MEDICAL LAB TECHNOLOGY

R2017

CURRICULUM

UAH17CT101	**ANATOMY**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Anatomy
OBJECTIVES	An outline of anatomy with special emphasis on applied aspects is provided to the students for better understanding of the technical and diagnostic procedure.

UNIT I: Organization of the human body

1. Introduction

- Introduction to human body
- Definition and subdivision of anatomy
- Anatomical position and terminology
- Region and systems of the body
- Cavities of the body and their contents
- Levels of organization of the body

2. Cell and genetics

- Parts of cell – cell membrane, cytoplasm, organelles, inclusion bodies, nucleus
- Structure of chromosome, DNA, RNA.
- Basics & fundamentals of Genetics, Karyotyping, Chromosomal disorders, prenatal diagnosis, genetic counseling and gene therapy.
- Cell division – Definition and main events that occur in different stages of mitosis and meiosis.
- Tissues – Definition, characteristic features and types with example.
- Types of glands with example

UNIT II: Systems of support and movement

I. Skeletal system

- Cartilage: Type and basic histological feature.
- Bones: definition, classification based on location, name and number of bones with general features of important bones, function of bone, histological feature of a compact bone.
- Joints – Definition and types with example, Axis and movements. Shoulder, elbow, hip, knee joints – type, bones and ligaments involved, possible movements.

II. Muscular system

- Types of muscle with basic histological features
- Parts of skeletal muscle.
- Definition of origin and insertion
- Origin, insertion, nerve supply, action of sternocleidomastoid, pectoralis major, deltoid, gluteus maximus and diaphragm.

UNIT III: Controls systems of the body

1. Nervous system

- Subdivisions of the nervous system
- Spinal cord-location, extent, external features and blood supply
- Brain-subdivision, location, external features of Medulla oblongata, Pons, Midbrain, Cerebellum, and Cerebrum, Thalamus and Hypothalamus, Location and subdivision of ventricles of brain. Circle of Willis.
- Cranial nerves-name, number, attachment, area of distribution
- Spinal nerves-typical spinal nerves. Name and location of plexuses. Location and distribution of brachial and lumbosacral plexus.
- Autonomic nervous system-sympathetic and parasympathetic nervous system. Location of preganglionic and postganglionic neurons.

2. Sense organs

- Location and features of nose, tongue, eye, ear and skin.

3. Endocrine system

- Names of the endocrine glands. Location and features of pituitary, thyroid, parathyroid, suprarenal, pancreas, ovaries and testes. Names of hormones produced by each gland.
- Microscopic features of thyroid and pancreas.

UNIT IV: Maintenance of the human body

1. Cardiovascular system

- Types and general features of blood vessels. Structure and types of arteries and veins. Shape, size, location, covering, external and internal features of Heart. Conducting system of heart. Blood supply of the heart. Name, location, branches and main distribution of principal arteries and veins

2. Lymphatic system

- General features of Lymph nodes and lymphatic vessels. Name, location, external features, microscopic features of tonsil and spleen.

3. Respiratory system

Name the organs of respiration. Location and features of Nasal cavity, pharynx, larynx, trachea, lung & pleura. Mention the microscopic feature of the lung.

4. Digestive system

- Name the parts of the alimentary canal and accessory organs. Location & features of esophagus, stomach, small and large intestine. Location and feature of tongue, salivary glands, pancreas, liver and gallbladder. Microscopic features of the liver.

5. Urinary system

- Names of urinary organs. Location and features of kidney, ureter, urinary bladder & urethra. Microscopic features of the kidney.

6. Reproductive system

- Names of male and female organs of reproduction. Location and features of testis, epididymis, vas deferens, prostate gland and spermatic cord. Location & features of uterus, uterine tube, ovary and breast.

7. Embryology

- Structure of gametes & gametogenesis. Fertilization to development of embryo till 3rd week. Derivatives of germ layers. Teratogens, Structure and Functions of placenta.

UNIT V: Anatomical regions

- Simple ideas about scalp, triangles of neck, axilla, cubital fossa, carpal tunnel, mediastinum, umbilicus, inguinal canal, femoral triangle
- sub sartorial canal popliteal fossa

PRACTICALS/DEMONSTRATIONS

1. Demonstrations of dissected specimens.

2. Viewing of projection of microscopic slides of muscle, bone, cartilage, spleen, tonsil, lung, liver, kidney, thyroid and pancreas

REFERENCE BOOKS

1. Manipal manual for AHS by Dr. Sampath Madhyastha, (Second Edition) Published by CBS Publishers.

2. Handbook of anatomy for nurses by Dr. P. Saraswathi

3. Ross and Wilson, Anatomy and physiology in health & illness

COURSE OUTCOMES	
CO1	The student will be able to gain knowledge of general anatomy and locomotion.
CO2	The student will be able to gain knowledge of basic human anatomy and histology of CVS and Respiratory systems.
CO3	The student will be able to gain knowledge of basic human anatomy and histology of CNS, GI, excretotry and reproductive systems.
CO4	The student will be able to gain of knowledge basic human anatomy and histology of endocrine system and special senses.

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES

COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S					
2		**M**				
3			**S**			
4	s			**S**		**M**

Category	Basic Science (Non Clinical)
Approval	46th Meeting of Academic Council held in Aug, 2017

UAH17CT102	**PHYSIOLOGY**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Physiology
OBJECTIVES	To know the basic functioning of the human body, and the various organ systems.

Unit-I

1. General Physiology:

- Concept of Homeostasis
- Cell structure and functions
- Transport across membranes

Body and body fluids:

- Body fluid volumes, compartments and composition
- Blood composition and functions
- Plasma proteins – Types and functions
- Erythrocytes – functions, Erythropoiesis, anemia‟s
- Leucocytes – classification and functions
- Platelets – morphology and functions
- Blood coagulation – Mechanism and name of anticoagulants
- Blood groups – Basis of ABO & Rh grouping, Erythroblastosis Foetalis

2. Muscle physiology:

- Muscles – Classification & structure of striated, nonstriated & cardiac muscle
- Neuromuscular junction
- Mechanism of skeletal muscle contraction

3. Digestive system:

- Salivary glands, functions of saliva
- Parts of stomach, composition & functions of gastric juice

- Pancreatic Juice – composition & functions
- Bile – composition & functions of bile & bile salts
- Functions of Small intestine & large intestine

Unit-II

1. Skin : Structure & Functions

2. Excretory system:
- Kidney: Basic physiological anatomy (Including JGA)
- Formation of urine – GFR
- Formation of urine – Reabsorption & secretion
- Micturition Reflex
- Dialysis – Principle, types
- Renal function tests

Unit-III
1. Endocrine system:
- Hypothalamo hypophyseal inter relationship
- Posterior pituitary hormones and its actions
- Anterior pituitary hormones, Growth hormone – Actions
- Dwarfism, gigantism, acromegaly
- Thyroid hormones – Actions
- Cretinism, Myxoedema, Grave‟s disease (clinical features)
- Parathyroid hormones – Functions, Tetany
- Insulin, Glucagon‟s – Actions, Diabetes mellitus
- Adrenal medullary hormones & their actions
- Adrenal cortex hormones & their actions

2. Reproductive system:
- Male reproductive organs – Spermatogenesis, Testosterone actions
- Female reproductive organs – menstrual cycle (endometrial and ovarian cycles) and its hormonal control
- Contraceptive methods in male and female

Unit-IV
1. Respiratory system:
- Basic physiological anatomy
- Surfactant
- Mechanics of respiration
- Lung volumes and capacities
- Oxygen transport, Carbon-di-oxide transport
- Nervous and chemical regulation

- Pulmonary function tests.

2. Cardiovascular system:

- Basic physiological anatomy, innervations of heart
- ECG – normal waves, intervals and their significance
- Cardiac cycle – mechanical events, Heart sounds
- Blood pressure – Definition, measurement, normal values, factors maintaining BP Regulation

Unit-V

1. Nervous system:

- Structure of neuron, neuroglial cells, synapse and transmission across it
- Reflex – Components of reflex arc, examples.
- Functions of ascending tracts – anterior, lateral spinothalamic tracts, Dorsal column
- Functions of Corticospinal (Pyramidal) tract-Descending tract
- Functional areas of cerebral cortex
- Functions of basal ganglia, thalamus, hypothalamus, limbic system and cerebellum

2. Special senses:

● Receptors for various special senses

Practical Demonstration

Hematology:

1. Enumeration of RBC count.
2. Enumeration of WBC count.
3. Differential Count.
4. Estimation of Hemoglobin.
5. Determination of blood group.
6. Determination of bleeding time and clotting time.

Clinical physiology:

1. Measurement of blood pressure.
2. Determination of Radial pulse

Reference Book

1. Human Physiology for BDS by A.K.Jain, 4th Edition, Avichal publishing co

COURSE OUTCOMES	
CO1	The student will be able to gain knowledge of general physiology, nerve-muscle physiology and haematology.
CO2	The student will be able to gain knowledge of basic human physiology with respect to CVS, Respiratory system and GI system.
CO3	The student will be able to gain knowledge of basic human physiology of excretion and CNS.
CO4	The student will be able to gain knowledge of basic human physiology of special senses and endocrine system

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S					
2		**M**				
3			**S**			
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UAH17CT103	**BIOCHEMISTRY**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Biochemistry
OBJECTIVES	To know the basic Biochemical reactions within the human body, and the various organ system.

UNIT I – Cell and its molecules

Cell – Cell organelles, Fluid Mosaic Model, functions of cell membrane, Brief description of transport across the cell membrane.

Carbohydrates – Definition, Classification with examples, Sources, physiological significance and HbA1c.

Lipids – Definition, Classification with examples, Sources, Types of lipids present in the body, storage form, storage site, free cholesterol structure, functions of lipids, lipoprotein structure and its functions.

Nucleic acids – Nucleotide, Nucleoside, types of nucleic acids, secondary structure of DNA & Its functions; Types of RNA & its functions.

UNIT II – Proteins and Enzymes

Proteins – Definition, Classification, functions of proteins, Plasma proteins; Classification of Amino acids with examples Hemoglobin structure, Functions of hemoglobin, hemoglobin derivatives, abnormal hemoglobin

Enzymes: Definition, Classification, coenzymes, Metalloenzymes, Factors affecting enzyme activity, Regulation of enzymes, overview of Mechanism of enzyme action, Isoenzymes and Clinical importance of enzymes

UNIT III-Vitamins, Minerals, Nutrition

Vitamins: Definition, Classification of Vitamins

Sources, RDA, Function & Deficiency symptoms of

- Fat Soluble Vitamins (A, D, E & K);
- Water Soluble Vitamins (Thiamine, Riboflavin, Niacin, Biotin, Pantothenic acid, Pyridoxine, Folic acid, Cobalamin) and Vitamin C

Minerals: Definition, Classification of Minerals

Sources, RDA, Function, Reference levels & Deficiency Symptoms of

- Calcium, Phosphorus, Iron Copper, Zinc, Sodium, Chloride, Iodine, Potassium, Fluorine and Selenium.

Nutrition: BMR, SDA, Dietary fibres, protein Energy Malnutrition and Obesity 24

UNIT IV – Bioenergetics and Metabolism

Bioenergetics: Electron Transport chain and Oxidative Phosphorylation

Metabolism

Carbohydrates: Digestion and absorption, Glycolysis, TCA cycle, Metabolism of Fructose and Galactose.

Lipids: Digestion and absorption, Beta oxidation of fatty acids, Regulation of Cholesterol level in the cell and outline of lipid transport.

Proteins: Digestion and Absorption, Formation and Disposal of Ammonia, Urea Cycle, Special Products of Glycine, Tyrosine and Tryptophan.

UNIT V – Miscellaneous

Outlines of DNA organization, Replication, Transcription, Genetic code and Translation

Organ function Tests: Liver, Renal and Bone.

PRACTICAL

- Spotters

COURSE OUTCOMES	
CO1	The student will be able to gain knowledge of biochemistry of cell structure, functions, digestion, enzymes and proteins.
CO2	The student will be able to gain knowledge of biochemistry of carbohydrates, minerals and vitamins
CO3	The student will be able to gain knowledge of liver and renal function tests, specialized laboratory investigations and lipids.
CO4	The student will be able to gain knowledge of biochemistry of metabolism, homeostasis, nucleic acids and cancer

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S				s	
2		**M**		s		
3	M		**S**			
4	s			**S**		**M**
Category	Basic Science (Non Clinical)					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CT104	**BASICS IN MEDICAL PHYSICS AND ELECTRONICS**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Radiology
OBJECTIVES	To know the basics in Medical Physics, Bio electric potential and the functioning of Medical equipment

Unit I: Laser

Nature of light-Reflection-Refraction-Total internal reflection-Optical fibers-Applications in Medicine – Laser-Principles-Action-Types of laser, Basic principles of laser in Medical Application – Argon-Ion laser photocoagulator-Photo thermal-Photochemical application-Applications of laser in Medicine-Laser hazards and safety measures.

Unit II: Radiation Physics

Introduction to nuclear physics and radioactivity, Radioactive radiations – X-ray, production of x-ray, Properties of x-ray radiations – Biological effects of radiation, Radiation damage in matter, Radiation protection principles, radiation detection and measurement – Ultrasound and generation of ultrasound.

Unit III: Introduction to Imaging Technique

Principles of Microscope: Simple microscope and compound microscope-Radiography: Making and X-ray image-Fluoroscopy. CT Scans, MRI – Ultrasonography: Ultrasound picture of Body-A-Scan-M-Scan-Ultrasound diathermy-Phonocardiography – Radio isotopes: Uses of Radio isotopes – 99mTc Generator – Scintillation detectors – Application of scintillation detectors – Gamma Camera – Positron Camera

Unit IV: Semiconductor devices

Principles of diodes and Transistors – Integrated circuits – Amplifiers – Basic configuration and types – differential and operational amplifiers – Waveform generators – Timer – A/D and D/A converters – Active filters – Transducers – Basic configuration and types.

Unit V: Bio potential Recording Systems

Introduction to bioelectric potential – Electrodes and surfaces – Bio potential amplifier – Frequency ranges of various biopotential signals – Working principles of bio potential recording systems – Electrocardiography – Electroencephalograph –Electromyography.

Reference Books:

1. New Understanding physics for advanced level – Jim Breithauput.

2. Advanced Physics for you by Keith Johnson, Simmons Hewett, Sue holt, John miller

3. Christensen‟s Physics of diagnostic Radiology by Thomas S. Curry III, M.D., Robert C Murry, Jr. PhD, Dow Dey, PhD.

4. Applied Electronics, A. Subramanyam, The National Publishing co., Madras (1996).

5. Design and Development of Medical Electronic Instrumentation, David Prutchi and Michael Norris, John Wiley & Sons (2005).

COURSE OUTCOMES	
CO1	The student will be able to know the functioning of radiological devices
CO2	The student will be able to understand the mechanism of functioning of medical equipments
CO3	The student will be able to know the functioning of Lab instruments
CO4	The student will be able to understand the functioning of radiation devices

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CT105	**ENGLISH**
	Total Contact Periods – 60
	Total credits -4
	Course Designed by – Department of English
OBJECTIVES	To enable students to enhance their ability to comprehend spoken and written English required for effective communication in their professional work. Students will practice their skills in verbal and written.

Unit I: Spoken Communication

Learning to read the phonetic symbols

Stress

Intonation

Rhythm

Commonly mispronounced words

Correct pronunciation of important commonly used

Words in hospital practice

Unit II: Vocabulary and Reading

Special features of English vocabulary

Common errors in choice of word

Semi technical vocabulary

Collecting material from library on scientific topics

Comprehensive exercises

Unit III: Writing

Writing letters regarding permission, leave, opening bank account etc.

Taking notes from lecture / reading materials

Writing reports on patient care

Summarizing scientific passages

Unit IV: Grammatical and Idiomatic Usage

Correction of errors

Types of interrogative sentences

Active-Passive voice

Tense

Principles of procession, clarity and specificity

Reference Books:

1.Effective English Communication by Krishna Mohan and Meenakshi Raman, Tata McGraw – Hill Publishing Company Limited, New Delhi. (Approx. Cost Rs. 200)

2. English for colleges and Competitive Exams by Dr. R. Dyvadatham, Emerald Publishers (Approx. cost Rs. 150)

COURSE OUTCOMES	
CO1	The student will be able to develop their intellectual, personal and professional abilities.
CO2	The student will be able to acquire basic language skills, listening, speaking, reading and writing.
CO3	The student will be able to acquire the linguistic competence necessarily required in various life situation
CO4	The student will be able to communicate with speakers of English language

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**

Category	Language
Approval	46th Meeting of Academic Council held in Aug, 2017

UAH17CT106	**BASIC OF COMPUTERS**
	Total Contact Periods – 30
	Total credits -4
	Course Designed by – Department of English
OBJECTIVES	This course is designed for students to develop basic understanding of used of computer and its applications in Clinical Departments

UNIT I: INTRODUCTION

Computer basics – Types of computers – hardware components – input devices – output devices – storage devices – memory – units and sizes – factors affecting performance – operating systems – applications software – networking – LAN and WAN – Accessories – backup – computer virus – software copyright.

