

SECTION II

COURSE OF STUDY, ATTENDANCE AND SCHEME OF EXAMINATION

1. Course of Study

- i) Every student shall undergo a period of certified study extending over 4 1/2 academic years from the date of commencement of his study for the subject comprising the medical curriculum to the date of completion of the examination followed by one year compulsory rotating Internship. The 4 1/2 year course has been divided into three phases, Phase - I - 1 year, consisting of two terms of 6 months each, and Phase - II- 1 year, consisting of two terms of 6 months each.
- ii) Phase III (part I and part II)-2 1/2 years- consists of 5 terms of 6 month each after Phase II.

2. Attendance

Every candidate should have minimum of 70 percent attendance of the total classes conducted in theory and practical and clinical separately in each calendar year calculated from the date of commencement of the term to the last working day as notified by the University in each of the subjects prescribed to be eligible to appear for the Examination.

A candidate lacking in the prescribed attendance and progress in any one subject in theory and practical/clinical in the first appearance should not be permitted to appear in that subject

3. Scheme of examination

Basic sciences (phase I and PhaseII)

At the end of each semester, College will conduct Examination of fullmarks 100 including theory, practical and viva and passmarks is decided 50% in each subject.

Clinical medicine (Third phase part I and Part II)

At the end of each semester, College will conduct Examination of fullmarks 100 including theory, practical, clinical and viva and passmarks is decided 50% in each subject

SECTION III COURSE CONTENTS

ANATOMY

GOALS & OBJECTIVES

Goals

The broad goal of teaching of Anatomy is to prepare students with basic knowledge of structure and its correlation with function, growth and development of human body and to apply the knowledge in clinical practice.

Objectives

At the end of the course, the student should be able to:

Knowledge

1. Comprehend the normal disposition, clinically relevant interrelationship, functional and cross sectional anatomy of various structures in the body.
2. Identify the microscopic structure and correlate elementary ultra structure of various tissues and organs and correlate the structure with the functions as a pre-requisite for understanding the altered state in various disease processes.
3. Comprehend the basic structure and connections of the central nervous system to analyse the integrative and regulative functional of the organs and systems. He/She should be able to

- altered state in various disease processes.
3. Comprehend the basic structure and connections of the central nervous system to analyse the integrative and regulative functional of the organs and systems. He/She should be able to locate the site of gross lesions according to the deficits encountered.
 4. Demonstrate knowledge of principles and sequential development of the organs and systems, recognise the critical stages of development and the effects of common teratogens, genetic mutations and environmental hazards. He/she should be able to explain the developmental basis of major various abnormalities.
 5. Point out the features of various appearances of normal human body in skiagrams after routine Radiological investigations.
 6. Understand the principles of karyotyping and identify the gross congenital anomalies.
 7. Understand the principles of newer imaging techniques and interpretation of CT Scans and Sonograms.
 8. Understand clinical basis of some common clinical procedures i.e., intramuscular, intravenous injections, lumbar puncture and kidney biopsy.
 9. Understand different types of Bio-medical waste, their potential risks and their management.

Skills

1. Identify and locate structures of the body and mark the topography of living anatomy.
2. Identify the organs and tissues under microscope.

Integration

From the integrated teaching of other basic sciences, radiology and surgery the students should be able to comprehend the regulation and integration of the functions of the organs and systems in the body, thus interpret the anatomical basis of disease process.

SYLLABUS AT A GLANCE FOR M.B.B.S. PHASE - I COURSE

1. General Anatomy : Basic tissues of the body Terminology and Nomenclature, History of Anatomy.
2. Elements of Anatomy : Osteology, Arthrology, Myology, Angiology, Neurology
3. Regional Anatomy : Upper limb, Lower limb, Thorax- including diaphragm Abdomen including Pelvis, Head and Neck, Brain and Spinal cord
4. Gen-Embryology : Development of individual organs and systems. Postnatal Growth & Development
5. Histology : General Histology, Microanatomy of individual organs and systems
6. Human Genetics : Principles of Human Genetics and Molecular Biology.
7. Radiological Anatomy : Skiagrams, Special X- Rays and CT scan
8. Surface Anatomy : In cadavers, In the living
9. Sectional Anatomy : Head and Neck, Brain, Thorax, Abdomen including Pelvis
10. Applied Anatomy :
11. Bio-medical waste : Types, potential risks and their safe management.

1. THEORY

General Embryology

1. a. Definition of embryology, brief account of male and female reproductive system, gestation period - subdivisions; testis, ovary; definition of gamete; sperm, ovum, gametogenesis. migration of primordial germ cells into gonadal ridge; structure of sperm, growth of ovarian follicles, and uterine cycle.
- b. Principles of Family Planning (contraception), In vitro fertilisation (for integrated teaching)

First week of Development

2. Definition and process of fertilisation, formation of zygote: cleavage, formation of morula and blastocyst; implantation; formation of decidua- its subdivision. Types of implantation and abnormal sites of implantation.

Second week of Development

3. Differentiation of embryoblast and trophoblast; changes in the embryo blast, bilaminar germ disc; changes in the trophoblast, formation of cytotrophoblast, syncytiotrophoblast, amniotic membrane, yolk sac, extra embryonic mesoderm, extra embryonic coelom, connecting stalk, formation of chorion, amniotic cavity, primary yolk sac and appearance of prochordal plate.

Third week of Development

4. Appearance of primitive streak and primitive node; formation of intraembryonic mesoderm resulting in trilaminar germ disc; formation of notochord, buccopharyngeal and cloacal membranes, pericardial sac, paraxial, intermediate and lateral plate mesoderm, secondary yolk sac, intraembryonic coelom and allantonic diverticulum; derivatives of ectoderm, endoderm and mesoderm.

Fourth to Eight week of Development

5. Formation of somites, neural tube, cephalocaudal folding, lateral folding, body form, stomodeum, proctodeum, gut and vitelline duct; subdivisions of gut into foregut, midgut and hindgut.

Placenta

6. Formation of placenta and chorionic villi; decidua basalis; features and functions of placenta; placental circulation; abnormalities, placental barrier and types of placenta.

Umbilical Cord

7. Formation and features of umbilical cord

Amniotic Cavity

8. Amniotic cavity antt membrane; amniotic fluid - functions, expansions of amniotic cavity and fusion with chorion; chorion laeve with decidua basalis, decidua capsularis and decidua

Amniotic Cavity
8. Amniotic cavity antt membrane; amniotic fluid - functions, expansions of amniotic cavity and fusion with chorion; chorion laeve with decidua basalis, decidua capsularis and decidua parietalis, obliteration of chorionic and uterine cavities, function of fused foetal membranes to dilate cervical canal.

9. Formation and types of twins and multiple pregnancies. Conjoined twins.

Teratology

10. Genetical and environmental factors as causes for congenital malformations.

II. Systemic Embryology

1. Development of individual organs of the respiratory system, cardiovascular system digestive system, urinary system, genital system and nervous system. Special sensory organs (in brief), endocrine glands and mammary gland.

2. Developmental abnormalities.

3. Development of skeletal system, muscular system (in brief)

4. Development of face, branchial apparatus and associated congenital anomalies.

III. Osteology

Names of bones of the body and their positions; classification of bones with examples; general features, general pattern of blood supply; particular features; relations of blood vessels and nerves to bones. [Desirable to know determination of age (Ossification)]

Skull - All normae and interior of skull, foetal skull, mandible. Identification of individual skull bones.

IV. Muscular System

Classification and identification of the muscles of the body; main attachments, nerve supply and actions; Actions of muscle groups on functional basis with reference to joints.

V. Arthrology

Classification of joints, general features of different types of joints, detailed study of the following joints of the body with movements: temperomandibular, atlanto occipital, atlanto axial, shoulder, elbow, radio ulnar, wrist, carpo metacarpal joint of thumb. Hip, knee, ankle and sub talar joint, Intervertebral and sacroiliac joint.

REGIONWISE

VI. Cardio - Vascular System

1. Pericardium. Thoracic wall, position and parts of the heart, conducting system, blood supply and nerve .supply of heart, names of the blood vessels and their distribution in the body; region wise.

2. Developmental anomalies (as part of embryology)

VII. Respiratory System

Pleura and lungs - position, parts, relations, blood supply and nerve supply. Lungs - emphasis on Bronchopulmonary segments.

Mediastinum - Superior - arch of aorta. Posterior - Thoracic duct, esophagus and azygos system of veins.

Diaphragm - with nerve supply.

VIII. Abdomen

Peritoneum - General disposition - horizontal and vertical; viscerae - general disposition, position, parts, relations, blood supply and nerve supply of abdominal organs.

IX. Pelvic Organs

Parts, position, relations, blood supply and nerve supply.

X. Endocrinal System and Individual Endocrine Glands (Regionwise)

1. Organs, relations, blood supply, nerve supply, microscopic anatomy and normal development

2. Clinical manifestations of common endocrine disorders.

XI. Nervous System and its Components

Parts of nervous system, meninges, ventricles, motor and sensory pathways, cranial nerves, functional areas, normal development, microscopic anatomy of neurons, motor and sensory, cortex and their blood supply with cross sectional studies and morphology of spinal cord. General features of medulla oblongata, pons, midbrain, cerebellum and cerebrum

Sections of Medulla - a) At Pyramidal decussation

b) Sensory decussation

c) Open part of Medulla

Pons - a) Lower pons

b) Upper pons

Midbrain - a) Inferior colliculus

b) Superior colliculus

Cerebellum - Horizontal

Cerebrum - a) Mid Saggital section

b) Horizontal section at interventricular foramen

c) Coronal section at anterior commissure

d) Coronal section at mammillary body.

2. Common neurological disorders: case studies and demonstration.

XII. Special Sensory Organs (Regionwise)

Gross anatomy of eyeball, ear, nose and tongue.

