	CO5	H	L								
	CO6	H	L								
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 (PPI)
									✓		
4	Approval	47 th Academic Council Meeting									

UNIT – I TRENDS **12**

Major language trends in twentieth century Language Teaching

1. Brief History of Language Teaching – Introduction - Approaches – Language – history
2. Nature and approaches in Language Teaching – Introduction – Nature- Approaches

UNIT – II LANGUAGE TEACHING **12**

Competency based language teaching – Methods – Format – Basic – Language – Aptitude
Task based language teaching – Trial and Errors – Learning Language – Method of Learning

UNIT – III SKILL SETS **12**

Teaching, Listening, Speaking, Reading and Writing. – Communication skills – skill based learning
Teaching English in multilingual societies–Using multilingual language – usage of society – importance

UNIT – IV CALL **12**

Computer Aided Language Learning and Communication – smart language learning – types of computer – significance
Using Internet, Smart Classroom, Online teaching –Introduction – types of smart class room – online teaching method
Developing Blog - developing the web page – online searching

UNIT – V HANDS ON LEARNING **12**

Practical – learn to practice -
Voice and accent training using Software – Non voice and voice process – tone – intonation
L S R W skills – communication skills – types of communication

TEXT BOOKS:

1. Jack C. Richards and Theodore, “Approaches and methods in language teaching”,Cambridge English Pub., 2016
2. Albert A. Baugh & Thomas Cable, “A history of English Language Teaching, Sixth Edition, BSC Pub., 2013

REFERENCE BOOKS:

1. A.P.R.Howett and Widdowson, Developments in English for Specific Norms: A Multi-disciplinary approach, Cambridge England, Dudley Evans T. and St. John. Cambridge University Press, 2000

Course Coordinator

HOD

LITERARY THEORY AND CRITICISM

P18MCEN304		LITERARY THEORY AND CRITICISM							L	T	P	C
		Total Contact Hours – 60							4	0	0	4
		Prerequisite course – UG level English										
		Course Coordinator & Dept : Ms.A.ANNIE CHRISTY & English										
COURSE OBJECTIVES : To introduce students to literary theories and criticism, understand the significance of literary criticism and the works of significant Critics .												
COURSE OUTCOMES (COs)												
CO1	Remember the various concepts and approaches to literary criticism											
CO2	Understand the works of the critics and their Criticism											
CO3	Apply the significance of literary theories											
CO4	Analyze the ability of literary criticism in literary contexts											
CO5	Evaluate an insight for critical analysis											
CO6	Create an assess the work of art acquired Mastery in criticism											
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	PO2	PO3	PO4	PO5	PO6	PO7	PS O1	PSO2	PS O3	
2	CO1	H	L						H			
	CO2	H	L									
	CO3	H	L									
	CO4	H	L									
	CO5	H	L									
	CO6	H	L									
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 (PRI)	
					✓							
4	Approval	47 th Academic Council Meeting										

UNIT –I INTRODUCTION

12

Introduction to classical criticism- Plato, Aristotle, Horace, Longinus and Sanskrit, Rasa, Dhvani, Literary genre, names of and features of poetics, theme and techniques of plot construction

UNIT – II CRITICISMS

12

Johnson –Preface to Shakespeare –Appreciates and brings out the significance of Shakespeare’s literature

William Wordsworth – Preface to Lyrical ballads – It brings out the significance of background, poetic devices and the metric elements used

UNIT – III TOUCHSTONE METHOD

12

Arnold – Study of poetry - Arnold’s classic poets include Milton, Shakespeare, Dante, and Homer - shows how their poetry is timeless and moving - feeling and sincerity are paramount - seriousness of subject

T.S.Eliot – Tradition and Individual Talent - redefines “tradition” by emphasizing the importance of history to writing and understanding poetry - argues that poetry should be essentially “impersonal”

UNIT-IV ARCHETYPAL

12

Cleanth Brooks- The Language of Paradox – Connotation – Denotation – Poetic language

Northrop Frye – Archetypes of literature - Analyzing a text in concern to the myths and archetypes – in the form of description, symbols, images, allusions, references, characteristic traits

UNIT – V MODERNISM

12

George Lucas – Ideology of Modernism - opposed the traditional culture in criticism - tyrannically centered on the author, his person, his life - abolished the classical literary criticism

Roland Barthes – Death of the author- landmark for 20-th century literature - literary theory, post-structuralism, and postmodernism - opposes the established trends “in ordinary culture - tyrannically centered on the author, his person, his life - abolish the classical literary criticism

TEXT BOOKS:

1. Classical Literary Criticism, Penguin Classics
2. Roland Barthes, “Death of the author”, Macat Library, 2018

REFERENCE BOOKS:

1. Arnold, “The Study of Poetry A Critique”, Motilal Banarsidass Publishers
2. Eliot, “Objective Correlative: Tradition or Individual Talent?”, Sussex Academic Press, 2012

LITERATURE AND COGNITIVE SCIENCES

P18MCEN305		LITERATURE AND COGNITIVE SCIENCES							L	T	P	C
		Total Contact Hours – 60							4	0	0	4
		Prerequisite course – UG level English										
		Course Coordinator & Dept. :Mrs.B.CAROLINE & English										
COURSE OBJECTIVES: To know the Story and Science of reading Brain, cognition in dreams, understand emotional intelligence, various kinds of art including literature, and learn to express peak experiences												
COURSE OUTCOMES (COs)												
CO1	Remember the story and science of reading brain											
CO2	Understand the states of consciousness and cognition in dreams											
CO3	Apply the Neural basis of human moral cognition											
CO4	Analyze the relation between Emotion intelligence and Moral cognition											
CO5	Evaluate literature & cognitive science											
CO6	Critically analyzes the brain, its functions in literature and cognition											
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	PO2	PO3	PO4	PO5	PO6	PO7	PS O1	PSO2	PS O3	
2	CO1	H	L						H			
	CO2	H	L									
	CO3	H	L									
	CO4	H	L									
	CO5	H	L									
	CO6	H	L									
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 (PRI)	
					✓							
4	Approval	47 th Academic Council Meeting										

UNIT – I READING AND MEMORY **12**

Reading and memory

1. Story & Science of reading Brain – Maryanne Wolf, Harper Collins publishers.
2. The sense of an ending – Julia Barnes.

UNIT -II AFFECT AND COGNITION IN DREAMS **12**

Affect and Cognition in Dreams

1. States of consciousness: Dreams, literature and the Neurochemistry of the brain – Isabel
2. Kublakan – S T Coleridge

UNIT – III EMOTION INTELLIGENCE AND MORAL COGNITION **12**

Emotion Intelligence and Moral Cognition

1. The Brain and emotional Intelligence, New Insights – Daniel Goleman
2. The Neural basis of human moral cognition – George Moll, Roland Zahn, Richardo de Olivera – Souza, Frank Krueger and Craftsman

UNIT – IV EMERGENCE OF CULTURE **12**

1. What is an art? – Ellen Dissanayake, Washington Press.
2. Cracking India : Bapsi Sidwa

UNIT – V EPIPHANIES AND CHARACTERISTICS **12**

1. Peak expressions- Abraham Maslow – Penguin
2. Excerpts from Wings of Fire related to concept of flow.

TEXT BOOKS:

1. S T Coleridge, “Kubla Khan”, Two Rivers Press; New edition, 2004
2. Maryanne Wolf, ‘Proust and the Squid - Story & Science of reading Brain’ Icon Publishers, 2008

REFERENCE BOOKS:

1. Daniel Goleman, “The Brain and Emotional Intelligence – New Insights”, Morethan sound Publishers, 2011
2. Jerry R. Hobbes, “Literature and Cognition”, CSLI Publications, 1990
3. Cognitive Science and Literature – Peter Queen’s University Press, Swirski, Mc Gill

Course Coordinator

HOD

PUBLIC SPEAKING AND JOURNALISM

P18MEEN031		PUBLIC SPEAKING AND JOURNALISM							L	T	P	C
		Total Contact Hours – 60							4	0	0	4
		Prerequisite course – UG level English										
		Course Coordinator & Dept : Mr.S.KUMARESAN & English										
COURSE OBJECTIVES: To make the students learn the art of public speaking, develop confidence by understanding the necessary elements, to speak fluently and write creatively												
COURSE OUTCOMES (COs)												
CO1		Remember the basic modes of communication										
CO2		Understand their fluency and confidence for public speaking										
CO3		Apply how to write reviews of books, movies etc.										
CO4		Analyze the value of creative writing techniques										
CO5		Evaluate the features of creative writing										
CO6		Speak and write creatively, effectively and efficiently.										
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	PO2	PO3	PO4	PO5	PO6	PO7	PS O1	PSO2	PS O3	
2	CO1	H	L						H			
	CO2	H	L									
	CO3	H	L									
	CO4	H	L									
	CO5	H	L									
	CO6	H	L									
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 (PRI)		
						✓						
4	Approval	47 th Academic Council Meeting										

UNIT – I INTRODUCTION

12

Introduction to public speaking
Audience, Context, Speech planning.

UNIT - II DEVELOPING CONFIDENCE

12

Developing confidence through speech - Understanding public speaking - Confidence through effective public speaking

1. Select appropriate speech goal.
2. Understanding audience
3. Gather and evaluate information
4. Choose correct wording

UNIT –III FEATURES

12

Characteristics – Creativity - Emphasis; Methods of informing, Description, Definition and narration –Ruddolff Verderber and Kathreen S. Verderber

UNIT – IV REVIEW

12

Practice - Sports column review, Film review

UNIT – V WRITING

12

Short Story, Creative writing

Major Aspects:

1. Rational
2. Psychological
3. Sociological

TEXT BOOK:

1. Dale Carnegie, “The Art of Public Speaking”, Prabhat Prakashan Publisher, 2017
2. Stephen King, “On Writing: A Memoir of the Craft”, Hodder Paperbacks, 2012

REFERENCE BOOKS:

1. Carmine Gallo, “Talk Like Ted: The 9 Public Speaking Secrets of the World’s Top Minds”, St. Martin's Press, 2014
2. Chris Anderson, “TED Talks: The Official TED Guide to Public Speaking”, Nicholas Brealey Publishing, 2018.

Course Coordinator

HOD

MYTH AND MYTHOLOGY

P18MEEN032	MYTH AND MYTHOLOGY							L	T	P	C
	Total Contact Hours – 60							4	0	0	4
	Prerequisite course – UG level English										
	Course Coordinator & Dept : Mr.S.KUMARESAN - English										
COURSE OBJECTIVES : This paper aims at enabling students to explore the world of myth and their origin through a study of literary texts of different cultures and countries.											
COURSE OUTCOMES (COs)											
CO1	Remember the role of myth in history, and in culture consciousness										
CO2	Understand the influence of world classics myth in literature										
CO3	Apply an understanding and appreciation of myth in world literature										
CO4	Analyze the early heroes and Gods in mythology										
CO5	Evaluate a cross-cultural perspective on myths, mythologies and folklore										
CO6	critically create the different theories of the cultural meanings and functions of myth										
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	PO2	PO3	PO4	PO5	PO6	PO7	PS O1	PSO2	PS O3
2	CO1	H	L						H		
	CO2	HH	L								
	CO3	H	L								
	CO4	H	L								
	CO5	H	L								
	CO6	H	L								
3	Category	Humanities & Social Studies (HS)	Basic Sciences (BS)	Engg Sciences (ES)	Professional Core (PC)	Core Elective	Non-Major Elective (NE)	Open Elective (OE)	Any other		Project/Term Paper/ Seminar/ Internship (PP)
						✓					
4	Approval	47 th Academic Council Meeting									

UNIT – I INTRODUCTION TO MYTHOLOGY

12

Beginnings of Myth – Retelling \Restating of Myths – political dimensions of myth – Myth and Rituals – Myth, legends and folktale.

Unit – II GREEK MYTHOLOGY

12

The Greek pantheon (The twelve Greek gods)– Theogony - Illiad Book 1-3 - The Odyssey Book 1-4

Unit- III EUROPEAN MYTHOLOGY

12

Greek antecedents of Roman Mythology - Celtic Mythology - (Prescribed text – The wanderings of Oisín- W.B. Yeats)

Unit – IV CLASSIC RELIGIOUS MYTHOLOGY

12

Introduction to Hindu Scriptures – The Ramayana – The Mahabharata

Unit – V MYTH IN LITERATURE

12

Adonais – Shelley- Author Biography -Theme –Poetic devices – Annotations - Summary – Critical analysis; **Leda and swan – W.B. Yeats** - Author Biography -Theme –Poetic devices – Annotations - Summary – Critical analysis; **Billy Budd – Melville** - Author Biography -Theme –Poetic devices – Annotations - Summary – Critical analysis

TEXT BOOKS:

1. Joseph Campbell, “The Power of Myths”, RHUS Publisher, 1991
2. Joseph Campbell, “The hero with a Thousand Faces”, New World Library Publisher, 1959

REFERENCE BOOKS:

1. Claude Lévi-Strauss, “Myth and Meaning: Cracking the code of culture”, Schocken Publisher; 1995
2. Richard Howard (translation), “Mythologies: The complete Edition”, Roland Barthes, Hill and Wang publisher, 2013.

Course Coordinator

HOD

POST-MODERN LITERATURE

P18MEEN033	POST-MODERN LITERATURE							L	T	P	C
	Total Contact Hours – 60							4	0	0	4
	Prerequisite course – UG level English										
	Course Coordinator & Dept : Mrs.M.SHEEBA - English										
COURSE OBJECTIVES : To develop knowledge and understanding of key concepts and theories of postmodernism and to introduce to a range of postmodern literary forms											
COURSE OUTCOMES (COs)											
CO1	Remember the knowledge and understanding of a range of postmodern fictional texts										
CO2	Understand the concepts and theories of postmodernism										
CO3	Apply the appropriate scholarly discourse										
CO4	Analyze their ability to analyze meanings and formal qualities of individual texts										
CO5	Evaluate the texts with the critical contexts of postmodern techniques										
CO6	Create the fictions based on the historical context of postmodernisms										
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	Po2	PO3	PO4	PO5	PO6	PO7	PS O1	PSO2	PS O3
2	CO1	H	L						H		
	CO2	H	L								
	CO3	H	L								
	CO4	H	L								
	CO5	H	L								
	CO6	H	L								
3	Category	Humanities & Social Studies (HSS)	Basic Sciences (BS)	Engg Sciences (ES)	Professional Core (PC)	Core Elective	Non-Major Elective (NE)	Open Elective (OE)	Any other	Project/Term Paper/ Seminar/ Internship (PP)	
4	Approval	47 th Academic Council Meeting									

UNIT-I – INTRODUCTION

12

What is Post Modernism? Key concepts - Inter-textuality, hyper-reality, pastiche, parody, paradox, fragmentation, self -reflexivity, grand narrative, meta-narrative, meta-fiction, absurdity, Black Humour.

UNIT – II- POETRY

12

Having a coke with- Frank O’ Hara - Author Biography -Theme –Poetic devices – Annotations - Summary – Critical analysis; **The Fish by Elizabeth Bishop** - Author Biography -Theme–Poetic devices – Annotations - Summary – Critical analysis

UNIT-III- PROSE

12

The Postmodern condition- Francois Lyotard - Author Biography - Theme – Summary – Critical analysis; **Essay on Postmodernism- JurgenHabermas** - Author Biography - Plot – Theme – Summary – Critical analysis

UNIT - IV - DRAMA

12

Waiting for Godot- Samuel Beckett - Plot – Theme - Character analysis – Summary – Critical analysis; **Vladimir Nobokov** – Lolita, **Joseph Heller** – Catch 22.

UNIT-V- NOVEL

12

The Unbearable lightness of being- Milan Kundera - Plot – Theme - Character analysis – Summary – Critical analysis, **One Hundred Years of Solitude** – Gabriel Garcia Marquez.

TEXT BOOKS:

1. Terry Eagleton, “Illusions of Postmodernisms”, Blackwell Pub.,1989
2. Milan Kundera, “Unbearable Lightness of Being”, Bright Summaries.com, 2018

REFERENCE BOOKS:

1. Francis Barker, “Postmodernisms and the Rereading of Modernity”, Manchester UP: 1992.
2. Hans Bertens, “The Idea of the Postmodern: A History” Routledge,1995

Course Coordinator

HOD

SEMESTER IV

MAJOR CORE

SOFT SKILLS THROUGH LITERATURE

P18MCEN401	SOFT SKILLS THROUGH LITERATURE								L	T	P	C
	Total Contact Hours – 60								4	0	0	4
	Prerequisite course – UG level English											
	Course Coordinator & Dept : Mrs.B.JANUA SHERLY - English											
COURSE OBJECTIVES : To train students in studying various types of characters, identify their personality traits by comparing with the characters, their social acceptability, and realize to improve their personality												
COURSE OUTCOMES (COs)												
CO1		Remember what are soft skills through literature										
CO2		Understand various characters and compare own characteristics with them										
CO3		Apply the author how characters play a vital role through soft skills in literature.										
CO4		Analyze and get inspired by the positive personalities										
CO5		Evaluate the significance of soft skills in career and life										
CO6		Critically create the characters and acquire the positive traits										
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	PO2	PO3	PO4	PO5	PO6	PO7	PS O1	PSO2	PS O3	
2	CO1	H	L						H			
	CO2	H	L									
	CO3	H	L									
	CO4	H	L									
	CO5	H	L									
	CO6	H	L									
3	Category	Humanities & Social Studies (HS)	Basic Sciences (BS)	Engg Sciences	Professional Core (PC)	Core Elective (CE)	Non-Major Elective (NE)	Open Elective (OE)	Any other		Project/Term Paper/ Seminar/ Internship (PP)	
					✓							
4	Approval	47 th Academic Council Meeting										

UNIT – I EVIDENCES	12
Responsibility – Sydney Carton in A tale of two cities	
UNIT -II SELF ESTEEM	12
Self Esteem – Shakespeare – Coriolanus	
UNIT – III SOCIABILITY	12
Sociability – Shakespeare – As you like it	
UNIT – IV SELF MANAGEMENT	12
Self-Management- Shakespeare – Hamlet	
UNIT – V INTEGRITY	12
Shakespeare - Antony and Cleopatra	

TEXT BOOK:

1. As you like it by Shakespeare, Fingerprint Publishing, 2018
2. Hamlet it by Shakespeare, Fingerprint! Publishing, 2015
3. Antony and Cleopatra by Shakespeare, Oxford University Press, 2013

REFERENCE BOOKS:

1. Karl Perera, “Self Esteem”, Motivational Press,Inc., 2013
2. How to Stop Worrying and Start Living by Dale Carnegie,Amazing Reads, 2018

Course Coordinator

HOD

RESEARCH METHODOLOGY

P18MCEN402		RESEARCH METHODOLOGY							L	T	P	C
		Total Contact Hours – 60							4	0	0	4
		Prerequisite course – UG level English										
		Course Coordinator & Dept Mrs.S.SUBATHRA - English										
COURSE OBJECTIVES:To enable the students to do research by learning the basics of research methodology.												
COURSE OUTCOMES (COs)												
CO1		Remember the knowledge of theory of Research and its type										
CO2		Understand the methodology to be followed in Research										
CO3		Apply the areas of Research in English Literature and ELT										
CO4		Analyze the ability to collect data from various sources										
CO5		Evaluate the complexities in the process of Research										
CO6		Create compile all the collected data and frame a thesis										
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	PO2	Po3	PO4	PO5	PO6	PO7	PS O1	PSO2	PS O3	
2	CO1	H	L						H			
	CO2	H	L									
	CO3	H	L									
	CO4	H	L									
	CO5	H	L									
	CO6	H	L									
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 (PPI)	
					✓							
4	Approval	47 th Academic Council Meeting										

UNIT – I	
INTRODUCTION	12
Research and writing	
UNIT – II	
CLARITY	12
Plagiarism and Academic integrity	
UNIT – III	
MECHANISM	12
The mechanics of writing	
UNIT IV	
FORMAT	12
The format of research paper	
UNIT – V	
DRAFTING	12
Documentation	
Preparing the list of works	
Citing sources in the texts	

TEXT BOOK:

1. Modern Language Association of America, “MLA Handbook for Writers of Research Papers”, Affiliated East-West Press; 7 th FOR SALE IN INDIA edition, 2008

REFERENCE BOOKS:

1. English for Writing Research Papers by Adrian Wallwork, Springer Publisher, 2nd ed. 2016

Course Coordinator

HOD

MAJOR ELECTIVE –IV

POST COLONIAL THEORY AND LITERATURE

P18MEEN041	POST-COLONIAL THEORY AND LITERATURE								L	T	P	C
	Total Contact Hours – 60								4	0	0	4
	Prerequisite course – UG level English											
	Course Coordinator & Dept : Mrs.M.SHEEBA - English											
COURSE OBJECTIVES : To Familiarize students with the knowledge of Colonization and its impact on people and society and their culture.												
COURSE OUTCOMES (COs)												
CO1	Remember the causes and effects of colonization											
CO2	Understand the critical reading and thinking											
CO3	Apply the impact of colonization through literature											
CO4	Analyze the nature of marginalization and hybridization											
CO5	Evaluate the need to pursue English language											
CO6	Create the scope of Post-colonialism											
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	PO2	Po3	Po4	Po5	PO6	PO7	PS O1	PSO2	PS O3	
2	CO1	H	L						H			
	CO2	H	L									
	CO3	H	L									
	CO4	H	L									
	CO5	H	L									
	CO6	H	L									
3	Category	Humanities & Social Studies	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 (PP)	
						✓						
4	Approval	47 th Academic Council Meeting										

UNIT –I DEFINITIONS, KEY TERMS 12

Colonialism - Post – colonialism -Decolonization - Alienation

Hybridity - Imperialism -Orientalism -Hegemony

Diaspora -Marginalization -Mimicry-Identity Crisis -Ethnicity

Multi-Culturalism-Ideology –Nationalism-Trauma

UNIT –II POETRY 12

Africa – David Diop- Author Biography -Theme –Poetic devices – Annotations - Summary – Critical analysis; **A Farcry from Africa – Derek Walcott** - Author Biography -Theme –Poetic devices – Annotations - Summary – Critical analysis; **Australia - A.D. Hope** - Author Biography - Theme –Poetic devices – Annotations - Summary – Critical analysis

UNIT – III ESSAY /PROSE 12

Orientalism and culture Imperialism – Edward Said - Author Biography - Plot – Theme - Character sketch – Summary – Critical analysis; **The empire writes Back Theory – Bill Ashcroft** - Author Biography - Plot – Theme - Character sketch – Summary – Critical analysis

UNIT – IV DRAMA 12

A Tempest – AimeCeaser - Author Biography - Plot – Theme - Character analysis – Summary – Critical analysis; **Things Fall Apart – Chinua Achebe** - Author Biography - Plot – Theme - Character analysis – Summary – Critical analysis

UNIT – V FICTION 12

The wretched of the earth – Frantz Fanon - Author Biography - Plot – Theme - Character analysis – Summary – Critical analysis; **The inheritance of loss - Kiran Desai** - Author Biography - Plot – Theme - Character analysis – Summary – Critical analysis