UNIT II: WORD PROCESSING

Windows – Office automation – WORD processor – open a new document – toolbars – menus – font dialog box – enter text – scroll – spelling checker – Autocorrect – undo and redo – bullets and numbered lists – indenting – moving and copying – find and replace – auto shapes – saving document – preview and print.

UNT III: ELECTRONIC SPREADSHEET AND DATA PRESENTATION

EXCEL spreadsheet – grid of rows and columns – active cell – selecting range – entering data – editing data – row and column labels – adjusting width – creating and copying formulae – relative – logical functions – lookup function – creating chart – bar chart – pit chart – print and save.

POWERPOINT presentation – creating slideshows- building outline – switching levels in outline – adding pictures – slide designs – design templates – formatting – color scheme – customized backgrounds – inserting content – hyperlink – revolution in education.

UNIT IV: DATABASE MANAGEMENT SYSTEM

ACCESS database – concept – template –primary key – records and fields – Student roster database – input mask – adding records – viewing data – updating entries – searching and querying – sorting – Table, forms and reports.

UNIT V: APPLICATIONS IN HEALTHCARE AND MEDICINE

INTERNET – e-governance – access to information – communication facility – mechanics of E-mail – social transformation – electronic billing – drug information –information flow in lab and radiology – storage of medical records – networking the organization – patient care – intelligent monitoring – scholarly information – health informatics – robotic assisted surgery – Clinical decision support systems – Telemedicine.

COURSE OUTCOMES	
CO1	The student will be able to develop basic under-standing of computer use.
CO2	The student will be able to acquire knowledge on Applications of computers in clinical departments.
CO3	The student will be able to have the detailed knowledge on how to use hospital information systems.
CO4	The student will be able to communicate with speakers of English language

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES

COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**

Category	Basic Science
Approval	46th Meeting of Academic Council held in Aug, 2017

UAH17CT107	**MICROBIOLOGY**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Microbiology
OBJECTIVES	This course is designed to enable students to acquire understanding of fundamentals of microbiology and identification of various microorganisms. It also provides opportunities for practicing infection control measures in hospital and community settings.

UNIT – I: General Bacteriology

Introduction & History of Microbiology, Classification & Morphology of Bacteria, Growth & nutrition, Culture Media & Methods, Sterilization & Disinfection, Fundamental aspects of antibacterial agents and antimicrobial susceptibility testing.

UNIT – II: Immunology

Infection, Immunity, Immunization schedule, applications of antigen antibody reactions, Hypersensitivity, Tumor & Transplantation Immunology.

UNIT – III: Virology

Introduction to virology, viral hepatitis, poliomyelitis, Rabies, Human immunodeficiency virus.

UNIT – IV Mycology & Parasitology

Introduction to mycology, pathogenic yeasts & fungi, Introduction to parasitology, Amoebiasis, Malaria, Helminthic infections.

UNIT – V: Applied Microbiology

Outline of common bacterial diseases, treatment & prevention-Respiratory tract infections (upper & lower), Meningitis (septic & aseptic), Enteric infections (food poisoning & gastro enteritis), Anaerobic infections, Skin & soft tissue infections, Urinary tract infections, Sexually transmitted diseases, Tuberculosis & Leprosy, Hospital acquired infections, Biomedical waste management.

PRACTICAL EXERCISES: Spotters, Gram staining.

Reference Books

1. Textbook of Microbiology by Ananthanarayan & Panicker‟s, 8th edition-Universities Press (India) PVT LTD.

2. Textbook of Microbiology by C. P. Baveja, 4th edition, Arya Publications.

3. Textbook of Medical Parasitology, CK Jayaram Paniker, 5th edition, Jaypee Publications.

4. Medical Parasitology by C. P. Baveja & V. Baveja, 2nd edition, Arya

5. Publications.

COURSE OUTCOMES	
CO1	The student will be able to understand the morphological characters of bacteria.
CO2	The student will be able to master the preparation of smear, fixation and staining of bacterial smears and its quality control methods
CO3	The student will be able to learn to use microscope , autoclave, hot air oven, water bath, steamer, filters
CO4	The student will be able to differentiate between innate and adaptive immunity, and explain the main defences lines as well as biological barrier to the infections.

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES

COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**

Category	Basic Science
Approval	46th Meeting of Academic Council held in Aug, 2017

UAH17CT108	**PATHOLOGY**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Pathology
OBJECTIVES	This course is designed to enable students to acquire understanding of fundamentals of microbiology and identification of various microorganisms. It also provides opportunities for practicing infection control measures in hospital and community settings.

UNIT-I: General Pathology I: Cellular Pathology, Acute and Chronic Inflammation, Tissue Renewal Regeneration and Repair, Hemodynamic Disorders Thromboembolic Disease and Shock

Introduction to Pathology, Adaptations Of Cellular Growth And Differentiation, Causes Of Cell Injury, Mechanisms Of Cell Injury, Necrosis, Apoptosis, Pathologic Calcification, Cellular Aging, Acute Inflammation – Mediators Of Inflammation Outcomes Of Acute Inflammation, Morphologic Patterns Of Acute Inflammation, Chronic Inflammation – Causes Of Chronic Inflammation, Granulomatous Inflammation, Healing By Repair, Scar formation And Fibrosis, Cutaneous Wound Healing, Healing By First Intention, Healing By Second Intention, Edema, Hemostasis and Thrombosis, Infarction, Shock

UNIT-II: General Pathology II: Diseases of the Immune System, Neoplasia, Environmental And Nutritional Disease, Diseases Of Infancy And Childhood

Innate Immunity, Adaptive Immunity, Components Of The Immune System, Mechanisms Of Hypersensitivity Reactions, Acquired Immunodeficiency Syndrome (AIDS), Neoplasia – Definition and Nomenclature, Characteristics Of Benign And Malignant Neoplasm‟s, Molecular Basis Of Cancer, Essential Alterations For Malignant Transformation, Clinical Aspects Of Neoplasia, Laboratory Diagnosis Of Cancer, Common Environmental And Nutritional Pathology, Nutritional Diseases, Tumors And Tumor-Like Lesions Of Infancy And Childhood

UNIT-III: Systemic Pathology I: Blood Vessels, the Heart, Red Blood Cell and Bleeding Disorders, Diseases Of White Blood Cells

Arteriosclerosis, Atherosclerosis, Hypertensive Vascular Disease, Ischemic Heart Disease, Hypertensive Heart Disease, Valvular Heart Disease, Infective Endocarditic, Rheumatic Fever And Rheumatic Heart Disease, Cardiomyopathies, Leucopenia, Anemia‟s, Polycythemia, Bleeding Disorders, Reactive Proliferations Of White

Cells, Definitions And Classifications of Lymphoid Neoplasm‟s and Myeloid Neoplasm‟s, Splenomegaly.

UNIT-IV: Systemic Pathology II: The Lung, The Gastrointestinal Tract, Liver And Biliary Tract

Acute Respiratory Distress Syndrome, Obstructive Pulmonary Diseases, Pulmonary Infections, Gastritis, Peptic Ulcer Disease, Inflammatory Bowel Diseases, Liver Function Tests, Hepatic Failure, Cirrhosis, Portal Hypertension, Jaundice, Cholelithiasis

UNIT-V: Systemic Pathology III: The Urogenital System, the Breast, the Endocrine System, Bones Joints and Soft-Tissue, Peripheral Nerve and Skeletal Muscle, the Central Nervous System

Renal Function Tests, Nephrotic Syndrome, Nephritic Syndrome, Urolithiasis, Pap Smear, Carcinoma Of The Breast-Types And Classification, Thyroid Gland – Hyperthyroidism, Hypothyroidism, Thyroiditis, Graves‟ Disease, Diffuse And Multinodular Goiters, Parathyroid Glands – Hyperparathyroidism, Hyperparathyroidism, Diabetes Mellitus, Fractures, Osteomyelitis, Arthritis, Osteoarthritis, Rheumatoid Arthritis, Infectious Arthritis, Diseases of Peripheral Nerve, Diseases of Skeletal Muscle, Infections of CNS – CSF Find

REFERENCE BOOKS

1. Pocket companion to Pathologic Basis of Disease by Robbins and Cotran, 7th edition, Saunders.
2. Pathology Quick Review and MCQs by Harsh Mohan, 2nd edition, Jaypee Publications.

COURSE OUTCOMES	
CO1	The student will be able to gain knowledge of general pathology.
CO2	The student will be able to gain knowledge pathology of neoplasms.
CO3	The student will be able to gain knowledge of basics of community health.
CO4	The student will be able to gain knowledge of systemic pathology.

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES

COs\POs	a	b	c	d	e	f
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**

Category	Basic Medical Science
Approval	46th Meeting of Academic Council held in Aug, 2017

UAH17CT109	**PHARMACOLOGY**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Pharmacology
OBJECTIVES	This course is designed to help the students to develop an understanding of basic knowledge of pharmacology and knowledge of common drugs/group of drugs

UNIT-I: General Pharmacology

Introduction to pharmacology-various terminologies-sources & routes of drug administration – Absorption & Factors modifying drug absorption – Distribution of drugs – Metabolism: Phase II, - Excretion: routes, modes & kinetics of elimination – Excretion – Mechanism of drug action in brief, synergism & antagonism and Factors modifying drug action – Adverse drug reactions – ADR reporting & monitoring – Drug interactions.

UNIT-II: Central Nervous System & Respiratory System

Introduction to CNS and Neurotransmitters, drugs used in insomnia, Sedatives and hypnotics – diazepam – alprazolam, anti-anxiety drugs, Antiepileptic – phenytoin, carbamazepine, sodium valproate,General Anesthetics – halothane, isoflurane, sevoflurane – Local Anesthetics – lignocaine – list of other drugs, Alcohols – ethyl alcohol – disulfuram, Anti parkinsonians – levodopa – carbidopa, Opioids – morphine – naloxone – tramadol – pentazocine, NSAIDs – aspirin – diclofenac – ibuprofen – paracetamol – Cox 2 inhibitors. Drugs used in bronchial asthma and cough

UNIT-III: Cardio vascular system & blood

Drugs used in Ischemic Heart Disease-nitrates-Calcium channel blockers-nifedipine, verapamil-list of other drugs – Beta blockers – propranolol, atenolol – metoprolol and antiplatelets – aspirin, clopidogrel, and names of other drugs-fibrinolysis drugs-streptokinase and other drugs, Drugs used in CCF-digoxin and list of other drugs useful in CCF, Shock. Diuretics: 4 groups – Thiazides, Loop diuretics, Potassium sparing and osmotic diuretics. Hypertension – outline of drugs used in hypertension, Rennin angiotensin system – ACE inhibitors – captopril, ramipril and names of other drugs – Receptor antagonist – losartan and list of other drugs, Antiarrhythmic drugs-classification – Quinidine, Lignocaine and amiodaron – Drugs for Hypercholesterolemia – statins. Drugs for anemia – oral & parenteral iron preparations, folic acid, vit B12 and erythropoietin. Coagulants and anti-coagulants

UNIT-IV: Hormones and GIT

Contraceptives – oral and injectable, Corticosteroids – glucocorticoids – hydrocortisone-prednisolone-dexamethasone and names of topical steroids – Insulin – Oral hypoglycemic – sulphonyl ureas, biguanides and others, Thyroid and Antithyroid drugs, Sex Hormones-Estrogen and anti estrogens,

Progestin and Anti progestin‟s, Androgen And anti androgens. Emetics and anti emetics- metoclopromide and domperidone, Drugs used in peptic ulcer, constipation-lactulose & Diarrhea-ORS- Loperamide.

UNIT-V: Chemotherapy and Miscellaneous

Introduction – Beta lactam antibiotics: Penicillin‟s – natural, semi synthetic penicillin‟s – amoxicillin – cloxacillin-clauvulinic acid – sulbactum – Cephalosporin‟s – cephalexin – cefuroxime – cefixime – ceftrioxone-cefipime, Broad spectrum antibiotics – Doxycycline – chloramphenicol-imipenum-Macrolides – erythromycin, azithromycin and others – Quinolones- ciprofloxacin and list of other drugs and sulfonamides- cotrimoxazole- Amino glycosides-gentamycin, amikacin and names of other drugs Anti TB-first line drugs, Anti leprosy-dapsone and clofazimine Anti-malarial- chloroquine- mefloquine and artemisinins, Anti-fungal- amphotericin B- fluconazole and topical drugs & Anti-viral drugs- acyclovir and anti HIV, Anti protozoals- metronidazole – Anthelmintics- albendazole- praziquantel.

Anti-cancer drugs-Introduction – Anti metabolites- methotrexate- 6 mercapto purine- Alkylating agents-cyclophosphamide- busulphan and cisplatin – Plant products- vinblatin- vincristine- taxanes, antibiotics-actinomycin D- monoclonal antibodies. Immuno modulators- cyclosporine, tacrolimus, azathioprine and steroids. Toxicology-Drugs used in common poisoning, organophosphates, methyl alcohol, Benzodiazepam.

REFERENCE BOOKS:

1. Lippincott‟s Illustrated Reviews: Pharmacology, 5th edition, by Richard A. Harvey and Pamela C. Champe, Lippincott Williams & Wilkins Publisher

2. Essentials of Medical Pharmacology: K.D. Tripathi, 6th edition, Jaypee Publishers.

COURSE OUTCOMES						
CO1	The student will be able to gain basic knowledge in pharmacology.					
CO2	The student will be able to gain knowledge of detailed systemic pharmacology.					
CO3	The student will be able to gain knowledge of detailed knowledge of drugs and groups of drugs.					
CO4	The student will be able to gain knowledge of action of drugs					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CT110	**ENVIRONMENTAL SCIENCE AND COMMUNITY MEDICINE**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Community Medicine
OBJECTIVES	This course is designed for students to practice community health nursing for the individual, family and groups at both urban and rural settings by using concept and principles of health and community health nursing. It also is designed for students to understand the natural resources and environmental pollution

UNIT – I:

Natural Resources: Introduction, Multi-disciplinary nature of environmental studies, Earth Resources and Man, Renewable and Non-Renewable Resources, Water Resources, Mineral Resources: Food Resources: Effect of modern agriculture, Fertilizer/pesticide problems, Water logging, and salinity, Energy Resources.

Ecosystems: Concept of an Ecosystem, Structure and Functions of an Ecosystem, Producers, Consumers and Decomposers, Cycles in the Ecosystem

Biodiversity: Introduction, Definition: Genetic, Species, Ecosystem diversity, India as a Mega Diversity Nation, Hotspots Of Biodiversity Threats to Biodiversity. Poaching of Wildlife, Man-Wildlife Conflicts, Endangered and Endemic Species Of India, Conservation of Biodiversity

UNIT – II:

Pollution: Definition, Causes, Effects and Control Measures of Air Pollution, Water Pollution, Pollution, Marine Pollution, Noise Pollution, Thermal Pollution, Nuclear hazards, Solid Waste Management role of Individuals in Pollution Prevention.

Social Issues Human, Population and Environment: From Unsustainable To Sustainable Development, Urban Problems Related To Energy, Water Conservation, rain Water Harvesting, global warming, acid rain, ozone layer depletion, nuclear accidents and nuclear holocaust. Environment Protection Act.

UNIT – III:

Concept of health & disease: Concept of health, Definition of health, Philosophy of health- Dimension of health – Concept of wellbeing, Spectrum of health, Responsibility of health – Determinates of health & Indicators of health – Concepts of disease & Concepts of cessation – Natural history of disease – Iceberg phenomenon, Concepts of control – Concepts of prevention – Modes of Intervention, Changing pattern of disease.

UNIT – IV:

Epidemiology: Definition & explanation, Aims, Epidemiologic approach, Basic measurements in epidemiology & tools of measurements – Measurements of Mortality & Morbidity, Epidemiologic methods- Descriptive epidemiology-Analytical epidemiology – case control study – analytical epidemiology – Cohort study – Experimental epidemiology – RCT – Association & Causation Uses of epidemiology (Criteria for judging causality) – Infection disease epidemiology Definitions Dynamic of disease transmission & Modes of transmission – Disinfection – Definition Types Agents used Recommended disinfection procedures-Investigation of an epidemic.