XIII. Lymphatic System

1. Spleen and Thymus (Region wise)

2. Gross anatomy of the major groups (region-wise) of the lymph nodes of the body and their drainage areas. Gross anatomy of the major lymphatics especially thoracic duct and its tributaries

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2. Gross anatomy of the major groups (region-wise) of the lymph nodes of the body and their drainage areas. Gross anatomy of the major lymphatics especially thoracic duct and its tributaries.

XIV. Micro Anatomy

12 General topics, 15 systemic topics, (wide separate list attached) Study of microscopes and artefacts.

1. General Histology, study of the basic tissues of the body: functional correlation of the structural components of the organs.

2. Systemic histology of concerned organs.

XV. Postnatal Growth and Development (For Integrated Teaching)

1. Meaning of the terms like growth, development, principles of growth and development, types of postnatal growth, periods of growth and development and factors influencing them.

Assessment of growth and development, Genetic aspects of Growth & development.

2. Milestones of development, growth and development during adolescence, (for integrated teaching)

XVI. Radiological Anatomy

Identification of normal anatomical features in skiagrams, including special radiological investigations (Barium studies, Intra Venous Urogram. Ultrasound, Hysterosalpingography, Cholecystography. CT Scan and MRI).

XVII. Surface Anatomy

Surface features of the body and projections, outline of heart, lungs, pleura, liver, kidneys. ureter and important blood vessels and nerves.

XVIII. Cross Sectional Anatomy

Cross sections of head and neck, thorax, abdomen and pelvis at different levels to understand the interrelations of organs at the following levels:

THORAX T-3, T-4, T-5 Levels Horizontal section

ABDOMEN L-1, L-2, L-4 Levels Horizontal section

Pelvis Saggital section of male and female

Head & Neck Mid saggital section and horizontal sections at C4 & C6

Brain already mentioned - in Neuro anatomy

XIX. Genetics - 9 Lectures & Practicals

Introduction - DNA, RNA, Protein Synthesis, Mitosis and Meiosis, Chromosomes - Methodology, Chromosomal abnormalities - Non dysfunction, Numerical abnormalities, (Downs, Turners and Kline felters Syndrome), congenital abnormalities (structure, deletion, translocation, inversion), pedigree Q chart, types of inheritance, autosomal dominant & autosomal recessive, inborn errors of metabolism and genetic counseling.

XX. Bio-medical waste: Types, potential risks and their safe management.

2. PRACTICALS

GROSS ANATOMY: Time: Total 32-34 Wks.

Upper Limb : Dissection : Pectoral, scapular and shoulder region, arm, forearm (5 wks)Prosected parts: Joints, Palm and dorsum of hand.

Thorax : Dissection : Chest wall, mediastinum, lungs, and heart. Cross sections at T-3, T-4 and T-5 Levels (3 wks)

Abdomen : Dissection : Anterior abdominal wall and inguinal region. Viscera and posterior abdominal wall- Cross sections at L-1,L-2 and L4 levels (4 wks.)

Pelvis : Dissection : Pelvic viscera, blood vessels and nerves - saggital section of male and female (2 wks)Prosection Parts: Perineum including' ischio- rectal fossa

Lower Limb : Dissection : Gluteal region, front, medial and back of thigh, popliteal fossa, leg and dorsum of foot. (4 wks)Prosected Parts: Sole of the foot and joints.

Head & Neck : Dissection : Scalp, Superficial and deep dissection of face and **neck.(8wks to 10 wks).Prosected Parts:** Orbit, eyeball, submandibular region, Temporal and infratemporal fossa, cranial cavity, naso and oropharyngeal regions, Ear, larynx and pharynx. Cross sections at **C-4 and C-6 levels. Saggital section of Head & Neck.**

Nervous System

Sections of brain and Prosected Specimens of sections of the brain and major functional areas. Gross structure of brain and spinal cord and study of gross sections as mentioned earlier.

Demonstrations

- * Bones-as described in osteology section
- * Brain and spinal cord
- * Cross- sectional anatomy
- * Radiotological anatomy
- * Ultrasound, CT and MRI

Microscopic Anatomy

Stained slides of all the tissues and organs.

Developmental Anatomy

* Morphological development of head, face and limbs at different stages of development

Microscopic Anatomy

Stained slides of all the tissues and organs.

Developmental Anatomy

* Models to demonstrate various stages of early foetus and different organ development.

Genetics

Demonstration of:

1. Karyotyping, Normal XX and Normal XY, Mitosis & Meiosis,
2. Karyotype and clinical features of Downs, Klinefelter's and Turners Syndrome, Buccal Smear and different banding photographs.
3. Pedigree of case given, Pedigree of student and demonstration of dermatoglyphics.

Specific Skills: Students should learn the following skills

1. To demonstrate surface marking of important organs
2. To localise important pulsations and where pressure can be applied in case of bleeding from a particular artery.
3. To locate superficial and deep reflexes.
4. To demonstrate muscle testing and movements at joints.
5. To locate sites for: Lumbar puncture, sternal puncture, pericardial tapping and liver biopsy.
6. To locate veins for venae puncture.
7. To locate site for emergency tracheostomy.
8. To locate the subcutaneous positions of large nerves.
9. Preparation of Histology drawings.

HISTOLOGY

Practical classes (of 2 hrs. duration) together with 1 hour Lecture.

General Histology

1. Microscope
2. Cell
3. Epithelial Tissue I
4. Epithelial Tissue II
5. Connective tissue
6. Muscular tissue
7. Nerve tissue - TS & LS of peripheral nerve, optic nerve, sensory & sympathetic ganglia.
8. Epithelial glands (serous, mucous and mixed salivary glands)
9. Circulatory system (large sized artery, medium sized artery, large sized vein.)
10. Lymphatic System (lymph node, thymus, tonsil and spleen)
11. Skin & its appendages
12. Placenta & umbilical cord

Systemic Histology

1. Respiratory system - trachea and lung
2. Digestive system - Lip, tongue, oesophagus, stomach, small and large intestine, Liver, gall bladder and pancreas.
3. Urinary System - kidney, ureter, urinary bladder and urethra
4. Reproductive System - female - ovary, ovarian tube and uterus
5. Reproductive System - male - testis, epididymis, vasdeferens and prostate gland.
6. Hypophysis cerebri, thyroid and suprarenal
7. Eye (Cornea and Retina)
8. Neuro histology - The slides to be shown for Neuro histology are given below:
 1. Spinal Cord
 - i. Cross section (CS) at mid thoracic level
 2. Medulla
 - i. C.S. at Pyramidal level
 - ii. C. S. at Sensory decussation
 - iii. C. S. at open part of Medulla
 3. Pons
 - i. CS. at lower pons
 - ii. C. S. at upper pons
 4. Midbrain
 - i. C.S, inferior colliculus
 - ii. C. S. at superior colliculus
 5. Cerebral Cortex
 - i. granular cortex
 - ii. agranular cortex
 6. Cerebellum
 - Structure of cortex

Note: Desirable to know (for teaching and demonstration only not for evaluation) Histology of Mammary Gland, seminal vesicle, penis, lacrimal gland and eyelid and ear.

Area for Integrated Teaching (Vertical Integration)

Organising Department: **Anatomy**

- | S1. No. | Area/Subject | Department(s) to be involved |
|---------|--|--|
| 1. | Anatomical basis of birth control measures | Obstetrics & Gynaecology and Surgery |
| 2. | Postnatal growth and development | Paediatrics and Community Medicine. |
| 3. | Antenatal growth and development | Obstetrics & Gynaecology & Community Medicine. |
| 4. | Genetics disorders | Various clinical departments |
| 5. | Neuro-Anatomy | Physiology and Medicine. |
| 6. | Kinesiology-movements at various joints | Orthopaedics |
| 7. | Embryological basis of important & common congenital anomalies | Paediatrics, Obstetrics and Gynaecology. |

RECOMMENDED TEXT AND REFERENCE BOOKS:

TEXT BOOKS

1. SNELL (Richard, S). Clinical Anatomy for Medical Students. Ed. 7. Williams and Wilkins

common congenital anomalies Gynaecology.
RECOMMENDED TEXT AND REFERENCE BOOKS:

TEXT BOOKS

1. SNELL (Richard. S), Clinical Anatomy for Medical Students, Ed. 7, William and Wilkins, Lippincott 2003, p1012, 545.
2. MOORIE (Kieth L), Clinically Oriented Anatomy, ed. 4., Williams and Wilkins, Baltimore, 1999, p 1167, \$40.
3. DATTA (A.K), Essentials of human anatomy: Thorax and Abdomen ed.6. Vol. I, Current Book International; Calcutta. 2003, p380.
DATIA (AK), Essentials of human anatomy; Head and Neck. Ed 3. Vol II, Current Book international, Calcutta 2004 reprint, p373. -
DATTA (AK), Essentials of human anatomy: Neuroanatomy, Ed. 2, Vol. IV Current Book International, Calcutta, 2000, p291.
4. SINGH (Inderbir), Text Book of anatomy with colour atlas: Introduction, Osteology, Upper extremity, Lower extremity, Ed. 3, Vol I, JP brothers, New Delhi. 1996, p448, Rs.325- SINGH (Inderbir), Text Book of anatomy with colour atlas: Thorax and abdomen, Ed. 3, Vol. II JP brothers, New Delhi. 1996, -
SINGH (Inderbir), Text Book of anatomy with colour atlas: Head & Neck Central Nervous System, Ed. 3, Vol. III JP brothers, New Delhi. 1996.
5. SINGH (Inderbir), Human Osteology, Ed. 2, JP brothers, New Delhi. 1990. PI91,

PRACTICALS

1. ROMANES (G J), Cunningham manual of practical anatomy: upper and lower limb ed. 15. Vol. 1 Oxford Medical Publication, Oxford 1996. P263.
2. ROMANES (G J), Cunningham manual of practical anatomy: thorax and abdomen. Ed 15. Vol II. Oxford Medical publication, Oxford. 1996. P208.
3. ROMANES (G J), Cunningham manual of practical anatomy: Head and Neck and brain ed. 15. Vol III. Oxford Medical publication, Oxford 1996. p346.