TEXT BOOKS:

1. Frantz Fanon, “The wretched of the earth” ,Penguin UK;2001
2. The inheritance of loss - Kiran Desai: Penguin;2014

REFERENCE BOOKS:

1. Vivek Chibber, “Postcolonial Theory and the Specter of Capital”, Verso, 1st Edition, 2013
2. Bill Ashcroft-The post-colonial studies reader: Routledge, 20

Course Coordinator

HOD

INDIAN LITERATURE IN TRANSLATION

P18MEEN042	INDIAN LITERATURE IN TRANSLATION							L	T	P	C
	Total Contact Hours – 60							4	0	0	4
	Prerequisite course – UG level English										
	Course Coordinator & Dept : Mrs.B.JANUA SHERLY & English										
COURSE OBJECTIVES : To enable the students to learn the culture and aesthetic of Indian society											
COURSE OUTCOMES (COs)											
CO1	Remember the knowledge about diverse culture										
CO2	Understanding the existence of different society through literature										
CO3	Apply to comprehend the didactic purpose										
CO4	Analyze the forms and styles of Indian authors										
CO5	Evaluate an insight of Indian history through literature										
CO6	Create the critical reading and thinking										
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	PO2	PO3	PO4	PO5	PO6	PO7	PS O1	PSO2	PS O3
2	CO1	H	L						H		
	CO2	H	L								
	CO3	H	L								
	CO4	H	L								
	CO5	H	L								
	CO6	H	L								
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	47 th Academic Council Meeting									

UNIT-1: INTRODUCTION

12

Concept of Indian Literature, Agam and Puram Concepts, Theory of Nine Rasas in

Indian Aesthetics

UNIT-2: POETRY

12

Is Poetry always worthy when it's old? Kalidasa (Malavikagnimitram) - Author Biography - Theme –Poetic devices – Annotations - Summary – Critical analysis of translation; **What She Said - Tevakulattar, Kurunthokai 3 (Tamil)** - Author Biography -Theme –Poetic devices – Annotations - Summary – Critical analysis of translation;

What She Said to her Girlfriend - Kapilar, Akanaanooru 82 (Tamil) - Author Biography -Theme –Poetic devices – Annotations - Summary – Critical analysis of translation; **Gitanjali – (1-5) - Rabindranath Tagore** - Author Biography -Theme –Poetic devices – Annotations - Summary – Critical analysis of translation; **Six Rubaiiyats - MirzaArif (Urdu)** - Author Biography -Theme – Poetic devices – Annotations - Summary – Critical analysis of translation

UNIT-3: PROSE

12

Roots –IsmatChughtai (Urdu) - Author Biography - Theme - Summary – Critical analysis of translation; **The Shroud –MunshiPremchand (Hindi)** - Author Biography - Theme - Summary – Critical analysis of translation; **Sita Brand Soapnut Powder –SundaraRamaswamy (Tamil)** - Author Biography - Theme - Summary – Critical analysis of translation; **Poovan Banana - Vaikom Mohammad Basheer (Malayalam)** - Author Biography - Theme - Summary – Critical analysis of translation

UNIT-4: DRAMA

12

Wedding Album – GirishKarnad- Author Biography - Plot – Theme - Character analysis – Summary – Critical analysis of translation

UNIT-5: FICTION

12

Beasts of Burden – Imayam (Tamil) - Author Biography - Plot – Theme - Character analysis – Summary – Critical analysis of translation

TEXT BOOKS:

1. GN Devy, “Indian Literary Criticism: Theory and Interpretation”, Orient Blackswan Pvt. Ltd., 2019
2. Imayam, “Beasts of Burden” Niyogi Books Pvt. Ltd., 2019

REFERENCE BOOKS:

1. VM Basheer, “Poovan Banana and Other Stories”, Orient Blackswan, 1994
2. PremchandMunshi, “The Shroud”, Four Corners, 2008

Course Coordinator

HOD

MODERN ENGLISH GRAMMAR

P18MEEN043	MODERN ENGLISH GRAMMAR	L	T	P	C
	Total Contact Hours – 60	4	0	0	4
	Prerequisite course – UG level English				
	Course Coordinator & Dept Mrs.M.SHEEBA - English				

COURSE OBJECTIVES : To familiarize students with significance and scope of English language and grammar and use it correctly.

COURSE OUTCOMES (COs)

CO1	Remember the interest towards English communication
CO2	Understanding the complexities in the usage of grammar
CO3	Apply the knowledge of grammatical usages and errors
CO4	Analyze to fluently without grammatical errors
CO5	Evaluate the modern usage of grammar in communication
CO6	Create the accurate accent and pronunciation

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	PO2	PO3	PO4	PO5	PO6	PO7	PS O1	PSO2	PS O3
2	CO1	H	L						H		
	CO2	H	L			2					
	CO3	H	L								
	CO4	H	L								
	CO5	H	L								
	CO6	H	L								
3	Category	Humanities & Social Studies	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 (PP)	
					✓						
4	Approval	47 th Academic Council Meeting									

UNIT-I: INTRODUCTION **12**

The Evolution of Standard English [(Chapter- 8) (Pages 196-209)]

UNIT-II: LANGUAGE AND REGIONAL VARIATION **12**

The Standard Language -Accent and Dialect -Dialectology

Regional Dialects -Style, Slang and Jargon

UNIT-III **12**

Areas of Difficulty in the Usage of English Language for the II Language Users

Basic Grammar -Parts of speech and agreement (voice, tense, number)

Modals and Auxiliaries

Types of sentences (Interrogatives, Declaratives, Exclamatory and Imperative)

Direct and Indirect speech -Question Tags

UNIT-4: LANGUAGE FOR SPECIFIC SPEECH EVENTS **12**

Drafting an invitation -Drafting the minutes of a meeting

Addressing a gathering (welcome address) -Proposing vote of thanks

UNIT-5: ENGLISH IN THE INTERNET ERA **12**

The Internet and English Vocabulary

Role and Scope of Online English Dictionaries

Language and the Advent of Technology

Useful online resources such as YouTube, Google Scholar

TEXT BOOKS:

1. George Yule, "The Study of Language", Cambridge University Press; Sixth edition, 2017
2. F T Wood, An Outline History of the English Language – Laxmi Pub., 2015

REFERENCE BOOKS:

1. Practical English Grammar – A J Thomson and A V Martinet, OUP, Fourth Edition, 1997
2. Language and the Internet – David Crystal, Cambridge University Press, 2 edition, 2006

PROJECT WORK

P18PREN4P1			PROJECT WORK						L	T	P	C
			Total Contact Hours – 60						10	0	0	10
			Prerequisite – UG level English									
			Course Coordinator & Dept : Dr.P.AROCKIA NATHAN - English									
COURSE OBJECTIVES												
To make the students to identify state the problem of research, do survey, collect data, make references using analyzing ability to do research work in the field of English literature												
COURSE OUTCOMES (COs)												
CO1		Remember the concept and objectives, nature, types and methods of project.										
CO2		Understanding the process and steps involved in preparation of project work										
CO3		Apply research and methodology										
CO4		Analyse the data of the project work										
CO5		Evaluate the review of the project work										
CO6		Create the final project work by getting suggestion & conclusion										
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	PO2	PO3	PO4	Po5	PO6	PO7	PS O1	PSO2	PS O3	
2	CO1	H	L						H			
	CO2	H	L									
	CO3	H	L									
	CO4	H	L									
	CO5	H	L									
	CO6	H	L									
3	Category	Humanities & Social Studies	Basic Sciences (BS)	Engg Sciences (ES)	Professional Core (PC)	Core Elective	Non-Major Elective (NE)	Open Elective (OE)	Any other		Project/Term Paper/ Seminar/ Internship (PR)	
											✓	
4	Approval	47 th 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 Literature of English. 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**

பாரத் உயர் கல்வி மற்றும் ஆராய்ச்சி நிறுவனம்
கலை மற்றும் அறிவியல் புலம்
தமிழ்த்துறை(M.A)

நோக்கு (Vision)

- இலக்கணங்கள், சங்க இலக்கியங்கள், சங்க மருவிய கால இலக்கியங்கள், காப்பியங்கள், சமய இலக்கியங்கள், சிற்றிலக்கியங்கள், நெறி இலக்கியங்கள், சித்தர் இலக்கியங்கள், நாட்டுப்புற இலக்கியங்கள், இருபதாம் நூற்றாண்டு இலக்கியங்கள் (கவிதை, சிறுகதை, நாவல், உரைநடை, திறனாய்வு, கட்டுரை) வாயிலாக தமிழர் பண்பாடு, வரலாறு, சமூகம் ஆகியவற்றை தரமான தமிழ்க் கல்வியின் வழியே பயின்று, சமூக அக்கறையோடு மானிட விழுமியங்களோடு இக்கால வாழ்வை எதிர்கொள்ளும் திறன் வாய்ந்த இளைய சமுதாயத்தை உருவாக்குதல்.

இலக்கு (Mission)

துறையின்இலக்கு (இ.1)	தரமான தமிழ்க் கல்வியின் வழி, தமிழரின் கலை இலக்கிய வடிவங்களை பகுத்து பார்க்கும் திறன் பெற்ற மாணவர்களை உருவாக்குதல்.
துறையின்இலக்கு (இ.2)	இன்றைய சமுதாயத்திற்கேற்ப ஆய்வுகளை மேற்கொள்ளும் வகையிலும் பல்வேறு பகுப்புகளுக்குட்பட்ட தமிழிலக்கியங்களின் அனைத்துப் பகுதிகளும் ஆய்வுக் களங்களாக உருவாக்க முயலுதல்.
துறையின்இலக்கு (இ.3)	நவீனத் தொழில்நுட்ப உபகரணங்களைக் கொண்டு வகுப்பறையில் பாடங்களைத் தெளிவுப்படுத்துதல் மட்டுமல்லாமல் மாணவர்களின் சுய சிந்தனையைத் தூண்டும் வகையில் கற்பித்தல்.
துறையின்இலக்கு (இ.4)	மாணவர்களின் படைப்பாற்றல் திறனை அடையாளம் காணுதல் மட்டுமல்லாமல் மத்திய - மாநில அரசு சார்ந்தப் போட்டிகளில் வெற்றிப் பெற வழிவகை செய்தல்.
துறையின்இலக்கு (இ.5)	மொழிப்பாடத்தின் வாயிலாக தன்னாளுமையை வளர்த்ததோடு, மாணவர் கருத்தரங்குகள், ஆசிரியர் கருத்தரங்குகள், வகுப்பறை விவாதங்களை நிகழ்த்துதல், ஊடக நிகழ்ச்சிகளில் பங்குபெற பயிற்சியளித்தல்

பாடத்தின் நோக்கங்கள் (PROGRAMME EDUCATIONAL OBJECTIVES(PEOs))

PEO1	தமிழ் இலக்கிய புலமையும் இலக்கண அறிவும் வாய்க்கப் பெற்றவர்களாக மாணவர்களை தயார்படுத்துதல்.
PEO2	படைப்பு ஆர்வமிக்கவர்களாக, இலக்கிய விமர்சர்களாக திகழும்படி செய்தல்
PEO3	தமிழ் இலக்கியம், தமிழ்மொழி, தமிழ்ப்பண்பாடு ஆகியவற்றின் சிறப்புகளை உலகளாவிய

	நிலையில் கொண்டு சேர்க்கும் பணிகளை மேற்கொள்ளச் செய்தல்

பாடத்தின் விளைவுகள்(பா.வி): (PROGRAMME OUTCOMES:)

மாணவர்கள் B.A. தமிழ் கல்வி முடித்திருக்கும் தருவாயில்

P O 1	விமர்சனசிந்தனை: நமதுசிந்தனையையும்செயல்களையும்வடிவமைக்கும்அனுமானங்களைஅடையாளம்கண்டு, இந்தஅனுமானங்கள்எந்தஅளவிற்குதல்லியமானவைமற்றும்பயன் தேவையானதாஎன்பதைசரிபார்த்து, தங்கள்கருத்துக்கள்மற்றும்முடிவுகளை (அறிவுசார், நிறுவனமற்றும்தனிப்பட்ட) வெவ்வேறுகோணங்களில்பார்த்தபிறகுதகவலறிந்தசெயல்களைமேற்கொள்வர்.
P O 2	பயனுள்ளதொடர்பு: தமிழிலும்ஒருஇந்தியமொழியிலும்நேரில்மற்றும்மின்னணுஊடகங்கள்மூலம்தெளிவாகபேசவும், படிக்கவும், எழுதவும்கேட்கவும், மக்கள், யோசனைகள், புத்தகங்கள், ஊடகம்மற்றும்தொழில்நுட்பத்தைஇணைப்பதன்மூலம்உலகிற்குபுரிதலைஏற்படுத்துவர்.
P O 3	சமூகதொடர்பு: மற்றவர்களின்தெளிவானபார்வைகள், கருத்துவேறுபாடுகளைதெளிவுபடசெய்தல்மற்றும்குழுஅமைப்புகளில்முடிவுகளைஅடையஉதவுவர்.
P O 4	பயனுள்ளகுடியுரிமை: மனிதநேயம் கொண்டசமூகஅக்கறைமற்றும்சமத்துவத்தைமையமாகக்கொண்டதேசியவளர்ச்சிமற்றும்பிரச்சினைகள் பற்றியவிழிப்புணர்வுடன்செயல்படுவதற்கும்தன்னார்வத்தொண்டுமூலம்குடிமைவாழ்க்கையில்பங்கேற்பதற்கும்கூடுதலானதிறனைவெளிப்படுத்துவர்.
P O 5	நெறிமுறைகள்: தங்களுடையமதிப்பீடுவெவ்வேறுமதிப்புஅமைப்புகளைஅங்கீகரித்தல், தங்கள்முடிவுகளின்தார்மீகபரிமாணங்களைப்புரிந்துகொள்வதுமற்றும்அவற்றுக்கானபொறுப்பைஏற்றுக்கொள்வர்.
P O 6	சுற்றுச்சூழல்மற்றும்நிலைத்தன்மை: சுற்றுச்சூழல்சூழல்கள்மற்றும்நிலையானவளர்ச்சியின்சிக்கல்களைப்புரிந்துகொள்ளும் திறன் பெறுதல்.
P O 7	சுயமுன்னேற்றம்மற்றும்வாழ்நாள்முழுவதும்கற்றல்: பரந்தசூழலில்சமூக-தொழில்நுட்பமாற்றங்களில்ஈடுபட்டு தன்னை முன்னேறச் செய்தல்மற்றும்வாழ்நாள்முழுவதும்கற்றலில்ஈடுபடும்திறனைப்பெறுவர்.

பாடத்தின் குறிப்பிட்ட விளைவுகள்: (PROGRAM SPECIFIC OUTCOMES (PSOs))

PSO 1	இலக்கியத்தின்மூலம்மக்களின்நாகரீகப்பண்பாட்டையும்வாழ்வியல்பண்புகளையும்அறிந்துவாழகுதிப்படுத்திக்கொள்வர்.
PSO 2	மொழியின்வளத்தைஅறிந்துபிழையின்றி பேசவும் எழுதவும், சிறந்த படைப்புக்களை உருவாக்கும்திறனைப்பெறுவர்
PSO 3	மொழியில், இலக்கண, இலக்கியத்தில் திறனாய்வு செய்யும் சிறந்ததிறனாய்வாளனுக்குரியப்பண்புகளைப்பெறுவர்..

பாரதீயர்கல்விமற்றும்ஆராய்ச்சிநிறுவனம்
கலைமற்றும்அறிவியல்புலம்- தமிழ்த்துறை- முதுகலைத்தமிழ்இலக்கியம்(M.A.)
பொதுவிருப்பத்தேர்வுமுறைப்பாடஅமைப்புகள்(CBCS) 2018

Deg ree	Batch	Dept	Mode	Sem	FT - Code	Subject	Cr.
PG	2018	MA	FT	1	P18MCTA101	தொல்காப்பியம்- எழுத்ததிகாரம்(MC)	4
PG	2018	MA	FT	1	P18MCTA102	சங்கஇலக்கியம்- பத்துப்பாட்டு(MC)	4
PG	2018	MA	FT	1	P18MCTA103	தற்காலஇலக்கியம்(MC)	4
PG	2018	MA	FT	1	P18MCTA104	நாட்டார்வழக்காற்றியல்(MC)	4
PG	2018	MA	FT	1	P18MCTA105	உலகக்காப்பியங்கள்(MC)	4
PG	2018	MA	FT	1	P18META011 P18META012 P18META013	சார்புப்பாடம்(Major Elective) - I	3
						தமிழ்உரைநடைவரலாறு தமிழ்ஆராய்ச்சிவரலாறு தமிழ்மொழிவரலாறு	
PG	2018	MA	FT	2	P18MCTA201	தொல்காப்பியம்- சொல்லதிகாரம்(MC)	4
PG	2018	MA	FT	2	P18MCTA202	சங்கஇலக்கியம்- எட்டுத்தொகை(MC)	4
PG	2018	MA	FT	2	P18MCTA203	சிறுநிலக்கியங்கள்(MC)	4
PG	2018	MA	FT	2	P18MCTA204	நதிஇலக்கியங்கள்(MC)	4
PG	2018	MA	FT	2	P18MCTA205	தமிழகவரலாறும்பண்பாடும்(MC)	3
					P18META021	சார்புப்பாடம்(Major Elective) - II	
						இலக்கியத்திறனாய்வுக்கோட்பாடுகள்	

PG	2018	MA	FT	2	P18META022 P18META023	தமிழ்நாட்டின்தலவரலாறுகளும்பண்பாட்டுச்சி ன்னங்களும் தமிழகம்ஊரும்பேரும்	3
PG	2018	MA	FT	3	P18MCTA301	தொல்காப்பியம்- பொருளதிகாரம்- I (MC)	4
PG	2018	MA	FT	3	P18MCTA302	பக்திஇலக்கியம்(MC)	4
PG	2018	MA	FT	3	P18MCTA303	உரையாசிரியர்களும்உரைமரபுகளும்(MC)	4
PG	2018	MA	FT	3	P18MCTA304	ஆராய்ச்சிநெறிமுறைகள்(MC)	3
PG	2018	MA	FT	3	P18MCTA305	பொதுமொழியியல்(MC))	4
PG	2018	MA	FT	3	P18META031 P18META032 P18META033	சார்புப்பாடம்(Major Elective) -III	3
						இலக்கியஒப்பாய்வுக்களங்கள் படைப்புத்திறன் மையஅரசுப்பணித்தேர்வுத்தமிழ்	
PG	2018	MA	FT	4	P18MCTA401	தொல்காப்பியம்- பொருளதிகாரம்II (MC)	4
PG	2018	MA	FT	4	P18MCTA402	நம்பிஅகப்பொருள்விளக்கம்(MC)	4
PG	2018	MA	FT	4	P18MCTA403	காப்பியங்கள்(MC)	4
PG	2018	MA	FT	4	P18MCTA404	சித்தர்இலக்கியம்(MC)	3
PG	2018	MA	FT	4		Open Elective	2
PG	2018	MA	FT	4	P18MCYO001	மனவளக்கலை(Yoga)	0
PG	2018	MA	FT	4	P18PRTA4T1	Term Paper	1
PG	2018	MA	FT	4	P18PRTA4P1	ஆய்வுத்திட்டக்கட்டுரை(Project)	8
பருவமுறைப்பாடங்கள்- தரப்புள்ளிகள்							93

Open Elective

S.No	Sub Code	Subjects	L	T	P	C
1.	P18OETA001	கணினியல்	2	0	0	2
2.	P18OETA002	கணினித்தமிழ்- இணையம்	2	0	0	2
3.	P18OETA003	தகவல்தொடர்பியல்	2	0	0	2
4.	P18OETA004	ஊடகவியல்	2	0	0	2
5.	P18OETA005	பேச்சுக்கலை	2	0	0	2
6.	P18OETA006	இதழியல்கலை	2	0	0	2

P18MCTA101	தொல்காப்பியம்-எழுத்ததிகாரம்						L	T	P	C	
	Total Contact Hours – 60						4	0	0	4	
	Prerequisite course – B.A.தமிழ் / B.Litt / பகுதி I அல்லதுபகுதி II தமிழுடன்எந்தப்பட்டமும்										
	Course Coordinator Name& Department :முனைவர். த. கிறிஸ்டல் ரெஜித்ரமித்தூறை										
COURSE OBJECTIVES : எழுத்ததிகாரத்தைஅடிப்படையாகக்கொண்டுபழந்தமிழ்எழுத்திலக்கணத்தைகற்பித்தல்.											
COURSE OUTCOMES (COs)											
CO1	எழுத்து, சார்பெழுத்துக்களைப்பற்றிஅறிவர்										
CO2	எழுத்துக்களின்ஒலி, இயல்பு, திரிபு, சாரியைப்பற்றிஅறிவர்										
CO3	வேற்றுமைப்புணர்ச்சி, அல்வழிப்புணர்ச்சிபற்றிஅறிவர்										
CO4	எழுத்துக்கள்புணரும்பாங்குபற்றிஅறிவர்										
CO5	குற்றியலுகரம்-நிலைமொழிபுணரும்பாங்குபற்றிஅறிவர்										
CO6	தொல்காப்பியம் எனும் பழந்தமிழ் எழுத்திலக்கணத்தை அறிவர்										
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	PSO3
2	CO1	M	H							H	M
	CO2	M	H								
	CO3	M	H								
	CO4	M	H								
	CO5	M	H								
	CO6	M	H								
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									

அலகு2 பிறப்பியல், புணரியல்	12
அலகு3 தொகைமரபு, உருபியல்	12
அலகு4 உயிர்மயங்கியல், புள்ளிமயங்கியல்	12
அலகு5 குற்றியலுகரப்புணரியல்	12

பாடநூல்கள்:

1. புலியூர்க்கேசிகன், "தொல்காப்பியம்(எழுத்ததிகாரம்)", பாவைபப்ளிகேஷன்ஸ், 2016
2. இளம்பூரணனார், "தொல்காப்பியம்எழுத்ததிகாரம்", கௌராபதிப்பக்குமும், 2016
3. கு.வெ.பாலசுப்பிரமணியன், "தொல்காப்பியம்", நியூசெஞ்சரிபுக்ஸ், 2018

பார்வைநூல்கள்:

1. நச்சினார்க்கினியர், "தொல்காப்பியம் எழுத்ததிகாரம்", சாரதா பதிப்பகம், 2011
2. தொல்காப்பியர், "தொல்காப்பியம் எழுத்ததிகாரம்", கழகவெளியீடு, 1998
3. கி.இராசா, "தொல்காப்பியம் - எழுத்ததிகாரம்", பாவை வெளியீடு, 2007