Unit – V:

Environment & health: Definition & components (environment sanitation environmental sanitation) Water: Safe & Whole some water Requirements Uses source of water supply (sanitary well)-Purification of water (1). Large scale purification, (2). Small scale purification – Water Quality – Special treatment

of water

Air: Composition The air of occupied room discomfort. Air pollution & its effects. Prevention & Control of air pollution

Ventilation: Definition Standards of ventilation Types of ventilation. Light, Noise & Radiation,

Metrological environment, Housing, Disposal of waste Excreta disposal

PRACTICALS:

1. Epidemiology Problems

2. Environmental spotters

REFERENCE BOOK

1. Textbook of Preventive and Social medicine by k. Park, 21st edition, published by Banarsidas Bhanot

COURSE OUTCOMES						
CO1	The student will be able to know the concept of health & illness					
CO2	The student will be able to know epidemiology of common communicable diseases					
CO3	The student will be able to know epidemiology of common non communicable diseases					
CO4	The student will be able to know the effects of pollution on humans.					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CT111	**BASICS OF NURSING**
	Total Contact Periods – 80
	Total credits -5
	Course Designed by – Department of Nursing
OBJECTIVES	This course is designed to help the students to develop an understanding of the nursing profession, philosophy, objectives, theories and application of nursing in various clinical settings. It is aimed at helping the students to acquire knowledge, understanding and skills in techniques of nursing and practice them in supervised clinical settings.

Unit I: Introduction of Health

Health care system, major health problems of the country, nature of disease pattern, technological advances and national health programmes, health for all by 2000 AD. Role of health care workers in the health care delivery system, impact of illness of the individual family and community. History of Nursing, Communication Skills -Relationship with patients, process of communication

UNIT II: Concept of Nursing

Nursing Processes- Problems solving approach, assessment, diagnosis, planning, implementation and evaluation.

Unit III: First Aid and Nursing in Emergencies

Definition, basic principles, scope and rules, Wounds, hemorrhages, shock, fracture, dislocation and muscle injuries, respiratory emergencies, resuscitation, unconsciousness, Miscellaneous conditions, burns, scalds, foreign bodies in the skin, eyes, ear, nose, throat and stomach.Frost bite, effects of heart cramps, bites and stings. Poisoning, Transporting injured persons.

Unit IV: **Personal Hygiene and Health**

Care of skin, mouth, eyes, nails, hair, Menstrual hygiene, clothing, mental health, common health problems of poor personal hygiene. Comfort, Rest and Sleep, Hospital Housekeeping

Unit V: Health Education

Introduction to principles and methods of health education. Use of audio visual aids, mass education, role of nurse in health education.

COURSE OUTCOMES						
CO1	The student will be able to gain knowledge on concept of health, health-illness continuum and health care delivery system.					
CO2	The student will be able to gain knowledge on scope of nursing practice.					
CO3	The student will be able to gain knowledge on concept, theories and models of nursing practice.					
CO4	The student will be able to gain knowledge on concept, theories and models of nursing practice.					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAML17CT201	**Histopathology – Theory**
	Total Contact Periods – 80
	Total credits -4
	Course Designed by – Department of Pathology
OBJECTIVES	At the end of the course, the student should be able to be able to identify and describe in detail the microscopic structure of the major organs, tissues and cells of the body. be able to explain the theoretical background to surgical cutup, tissue fixation, tissue processing, microtomy and staining using routine and specialised techniques be able to demonstrate proficiency in the preparation of routine formalin-fixed, paraffin-embedded tissue sections.

Unit I: Introduction – Receipt and despatch of biopsy material Documentation
Unit II: Fixation Grossing, Tissue processing, (Dehydration, clearing, impregnation, embedding) (Decalcification)
Unit III: Microtomy

- Knives & Knife sharpening and Tissue sectioning, mounting etc.

Unit IV: Principles of staining
Staining techniques – Routine & special
Unit V: Filling, indexing & preservation of blocks etc., Frozen section (Cryostat), Museum techniques

COURSE OUTCOMES	
CO1	be able to explain the theoretical background to surgical cutup, tissue fixation, tissue processing, microtomy and staining using routine and specialised techniques
CO2	be able to demonstrate proficiency in the preparation of routine formalin-fixed, paraffin-embedded tissue sections
CO3	be able to demonstrate proficiency in haematoxylin and eosin staining, selected special stains and immunohistochemical methods
CO4	be able to explain the importance of quality assurance and health and safety procedures pertinent to the histopathology laboratory

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES

COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAML17CL202	**Histopathology – Practical**
	Total Contact Periods – 80
	Total credits -4
	Course Designed by – Department of Pathology
OBJECTIVES	At the end of the course student should be able to demonstrate proficiency in the preparation of routine formalin-fixed, paraffin-embedd and proficiency in haematoxylin and eosin staining, selected special stains and immunohistochemical methods

Note: Exercises / Spotters to be chosen by the examiners

EXERCISE: (3X10=30 marks)

- Tissue sectioning and H & E staining (1x10=10 marks)
- Special staining: (Any one of the following) (1x10=10 marks)

  - Perls stain
  - PAS stain
  - Giemsa stain
  - Ziehl – Neelsen stain
  - Reticulin stain
  - van Gieson stain
- Any one of the following: (1x10=10 marks)

  - Embedding
  - Frozen sectioning

SPOTTERS: (5x2=10 marks) (Any five of the following)

- Lab materials – Name & application of each:

  - Tissue cassette
  - Paraffin wax
  - Disposable blade for microtome
  - DPX
  - Waterbath
  - Diamond pencil
  - Cover slip
- Mention two applications of each:

  - Formalin
  - Chloroform
  - Alcohol
  - Xylene
- Charts / photographs:

  - Histokinette
  - Microtome
  - Cryostat
  - Embedding station

COURSE OUTCOMES						
CO1	be able to explain the theoretical background to surgical cutup, tissue fixation, tissue processing, microtomy and staining using routine and specialised techniques					
CO2	be able to demonstrate proficiency in the preparation of routine formalin-fixed, paraffin-embedded tissue sections					
CO3	be able to demonstrate proficiency in haematoxylin and eosin staining, selected special stains and immunohistochemical methods					
CO4	be able to explain the importance of quality assurance and health and safety procedures pertinent to the histopathology laboratory					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAML17CT203	**Cytology – Theory**
	Total Contact Periods – 80
	Total credits -4
	Course Designed by – Department of Pathology
OBJECTIVES	At the end of the course the student will be able to fix, process, embed tissues and make sections for microsection studies. He will also be competent to make routine cytological preparation.

Unit I:

1. Introduction to FNAC & Exfoliative cytology
2. Fixation of smears
3. Coating fixatives
    a) Polyethylene glycol solution
    b) Diaphane solution
4. Rehydration of air dried smears
5. Mailing of unstained smears
6. Preservation of fluid specimens prior to processing – Fresh material
    a) Specimens with a high mucous content
    b) Specimens with a high protein content
    c) Specimens with a low mucous or protein content

a. Specimens with low PH

7. Pre fixation of material

a. Ethyl alcohol (50% solution)
b. Sacromannos fixative
c. Mucolex

8. Preparation of fluid smears for microscopic examination

- Direct or sediment smears on glass slides (fresh / clotted / bloody / prefixed)

Unit II:

1. Processing of fluids
    a) Sputum, bronchial aspirates, bronchial washings, gastric washings
    b) Urine & other watery fluids
    c) Cerebrospinal fluid

Unit III:

1. Cytocentrifuge preparations
    a) Shandon's cytospin
    b) Unloading the machine
    c) Operation
    d) Comments
2. Preparation with membrane filters
    a) Materials needed
    b) Specimen requirements
    c) Method of filtration
3. Preparation of cell blocks
    a) Fixed sediment method
    b) Bacterial agar method

c) Plasma thrombin clot method

Unit IV:

1. Preparations of stains and solutions used in the Papanicolau method
    a) Graded alcohols
    b) Bluing solutions
    c) Preparation of Harris, Mayer, Lillie Mayer and Gill Haematoxylins
    d) EA50, EA36, EA65 and Orange G
2. Stains for hematologic material and air dried smears
    a) Wright stain
    b) Giemsa stain
    c) Wright Giemsa stain
    d) Modified May Grunwald Giemsa stain

Unit V:

1. Important factors influencing staining results
    a. Maintenance of solutions and stains
    b. Dipping slides
    c. Intensity of staining reaction
    d. Contamination control
    e. Important factors influencing the staining results of filters
    f. Destaining slides
    g. Timing
    h. Dye solubility and impurities
    i. Total dye content
    j. Stains with special purpose depending on category, use stain and fixative
2. Mounting the cell sample
    a. Mounting medium
    b. Dissolving nuclear pore filters prior to staining
    c. Dissolving nuclear pore filters after staining
    d. Cover slips
    e. Cover slipping the entire sample
    f. Method of cover slipping glass slides and filters
    g. Cooling slides
3. Stains used in hormonal evaluation
4. Stains used in the identification of sex chromatin

UAML17CT204	**Cytology – Practical**
	Total Contact Periods – 80
	Total credits -4
	Course Designed by – Department of Pathology
OBJECTIVES	At the end of the course the student will be able to fix, process, embed tissues and make sections for microsection studies. He will also be competent to make routine cytological preparation.

Unit I:

9. Introduction to FNAC & Exfoliative cytology

10. Fixation of smears

11. Coating fixatives

a) Polyethylene glycol solution
b) Diaphane solution

12. Rehydration of air dried smears

13. Mailing of unstained smears

14. Preservation of fluid specimens prior to processing – Fresh material

a) Specimens with a high mucous content
b) Specimens with a high protein content
c) Specimens with a low mucous or protein content

a. Specimens with low PH

15. Pre fixation of material

d. Ethyl alcohol (50% solution)
e. Sacromannos fixative
f. Mucolex

16. Preparation of fluid smears for microscopic examination

- Direct or sediment smears on glass slides (fresh / clotted / bloody / prefixed)

Unit II:

2. Processing of fluids
   a) Sputum, bronchial aspirates, bronchial washings, gastric washings
   b) Urine & other watery fluids
   c) Cerebrospinal fluid

Unit III:

4. Cytocentrifuge preparations
   a) Shandon's cytospin
   b) Unloading the machine
   c) Operation
   d) Comments

5. Preparation with membrane filters
   a) Materials needed
   b) Specimen requirements
   c) Method of filtration

6. Preparation of cell blocks
   a) Fixed sediment method
   b) Bacterial agar method

c) Plasma thrombin clot method

Unit IV:

3. Preparations of stains and solutions used in the Papanicolau method
    a) Graded alcohols
    b) Bluing solutions
    c) Preparation of Harris, Mayer, Lillie Mayer and Gill Haematoxylins
    d) EA50, EA36, EA65 and Orange G
4. Stains for hematologic material and air dried smears
    a) Wright stain
    b) Giemsa stain
    c) Wright Giemsa stain
    d) Modified May Grunwald Giemsa stain

Unit V:

5. Important factors influencing staining results
    a. Maintenance of solutions and stains
    b. Dipping slides
    c. Intensity of staining reaction
    d. Contamination control
    e. Important factors influencing the staining results of filters
    f. Destaining slides
    g. Timing
    h. Dye solubility and impurities
    i. Total dye content
    j. Stains with special purpose depending on category, use stain and fixative
6. Mounting the cell sample
    a. Mounting medium
    b. Dissolving nuclear pore filters prior to staining
    c. Dissolving nuclear pore filters after staining
    d. Cover slips
    e. Cover slipping the entire sample
    f. Method of cover slipping glass slides and filters
    g. Cooling slides
7. Stains used in hormonal evaluation
8. Stains used in the identification of sex chromatin

COURSE OUTCOMES						
CO1	The student will be able to fix, process, embed tissues					
CO2	Be able to make sections for microsection studies					
CO3	Be competent to make routine cytological preparation.					
CO4	Be able to explain the importance of quality assurance and health and safety procedures pertinent to the Cytology laboratory					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CT205	**BASIC PRINCIPLES OF HOSPITAL MANAGEMENT**
	Total Contact Periods – 60
	Total credits -4
	Course Designed by – Department of Hospital Administration
OBJECTIVES	The course will offer basic knowledge about management planning , Organizing , staffing, motivating and controlling management in Health care units

Unit I: Introduction to management & Organization:

The evolution of Management, Definition and Importance of Management. Planning – Organizing – staffing – Motivating – Leading – Controlling. Management of health care units (in brief). Individual behavior in organization; organizational functioning (Group/Individual); Perception; Motivation MBO; Organizational Development.

Unit II: Planning and Management of Hospitals & Clinical Services:

Building and physical layout – space required for separate function – Planning of infrastructure facilities, clinical services, equipment & Human resources – Types of Hospitals. Organization and administration of various clinical services; outpatient services. In-patient services, emergency services, operation theatres, ICU's and super specialty services.

Unit III: Organizing of support clinical services & Hospital management:

Imaging – CSSD – Laboratory – Blood Bank – diet – Medical Records – Mortuary. Housekeeping – Maintenance (Water, Electricity, Civil, Air Conditioning, Lift) – Pest Control – transport – Security. Forecasting – Purchasing & procurement (Sourcing, methods and procedures) – storing & issuing, Concept of inventory control, Maintenance of equipment and contracts (with special reference to major biomedical equipment). Trends in financing of Health and Hospital Services – Classification of Hospitals depending on source of financing – roles of financial institutions.

Unit IV: Personnel and quality Management in Hospital & Marketing:

Concepts – Manpower planning – Training & Developments – Team Building – Conflict Management – Performance appraisal – Office rules and regulations Outline of Strategic Planning and Marketing.

Concepts of quality – Professional Audit System – QA program – Medical Audit – Quality Circle – TOM – Patient Satisfaction – ISO 9000. A brief outline – computerization in hospital departments. Concept, Techniques, Indicators, Evaluation of Efficiency & Effectiveness evaluation of hospital and medical care services.

Unit V: Ethical, current issues and Legal Aspects of Hospitals management services:

Laws related to Hospital – Medico Legal Cases law of Torts – Autopsy – Dying delaration – CPA. – Waste Management – Telemedicine – Organ Transplantation – Rehabilitation Service – Health

Insurance. Operations Research and Quantitative Methods in Hospital Administration & Nursing Services in a Hospital.

COURSE OUTCOMES						
CO1	The student will be able to gain knowledge about infrastructure facilities, clinical services, equipment and Human resources					
CO2	The student will be able to understand how to maintain inpatient services, outpatient services, ICUs, Emergency services, Operation theatres and super speciality services					
CO3	The student will be able know about Manpower planning , training , developing and knowledge about marketing.					
CO4	The student will be able to learn developing and knowledge about marketing					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Management					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAML17CL206	**Clinicals In Histopathology And Cytology: Comprehensive Viva**
	Total Contact Periods – 60
	Total credits -4
	Course Designed by – Department of Pathology

UAML17CT207	**Clinical pathology (Hematology & Urine Analysis – Theory**
	Total Contact Periods – 60
	Total credits -4
	Course Designed by – Department of Haematology
OBJECTIVES	The objective of the course is to make the students able to understand the blood disorders, its lab diagnosis and various types of laboratory tests and to learn the differential diagnosis and appropriate diagnostic evaluation of common hematologic abnormalities.

Unit I:

1) Components of blood and their functions
2) Haematopoietic system of the body
3) Specimen collection for haemotological studies
4) Discarding procedures
5) Cleaning of laboratory glassware in hematology
6) Determination of Hb concentration
7) Calculation of blood cell indices – MCA, MCH & MCHC
8) Estimation of erythrocyte sedimentation rate
9) Estimation of packed cell volume

Unit II:

1) Peripheral smear examination-staining, interpretation, normal & abnormal cells, parasites
2) Reticulocyte count
3) Counting on hemocytometer
4) Automated systems in hematology

Unit III:

1) Approach to the diagnosis of anemia
   a. Screening for sickle cell anemia
   b. Estimation of fetal Hb
   c. Hemoglobin electrophoresis
   d. Osmotic fragility test
   e. Heinz body preparation
2) Lupus erythematosus (LE) cell preparation
3) Approach to the diagnosis of leukemias-Cytochemical tests and other investigations
4) Preparation of bone marrow smears for microscopic examination

Unit IV:

1) Haemostasis
2) Mechanism of blood coagulation
3) Fibrinolysis
4) Bleeding time determination

5) Whole blood clotting time
6) Thrombin time
7) Clot retraction and lysis time
8) Preparation of blood samples for coagulation test
9) PT, PTT, APTT, Plasma recalcification time, thrombin time
10) Lab diagnosis of bleeding disorders

Unit V:

- Urine analysis with manual & strip methods
- CSF analysis
- Analysis of serous fluids, synovial fluids, gastric juice
- Semen analysis

COURSE OUTCOMES						
CO1	Will be able to understand the blood disorders.					
CO2	To understand its lab diagnosis of blood disorders					
CO3	The student will be able know about various types of laboratory tests					
CO4	The student will be able to learn developing and knowledge about marketing					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAML17CL208	**Clinical pathology (Hematology & Urine Analysis – Practical**
	Total Contact Periods – 60
	Total credits -4
	Course Designed by – Department of Haematology
OBJECTIVES	The objective of the course is to make the students able to understand the blood disorders, its lab diagnosis and various types of laboratory tests and to learn the differential diagnosis and appropriate diagnostic evaluation of common hematologic abnormalities.