HISTOLOGY

1. SINGH (Inderbir), Text Book of Histology, ed. 4, Jaypee brothers, New Delhi, 2002, p354.
2. COPENHAVER (WM), Bailey's Text book of Histology, ed. 16, Williams and Wilkins. Baltimore. 1971. p745.

EMBRYOLOGY

1. MORRIE (Keith L) and PERSAUD (TVN), The Developing Human Clinically oriented Embryology, Ed. 7, W B Saunders, Philadelphia, 2003, p560, Rs. 995/-
2. LANGMAN, Medical Embryology: human development-normal-ahnormal. Ed.9, William and Wilkins, Baltimore, 2004, p534.
3. DATTA (AK), Essentials of Human Embryology. Ed.4, Current Books International, Calcutta, 1995, p310,
4. SINGH (Inderbir), Human Embryology, Ed.7, Macmillan India Ltd., Madras, 2001, p391,

NEUROANATOMY

1. DATTA (A K), Essentials of Anatomy: Neuroanatomy, Ed 2, Current Book International, Calcutta, 2000, p291.

REFERENCE BOOKS

1. WILLIAMS (Peter L) Gray's Anatomy. Ed. 38 Churchill Livingstone, 2000, p2092
2. DECKER (CAG) and DJ DUPLESSIS, Lee Megregor's synopsis of surgical anatomy, ed. 12. K M Varghese and Co., Bombay. 1986, p626,
3. McMINN (RMH), Last's Anatomy regional and applied, ed. 10, ELBS, UK, 1992 P707. L8-95
4. BASMAJIAN (J V), Grant's method of anatomy, ed 11, Williams and Wilkins Baltimore. 1989, p615,

ATLAS

1. ROSS (Michael. J D) et. al., Histology; text and atlas. Ed 3. Williams and Wilkins, Baltimore. 1995, p823
2. DIFIORE (Mariand. S H), Atlas of normal histology, Ed 9. Williams and Wilkins, Lippincott, 2000, P363.

SURFACE ANATOMY

1. ROBINSON (Rawling J 0), Landmarks of surface markings of the human body, Ed 9. Lewis and Co., 1953.p
2. HALIM (A), Surface and Radiological Anatomy, Ed 2, CBS. Publishers and distributors, New Delhi, 2002 (reprint), p225.

GENETICS

1. EMERY (Alan H) and MULLER (Robert F), Elements of Medical Genetics; Student Notes. Ed 11, ELBS, UK, 1992, p372,

PHYSIOLOGY

OBJECTIVES

At the end of the course, the student should be able to:

1. Describe the normal functions of all organ systems, regulatory mechanisms and interactions of the various organs for well co-ordinated total body function.
2. Understand the basic principles, mechanism and homeostatic control of all the functions of human body as a whole.
3. Elucidate the physiological aspect of normal growth and development.
4. Analyse the physiological responses and adaptation to different stresses during life. Processes

2. Understand the basic principles, mechanism and homeostatic control of all the functions of human body as a whole.
3. Elucidate the physiological aspect of normal growth and development.
4. Analyse the physiological responses and adaptation to different stresses during life Processes.
5. Lay emphasis on applied aspect of physiological functions underlying disease state.
6. Correlate knowledge of physiology in areas indicated by National Health Programmes.
7. Acquire the skills to do the experiments for study of physiological function.
8. Interpret experimental and investigative data.
9. Distinguish between normal and abnormal data derived as a result of tests which he / she Performed and observed in the laboratory.
10. Understand different types of Bio-medical waste, their potential risks and their management.

COURSE CONTENTS

Theory

I. GENERAL PHYSIOLOGY

1. Homeostasis, concepts of physiological norms, range and variations, active and passive Transport, relationship between stimulus and response.
2. Structure of cell membrane, resting membrane potentials, cellular receptors, intercellular Communications.
3. Body fluids - Compartments, changes in body fluid compartments, hypoproteinaemia Replacement of body fluid loss.

II. BLOOD AND LYMPH.

Blood composition, cellular elements of blood their formation and regulation. Haemoglobin - Synthesis and functions, jaundice, anaemias and their classification, haemostatic mechanisms, anticoagulants, blood groups, Rh incompatibility, blood transfusion; ESR, Basic mechanisms of immunity and functions of WBCs, Lymph- composition, circulation and functions.

III. NERVE AND MUSCLE

Classification of nerves, muscle. Structure of skeletal muscle. Types of muscle fibres mechanism of contraction and its Molecular basis. Thermal and chemical changes during muscle contraction; oxygen debt. Neuromuscular transmission. Neuromuscular blocking drugs. Neuromuscular disorders, Pathophysiology of Myesthemia gravis.

IV. GASTROINTESTINAL TRACT

Functional morphology. Smooth muscle - structure, mechanism of contraction and nerve supply and neurotransmitters, composition, function and regulation of secretion of salivary glands, stomach, small intestine and large intestine; regulation of gastrointestinal movements; functions of gall bladder, liver, site of production and actions of GI hormones, Mechanism - intestinal absorption of food. Physiological basis of peptic ulcer diarrhea and constipation, motility disorders - Achalasia, Hirschsprung's disease.

V. KIDNEY

Functions of different parts of nephron in urine formation. Role of kidney in water and electrolyte balance, Acidification of urine, diuresis, kidney function tests. Juxtaglomerular apparatus. Renin - Angiotensin system, Renal blood flow, structure and innervations of bladder; micturition, Cystometrogram, disorders of micturition, principles of artificial kidney.

VI. SKIN AND BODY TEMPERATURE (ENVIRONMENT)

Structure and functions of skin, Regulation of Body temperature.

VII. ENDOCRINE GLANDS

(To be integrated with Biochemistry)

General principles of regulation of endocrine glands. Hormones, functions cellular mechanism of hormone action, regulation of secretion. Experimental and clinical disorders of anterior and posterior pituitary, thyroid, parathyroid, adrenal cortex and medullar and endocrine pancreas. Stress and hormones, physiology of growth. Minor endocrine glands - Pineal body, heart, and kidney.

VIII REPRODUCTION

Sex determination and differentiation.

1. Male Reproduction: functions of testis, constituents of semen, testicular hormones, spermatogenesis and regulation.
2. Female Reproduction: Menstrual cycle: Changes in ovary, uterus, cervix, vagina and hormonal regulation. Ovulation and its detection, fertilization, implantation, physiological changes during pregnancy, Foetoplacental unit; nutritional needs of mother during pregnancy. Parturition, lactation, Composition of breast milk, placenta, menopause. Physiology of newborn.
3. Family Planning and Welfare: Physiological basis of contraception in males and females. Principles of use of oral contraceptives, safe period, rhythm and other methods of contraception.

IX. CARDIOVASCULAR SYSTEM

Functional anatomy of heart, properties of cardiac muscle, principles of electro cardiography, electrical and mechanical changes in cardiac cycle, conducting system of heart, normal ECG. Cardiac output measurement in man, physiological variations. Regulatory mechanisms of heart rate and blood pressure. Regional circulations: normal values, physical principles governing flow of blood in heart and blood vessels, measurement and regulation of coronary, cerebral, skin. Foetal circulation, changes in CVS during muscular exercise, postural changes, hypovolemia, hypoxia, and cardiopulmonary resuscitation. Microcirculation, Haemodynamics, pathophysiology of hypertension, shock, cardiac failure and coronary artery disease.

X RESPIRATORY SYSTEM

skin. Postural circulation, changes in CVS during muscular exercise, postural changes, hypovolemia, hypoxia, and cardiopulmonary resuscitation. Microcirculation, Haemodynamics, pathophysiology of hypertension, shock, cardiac failure and coronary artery disease.

X. RESPIRATORY SYSTEM

Functional anatomy of respiratory system. Mechanics of normal respiration. Physical principles governing flow of air in respiratory passages. Lung compliance, alveolar ventilation, ventilation perfusion ratio, oxygen and carbon dioxide transport, diffusing capacity, pulmonary function tests, Regulation of respiration, respiratory acidosis and alkalosis, pulmonary blood flow. Hypoxia, cyanosis, asphyxia. Respiratory adjustments during muscular exercise, hyperbaric conditions, principles of oxygen therapy, artificial respiration. Hyaline membrane disease. Pathophysiology of obstructive and restrictive disorders. Pulmonary oedema, decompression sickness, hyperbaric oxygen therapy, dyspnoea.

XI. CENTRAL NERVOUS SYSTEM

1. Organisation of the central nervous system. Functions and neuronal organisation at spinal cord level. Synaptic transmission. Motor and sensory systems and their lesions. Reticular system in brain stem, sleep, wakefulness, EEG waves and physiological changes in EEG. Clinical lesions and experimental sections at spinal cord, brain stem and sub-cortical levels. Physiology of basal ganglia, cerebellum, thalamus, hypothalamus, limbic system, prefrontal lobe and cerebral cortex. Speech and its disorders. Autonomic nervous system. Formation, circulation and functions of CSF. Blood brain barrier, central Neurotransmitters, Neuroglia. Physiological Basis of CNS disorders like Alzheimer's disease, Parkinsonism, Syringomyelia, Tabes dorsalis.

XII. SPECIAL SENSES

Eye: Functional anatomy of eye. Image formation on retina. Structure of photoreceptors electrical activity of photoreceptors. Errors of refraction, functions of aqueous humour, intraocular tension. Mechanisms of accommodation, dark adaptation, pupillary reflexes, functions of retina. Optic pathway and lesions. Role of visual cortex in perception. Field of vision. Colour vision, Acuity of vision, photochemistry of vision. Nutritional deficiency - blindness.

Auditory Apparatus:

1. Functional anatomy of the ear, physics of sound (basic)
2. Role of tympanic membrane, middle ear, cochlea in hearing.
3. Auditory receptors and pathway
4. Deafness and its causes, principles of audiometry, tuning fork tests and its interpretation.