பாடநெறி ஒருங்கிணைப்பாளர்

துறைத் தலைவர்

P18MCTA102	சங்கஇலக்கியம்- பத்துப்பாட்டு	L	T	P	C
	Total Contact Hours – 60	4	0	0	4
	Prerequisite course – B.A.தமிழ் / B.Litt / பகுதி I அல்லதுபகுதி II தமிழுடன்எந்தப்பட்டமும்				
	Course Coordinator Name& Department :திரு மு பரந்தாமன்.&தமிழ்த்துறை				
COURSE OBJECTIVES : பழந்தமிழ்நாட்டின்வாழ்க்கைமுறை, பண்பாடுகளைபத்துப்பாட்டுமூலம்அறியச்செய்தல்.					
COURSE OUTCOMES (COs)					
CO1	முருகனிற்படைவீடு, கரிகால்வளவனின்சிறப்புகளையும்அறிவர்				
CO2	வஞ்சி,மதுரையின் சிறப்பு,, பாணனதுயாழின்வருணனை, நெல்விளைதல்பற்றிஅறிவர்				
CO3	பேரியாழின்இயல்பு, உபசாரம், கொடை, போரின்விளைவு, நிலையாமைபற்றிஅறிவர்				
CO4	99 வகைபூக்கள், மாலைக்காலம், மக்கள்விளையாட்டு, வணிகர்வாழ்க்கைபற்றிஅறிவர்				
CO5	மழை, விரிச்சிகேட்டல், பாசறை, கூதிர்க்காலம்பற்றிஅறிவர்				
CO6	பழந்தமிழ்நாட்டின்வாழ்க்கைமுறை, பண்பாடுகளைபத்துப்பாட்டுமூலம் அறிவர்				

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	PSO3
2	CO1	M	H						H	M	M
	CO2	M	H								
	CO3	M	H								
	CO4	M	H								
	CO5	M	H								
	CO6	M	H								
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									

அலகு1

12

திருமுருகாற்றுப்படை- திருவாவினன்குடிஎனும்பழனி- பழமுதிர்சோலை

பொருநராற்றுப்படை- கரிகால்வளவனதுசிறப்புக்கள், வெண்ணிப்போர்வெற்றி,கொடையின்சிறப்பு

அலகு2

12

சிறுபாணாற்றுப்படை- வஞ்சிமாநகரின்சிறப்பு,தமிழ்நிலைபெற்றமதுரையின்மாண்பு, உறந்தையின்சிறப்பு

பொரும்பாணாற்றுப்படை- பாணனதுயாழின்வருணனை, நெல்விளைதற்சிறப்பு, நெல்அரிந்துகடாவிடுதல், கச்சிமுதாரின்சிறப்பு

அலகு3

12

மலைபடுகடாம்- பேரியாழின்இயல்பு, கோவலரதுகுடியிருப்பில்பெறும்உபசாரம், உழவர்செய்யும்உபசாரம், நன்னனதுகொடைச்சிறப்பு

மதுரைக்காஞ்சி- முதுவெள்ளிலைஎன்னும்ஊரின்சிறப்பு, பகைவர்தேசம்பாழ்பட்டநிலை, நிலையாமையைஅறிவுறுத்தல், விடியல்காலத்தில்துரைமாநகர்

அலகு4

12

குறிஞ்சிப்பாட்டு- பூக்களைப்பறித்துப்பாறையில்சுவைத்தல், தலைவிதலைவனுடன்கூடியநிலை, மாலைக்காலத்தின்வருகை

பட்டினப்பாலை- மக்களின்விளையாட்டுக்கள், இரவில்துயிலும்நிலை, வணிகர்களின்வாழ்க்கைமுறை, பகைவர்மேல்போருக்குஎழுதல், பகைவரதுநாட்டைப்பாழ்படுத்துதல்

அலகு5

12

முல்லைப்பாட்டு1-54

நெடுநல்வாடை- ஊரினதுசெழிப்பு, கூதிர்க்காலம்நிலைபெற்றமையால்நேர்ந்தவிளைவுகள், தலைவியைத்தேற்றுதல், தலைவியின்வருத்தமிகுதி, பாசறையில்அரசன்நிலை

1. கு.வெ.பாலசுப்பிரமணியம், "பத்துப்பாட்டு: மூலமும்உரையும்", நியூசெஞ்சுரிபுக்ஸ், 2004
2. கதிர்முருகு, "பத்துப்பாட்டு- மூலமும்உரையும்", கௌராபுத்தகமையம், 2016
3. ஞா.மாணிக்கவாசகன், "பத்துப்பாட்டு(தெளிவுரை)", உமாபதிப்பகம், 2012

1. நைசி. கரிகாலன், "பத்துப்பாட்டு ஆய்வுகள்", நியூ செஞ்சுரி புக் ஹவுஸ், 2011
2. அன்புமணி, "எட்டுத்தொகை பத்துப்பாட்டு நூல்கள்", மணிமேகலை பிரசுரம், 2013
3. உ.வே.சா., "பத்துப்பாட்டுமூலமும்நச்சினார்க்கினியாநுரையும்", உ.வே.சா.நூல்நிலையம், 2018

துறைத் தலைவர்

P18MCTA103	தற்காலஇலக்கியம்		L	T	P	C					
	Total Contact Hours – 60		4	0	0	4					
	Prerequisite course – B.A.தமிழ் / B.Litt / பகுதி I அல்லதுபகுதி II தமிழுடன்எந்தப்பட்டமும்										
	Course Coordinator Name& Department :முனைவர் பாலகிருஷ்ணன் .இரா .&தமிழ்த்துறை										
COURSE OBJECTIVES : இக்காலஇலக்கியங்களைபற்றிஅறியச்செய்தல்.											
COURSE OUTCOMES (COs)											
CO1	காலத்தால்முந்தியமரபுக்கவிதைகளைப்பற்றிஅறிவர்										
CO2	உரைநடைச்சாயலில்கவிதைகளைப்பற்றிஅறிவர்										
CO3	கதைகூறும்புனைவுவகைஉரைநடையைஅறிவர்										
CO4	உரைநடையில்அமைந்தநீள்கதைஇலக்கியத்தைஅறிவர்										
CO5	நாடகக்கலை, உரைநடைபற்றிஅறிவர்										
CO6	இக்காலஇலக்கியங்களை அறிவர்										
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	PSO3
2	CO1	M	H						M	H	M
	CO2	M	H								
	CO3	M	H								
	CO4	M	H								
	CO5	M	H								
	CO6	M	H								
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									

அலகு1

12

மரபுக்கவிதை: பாரதியார்கவிதைகள்-தேசியகீதங்கள்- பாரதநாடு- நாட்டுவணக்கம், பாரததேசம், எங்கள்நாடு,தாயின்மணிக்கொடிபாரீர்- தமிழ்நாடு- செந்தமிழ்நாடு, தமிழ்த்தாய், தமிழ், தமிழ்மொழிவாழ்த்து.பாரதிதாசன்கவிதைகள்-தமிழுக்குஅமுதென்றுபேர்- தமிழுக்குவாழ்வதேவாழ்வு, எதுஎன்ஆசை, தமிழர்க்குஅழைப்பு, தமிழர்வாழ்க, தமிழன்னைவிழிக்க, தமிழ்தமிழன்உயிர், எழுகதமிழர், தமிழன், தமிழன்னை . கவிமணியின்கவிதைகள்-உள்ளமும்உணர்வும்- வாழ்க்கைத்தத்துவங்கள், வாழ்க்கைநிலையாமை, சமூகம்- பெண்களின்உரிமைகள், தேசியம்- தேசியக்கொடியின்சிறப்பு

அலகு2

12

புதுக்கவிதை: மு.மேத்தா-ஊர்வலம்- கால்களால்நடந்தகதை, இசை, உன்பழையகடிதங்கள், சுதந்திரச்சிந்தனைகள், கருப்பை .சிற்பி-சர்ப்பயாகம்- ஒருவிதையின்கதை, இலக்கியவழிகாட்டி, துயரச்சிலுவைகள், மௌனத்திரை, பேசாதபொருள்கள்பேசினால்

வைரமுத்து-தமிழுக்குநிறம்உண்டு- தேடல், இன்பம், தவம், உலகம், மீண்டும்சந்திப்போம்

அலகு3

12

சிறுகதையும்கட்டுரையும்: வ.வே.சு.ஐயர்-குளத்தங்கரைஅரசமரம், பாரதியார்-ஆறில்ஒருபங்கு, சி.சு.செல்லப்பா, மாலன்- தமிழில்முதலில்தோன்றியசிறுகதைகுறித்தகட்டுரைகள்

அலகு4

12

மூன்றுநாவல்கள்: பிரதாபமுதலியார்சரித்திரம்-கதைச்சுருக்கம், நீதிஉபதேசம், உபகதைகள், நிகழ்ச்சிகள்இணைதல், மர்மமும்வெளிப்பாடும், ஒரேவகைநிகழ்ச்சிகள், பொருத்தமற்றநிகழ்ச்சிகள், பெண்களின்உயர்வு .கமலாம்பாள்சரித்திரம்- கதைச்சுருக்கம், கதையின்வளர்ச்சி, முத்துசாமிஐயர், ஆசிரியரின்அநுபவம், கமலாம்பாள், அம்மையப்பபிள்ளை, பிறபாத்திரங்கள், முன்அறிகுறி, பிறஇயல்புகள் .பத்மாவதிசரித்திரம்-சங்கரன், ஐயமும்முதிர்வும், சிக்கல்தெளிதல், நாராயணன், பத்மாவதி, பிறபாத்திரங்கள், சாவித்திரி, கல்யாணி, டாக்டர்மில்லர், சிலசிறுகதைகள்

அலகு5

12

நாடகமும்உரைநடையும்: பம்மல்சம்மந்தனார்- சபாபதி(முதலிருபாகங்கள்) - தேவநேயப்பாவாணர்-தமிழின்பொன்மை, தமிழன்பிறந்தகம்

பாடநூல்கள்:

1. மு. மேத்தா, "ஊர்வலம்", திருமகள்நிலையம், 2009
2. சிற்பிபாலசுப்பிரமணியம், "சர்ப்பயாகம்", அன்னம்(பி) லிட், 1976
3. வைரமுத்து, "தமிழுக்குநிறம்உண்டு", திருமகள்நிலையம், 2010
4. வ.வே.சு.ஐயர், "குளத்தங்கரைஅரசமரம்", வ.உ.சி.நூலகம், 2007

பார்வைநூல்கள்:

1. கி.வா.ஜகந்நாதன், "தமிழ்நாவலின்தோற்றமும்வளர்ச்சியும்",எழுத்தாளர்சங்கம், 2011
2. பம்மல்சம்மந்தமுதலியார், "சபாபதி", புஸ்தகாடிஜிட்டல்மீடியா, 2017
3. தேவநேயப்பாவாணர்உரைகள், "புலவர்அ.நக்கீரன்", நியூசெஞ்சரிபுக்ஹவுஸ், 2007

பாடநெறி ஒருங்கிணைப்பாளர்

துறைத் தலைவர்

P18MCTA104	நாட்டார்வழக்காற்றியல்	L	T	P	C
	Total Contact Hours – 60	4	0	0	4
	Prerequisite course – B.A.தமிழ் / B.Litt / பகுதி I அல்லதுபகுதி II தமிழுடன்எந்தபட்டமும்				
	Course Coordinator Name& Department :முனைவர் சு.பாப்பாண்டி&தமிழ்த்துறை				

COURSE OBJECTIVES : நாட்டார்வழக்காற்றியல்பற்றியபல்வேறுபட்டகருத்துப்பரிமாணங்களைஅறியச்செய்தல்											
COURSE OUTCOMES (COs)											
CO1	நாட்டுப்புறவியலின்வரலாறுபற்றிஅறிவர்										
CO2	நாட்டுப்புறத்தை, விடுகதை, நம்பிக்கைகள்பற்றிஅறிவர்										
CO3	நாட்டுப்புறத்தெய்வங்கள், திருவிழாக்கள், விளையாட்டுக்கள்பற்றிஅறிவர்										
CO4	நாட்டுப்புறக்கட்டடக்கலை, தொழில்நுட்பவியல்பற்றிஅறிவர்										
CO5	நாட்டுப்புறவியல்ஆய்வுக்கோட்பாடுகள்பற்றிஅறிவர்										
CO6	நாட்டார்வழக்காற்றியல்பற்றியபல்வேறுபட்டகருத்துப்பரிமாணங்களை அறிவர்										
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	PSO3
2	CO1		M	M	M	M		M	H	M	M
	CO2		M	M	M	M		M			
	CO3		M	M	M	M		M			
	CO4		M	M	M	M		M			
	CO5		M	M	M	M		M			
	CO6		M	M	M	M		M			
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									

- அலகு1 12
நாட்டுப்புறவியல்விளக்கம்- நாட்டுப்புறவியலின்வரலாறு – தமிழகநாட்டுப்புறவியலின்வரலாறு –
நாட்டுப்புறஇலக்கியமும்எழுத்திலக்கியமும்- நாட்டுப்புறப்பாடல்கள்
- அலகு2 12
நாட்டுப்புறத்தைகள்- நாட்டுப்புறவிடுகதைகள்- பழமொழிகள்- நாட்டுப்புறநம்பிக்கைகள்
- அலகு3 12
நாட்டுப்புறத்தெய்வங்கள்- நாட்டுப்புறத்திருவிழாக்கள்- நாட்டுப்புறவிளையாட்டுக்கள்- நாட்டுப்புறமருத்துவம்-
நாட்டுப்புறக்கலைகளும்கைவினைப்பொருட்களும்
- அலகு4 12
நாட்டுப்புறக்கட்டடக்கலை- நாட்டுப்புறத்தொழில்நுட்பவியல்- பயன்பாட்டுநாட்டுப்புறவியல்- மக்கள்பெயராய்வு –
ஊர்ப்பெயராய்வு – களஆய்வுமுறை
- அலகு5 12

நாட்டுப்புறவியல்ஆய்வுக்கோட்பாடுகள்-

அமைப்பியல்கோட்பாடு(நாட்டுப்புறக்கதைகளில்பெண்களின்சிக்கல்களும்அவற்றைஎதிர்கொள்ளும்முறைகளும்,
புராணக்கதைகள்ஓர்அமைப்பியல்ஆய்வு) - வாய்மொழிவாய்பாட்டுக்கோட்பாடு(நாட்டுப்புறக்கதைகூறலில்உத்திகள்) -
ஒப்பீட்டாய்வு(நாட்டுப்புறக்கதைகள்உணர்த்தும்செய்தி) - உளவியல்கோட்பாடு(
வாய்மொழித்தொன்மக்கதைகள்ஓர்உளவியல்பகுப்பாய்வு) -
சூழல்கோட்பாடு(சூழல்கோட்பாடுகளும்நாட்டுப்புறவழக்காறுகளும்)

பாடநூல்கள்:

1. சு.சக்திவேல், "நாட்டுப்புறஇயல்ஆய்வு", மணிவாசகர்பதிப்பகம், 2015
2. வேணுகோபால், "நாட்டுப்புறவியல்கோட்பாடுஆய்வுகள்", தாமரைவெளியீடு, 1991
3. சு. சண்முகசுந்தரம், "நாட்டுப்புறவியல்ஓர்அறிமுகம்", மணிவாசகர்பதிப்பகம், 1982

பார்வைநூல்கள்:

1. ம.சா. அறிவுடைநம்பி, "தமிழக நாட்டுப்புறவியல் ஆய்வுகள்", நியூ செஞ்சுரி புக்ஸ், 2010
2. சண்முகசுந்தரம், "நாட்டுப்புறவியல் ஆய்வுக் கோட்பாடுகள்", காவ்யா பதிப்பகம், 2012
3. நா. வானமாமலை, "தமிழ்நாட்டுப் பாமரர் பாடல்கள்", நியூ செஞ்சுரி புக் ஹவுஸ், 2010

பாடநெறி ஒருங்கிணைப்பாளர்

துறைத் தலைவர்

P18MCTA105		உலகக்காப்பியங்கள்					L	T	P	C	
		Total Contact Hours – 60					4	0	0	4	
		Prerequisite course – B.A.தமிழ் / B.Litt / பகுதி I அல்லதுபகுதி II தமிழுடன்எந்தபட்டமும்									
		Course Coordinator Name& Department :முனைவர் ஜெ.அந்தோணி.ஜெயஷிலா&தமிழ்த்துறை									
COURSE OBJECTIVES : பல்வேறுஉலக நாட்டு காப்பியங்களைபற்றிஅறியச்செய்தல்											
COURSE OUTCOMES (COs)											
CO1	காப்பியம்தோற்றம்வளர்ச்சிமற்றும்அதன்கொள்கைகளைஅறிவர்										
CO2	பாபிலோனிய, சமேரிய, பிளீசியகாப்பியம்மற்றும்கிரேக்ககாப்பியங்களைஅறிவர்										
CO3	கிறிஸ்துவ, லத்தீன்செர்மன்பிரஞ்சுமொழிக்காப்பியங்களைஅறிவர்										
CO4	இத்தாலி, நெதர்லாந்த். ருசிய, ஸ்பானியமொழிக்காப்பியங்களைஅறிவர்										
CO5	போர்ச்சுகீசிய, அமெரிக்க, செர்பிய, சுவிஷ். சைன, சப்பானியகாப்பியங்களைஅறிவர்										
CO6	பல்வேறுஉலக நாட்டு காப்பியங்களைபற்றி அறிவர்										
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	PSO3
2	CO1	L	M						H		M
	CO2	L	M								
	CO3	L	M								
	CO4	L	M								
	CO5	L	M								
	CO6	L	M								

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								

அலகு1

12

காப்பியக்கொள்கை- காப்பியத்தோற்றமும்வளர்ச்சிப்படிநிலைகளும்- காப்பியம்வகை, விளக்கம்

அலகு2

12

பாபிலோனிய, சுமேரியகாப்பியம்- பிளீசியகாப்பியம்கலவேலா- கிரேக்ககாப்பியங்கள்

அலகு3

12

கீப்ரூமொழியும்பழையகிறிஸ்துவகாப்பியமும்-
பிரஞ்சுமொழிக்காப்பியம்

லத்தீன்மொழிக்காப்பியங்கள்செர்மன்மொழிக்காப்பியம்-

அலகு4

12

ஸ்காண்டிநேவியகாப்பியம்- இத்தாலிமொழிக்காப்பியம்- நெதர்லாந்தியகாப்பியங்கள்- ருசியமொழிக்காப்பியம்-
ஸ்பானியமொழிக்காப்பியம்

அலகு5

12

போர்ச்சுகீசியகாப்பியம்- அமெரிக்ககாவியம்- செர்பியமொழிக்காப்பியம்- சுவிஷ்மொழிக்காப்பியம்- சைன,
சப்பானியகாப்பியம்- பிறமேலைநாட்டுக்காப்பியம்

பாடநூல்கள்:

1. இரா.காசிராசன், "உலகக்காப்பியங்கள்", நியூசெஞ்சுரிபுக்ஹவுஸ், 2014
2. து. சீனிச்சாமி. "தமிழில் காப்பியக் கொள்கை", கழக வெளியீடு, 2012
3. கி.வா. ஜகநாதன், "தமிழ்க் காப்பியங்கள்", சாரதா பதிப்பகம், 2011

பார்வைநூல்கள்:

1. அ. பாண்டிரங்கன், "காப்பிய இயல்", யுனிகியூ மீடியா இன்டெகரேட்டர்ஸ், 2017
2. தே. ஞானசுந்தரம், "காப்பிய விருந்து", அமுதா நிலையம், 2012
3. தேவசங்கீதம், "ஆய்வுக்கோவை-காப்பியமும் புராணமும்", தமிழாசிரியர் மன்றம், 1998

P18META011	தமிழ்உரைநடைவரலாறு		L	T	P	C					
	Total Contact Hours – 45		3	0	0	3					
	Prerequisite course – B.A.தமிழ் / B.Litt / பகுதி I அல்லதுபகுதி II தமிழுடன்எந்தபட்டமும்										
	Course Coordinator Name& Department :முனைவர் பாலகிருஷ்ணன்.இரா .&தமிழ்த்துறை										
COURSE OBJECTIVES : காலந்தோறும்தோன்றியஉரைநடையின்வளர்ச்சிபற்றிஅறிதல்											
COURSE OUTCOMES (COs)											
CO1	உரைநடையின்தோற்றம்வளர்ச்சிபற்றிஅறிவர்										
CO2	சிலப்பதிகாரத்தில் உள்ள உரைநடைபற்றிஅறிவர்										
CO3	உரையாசிரிகளின்கூற்றுக்களைஅறிவர்										
CO4	வடமொழிஉரை, உரையாசிரிகளின்தமிழ்ப்பணிபற்றிஅறிவர்										
CO5	அன்றையஇன்றையஉரைநடைபற்றிஅறிவர்										
CO6	காலந்தோறும்தோன்றியஉரைநடையின்வளர்ச்சிபற்றி அறிவர்										
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	PSO3
2	CO1	L	H							H	M
	CO2	L	H								
	CO3	L	H								
	CO4	L	H								
	CO5	L	H								
	CO6	L	H								
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									

எதுஉரைநடை? - உரைநடைவிளக்கம்- மேனாட்டவர்கருத்து- உரைநடையின்தோற்றமும்வளர்ச்சியும்

அலகு2 9
சிலப்பதிகாரஉரைநடை- தமிழ்உரைநடையில்ஒருமைல்கல்

அலகு3 9
முன்னையஉரையாசிரியர்கள்கூற்று- கல்வெட்டுக்கள்பற்றியஉரையாசிரிகள்கருத்து

அலகு4 9
தமிழ்உரைகளும்வடமொழிஉரைகளும்- பிற்காலஉரையாசிரிகளின்தமிழ்ப்பணி

அலகு5 9
உரைநடைவளர்ச்சியில்மேலைநாட்டவர்தொண்டும்பணியும்- இருபதாம்நூற்றாண்டில்உரைநடையின்வளர்ச்சி-
உரைநடைஅன்றும்இன்றும்.