Note: Exercises / Spotters to be chosen by the examiners

EXERCISE: (3x10=30 marks)

- Smearing peripheral blood, staining with Leishman stain and differential counting (1x10=10 marks)
- Any one of the following: (1x10=10 marks)
  - Urine physical & chemical examination for the presence of reducing sugar, protein, blood, ketone – manual method
  - Urine physical & chemical examination for the presence of reducing sugar, protein, blood, ketone – strip method
- Any one of the following: (1x10=10 marks)
  - Hb estimation by colorimeter
  - Estimation of ESR
  - Total count on hemocytometer
  - Staining of reticulocytes
  - Semiautomated PT
  - Semiautomated aPTT
  - Urine microscopic examination
  - Fluid – Physical examination, Total count
  - Fluid – differential count on a stained smear

SPOTTERS: (5X2=10 marks) (Any five of the following)

- Lab materials – Name & application of each:
  - Vacutainer – Lavender / Blue / Green / Grey topped
  - ESR tube
  - Cuvette
  - PCV tube
  - Pasteur pipette
  - Micropipette
  - RBC pipette
  - WBC pipette
  - Neubauer chamber
  - Bone marrow needle
  - Lancet
- Slide identification:
  - Malaria

- Iron deficiency anemia
- Charts:
  - Microfilaria
  - Reticulocyte
  - Sickle cell
  - Chronic myeloid leukemia

EXAM PATTERN:

Exercise = 30 marks

Spotters / Charts = 10 marks

Viva = 20 marks

COURSE OUTCOMES						
CO1	Will be able to understand the blood disorders.					
CO2	To understand its perform tests on lab diagnosis of blood disorders					
CO3	The student will be able know about various types of laboratory tests					
CO4	The student will be able to interpret blood test results					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAML17CT209	**Blood banking and Immunology – Theory**
	Total Contact Periods – 60
	Total credits -4
	Course Designed by – Department of Haematology
OBJECTIVES	At the end of the course students will be able to learn the basic techniques with clotting mechanisms, blood banking techniques and automation. To perform the various type of tests involved in hematology, Imunohematology, coagulation profile and can handle automated instruments.

Unit I – Immunology

- Introduction to immunology
- Cells of Immune System
- Complement pathway
- Cytokines
- Hypersensitivity reactions
- HLA and Tissue typing
- Blood group genetics
- Elisa, Western blot

Unit II-Introduction to immunohematology-

- Introduction to immunohematology
- Characteristics of antigens – antibodies
- Factors influencing antigen – antibody reactions
- Principles of antibody potentiators
- Direct antiglobulin test
- Indirect antiglobulin test
- Sources of error in antiglobulin test
- Blood banking reagents
- Rroutine testing procedures in immunohematology laboratory
- ABO blood group system
- Rh blood group system
- Other blood groups

Unit III- Blood Banking Technology

- Blood donor selection
- Blood donor reactions
- Blood collection
- Blood component preparation and storage
- Blood component uses
- Pretransfusion testing
- Blood administration
- Adverse reactions of blood transfusion

Unit IV-Transfusion Transmitted Diseases and safety precautions

- Transfusion transmitted diseases

- HIV, HBsAg, HCV, Syphilis and Malaria
- Testing for TTI
- Universal precausions

Unit V- Quality Assurance and Regulation of Blood Bank Industry

- Blood bank licensing issues
- Good manufacturing practices
- Blood bank safety programs
  - Sickle cell
  - Chronic myeloid leukemia
  - LE cell

COURSE OUTCOMES						
CO1	Will be able to understand the basic techniques with clotting mechanisms.					
CO2	To understand blood banking techniques and automation					
CO3	The student will be able to perform the various type of tests involved in hematology					
CO4	The student will be proficient in imunohematology, coagulation profile and can handle automated instruments.					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAML17CL210	**Blood banking and Immunology – Practical**
	Total Contact Periods – 60
	Total credits -4
	Course Designed by – Department of Haematology
OBJECTIVES	At the end of the course students will be able to learn the basic techniques with clotting mechanisms, blood banking techniques and automation. To perform the various type of tests involved in hematology, Imunohematology, coagulation profile and can handle automated instruments.

Note: Exercises / Spotters to be chosen by the examiners

Exercise: Any three of the following: (10x3= 30 marks)

1. Blood grouping & Rh typing
2. Cross matching
3. Direct Coombs test
4. Indirect Coombs test
5. TTI rapid tests
6. Antisera affinity & avidity

Spotters: Any five of the following: (2x5 = 10 marks) (1 mark for identification and 1 mark for mentioning the use)

1. Antisera
2. Gel cards
3. Pasteur pipette
4. Elisa plates
5. Antiglobulin reagents
6. TTI rapid test rate
7. Blood bags – single, double, triple
8. Fresh frozen plasma
9. Platelet concentrate
10. Leukodepletion filters

COURSE OUTCOMES						
CO1	Will be able to understand the basic techniques with clotting mechanisms.					
CO2	To understand blood banking techniques and automation					
CO3	The student will be able to perform the various type of tests involved in hematology					
CO4	The student will be proficient in imunohematology, coagulation profile and can handle automated instruments.					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CT206	**HEALTH CARE MANAGEMENT**
	Total Contact Periods – 60
	Total credits -4
	Course Designed by – Department of Hospital Administration
OBJECTIVES	To Explain the effect of personality, attitudes, perceptions and attributions on their own and other's behaviors in team and organizational settings.

UNIT I: Concept of Health Care and Health Policy

Health in Medical Care, Indigenous systems of Health Care & their relevance, Framework for Health Policy Development.

UNIT II: Health Organisation

Historical development of Health Care System in the third world & India, Organization & Structure of Health administration in India, Type of Health Organization including International Organizations, Private & Voluntary Health care provider, Distribution of Health Care Services, Health Care System in Public sector Organization, Health systems of Various Countries.

UNIT III: Health Policy and National Health Programme

National Health Policy, Drug Policy, National Health Programs (Malaria, T.B., Blindness, AIDS etc.,) Evaluation of Health Programs (Developing indicators for evaluation), Medical Education & Health Manpower Development.

UNIT IV: Health Economics – Fundamentals of Economics

Scope & Coverage, Demand for Health Services, Health as an Investment, Population, health of Economic Development. **Economics of Health-**

Population based health services, Economics of Communicable and Non Communicable diseases

UNIT V: Methods & Techniques of Economic Evaluation of Health Program

Cost Benefit & Cost Effective Methods

- **Household & Health:** Health Expenditure & Outcome, Rationale for Government action, Household capacity, income and schooling
- **Health Insurance.**

COURSE OUTCOMES						
CO1	The student will be able to Develop skills in using materials tools and/or technology central to health care mgt;					
CO2	The student will be able to understand perspectives and values of health care management ;					
CO3	The student will be able to Integrate health care management theory with real world situation					
CO4	The student will be to Develop the ability to work productively with others in diverse teams					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAML17CL212	**Clinical in Clinical pathology and Blood banking: comprehensive viva**
	Total Contact Periods – 60
	Total credits -4
	Course Designed by – Department of Haematology

UAML17CL313	**Paper-I General Bacteriology, Immunology and Systematic Bacteriology – Theory**
	Total Contact Periods – 60
	Total credits -4
	Course Designed by – Department of Microbiology
OBJECTIVES	To give students Basic principles of General Bacteriology and Immunology. Fundamental knowledge about bacterial, viral, parasitic and fungal infections.Techniques involved in diagnostic microbiology – preparation of media, sterilization and disinfections procedures, specimen collection, processing of clinical specimens, serological procedures etc.

Unit 1 : General bacteriology

- **Morphological** classification of bacteria
- **Bacterial cell structure –** cell wall, cytoplasmic membrance, cytoplasm, flagella, fimbriae, nucleic acids, capsule, spore (diagram of bacterial cell structure)
- **Definition of sterilization** and disinfection, classification of physical and chemical methods of sterilization, autoclave, hot air oven filtration, chemical agents of sterilization – alcohol, aldehydes, halogens, phenol, gaseous method of sterilization, surface active agents, quality controls for sterilization procedures

Unit 2: Culture media & methods

- **Culture Media** – Types – simple media, enriched media, enrichment media, selective media, indicator media, sugar media, transport media, anaerobic media (suitable examples)
- **Culture methods** – Aerobic culture method – streak culture, lawn culture, stroke culture, stab culture, inoculation in liquid culture, anaerobic culture media and methods Robertson's cooked meat media, thioglycollate medium, anaerobic jar
- **Identification of bacteria** – staining techniques – grams staining, acid fast staining. **Biochemical reactions –** sugar fermentation and IMViC tests.
- **Antibiotic susceptibility testing** – Kirby Bauer disc diffusion test

Unit 3: Immunology

- Sources and spread of infections
- Immunity – definition types of immunity with examples, vaccines, antibodies – types and functions
- Antigen antibody reactions – precipitation, agglutination, ELISA, immunochromatography.
- Hypersensitivity – definition, types, anaphylaxis

Unit 4: Systemic Bacteriology

- Stahphylococcs, Streptococcus, - morphology,culture characteristics, Laboratory diagnosis
- Niessena – Gonococcus and meningococcus – morphology, culture characteristics
- Gram negative bacilli – Escherichia coli, Klebsiella species, Proteus species, Pseudomonas species, Salmonella species, Shigella species, Vibrio species, Acinetobacter species – Morphology, cultural characteristics, laboratory diagnosis

Unit 5 :

- Mycobacterium tuberculosis – morphology, culture characteristics & Laboratory diagnosis
- Hospital acquired infections – definition, types, source and mode of spread of infection, hospital infection control
- Biomedical waste management – definition, segregation, management
- Universal precautions

COURSE OUTCOMES						
CO1	The student will know basic principles of General Bacteriology and Immunology					
CO2	The student will be have fundamental knowledge about bacterial, viral, parasitic and fungal infections					
CO3	The student will be able to perform Techniques involved in diagnostic					
CO4	The student will be able to perform preparation of media, sterilization and disinfections procedures, specimen collection, processing of clinical specimens, serological procedures etc.					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAML17CL314	**Paper-I General Bacteriology, Immunology and Systematic Bacteriology – Practical**
	Total Contact Periods – 60
	Total credits -4
	Course Designed by – Department of Microbiology
OBJECTIVES	To give students Basic principles of General Bacteriology and Immunology. Fundamental knowledge about bacterial, viral, parasitic and fungal infections.Techniques involved in diagnostic microbiology – preparation of media, sterilization and disinfections procedures, specimen collection, processing of clinical specimens, serological procedures etc.

Unit 1: General Bacteriology

- **Microscope –** Structure, operation, maintenance, types.
- **Staining techniques –** simple staining, Gram staining, Acid fast staining
- **Detection of motility by hanging drop.**
- **Sterilization – Autoclave –** Principle, working, maintenance, Hot air oven – Principle, working, maintenance,Chemical disinfectants – sodium hypochlorite, Iysoformin, phenols, gluteraldehyde, chlorhexidine/betadine (Povidine iodine)-uses

Unit 2: Culture Media & Culture methods

- **Culture Media –** Types – simple media, enriched media, enrichment media, selective media, indicator media, sugar media, transport media, anaerobic media – **Preparation, sterilization and uses**
- **Culture methods –** Aerobic and anaerobic culture methods – Techniques
- **Identification of bacteria –** biochemical reactions preparation and inoculation and interpretation
- **Antibiotic susceptibility testing –** Kirby Bauer disc diffusion test

Unit 3: Immunology

- Serological tests – agglutination tests – Latex agglutination, tube agglutination
- Immunochromatography – Rapid card tests.
- ELISA (Enzyme linked immunosorbent assay)
- Mantoux test – Administration (type IV hypersensitivity)

Unit 4: Systemic Bacteriology

- Staphylococcus, Streptococcus – Microscopy, colony morphology, identification
- Neisseria – Gonococcus and meningococcus – Microscopy
- Gram negative bacilli – Escherichia coli, Klebsiella species, Proteus species, Pseudomonas species, Salmonella species, Shigella species, Vibrio species – Microscopy, cology morphology, Identification
- Mycobacterium tuberculosis – Microscopy, colony morphology, identification

Unit 5: Applied Microbiology

- Hospital acquired infections – definition, types, source and mode of spread of infection, hospital infection control – charts

- Biomedical waste management – spotter & charts
- Universal precautions – spotters & charts
- Drinking water analysis / Milk analysis

Allergen testing

COURSE OUTCOMES						
CO1	The student will be able to maintain the aseptic facilities					
CO2	have good knowledge about pathogenic microbes and their related assays					
CO3	Students will be able to maintain good laboratory practice to be followed in a lab					
CO4	The student will be able to perform preparation of media, sterilization and disinfections procedures, specimen collection, processing of clinical specimens, serological procedures etc.					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAML17CT315	**Paper –II Virology, Mycology and Parasitology – Theory**
	Total Contact Periods – 60
	Total credits -4
	Course Designed by – Department of Microbiology
OBJECTIVES	The objective of the course is to instill sound knowledge of pathogenic microbes, laboratory diagnosis, basic understanding of virology, mycology, & advanced serological techniques.

Unit 1 : General virology

- General properties of viruses – Basis structure of the virus, classification of viruses, viral multiplication
- Cultivation of viruses – Animal inoculation, embryonated eggs, tissue cultures
- Laboratory diagnosis of viral infections – Briefly on Microscopy detection of viral antigens and antibodies, isolation of virus, molecular diagnosis.
- Viral vaccines – Live and killed viral vaccine routinely administered

Unit 2: Medically important viruses I

- Mode of transmission, clinical manifestations, and preventive measures.
    1. Herpes simplex viruses (HSV I & II)
    2. Influenza virus
    3. Polio virus
    4. Measles.

Unit 3: Medically important viruses II

- Mode of transmission, clinical manifestations, and preventive measures.
    1. Dengue
    2. Japanese B encephalitis
    3. Chikungunya
    4. Hepatitis
    5. HIV

Unit 4: Medically important fungi

- Morphology & infections caused by – Candida species, Dermatophytes, Aspergillus species, Mucor & Rhizopus.
- Culture media and staining methods used in identification of fungi

Unit 5: Medically important parasites-

- Etiology, mode of transmission, sample to be collected – Ameobiasis, malaria, tape, worms, round worm, hook worm, filarial worm infections, pin worm, strongyliodes & whip worm infections.
- Stool examination, Peripheral blood smear examination

COURSE OUTCOMES						
CO1	The student will be able to maintain the aseptic facilities					
CO2	have good knowledge about pathogenic microbes and their related assays					
CO3	Students will be able to maintain good laboratory practice to be followed in a lab					
CO4	The student will be able to perform preparation of media, sterilization and disinfections procedures, specimen collection, processing of clinical specimens, serological procedures etc.					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAML17CL316	**Paper –II Virology, Mycology and Parasitology – Theory**
	Total Contact Periods – 60
	Total credits -4
	Course Designed by – Department of Microbiology
OBJECTIVES	The objective of the course is to instill sound knowledge of pathogenic microbes, laboratory diagnosis, basic understanding of virology, mycology, & advanced serological techniques.

- Sample collection-blood collection, serum separation, collection of other required specimens
- Rapid card tests & ELISA for detection of antigens and antibodies
- Fungal media preparation and inoculation – Sabouraud's Dextrose Agar, Corn meal agar.
- Staining techniques – LPCB mount, KOH mount
- Stool concentration techniques, identification of ova cyst in stool samples by saline and iodine mount,
- Peripheral blood smear – Preparation, Leishman's staining

COURSE OUTCOMES	
CO1	The student will be able to maintain the aseptic facilities
CO2	have good knowledge about pathogenic microbes and their related assays
CO3	Students will be able to maintain good laboratory practice to be followed in a lab
CO4	The student will be able to perform preparation of media, sterilization and disinfections procedures, specimen collection, processing of clinical specimens, serological procedures etc.