Vestibular Apparatus:

Structure and functions, connections and lesions of Vestibular apparatus.

Taste and Smell:

Modalities, receptors, pathway, cortical and limbic areas associated with taste and smell.

XII. BIO-MEDICAL WASTE: Types, potential risks and their safe management.

Practical

The following list of practical is minimum and essential. Additional exercises can be included as and when feasible and required. All the practicals have been categorized as 'Procedures' and 'Demonstrations'. The procedures are to be performed by the students during practical classes to acquire skills. Some of these would be included in the practical during University examination. Those categorized as "Demonstrations" are to be shown to students during practical classes. However, these Demonstrations would not be included in the university examinations, but questions based on these would be given in the form of data, charts, problems and case - histories, for interpretation by students. Procedures to be performed by the students:

I. Haematology:

- 1) RBC count, 2) WBC Count, 3) Differential Leucocyte Count 4) Estimation of haemoglobin 5) Blood grouping 6) Bleeding time 7) Clotting time 8) Absolute Eosinophil Count 9) Erythrocyte Sedimentation Rate, 10) Determination of blood indices - MCV, MCH, MCHC and Colour Index.

II. Procedures to be performed on human subjects

1. Mosso's ergometry - at normal condition, after venous occlusion and arterial occlusion.
2. Recording of Blood Pressure, effect of posture and exercise on it
3. Stethography - at rest, effect Of deglutition, exercise, voluntary hyperventilation and break point after breath holding, breathing through long tube, rebreathing through bag.
4. Spirometry - lung volumes and capacities, MVV and Dyspnoeic Index, FEV1.
5. Peak Expiratory Flow Rate (PEFR) by Wright's mini peak flow meter
6. Cardiovascular fitness test - by Harvard's step test or bicycle ergometer or 2 km walk.
7. Visual field by Perimetry
8. Body composition - BMI (by Quetlet's Index) and Body Fat % by Durenberg's equation.
9. Recording of ECG in lead II.
10. Tests of autonomic functions.

III. Clinical Examination

1. Examination of radial pulse.
2. Clinical Examination of Cardiovascular system
3. Clinical Examination of Respiratory system
4. Examination of Cranial Nerves
5. Examination of Sensory system
6. Examination of Motor system
7. Examination of Reflexes.

IV. Interpretation of - Charts, Problems and Case histories

Recommended Demonstrations:

1. Haematology: Haematocrit, Reticulocyte count, Platelet count, Osmotic fragility

7. Examination of Reflexes:

IV. Interpretation of - Charts, Problems and Case histories

Recommended Demonstrations:

1. Haematology: Haematocrit, Reticulocyte count, Platelet count, Osmotic fragility.
2. Nerve - Muscle Physiology: Electro myography (E.M.G.)
3. Cardiovascular system: Electrocardiography (ECG), Demonstration of sinus arrhythmias, Recording of Arterial pulse tracing.
4. Respiratory system "Determination of lung volumes and capacity, and other lung function tests by computerized spirometry.
5. Reproductive system: Sperm motility and Sperm count
6. Special senses: Audiometry, Purkinje - Samson's images, Ophthalmoscopy, Retinoscopy, Examination of fundus.
7. Nervous system: Autonomic function tests
8. Amphibian Practical: Muscle - nerve and heart experiments may be demonstrated if feasible for academic interest only and not for university practical examination as graphs on amphibian experiments are deleted.
9. Electro encephalogram (E.E.G)

TEXT BOOKS

1. GUYTON (Arthur C), Text of Medical Physiology. Recent edn., Prism Publishers, Bangalore
2. GANONG (William F), Review of Medical Physiology, Recent edn., Appleton and Lange.
3. VANDER et al. Human Physiology, recent edn.
4. SHLKURT (Evald E.), Basic Physiology for the health sciences, Little Borwn, Boston
5. CHAUDHURI (Sujith K), Concise Medical Physiology, New Central Books, Calcutta.
6. TORTORA (Gerald J), Principles of anatomy and physiology Harper Collins Ref. College Publication,
7. GABRIAL ENGEILA - Text book of Physiology
8. A.K.JAIN - Textbook of Medical Physiology.
9. BIJLANI (RL), Understanding medical physiology; text book for medical students, Jaypee brothers, New Delhi

REFERENCE BOOKS

Level 1

1. MORAN Campbell E. J. Clinical Physiology, ELBS UK.

Level 2

1. BERNE (Robert M) and Levy (Mathew), Physiology, Mosby Publication.
2. SCHMIDT (RF) and THEWS (G), Human Physiology, Spinger Verlog, London.

Level 3

1. MOUNTCASTLE (Veernow B), Medical Physiology.
2. PATRON (Harry d), Text book of Physiology.
3. RAINER AND NINDHAERST- Text of Physiology- Springer verlog, London.

Experimental Physiology

There is no one textbook on experimental physiology and that may be recommended with impunity. However, there is certainly no need for an undergraduate medical student to invest in one. Some useful books to refer to are:

1. Ghai., A textbook of Practical Physiology.
2. McLeod, Clinical Examination
3. Hutchinson & Hunter, Clinical Methods.
4. A.K.Jain - Manual of practical physiology.

BIOCHEMISTRY

GOALS & OBJECTIVES

Goals

The knowledge acquired in Biochemistry should help the student to integrate molecular events with structure and function of the human body in health and disease. Towards this, the departments would facilitate:

1. To enable students understand the scientific basis of life processes at the molecular level and orient them towards the application of knowledge acquired in solving clinical problems.
2. To acquire basic practical skills for biochemical investigations in order to support clinical diagnosis of common disorders in the community, and
3. To promote research activities for students and staff.

Objectives

At the end of the course, the student shall be able to:

1. Enlist and describe the cell organelles with their with their molecular and functional organisation.
2. Delineate structure, function and interrelationships of various biomolecules and consequences of deviation from the normal.
3. Understand basic enzymology and emphasize on its clinical applications wherein regulation of enzymatic activity is disturbed.
4. Describe digestion and assimilation of nutrients and consequences of malnutrition.
5. Describe and integrate metabolic pathways of various biomolecules with their regulatory mechanisms.
6. Explain the biochemical basis of inherited disorders with their associated sequelae.
7. Describe mechanisms involved in maintenance in water, electrolyte and acid base balance and

5. Describe and integrate metabolic pathways of various biomolecules with their regulatory mechanisms.
6. Explain the biochemical basis of inherited disorders with their associated sequelae.
7. Describe mechanisms involved in maintenance in water, electrolyte and acid base balance and consequences of their imbalances.
8. Outline the molecular mechanisms of gene expression and regulation, basic principles of biotechnology and their applications in medicine.
9. Understand the basic immunology involving molecular concepts of body defence mechanism and their applications in medicine.
10. Continue to learn advancements in biochemistry and apply the same in medical practice
11. Understand different types of Bio-medical waste, their potential risks and their management

Skills

1. Conduct conventional and selected special investigations.
2. Analyse and interpret laboratory data.
3. Demonstrate skills for solving clinical problems to arrive at diagnosis using laboratory data

COURSE CONTENTS

Theory

I. Introduction and Scope of Biochemistry

II. Cell and sub cellular structures

- A. Cell membrane- composition
- B. Function of sub - cellular structures
- C. Transport across the cell membrane
 - a. Active transport
 - b. Facilitated diffusion
 - c. Receptor Mediation
 - d. Endocytosis

III. Hydrogen Ion concentration, Acids, Bases, Buffers, Henderson Hasselbalch Equation

IV. Isotopes, Radioactive Isotopes and their applications in Medicine

V. Chemistry of Carbohydrates

- a) Definition, Classification and biological importance.
- b) Monosaccharides: structure, classification and properties.
- c) Isomerism and stereoisomerism
- d) Oligosaccharides, Disaccharides - structure and their importance
- e) Polysaccharides: Homo and Hetero polysaccharides - structure and their functions.

VI Chemistry of Proteins, Amino Acids and Peptides

- a. Proteins: Definitions, Classifications and functions
- b. Amino acids: Classification, properties, side chains of amino acids, charge properties.
- c. Peptides: Biologically active peptides - Examples such as GSH, Insulin - its structure.
- d. Structural organisation, conformation and denaturation.

VII Chemistry of Lipids

- a. Definition, Classification and biological importance.
- b. Simple lipids: Triacylglycerols and waxes-structure and composition.
- c. Compound lipids: Phospholipids - Sphingolipids, Glycolipid - composition and functions.
- d. Derived lipids: Fatty acids - saturated, unsaturated, Steroids and their properties, Eicosanoids, Terpenes.

VIII Chemistry of Nucleic Acids

- a. Definition and biological importance
- b. Classification and composition.
 - c. Purine and pyrimidine bases, nucleosides, nucleotides and biologically important nucleotides.
- d. DNA: Structure and functions
- e. RNA: Types of RNA - Structure and functions

IX Enzymes and Clinical Enzymology

- a. Definition, Classification, specificity, co-enzymes, co-factors and activators.
- b. Mechanism of enzyme action
- c. Factors affecting enzyme activity, km value and its importance.
 - d. Enzyme inhibitions: reversible and irreversible, competitive, other types and their clinical application.
- e. Regulatory enzymes: Pro-enzymes, isoenzymes, allosteric enzymes and feed back control.
- f. Diagnostic and therapeutic importance of enzymes including enzyme immunoassay.
- g. ELISA &RIA

X. Vitamins

- a. Definition and Classification
 - b. A brief account of chemistry, sources, deficiency diseases and biochemical role, Recommended dietary allowances (RDA)
- c. Vitamin antagonists
- d. Hypervitaminosis.
- e. A brief account of role of antioxidants and free radicals

XI. Biological Oxidation

- c. Vitamin deficiencies.
- d. Hypervitaminosis.
- e. A brief account of role of antioxidants and free radicals

XI. Biological Oxidation

Mitochondrial electron transport chain, oxidative phosphorylation, mechanism, uncouplers and inhibitors.