பாடநூல்கள்:

1. அ.மு. பரமசிவானந்தம், "தமிழ்உரைநடைபாகம்1", சீதைபதிப்பகம், 2012
2. வி.செல்வநாயகம், "தமிழ்உரைநடைவரலாறு", குமரன்புத்தகஇல்லம், 2000
3. மு. வை. அரவிந்தன், "உரையாசிரியர்கள்", மணிவாசகர்பதிப்பகம், 2018

பார்வைநூல்கள்:

1. அ.மு.பரமசிவானந்தம், "19ம்நூற்றாண்டின்தமிழ்உரைநடைவளர்ச்சி", பாரிநிலையம், 1978
2. தி.சு. நடராசன், "உரைகளும் உரையாசிரியர்களும்", நியூ செஞ்சுரி புக் ஹவுஸ், 2013
3. இரா.மோகன், நெல்லைசொக்கலிங்கம், "உரைமரபுகள்", மணிவாசகர்பதிப்பகம், 2011

பாடநெறி ஒருங்கிணைப்பாளர்

துறைத் தலைவர்

P18META012	தமிழ்ஆராய்ச்சிவரலாறு	L	T	P	C
	Total Contact Hours – 45	3	0	0	3
	Prerequisite course – B.A.தமிழ் / B.Litt / பகுதி I அல்லதுபகுதி II தமிழுடன்எந்தபட்டமும்				
	Course Coordinator Name& Department :முனைவர் ஜெ.அந்தோணி.ஜெயஷிலா&தமிழ்த்துறை				
COURSE OBJECTIVES : தமிழிலக்கண, இலக்கியங்களின்ஆராய்ச்சிப்பற்றிஅறியச்செய்தல்					
COURSE OUTCOMES (COs)					
CO1	இலக்கண, சங்கஇலக்கியஆய்வுகள்பற்றிஅறிவர்				
CO2	அறஇலக்கியஆய்வுகள்பற்றிஅறிவர்				
CO3	உரையாசிரியர்கள்பற்றியஆய்வுகள்பற்றிஅறிவர்				

CO4	பிற்காலஅறநூல்ஆய்வுகள்பற்றிஅறிவர்										
CO5	இருபதாம்நூற்றாண்டுஇலக்கியங்களின்ஆய்வுகள்அறிவர்										
CO6	தமிழ்இலக்கண, இலக்கியங்களின்ஆராய்ச்சிப்பற்றி அறிவர்										
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	PSO3
2	CO1		M			H		H		H	H
	CO2		M			H		H			
	CO3		M			H		H			
	CO4		M			H		H			
	CO5		M			H		H			
	CO6		M			H		H			
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									

அலகு1

9

இலக்கண, சங்கஇலக்கியஆய்வுகள்: தொல்காப்பியரும்அவருக்குமுற்பட்டகாலமும்- சங்கம்குறித்தவரலாறு - சங்கநூல்வரலாறு. காப்பியஇலக்கியஆய்வுகள்: சிலப்பதிகாரம்- மணிமேகலை - சீவகசியதாமணி - வளையாபதி - குண்டலகேசி - பிற்காப்பியங்கள்.

அலகு2

9

அறஇலக்கியஆய்வுகள்: திருக்குறள் - திருவள்ளுவர்- திருக்குறள்நீங்கலானபதினெண்கீழ்க்கணக்கு. பக்திஇலக்கியஆய்வுகள்: தேவாரம்- திருவாசகம்- திருமயதிரம்- பிற்திருமுறைகள் - நாலாயிரத்திவ்யபிரபயதம்- கிறித்தவஇலக்கியங்கள் - இசுலாமியஇலக்கியங்கள்.

அலகு3

9

உரையாசிரியர்கள்பற்றியஆய்வுகள்: இளம்பூரணர்- சேனாவரையர்- பேராசிரியர்- நச்சினார்க்கினியர்- பரிமேலழகர்- பிறஉரையாசிரியர்கள். சிற்றிலக்கியஆய்வுகள்: அந்தாதி - உலா - மடல் - பள்ளு - குறவஞ்சி - தூது - பரணி - கலம்பகம்- பிறசிற்றிலக்கியங்கள்

அலகு4

9

பிற்காலஅறநூல்ஆய்வுகள்: ஆத்திசூடி - கொன்றைவேந்தன்- நல்வழி- மூதுரை- வெற்றிவேற்கை - உலகநீதி - நன்னெறி- நீதிநெறிவிளக்கம்- பிறஅறநூல்கள். பிற்காலநூல்ஆய்வுகள்: வள்ளலார்- பலபட்டடைச்சொக்கநாதபுலவர்- தனிப்பாடல்கள் - சித்தர்இலக்கியங்கள் - பிறஅறநூல்கள்.

இருபதாம்நூற்றாண்டுஆய்வுகள்: பாரதியார்- பாரதிதாசன்- கவிமணி – நாமக்கல்கவிஞர்- புதுக்கவிஞர்கள் – பிறகவிஞர்கள் – தமிழ்அறிஞர்கள் – புதினங்கள் – சிறுகதைகள் – நாடகங்கள் – நாட்டுப்புறஇலக்கியங்கள் – பிற. கோட்பாட்டுஆய்வுகள்: பிறதுறைசார்ந்தஆய்வுகள் – நிறுவனம்சார்யதஆய்வுகள் – மொழிஆய்வுகள் – புதியகருத்தோட்டஆய்வுகள் – பிற.

பாடநூல்கள்:

1. சுப்பிரமணியன், "தமிழாராய்ச்சியின்வளர்ச்சி", அமுதநிலையம், 1971
2. பாவீரப்பன், "தமிழ்ஆராய்ச்சியின்வரலாறு", வனிதாபதிப்பகம், 2008
3. தமிழ்ப்பேராசிரியர்கள், "தமிழ்ஆராய்ச்சிவரலாறு", பச்சையப்பன்ஆய்வரங்கம், தமிழ்த்துறை, 2004

பார்வைநூல்கள்:

1. ப. திருஞானசம்பந்தம், தமிழியல் ஆய்வு வரலாறு, சந்தியா பதிப்பகம், 2017
2. நா. இராமச்சந்திரன், தமிழியல் ஆய்வு, நியூ செஞ்சுரி புக் ஹவுஸ், 2010
3. ம. மதியழகன், தமிழியல் ஆய்வு வரலாறு, ப்ரீத் வெளியீட்டகம், 1996

பாடநெறி ஒருங்கிணைப்பாளர்

துறைத் தலைவர்

P18META013	தமிழ்மொழிவரலாறு			L	T	P	C				
	Total Contact Hours – 45			3	0	0	3				
	Prerequisite course – B.A.தமிழ் / B.Litt / பகுதி I அல்லதுபகுதி II தமிழுடன்எந்தபட்டமும்										
	Course Coordinator Name& Department :முனைவர் சு.பால்பாண்டி&தமிழ்த்துறை										
COURSE OBJECTIVES : தமிழ்மொழிவரலாறுபற்றிகற்பித்தல்											
COURSE OUTCOMES (COs)											
CO1	தமிழ்மொழிவரலாறுபற்றிகற்பித்தல்										
CO2	தமிழ்எழுத்தின்தோற்றம்வளர்ச்சிபற்றிஅறிவர்										
CO3	தற்காலத்தில்தமிழின்வளர்ச்சிபற்றிஅறிவர்										
CO4	தொல்காப்பியஅமைப்புமுறை, உருபனியல்தொடரியல்பற்றிஅறிவர்										
CO5	பெயர்த்தொடர்அமைப்புமொழிபற்றிஅறிவர்										
CO6	தமிழ்மொழிவரலாறுபற்றி அறிவர்										
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	PSO3
2	CO1	M	H							H	H
	CO2	M	H								
	CO3	M	H								
	CO4	M	H								
	CO5	M	H								
	CO6	M	H								

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								

அலகு¹ 9
இந்தியமொழிக்குடும்பங்கள்

அலகு² 9
தமிழ்எழுத்தின்தோற்றமும்வளர்ச்சியும்

அலகு³ 9
தமிழ்மொழிவரலாறு- தற்காலத்தில்தமிழின்வளர்ச்சி

அலகு⁴ 9
தொல்காப்பியம்- எழுத்து – சொல்- பொருள்அமைப்புமுறை- தமிழ்உருபனியலும்தொடரியலும்

அலகு⁵ 9
பெயர்த்தொடர்அமைப்புமொழி

பாடநூல்கள்:

1. ம. இராசேந்திரன், "தமிழ்மொழிவரலாறு", தமிழ்வளர்ச்சிஇயக்ககம், 1999
2. தெ.பொ. மீனாட்சிசுந்தரனார், "தமிழ்மொழிவரலாறு", நியூசெஞ்சுரிபுக்ஹவுஸ், 2018
3. சு.சக்திவேல், "தமிழ்மொழிவரலாறு", மணிவாசகர்பதிப்பகம், 2014

பார்வைநூல்கள்:

1. நரசய்யா, "தமிழ் மொழியின் வரலாறு", உலகத் தமிழாராய்ச்சி நிறுவனம், 2003
2. சூரியநாராயண சாஸ்திரியார், தமிழ் மொழியின் வரலாறு, தமிழாராய்ச்சி நிறுவனம், 2012
3. ஞா. தேவநேயப் பாவாணர் , தமிழ் வரலாறு , சங்கர் பதிப்பகம், 1967

பாடநெறி ஒருங்கிணைப்பாளர்

துறைத் தலைவர்

P18MCTA201	தொல்காப்பியம்- சொல்லதிகாரம்					L	T	P	C		
	Total Contact Hours – 60					4	0	0	4		
	Prerequisite course – B.A.தமிழ் / B.Litt / பகுதி I அல்லதுபகுதி II தமிழுடன்எந்தபட்டமும்										
	Course Coordinator Name& Department :முனைவர். த. கிறிஸ்டல் ரெஜித்ரம்தமிழ்த்துறை										
COURSE OBJECTIVES : தமிழ்மொழியின்செழுமையையும், சொல்லிலக்கணக்கோட்பாடுகளையும்கற்பித்தல்.											
COURSE OUTCOMES (COs)											
CO1	சொற்றொடர்வாக்கியமாக, வேற்றுமைஉருபுசொற்றொடராகஅமைவதுபற்றிஅறிவர்										
CO2	வேற்றுமைஉருபுகள், பெயர்ச்சொல்எவ்வாறுமாற்றம்கொள்ளும்என்பதுபற்றிஅறிவர்										
CO3	ஒருமை, பன்மை, மூவிடம், மற்றும்வினையியல்பற்றிஅறிவர்										
CO4	இடைச்சொற்கள், உரிச்சொற்கள்அவைஉணர்த்தும்பொருள்களைப்பற்றிஅறிவர்										
CO5	இயற்சொல், திரிசொல், திசைச்சொல், வடசொல், எச்சம்முதலானவைபற்றிஅறிவர்										
CO6	தமிழ்மொழியின்செழுமையையும், சொல்லிலக்கணக்கோட்பாடுகளையும் அறிவர்										
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	PSO3
2	CO1	L	H							H	H
	CO2	L	H								
	CO3	L	H								
	CO4	L	H								
	CO5	L	H								
	CO6	L	H								
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									

அலகு2 வேற்றுமைமயங்கியல், விளிமரபு	12
அலகு3 பெயரியல், வினையியல்	12
அலகு4 இடையியல், உரியியல்	12
அலகு5 எச்சவியல்.	12

பாடநூல்கள்:

1. சேனாவரையர், "தொல்காப்பியம்சொல்லதிகாரம்", அமராவதிபதிப்பகம், 2017
2. கோ.இளவழகன், "தொல்காப்பியம்சொல்லதிகாரம்", தமிழ்மண்பதிப்பகம், 2003
3. கு.சுந்தரமூர்த்தி, "தொல்காப்பியம்சொல்லதிகாரம்", அண்ணாமலைப்பல்கலைக்கழகம், 1996

பார்வைநூல்கள்:

1. சேனாவரையனார், "தொல்காப்பியம் சொல்லதிகாரம்", சாரதா பதிப்பகம், 2010
2. வ.த.இராம.சுப்பிரமணியம், "தொல்காப்பியம் சொல்லதிகாரம்", பூம்புகார் பதிப்பகம், 2012
3. மு.சண்முகம், "தொல்காப்பியம் சொல்லதிகாரம்", பாரி நிலையம், 2010

பாடநெறி ஒருங்கிணைப்பாளர்

துறைத் தலைவர்

P18MCTA202	சங்கஇலக்கியம்- எட்டுத்தொகை	L	T	P	C
	Total Contact Hours – 60	4	0	0	4
	Prerequisite course – B.A.தமிழ் / B.Litt / பகுதி I அல்லதுபகுதி II தமிழுடன்எந்தபட்டமும்				
	Course Coordinator Name& Department :முனைவர் ஜெ.அந்தோணி.ஜெயஷிலா&தமிழ்த்துறை				
COURSE OBJECTIVES : சங்கஇலக்கியங்கள்இயற்கைசார்ந்தவாழ்வியல்கூறுகளோடுகட்டமைக்கப்பட்டவைஎன்பதனைஅறியச்செய்தல்					
COURSE OUTCOMES (COs)					
CO1	களவு, கற்புசார்ந்தவைகளைஅவரவர்கூற்றுகளின்வழிஅறிவர்				
CO2	கார்காலத்தில்தலைவியின் பிரிவு, தோழிதலைவியைஆற்றுப்படுத்துவதைபற்றிஅறிவர்				

CO3	களவுகற்புசார்ந்தவை, ஆற்றுப்படுத்துதல், முருகவேளைவாழ்த்துதல்பற்றிஅறிவர்										
CO4	நெடுஞ்சேரலாதனின்வீரம், பகைவர்நாடு, கொடைபற்றிஅறிவர்										
CO5	புறநானூறுபாடல்களைபற்றிஅறிவர்										
CO6	சங்க இலக்கியங்கள் மூலம் இயற்கை சார்ந்த வாழ்வியல் கூறுகளை அறிவர்										
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	PSO3
2	CO1	M	H						H	M	M
	CO2	M	H								
	CO3	M	H								
	CO4	M	H								
	CO5	M	H								
	CO6	M	H								
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									

அலகு1

நற்றிணை - தலைவன்கூற்று - 3, 6, 8, 21, 39, 52, 75,113, 126, 384
குறுந்தொகை - தலைவிகூற்று - 223, 231, 254,279, 293, 311, 320, 330, 346, 368

12

அலகு2

ஐங்குறுநூறு - பாசறைப்பத்து, தோழிக்குஉரைத்தபத்து
கலித்தொகை: பாலைக்கலி - 2-11 குறிஞ்சிக்கலி - 37-46
மருதக்கலி- 66-75 முல்லைக்கலி- 101-110 நெய்தற்கலி - 118-127

12

அலகு3

அகநானூறு: தலைவன்கூற்று- 121, 123, 124, 126, 130 தலைவிகூற்று- 122, 128, 133, 135, 138
தோழிகூற்று - 127, 129, 132, 137, 143 ; பரிபாடல்:- செவ்வேள்(9)

12

அலகு4

பதிற்றுப்பத்து - இரண்டாம்பத்து- இமயவரம்பன்னெடுஞ்சேரலாதன்

12

அலகு5

புறநானூறு- (ஆசிரியர்வரிசையில்) : ஆலத்தூர்கிழார்- 34, 36, 69, 225, 324
முடமோசியார்- 13,127,128,129, 130 ஒளவையார்- 90, 91, 92, 93, 94 கபிலர்-111, 112, 113, 114, 115
கல்லாடனார்- 23, 25, 371, 385, 391 பரணர் - 63, 336, 343, 348, 369

12

பாடநூல்கள்:

1. அ.ப. பாலையன், "நற்றிணைமூலமும்உரையும்", சாரதாபதிப்பகம், 2017
2. புலியூர்க்கேசிகன், "குறுந்தொகைமூலமும்உரையும்", கௌராபதிப்பகமும், 2015
3. கு.வெ.பாலசுப்பிரமணியம், "ஐங்குறுநூறு: மூலமும்உரையும்", நியூசெஞ்சரிபுக்ஸ், 2004
4. புலியூர்க்கேசிகன், "கலித்தொகைமூலமும்உரையும்", சாரதாபதிப்பகம், 2015
5. புலியூர்க்கேசிகன், அகநானூறுமூலமும்உரையும்", சாரதாபதிப்பகம், 2018
6. புலியூர்க்கேசிகன், "பரிபாடல்மூலமும்உரையும்", சாரதாபதிப்பகம், 2015
7. புலியூர்க்கேசிகன், "பதிற்றுப்பத்து", செண்பகாபதிப்பகம், 2010
8. புலியூர்க்கேசிகன், "புறநானூறுமூலமும்உரையும்", சாரதாபதிப்பகம், 2018

பார்வைநூல்கள்:

1. ஆசிரியர்கள், "சங்க இலக்கியம் (14 தொகுதிகள்)", நியூசெஞ்சரி புக் ஹவுஸ், 2010
2. கு.வெ.பாலசுப்பிரமணியம், "சங்க இலக்கியம்", நியூசெஞ்சரி புக் ஹவுஸ், 2012
3. சுப்ரமணியன், "தமிழ் செவ்வியல் நூல்கள்", மணிவாசகர் பதிப்பகம், 2011

பாடநெறி ஒருங்கிணைப்பாளர்

துறைத் தலைவர்

P18MCTA203	சிறநிலக்கியங்கள்		L	T	P	C					
	Total Contact Hours – 60		4	0	0	4					
	Prerequisite course – B.A.தமிழ் / B.Litt / பகுதி I அல்லதுபகுதி II தமிழுடன்எந்தப்பட்டமும்										
	Course Coordinator Name& Department :முனைவர் பாலகிருஷ்ணன்.இரா .&தமிழ்த்துறை										
COURSE OBJECTIVES : அறம், பொருள், இன்பம், வீடுஎனும்உறுதிப்பொருள்களுள்ஒன்றைத்விளக்குவதாகஅமையும்சிறநிலக்கியத்தைபற்றிகற்பித்தல்											
COURSE OUTCOMES (COs)											
CO1	சொக்கநாதரின்பெருமை, திருவிளையாடல்புராணவரலாறுபற்றிஅறிவர்										
CO2	குலோத்துங்கச்சோழனின்புகழ், வம்சாவழிபற்றிஅறிவர்										
CO3	பிள்ளைத்தமிழ்இலக்கியத்தைப்பற்றிஅறிவர்										
CO4	குறிசொல்லும்'குறம்' என்றசிறநிலக்கியத்தைப்பற்றிஅறிவர்										
CO5	குலோத்துங்கசோழனின்கலிங்கப்போர்வெற்றிபற்றிஅறிவர்										
CO6	அறம், பொருள், இன்பம், வீடு எனும் உறுதிப் பொருள்களை அறிவர்										
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	PSO3
2	CO1		M			H			H		M
	CO2		M			H					
	CO3		M			H					
	CO4		M			H					
	CO5		M			H					
	CO6		M			H					

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								

அலகு¹

குமரகுருபரர்- மதுரைக்கலம்பகம்

12

அலகு²

ஒட்டக்கூத்தர்- குலோத்துங்கச்சோழன்உலா

12

அலகு³

மீனாட்சிசுந்தரம்பிள்ளை- சேக்கிழார்பிள்ளைத்தமிழ்

12

அலகு⁴

குமரகுருபரர்- மீனாட்சியம்மைக்குறம்

12

அலகு⁵

ஜெயங்கொண்டார்- கலிங்கத்துப்பரணி

12

பாடநூல்கள்:

1. கதிர்முருகு, "மதுரைக்கலம்பகம்மூலமும்உரையும்", சாரதாபதிப்பகம், 2007
2. கதிர்முருகு, "குலோத்துங்கச்சோழன்உலாதெளிவுரை", சாரதாபதிப்பகம், 2009
3. துரை.இராசாரம், "சேக்கிழார்பிள்ளைத்தமிழ்", பாரிநிலையம், 2008
4. துரை.இராசாரம், "மீனாட்சியம்மைக்குறம்" பாரிநிலையம், 2007
5. பி.ரா. நடராசன், கலிங்கத்துப்பரணி, திருமகள்நிலையம், 2008

பார்வைநூல்கள்:

1. தா. ஈசுவரப்பிள்ளை, "தமிழில்சிறுநிலக்கியவரலாறு", தமிழ்ப்பல்கலைக்கழகம், 2013
2. மு.பொன்னுசாமி, "தமிழ்சிறுநிலக்கியவரலாறு" (இருதொகுதிகள்), பாரிநிலையம், 2012
3. நாஞ்சில்நாடன், சிறுநிலக்கியங்கள், தமிழினிவெளியீடு, 2013

பாடநெறி ஒருங்கிணைப்பாளர்

துறைத் தலைவர்

P18MCTA204	நீதிஇலக்கியங்கள்		L	T	P	C					
	Total Contact Hours – 60		4	0	0	4					
	Prerequisite course – B.A.தமிழ் / B.Litt / பகுதி I அல்லதுபகுதி II தமிழுடனளந்தபட்டமும்										
	Course Coordinator Name& Department :முனைவர் சு.பால்பாண்டி&தமிழ்த்துறை										
COURSE OBJECTIVES :											
COURSE OUTCOMES (COs)											
CO1	அரசனதுஇயல்புகுறித்துஇருபத்தைந்துஅதிகாரம்மூலம்அறிவர்										
CO2	நாள்தோறும்வாழ்க்கையில்பின்பற்றிநடக்கவேண்டியநித்தியஒழுக்கங்களைஅறிவர்										
CO3	வாழ்க்கையில்நல்லவழியில்நடப்பதற்குஉதவும்அறக்கருத்துக்களைஅறிவர்										
CO4	மக்களைநல்வழிபடுத்தும்நன்னெறிகளைஅறிவர்										
CO5	நறுந்தொகைமூலம்நல்லகருத்துகளைஅறிவர்										
CO6	அறம், பொருள், இன்பம், வீடுபெறுஆகியநாற்பொருள்களைப்பற்றி அறிவர்										
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	PSO3
2	CO1			M		H			H		M
	CO2			M		H					
	CO3			M		H					
	CO4			M		H					
	CO5			M		H					
	CO6			M		H					
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									

அலகு1 திருக்குறள்- பொருட்பால்- அரசியல்	12
அலகு2 திரிகடுகம்(பாடல்கள்1-15) ஆசாரக்கோவை(பாடல்கள்1-10)	12
அலகு3 ஒளவையார்- நல்வழிமுழுவதும்(40 பாடல்கள்)	12
அலகு4 சிவப்பிரகாசர்- நன்னெறிமுழுவதும்(40 பாடல்கள்)	12
அலகு5 அதிவீரராமபாண்டியர்- வெற்றிவேற்கை(பாடல்கள்1-35)	12

பாடநூல்கள்:

1. பகலவன், "திருக்குறள்கருத்துரை", கற்பகம்புத்தகாலயம், 2018
2. ஆசிரியர்குழு, "திரிகடுகம்மூலமும்உரையும்", சாரதாபதிப்பகம், 2018
3. தமிழ்ப்பிரியன், "ஆசாரக்கோவைமூலமும்உரையும்", கற்பகம்புத்தகாலயம், 2007
4. ந.மு.வேங்கடசாமிநாட்டார், "நல்வழிநறுந்தொகை", சாரதாபதிப்பகம், 2018
5. சுதிர்முருகு, "நன்னெறிமூலமும்உரையும்", சாரதாபதிப்பகம், 2017
6. ஆ.கணபதி, ஆ.சுப்புலட்சுமிகணபதி, "வெற்றிவேற்கை", ஸ்ரீ அலமுபுத்தகநிலையம், 2014

பார்வைநூல்கள்:

1. மு. பொன்னுசாமி, "தமிழ்நீதிஇலக்கியவரலாறு", பாரிநிலையம், 2013
2. சுதிர்முருகு, "பிற்காலநீதிஇலக்கியவரலாறு", கௌராபதிப்பகக்குழுவும், 2010
3. ந.மு.வேங்கடசாமிநாட்டார், "நீதிநூல்கள்", பாரிநிலையம், 2012

பாடநெறி ஒருங்கிணைப்பாளர்

துறைத் தலைவர்

P18MCTA205	தமிழகவரலாறும்பண்பாடும்	L	T	P	C
	Total Contact Hours – 45	3	0	0	3
	Prerequisite course – B.A.தமிழ் / B.Litt / பகுதி I அல்லதுபகுதி II தமிழுடன்எந்தப்பட்டமும்				
	Course Coordinator Name& Department :முனைவர் ஜெ.அந்தோணி.ஜெயஷிலா&தமிழ்த்துறை				
COURSE OBJECTIVES : தமிழகத்தின்தொன்மை, அரசாட்சிமுறை, சமூகவாழ்க்கைகளைப்பற்றிஅறியச்செய்தல்					
COURSE OUTCOMES (COs)					
CO1	தமிழகவரலாற்றின்பல்வேறுகாலங்களைப்பற்றிஅறிவர்				
CO2	தமிழகத்தின்தொன்மை, சமூகநிலை, பல்லவர்காலஆட்சியைப்பற்றிஅறிவர்				
CO3	சோழப்பேரரசின்தோற்றம், வளர்ச்சி, வீழ்ச்சி, மக்களின்வாழ்க்கைப்பற்றிஅறிவர்				

CO4	பாண்டியப்பேரரசின்தோற்றம், வளர்ச்சி, வீழ்ச்சி, மக்களின்வாழ்க்கைபற்றிஅறிவர்										
CO5	ஆங்கிலேயர்ஆட்சி, இவ்வாட்சியைஎதிர்த்துஎழுந்தசுதந்திரக்கிளர்ச்சியைஅறிவர்										
CO6	தமிழகத்தின்தொன்மை, அரசாட்சிமுறை, சமூகவாழ்க்கைகளைப்பற்றி அறிவர்										
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	PSO3
2	CO1		H	M	H	M			H	M	M
	CO2		H	M	H	M					
	CO3		H	M	H	M					
	CO4		H	M	H	M					
	CO5		H	M	H	M					
	CO6		H	M	H	M					
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									

அலகு1

தமிழகவரலாற்றுக்குரிய சான்றுகள் செப்பேடுகள்- கல்வெட்டுகள்- இலக்கியங்கள்- வெளிநாட்டார் குறிப்புகள்- வரலாற்றுக்கு முற்பட்ட காலம்- தமிழகவரலாற்றில் பழைய கற்காலம், புதிய கற்காலம், இரும்புக்காலம்-ஆகியவற்றுக்கான சான்றுகளும் அவற்றைப்பற்றிய ஆவணங்களும்- சிந்து வெளிநாகரிகம்- திராவிடர் யார்?