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES

COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CT207	**PHYSICIANS OFFICE MANAGEMENT**
	Total Contact Periods – 60
	Total credits -4
	Course Designed by – Department of Nephrology
OBJECTIVES	•To promote scientific management of hospital and advancement of health care systems so as to make it rational, responsive and cost efficient

UNIT I. Outpatient Section

Registration of new cases, Registration of repeat cases, Patient record guide, Laboratory X-Ray reports & reports & reports filing, Alpha index typing & Filing, O.P. Records coding (disease & indexing), O.P. records retrieval, O.P. Statistics

UNIT II. Inpatient Section

Admitting office procedure, Inpatient record removal & forwarding, Ward Census,

UNIT III. Assembling & deficiency checks, I.P. record coding & indexing,

UNIT IV. Discharge Analysis

Incomplete record control, Completed record control, Medico legal procedures & issue of Medical certification, Record retention & destruction of O.P. & I.P. records,

UNIT V. Miscellaneous

Hospital reception, Secretarial practice, Library (Medical)

REFERENCE BOOKS

- Financial Management of the Medical Practice ,J. Max Reiboldt, American Medical Association
- Saunders Medical Office Management,Alice Anne Andress CCS-P CCP

COURSE OUTCOMES						
CO1	The student will be able to Understand and apply resource management concepts (personnel, finance, and material resources) and the processes and strategies needed in specific hospital sectors					
CO2	The student will be able to Communicate effectively and develop their leadership and teambuilding abilities					
CO3	Apply modern change management and innovation management concepts to optimize structures					
CO4	The student will be to Analyze existing hospital service policies and enhance their alignment within the local and national context					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAML17CL318	**CLINICALS IN GENERAL BACTERIOLOGY, IMMUNOLOGY, VIROLOGY AND MYCOLOGY: COMPREHENSIVE VIVA**
	Total Contact Periods – 60
	Total credits -4
	Course Designed by – Department of Microbiology

UAML17CT319	**Clinical Chemistry Paper-I – Theory**
	Total Contact Periods – 60
	Total credits -4
	Course Designed by – Department of Biochemistry
OBJECTIVES	This course is designed to equip the students with essential all the laboratory equipment and know how to maintain them.to make them aware of the safety protocols and guidelines to be adhered in a laboratory setup

Unit I

1. Role of a lab technician in Clinical Biochemistry lab.
2. Lab utensils: Beaker, Funnels, graduated cylinders, flasks, Volumetric flasks, Syringes, Pipettes, Micro pipettes, Multi – channel pipettes, Dilutors & dispensers. Quality control of micropipettes, Quality control validation for performance of pipettes.
3. Lab plastic & glass ware composition and cleaning.
4. Laboratory safety: Guidelines of OSHA, general safety (Fire, Electrical safety), Chemical Hygiene plan, Storage of chemicals, Labelling & Handling requirements, Waste generation & disposal

Unit II:Units of measurement

Measurement of mass – basic quantities and units of SI. SI derived units used in medicine. Types of balances – maintenances of balance.

Basic calculations in Laboratory. Normality, Molality, Molarity, Dilutions – per cent concentration (wt/w, v/v, w/v), pH, pk, buffer preparation.

Water as reagent – Reagent grade water – purification process – Grade of water purity – siorage & handling of reagent water – suggested uses of reagent water – Quality control – system documentation & record keeping

Unit III: Instrumentation

Centrifuges – principles of centrifugation – centrifuge types, components, maintenance and quality assurance Water bath, Oven, Incubator – thermometer, calibration and maintenance

Photometry – principles of photometry. Components & applications of colorimeter. Spectrophotometer, Flame photometer, Nephlometer try, turbidimetry & reflectance photometry

Enzymes definition, action, and kinetics

Unit IV

Electrochemistry: Principles and measurements of electrochemistry & electro analytical chemistry. Putenticrnetry, Voltametry coulometry methods – Principles, components, usage, advantages & disorder.

Electrophoresis – Principles, components, procedure, types, clinical application & interpretation of the data

Unit V

1. Chromatography – Principles, components, procedure, types, clinical application
2. Immunochemistry techniques – Principles of immunochemistry, detectors needed sensitivity & specificity – Elisa, Chemiluminscence, fluorescence assays.
3. Semi automatic, Automatic – Overview, Principles and methodologies used.

COURSE OUTCOMES						
CO1	Students will be able to identify all the laboratory equipment and know how to maintain them.					
CO2	They will be aware of the safety protocols and guidelines to be adhered in a laboratory setup					
CO3	Students will be able to maintain good laboratory practice to be followed in a lab					
CO4	The student will be able to perform fundamental assays in clinical chemistry.					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAML17CL320	Clinical Chemistry Paper-I – Practical
	Total Contact Periods – 60
	Total credits -4
	Course Designed by – Department of Biochemistry
OBJECTIVES	This course is designed to equip the students with essential all the laboratory equipment and know how to maintain them.to make them aware of the safety protocols and guidelines to be adhered in a laboratory setup

Unit I – Pipetting & Weights and Measurements: Principles of weighing, usage of pipettes, pipetting

Practice – principles of weight – preparation of solutions, Normality – molality – molarity – Dilution – percentage (V/V, W/V, V/W)

Unit II – pH and Buffers – Preparation of different buffers – measurements of pH (pH paper, pH meter)

Unit III – Standardisation of Biochemical substances – Glucose, Urea, Creatinine

Unit IV – Estimation of Glucose, Urea, Creatinine, total protein, Albumin

Unit V – Charts / Spotters / Case Studies

1. Lab safety
2. Grading of reagent water
3. Conversion of Units
4. Calculation in Biochemistry
5. Waste generation St Disposal
6. PH
7. Buffer
8. Standardisation curve
9. Serum Protein Electrophoresis
10. Instrumentation – Identification

COURSE OUTCOMES						
CO1	Students will be able to identify all the laboratory equipment and know how to maintain them.					
CO2	They will be aware of the safety protocols and guidelines to be adhered in a laboratory setup					
CO3	Students will be able to maintain good laboratory practice to be followed in a lab					
CO4	Students will be able to prepare and standardize various components required for various biochemical assays					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**

1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAML17CL321	Clinical Chemistry Paper-II – Theory(UE)
	Total Contact Periods – 60
	Total credits -4
	Course Designed by – Department of Biochemistry
OBJECTIVES	This course is designed to make Students will be well versed with pre analytical techniques and the protocols involved, well acquainted with various blood parameters and their biological interval significance. Also make them learn the quality control measures adapted for various assays

Unit I: Pre – analytical – Blood Collection – Types of blood sample – Preservatives & anti-coagulants – Errors related to it Vacutainer system procedures to decrease phlebotomy related variables – Patient identification sample collection – Past collection cause – sample transportation – Procedure to minimize sample transportation errors – use of mechanical transporters – sample processing – procedures – Pre analytical variables in urine collections – pre-analytical variables in other body fluids – Blood collection for inborn errors of Metabolism – criteria for rejection of specimens

Unit II: Analytical-

1. Overview of glucose homeostasis, Definition of Diabetes, overview of pathophysiology, Type I, II, GDM, Pre-Diabetes. Methodologies, comparison of methodologies, reference level. Diagnostic guidelines – Glucose, Insulin, C-Peptide, Glucose Tolerance test Determination, usage of HbA1C methodology to estimate.
2. Lipid Profile: Definition of lipid, Over view of types of lipid, distribution, their role in the L6L' – Estimation of Total Cholesterol, triglycerides, HDL Cholesterol, LDL Cholesterol, VLDL Cholesterol – Methodology – Reference level – Diagnostic guidelines.
3. Liver Profile – Overview of Liver damage and the tests to identify it – total protein, Albumin, Bilirubin (Total & Direct), ALT, AST, ALP & GGT – Methodology – Reference level.
4. Renal Profile – Overview about Renal function, GFR, tubular function tests.
5. Minerals: Role of minerals in health – estimation of calcium, phosphorus, Magnesium, Iron, copper – Methodology – Reference level – interpretation of data.

Vitamins: Estimation of Folic acid, Vitamin B12 Vitamin D, Vitamin K, Vitamin B b6-methodology – Reference level – interpretation of data

Unit III: Special Investigations: Hormones

Thyroid Gland Regulation, Test to Identify Thyroid disorder (T3, T4, FT3, FT4, TSH), Methodology and interpretation, Role of PTH in our Body, Tests to identify parathyroid disorder, PTH (free and Intact) Interpretation, Tests for Infertility LH, FSH, Prolactin, Estradiol, Testosterone (Free & total), B HCG interpretation, Methodologies existing, Hormone analysis

Unit IV: Other Special Investigations

- Tumour markers – Investigation for Myocardial Infraction – Investigation for acute Pancreatitis – Acid – base abnormality – Anion Gap
- Nutritional assessment – Negative Nitrogen Balance – Positive Nitrogen Balance

Unit V: Quality Control:

Sensitivity – Specificity – Linearity – Accuracy & Precision, Primary Standard, Secondary standard, Calibration – Internal Quality control indicators, External Qualtiy Control Program, test utilization and turn around time, around time, Regulations for Lab (by Indian Govt Internatior: Guideliness). Hospital management structure – organisation of clinical lab, Communication within the total hospital, communication within the lab, Personal Management, Work Scheduling, Continuous Quality improvement – Continuing education – resource management (Lab staff, reagents, supplies & capital equipment).

COURSE OUTCOMES						
CO1	Students will be well versed with pre analytical techniques and the protocols involved					
CO2	Students will be well acquainted with various blood parameters and their biological interval significance.					
CO3	They will also learn the quality control measures adapted for various assays					
CO4	Students will be able to prepare and standardize various components required for various biochemical assays					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAML17CL322	**Clinical Chemistry Paper-II – Practical**
	Total Contact Periods – 60
	Total credits -4
	Course Designed by – Department of Biochemistry
OBJECTIVES	This course is designed to make to perform various assay to estimate enzymes and other blood parameters

Unit I-Estimation of Bilirubin, Cholesterol, Triglycerides, Uric Acid, Calcium, Phosphorus

Unit II-Estimation of Enzymes amylase, Alkaline Phosphatrase, Lipase

Unit III-Electrophoresis – Agar gel Electrophoresis – serum Protein Electrophoresis Identification and interpretation

Unit IV-Chromatography – Circular paper chromatography – separation of Aminoacids & Sugars and calculation of Rf values

Unit V-Charts/Spotters/Case Studies

- Preservatives
- Anti-coagulants
- Types of Samples
- Vaccutainers
- Blood Collection
- Reference interval
- Glucose Tolerance test graphs
- Interpretation of Routine tests
- QC materials
- Guideline tor regulation of Lab

COURSE OUTCOMES						
CO1	Students will be well versed with pre analytical techniques and the protocols involved					
CO2	Students will be well acquainted with various blood parameters and their biological interval significance.					
CO3	They will also learn the quality control measures adapted for various assays					
CO4	Students will be able to prepare and standardize various components required for various biochemical assays					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAML17CT323	**TRAUMA LIFE & CARDIAC LIFE SUPPORT**
	Total Contact Periods – 60
	Total credits -4
	Course Designed by – Department of Cardiology
OBJECTIVES	To get knowledge about handling and management of trauma cases likemusculoskeletal , head, and thermal burns

UNIT I. TRAUMA LIFE (Part 1)

- BLS
- TRIAGE
  a. Primary Survey
  b. Secondary Survey
- Airway & Ventilatory management
- Shock
- Central & peripheral venous access
- Thoracic trauma – Tension pneumothorax
- Other thoracic injuries
- Abdominal trauma – Blunt injuries
- Abdominal trauma – Penetrating injuries

UNIT II. TRAUMA LIFE (Part 2)

- Spine and spinal cord trauma
- Head trauma
- Musculoskeletal trauma
- Electrical injuries
- Thermal burns
- Cold injury

UNIT III. TRAUMA LIFE (Part 3)

- Paediatric trauma
- Trauma in pregnant women
- Workshop BLS
- Workshop cervical spine immobilization
- Imaging studies in trauma

UNIT IV. CARDIAC LIFE SUPPORT (Part 1)

- BLS
- The universal algorithm for adult ECC
- Ventricular fibrillation/Pulseless ventricular tachycardia algorithm
- Pulseless electrical activity (PEA) / asystole algorithm
- Bradycardia treatment algorithm
- Tachycardia Treatment algorithm

UNIT V. CARDIAC LIFE SUPPORT (Part 2)

- Hypotension / Shock
- Acute myocardial infarction
- Paediatric Advanced life support
- Airway management
- Defibrillation
- Drugs used in ACLS
- Emergency Cardiac pacing
- AED
- Techniques for oxygenation and ventilation

REFERENCE BOOKS:

- ECG Made Easy –AtulLuthra
- Reference by PGDCC – IGNOU Handbooks for ECG, ECHO and Stress Test
- An Introduction to Electrocardiography:Schamroth Colin
- Clinical Electrocardiography: Goldberger. A

COURSE OUTCOMES						
CO1	The student will be able to know basic knowledge about BLS and triage					
CO2	The student will be able to understand the Handling and management of Airway ventilator and shock					
CO3	The student will be able to Know about handling of Paediatric trauma cases					
CO4	The student will be to know about Abdominal trauma in blunt injuries and penetrating injuries					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAML17CL324	**Clinical in Clinical Chemistry: comprehensive viva**
	Total Contact Periods – 60
	Total credits -4
	Course Designed by – Department of Biochemistry
OBJECTIVES	

PROGRAMME ELECTIVE							
		COURSE		TEACHING HOURS			
SI NO	SEMESTER	**COURSE CODE**	**COURSE TITLE**	**L**	**T**	**P**	**CREDITS**
1	I	UAH17CE1020	Fundamentals of Biostatistics	4	4		2
2	I	UAH17CE1021	Communication skills for Health Care professionals	5	5		2
3	II	UAH17CE1022	Biomedical Ethics	3	3		2
4	II	UAH17CE1023	Fundamentals of Human Genetics	4	4		2
5	III	UAH17CE2024	Principles and application of Clinical Genetics	6	4	2	2
6	III	UAH17CE2025	Clinical Examination of the HumanVisual System	5	3	2	2
7	IV	UAH17CE2026	Personality Development and Stress Management	4	4		2
8	IV	UAH17CE2027	First Aid Management & Splinting Techniques	6	4	2	2
9	V	UAH17CE3028	Essentials of Medical Transcription	7	7		2
10	V	UAH17CE3029	Communication and Soft Skill	7	7		2
11	VI	UAH17CE3030	Professional skills Development	6	6		2
12	VI	UAH17CE3031	Library Science and E-Resources	6	6		2

UAH17CE1020	**FUNDAMENTALS OF BIOSTATISTICS**
	Total Contact Periods – 4
	Total credits -2
	Course Designed by – Department of Community Medicine
OBJECTIVES	The course will offer basic knowledge about Biostatistics and to correctly apply a variety of statistical procedures and tests according to objective of study

UNIT I: Introducing the Basics

Introduction, Graphical representation of data, Data collection, Diagrammatic and Graphical Presentation of data, Types of data, limitations.

UNIT II: Measures of Central Tendency & Dispersion

Measures of Central Tendency; Mean, Median, Mode, Geometric mean, Harmonic mean for raw data. Measures of dispersion; Quartile deviation, Mean Deviation - Standard Deviation - Coefficient of variation- Range

UNIT III: Probability

Introduction to Probability, Theorems of probability; Bayer‘s Theorem, Probability Distributions; Discrete & Continuous distributions, Binomial Distribution, Poisson Distribution, Normal Distribution.

UNIT IV: Correlation & Regression Analysis

Correlation Analysis, Types of correlation; Rank Correlation Coefficient. Regression analysis, Types of Regression, Assumptions; Comparison to Correlation.

UNIT V: Hypothesis Testing

Introduction; Types of sampling, Hypothesis testing; Type of errors, Parametric & Non-parametric tests; Mann Whitney’s U test, Chi-square, t-tests, ANOVA.

REFERENCES

1. Don. Mc Neil - Epidemiological Research Methods - Oxford University Press, London.

2. Biostatistics –Principle & Practice – McGraw Hill Education.

3. http://www.ats.ucla.edu/stat/

4. Ahttp://www.statsoft.com/textbook/basic-statistics/

COURSE OUTCOMES						
CO1	The student will be able to understand and apply the Biostatistics.					
CO2	The student will be able to use the software independently for the data analysis.					
CO3	The student will be able determine the correct procedures to use in a given situation					
CO4	The student will be able to interpret the results of hypothesis tests					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Management					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE1021	**COMMUNICATION SKILLS FOR HEALTH CARE PROFESSIONALS**
	Total Contact Periods – 5
	Total credits -2
	Course Designed by – Department of Community Medicine
OBJECTIVES	This course deals with essential functional English aspects of the of communication skills essential for the health care professionals.

UNIT: I APPLIED GRAMMAR

Identifying common errors in sentences, Transformation of sentences, Usage of either …or…, Neither… nor…, So… that…, Such… that…, Not only… but also…, unless…

UNIT: II VOCABULARY

Abbreviations used in healthcare, Medical idioms & Phrases

UNIT: III WRITING

Letter writing, Curriculum Vitae writing, covering letter, Creative writing – invite, posters, Essay writing, summary writing, note taking, report writing.

UNIT: IV SPOKEN COMMUNICATION

Telephone etiquette, Importance of Stress, Intonation and rhythm, speaking; describing simple process, Filling a form etc., - Asking and answering questions; Debate/Oral Reporting

UNIT: V LISTENING AND READING SKILLS:

Listening and reading comprehension exercises.