XII Digestion and absorption from gastrointestinal tract

- a. Digestion and absorption of carbohydrates, lipids, proteins and nucleic acids.
- b. Malabsorption syndromes.

XIII Carbohydrate Metabolism

- a. Glycogenesis, Glycogenolysis and Glycogen storage diseases.
- b. Glucose Transporters, Glycolysis, Rapaport Leubering Cycle, Pyruvate Oxidation and Citric Acid Cycle.
- c. Pentose Phosphate Pathway.
- d. Uronic acid pathway.
- e. Gluconeogenesis and Cori's cycle.
- f. Metabolism of Fructose and Galactose.
- g. Regulation of metabolic pathways.
- h. Disorders of carbohydrate metabolism.
- i. Regulation of Blood Glucose, GTT, Diagnostic and Prognostic importance of glycated hemoglobin and Diabetes Mellitus.

XIV Lipid Metabolism

- a. Oxidation of fatty acids, propionate metabolism, formation and utilization of Ketone bodies, ketosis, outline of the synthesis of Cholesterol (reactions up to Mevalonate in detail) breakdown of cholesterol and metabolic disorders of lipids.
- b. Lipogenesis, de Novo synthesis of fatty acids, chain elongation, desaturation, Phospholipid biosynthesis (Lecithin and Cephalin only) and their breakdown
- c. Fatty liver and lipotropic factors.
- d. Prostaglandins and their biological functions.
- e. Plasma lipoproteins - classification, functions and disorders.

XV. Protein and amino acid metabolism

- a. Breakdown of tissue proteins and amino acid pool, general reactions of amino acids.
- b. Disposal of Ammonia: Urea cycle, glutamate and glutamine formation.
- c. Metabolism of amino acids (Glycine, serine, sulfur containing amino acids, aromatic amino acids, Histidine & Arginine)
- d. Metabolic disorders of amino acids, aminoacidurias
- e. Synthesis of creatine, Phosphocreatine, formation of creatinine and clinical significance of creatinine clearance.

XVI Purine and Pyrimidine Metabolism

- a. Sources of atoms of Purine and Pyrimidine ring, biosynthesis of purine and pyrimidine nucleotides and their breakdown.
- b. Salvage pathways
- c. Disorders of purine and pyrimidine metabolism.

XVII Intermediary Metabolism

Introduction, Methods of study of Intermediary metabolism.

XVIII Minerals

Calcium, Phosphorus, Sodium, Potassium, Chlorides, Iron, Copper, Iodine, Zinc, Fluoride, Magnesium, Manganese and Selenium.

XIX Molecular Genetics and Protein Biosynthesis

- a. DNA RNA metabolism
- b. Replication, transcription, reverse transcription and post transcriptional modifications.
- c. Translation - amino acid activation, initiation, elongation and termination, Post translational modifications.
- d. Regulation of Gene expression.
- e. Mutations
- f. Recombinant DNA technology, PCR and gene therapy.

XX Tissue Biochemistry

- a. Heme metabolism: Outline of heme biosynthesis, degradation of heme and functions of normal hemoglobin
- b. Abnormal Hemoglobins
- c. Jaundice
- d. Porphyrias
- e. Plasma Proteins: Separation, functions and importance.
- f. Immunoglobulins: Structure and functions
- g. pH of blood, its regulation, acidosis alkalosis, principles of estimation of body fluids. role of kidneys and lungs in blood pH maintenance.
- h. Water and electrolyte balance and disorders

XXI Liver functions and Kidney functions

- a. Liver function tests, kidney function tests
- b. Detoxification mechanisms and metabolism of Xenobiotics.

XXII Nutrition and energy metabolisms

- a. BMR and its importance
- b. Calorific value of food, RQ, SDA, balanced diet.
- c. Protein energy malnutrition, biological value of proteins, Nitrogen equilibrium

- a. BMR and its importance
- b. Calorific value of food, RQ, SDA, balanced diet.
- c. Protein energy malnutrition, biological value of proteins, Nitrogen equilibrium
- d. Dietary fibres.
- e. Biochemistry of starvation.

XXIII Biochemistry of Cancer

- a. Oncogenes
- b. Growth factors
- c. Tumors markers
 - Definition
 - Clinically important tumours markers CEA, Alfafetoprotein (AFP)
 - Human chorionic gonadotrophins (HCG), Calcitonin, Prostate Specific Antigen (PSA).

XXIV Endocrine function:

- a. Hormone actions: Mechanism of actions of insulin, glucagon, epinephrine, steroids
- b. Thyroid function tests

XXV. Biochemical tests for Atherosclerosis and Myocardial Infarction

- a. Lipid profile, apoproteins, homocysteine and C-reactive protein
- b. CKMB, Troponins.

XXVIII. SI Units, Quality control and standardization

- a. Clinical Chemistry - interpretation and reference values of Blood glucose, Urea, Creatinine, Uric Acid, Cholesterol, Calcium, Proteins, Albumin & A/G ratio.
- b. Instrumentation including autoanalyser

XXIX. Bio-medical Waste: Types, potential risks and their safe management.

Practicals

Part I

- a. Practical to be performed by students
 1. Reactions of Monosaccharides - Glucose and Fructose
 2. Reactions of Disaccharides - Lactose, Maltose, Sucrose
 3. Reactions of Polysaccharides - Starch.
 4. Identification of unknown carbohydrates.
 5. Precipitation and coagulation reactions of proteins.
 6. Colour reactions of proteins: Albumin and casein
 7. Identification of unknown proteins.
 8. Identification of substances of physiological importance.
 9. Normal constituents of urine
 - i. Organic: Urea, Uric Acid and Creatinine
 - ii. Inorganic: Ca, P, Cl, SO₄ and NH₃, Specific gravity
 10. Analysis of abnormal urine
 11. Spectroscopic examination of Hemoglobin derivatives and preparation of hemin crystals.
 12. Spot test for PKU, Alkaptonuria and Homocystinuria.
 13. Spotters.

Part - II

1. Estimation of blood glucose and interpretation.
2. Estimation of blood urea and interpretation.
3. Estimation of serum inorganic phosphorus and interpretation.
4. Estimation of total serum proteins, serum albumin and A:G ratio.
5. Estimation of urinary creatinine and interpretation of creatinine clearance.
6. Interpretation of charts and case reports.
- b. Practical for Demonstration only:
 1. Colorimetry
 2. Paper Chromatography
 3. Paper electrophoresis
 4. Glucose tolerance tests
 5. Determination of AST (SGOT) and ALT (SGPT)
 6. Estimation of serum cholesterol (Kit method)
 7. Determination of ascorbic acid
 8. Principle of flame photometry
 9. Determination of glucose and proteins in CSF
 10. Estimation of albumin in urine and test for Bence Jones proteins in urine.

RECOMMENDED TEXT BOOKS AND REFERENCE BOOKS

Text Books

1. Lippincott's Illustrated Reviews, Biochemistry, 3rd edition-2005
2. MURRAY (ROBERT. KK), Harper's Biochemistry Ed. 26, Prentice Hall. 2003 p 925
3. RAMAKRISHNAN (S), PRASANAN (KG), RAJAN (R), 3rd edition - 2001 Text Book of Medical Biochemistry, Ecl 3, Orient Longman. Bombay 2004, p717,
4. VASUDEVAN (DM) and SREE KUMARI (S), Text Book of Biochemistry for Medical students, Ed 4, Jay Pee Brothers, New Delhi, 2004, p637,
5. DAS (Dcbajyothi) Fundamentals of Biochemistry, Ed. 11, Academic Publishers, Calcutta, 2002 p848,
6. DR. DINESH PURI - Text Book of Biochemistry - A clinically oriented approach - BI Churchill Living Stone, New Delhi, 2002,-

Reference Books

1. LEHNINGER (Albert) et al., Principles of Biochemistry, Ed. 4, LBS Publishers, Delhi, 2002, p

Reference Books

1. LEHNINGER (Albert) et al., Principles of Biochemistry, Ed. 4, LBS Publishers, Delhi, 2002, p 1143, ~ 16.99.
2. ORTEN (James M) and NEUHAUS (OTTO. W), Human biochemistry, Ed. 10, Mosby, St. Louis, 1983, p 994
3. STRYER (Lubert), Biochemistry, Ed. 5, WH, Freeman & Co., Ny. 2002, p 1064, ~ 38.99
4. DELVIN (Thomas M), Biochemistry with Clinical Correlations Ed. 5, Willey Liss, NY 2002. p 186,
5. MONTGOMERY (REX) et. al., Biochemistry: A Case Oriented Approach, Ed 6, C V Mosby, St. Louis, 1996, p 905,

PATHOLOGY

GOALS AND OBJECTIVES:

MBBS Student at the end of training in Pathology will be able to:

- Understand the concepts of cell injury and changes produced thereby in different tissues and organs and the body's capacity for healing.
- Understand the normal homeostatic mechanisms, the derangement of these mechanisms and the effects on human systems.
- Understand the etiopathogenesis, the pathological effects and clinico-pathological correlation of common infectious and non-infectious diseases.
- Understand the concept of neoplasia with reference to the etiology, gross, and microscopic features, diagnosis and prognosis in different tissues and organs of the body.
- Correlate normal and altered morphology (Gross and Microscopic) of different organ systems in different diseases to the extent needed for understanding of disease processes and their clinical significance.
- Have knowledge of common immunological disorders and their resultant effects on the human body. Have an understanding of the common haematological disorders and the investigations necessary to diagnose them and determine their prognosis.
- Know the principles of collection, handling and dispatch of clinical samples from patients in a proper manner.
- Perform and interpret in a proper manner the basic clinical pathology procedures.
- Understand different types of Bio-medical waste, their potential risks and their management.