அலகு2

தமிழகத்தின் தொன்மை - குமரிக்கண்டம்- சங்ககாலச் சேரர், பாண்டியர், சோழர் வரலாறு - சங்ககாலச் சமூகநிலை - பெண்டிர்நிலை கல்விநிலை - சங்ககாலத்தமிழகத்தின் பொற்காலம்- களப்பிரர் ஆட்சியும், தமிழகமும். பல்லவர்தோற்றமும், வரலாறும்- முற்காலப்பல்லவர்கள் இடைக்காலப்பல்லவர்கள்- பிற்காலப்பல்லவர்கள்- புதிய பல்லவர் மரபு- பல்லவரின் வீழ்ச்சி - பல்லவர்கள் ஆட்சி முறை - சமயநிலை சமூக வாழ்க்கை - கல்விநிலை - பெண்டிர்நிலை- இசையும் நடனமும்- கட்டடக்கலை.

அலகு3

பிற்காலச் சோழப்பேரரசின்தோற்றமும், வளர்ச்சியும்- சோழர் வரலாறு- முதல் இராசராசன், முதல் இராசேந்திரன் ஆகியோரின் தனிச்சிறப்பு - சோழரும், இராட்டிரடரும்- சோழரும்- சாளுக்கியரும் தமிழகத்துக்கும் இலங்கைக்குமுள்ள தொடர்புகள்- சோழர் ஆட்சி வீழ்ச்சி - சமயநிலை. பிற்காலச் சோழராட்சி முறை - சமூக வாழ்க்கை - பொருளாதாரநிலை - ஊராட்சி முறை - பெண்டிர்நிலை- இசை - நடனம்- சோழர்காலத்தில் கட்டடக்கலைத்தொடர்புகள்.

அலகு4

முதல் பாண்டியப்பேரரசு - பாண்டிய நாட்டில் சோழராட்சி எழுச்சியும், இரண்டாம் பாண்டியப்பேரரசு உருவாக்கமும்- பாண்டியர் வீழ்ச்சியும்- இசுலாமியர் வருகையும். பாண்டியர் ஆட்சி முறை- சமூக வாழ்க்கை - பொருளாதாரநிலை - நீர்ப்பாசனம்- முத்துக்குளிப்பு - பாண்டியர் ஆட்சியில் மகளிர்நிலை - பொருளாதாரம்- வாணிகம். தமிழகத்தில் இசுலாமியர் விசயநகரம் மராட்டியர் இராணிமங்கம் மாவரலாறு ஆட்சி முறை- சமூகநிலை.

அலகு5

ஆங்கிலேயர் ஆட்சி தமிழகத்தில் வேரூன்றல்- ஆங்கிலேயர் சமூகநிலை - கல்விநிலை - பொருளாதாரநிலை- ஆங்கில ஆட்சி- பூலித்தேவன், கட்டபொம்மன், மருதுசகோதரர்கள் வரலாறு- வேலூர்க்கலகம்- உப்புச்சத்தியாகிரகம்- காங்கிரசு, நீதிக்கட்சி (சுயமரியாதை) இயக்கம், விடுதலைப்போராட்டப்பணி

பாடநூல்கள்:

- 1.கே.கே.பிள்ளை, "தமிழகவரலாறுமக்களும்பண்பாடும்", தமிழாராய்ச்சிநிறுவனம்,2015
2. வே.தி.செல்லம், "தமிழகவரலாறும்பண்பாடும்", மணிவாசகர்பதிப்பகம், 2002
3. மா. இராசமாணிக்கனார், "தமிழகவரலாறும்பண்பாடும்", சாரதாபதிப்பகம், 2016

பார்வைநூல்கள்:

1. அ.தட்சிணாமூர்த்தி, "தமிழர்நாகரிகமும்பண்பாடும்",ஐந்திணைப்பதிப்பகம், 2017
2. நாவானமாமலை ., தமிழர் பண்பாடும் தத்துவமும், அலைகள் வெளியீட்டகம், 2016
3. தேவநேயர், "பண்டைத்தமிழர்நாகரிகமும்பண்பாடும்", பூம்புகார்பதிப்பகம், 2017

பாடநெறி ஒருங்கிணைப்பாளர்

துறைத் தலைவர்

P18META021	இலக்கியத்திறனாய்வுக்கோட்பாடுகள்						L	T	P	C	
	Total Contact Hours – 45						3	0	0	3	
	Prerequisite course – B.A.தமிழ் / B.Litt / பகுதி I அல்லதுபகுதி II தமிழுடன்எந்தப்பட்டமும்										
	Course Coordinator Name& Department :முனைவர் பாலகிருஷ்ணன்.இரா .&தமிழ்த்துறை										
COURSE OBJECTIVES : மொழியின்கட்டமைப்புக்கூறுகளையும்கருத்தியல்வளத்தினையும்அறியச்செய்தல்											
COURSE OUTCOMES (COs)											
CO1	திறனாய்வுக்கலையின்தோற்றம், வளர்ச்சிபற்றிஅறிவர்										
CO2	திறனாய்வுவகைகளைப்பற்றிஅறிவர்										
CO3	பின்நவீனத்துவத்தின்அணுகுமுறை, கதைநெறிபற்றியதிறனாய்வுகளைஅறிவர்										
CO4	அழகியல், பின்காலனியகோட்பாடு, நவீனவரலாற்றியல்கோட்பாடுகளைஅறிவர்										
CO5	பெண்பால்இணைவு, மகிழ்விலகல், உரையாசிரியர், மரபுவழிகோட்பாடுகளைஅறிவர்										
CO6	மொழியின்கட்டமைப்புக்கூறுகளையும்கருத்தியல்வளத்தினையும் அறிவர்										
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	PSO3
2	CO1	M	H					M		M	H
	CO2	M	H					M			
	CO3	M	H					M			
	CO4	M	H					M			
	CO5	M	H					M			
	CO6	M	H					M			
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

அலகு1

9

திறனாய்வுக்கலையின்வளர்ச்சி- மார்க்சியத்திறனாய்வு- இருப்பியத்திறனாய்வு

அலகு2

9

உட்பகுப்புத்திறனாய்வு- தொல்வடிவத்திறனாய்வு- அமைப்பியலும்பின்அமைப்பியலும்- பெண்ணியத்திறனாய்வு

அலகு3

9

பின்னவீனத்துவம்- சூழலியல்திறனாய்வு- கதைஉரைப்பியல்

அலகு4

9

எழுநடையியல்- குறியியல்- பின்காலனியத்திறனாய்வு- புதியவரலாற்றியலும்பண்பாட்டுப்பொருண்மியவாதமும்- தாராண்மைமானிடவாதம்

அலகு5

9

பெண்பால்இணைவுமற்றும்மகிழ்விலகல்திறனாய்வு- உரையாசிரியரும்திறனாய்வும்- மரபுவழிஇந்தியத்திறனாய்வு- திறனாய்வும்மத்தியதரவகுப்பினரும்-திறனாய்வுக்கலைச்சொற்கள்

பாடநூல்கள்:

1. சபா.ஜெயராசா, "இலக்கியத்திறனாய்வுக்கோட்பாடுகள்", சேமமடுபதிப்பகம், 2008
2. சு. பாலச்சந்திரன், "இலக்கியத்திறனாய்வு", நியூசெஞ்சுரிபுக்ஹவுஸ், 2012
3. க. பஞ்சாங்கம், "தமிழ்இலக்கியத்திறனாய்வுவரலாறு", அன்னம்-அகரம்பதிப்பகம்,2013

பார்வைநூல்கள்:

1. மு. வரதராசன், "இலக்கியத்திறன்", பாரிநிலையம், 2015
2. எம். ஏ. நுஃமான், "திறனாய்வுக்கட்டுரைகள்", அன்னம்வெளியீடு, 1985
3. பூர்ணச்சந்திரன், "தமிழ்இலக்கியத்திறனாய்வுவரலாறு", தமிழ்ப்பல்கலைக்கழகம்,2013

பாடநெறி ஒருங்கிணைப்பாளர்

துறைத் தலைவர்

P18META022	தமிழ்நாட்டின்தலவரலாறுகளும்பண்பாட்டுச்சின்னங்களும்						L	T	P	C	
	Total Contact Hours – 60						3	0	0	3	
	Prerequisite course – B.A.தமிழ் / B.Litt / பகுதி I அல்லதுபகுதி II தமிழுடன்எந்தப்பட்டமும்										
	Course Coordinator Name& Department :முனைவர் சு.பாற்பாண்டி&தமிழ்த்துறை										
COURSE OBJECTIVES : தமிழ்நாட்டின்தலவரலாறுகளையும்,பண்பாட்டுச்சின்னங்கங்களையும்அறியச்செய்தல்											
COURSE OUTCOMES (COs)											
CO1	காஞ்சிபுரம், மாமல்லபுரம், திருவண்ணாமலைதலவரலாறுகளைஅறிவர்										
CO2	செஞ்சி, சிதம்பரம், பூம்புகார், கும்பகோணம், நாகப்பட்டினம்தலவரலாறுகளைஅறிவர்										
CO3	திருவாரூர், தஞ்சாவூர், சோழபுரம், ஸ்ரீரங்கம்தலவரலாறுகளைஅறிவர்										
CO4	பழனி, மதுரை, இராமநாதபுரம், இராமேஸ்வரம்தலவரலாறுகளைஅறிவர்										
CO5	திருச்செந்தூர், ஸ்ரீவில்லிபுத்தூர், கன்னியாகுமரிதலவரலாறுகளைஅறிவர்										
CO6	தமிழ்நாட்டின்தலவரலாறுகளையும்,பண்பாட்டுச்சின்னங்கங்களையும் அறிவர்										
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	PSO3
2	CO1		H	H	M		M	M	H	M	M
	CO2		H	H	M		M	M			
	CO3		H	H	M		M	M			
	CO4		H	H	M		M	M			
	CO5		H	H	M		M	M			
	CO6		H	H	M		M	M			
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									

அலகு1

தமிழ்நாட்டின்தலவரலாற்றுச்சுருக்கம்- காஞ்சிபுரம்- மாமல்லபுரம்- திருவண்ணாமலை

9

அலகு2

செஞ்சிக்கோட்டை- சிதம்பரம்- பூம்புகார்- கும்பகோணம்- நாகப்பட்டினம்

9

அலகு3 9
திருவாரூர்- தஞ்சாவூர்- கங்கைகொண்டசோழபுரம்- ஸ்ரீரங்கம்

அலகு4 9
பழனி- மதுரை- இராமநாதபுரம்- இராமேஸ்வரம்

அலகு5 9
திருச்செந்தூர்- ஸ்ரீவில்லிபுத்தூர்- பாஞ்சாலங்குறிச்சி- கன்னியாகுமரி

பாடநூல்கள்:

1. வி. கந்தசாமி, "தமிழ்நாட்டின்தலவரலாறுகளும்பண்பாட்டுச்சின்னங்களும்", பழனியப்பாபிரதர்ஸ், 2011
2. இரா.நாகசாமி, "தமிழகதொன்மைச்சின்னங்கள்", தமிழகஅரசுதொல்லியல்துறை,1978
3. இரா.நாகசாமி, "மாமல்லை", தமிழ்நாடுஅரசுதொல்லியல்துறை, 1977

பார்வைநூல்கள்:

1. இரா.நாகசாமி, "கங்கைகொண்டசோழபுரம்வரலாறு," தொல்லியல்துறை, 1992
2. ஜே.எம்.சோமசுந்தரம், "சோழர்கோயில்கள்", தஞ்சாவூர்அரண்மனைதேவஸ்தானம்,1998
3. மா.இராசமாணிக்கனார், "தமிழ்ப் பண்பாட்டு வரலாறு", காவ்யா பதிப்பகம், 2012

பாடநெறி ஒருங்கிணைப்பாளர்

துறைத் தலைவர்

P18META023	தமிழகம்ஊரும்பேரும்					L	T	P	C		
	Total Contact Hours – 45					3	0	0	3		
	Prerequisite course – B.A.தமிழ் / B.Litt / பகுதி I அல்லதுபகுதி II தமிழுடன்எந்தப்பட்டமும்										
	Course Coordinator Name& Department :திரு மு பரந்தாமன்.&தமிழ்த்துறை										
COURSE OBJECTIVES : தமிழகத்தில் உள்ள ஊர்களையும், அதன்பெயர்களையும் சிறப்புகளையும் அறியச்செய்தல்											
COURSE OUTCOMES (COs)											
CO1	தமிழகத்தின்நிலவகைப்பற்றிஅறிவர்										
CO2	தமிழகத்தின்நாடும்நகரமும்- குடியும்படையும்பற்றிஅறிவர்										
CO3	தமிழகத்தின்குலமும்கோவும்பற்றிஅறிவர்										
CO4	தமிழகத்தின்தேவம்தலமும்பற்றிஅறிவர்										
CO5	தமிழகத்தின்அன்றையஇன்றையநிலையைஅறிவர்										
CO6	தமிழகத்தில் உள்ள ஊர்களையும், அதன்பெயர்களையும் சிறப்புகளையும் அறிவர்										
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	PSO3
2	CO1		H	M	M		M	M			

	CO2		H	M	M		M	M	H	M	M
	CO3		H	M	M		M	M			
	CO4		H	M	M		M	M			
	CO5		H	M	M		M	M			
	CO6		H	M	M		M	M			
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								

அலகு1

தமிழகமும்நிலமும்

9

அலகு2

நாடும்நகரமும்- குடியும்படையும்

9

அலகு3

குலமும்கோவும்

9

அலகு4

தேவும்தலமும்

9

அலகு5

தமிழகம்- அன்றும்இன்றும்

9

பாடநூல்கள்:

1. ரா.பி.சேதுப்பிள்ளை, "தமிழகம்ஊரும்பேரும்", பழனியப்பாபிரதர்ஸ், 2008
2. எஸ்.சுவந்தரபாண்டியன், "தமிழக ஊர் வரலாறுகள்", அரசினர் சுவடிகள் நூலகம். 1995
3. எம்.என்.ராமசாமி, தமிழகம் அன்றும் இன்றும், வனிதா பதிப்பகம், 2013

பார்வைநூல்கள்:

1. எஸ்.ஆர்.விவேகானந்தம், ஊர் வரலாறு – பந்தல்குடி, குளோபல் பப்ளிகேஷன்ஸ், 2012
2. ஆர்.ஆளவந்தார், இலக்கியத்தில் ஊர்ப்பெயர்கள், உலகத் தமிழாராய்ச்சி நிறுவனம், 1984
3. ஆர்.ஆளவந்தார், கல்வெட்டில் ஊர்பெயர்கள், உலகத் தமிழாராய்ச்சி நிறுவனம், 1983

துறைத் தலைவர்

P18MCTA301	தொல்காப்பியம்- பொருளதிகாரம்- I					L	T	P	C			
	Total Contact Hours – 60					4	0	0	4			
	Prerequisite course – B.A.தமிழ் / B.Litt / பகுதி I அல்லதுபகுதி II தமிழுடன்எந்தப்பட்டமும்											
	Course Coordinator Name& Department :முனைவர். த. கிறிஸ்டல் ரெஜிசுதமிழ்த்துறை											
COURSE OBJECTIVES : பிற்காலஇலக்கியமரபுகளின்தோற்றுவாய்பொருளதிகாரத்தில்அமைந்திருப்பதைஅறிதல்												
COURSE OUTCOMES (COs)												
CO1	அகவாழ்க்கைப்பாங்குகளும், பண்புகளும்பற்றிஅறிவர்											
CO2	புறவாழ்க்கைப்பாங்குகளும், பண்புகளும்பற்றிஅறிவர்											
CO3	காதல்கொள்ளும்ஒழுக்கம்பற்றிஅறிவர்											
CO4	திருமணத்துக்குப்பின்னர்வாழும்வாழ்க்கையைப்பற்றிஅறிவர்											
CO5	பாட்டின்உட்பொருளைஎவ்வாறுஉணர்ந்துகொள்ளவேண்டும்என்பதைப்பற்றிஅறிவர்											
CO6	பிற்கால இலக்கிய மரபுகளின் தோற்றுவாய் மற்றும் வாழ்க்கைப் பாங்குகளையும் அறிவர்											
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	PSO3	
2	CO1	L	H							H	H	
	CO2	L	H									
	CO3	L	H									
	CO4	L	H									
	CO5	L	H									
	CO6	L	H									
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										

அலகு¹ அகத்திணையியல்	12
அலகு² புறத்திணையியல்	12
அலகு³ களவியல்	12
அலகு⁴ கற்பியல்	12
அலகு⁵ பொருளியல்	12

பாடநூல்கள்:

1. பேராசிரியர், "தொல்காப்பியம்பொருளதிகாரம்", அமராவதிபதிப்பகம், 2017
2. இளம்பூரணார், "தொல்காப்பியம்பொருளதிகாரம்", சாரதாபதிப்பகம், 2018
- 3.பாலசுப்பிரமணியன், "தொல்காப்பியம் மூலமும் உரையும்", நியூ செஞ்சரி பூக்ஸ்,2017

பார்வைநூல்கள்:

1. தொல்காப்பியர், "தொல்காப்பியம்: எளியஉரை", கழகவெளியீடு, 1998
2. எஸ்.திருஞானசம்பந்தம், "தொல்காப்பியம்பொருளதிகாரம்", கதிர்வதிப்பகம், 2018
- 3.ச.வே.சுப்பிரமணியன், "தொல்காப்பியம்உரைவளக்கோவை",மெய்யப்பன்பதிப்பகம்,2009

பாடநெறி ஒருங்கிணைப்பாளர்

துறைத் தலைவர்

	பக்திஇலக்கியம்	L	T	P	C
	Total Contact Hours – 60	4	0	0	4

P18MCTA302		Prerequisite course – B.A.தமிழ் / B.Litt / பகுதி I அல்லதுபகுதி II தமிழுடன்எந்தப்பட்டமும்									
		Course Coordinator Name& Department :திரு மு பரந்தாமன்.&தமிழ்த்துறை									
COURSE OBJECTIVES : பக்திஇலக்கியமரபு, தொடர்ச்சி, ஒழுக்கமுறைமைகளைஅறியச்செய்தல்											
COURSE OUTCOMES (COs)											
CO1	தேவாரம், திருவாசகம்மூலம்சைவசமயகடவுளைவழிபடுதலைபற்றிஅறிவர்										
CO2	திருமொழி, திருக்குறுந்தாண்டகம்மூலம்சைவசமயகடவுளைவழிபடுதல்பற்றிஅறிவர்										
CO3	இரட்டைமணிமாலை, திருப்புகழ்மூலம்சிவபெருமான்,முருகனை வழிபடுதலை அறிவர்										
CO4	இறைவனையும்,, இறைவன்உயிர்களிடத்தேவைத்துள்ளதிருவருளைப்பற்றியும்அறிவர்										
CO5	அபிராமபட்டர், அபிராமிஅம்மைமீதுசெலுத்தியபக்தியைபற்றிஅறிவர்										
CO6	பக்திஇலக்கியமரபு, தொடர்ச்சி, ஒழுக்கமுறைமைகளை அறிவர்										
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	PSO3
2	CO1	L	M			H		M	H	M	M
	CO2	L	M			H		M			
	CO3	L	M			H		M			
	CO4	L	M			H		M			
	CO5	L	M			H		M			
	CO6	L	M			H		M			
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									

அலகு1

12

1. 'வண்டரங்கப்புனல்' எனத்தொடங்கும்திருத்தோணிபுரப்பதிகம்- சம்பந்தர்- தேவாரம்
2. 'இடர்கெடுமாறு' எனத்தொடங்கும்திருவாரூர்ப்பதிகம்- அப்பர்- தேவாரம்
'வேதியா' எனத்தொடங்கும்திருவாலவாய்ப்பதிகம்- அப்பர்- தேவாரம்
3. 'நொந்தா ஒண்கடரே' எனத்தொடங்கும்திருக்கச்சி மேற்றளிப்பதிகம்-சுந்தரர்-தேவாரம்
4. ஆசைப்பத்து – திருவாசகம்

அலகு2

12

1. மன்னுபெரும்புகழ்2.வாரணமாயிரம்3.கருப்பூரம்நாறுமோ- பதிகங்கள்- ஆண்டாள்- நாச்சியார்திருமொழி. 4. பெரியதிருமொழி- திருக்குறுந்தாண்டகம்- திருமங்கையாழ்வார்.