Textbook Recommended:

1. Effective English Communication by Krishna Mohan and Meenakshi Raman, Tata Mc Graw –Hill Publishing Company Limited, New Delhi.

2. English for Colleges and Competitive Exams by Dr. R. Dyvadatham, Emerald Publishers.

COURSE OUTCOMES						
CO1	The student will be able to express better.					
CO2	The student will be able to get knowledge about MOA, adverse effects					
CO3	The student will Grow personally and professionally					
CO4	The student will Develop confidence in every field					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE1022	**BIOMEDICAL ETHICS**
	Total Contact Periods – 3
	Total credits -2
	Course Designed by – Department of Community Medicine
OBJECTIVES	To provide basic skills in: A) Approaching ethical issues. B) Analysis and statement of issues. C) Understanding the relevant ethical principles invoked..

Introduction to Bioethics

Bioethical issues related to Healthcare &Medicine 5

2Anatomy - Cadaver ethics, Human dignity, PNDT, Disposal of cadaver, Genetic Counseling 7

Physiology - Animal ethics, Health policy privacy 7

Biochemistry & Pathology - Prudence of investigation confidentiality, Patients bill of rights,

Disposal of investigative material, Integrity, Blood transfusion 5

Pharmacology - Rational drug prescribing, Clinical trials, Risk minimization, Animal

ethics

Microbiology - Hand wash, Drug resistance minimization, Prudence of investigation

confidentiality, Sterilization procedure, Biosafety and bio hazard 5

Medicolegal aspects of medical records

Introduction to Intellectual Property:

Concept of Intellectual Property Kinds of Intellectual Property

Patents, CopyrightsDesigns, Trademarks,Geographical Indication, Infringement of IPR, Its protection and

Remedies Licensing and its types

REFERENCE BOOKS

1. Contemporary issues in bioethics – Beauchamp &walters (B&W) 4th edition.

2. Classic philosophical questions by Gloud (8th Edition)

3. Case book series and booklets by UNESCO Bioethics Core curriculum 2008

4. Encyclopedia of Bioethics 5 vol set, (2003) ISBN-10: 0028657748

5. Intellectual property rights- Ganguli-Tat McGrawhill. (2001) ISBN-10: 0074638602,

6. Intellectual Property Right- Wattal- Oxford Publicatiopn House.(1997) ISBN:0195905024.

COURSE OUTCOMES						
CO1	The students will be able to: Recognize what constitutes an ethical concern in health care					
CO2	The student will be able to understand the clinical evaluations of Disease Condition					
CO3	The student will be able to Understand better the complexity and multi-dimensionality of medical ethical concerns and uniqueness of each problem.					
CO4	The student will get the knowledge of plagiarism in their innovations which can be questioned legally					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE1023	**FUNDAMENTALS OF HUMAN GENETICS**
	Total Contact Periods – 4
	Total credits -2
	Course Designed by – Department of Genetics
OBJECTIVES	To Comprehend the Chromosomal basis of inheritance

I - Introduction to cellular components

Structure and morphology of various types of cells - Biochemical composition - Cellular organelles - Composition and components of nucleus - Chromosomes - Cell division and Mechanics of cell division and regulation.

II - Structure and functions of nucleic acids

Functions, Structure and characteristics of nucleic acids - Types of mutations -Genetic variations and polymorphisms

III - Chromosomal basis of inheritance

Chromosome behavior and inheritance pattern in man - Single gene Mendelian disorders: autosomal dominant, recessive, sex linked dominant and recessive - Polygeneic and mitochondrial inheritance.

III - Origin and detection of genetic disorders

Mutation - Non-disjunction - Chromosomal abnormalities and clinical phenotypes of common genetic syndromes (Down's syndrome, Patua‘s syndrome, Edward syndrome, Turner syndrome and Klinefelter's syndrome, Cri-du-caht syndrome)- Karyotyping, Neural tube defects, Carcinogenesis.

IV–Biochemical basis for the inborn errors of metabolism

General characteristics of inborn errors of metabolism – Incidence - etiology - Folic acid metabolism - triple markers - New born screening, prevention and management. False positive and false negative -Ethical principles of Genetic counseling for prenatal diagnosis - Fetal rights – Regulation and prevention of misuse act 1994.

Reference books

1. A guide to genetic counseling, 2nd edition, D.L. Baker, J.L. Schuette and W.R. Uhlmann, Wiley –Leiss Publications 2002.

2. Emery Elements of Medical Genetics, 9th edition, Robert F. Mueller & Ian D. young, Churchill Livingstone, 1995.

3. Medical Genetics, 3rd edition, Lynn B. Jorde, John C. Carey, Michael J. Bamshad, & Raymond L. White, Mosby, 2003.

COURSE OUTCOMES						
CO1	The student will be able to Be able to describe the chromosomal basis of inheritance and how alterations in chromosome number or structure. . .					
CO2	The student will be able to understand of the differences and similarities between diagnostic, predictive and carrier genetic testing.					
CO3	The student will be able to know detailed information of Chromosome behavior and inheritance pattern in man					
CO4	The student will be to understand the phenotype and genotype .					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE2024	**PRINCIPLES AND APPLICATION OF CLINICAL GENETICS**
	Total Contact Periods – 6
	Total credits -2
	Course Designed by – Department of Nephrology
OBJECTIVES	To develop awareness about Genetic testing, Genetic counseling, Philosophy and Ethos of Genetic services

I -Principle and components of genetic testing Lay out of genetic laboratories - Genetic testing, Genetic counseling, Philosophy and Ethos of Genetic services, Types of testing- Cytogenetic testing- Molecular cytogenetic testing- DNA testing.

II - Cytogenetic testing Indications, Type of sample, Sampling and transport conditions, Karyotyping - chromosome identification, merits and demerits of conventional cytogenetic testing

III - Molecular Cytogenetic testing

Indications, Type of sample, Sampling and transport conditions - Fluorescence in-situ hybridization, fluorescence signal enumeration, merits and demerits of FISH.

IV - DNA testing

Organization of human genome, Structure and function of genetic material, Polymerases chainmreaction - Types, principles and testing, Sequencing.

V - Practical:

Case studies

Reference books

1. Practical Genetic counseling, Peter S. Harper, 6th edition, Hodder Headline Group 2004.

2. Medical Genetics, 3rd edition, Lynn B. Jorde, John C. Carey, Michael J. Bamshad, &

Raymond L. White, Mosby, 2006.

3. Genetics in Medicine, Thompson & Thompson, 6th edition, Elsevier 2004.

4. Practical Genetic counseling, Peter S. Harper, 6th edition, Hodder Headline Group 2004.

COURSE OUTCOMES						
CO1	The student will be able to become familiar with and practice genetic tests.					
CO2	The student will be able to provide better patient care					
CO3	The student will be able to know detailed information about Genetic Counselling					
CO4	The student will be to know about Genetic testing.					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE2025	**CLINICAL EXAMINATION OF THE HUMANVISUAL SYSTEM**
	Total Contact Periods – 5
	Total credits -2
	Course Designed by – Department of Opthalmology
OBJECTIVES	The core objective of this course is to gain in depth knowledge on the structural and physiological functions of the various parts of the eye and the different examination procedures for the ocular structures.

: **I - History Taking**

Importance of history taking, Demographic data and its importance, Chief presenting symptoms, History of present illness, History of past illness, Family History, Common ocular symptoms and their causes – defective vision, watering eyes, discharge, redness, pain, asthenopia and other symptoms

II - Visual Acuity measurement

Distance visual acuity-charts, methods and measurements; Near visual acuity –charts, methods and measurements; contrast sensitivity testing; colour vision testing

III - External Examination

Examination of head posture, examination of forehead, examination of eye brows, examination of eyelids, examination of Lacrimal apparatus, examination of eyeball on the whole, examination of the cornea, conjunctiva sclera and anterior chamber, eye movements, muscle balance and squint evaluation

IV - Anterior segment Evaluation

Slit lamp examination of the eyelids, cornea, conjunctiva, anterior chamber depth, iris, and lens Intraocular pressure measurements using non contact tonometer

V - Posterior segment Evaluation

Introduction and importance of posterior segment evaluation- direct and indirect ophthalmoscopy

REFERENCE BOOKS:

1. Comprehensive Ophthalmology – A K Khurana, 5th edition, New Age International Publishers,

2012.

2. Clinical Ophthalmology – Jack J Kanski, 7th edition, Butterworths, 2012

1. Borish's Clinical Refraction - William J. Benjamin, Irvin M. Borish, Butterworth-Heinemann, 2006

COURSE OUTCOMES						
CO1	The student will be able to have the skill to perform basic ophthalmic examination					
CO2	The student will be able to understand concept of theory and clinical evaluation of disease conditions gain an in- depth knowledge on disease outline and clinical evaluation of patients					
CO3	The student will be able to depth knowledge on the functions of the visual system					
CO4	The student will have the skill to perform basic ophthalmic examination					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE2026	**PERSONALITY DEVELOPMENT AND STRESS MANAGEMENT**
	Total Contact Periods – 4
	Total credits -2
	Course Designed by – Department of HR
OBJECTIVES	• To Explain the effect of personality, attitudes, perceptions and attributions on Health stress, coping and relaxation.

Unit 1

Introduction to Personality Development, Different Stages of Development, Types of personalities, personality perspectives and theories

Unit 2

How needs impact personality, Maslow‘s hierarchy of need, Basic Personality Traits; Values, Beliefs, Interactions, Experiences, Environmental influences, the big five dimensions.

Unit 3

Stress; causes, effect and types, Stress resistant personalities, Relaxation; training aspects importance and Body works.

Unit 4

Health stress and coping, Understanding and communicating our health needs, Behavioral and psychological correlates of illness.

Unit 5

Soft skill; need and importance, Personality development and soft skills. Effective communication, listening, speaking, writing, interpretation part of soft skills and personality

Learning Outcome:

By successfully completing this course, students will be able to Describe how a personality develops.

- Define the stages of personality development.
- Define personality types.
- Describe basic personality traits.
- Personality and stress.
- Health stress, coping and relaxation.
- Soft skills and personality.

Text Books:

1. Hurlock (1976). Personality development. Tata McGraw Hill.

2. Baron R A, Psychology 5th edition, Pearsons publication.

3. Abraham A, General Psychology, Tata Mc Graw hill Education private limited.

Reference Books:

1. Lazarus J Stress Relief and Relaxation Techniques, Viva Book Private limited.

2. Shelly E. Taylor, Health psychology, 7th edition, TATA McGrawHil, New Delhi.

COURSE OUTCOMES						
CO1	The student will be able to Define the stages of personality development.					
CO2	• The student will be able to Describe basic personality traits.					
CO3	The student will be able to Describe how a personality develops- Personality and stress.					
CO4	The student will be able to Develop the Soft skills and personality.					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Management					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE2027	**FIRST AID MANAGEMENT & SPLINTING TECHNIQUES**
	Total Contact Periods – 6
	Total credits -2
	Course Designed by – Department of Medicine
OBJECTIVES	Students will gain additional skills in interventional procedures and Differentiate between emergency situation and other use.

Unit-I BACKGROUND INFORMATION

- The importance of first Aid
- First aid supplies
- First aid and the law
- Prevention practices

Unit-II ACTION AT AN EMERGENCY

- Recognizing Emergencies
- Deciding to act
- Seeking medical care
- Disease transmission
- Rescuer reactions

Unit –III BLEEDING AND WOUNDS

- External bleeding
- Wound infection
- Amputations
- Impaled objects
- Wound that require medical care
- Internal Bleeding
- Dressing and Bandages

Unit-IV BONE, JOINT AND MUSCLE INJURIES

- Bone injuries
- Splinting
- Joint injuries
- RICE injuries
- Muscle injuries
- Splints – Introduction, Types, Uses, Splinting guidelines, Slings, Procedure,Complications

UNIT-V RESCUING AND MOVING INJURIES

- Water rescue

- Ice rescue
- Electrical Emergency Rescue
- Hazardous materials incidents
- Motor Vehicle crashes
- Fires
- Confined spaces
- Triage – what to do with multiple victims
- Moving victims

Text books:

1 .First Aid CPR and AED standard (sixth edition)

2. First aid book-St Johns Ambulance services

3. Text book of Orthopaedics – Natarajan

4. Text book of Orthopaedics – John Ebenezer Reference books: First Aid and Management of Minor Injuries by Jon Dallimore First Aid and Beyond by Dan Wolfe - Smashwords , 2014 International Trauma Life Support Provider Manual Essentials Orthpaedics Mark D Mille

COURSE OUTCOMES	
CO1	The student will be able to Differentiate between emergency situation and other use.
CO2	The student will be able to know about the basics of concepts of disease & outlines of clinical evaluation.
CO3	The student will be able to List management, assessment, and care steps for upper extremity and lower extremity fractures.
CO4	The student will be to know Splinting techniques of lower extremities –Thomas splint, sam splint, etc

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE3028	**ESSENTIALS OF MEDICAL TRANSCRIPTION**
	Total Contact Periods – 7
	Total credits -2
	Course Designed by – Department of MRD
OBJECTIVES	Provide Hands on training on English Language and listening comprehension and provide foundation to learn medical terminology & learn laboratory report

Unit 1

The Medical Transcriptionist‘s career including Ethical& Legal Responsibilities Introduction to Medical transcription, Job Opportunities,Transcription Skills, Medical records, Certification for Medical Transcriptionists, Ethical and Legal responsibilities

Unit 2

Equipments in Transcription Equipment, Computer Systems, Ergonomics, Dictation Equipments, Hand and Foot control Dictation, Transcription Preparation

Unit 3

Transcription Guidelines Punctuations, Proof reading notations, Formats and styles, SOAP for Chart notes; Discharge Summary

Unit 4 PRACTICAL:

1. Equipments for Medical Transcription,2. Typing for the beginners, 3. Vocabulary, 4. Proof reading Notations , 5. Formats and styles in document preparation , 6. Preparation of chart notes, 7. Listening Comprehension, 8. Transcription check off sheet

References Books:

1. Medical Key boarding, Typing, and Transcribing Techniques and procedures 4th Edition, March Otis Diehl, Marilyn Takahashi Fordney, W.B. Saunders Company
2. The AAMT Book of Style for Medical Transcription, Claudia J. Tessier

3. CD‘s available for:

a. Stedman‘s Electronic Medical Dictionary 4.0

b. American Drug Index 2003

Text Books:

1. Medical Key boarding, Typing, and Transcribing Techniques and procedures 4th Edition, March Otis Diehl, Marilyn Takahashi Fordney, W.B. Saunders Company

2. The AAMT Book of Style for Medical Transcription, Claudia J. Tessier

COURSE OUTCOMES	
CO1	The student will be able to Demonstrate their basic skills in the knowledge of Vocabulary, Medical terminology
CO2	The student will be able to Demonstrate their basic skills in the preparation of chart notes. .
CO3	The student will be able to Demonstrate skills in listening comprehension
CO4	• The student will be Be able to identify accurate format for medical document preparation

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Medical Records					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE3029	**COMMUNICATION AND SOFT SKILL**
	Total Contact Periods – 7
	Total credits -2
	Course Designed by – Department of Human Resources
OBJECTIVES	This course is designed to equip the students with essential soft skills needed for workplace and improve personality.

LEARNING OUTCOME:

This course is designed to help the students to

- Foster healthy attitude.
- Develop effective inter and intra personal skills to be an effective team worker.
- Communicate effectively in both academic and professional setup

UNIT: I ASPECTS OF COMMUNICATION

Importance of communication, Process, Barriers, Non verbal Communication

UNIT: II SPEAKING

How to Open and Close conversations, Introductions and Address System, Expressing Courtesy, Giving Compliments and replying to Compliments, Presentation Skills, Telephonic conversation and telephone etiquette

UNIT – III PRESCRIBED READING

Tom Sawyer by Mark Twain, Bacon‘s Essays: - Of Goodness and goodness of nature

UNIT – IV WRITING

Letter writing - Letter of Complaints, Inviting and Declining an invitation, Writing Memos and Emails, Grammar, Spelling & Punctuation, Use of Dictionary & Thesaurus.

UNIT – V SOFT SKILLS

Active Listening Skills, Assertive Skills, Negotiation and Persuasive Skills, Interview Skills

Text Book:

Developing Communication Skills by Krishna Mohan and Meera Banerji, II edition, Macmillan.

Reference Books:

1. Communication Skills for Engineers and Scientists by Sangeeta Sharma and Binod Mishra, PHI Learning Private Limited, New Delhi.

2. English and soft skills by S.P. Dhanavel, Orient Black Swan

3. Effective English Communication by Krishna Mohan and Meenakshi Raman, Tata McGraw –Hill Publishing Company Limited.

4. Technical Communication – Principles and Practice, by Meenakshi Raman and Sangeetha Sharma, II edition, Oxford University Press.