COURSE CONTENTS

THEORY

GENERAL PATHOLOGY

I. INTRODUCTION

Introduction and scope of Pathology

Brief resume of Historical Aspects, present state of the art and future.

Ethical aspects of Pathology practice.

II CELL INJURY

Must know

1. Cell injuries: Aetiology and Pathogenesis with a brief recall of important aspects of normal cell structure.
2. Reversible cell injury: Types, Sequential changes, Cellular swellings, vacuolation, Hyaline changes, Mucoid changes.
3. Irreversible cell injury: Types of Necrosis & Gangrene, Autolysis.
4. Pathologic calcification: Dystrophic and Metastatic.
5. Intracellular Accumulations - Fatty changes, Protein accumulations, Glycogen accumulations, Pigments - Melanin / Hemosiderin.
6. Extra cellular accumulations : Amyloidosis - Classification, Pathogenesis, Pathology including special stains.

Desirable to know

Apoptosis, Ochronosis, Porphyria, Lipofuscin pigment

III INFLAMMATION AND REPAIR

Must know

1. Acute inflammation: features, causes, vascular and cellular events.
2. Morphologic variants of acute inflammation.
3. Inflammatory cells and Mediators.
4. Chronic inflammation: Causes, Types, Classification nonspecific and granulomatous with examples.
5. Repair, Wound healing by primary and secondary union, factors promoting and delaying the process.
6. Healing in specific site including bone healing.

IV IMMUNOPATHOLOGY

Must know

1. Immune system: General concepts.
2. Hypersensitivity: type and examples, antibody and cell mediated tissue injury with examples.
3. Secondary immunodeficiency including HIV infection.

1. Immunity system: General concepts.
2. Hypersensitivity: type and examples, antibody and cell mediated tissue injury with examples.
3. Secondary immunodeficiency including HIV infection.
4. Auto-immune disorders: Basic concepts and classification, SLE.
5. AIDS-Aetiology, Modes of transmission, Diagnostic procedures, handling of infected material and health education.

Desirable to know

1. Primary immunodeficiency.
2. Autoimmune diseases: organ specific and non-organ specific such as polyarteritis nodosa, Hashimoto's disease, Sjogren's, Polymyositis, Dermato-Myositis, Scleroderma.
3. Organ transplantation: immunologic basis of rejection and graft versus host reaction

V INFECTIOUS DISEASES

Must know

1. Mycobacterial diseases: Tuberculosis, Leprosy and Syphilis.
2. Bacterial disease: Pyogenic, Diphtheria, Gram negative infection, Bacillary dysentery.
3. Viral diseases: Poliomyelitis, Herpes, Rabies, Measles, Ricktsia, Chlamydial infection, HIV infection.
4. Fungal disease and opportunistic infections.
5. Parasitic diseases: Malaria, Filaria, Amoebiasis, Kala-azar, Cysticercosis, Hydatid cyst.

VI CIRCULATORY DISTURBANCES

Must know

1. Hyperemia/Ischemia and Haemorrhage
2. Edema: Pathogenesis and types.
3. Chronic venous congestion: Lung, Liver, Spleen, Systemic Pathology
4. Thrombosis and Embolism: Formation, Fate and Effects.
5. Infarction: Types, Common sites.
6. Shock: Pathogenesis, types, morphologic changes.

VII GROWTH DISTURBANCES AND NEOPLASIA

Must know

1. Atrophy, Hypertrophy, Hyperplasia, Aplasia, Hypoplasia, Metaplasia, Malformation, agenesis, dysplasia.
2. Precancerous lesions.
3. Neoplasia: Definition classification, Histogenesis, Biological behaviour: Benign and Malignant, Carcinoma and Sarcoma.
4. Malignant Neoplasia: Grades and Stages, Local & Distant spread.
5. Carcinogenesis: Environmental carcinogens, chemical, viral, occupational. Heredity and cellular oncogenes and prevention of cancer.
6. Benign & Malignant epithelial tumours Eg. Squamous papilloma, Squamous cell carcinoma, Malignant melanoma. Benign & Malignant mesenchymal tumours Eg: Fibroma, Lipoma, Neurofibroma, Fibrosarcoma, Liposarcoma, Rhabdo-myosarcoma, Teratoma.
7. Diagnostic Methods - Biopsy, Exfoliative Cytology, FNAC, Cryostat.
8. Tumour and host interactions: Systemic effects including paraneoplastic syndromes, cachexia tumour immunology.

Desirable to know

Detailed Procedures of Laboratory diagnosis, Cytology, Biopsy, Tumour markers, flow cytometry (basic concepts) PCR

VIII NUTRITIONAL & OTHER DISORDERS

Must know

1. Protein energy malnutrition: Marasmus, Kwashiorkor, and Vitamin deficiency disorders, classification with specific examples.
2. Disorders of pigment and mineral metabolism such as bilirubin.
3. Exogenous pigments.

Desirable to know

Environmental Pathology

IX GENETIC DISORDERS

Must know

Basic concepts of genetic disorders and some common examples and congenital malformation.

Desirable to know

Specific Diseases - Down's syndrome, Turner's syndrome, Klinefelter's Syndrome, Storage Disorders.

SYSTEMIC PATHOLOGY

X HAEMATOLOGY

Must know

1. Constituents of blood and bone marrow, Regulation of hematopoiesis.
2. Anemia: Classification, clinical features & lab diagnosis.
3. Nutritional anemias: Iron deficiency anemia, Folic acid, Vit. B 12 deficiency anemia including pernicious anemia.
4. Hemolytic Anaemias: Classification and Investigations.
 - a. Hereditary hemolytic anaemias: Thalassemia, Sickle cell anemia, Spherocytosis and Enzyme deficiencies.
 - b. Acquired hemolytic anaemias
 - i. Alloimmune, Autoimmune
 - ii. Drug induced, Microangiopathic
5. Pancytopenia - Aplastic anemia.

1. Alloimmune, Autoimmune
 - ii. Drug induced, Microangiopathic
5. Pancytopenia - Aplastic anemia.
6. Hemostatic disorders, Vascular and Platelet disorders & lab diagnosis.
7. Coagulopathies - (i) Inherited (ii) Acquired with lab diagnosis.
8. Leukocytic disorders: Leukocytosis, Leukopenia, Leukemoid reaction.
9. Leukemia: Classification, clinical manifestation, pathology and Diagnosis.
10. Multiple myeloma and dysproteinemias.
11. Blood transfusion; Grouping and cross matching, untoward reactions, transmissible infections including HIV & hepatitis, Blood-components & plasma-pheresis.

Desirable to know

1. Myelodysplastic syndrome - Basic concepts.
2. Myeloproliferative disorders: polycythemia, myelofibrosis - basic concepts.

XI CARDIOVASCULAR PATHOLOGY

Must know

1. Congenital Heart disease: Atrial septal defect, Ventricular septal defect, Fallot's tetralogy, Patent ductus arteriosus.
2. Endocarditis.
3. Rheumatic Heart disease.
4. Vascular diseases: Atherosclerosis, Monckeberg's medial calcification, Aneurysm and Arteritis and turnouts of Blood vessels.
5. Ischemic heart Disease: Myocardial infarction.
6. Hypertension and hypertensive heart Disease.

Desirable to know

1. Cardiomyopathy - basic concepts
2. Tumours of Heart

XIII PATHOLOGY OF KIDNEY & URINARY TRACT

Must know

1. Glomerular diseases - nephritic & nephrotic syndrome
2. Tubulo interstitial diseases: Acute tubular necrosis & pyelonephritis.
3. Renal vascular disorders, kidney changes in hypertension
4. Renal turnouts: Renal cell carcinoma, nephroblastoma.
5. Urolithiasis and Obstructive Uropathy, Hydronephrosis.
6. Ureteric lesion: Inflammatory lesions and tumours.
7. Urinary bladder inflammatory lesions and tumours.

Desirable to know

1. Renal malformations: polycystic kidneys, types and clinical features.

XIV PATHOLOGY OF THE ALIMENTARY TRACT

Must know

- 1 Oral Pathology: Ulcers, leukoplakia, Carcinoma, oral cavity diseases and tumour of salivary gland & esophagus and precancerous lesions. Esophagus inflammatory, functional disorders and tumours.
- 2 Stomach: Gastritis, Ulcer & Turnouts.
- 3 Inflammatory diseases of small intestine: Typhoid, Tuberculosis, Crohn's and Malabsorption syndromes.
4. Inflammatory diseases of large intestine: Amoebic colitis, Bacillary dysentery, ulcerative colitis, appendicitis, mesenteric thrombosis, enterocolitis, diverticulosis & Hirschsprung diseases.
5. Tumours and tumour like condition of the small and large Intestine: Polyps, carcinoid, carcinoma, Lymphoma.
6. Pancreatitis and pancreatic tumours: i) Exocrine. ii) Endocrine
7. Salivary gland turnouts: Mixed, Warthin's

Desirable to know

Apudomas, Intussusception

XV HEPATO-BILIARY PATHOLOGY

Must know

1. Jaundice: Types, aetio-pathogenesis and diagnosis.
2. Hepatitis: Acute, Chronic, neonatal.
3. Alcoholic liver disease
4. Cirrhosis: Postnecrotic, Alcoholic, Metabolic and Portal hypertension
5. Liver abscesses; Pyogenic, parasitic and Amoebic.
6. Tumours of Liver
7. Diseases of the gall bladder: Cholecystitis, Cholelithiasis, Carcinoma.

XVI LYMPHORETICULAR SYSTEM / SPLEEN

Must know

1. Lymphadenitis - Non specific and granulomatous
2. Causes of Lymph Node enlargements. Reactive Hyperplasia. Primary Turnouts - Hodgkin's and Non Hodgkin's Lymphomas, Metastatic Tumours.
3. Causes of Splenic Enlargements.