அலகு3

12

- 1.திருநாரையூர்விநாயகர்இரட்டைமணிமாலை(11ம்திருமுறை)-நம்பியாண்டார்நம்பி.
2. திருப்புகழ்- மதுரைத்தலப்பாடல்கள்(11 பாடல்கள்) – அருணகிரிநாதர்

அலகு4

12

1. தாயுமானார்பாடல்கள்- பராபரக்கண்ணிமுதல்50 கண்ணிகள்.
2. திருவருட்பா- பாங்கிமார்கண்ணியும், வெண்ணிலாக்கண்ணியும்(49கண்ணிகள்) வள்ளலார்

அலகு5

12

அபிராமிஅந்தாதி- முதல்50 பாடல்கள்.

பாடநூல்கள்:

1. சம்பந்தர், "தேவாரம்-முதல், இரண்டாம்மூன்றாத்திருமுறை", இந்துபப்ளிகேஷன்ஸ், 2007
2. மாணிக்கவாசகர்"திருவாசகம்"மணிவாசகர்பதிப்பகம், 2003
3. பிரபாகரி, "ஆண்டாள்-நாச்சியார் திருமொழி: பொழிப்புரை", மோகன் பதிப்பகம், 2002
4. திருமங்கையாழ்வார், "பெரிய திருமொழி உரை", தமிழ்ப் பல்கலைக் கழகம், 1989
5. இராசவசந்தகுமார், "பதினொன்றாத்திருமுறை", கற்பகம்பல்கலைக்கழகம், 2011
6. செங்கல்வராயர்"அருணகிரிநாதர்-திருப்புகழ் மூலமும் உரையும்", சீதைப் பதிப்பகம்,2013

பார்வநூல்கள்:

1. ப.அருணாசலம், "பக்திஇலக்கியம்", பாரிநிலையம், 2010
2. மேகநாதன், "பக்திஇலக்கியவரலாறு", காவ்யா, 2012
3. அ. அ. மணவாளன், "தமிழ்பக்திஇலக்கியம்", சாகித்தியஅகாடெமி, 2013

பாடநெறி ஒருங்கிணைப்பாளர்

துறைத் தலைவர்

P18MCTA303	உரையாசிரியர்களும்உரைமரபுகளும்						L	T	P	C	
	Total Contact Hours – 60						4	0	0	4	
	Prerequisite course – B.A.தமிழ் / B.Litt / பகுதி I அல்லதுபகுதி II தமிழுடன்எந்தப்பட்டமும்										
	Course Coordinator Name& Department : திரு மு பரந்தாமன்.&தமிழ்த்துறை										
COURSE OBJECTIVES : இருளில்மூழ்கிக்கிடந்தபண்டையஇலக்கண, இலக்கியங்களைஉலகிற்குப்புதியவெளிச்சம்கொண்டுஅறியச்செய்தஉரையாசிரியர்களை பற்றி அறியச் செய்தல்											
COURSE OUTCOMES (COs)											
CO1	தமிழ்உரைகளின்தோற்றம், வளர்ச்சி, வகைகள், இயல்புகள்பற்றிஅறிவர்										
CO2	இலக்கணஉரையாசிரியர்கள், அவர்களின்உரைச்சிறப்புகளைபற்றிஅறிவர்										
CO3	இலக்கியஉரையாசிரியர்கள், அவர்களின்உரைச்சிறப்புகளைபற்றிஅறிவர்										
CO4	சமயஉரையாசிரியர்கள், அவர்களின்உரைச்சிறப்புகளைபற்றிஅறிவர்										
CO5	19-ஆம், 20-ஆம்நூற்றாண்டுஉரையாசிரியர்கள்பற்றிஅறிவர்										
CO6	பண்டையஇலக்கண, இலக்கியங்களைஉலகிற்குப்புதியவெளிச்சம்கொண்டுஅறியச்செய்தஉரையாசிரியர்களை பற்றி அறிவர்										
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	PSO3

2	CO1										
	CO2										
	CO3										
	CO4										
	CO5										
	CO6										
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									

அலகு1

12

தமிழ்உரைகளின்தோற்றமும்வளர்ச்சியும் – தொல்காப்பியத்தில்உரைஇலக்கணம் – உரையின்வகைகள் – உரையும்உரைநடையும் – உரைகளில்தினாாய்வுக்கூறுகள் – உரையின்இயல்புகள்.

அலகு2

12

இலக்கணஉரையாசிரியர்கள் – நக்கீரர் – இளம்பூரணர் – சேனாவரையர் – பேராசிரியர் – நச்சினார்க்கினியர்- தெய்வச்சிலையார் – கல்லாடர் – குணசாகரர் – மயிலைநாதர் – சங்கரநமச்சிவாயர்ஆகியோரின்உரைச்சிறப்புக்களும்உரைமரபுகளும் – வடமொழிச்செல்வாக்கு.

அலகு3

12

இலக்கியஉரையாசிரியர்கள் – அடியார்க்குநல்லார், அரும்பதவுரைகாரர், நச்சினார்க்கினியர் – பரிமேலழகர்மற்றுத்திருக்குறள்உரையாசிரியர்கள்.

அலகு4

12

சமயநூல்உரையாசிரியர்கள் – நாலாயிரத்திவ்யபிரபந்தஉரைகள் – பன்னிருதிருமுறைஉரைகள் – சைவசாத்திரஉரைகள்.

அலகு5

12

19-ஆம், 20-ஆம்நூற்றாண்டுஉரையாசிரியர்கள்

பாடநூல்கள்:

1. மு.வை.அரவிந்தன், "உரையாசிரியர்கள்", மணிவாசகர்பதிப்பகம், 2018
2. இரா.மோகன், நெல்லைசொக்கலிங்கம், "உரைமரபுகள்", மணிவாசகர்பதிப்பகம், 2011
3. தமிழண்ணல், "உரைவிளக்கு", விழிகள்பதிப்பகம், 2012

பார்வைநூல்கள்:

1. ஞானசுந்தரம், "வைணவஉரைவளம்", University of Madras, 1980
2. தி.சு. நடராசன், "உரைகளும் உரையாசிரியர்களும்", நியூ செஞ்சுரி புக் ஹவுஸ், 2013
3. வி.செல்வநாயகம், "தமிழ் உரைநடை வரலாறு", அடையாளம் பதிப்பகம், 2018

பாடநெறி ஒருங்கிணைப்பாளர்

துறைத் தலைவர்

P18MCTA304	ஆராய்ச்சிநெறிமுறைகள்					L	T	P	C		
	Total Contact Hours – 45					3	0	0	3		
	Prerequisite course – B.A.தமிழ் / B.Litt / பகுதி I அல்லதுபகுதி II தமிழுடன்எந்தப்பட்டமும்										
	Course Coordinator Name& Department :முனைவர். த. கிறிஸ்டல் ரெஜி&தமிழ்த்துறை										
COURSE OBJECTIVES : ஆராய்ச்சிநெறிமுறைகளையும்ஆய்வேட்டுஅமைப்புப்பற்றிஅறிதல்.											
COURSE OUTCOMES (COs)											
CO1	ஆய்வுஅணுகுமுறைகள், ஆய்வுமுறைகள்பற்றிபற்றிஅறிவர்										
CO2	ஆய்வுச்சிக்கல், தலைப்பைதேர்வுசெய்வது, கருதுகோள்பற்றிஅறிவர்										
CO3	களஆய்வுபற்றிஅறிவர்										
CO4	ஆய்வில்கணிநியின்பயன்பாடுபற்றிஅறிவர்										
CO5	ஆய்வேடுஅமைப்புப்பற்றிஅறிவர்										
CO6	ஆராய்ச்சிநெறிமுறைகளையும்ஆய்வேட்டுஅமைப்புப்பற்றி அறிவர்										
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	PSO3
2	CO1		M			H		H		H	H
	CO2		M			H		H			
	CO3		M			H		H			
	CO4		M			H		H			
	CO5		M			H		H			
	CO6		M			H		H			
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									

அலகு1

9

ஆய்வு- ஆய்வுநாகரிகம்- ஆய்வாளர்தகுதிகள்- ஆய்வுமொழிநடை- ஆய்வுஅணுகுமுறைகள்- சமூகவியல்அணுகுமுறை(Sociological Approach) - உளவியல்அணுகுமுறை(Psychological Approach) - அமைப்பியல்அணுகுமுறை(Systems Approach) - வடிவியல்அணுகுமுறை(Formalistic Approach) முதலியன. ஆய்வுமுறைகள்:தனிநிலைஆய்வுமுறை(Case Study Method), பயனிலைஆய்வுமுறை(Applied Research), ஒருதுறைசார்ஆய்வு(Monodisciplinary Research), பலதுறைசார்ஆய்வு(Interdisciplinary Research), விதியுணர்முறை(Normative Method), உய்த்துணர்முறை(Deductive Method), பகுப்புமுறைஆய்வு(Analytical Research), தொகுப்புமுறைஆய்வு(Synthetic Research), தருக்கமுறைஆய்வு(Logical Method), அளவீட்டுமுறைஆய்வு(Survey Method), புள்ளியல்ஆய்வு(Statistical Method), வரலாற்றுஆய்வுமுறை(Historical Method), ஒப்பியல்ஆய்வு(Comparative Method), விளக்கமுறைஆய்வு, களஆய்வுமுறை(Field Method) முதலியன.

அலகு2

9

ஆய்வுசெல்நெறி: ஆய்பொருள்சிக்கல்- ஆய்வுச்சிக்கலைஇனங்காணுதலும்பகுத்துணர்தலும்- ஆய்வுச்சிக்கலின்தகவல்அறிதலும்உறுதிப்பாடும். தலைப்புத்தெரிவு- கருதுகோள்- கருதுகோளின்தேவை- கருதுகோளின்வகைகள்- எளியகருதுகோள்- மாற்றுக்கருதுகோள்- பயனில்கருதுகோள்- எதிர்மறைக்கருதுகோள்.

அலகு3

9

களஆய்வியல்: களப்பணி- விளக்கம்- களப்பணியின்தேவை- திட்டமிடல்- கருவிகள்- காலம், பொழுது- சேகரிக்கும்இடம், சூழல்- தகவலாளிஅணுகுமுறை- நேர்காணல், வினாநிரல், வாய்மொழிமரபுச்செய்திகள், தகவல்கள்திரட்டுதல்- வகைப்பாடு, ஆய்வு.

அலகு4

9

ஆய்வில்கணினியின்பயன்பாடு: தரவுகளைச்சேகரிப்பதில்கணினியின்பங்கு, தமிழ்ஆய்வில்இணையத்தின்பயன்பாடு, தமிழ்வலைகள், மின்குழு, மின்னஞ்சல்கள், தமிழ்மின்னிதழ்கள், இணையநூலகப்பயன்பாடு.

அலகு5

9

ஆய்வேட்டுஅமைப்பியல்: ஆய்வுப்பொருள்அமைப்பும்இயல்பாகுபாடும்- இயல்அமைப்பு- இயல்களின்வைப்புமுறை- நடைச்செய்மை- பிறன்கோட்கூறல்- உடன்படல்- மறுத்தல்- மேற்கோள்காட்டும்முறைமை- ஆய்வுநாகரிகம்- அடிக்குறிப்பு- குறியீட்டுவிளக்கம்- பின்னிணைப்புகள்- மூலநூற்பட்டியல்- மேற்கோள்நூற்பட்டியல்- ஆய்வேட்டுவடிவமைப்பில்கணினியின்பயன்பாடு.

பாடநூல்கள்:

1. தமிழண்ணல், எம்.எஸ்.இலக்குமணன், "ஆய்வியல்அறிமுகம்", பாரிநிலையம், 2016
2. சு.வேங்கடராமன், "ஆய்வுக்கட்டுரைஎழுதும்முறை", சர்வோதயாபண்ணை, 2007
3. கு.வெ.பாலசுப்ரமணியன், "ஆய்வியல்நெறிமுறைகள்", பாரிநிலையம், 2016

பார்வைநூல்கள்:

1. க.துரையசன், "இணையமும்இனியதமிழும்", இசைப்பதிப்பகம், 2012
2. மு.பொன்னுசாமி, "ஆராய்ச்சிமுறையியல்ஒர்அறிமுகம்", கலாபதிப்பகம், 1983
3. க.பஞ்சாங்கம், ஆய்வு நெறிமுறைகள், அன்னம் - அகரம், 2017

பாடநெறி ஒருங்கிணைப்பாளர்

துறைத் தலைவர்

P18MCTA305	பொதுமொழியியல்	L	T	P	C
	Total Contact Hours – 60	4	0	0	4
	Prerequisite course – B.A.தமிழ் / B.Litt / பகுதி I அல்லதுபகுதி II தமிழுடன்எந்தபட்டமும்				
	Course Coordinator Name& Department :திருமதி நா அமீதாராணி.&தமிழ்த்துறை				
COURSE OBJECTIVES : மொழியின்வடிவம், பொருள், சூழல்குறித்தஅறிவைப்பெறச்செய்தல்					
COURSE OUTCOMES (COs)					
CO1	மொழியில்பயன்படுத்தப்படும்வெவ்வேறுஒலிகள்பற்றிஅறிவர்				

CO2	மொழியின் அடிப்படை ஒலிகளின் வடிவங்களை அறிவார்										
CO3	சொற்களின் உள் அமைப்புகளை அறிவார்										
CO4	ஒலி, உருபங்களை அறிவார்										
CO5	மொழியில் சொற்கள், தொடர்கள் போன்றவற்றின் பொருளைப்பற்றி அறிவார்										
CO6	மொழியின் வடிவம், பொருள், சூழல்களை அறிவார்										
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	PSO3
2	CO1	L	H							H	H
	CO2	L	H								
	CO3	L	H								
	CO4	L	H								
	CO5	L	H								
	CO6	L	H								
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									

அலகு¹ 12
ஒலியியல்

அலகு² 12
ஒலியனியல்

அலகு³ 12
உருபனியல்

அலகு⁴ 12
தொடரியல்

அலகு⁵ 12
பொருண்மையியல்

பாடநூல்கள்:

1. கி.கருணாகரன், வ.ஜெயா, "மொழியியல்", குமரன்பதிப்பகம், 1997
2. முத்துசண்முகன், "இக்காலமொழியியல்", மதுரைப் பள்ளிஷிங்ஹவுஸ், 1980
3. பொற்கோ, "பொதுமொழியியல்", ஐந்திணைப்பதிப்பகம், 2011

பார்வைநூல்கள்:

1. ரா.சீனிவாசன், "மொழியியல்", முல்லைநிலையம், 2009
2. டெரன்ஸ் கார்டன், "மொழியியல்:தொடக்கநிலையினருக்கு",அடையாளம் பதிப்பகம், 2013
3. அகஸ்தியலிங்கம்,"மொழியியல் வாழ்வும் வரலாறும்", தமிழ் மொழியியற் கழகம், 1977

பாடநெறி ஒருங்கிணைப்பாளர்

துறைத் தலைவர்

P18META031	இலக்கியஒப்பாய்வுக்களங்கள்						L	T	P	C	
	Total Contact Hours – 45						3	0	0	3	
	Prerequisite course – B.A.தமிழ் / B.Litt / பகுதி I அல்லதுபகுதி II தமிழுடன்எந்தப்பட்டமும்										
	Course Coordinator Name& Department :திருமதி நா அமீதாராணி.&தமிழ்த்துறை										
COURSE OBJECTIVES : படைப்பாளிகளையும், பன்மொழிபடைப்புகளையும், ஒரேமொழியில்வெவ்வேறுதுறைகளின்படைப்புப்போக்குகளையும்ஒப்பீட்டுஆய்வதுபற்றிஅறிதல்											
COURSE OUTCOMES (COs)											
CO1	ஒப்பிலக்கியக்கோட்பாடுகள்பற்றிஅறிவர்										
CO2	ஒப்பிலக்கியமூலம்வீரயுகப்பாடல்கள், அறநெறிப்பாடல்களைப்பற்றிஅறிவர்										
CO3	ஒப்பிலக்கியமூலம்இறைநெறிப்பாடல்கள், வீறுணர்ச்சிப்பாடல்களைப்பற்றிஅறிவர்										
CO4	செந்நெறிஇலக்கியங்கள்பற்றிஅறிவர்										
CO5	பாரதியோடுவால்ட்விட்மன், சுந்தரம்பிள்ளை, ஷெல்லிபடைப்புகளை ஒப்பீட்டு பார்க்கும்திறனைபெறுவர்										
CO6	ஒப்பீட்டுஆய்வதுபற்றி அறிவர்										
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	PSO3
2	CO1		H	M	M	M		M	H	M	H
	CO2		H	M	M	M		M			
	CO3		H	M	M	M		M			
	CO4		H	M	M	M		M			
	CO5		H	M	M	M		M			
	CO6		H	M	M	M		M			

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								

அலகு1

ஒப்பாய்வுகளங்கள்- ஒப்பிலக்கியக்கோட்பாடுகள்

9

அலகு2

வீரயுகப்பாடல்கள்- அறநெறிப்பாடல்கள்

9

அலகு3

இறைநெறிப்பாடல்கள்- வீறுணர்ச்சிப்பாடல்கள்

9

அலகு4

புதுச்செந்நெறிஇலக்கியங்கள்- பொற்காலமும்புதுயுகமும்

9

அலகு5

பாரதியும்வால்விட்டமனும்- பாரதியும்சுந்தரம்பிள்ளையும்- பாரதியும்ஷெல்லியும்

9

பாடநூல்கள்:

1. ஜி.ஜான்சாமுவேல், "இலக்கியஒப்பாய்வுக்களங்கள்", ஆசியஆய்வுகள்நிறுவனம், 2013
2. தமிழண்ணல், "ஒப்பிலக்கியஅறிமுகம்", பாரிநிலையம், 2014
3. க. கைலாசபதி, "ஒப்பியல்இலக்கியம்", குமரன்புத்தகஇல்லம், 2014

பார்வைநூல்கள்:

1. அ.மணவாளன், "இலக்கியஒப்பாய்வுசங்கஇலக்கியம்", நியூசெஞ்சுரிபுக்ஸ், 2009
2. அ. சிவக்கண்ணன் "மு.வ.வும் காண்டேகரும்", பாவை பப்ளிகேஷன்ஸ், 2007
3. கி. நடராஜன், "வள்ளுவரும் ஷேக்ஸ்பியரும்", நியூ செஞ்சுரி புக் ஹவுஸ், 2016

P18META032	படைப்புத்திறன்		L	T	P	C					
	Total Contact Hours – 45		3	0	0	3					
	Prerequisite course – B.A.தமிழ் / B.Litt / பகுதி I அல்லதுபகுதி II தமிழுடன்எந்தப்பட்டமும்										
	Course Coordinator Name& Department :திருமதி நூ அமீதாராணி.&தமிழ்த்துறை										
COURSE OBJECTIVES : மாணவர்களின்படைப்புத்திறனைபெருகச்செய்தல்											
COURSE OUTCOMES (COs)											
CO1	புதுக்கவிதைஎழுதும்திறனைஅடைவர்										
CO2	சிறுகதைஎழுதும்திறனைஅடைவர்										
CO3	மேடைப்பேச்சுபேசும்திறனைஅடைவர்										
CO4	நேர்முகவர்ணனைசெய்யும்திறனைஅடைவர்										
CO5	கட்டுரைஎழுதும்திறனைஅடைவர்										
CO6	இலக்கியம் படைக்கும் ஆற்றலைப் பெறுவர்										
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	PSO3
2	CO1	L	H	H	M	M		H		M	H
	CO2	L	H	H	M	M		H			
	CO3	L	H	H	M	M		H			
	CO4	L	H	H	M	M		H			
	CO5	L	H	H	M	M		H			
	CO6	L	H	H	M	M		H			
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									

அலகு1	9
புதுக்கவிதைஎழுதுதல்- மையக்கருத்தைஅடிப்படையாகக்கொண்டு20 அடிகளுக்குமிகாமல்எழுதப்பயிற்றுவித்தல்	
அலகு2	9
சிறுகதைஎழுதுதல்- சிறுகதைஇலக்கணப்படிஎழுதப்பயிற்றுவித்தல்(ஐந்துபக்கங்களுக்குள்)	
அலகு3	9
மேடைப்பேச்சுபயிற்றுவித்தல்	
அலகு4	9
நேர்முகவர்ணனைசெய்தல்- ஏதேனும்ஒருநிழ்ச்சியைகுறித்துவர்ணனைஎழுதப்பயிற்றுவித்தல்	
அலகு5	9
கட்டுரைஎழுதுதல்- இலக்கிய, இலக்கணங்களைப்பற்றிகட்டுரைஎழுதப்பயிற்றுவித்தல்	

பாடநூல்கள்:

1. வல்லிக்கண்ணன், "புதுக்கவிதையின்தோற்றமும்வளர்ச்சியும்", சீதைபதிப்பகம், 2018
2. கி.வா.ஜகந்நாதன், "கவிபாடலாம்", அமுதநிலையம், 2012
3. கா.சிவத்தம்பி, "தமிழில்சிறுகதையின்தோற்றமும்வளர்ச்சியும்", தமிழ்ப்புத்தகாலயம், 2013

பார்வைநூல்கள்:

1. பொன்னுச்சாமி, "சிறுகதைப்படைப்பின்உள்விவகாரம்", கங்கைபுத்தகநிலையம்,2007
2. டேல்கார்னகி, "மேடைப்பேச்சுக்கலை", கண்ணதாசன்பதிப்பகம், 2012
- 3.பசுமைக்குமார், "படைப்பாற்றல் திறனை வளர்ப்பது எப்படி", தாமரை பப்ளிகேஷன்ஸ், 2009

பாடநெறி ஒருங்கிணைப்பாளர்

துறைத் தலைவர்

P18META033	:மையஅரசுப்பணித்தேர்வுத்தமிழ்	L	T	P	C
	Total Contact Hours – 45	3	0	0	3
	Prerequisite course – B.A.தமிழ் / B.Litt / பகுதி I அல்லதுபகுதி II தமிழுடன்எந்தபட்டமும்				
	Course Coordinator Name& Department :திரு கே பரந்தாமன்.வி.&தமிழ்த்துறை				
COURSE OBJECTIVES : மையஅரசுப்பணித்தேர்வுக்குமாணவர்களைத்தகுதிபெறச்செய்தல்					
COURSE OUTCOMES (COs)					
CO1	மொழிக்குடும்பங்களின்வரலாறு, சொற்களைப்பற்றிஅறிவர்				
CO2	தொல்காப்பியம், சங்கஇலக்கியம், அறஇலக்கியங்களைப்பற்றிஅறிவர்				
CO3	பக்திஇலக்கியத்தைப்பற்றிஅறிவர்				
CO4	சிறநிலக்கியங்களைப்பற்றிஅறிவர்				

CO5	தற்காலஇலக்கியங்களைப்பற்றிஅறிவர்										
CO6	மைய அரசுப்பணித் தேர்வுக்கு மாணவர்கள் தகுதி பெறுவர்										
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	PSO3
2	CO1			H	M	M	M	H		H	H
	CO2			H	M	M	M	H			
	CO3			H	M	M	M	H			
	CO4			H	M	M	M	H			
	CO5			H	M	M	M	H			
	CO6			H	M	M	M	H			
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									