5. Developing Communication Skills by Krishna Mohan and Meera Banerji, II edition, Macmillan.

6. The Complete Guide to Functional Writing in English by M. Sarada, Sterling Publishers (P) Ltd., New Delhi.

7. Speaking Naturally: Communication Skills in American English by Bruce Tillitt and Mary Newton Bruder, Cambridge University Press .

COURSE OUTCOMES						
CO1	The student will be able to Foster healthy attitude					
CO2	The student will be able to develop effective inter and intra personal skills to be an effective team worker					
CO3	The student will be able to Develop effective inter and intra personal skills to be an effective team worker					
CO4	The student will be able to Communicate effectively in both academic and professional setup					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE3030	**PROFESSIONAL SKILLS DEVELOPMENT**
	Total Contact Periods – 6
	Total credits -2
	Course Designed by – Department of Human Resources
OBJECTIVES	To Advance the students' intellectual curiosity, competency and skills in preparation for employment

1. Communication Skills

Importance of Communication skills in Public health; Communication process; Methods of communication; Types of communication: Verbal and Non-verbal; Impediments to effective communication; Feedback

2. Oral Presentation Skills:

Preparation and planning; Structure; Audio-visual aids; Creating interest and establishing a relationship with the audience; Body language; Voice and pronunciation; Review

3. Writing skills:

Writing a scientific paper; Writing a proposal; Structure of an article; References and literature review; Peer-review process-Publication bias; International guidelines for publication in journals; Professional Ethics

4. Leadership in Public health:

Leadership styles and trait; Motivation skills; Interpersonal communication skills; Problem solving skills; Decision making skills; Management skills; Communication Skills

5. Manuscript writing

Writing introduction, objectives, methodologies, major finding, discussion, conclusion and recommendation

6. Seminar presentations

Use of computers present data and information on recent topics

Text Books:

1. Professional Writing Skills, A self paced training programme by Janis Fisher Chan and Diane Lutovich. Advanced Communication Designs Inc, 2003. San Anselmo, CA. ISBN 0963745549

2. Speaking Your Mind: Oral Presentation and Seminar Skills By Rebecca Stott, Tory Young, Cordelia Bryan Contributor Rebecca Stott, Tory Young, Cordelia Bryan Published by Longman, 2001 ISBN 0582382432, 9780582382435

3. Public Health Leadership: Putting Principles into Practice Louis Rowitz, PhD. Jones and Bartlett Publishers, 2003. ISBN-13: 9780763725013 ISBN-10: 0763725013

COURSE OUTCOMES						
CO1	The student will be able to Develop good written and oral communication abilities					
CO2	The student will be able to Develop an understanding of team building and leadership skills.					
CO3	The student will be able to Develop knowledge regarding capacities needed to work independently within diverse work environments					
CO4	The student will be able to know how to maintain Records and Reports and demonstrate the procedure.					
MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE3031	**LIBRARY SCIENCE AND E-RESOURCES**
	Total Contact Periods – 6
	Total credits -2
	Course Designed by – Department of Library science
OBJECTIVES	To gain knowledge about Documentary Sources of Information and Library Automation

Unit 1 BASIC CONCEPTS AND INFORMATION SERVICES

Meaning of Library – Types of Library -– Library layout - Functions of Library – need for Library – Meaning of ISBN and ISSN – Collection management - Library Classification system - Five laws of Library Science – Inter Library Loan (ILL), Communication theories and models. Barriers to communication. Levels of communications – Intrapersonal, interpersonal and mass communication. Information services – literaturesearch Methods of Dissemination of information Current Awareness Service (CAS), Selective Dissemination of Information (SDI), Document delivery service, Alert services, and Internet services.

Unit 2 INFORMATION SOURCES

Documentary Sources of Information, Print, and Non-print including Electronic, Human and Institutional sources: Nature, types, characteristics and utility. Internet as a source of Information. Primary sources of information – Journal, conference volume, patents, research reports, thesis and their electronic format – Secondary sources of information - Bibliography, Encyclopedia Dictionary, Yearbook , Directory, Geographical Source, Textbook, Index and Abstracts.

Unit 3 LIBRARY AUTOMATION

Definition need, Purpose, advantages. Planning for Library automation. Automation of Library operations - Acquisitions, Cataloguing, OPAC, Circulation and Serials control. Evaluation of Library automation systems - Application of Barcode and RFID Technology for Library Functions. Basic concepts: Bibliography, bibliographic coupling, Impact factor.

Unit 4 ELECTRONIC INFORMATION SOURCES

Electronic Information resources: Meaning and definition, Growth and development, Types. EJournals, e- Books, e-Theses, e-newspapers, Blogs, Wikis. Free databases and fee based bibliographical and full textdatabases, subject related websites, Institutional repositories, Open Archives and digital Libraries. - Resource

Sharing and Networks: Consortia- Importance and objectives. Study of Information networks and DigitalLibrary Consortia. Types of computer networks: Local Area Networks – Concept, Topologies - Bus, Star, Mesh, Tree, and Ring). Wide Area Networks and Metropolitan Area Networks- Concepts, Circuit switching and Packet switching. Difference between LAN and WAN. Wireless Networks –Mobile telephones.

Unit 5 DIGITAL LIBRARIES

Digital Libraries: Concepts and issues. Understanding digital Libraries Content creation –Electronic documents, files and file formats. Study of different file formats. Studying PDF in detail- features of PDF. Digitization-scanning, Digital Preservation, Conservation and Archival Management – Problems and prospects. Open Access Movement and Institutional repositories.

TEXTBOOKS

1. Ranganathan, S.R The five Laws of Library Science UBS Publishers, 1988.

2. Ranganathan, S.R. Library Manual Sarada Ranganathan endowment for Library Science, 1989.

3. Ranganathan, S.R. Cataloguing Practice Sarada Ranganathan endowment for Library Science 1990

COURSE OUTCOMES	
CO1	The student will be able to analyze and understand the query
CO2	The student will be able to Identify the sources of information
CO3	The student will be able to Find out the information
CO4	The student will be able to know how to maintain Records and Reports and demonstrate the procedure.

MAPPING BETWEEN COURSE OUTCOMES& PROGRAMME OUTCOMES						
COs\POs	**a**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Library Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE1020	**FUNDAMENTALS OF BIOSTATISTICS**
	TotalContactPeriods–4
	Total credits -2
	Course Designed by–Department of Community Medicine
OBJECTIVES	The course will offer basic knowledge about Biostatistics and to correctly apply a variety of statistical procedures and tests according to objective of study

UNIT I: Introducing the Basics

Introduction, Graphical representation of data, Data collection, Diagrammatic and Graphical Presentation of data, Types of data, limitations.

UNIT II: Measures of Central Tendency & Dispersion

Measures of Central Tendency; Mean, Median, Mode, Geometric mean, Harmonic mean for raw data. Measures of dispersion; Quartile deviation, Mean Deviation - Standard Deviation - Coefficient of variation- Range

UNIT III: Probability

Introduction to Probability, Theorems of probability; Bayer‘s Theorem, Probability Distributions; Discrete & Continuous distributions, Binomial Distribution, Poisson Distribution, Normal Distribution.

UNIT IV: Correlation & Regression Analysis

Correlation Analysis, Types of correlation; Rank Correlation Coefficient. Regression analysis, Types of Regression, Assumptions; Comparison to Correlation.

UNIT V: Hypothesis Testing

Introduction; Types of sampling, Hypothesis testing; Type of errors, Parametric & Non-parametric tests; Mann Whitney’s U test, Chi-square, t-tests, ANOVA.

REFERENCES

1. Don. Mc Neil - Epidemiological Research Methods - Oxford University Press, London.

2. Biostatistics –Principle & Practice – McGraw Hill Education.

3. http://www.ats.ucla.edu/stat/

4. Ahttp://www.statsoft.com/textbook/basic-statistics/

COURSEOUTCOMES	
CO1	The student will be able to understand and apply the Biostatistics.
CO2	The student will be able to use the software independently for the data analysis.
CO3	The student will be able determine the correct procedures to use in a given situation
CO4	The student will be able to interpret the results of hypothesis tests

MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES

COs\Pos	**A**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**			
4	S			**S**		**M**
Category	Management					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE1021	**COMMUNICATION SKILLS FOR HEALTH CARE PROFESSIONALS**
	TotalContactPeriods–5
	Total credits -2
	Course Designed by–Department of Community Medicine
OBJECTIVES	This course deals with essential functional English aspects of the of communication skills essential for the health care professionals.

UNIT: I APPLIED GRAMMAR

Identifying common errors in sentences, Transformation of sentences, Usage of either …or…, Neither… nor…, So… that…, Such… that…, Not only… but also…, unless…

UNIT: II VOCABULARY

Abbreviations used in healthcare, Medical idioms & Phrases

UNIT: III WRITING

Letter writing, Curriculum Vitae writing, covering letter, Creative writing – invite, posters, Essay writing, summary writing, note taking, report writing.

UNIT: IV SPOKEN COMMUNICATION

Telephone etiquette, Importance of Stress, Intonation and rhythm, speaking; describing simple process, Filling a form etc., - Asking and answering questions; Debate/Oral Reporting

UNIT: V LISTENING AND READING SKILLS:

Listening and reading comprehension exercises.

Textbook Recommended:

1. Effective English Communication by Krishna Mohan and Meenakshi Raman, Tata McGraw – Hill Publishing Company Limited, New Delhi.

2. English for Colleges and Competitive Exams by Dr. R. Dyvadatham, Emerald Publishers.

COURSEOUTCOMES						
CO1	The student will be able to express better.					
CO2	The student will be able to get knowledge about MOA, adverse effects					
CO3	The student will Grow personally and professionally					
CO4	The student will Develop confidence in every field					
MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**b**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3	M		**S**		S	
4	S			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE1022	**BIOMEDICAL ETHICS**
	TotalContactPeriods–3
	Total credits -2
	Course Designed by–Department of Community Medicine
OBJECTIVES	To provide basic skills in: A) Approaching ethical issues. B) Analysis and statement of issues. C) Understanding the relevant ethical principles invoked..

Introduction to Bioethics

Bioethical issues related to Healthcare &Medicine 5

2Anatomy - Cadaver ethics, Human dignity, PNDT, Disposal of cadaver, Genetic Counseling 7

Physiology - Animal ethics, Health policy privacy 7

Biochemistry & Pathology - Prudence of investigation confidentiality, Patients bill of rights, Disposal of investigative material, Integrity, Blood transfusion 5

Pharmacology - Rational drug prescribing, Clinical trials, Risk minimization, Animal ethics

Microbiology - Hand wash, Drug resistance minimization, Prudence of investigation confidentiality, Sterilization procedure, Bio safety and bio hazard 5

Medicolegal aspects of medical records

Introduction to Intellectual Property:

Concept of Intellectual Property Kinds of Intellectual Property

Patents, Copyrights Designs, Trademarks,Geographical Indication, Infringement of IPR, Its protection and

Remedies Licensing and its types

REFERENCE BOOKS

1. Contemporary issues in bioethics – Beauchamp & walters (B&W) 4th edition.

2. Classic philosophical questions by Gloud (8th Edition)

3. Case book series and booklets by UNESCO Bioethics Core curriculum 2008

4. Encyclopedia of Bioethics 5 vol set, (2003) ISBN-10: 0028657748

5. Intellectual property rights- Ganguli-Tat McGrawhill. (2001) ISBN-10: 0074638602,

6. Intellectual Property Right- Wattal- Oxford Publications House.(1997) ISBN:0195905024.

COURSEOUTCOMES	
CO1	The students will be able to: Recognize what constitutes an ethical concern in health care
CO2	The student will be able to understand the clinical evaluations of Disease Condition
CO3	The student will be able to Understand better the complexity and multi-dimensionality of medical ethical concerns and uniqueness of each problem.
CO4	The student will get the knowledge of plagiarism in their innovations which can be questioned legally

MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**d**	**E**	**f**
1	S		M		S	S
2				s		
3			**S**			
4	S		M			**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE1023	**FUNDAMENTALS OF HUMAN GENETICS**
	Total Contact Periods– 4
	Total credits -2
	Course Designed by–Department of Genetics
OBJECTIVES	To Comprehend the Chromosomal basis of inheritance

I -Introduction to cellular components

Structure and morphology of various types of cells - Biochemical composition - Cellular organelles -Composition and components of nucleus - Chromosomes - Cell division and Mechanics of cell division and regulation.

II - Structure and functions of nucleic acids

Functions, Structure and characteristics of nucleic acids - Types of mutations -Genetic variations and polymorphisms

III - Chromosomal basis of inheritance

Chromosome behavior and inheritance pattern in man - Single gene Mendelian disorders: autosomal dominant, recessive, sex linked dominant and recessive - Polygeneic and mitochondrial inheritance.

III - Origin and detection of genetic disorders

Mutation - Non-disjunction - Chromosomal abnormalities and clinical phenotypes of common genetic syndromes (Down's syndrome, Patua‘s syndrome, Edward syndrome, Turner syndrome and Klinefelter's syndrome, Cri-du-caht syndrome)- Karyotyping, Neural tube defects, Carcinogenesis.

IV–Biochemical basis for the inborn errors of metabolism

General characteristics of inborn errors of metabolism – Incidence - etiology - Folic acid metabolism - triple markers - New born screening, prevention and management. False positive and false negative -Ethical principles of Genetic counseling for prenatal diagnosis - Fetal rights – Regulation and prevention of misuse act 1994.

Reference books

1. A guide to genetic counseling, 2nd edition, D.L. Baker, J.L. Schuette and W.R. Uhlmann, Wiley –Leiss Publications 2002.

2. Emery Elements of Medical Genetics, 9th edition, Robert F. Mueller & Ian D. young, Churchill Livingstone, 1995.

3. Medical Genetics, 3rd edition, Lynn B. Jorde, John C. Carey, Michael J. Bamshad, & Raymond L. White, Mosby, 2003.

COURSEOUTCOMES						
CO1	The student will be able to Be able to describe the chromosomal basis of inheritance and how alterations in chromosome number or structure. . .					
CO2	The student will be able to understand of the differences and similarities between diagnostic, predictive and carrier genetic testing.					
CO3	The student will be able to know detailed information of Chromosome behavior and inheritance pattern in man					
CO4	The student will be to understand the phenotype and genotype .					
MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**d**	**E**	**f**
1	S		M		S	
2				s		M
3			**M**			
4	S			**S**		**S**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE2024	**PRINCIPLES AND APPLICATION OF CLINICAL GENETICS**
	Total Contact Periods– 6
	Total credits -2
	Course Designed by–Department of Nephrology
OBJECTIVES	To develop awareness about Genetic testing, Genetic counseling, Philosophy and Ethos of Genetic services

I -Principle and components of genetic testing Lay out of genetic laboratories - Genetic testing, Genetic counseling, Philosophy and Ethos of Genetic services, Types of testing- Cytogenetic testing- Molecular cytogenetic testing- DNA testing.

II - Cytogenetic testing Indications, Type of sample, Sampling and transport conditions, Karyotyping - chromosome identification, merits and demerits of conventional cytogenetic testing

III - Molecular Cytogenetic testing

Indications, Type of sample, Sampling and transport conditions - Fluorescence in-situ hybridization, fluorescence signal enumeration, merits and demerits of FISH.

IV - DNA testing

Organization of human genome, Structure and function of genetic material, Polymerases chainmreaction - Types, principles and testing, Sequencing.

V - Practical:

Case studies

Reference books

1. Practical Genetic counseling, Peter S. Harper, 6th edition, Holder Headline Group 2004.

2. Medical Genetics, 3rd edition, Lynn B. Jorde, John C. Carey, Michael J. Bamshad, &

Raymond L. White, Mosby, 2006.

3. Genetics in Medicine, Thompson & Thompson, 6th edition, Elsevier 2004.

4. Practical Genetic counseling, Peter S. Harper, 6th edition, Holder Headline Group 2004.

COURSEOUTCOMES						
CO1	The student will be able to become familiar with and practice genetic tests.					
CO2	The student will be able to provide better patient care					
CO3	The student will be able to know detailed information about Genetic Counselling					
CO4	The student will be to know about Genetic testing.					
MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**d**	**e**	**f**
1	S		M		s	
2				s		M
3			**M**			
4	S				S	**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE2025	**CLINICAL EXAMINATION OF THE HUMANVISUAL SYSTEM**
	TotalContactPeriods–5
	Total credits -2
	Course Designed by–Department of Opthalmology
OBJECTIVES	The core objective of this course is to gain in depth knowledge on the structural and physiological functions of the various parts of the eye and the different examination procedures for the ocular structures.