Desirable to Know

1. Thymus: Thymoma.

XVII REPRODUCTIVE SYSTEM (MALE & FEMALE)

Must know

1. Diseases of Vagina - Bartholin's cyst, Condyloma acuminata and tumours

XVII REPRODUCTIVE SYSTEM (MALE & FEMALE)

Must know

1. Diseases of Vulva - Bartholin's cyst, Condyloma accuminata and tumours.
2. Diseases of cervix: cervicitis and cervical carcinoma. CIN.
3. Diseases of uterus: Normal, hormonal changes in the endometrium, endometritis, endometrial hyperplasia and carcinoma, adenomyosis, smooth muscle tumours, Endometriosis, Classification.
4. Trophoblastic disease: Hydatidiform mole, Choriocarcinoma and laboratory diagnosis.
5. Diseases of ovary and Fallopian tubes: Endometriosis and tumours.
6. Prostate: Nodular hyperplasia and carcinoma.
7. Inflammatory lesions and turnouts of testis.
8. Diseases of penis - inflammatory, premalignant lesions and tumours.

Desirable to know

Basic of Pathology of Infertility

XVIII DISEASES OF BREAST

Disease of the breast: Mastitis, abscess, fibrocystic disease, Neoplastic lesions, Fibroadenoma, duct papilloma, carcinoma, Phylloides turnout, Gynaecomastia.

XIX MUSCULOSKELETAL SYSTEM

Must know

1. Osteomyelitis, acute, chronic, tuberculous, mycetoma
2. Metabolic diseases: Rickets/Osteomalacia, osteoporosis, Hyperparathyroidism, Paget's disease.
3. Tumours Classification: Benign, Malignant, Metastatic and synovial sarcoma.
4. Arthritis: Suppurative, Rheumatoid, Osteoarthritis, Gout, Tuberculous.

XX ENDOCRINE PATHOLOGY

Must know

1. Diabetes Mellitus: Types, Pathogenesis, Pathology, Laboratory diagnosis
2. Non-neoplastic lesions of Thyroid : Iodine deficiency goiter, autoimmune Thyroiditis, Thyrotoxicosis, myxedema, Hashimoto's thyroiditis.
3. Turnouts of Thyroid: Adenoma, Carcinoma: Papillary, Follicular, Medullary, Anaplastic.
4. Adrenal diseases: cortical hyperplasia, atrophy, tuberculosis, tumours of cortex and medulla.

Desirable to know

Parathyroid hyperplasia and Tumours, Pituitary Tumours.

XXI NEUROPATHOLOGY

Must know

1. Inflammations and Infections: TB Meningitis, Pyogenic Meningitis, Viral meningitis and Brain Abscess.
2. Tuberculosis, Cysticercosis.
3. CNS Tumours: Astrocytoma, Neuroblastoma, Meningioma, medulloblastoma.

Desirable to know: Alzheimer's disease, Parkinsonism.

XXII DERMATO PATHOLOGY

Must know

Skin Tumours: Squamous cell carcinoma, Basal cell carcinoma, Melanoma.

Desirable to know

Various Dermatitis/Dermatosis, Leprosy, Venereal lesions-syphilis, superficial fungal infections.

Dermal and appendage tumours.

XXIV BIO-MEDICAL WASTE: TYPES, POTENTIAL RISKS AND THEIR SAFE MANAGEMENT.

Must Know: Retinoblastoma.

Desirable to know

Inflammations or infections of Conjunctiva, Lachrymal Glands, Tumours

XXIII OCULAR PATHOLOGY

PRACTICALS

- I Haematology haemoglobin indices, PCV, ESR, Peripheral Blood Smear, Blood Grouping.
Aaaemias, Leukemias, Hematology Charts.
- II Clinical Pathology Urine Examination, Charts for discussion & Interpretation.
- III Histopathology Minimum number of slides to be shown.
 1. Acute Inflammation
 2. Chronic inflammation
 3. Intracellular Accumulation
 4. Circulatory Disturbances
Chronic Venous Congestion - Spleen
Chronic Venous Congestion - Liver
Chronic Venous Congestion - Lung
Organization of thrombus
 5. Neoplasia -
Benign epithelial tumour
Malignant epithelial tumours
Benign mesenchymal turnouts
Malignant Mesenchymal tumours
 6. Systemic pathology
CVS- Atherosclerosis
Monckebarg's

- 6. Systemic pathology
 - CVS- Atherosclerosis
 - Monckerberg's
 - Myocardial Infarction
 - Rheumatic Heart Disease
 - Respiratory system:
 - Renal system
 - GIT -
 - Liver
 - Reproductive system and breast
 - Lymph'nodes
 - Endocrine System
 - Musculoskeletal system
 - CNS & peripheral nervous System

Corresponding specimens to be included for demonstration

For Examination - A minimum of 40 histopathology slides and 50 specimens should be available for spotters, discussion and viva-voce.

A. LIST OF HAEMATOLOGY SLIDES AND INSTRUMENTS ECOMMENDED FOR SPOTTERS

a. HAEMATOLOGY SLIDES (Minimum of 10 slides)

1. Microcytic Hypochromic anemia
2. Macrocytic anemia
3. Dimorphic anemia.
4. Haemolytic anaemia.
5. Normocytic Hypochromic Anemia
6. Eosinophitia
7. Reticulocytes
8. Acute myeloblastic leukemia
9. Chronic myeloid leukemia
10. Acute lymphoblastic leukemia
11. Chronic lymphatic leukemia
12. Multiple myeloma - Bone marrow
13. Microfilaria
14. Malaria parasite

b. INSTRUMENTS (Minimum ten)

1. Lumbar puncture needle
2. Liverbiopsy needle
3. Bone marrow aspiration needle
4. Wintrobe's Tube with stand
5. Westergren's E.S.R. Tube and Stand

6. Urinometer
7. R.B.C. Pipette
8. W.B.C. Pipette
9. Sahli's Haemoglobinometer
10. Sahli's Haemoglobinometer central dilutino tube.
11. Sahli's Haemoglobinimeter pipette.
12. Albuminometer
13. Neubauer's Counting Chamber

B. LIST OF HISTOPATHOLOGY SLIDES AND SPECIMEN

1. Acute Appendicitis
2. Lobar Pneumonia
3. T.B. Lung
4. T.B. Lymphnode
5. Sequestrum
6. Fatty Liver
7. C.V.C. Liver
8. Lipoma
9. Squamous cell carcinoma Foot
10. Malignant Melanoma
11. Cavernous Haemangioma Liver
12. Chondroma
13. Madura Mycosis
14. Gastric Ulcer
15. Adenocarcinoma Colon
16. T.B. Intestine
17. Polyp-Intestine
18. Typhoid Ulcer- Intestine
19. Intusseption
20. Amoebic Ulcer-Intestine
21. Gall Stones
22. Portal Cirrhosis
23. Bronchiectasis
24. Emphysema

21. Gall Stones
22. Portal Cirrhosis
23. Bronchiectasis
24. Emphysema
25. Secondaries Lung
26. Bronchogenic Carcinoma
27. Rheumatic Endocarditis
28. Rheumatic Pericarditis
29. Mitral & Aortic Stenosis
30. Atheroma Aorta
31. Chronic Glomerulonephritis
32. Hydronephrosis
33. Vesical Calculus
34. Wilm's Tumour
35. Carcinoma - Kidney
36. Carcinoma - Penis
37. Seminoma Testis
38. Mucinous Cyst adenoma
39. Dermoid Cyst - Ovary
40. Leiomyoma Uterus
41. Hydatidiform Mole
42. Osteoclastoma
43. Osteo Sarcoma
44. Fibro adenoma Breast
45. Carcinoma Breast
46. Multinodular Goitre
47. Micro nodular and macro nodular cirrhosis
48. Meningitis
49. Amoebic liver abscess
50. Gangrene foot/hand
51. Infarction - heart
52. Infarction - spleen
53. Infarction - lung
54. Carcinoma of cervix.
55. Carcinoma of stomach.
56. Chronic pyelonephritis.
57. Amyloid spleen.

C. LIST OF CHARTS FOR DISCUSSION & SPOTTERS

1. T.B. Meningitis
2. Viral Meningitis
3. Pyogenic Meningitis
4. Nephrotic Syndrome
5. Ac. Lymphoblastic Leukemia
6. Ac. Myeloblastic Leukemia
7. Chronic Lymphatic Leukemia
8. Chronic Myeloid Leukemia
9. Microcytic hypochromic anaemia
10. Multiple Myeloma
11. Spherocytic anaemia with Hemolytic Jaundice
12. Obstructive Jaundice
13. Juvenile Diabetic Ketoacidosis
14. Vaginal Smear Carcinoma cervix
15. FNAC - Fibro Adenoma Breast
16. FNAC - Infiltrating Duct Carcinoma Breast

D. RECOMMENDED BOOKS:

1. ROBBINS (Stanley L) Et. AL, Pathologic Basis of Diseases. Ed 7. Prism Books Pvt. Ltd., Bangalore.
2. MOHAN (Harsh), Textbook of Pathology, Edn 5, Jaypee Brothers, New Delhi.
3. FIRKIN (Frank) et al, de Gruchy's Clinical Haematology in Medical practice Ed 5. Oxford University Press, Delhi 1989, P 524,
FIRKIN (Frank) et al, de Gruchy's Clinical Haematology in Medical practice Ed 5. Oxford University Press, Delhi 1989, P 524,
4. WALTER (JB) and Israel (MS), General Pathology, Ed. 7, Churchill Livingstone, Edinburgh, 1996. P-952, ~ 25.
5. Govan (Alasdair) Et al., Pathology, Illustrated, Ed. 4, Churchill Livingstone, Edinburgh, P-843, ~ 10.95.
6. SOOD (Ramnik) Medical Laboratory Technology, Ed. 4, Jaypee Brothers, New Delhi, 1996, P - 740, .