அலகு1

9

இந்தியமொழிக்குடும்பங்களின்வரலாறு- இந்தியமொழிகளில்தமிழின்இடம்- திராவிடத்தின்இடம்-
திராவிடமொழிகளின்கணக்கீடும்பங்கீடும்- சங்கஇலக்கியமொழி- இடைக்காலத்தமிழ்-பல்லவர்காலம்மட்டும்-
பெயர்ச்சொற்கள், வினைச்சொற்கள், பெயரடைச்சொற்கள், வினையடைச்சொற்கள், காலஇடைநிலைகள்-
வேற்றுமைஉருபுகள்- பிறமொழிகளிலிருந்துசொற்களைக்கடன்வாங்கல்- வட்டாரமற்றும்சமூகக்கிளைமொழிகள்-
இலக்கியத்தமிழுக்கும்பேச்சுத்தமிழுக்கும்உள்ளவேறுபாடு

அலகு2

9

தமிழ்இலக்கியவரலாறு- தொல்காப்பியம்- சங்கஇலக்கியம்- அறஇலக்கியங்களதுவளர்ச்சி-
சிலப்பதிகாரமும்மணிமேகலையும்

அலகு3

9

பக்திஇலக்கியம்(ஆழ்வார்களும்நாயன்மார்களும்)

அலகு4

9

உலா, பரணி, குறவஞ்சி முதலிய சிற்றிலக்கியங்கள்

அலகு5

9

தற்காலஇலக்கியங்களில்சமூகவளர்ச்சி: நாவல், தற்காலஎழுத்துக்களில்பல்வேறுஅரசியல்கருத்தியல்களதுதாக்கம்

சிறுகதை,

புதுக்கவிதை-

பாடநூல்கள்:

1. சு.சக்திவேல், "தமிழ்மொழிவரலாறு", மணிவாசகர்பதிப்பகம், 2014
2. சு.ஆனந்தன், "தமிழ்இலக்கியவரலாறு", பாரிநிலையம், 2018
3. தமிழண்ணல், "புதியநோக்கில்தமிழ்இலக்கியவரலாறு", மீனாட்சிபுத்தகநிலையம், 2017

பார்வைநூல்கள்:

1. தேவிரா, "தமிழ் இலக்கியத் தகவல் களஞ்சியம்", நந்தினி பதிப்பகம், 2019
2. கா.கோ.வேங்கடராமன், "தமிழ் இலக்கிய வரலாறு", நியூ செஞ்சரி புக் ஹவுஸ், 2012
3. மு.வரதராசன், "தமிழ் இலக்கிய வரலாறு", பாரி நிலையம், 2008

பாடநெறி ஒருங்கிணைப்பாளர்

துறைத் தலைவர்

P18MCTA401	தொல்காப்பியம்- பொருளதிகாரம்- II						L	T	P	C	
	Total Contact Hours – 60						4	0	0	4	
	Prerequisite course – B.A.தமிழ் / B.Litt / பகுதி I அல்லதுபகுதி II தமிழுடன்எந்தப்பட்டமும்										
	Course Coordinator Name& Department :முனைவர். த. கிறிஸ்டல் ரெஜி&தமிழ்த்துறை										
COURSE OBJECTIVES : பிற்காலஇலக்கியமரபுகளின்தோற்றுவாய்பொருளதிகாரத்தில்அமைந்திருப்பதைஅறிதல்											
COURSE OUTCOMES (COs)											
CO1	அக, புறச்செய்திகளைபண்டையபாடல்களின்மூலம்அறிவர்										
CO2	அக, புறச்செய்திகளைபண்டையபாடல்களின்மூலம்அறிவர்										
CO3	அக, புறவொழுக்கத்தில்புலப்படும்மெய்ப்பாடுகளைபற்றிஅறிவர்										
CO4	வாய்மொழியில்பொருளைவெளிப்படுத்தும்பாங்கைப்பற்றிஅறிவர்										
CO5	உயிரினங்களின்பாகுபாடு, பெயர்கள், ஐந்துபூதப்பொருள்களைப்பற்றிஅறிவர்										
CO6	இலக்கிய மரபுகளைப் பற்றி அறிவர்										
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	PSO3
2	CO1	L	H							H	H
	CO2	L	H								
	CO3	L	H								
	CO4	L	H								
	CO5	L	H								
	CO6	L	H								

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								

அலகு¹

செய்யுளியல்- நூற்பா¹ முதல்¹²⁵ வரை

12

அலகு²

செய்யுளியல்- நூற்பா¹²⁶ முதல்¹³⁵ வரை

12

அலகு³

மெய்ப்பாட்டியல்

12

அலகு⁴

உவமவியல்

12

அலகு⁵

மரபியல்

12

பாடநூல்கள்:

1. பேராசிரியர், "தொல்காப்பியம்பொருளதிகாரம்", அமராவதிபதிப்பகம், 2017
2. இளம்பூரணர், "தொல்காப்பியம்பொருளதிகாரம்", சாரதாபதிப்பகம், 2018
3. பாலசுப்பிரமணியன், "தொல்காப்பியம்மூலமும்உரையும்", நியூசெஞ்சுரிபுக்ஸ், 2017

பார்வைநூல்கள்:

1. தொல்காப்பியர், "தொல்காப்பியம்: எளியஉரை", கழகவெளியீடு, 1998
2. எஸ்.திருஞானசம்பந்தம், "தொல்காப்பியம்பொருளதிகாரம்", கதிர்வதிப்பகம், 2018
3. ச.வே.சுப்பிரமணியன், "தொல்காப்பியம்உரைவளக்கோவை", மெய்யப்பன்பதிப்பகம், 2009

P18MCTA402	நம்பிஅகப்பொருள்விளக்கம்						L	T	P	C	
	Total Contact Hours – 60						4	0	0	4	
	Prerequisite course – B.A.தமிழ் / B.Litt / பகுதி I அல்லதுபகுதி II தமிழுடன்எந்தப்பட்டமும்										
	Course Coordinator Name& Department :திருமதி ஸ்ரீதேவி .கோ.அ .&தமிழ்த்துறை										
COURSE OBJECTIVES : நம்பிஅகப்பொருள்விளக்கம்இலக்கணத்தைஅறியச்செய்தல்											
COURSE OUTCOMES (COs)											
CO1	அகப்பொருளின்அடிப்படைக்கூறுகளைஅறிவர்										
CO2	அகப்பொருளின்அடிப்படைக்கூறுகளைஅறிவர்										
CO3	தலைவன்- தலைவிவாழ்க்கைநெறிகளைஅறிவர்										
CO4	தலைவன்- தலைவிமணந்துகொள்ளுதல்பற்றிஅறிவர்										
CO5	திருமணத்திற்குப்பின்னர்தலைவன்-தலைவிவாழ்க்கைநெறிகளைஅறிவர்										
CO6	பண்டைய மக்களின் வாழ்க்கை நெறிகளை அறிவர்										
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	PSO3
2	CO1	L	H							H	H
	CO2	L	H								
	CO3	L	H								
	CO4	L	H								
	CO5	L	H								
	CO6	L	H								
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									

அலகு1 12
அகத்திணையியல்- 1 to 54
(அகப்பொருளின்வகைமுதல்உடன்போக்குநிகழ்ந்தவிடத்துஅறத்தொடுநின்றற்குஉரியார்வரை)

அலகு2 12
அகத்திணையியல்- 55 to 116 (கற்புமுதல்காதல்பரத்தையர்வரை)

அலகு3 12
களவியல்-117to170 (களவுஇயல்முதல்வரைவிடைவைத்துப்பொருள்வயிற்பிரிவுவரை)

அலகு4 12
வரைவியல் - 171 to 199 (வரைவுஇயல்முதல்வரைதல்வரை)

அலகு5 12
கற்பியல் - 200 to 209 (கற்புஇயல்முதல்பரத்தையிற்பிரிவுவரை)

பாடநூல்கள்:

1. யோ.ஞானசந்திரஜான்சன், "நம்பிஇயற்றியஅகப்பொருள்விளக்கம்",பாரிநிலையம்,2010
2. தேவிரா, "நம்பிஅகப்பொருள்விளக்கம்- தேவிராஉரை", நந்திநிபதிப்பகம், 2017
3. கா.ர. கோவிந்தராசமுதலியார், "அகப்பொருள்விளக்கம்", கழகவெளியீடு, 1997

பார்வைநூல்கள்:

1. நாற்கவிராசநம்பி, "அகப்பொருள்விளக்கம்மூலமும்உரையும்", சாரதாபதிப்பகம், 2017
2. நாற்கவிராச நம்பி, "அகப்பொருள் விளக்கம்",அண்ணாமலைப் பல்கலைக்கழகம், 1977
3. நாற்கவிராச நம்பி, "அகப்பொருள் விளக்கவுரை", சரசுவதி மகால் வெளியீடு, 1962

பாடநெறி ஒருங்கிணைப்பாளர்

துறைத் தலைவர்

P18MCTA403	காப்பியங்கள்	L	T	P	C
	Total Contact Hours – 60	4	0	0	4
	Prerequisite course – B.A.தமிழ் / B.Litt / பகுதி I அல்லதுபகுதி II தமிழுடன்எந்தப்பட்டமும்				
	Course Coordinator Name& Department :திரு கே பரந்தாமன்.வி.&தமிழ்த்துறை				
COURSE OBJECTIVES : காப்பியங்களின்வளர்ச்சி, கொள்கைப்பின்னணி, சமுதாயமாறுதல்களைஅறியச்செய்தல்					
COURSE OUTCOMES (COs)					

CO1	சிலம்பினால்விளைந்தசிலப்பதிகாரத்தின்மதுரைக்காண்டத்தைப்பற்றிஅறிவர்										
CO2	சண்டேசநாயனார்புராணம்பற்றிஅறிவர்										
CO3	தமயன்தம்பியைகாப்பாற்றமுனைந்துஇராமபாணத்தால்விழுந்தகதையைஅறிவர்										
CO4	கன்னிமரியாஸ்கருப்பம்பற்றிஎழுந்தஐயம்நீங்கிச்சூசைதெளிவுகொண்டதைஅறிவர்										
CO5	அமாவாசைஇருளில்அழகியமுழுநிலவைவரவழைத்து, அதைஇருகூறாகப்பிளவுபடச்செய்துஅதன்வாயாலேபேசவைத்ததைப்பற்றிஅறிவர்										
CO6	காப்பியங்களின்வளர்ச்சி, கொள்கைப்பின்னணி, சமுதாயமாறுதல்களைஅறிவர்										
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	PSO3
2	CO1	L	M						L		M
	CO2	L	M								
	CO3	L	M								
	CO4	L	M								
	CO5	L	M								
	CO6	L	M								
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									

அலகு1

சிலப்பதிகாரம்- மதுரைக்காண்டம்முழுவதும்

12

அலகு2

பெரியபுராணம்- சண்டேசநாயனார்புராணம்முழுவதும்

12

அலகு3

கம்பராமாயணம்- கும்பகர்ணன்வதைப்படலம்முழுவதும்

12

அலகு4

தேம்பாவணி- ஐயம்நீங்குபடலம்(96 பாடல்கள்)

12

அலகு5

சீராப்புராணம்- மதியைஅழைத்தபடலம்(ருபுவ்வத்துக்காண்டம்)

12

பாடநூல்கள்:

1. ந.மு.வேங்கடசாமிநாட்டார், "சிலப்பதிகாரம்- மதுரைக்காண்டம்", தமிழ்மண்பதிப்பகம், 2012
2. பி.ரா. நடராசன், "பெரியபுராணம்மூலமும்உரையும்", உமாபதிப்பகம், 2008
3. ந.சுப்பையபிள்ளை, "கம்பராமாயணம்யுத்தகாண்டம்: கும்பகர்ணன்வதைப்படலம்", சுப்பிரமணியபுத்தகசாலை, 1956

பார்வைநூல்கள்:

1. வீரமாமுனிவர், "தேம்பாவணிமூலமும்உரையும்", கௌராபதிப்பகமும், 2014
2. செங்குத்தம்பிபாவலர், "சீறாப்புராணம்மூலமும்உரையும்", யுனிவர்சல்பப்ளிஷர்ஸ், 2008
- 3.கி.வா. ஜகநாதன், "தமிழ்க் காப்பியங்கள்", சாரதா பதிப்பகம், 2011

பாடநெறி ஒருங்கிணைப்பாளர்

துறைத் தலைவர்

P18MCTA404	சித்தர்இலக்கியம்				L	T	P	C			
	Total Contact Hours – 45				3	0	0	3			
	Prerequisite course – B.A.தமிழ் / B.Litt / பகுதி I அல்லதுபகுதி II தமிழுடன்எந்தபட்டமும்										
	Course Coordinator Name& Department :திரு கே பரந்தாமன்.வி.&தமிழ்த்துறை										
COURSE OBJECTIVES :- நிறைமொழிமாந்தர்களமூலம்அவர்களுடையசிந்தனைகளைப்பற்றிஅறியச்செய்தல்.											
COURSE OUTCOMES (COs)											
CO1	சிவவாக்கியர், பட்டினத்தார், பாம்பாட்டிச் சித்தர்களின் பாடல்களைப் பற்றி அறிவர்										
CO2	இடைக்காட்டு, அகப்பேய், குதம்பைசித்தர்களின்பாடல்களைப்பற்றிஅறிவர்										
CO3	கடுவெளி, அழகணி, பத்திரகிரியார் சித்தர்களின் பாடல்களைப் பற்றி அறிவர்										
CO4	கொங்கண, கஞ்சமலை, கல்லுளி சித்தர்களின் பாடல்களைப் பற்றி அறிவர்										
CO5	சங்கிலி, நாயனார், மௌனசித்தர்ஆகியவர்களின்பாடல்களைப்பற்றிஅறிவர்										
CO6	நிறைமொழிமாந்தர்களின்சிந்தனைகளைப்பற்றிஅறிவர்										
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	PSO3
2	CO1	L	M			H		M	H	M	M
	CO2	L	M			H		M			
	CO3	L	M			H		M			
	CO4	L	M			H		M			
	CO5	L	M			H		M			
	CO6	L	M			H		M			

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								

அலகு1

9

ஒவ்வொருசித்தருக்கும்ஐந்துபாடல்கள்(சிவவாக்கியர்- பட்டினத்தார்- பாம்பாட்டிச்சித்தர்)

அலகு2

9

ஒவ்வொருசித்தருக்கும்ஐந்துபாடல்கள்(இடைக்காட்டுச்சித்தர்- அகப்பேய்ச்சித்தர்- குதம்பைச்சித்தர்)

அலகு3

9

ஒவ்வொருசித்தருக்கும்ஐந்துபாடல்கள்(கடுவெளிச்சித்தர்- அழகணிச்சித்தர்- பத்திரகிரியார்)

அலகு4

9

ஒவ்வொருசித்தருக்கும்ஐந்துபாடல்கள்(கொங்கணச்சித்தர்- கஞ்சமலைச்சித்தர்- கல்லுளிச்சித்தர்)

அலகு5

9

ஒவ்வொருசித்தருக்கும்ஐந்துபாடல்கள்(சங்கிலிச்சித்தர்- திருமூலநாயனார்- வகுளிநாதரென்னும்மௌனச்சித்தர்)

பாடநூல்கள்:

1. சி.எஸ்.முருகேசன், "சித்தர்பாடல்கள்", சங்கர்பதிப்பகம், 2016
2. மீ.ப.சோமசுந்தரம், "சித்தர்இலக்கியம்", அண்ணாமலைப்பல்கலைக்கழகம், 2004
3. ஆர்.திருமுருகன், "சித்தர்பாடல்கள்", சாகித்யஅகாடமி, 2014

பார்வைநூல்கள்:

1. தமிழ்பிரியன், "சித்தர்பாடல்கள்மூலமும்உரையும்", newbooklands, 2013
2. ஜெகதா, "சித்தர் பாடல்கள்", ராம்பிரசாந்த பப்ளிகேஷன்ஸ், 2015
3. சி.எஸ். முருகேசன், பதினெண் சித்தர்கள் வரலாறு, குறிஞ்சி பதிப்பகம், 2009

பாடநெறி ஒருங்கிணைப்பாளர்

துறைத் தலைவர்

P18MCYO001	மனவளக்கலை (Yoga)			L	T	P	C					
	Total Contact Hours – 30			2	0	0	2					
	Prerequisite course – B.A.தமிழ் / B.Litt / பகுதி I தமிழுடன்எந்தப்பட்டமும்											
	Course Coordinator Name& Department :திருமதி ஸ்ரீதேவி .கோ.அ .&தமிழ்த்துறை											
COURSE OBJECTIVES :பாடநெறியை மேற்கொண்ட பிறகு, பங்கேற்பாளர்கள் நல்ல ஆரோக்கியத்தைக் காக்க யோகப் பயிற்சிகள், ஆசனங்கள், சுவாசப் பயிற்சிகள் மற்றும் தியான நுட்பங்களைச் செய்ய முடியும்.												
COURSE OUTCOMES (COs)												
CO1	யோகாவின் பயன். யோகாவின் கோட்பாடுகள். பதஞ்சலியின் (உள் அறிவியலின் விஞ்ஞானி), யோகா சூத்திரம் (யோகா பற்றிய கிளாசிக் புத்தகம்) மற்றும் யோகாவின் எட்டு படிகள் மற்றும் கால்கள் அறிமுகம். வாழ்க்கையில் ஒழுக்கத்தின் முக்கியத்துவம்.											
CO2	யோகாவின் முதல் இரண்டு படிகள் (யாம்) விதிகள் (நியாம்) முக்கியத்துவமும் விளக்கமும். அன்றாட வாழ்க்கையில் பின்பற்ற வேண்டிய ஐந்து நற்பண்புகளின் விளக்கமும் முக்கியத்துவமும். ஆறு துப்புரவு செயல்முறைகள் (ஷுட்கர்மா) பயன் சுருக்கமான அறிமுகம்.											
CO3	யோகப் பயிற்சிகள் - ஒரு அறிமுகம். ஒருவரின் பார்வையில் ஆசன்களின் செல்வாக்கு மற்றும் நன்மைகள். பின்பற்ற வேண்டிய கோட்பாடுகள், விதிகள் மற்றும் முக்கிய அம்சங்கள்.											
CO4	ஆற்றல் மற்றும் ஆற்றல் உடல் (பிராணிக் உடல்) - ஒரு அறிமுகம். நவீன அறிவியல் மற்றும் பிராணன். யோக சுவாசத்தின் முக்கிய விதிகள் (பிராணாயம்). பிராணாயத்தின் தேவை. அறிமுகம்.											
CO5	கலை மற்றும் தளர்வு அறிவியல். மன அழுத்தத்தின் உடல் வெளிப்பாடு. தளர்வு நுட்பங்களின் இயக்கவியல். பதற்றத்திற்கு மூல காரணம். மனதின் மர்மங்கள். மனதின் செயல்பாடுகள்											
CO6	உள்நோக்கி இருப்பது என்ன. பிரத்யஹரின் முக்கியத்துவம். செறிவு (தரன்), தியானம் (தியான்) மற்றும் மொத்த தீர்வு (சமாதி). உயர் மன சக்தியின் வளர்ச்சிக்கு தியானத்தின் முக்கியத்துவம்											
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	PSO3	
2	CO1		H	H	M	M		H	M	L	L	
	CO2		H	H	M	M		H				
	CO3		H	H	M	M		H				
	CO4		H	H	M	M		H				
	CO5		H	H	M	M		H				
	CO6		H	H	M	M		H				
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										

அலகு¹

6

யோகாவின் பொருள் மற்றும் வரையறை - யோகாவின் நோக்கங்கள் - யோகா பற்றிய தவறான கருத்து. யோகா பற்றிய வரலாற்று முன்னோக்கு - பதஞ்சலியின் காலத்திற்கு முன் யோகா (சிந்து சமவெளி நாகரிகம், வேதங்கள், பிரம்மங்கள், உபநிடதங்கள், காவியங்கள், புராணங்கள்). யோகாவுக்கு பதஞ்சலி மற்றும் திருமுலரின் பங்களிப்புகள்.யோகா மற்றும் பிற பயிற்சிகள்.

அலகு²

6

யோகா பள்ளிகள்:பக்தி யோகா, ஞான யோகா, கர்ம யோகா, குண்டலினி யோகா, மந்திர யோகா, ஹத யோகா, ராஜ யோகா. யோகாவின் எட்டு கால்கள்: யம, நியாமா, ஆசனா, பிராணயாமா, பிரத்யஹாரா, தாரணா, தியானா &சமதி. ஆசனம், பிராணயாமா, தியானம், கிரியாஸ் பந்தாக்கள் மற்றும் முத்ரா ஆகியவற்றைப் பயிற்சி செய்வதற்கான பொதுவான கொள்கைகள்.

அலகு³

6

ஆசனங்களின் வகைப்பாடு -தியான ஆசனங்கள் - தளர்வான ஆசனங்கள் - கலாச்சார ஆசனங்கள் - ஆசனங்களைச் செய்யும்போது பாதுகாப்பு நடவடிக்கை மற்றும் முன்னெச்சரிக்கைகள். பிராணயாமா - பிராணயாமா நடைமுறைகளில் வெவ்வேறு கட்டங்கள்:புரகா (உள்ளிழுத்தல்), கும்பகா (தக்கவைத்தல்) மற்றும் ரெக்காக்கா (சுவாசம்), - பிராணயாமா செய்யும் போது பாதுகாப்பு நடவடிக்கைகள் மற்றும் முன்னெச்சரிக்கைகள்.தியானம் - அதன் நுட்பங்கள் மற்றும் நன்மைகள்.கிரியாஸ், பந்தா மற்றும் முத்ராவின் முறைகள் மற்றும் நன்மைகளைப் பயிற்சி செய்தல்.

அலகு⁴

6

தசை அமைப்பு, சுவாச அமைப்பு, சுற்றோட்ட அமைப்பு, நரம்பு மண்டலம், செரிமான அமைப்பு மற்றும் நாளமில்லா அமைப்பு ஆகியவற்றில் யோகாவின் தாக்கம்

அலகு⁵

6

யோகா மற்றும் ஆளுமையின் சமூக குணங்களின் வளர்ச்சி - ஒத்துழைப்பு - எளிமை - சகிப்புத்தன்மை - சமூக மாற்றங்கள் - யோகா மற்றும் தனிப்பட்ட செயல்திறன். யோகா மூலம் தனிப்பட்ட செயல்திறனை மேம்படுத்துதல்.

பார்வைநூல்கள்:

- 1.Author's guide, (2003). Yoga–The Science of Holistic living. Chennai: Vivekananda Kendra Prakashana trust
- 2.Chandrasekaran, K., (1999) Sound Health through Yoga. Sedapatti: Prem Kalyan Publications.
- 3.Maguire, Imelda., (2005) Yoga for a Healthy Body. London: Greenwich Editions.
- 4.Mariayyah, P., (2000). Suriyanamaskar. Perunthurai: Jaya Publishing House.
5. Tummers, Nanette. E., (2009) Teaching Yoga for Life. Champaign: Human Kinetics.