: **I - History Taking**

Importance of history taking, Demographic data and its importance, Chief presenting symptoms, History of present illness, History of past illness, Family History, Common ocular symptoms and their causes – defective vision, watering eyes, discharge, redness, pain, asthenopia and other symptoms

II - Visual Acuity measurement

Distance visual acuity-charts, methods and measurements; Near visual acuity –charts, methods and measurements; contrast sensitivity testing; colour vision testing

III - External Examination

Examination of head posture, examination of forehead, examination of eye brows, examination of eyelids, examination of Lacrimal apparatus, examination of eyeball on the whole, examination of the cornea, conjunctiva sclera and anterior chamber, eye movements, muscle balance and squint evaluation

IV - Anterior segment Evaluation

Slit lamp examination of the eyelids, cornea, conjunctiva, anterior chamber depth, iris, and lens Intraocular pressure measurements using non contact tonometer

V - Posterior segment Evaluation

Introduction and importance of posterior segment evaluation- direct and indirect ophthalmoscopy

REFERENCE BOOKS:

1. Comprehensive Ophthalmology – A K Khurana, 5th edition, New Age International Publishers,

2012.

2. Clinical Ophthalmology – Jack J Kanski, 7th edition, Butterworths, 2012

1. Borish's Clinical Refraction - William J. Benjamin, Irvin M. Borish, Butterworth-Heinemann, 2006

COURSEOUTCOMES						
CO1	The student will be able to have the skill to perform basic ophthalmic examination					
CO2	The student will be able to understand concept of theory and clinical evaluation of disease conditions gain an in- depth knowledge on disease outline and clinical evaluation of patients					
CO3	The student will be able to depth knowledge on the functions of the visual system					
CO4	The student will have the skill to perform basic ophthalmic examination					
MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**D**	**e**	**f**
1	S		M		s	
2				S		M
3	M		**S**			
4	M			**C**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE2026	**PERSONALITY DEVELOPMENT AND STRESS MANAGEMENT**
	Total Contact Periods– 4
	Total credits -2
	Course Designed by–Department of HR
OBJECTIVES	• To Explain the effect of personality, attitudes, perceptions and attributions on Health stress, coping and relaxation.

Unit 1

Introduction to Personality Development, Different Stages of Development, Types of personalities, personality perspectives and theories

Unit 2

How needs impact personality, Maslow's hierarchy of need, Basic Personality Traits; Values, Beliefs, Interactions, Experiences, Environmental influences, the big five dimensions.

Unit 3

Stress; causes, effect and types, Stress resistant personalities, Relaxation; training aspects importance and Body works.

Unit 4

Health stress and coping, Understanding and communicating our health needs, Behavioral and psychological correlates of illness.

Unit 5

Soft skill; need and importance, Personality development and soft skills. Effective communication, listening, speaking, writing, interpretation part of soft skills and personality

Learning Outcome:

By successfully completing this course, students will be able to Describe how a personality develops.

- Define the stages of personality development.
- Define personality types.
- Describe basic personality traits.
- Personality and stress.
- Health stress, coping and relaxation.
- Soft skills and personality.

Text Books:

1. Hurlock (1976). Personality development.Tata McGraw Hill.

2. Baron R A, Psychology 5th edition, Pearsons publication.

3. Abraham A, General Psychology, Tata McGraw hill Education private limited.

Reference Books:

1. Lazarus J Stress Relief and Relaxation Techniques, Viva Book Private limited.

2. Shelly E. Taylor, Health psychology, 7th edition, TATA McGrawHil, New Delhi.

COURSEOUTCOMES	
CO1	The student will be able to Define the stages of personality development.
CO2	• The student will be able to Describe basic personality traits.
CO3	The student will be able to Describe how a personality develops-Personality and stress.
CO4	The student will be able to Develop the Soft skills and personality.

MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**D**	**e**	**f**
1	S		M		s	
2				S		M
3	M		**S**			
4	S			**S**		**M**
Category	Management					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE2027	**FIRST AID MANAGEMENT & SPLINTING TECHNIQUES**
	TotalContactPeriods–6
	Total credits -2
	Course Designed by–Department of Medicine
OBJECTIVES	Students will gain additional skills in interventional procedures and Differentiate between emergency situation and other use.

Unit-I BACKGROUND INFORMATION

- The importance of first Aid
- First aid supplies
- First aid and the law
- Prevention practices

Unit-II ACTION AT AN EMERGENCY

- Recognizing Emergencies
- Deciding to act
- Seeking medical care
- Disease transmission
- Rescuer reactions

Unit –III BLEEDING AND WOUNDS

- External bleeding
- Wound infection
- Amputations
- Impaled objects
- Wound that require medical care
- Internal Bleeding
- Dressing and Bandages

Unit-IV BONE, JOINT AND MUSCLE INJURIES

- Bone injuries
- Splinting
- Joint injuries
- RICE injuries
- Muscle injuries
- Splints – Introduction, Types, Uses, Splinting guidelines, Slings, Procedure,Complications

UNIT-V RESCUING AND MOVING INJURIES

- Water rescue
- Ice rescue
- Electrical Emergency Rescue Hazardous materials incidents

- Motor Vehicle crashes
- Fires
- Confined spaces
- Triage – what to do with multiple victims
- Moving victims

Text books:

1 .First Aid CPR and AED standard (sixth edition)

2. First aid book-St Johns Ambulance services

3. Text book of Orthopaedics – Natarajan

4. Text book of Orthopaedics – John Ebenezer Reference books: First Aid and Management of Minor Injuries by Jon Dallimore First Aid and Beyond by Dan Wolfe - Smashwords , 2014 International Trauma Life Support Provider Manual Essentials Orthpaedics Mark D Mille

COURSEOUTCOMES						
CO1	The student will be able to Differentiate between emergency situation and other use.					
CO2	The student will be able to know about the basics of concepts of disease & outlines of clinical evaluation.					
CO3	The student will be able to List management, assessment, and care steps for upper extremity and lower extremity fractures.					
CO4	The student will be to know Splinting techniques of lower extremities – Thomas splint, sam splint, etc					
MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**D**	**e**	**f**
1	S		M		s	
2				S		M
3	M		**S**			
4	S			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE3028	**ESSENTIALS OF MEDICAL TRANSCRIPTION**
	Total Contact Periods– 7
	Total credits -2
	Course Designed by–Department of MRD
OBJECTIVES	Provide Hands on training on English Language and listening comprehension and provide foundation to learn medical terminology & learn laboratory report

Unit 1

The Medical Transcriptionist‘s career including Ethical& Legal Responsibilities Introduction to Medical transcription, Job Opportunities, Transcription Skills, Medical records, Certification for Medical Transcriptionists, Ethical and Legal responsibilities

Unit 2

Equipments in Transcription Equipment, Computer Systems, Ergonomics, Dictation Equipments, Hand and Foot control Dictation, Transcription Preparation

Unit 3

Transcription Guidelines Punctuations, Proof reading notations, Formats and styles, SOAP for Chart notes; Discharge Summary

Unit 4 PRACTICAL:

1. Equipments for Medical Transcription,2. Typing for the beginners, 3.Vocabulary, 4. Proof reading Notations , 5. Formats and styles in document preparation , 6. Preparation of chart notes, 7. Listening Comprehension, 8. Transcription check off sheet **References Book**1. Medical Key boarding, Typing, and Transcribing Techniques and procedures 4th Edition, March

Otis Diehl, Marilyn Takahashi Fordney, W.B. Saunders Company

2. The AAMT Book of Style for Medical Transcription, Claudia J. Tessier

3. CD‘s available for:

a. Stedman‘s Electronic Medical Dictionary 4.0

b. American Drug Index 2003

Text Books:

1. Medical Key boarding, Typing, and Transcribing Techniques and procedures 4th Edition, March

Otis Diehl, Marilyn Takahashi Fordney, W.B. Saunders Company

2. The AAMT Book of Style for Medical Transcription, Claudia J. Tessie

COURSEOUTCOMES						
CO1	The student will be able to Demonstrate their basic skills in the knowledge of Vocabulary, Medical terminology					
CO2	The student will be able to Demonstrate their basic skills in the preparation of chart notes. .					
CO3	The student will be able to Demonstrate skills in listening comprehension					
CO4	• The student will be be able to identify accurate format for medical document preparation					
MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**d**	**E**	**f**
1	S		M		S	
2				s		M
3	M		**S**			
4	S			**S**		**M**
Category	Medical Records					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE3029	**COMMUNICATION AND SOFT SKILL**
	Total Contact Periods– 7
	Total credits -2
	Course Designed by–Department of Human Resources
OBJECTIVES	This course is designed to equip the students with essential soft skills needed for workplace and improve personality.

LEARNING OUTCOME:

This course is designed to help the students to

- Foster healthy attitude.
- Develop effective inter and intra personal skills to be an effective team worker.
- Communicate effectively in both academic and professional setup

UNIT: I ASPECTS OF COMMUNICATION

Importance of communication, Process, Barriers, Non verbal Communication

UNIT: II SPEAKING

How to Open and Close conversations, Introductions and Address System, Expressing Courtesy, Giving Compliments and replying to Compliments, Presentation Skills, Telephonic conversation and telephone etiquette

UNIT – III PRESCRIBED READING

Tom Sawyer by Mark Twain, Bacon‘s Essays: - Of Goodness and goodness of nature

UNIT – IV WRITING

Letter writing - Letter of Complaints, Inviting and Declining an invitation, Writing Memos and Emails, Grammar, Spelling & Punctuation, Use of Dictionary & Thesaurus.

UNIT – V SOFT SKILLS

Active Listening Skills, Assertive Skills, Negotiation and Persuasive Skills, Interview Skills

Text Book:

Developing Communication Skills by Krishna Mohan and Meera Banerji, II edition, Macmillan.

Reference Books:

1. Communication Skills for Engineers and Scientists by Sangeeta Sharma and Binod Mishra, PHI Learning Private Limited, New Delhi.

2. English and soft skills by S.P. Dhanavel, Orient Black Swan

3. Effective English Communication by Krishna Mohan and Meenakshi Raman, Tata McGraw – Hill Publishing Company Limited.

4. Technical Communication – Principles and Practice, by Meenakshi Raman and Sangeetha Sharma, II edition, Oxford University Press.

5. Developing Communication Skills by Krishna Mohan and MeeraBanerji, II edition, Macmillan.

6. The Complete Guide to Functional Writing in English by M. Sarada, Sterling Publishers (P) Ltd., New Delhi.

7. Speaking Naturally: Communication Skills in American English by Bruce Tillitt and Mary Newton Bruder, Cambridge University

COURSEOUTCOMES	
CO1	The student will be able to Foster healthy attitude
CO2	The student will be able to develop effective inter and intra personal skills to be an effective team worker
CO3	The student will be able to Develop effective inter and intra personal skills to be an effective team worker
CO4	The student will be able to Communicate effectively in both academic and professional setup

MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**a**	**B**	**C**	**d**	**e**	**F**
1	S		M		s	
2				s		M
3	M		**S**			
4	s			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					

UAH17CE3030	**PROFESSIONAL SKILLS DEVELOPMENT**
	Total Contact Periods– 6
	Total credits -2
	Course Designed by–Department of Human Resources
OBJECTIVES	To Advance the students' intellectual curiosity, competency and skills in preparation for employment

1. Communication Skills

Importance of Communication skills in Public health; Communication process; Methods of communication; Types of communication: Verbal and Non-verbal; Impediments to effective communication; Feedback

2. Oral Presentation Skills:

Preparation and planning; Structure; Audio-visual aids; Creating interest and establishing a relationship with the audience; Body language; Voice and pronunciation; Review

3. Writing skills:

Writing a scientific paper; Writing a proposal; Structure of an article; References and literature review; Peer-review process-Publication bias; International guidelines for publication in journals; Professional Ethics

4. Leadership in Public health:

Leadership styles and trait; Motivation skills; Interpersonal communication skills; Problem solving skills; Decision making skills; Management skills; Communication Skills

5. Manuscript writing

Writing introduction, objectives, methodologies, major finding, discussion, conclusion and recommendation**6. Seminar presentations**Use of computers present data and information on recent topics

Text Books:

1. Professional Writing Skills, A self paced training programme by Janis Fisher Chan and Diane Lutovich. Advanced Communication Designs Inc, 2003. San Anselmo, CA. ISBN 0963745549

2. Speaking Your Mind: Oral Presentation and Seminar Skills By Rebecca Stott, Tory Young, Cordelia Bryan Contributor Rebecca Stott, Tory Young, Cordelia Bryan Published by Longman, 2001 ISBN 0582382432, 9780582382435

3. Public Health Leadership: Putting Principles into Practice Louis Rowitz, PhD. Jones and Bartlett Publishers, 2003. ISBN-13: 9780763725013 ISBN-10: 07637250

COURSEOUTCOMES						
CO1	The student will be able to Develop good written and oral communication abilities					
CO2	The student will be able to Develop an understanding of team building and leadership skills.					
CO3	The student will be able to Develop knowledge regarding capacities needed to work independently within diverse work environments					
CO4	The student will be able to know how to maintain Records and Reports and demonstrate the procedure.					
MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**D**	**e**	**f**
1	S		M		s	
2				S		M
3	M		**S**			
4	S			**S**		**M**
Category	Basic Medical Science					
Approval	46th Meeting Of Academic Council held in Aug, 2017					

UAH17CE3031	**LIBRARY SCIENCE AND E-RESOURCES**
	Total Contact Periods– 6
	Total credits -2
	Course Designed by–Department of Library science
OBJECTIVES	To gain knowledge about Documentary Sources of Information and Library Automation

Unit 1 BASIC CONCEPTS AND INFORMATION SERVICES

Meaning of Library – Types of Library -– Library layout - Functions of Library – need for Library – Meaning of ISBN and ISSN – Collection management - Library Classification system - Five laws of Library Science – Inter Library Loan (ILL), Communication theories and models.Barriers to communication.Levels of communications – Intrapersonal, interpersonal and mass communication. Information services – literature search Methods of Dissemination of information Current Awareness Service (CAS), Selective Dissemination of Information (SDI), Document delivery service, Alert services, and Internet services.

Unit 2 INFORMATION SOURCES

Documentary Sources of Information, Print, and Non-print including Electronic, Human and Institutional sources: Nature, types, characteristics and utility. Internet as a source of Information. Primary sources of information – Journal, conference volume, patents, research reports, thesis and their electronic format – Secondary sources of information - Bibliography, Encyclopedia Dictionary, Yearbook , Directory, Geographical Source, Textbook, Index and Abstracts.

Unit 3 LIBRARY AUTOMATION

Definition need, Purpose, advantages. Planning for Library automation. Automation of Library operations - Acquisitions, Cataloguing, OPAC, Circulation and Serials control. Evaluation of Library automation systems - Application of Barcode and RFID Technology for Library Functions. Basic concepts: Bibliography, bibliographic coupling, Impact factor.

Unit 4 ELECTRONIC INFORMATION SOURCES

Electronic Information resources: Meaning and definition, Growth and development, Types. Journals, e-Books, e-Theses, e-newspapers, Blogs, Wikis. Free databases and fee based bibliographical and full text databases, subject related websites, Institutional repositories, Open Archives and digital Libraries. - Resource Sharing and Networks: Consortia- Importance and objectives. Study of Information networks and Digital Library Consortia. Types of computer networks: Local Area Networks – Concept, Topologies - Bus, Star, Mesh, Tree, and Ring). Wide Area Networks and Metropolitan Area Networks- Concepts, Circuit switching and Packet switching. Difference between LAN and WAN. Wireless Networks –Mobile telephones.

Unit 5 DIGITAL LIBRARIES

Digital Libraries: Concepts and issues. Understanding digital Libraries Content creation – Electronic documents, files and file formats. Study of different file formats.Studying PDF in detail-features of PDF.Digitization- scanning, Digital Preservation, Conservation and Archival Management – Problems and prospects. Open Access Movement and Institutional repositories.

TEXTBOOKS

1. Ranganathan, S.R The five Laws of Library Science UBS Publishers, 1988.

2. Ranganathan, S.R. Library Manual SaradaRanganathan endowment for Library Science, 1989.

3. Ranganathan, S.R. Cataloguing Practice SaradaRanganathan endowment for Library Science 1990

COURSEOUTCOMES						
CO1	The student will be able to analyze and understand the query					
CO2	The student will be able to Identify the sources of information					
CO3	The student will be able to Find out the information					
CO4	The student will be able to know how to maintain Records and Reports and demonstrate the procedure.					
MAPPINGBETWEENCOURSEOUTCOMES&PROGRAMMEOUTCOMES						
COs\Pos	**A**	**B**	**c**	**d**	**e**	**F**
1	S		M		s	
2				s		M
3	M		**S**			
4	S			**S**		**M**
Category	Library Science					
Approval	46th Meeting of Academic Council held in Aug, 2017					