பாடநெறி ஒருங்கிணைப்பாளர்

துறைத் தலைவர்

P18PRTA4P1	ஆய்வுத்திட்டக்கட்டுரை	L	T	P	C
	Total Contact Hours –	0	0	16	8
	Prerequisite course – B.A.தமிழ் / B.Litt / பகுதி I அல்லதுபகுதி II தமிழுடன்எந்தப்பட்டமும்				
	Course Coordinator Name& Department :திருமதி ஸ்ரீதேவி .கோ.அ .&தமிழ்த்துறை				
COURSE OBJECTIVES : ஆய்வுசெய்துஆய்வேடுதயாரிப்பதுபற்றிஅறியச்செய்தல்					
COURSE OUTCOMES (COs)					
CO1	ஆய்வுதலைப்பு, இவ்வாய்வுத்தலைப்பையொட்டிஆய்வுசெய்தவரின்பதிவுகளைஅறிவர்				
CO2	களப்பணியோடுநூலகங்களைப்பயன்படுத்திதகவல்களைசேகரிப்பதுபற்றிஅறிவர்				

CO3	இயல்கள்பகுப்பது, அடிக்குறிப்பு, குறியீட்டுவிளக்கம், பின்னிணைப்புகள்பற்றிஅறிவர்										
CO4	மூலநூற்பட்டியல், மேற்கோள்நூற்பட்டியல்குறித்துஅறிவர்										
CO5	கணிப்பொறிமூலம்தட்டச்செய்துஆய்வேடுதயாரிப்பதுபற்றிஅறிவர்										
CO6	ஆய்வுசெய்துஆய்வேடுதயாரிப்பதுபற்றி அறிவர்										
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	PSO3
2	CO1		M	M	H	H		H		M	H
	CO2		M	M	H	H		H			
	CO3		M	M	H	H		H			
	CO4		M	M	H	H		H			
	CO5		M	M	H	H		H			
	CO6		M	M	H	H		H			
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								

இலக்கியம்தொடர்பானஆய்வுமேற்கொண்டுஆய்வேடுதயாரித்தல்.

ஆய்வுதலைப்பைமேற்பார்வையாளர்மூலம்தெரிவுசெய்து,
இவ்வாய்வுத்தலைப்பையொட்டிஆய்வுசெய்தவரின்பதிவுகளைபார்வையிட்டு, களப்பணியாற்றி,
நூலகங்களைப்பயன்படுத்தி, தகவல்களைசேகரித்து, இயல்களாகபகுத்து, ஆராய்ச்சிநெறிமுறைகள் (மூன்றாம்பருவம்)
பாடத்தைபார்வையிட்டு, இயல்கள், அடிக்குறிப்பு, குறியீட்டுவிளக்கம், பின்னிணைப்புகள், மூலநூற்பட்டியல்,
மேற்கோள்நூற்பட்டியல்இவைகளைத்தயாரித்து,
கணிப்பொறிமூலம்தட்டச்செய்துகுறித்ததேதியில்மேற்பார்வையாளரிடம்ஆய்வேட்டைசமர்ப்பிக்கவேண்டும்

(Open Elective)

(திறந்த தேர்ந்தெடுக்கப்பட்ட பாடம் - நான்காம் பருவம்)

வ. எண்	தாள் குறியீட்டெண்	தாள்	L	T	P	C
1.		கணினியல்	2	0	0	2
2.		கணினித்தமிழ்- இணையம்	2	0	0	2
3.		தகவல்தொடர்பியல்	2	0	0	2
4.		ஊடகவியல்	2	0	0	2
5.		பேச்சுக்கலை	2	0	0	2
6.		இதழியல்கலை				

		கணினியல்	L	T	P	C					
		Total Contact Hours – 30	2	0	0	2					
		Prerequisite course – B.A.தமிழ் / B.Litt / பகுதி I அல்லதுபகுதி II தமிழுடன்எந்தபட்டமும்									
		Course Coordinator Name& Department :முனைவர் ச.பால்பாண்டி&தமிழ்த்துறை									
COURSE OBJECTIVES : கணினியையும்அதன்பயன்பாட்டையும்அறியச்செய்தல்											
COURSE OUTCOMES (COs)											
CO1	கணினித்தலைமுறையும், வகைகளையும்அறிவர்										
CO2	கணினியின்முறைமைகளைஅறிவர்										
CO3	சொல்செயலியில்ஆவணங்களைக்கையாளுதலைப்பற்றிஅறிவர்										
CO4	சொல்செயலியில் பிழைதிருத்தம், கூடுதல்வசதிகள்பற்றிஅறிவர்										
CO5	விரிதாள்செயலியில்பணித்தாள்களைக்கையாளுதலைப்பற்றிஅறிவர்										
CO6	கணினியையும்அதன்பயன்பாட்டையும் அறிவர்										
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	PSO3
2	CO1						M	H			M
	CO2						M	H			
	CO3						M	H			
	CO4						M	H			
	CO5						M	H			
	CO6						M	H			

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								

அலகு¹

10

கணினித்தலைமுறைகள்- கணினிவகைகள்- கணினிமுறைமை(Computer System)

அலகு²

10

சொல்செயலி(MS Word) - ஆவணங்களைக்கையாளுதல்(Handling of Documents) - ஆவணவடிவமைப்பு(Document Formating) - பிழைதிருத்தம்- கூடுதல்வசதிகள்

அலகு³

10

விரிதாள்(Spreadsheet) - பணித்தாள்களைக்கையாளுதல்(Handling of Worksheets) - பணித்தாள்வடிவமைப்பு(Worksheet Formating) - வரைபடங்கள்(Charts) - அட்டவணைச்செயல்பாடுகள்

பாடநூல்கள்:

1. கணேஸ்வரன், "தமிழ்மூலம்MS WORD", Quick Tec Academy, 2000
2. கணேஸ்வரன், "தமிழ்மூலம்MS EXCEL", Quick Tec Academy, 2000
3. ஜெ.வீரநாதன், எம்.எஸ் ஆபீஸ், எஸ்சென்ஷியல் பப்ளிகேஷன்ஸ், 2018

பார்வைநூல்கள்:

- 1.ம.லெனின், எளியதமிழில் எக்ஸெல், சிக்ஸ்த்சென்ஸ் பப்ளிகேஷன்ஸ், 2008
- 2.கே.புவனேஸ்வரி, மைக்ரோசாஃப்ட் வேர்ட் 2013, கண்ணதாசன் பதிப்பகம், 2008
3. கே.புவனேஸ்வரி, கம்ப்யூட்டர் A to Z, விகடன் பிரசுரம், 2016

பாடநெறி ஒருங்கிணைப்பாளர்

துறைத் தலைவர்

		கணினித்தமிழ்- இணையம்				L	T	P	C		
		Total Contact Hours – 30				2	0	0	2		
		Prerequisite course – B.A.தமிழ் / B.Litt / பகுதி I அல்லதுபகுதி II தமிழுடன்கூடியதும்									
		Course Coordinator Name& Department : முனைவர் பாலகிருஷ்ணன்.இரா .&தமிழ்த்துறை									
COURSE OBJECTIVES : கணினிவகையமைப்புகளை அறியச்செய்தல்											
COURSE OUTCOMES (COs)											
CO1	இணையம்வரலாறுபயன்களைஅறிவர்										
CO2	இணையஇணைப்புகள்- அக்ஸஸ்வகைகள். பற்றி அறிவர்										
CO3	இணையஇணைப்புக்குத்தேவையானவைகளைஅறிவர்										
CO4	டொமைன்பெயர், டாப்லெவல்டொமைன், ஐ.பி. முகவரி பற்றி அறிவர்										
CO5	இணையத்தைப்பயன்படுத்துவதைப்பற்றிஅறிவர்										
CO6	ஈமெயில்,நியூஸ்குரூப்,மெயிலிங்லிஸ்ட்,வலை ,வலைப்பூக்கள் பற்றி அறிவர்										
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	PSO3
2	CO1						M	H			H
	CO2						M	H			
	CO3						M	H			
	CO4						M	H			
	CO5						M	H			
	CO6						M	H			
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									

அலகு1

10

இணையம்அறிமுகம்- வரலாறு- இணையத்தைநிர்வகிப்பவர்- பயன்கள்- இணையஇணைப்புகள்- அக்ஸஸ்வகைகள்.

அலகு2

10

இணையஇணைப்புக்குத்தேவையானவை- அக்கவுண்ட்கணினிமோடம்தகவல்தொடர்பு-
மென்பொருள்தொலைபேசிஇணைப்பு- முகவரிகள்- முக்கியத்துவம்- கணினிமுக்கியத்துவம்- பயன்பாட்டாளன்முகவரி-
டொமைன்பெயர்- டாப்டெவல்டொமைன்- ஐ.பி. முகவரி.

அலகு3

10

இணையத்தில்நுழையும்வழிமுறைகள்- லாகின்பெயர்- பாஸ்வேர்ட்- வெப்வரலாறு – ஹோம்பேஜ்-
வெப்சைட்டிற்குள்நுழைதல்- வெப்பேஜ்தகவலைப்பாதுகாத்தல்- வெப்பில்தேடல்- பைலைபயன்படுத்துதல்- ஈமெயில்-
நியூஸ்கூருப்- மெயிலிங்லிஸ்ட்- வலை – வலைப்பூக்கள்- தமிழ்விக்கிபீடியா – டெல்டெட்- இன்டிராநெட்-
அறிமுகப்படுத்தல்.

பாடநூல்கள்:

1. கே.புவனேஸ்வரி, "இன்டர்நெட்A to Z", விகடன்பிரசுரம், 2016
2. துரை.மணிகண்டன், "இணையமும்தமிழும்", நல்நிலம்(ஸ்கைடெக்பப்ளிகேசன்ஸ்), 2008
3. மா.லெனின், "இனிஎல்லாம்இன்டர்நெட்", சிக்ஸ்த்சென்ஸ்பப்ளிகேஷன்ஸ், 2012

பார்வைநூல்கள்:

1. கே.புவனேஸ்வரி, இன்டர்நெட் எக்ஸ்புளோர், மணிமேகலை பிரசுரம், 2002
2. ராம்குமார், கணினி – இணையம் மி. வணிகம், மணிவாசகர் பதிப்பகம், 2012
3. இராம்குமார், தகவல் தொழில் நூட்பம், கழகப் பதிப்பகம், 1998

பாடநெறி ஒருங்கிணைப்பாளர்

துறைத்தலைவர்

	தகவல்தொடர்பியல்	L	T	P	C
	Total Contact Hours – 30	2	0	0	2
	Prerequisite course – B.A.தமிழ் / B.Litt / பகுதி I அல்லதுபகுதி II தமிழுடன்எந்தப்பட்டமும்				
	Course Coordinator Name& Department :முனைவர் ஜெஅந்தோணி.ஜெயஷிலா&தமிழ்த்துறை				

COURSE OBJECTIVES : தகவல்தொடர்புச்சாதனங்களின்பயன்பாட்டைஅறியச்செய்தல்											
COURSE OUTCOMES (COs)											
CO1	தகவல்தொடர்புச்சாதனங்களின்கொள்கைகளைஅறிவர்										
CO2	தகவல்தொடர்புச்சாதனங்களின்கோட்பாடுகளைஅறிவர்										
CO3	தகவல்தொடர்புச்சாதனங்களைஅறிவர்										
CO4	வானொலி, தொலைக்காட்சிமூலம்பயனுள்ளதகவல்களைஅறிவர்										
CO5	திரைப்படம்மூலம்பயனுள்ளதகவல்களைஅறிவர்										
CO6	தகவல்தொடர்புச்சாதனங்களின்பயன்பாடுகளைஅறிவர்										
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	PSO3
2	CO1			H			M	H			L
	CO2			H			M	H			
	CO3			H			M	H			
	CO4			H			M	H			
	CO5			H			M	H			
	CO6			H			M	H			
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									

அலகு¹

10

கொள்கைகளும் கோட்பாடுகளும்

அலகு²

10

தகவல்தொடர்புச்சாதனங்கள்

அலகு³

10

வானொலி, தொலைக்காட்சி, திரைப்படம்

பாடநூல்கள்:

1. கி. இராசா, "மக்கள்தகவல்தொடர்பியல் அறிமுகம்", பாவையப்ளிகேஷன்ஸ், 2008

2. வி. பார்வதி, "தமிழில்தகவல்தொடர்புஊடகங்கள்" நியூசெஞ்சுரிபுக்ஹவுஸ், 2012
3. இராம்குமார், "தகவல் தொழில் நூட்பம்", கழகப் பதிப்பகம், 1998

பார்வைநூல்கள்:

- 1.ஸ்ரீகுமார், "மக்கள் தகவல் தொடர்பியல்", ஸ்ரீ செண்பகா பதிப்பகம், 2012
2. இராஜாவரதராஜா, "மக்கள் தகவல் தொடர்பியல்", ஆரா பதிப்பகம், 2013
3. வெ. கிருட்டிணசாமி, "தகவல் தொடர்பியல்", மணிவாசகர் பதிப்பகம், 2011

பாடநெறி ஒருங்கிணைப்பாளர் துறைத்தலைவர்

		ஊடகவியல்		L	T	P	C				
		Total Contact Hours – 30		2	0	0	2				
		Prerequisite course – B.A.தமிழ் / B.Litt / பகுதி I அல்லதுபகுதி II தமிழுடன்எந்தபட்டமும்									
		Course Coordinator Name& Department :முனைவர். த. கிறிஸ்டல் ரெஜிடிதமிழ்த்துறை									
COURSE OBJECTIVES : ஊடகங்களைஅறிமுகப்படுத்திஅதன்மூலம்வேலைவாய்ப்புகளைஅறியச்செய்தல்											
COURSE OUTCOMES (COs)											
CO1	பழங்காலத்துஊடகமானகல்வெட்டுகளைஅறிவர்										
CO2	ஒலைச்சுவடி, செப்பேடுகளைஅறிவர்										
CO3	அச்சுத்தொடர்புசாதனங்கள் பற்றிஅறிவர்										
CO4	அச்சுமுறையின்இடைக்காலமற்றும்தற்காலவளர்ச்சிகள் பற்றி அறிவர்										
CO5	மின்னணுஊடகத்தைஅறிவர்										
CO6	இணையஇதழ்கள்,அலைபேசி,குறுஞ்செய்தி பற்றி அறிவர்										
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	PSO3
2	CO1			H			M	H			L
	CO2			H			M	H			
	CO3			H			M	H			

	CO4			H			M	H			
	CO5			H			M	H			
	CO6			H			M	H			
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									

அலகு¹

10

மறுமொழிஊடகம்- கல்வெட்டு- ஓலைச்சுவடி- செப்பேடு

அலகு²

10

அச்சுஊடகம்- அச்சுத்தொடர்புசாதனங்கள்- மேல்நாட்டில்தோன்றியவகை- இந்தியாவில்அவற்றின்தொடக்கம்- அச்சுமுறையின்இடைக்காலமற்றும்தற்காலவளர்ச்சிகள்

அலகு³

10

மின்னணுஊடகம்- இணையஇதழ்கள்- அலைபேசி- குறுஞ்செய்தி

பாடநூல்கள்:

1. "ஊடகவியல்", தமிழ்த்துறைவெளியீடு, திருச்சிலுவைகல்லூரி, 2014
2. வி. பார்வதி, 'தமிழில்தகவல்தொடர்புஊடகங்கள்' நியூசெஞ்சுரிபுக்ஹவுஸ், 2012
3. இராஜாவரதராஜா, "மக்கள்தகவல்தொடர்பியல்", ஆராபதிப்பகம், 2012

பார்வைநூல்கள்:

1. மா.சு.சம்பந்தன், தமிழ் இதழியல் வரலாறு, தமிழர் பதிப்பகம், 1987
2. மா.சு.சம்பந்தன், அச்சம் பதிப்பும், தமிழர் பதிப்பகம், 1980
3. கி.இராசா , இதழியல், தாமரை பப்ளிகேஷன்ஸ், 2005

பாடநெறி ஒருங்கிணைப்பாளர்

துறைத்தலைவர்

		பேச்சுக்கலை		L	T	P	C				
		Total Contact Hours – 30		2	0	0	2				
		Prerequisite course – B.A.தமிழ் / B.Litt / பகுதி I அல்லதுபகுதி II தமிழுடன்எந்தபட்டமும்									
		Course Coordinator Name& Department :திருமதி நூ அமீதாராணி.&தமிழ்த்துறை									
COURSE OBJECTIVES : மாணவர்களின்பேச்சாற்றலைவளர்த்துஅவர்களின்ஆளுமைவளர்ச்சிக்குஉதவிபுரிதல்											
COURSE OUTCOMES (COs)											
CO1	பேச்சுக்கலைஅடிப்படைகளைப்பற்றிஅறிவர்										
CO2	ஆளுமைவெளிப்பாடுபற்றிஅறிவர்										
CO3	இலக்கியம், அரசியல் உரைகள்தயாரிப்பதுபற்றிஅறிவர்										
CO4	சமயஉரைகள்தயாரிப்பதுபற்றிஅறிவர்										
CO5	பல்வேறுஉரைகள்பற்றிஅறிவர்										
CO6	பேச்சாற்றலைவளர்த்துஅவர்களின்ஆளுமைவளர்ச்சிக்குஉதவிபுரிதல் பற்றிஅறிவர்										
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	PSO3
2	CO1			H	M	M	M	H		H	H
	CO2			H	M	M	M	H			
	CO3			H	M	M	M	H			
	CO4			H	M	M	M	H			
	CO5			H	M	M	M	H			
	CO6			H	M	M	M	H			
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									

அலகு1

பேச்சுஒருதனிபெருங்கலைஆளுமைவெளிப்பாடு
கேட்போர்மனநிலைபேச்சுக்கலைஅடிப்படை.

–

பயன்மிகச்சிறந்ததொடர்புஊடகம்-

10

பேசுவோர்,

அலகு2

தலைப்பையொட்டிக்குறிப்பெடுத்தல்தயாரிப்பு, இலக்கியம், அரசியல், சமயஉரைகள்தயாரித்தல்

10

அலகு3

பல்வேறுஉரைகள்-வரவேற்புரை, நன்றியுரை, தொடக்கவுரை, சிறப்புரை, தலைமையுரை, ஆசியுரை, ஏற்புரை, பட்டிமன்றம், வழக்காடுமன்றம்நீயா? நானா? போன்றதொலைக்காட்சிஉரைகளில்ஆற்றுகரை.

10

பாடநூல்கள்:

1. ஸ்டேல்கார்ன்கி, ஜே.பெர்க்ஜசன்வீன், "மேடைப்பேச்சுக்கலை", கண்ணதாசன்பதிப்பம், 2012
2. அறந்தைநாராயணன், "மேடையில்பேசுவோம்வாருங்கள்", நீயூசெஞ்சரிபுக்ஹவுஸ், 2011
3. குஞானசம்பந்தன், "பேசும்கலை", நீயூசெஞ்சரிபுக்ஹவுஸ், 2015

பார்வைநூல்கள்:

1. கமலா கந்தசாமி, "எப்பொழுதும் வெற்றி தரும் பேச்சுக்கலை", நர்மதா பதிப்பகம், 2013
2. கவிதாசன், "வெற்றிமேடை", குமரன் பதிப்பகம், 2007
3. யூ. ராசையா, "பேச்சுக்கலை - மக்கள் தொடர்புக் கலை", கங்காராணி பதிப்பகம், 2012

பாடநெறி ஒருங்கிணைப்பாளர்

துறைத்தலைவர்

	இதழியல்கலை	L	T	P	C
	Total Contact Hours – 30	2	0	0	2

		Prerequisite course – B.A.தமிழ் / B.Litt / பகுதி I அல்லதுபகுதி II தமிழுடன்எந்தப்பட்டமும்									
		Course Coordinator Name& Department :திருமதி ஸ்ரீதேவி .கோ.அ .&தமிழ்த்துறை									
COURSE OBJECTIVES : இதழியல்பற்றிகற்பித்தல்											
COURSE OUTCOMES (COs)											
CO1	இதழ்கள்வகைகளும்இயல்புகளும்பற்றிஅறிவர்										
CO2	இதழ்களின் கோட்பாடுகள் ,இதழியல்தொழில்பற்றிஅறிவர்										
CO3	இதழியல்வளர்ச்சிவரலாறு பற்றிஅறிவர்										
CO4	செய்தித்தாள்நிர்வாகஅமைப்புப்பற்றி அறிவர்										
CO5	பல்வேறுவகையானசெய்திகள்சேகரிப்பதைப்பற்றிஅறிவர்										
CO6	ஊடகவியல்/இதழியல்பற்றி அறிவர்										
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	PSO3
2	CO1			H			M	H			L
	CO2			H			M	H			
	CO3			H			M	H			
	CO4			H			M	H			
	CO5			H			M	H			
	CO6			H			M	H			
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									

அலகு1

இதழியல்விளக்கம்-
மக்களாட்சியில்இதழியல்-
இதழியல்தொழில்வாய்ப்புகள்.

இதழ்களின்பணிகளும்பொறுப்புகளும்-
இதழ்களின்சுதந்திரம்-

10
இதழ்கள்வகைகளும்இயல்புகளும்-
இதழ்களின்நடத்தையறக்கோட்பாடுகள்-

அலகு2

இதழியல்வளர்ச்சிவரலாறு – தமிழகத்தில்இதழியல்வளர்ச்சி –
இதழ்கள்தொடங்குவதற்குரியவழிமுறைசெய்தித்தாள்நிர்வாகஅமைப்பு.

10
பத்திரிகைச்சட்டங்கள்- பத்திரிகைமன்றம்-

அலகு3

10

செய்தியாளர்- செய்தி – செய்தியின்உள்ளடக்கங்கள்- செய்திதிரட்டுதல்- செய்திநிறுவனங்கள்- பேட்டிசெய்திகள்- பல்வேறுவகையானசெய்திகள்- செய்திகளும்சிறப்புத்தனிஇயல்புகளும்- படங்களும்இதழ்களும்.

பாடநூல்கள்:

1. மா.பா.குருசாமி, "இதழியல்கலை" ,குருதேமொழிபதிப்பகம், 2017
2. இரா.கோதண்டபாணி, "இதழியல்", கற்பகநூலகம், 2015
3. ச.ஈஸ்வரன், "இதழியல்", பாவைபதிப்பகம், 2014

பார்வைநூல்கள்:

1. கி.இராசா , இதழியல், தாமரை பப்ளிகேஷன்ஸ், 2005
2. மா.சு.சம்பந்தன், தமிழ் இதழியல் வரலாறு, தமிழர் பதிப்பகம், 1987
3. மா.சு.சம்பந்தன், அச்சம் பதிப்பும், தமிழர் பதிப்பகம், 1980

பாடநெறி ஒருங்கிணைப்பாளர்

துறைத்தலைவர்