REFERENCE BOOKS

LEVEL - 1

1. Mc Gee (Jaures) Et al., Oxford Textbook of Pathology, Ed I, Vol. I 2a and 2b, Oxford University Press, Oxford, 1992, P-2344.
2. KISSANE (john) Anderson's Pathology, Ed-10, Vol. I & 11, The CV Mosby Company, St. Louis. 1996. P 2905. -

1. Mc GEE (Gautes) Et al., Oxford Textbook of Pathology, Ed 1, Vol. 1 Et and 2, Oxford University Press, Oxford, 1992, P-2344.
2. KISSANE (John) Anderson's Pathology, Ed-10, Vol. I & 11, The CV Mosby Company, St. Louis, 1996, P 2905. -
3. CURRAN (RC), Colour Atlas of Histopathology, Ed - 3, Harvey Miller Publishers, Oxford University Press, New York, 1985. P-292, Rs. 1295/-.
4. MOIC SWEEN (Roddie) and Whaley (Keith). Muir's Text Book of Pathology, Ed-13. ELBS 1992, P-1245,
5. DACIE (Sir John) and LEWIS (SM), Practical Haematology, Ed.8, Churchill Livingstone, London 1991, P-556,
6. RUBIN (Emanuel) and FABER (John). Pathology, Ed.4, J.B.Lippincott Company, Philadelphia, P-1576,

LEVEL - 2

1. SYMMERS (WSTC), Systemic Pathology, Ed-3, Vol. 1-16. Churchill Livingstone. Edinburgh 1995.
2. JONES (Howond) and JONES (Geogenna). Novak's Text book of Gynecology, Ed 10

LEVEL - 3

1. ROSAI (Juan), Ackermann's Surgical Pathology, Ed 10, the C.V. Mosby Company.St.Lois. 1996, P-2732. .
 2. RAPHAEL (Stanley) Lynch's Medical, laboratory Technology, Ed-4, WB Saunder's Company, London 1983, P-845.
 3. LEE (Richard) Et al. Wintrobcs Clinical Hematology, Ed-10, vol. 1&2, Williams and Wilkins 1998. P-2680.
 4. HENRY (John): Clinical Diagnosis and Management by Laboratory Method. Ed-19. WB Saunder's Company, London. A Prism Indian Edition, 1996, P-155 (Jaypee).
- Specification mentioned such as edition, number of pages, cost etc., subject to change with newer edition.

PHARMACOLOGY

GOALS AND OBJECTIVES

The student after completing the course in Pharmacology will be able to:

- Understand the general principles of drug action and the handling of drugs by the body.
- Select and prescribe suitable drug(s) according to the need of the patient for prevention, diagnosis and treatment of common ailments.
- Foresee, recognize, prevent and manage adverse drug effects.
 - a. Avoid simultaneous use of drugs resulting in harmful interaction(s)
 - b. Judiciously use rational drug combinations in the best interest of the patient.
- Be aware of the contribution of both drug and non drug factors in the outcome of treatment.
- Appreciate the essential drug concept and translate it in terms of drug needs for a given community.
- Judiciously use "over the counter" drug and be aware of iii effects of social use of intoxicants.
- Exercise caution in prescribing drug(s) likely to produce dependence and be aware of treatment strategies for drug dependence.
- Be aware of the drug treatment guidelines laid down for diseases covered under National Health Programmes.
- Prescribe drug(s) for the control of fertility.
- Be aware of possible adverse effects of drugs on the foetus while treating pregnant woman.
- Be aware of the age related factors while prescribing treatment in relation to infant children/ geriatric patients.
- Understand different types of Bio-medical waste, their potential risks and their management.

COURSE CONTENTS

I. GENERAL PHARMACOLOGY

Must know

1. Definition and scope of Pharmacology and its different branches, route of administration of drugs, advantages and disadvantages of different routes.
2. General principles of drug action.
3. Basic principles of pharmacokinetics and its relevance to rational therapeutics.
4. Biotransformation of drugs and factors affecting it.
5. Basic mechanisms of drug interactions.
6. Various types of adverse effects that can occur with therapeutic use of drugs. Concept of therapeutic index and margin of safety.
7. Mechanism of drug action; factors modifying drug action and dosage including dose response relationship.
8. Drugs and drug combinations that are banned .
9. Bio-availability and bio-equivalence of drugs.
10. Clinical Pharmacology: definition, purpose and scope.

Desirable to know

11. Molecular mechanisms of drug action.
12. Modern drug delivery systems and principles underlying them.

II. AUTONOMIC NERVOUS SYSTEM

11. Molecular mechanisms of drug action.
12. Modern drug delivery systems and principles underlying them.

II. AUTONOMIC NERVOUS SYSTEM

Must know

1. General principles of autonomic neurotransmission with reference to cholinergic and adrenergic systems: various types and sub-types of receptors and their agonists and antagonists.
2. Therapeutic indications, common side effects and contraindications of cholinomimetics (including anti-cholinesterases) and cholinergic blocking (antimuscarinic) drugs. Steps in the pharmacotherapy of organophosphorous and atropine poisonings, pharmacotherapy of glaucoma and myasthenia gravis.
3. Therapeutic indications, common side effects and contraindications of alpha 1, alpha 2, Beta 1 and 2 selective and non-selective adrenoceptor agonist and antagonists.
4. Skeletal muscle relaxants: names, pharmacological actions, side effects.
5. Drugs used in Parkinsonism.

Desirable to know

1. Molecular and biochemical mechanisms of action of cholinergic drugs. Adrenergic drugs and their blockers.

III CARDIO-VASCULAR SYSTEM

Must know

1. a. Pharmacological actions of cardiac glycosides and the basis of their use in congestive heart failure (CHF) and arrhythmias.
b. Pharmacokinetics, drug interactions, adverse effects and contra indications of digoxin; treatment of digoxin toxicity.
c. Approaches to the treatment of CHF anti the status of diuretics, digitalis and vasodilators in its management.
2. a. Classification of antihypertensive drugs. Mechanism of action, adverse effects, drug interactions and basis of combining commonly used agents like Beta blockers, diuretics. ACE inhibitors, calcium channel blockers, clonidine.
b. Management of hypertensive emergencies.
3. Classification of drugs used in angina pectoris. Nitrates: pharmacological actions, mechanisms of beneficial effect in angina, adverse effects and phenomenon of nitrate tolerance.
4. Calcium channel blockers: pharmacological actions, adverse effects & indications
5. Approaches to the treatment of myocardial infarction.
6. Drug treatment of shock and peripheral vascular diseases.

IV DIURETICS

Must know

1. Classification of diuretics: site of action of diuretics of different classes & pattern of electrolyte excretion under their influence.
2. Short term side effects and long term complications of diuretic therapy.
3. Therapeutic uses of diuretics.

Desirable to know

1. Anti diuretics
2. Diabetes insipidus.

V DRUGS AFFECTING BLOOD AND BLOOD FORMATION

Must know

1. Antianaemic drugs
 - a. Mechanisms of iron absorption from gastrointestinal tract and factors modifying it. Bioavailability, adverse affects and indications of oral and parenteral iron preparations. Treatment of iron deficiency anemia.
 - b. Indications of folic acid, Vit. B 12, Vit K.
2. Classification of anticoagulants. Mechanisms of action of heparin and or anticoagulants. Drug interactions with oral anticoagulants and treatment of bleeding due to their overdose.
3. Drugs inhibiting platelet aggregations, their indications and precautions in their use.
4. Properties and indications of plasma expanders.

Desirable to Know

1. Disadvantages of 'shot gun' anti-anemia preparations.
2. Name and indications of fibrinolytics and antifibrinolytics.
3. Hypolipoproteinemic drugs: mechanisms of action, adverse effects and indications.

VI AUTOCOIDS AND RELATED DRUGS

Must know

1. Definitions of autocooids and their difference from hormones.
2. Pharmacological actions of the autocooids and their pathophysiological roles.
3. The subtypes of histamine receptors and the actions mediated through each.
4. Histamine H1 receptor antagonists: classification, pharmacological actions, adverse effects and therapeutic uses.
5. Angiotensin converting enzyme inhibitors: pharmacological actions, pharmaco-kinetics, adverse effects, drug interactions and therapeutic uses.
6. Established and potential therapeutic uses of prostaglandins and their analogues
7. Eicosanoids and Platelet Activating factor
8. Analgesics, Antipyretics, and anti-inflammatory drugs
9. Drugs used for Rheumatoid arthritis and Gout.

Desirable to know

1. Drugs which release histamine in the body and clinical implications of this property.

9. Drugs used for Rheumatoid arthritis and Gout.

Desirable to know

1. Drugs which release histamine in the body and clinical implications of this property.
2. The sub types of 5-HT receptors and drugs, which act by modifying the serotonergic system.
3. Antioxidants

VII RESPIRATORY SYSTEM

Must know

Drugs used in management of asthma, common side effects and precautions to be taken during their use. Principles governing the selection of drugs for asthma.

Desirable to know

1. Classification of antitussives based on their mechanism of action, pharmacological actions, indications, contraindications and common side effects of antitussives.
2. Expectorants and mucolytic agents: out line of their mechanisms of action, indications, common side effects and precautions to be taken during their use. Principles of choosing appropriate combination of cough remedies.

VIII GASTRO-INTESTINAL SYSTEM

Must know

1. Drugs for peptic ulcer.
 - a. Drugs used in the treatment of peptic ulcer and outline of pharmacological basis of the use of each.
 - b. Side effects, contraindications and precautions for the use of the various drugs used in peptic ulcer.
2. Antiemetic drugs and outline of their mechanism of action.
3. Drugs used in diarrhoea.
 - a. Symptomatic management of diarrhoea giving the pharmacological basis for the use of each drug / measure.
 - b. Oral rehydration powder
 - c. Indications for the use of anti microbials, anti-motility agents and antisecretory drugs.
4. Indications, limitations and hazards of purgatives.

Desirable to know

1. Drugs used in therapy of ulcerative colitis outlining the pharmacological basis for their use. Side effects, contraindications and precautions during use of these agents

IX ENDOCRINE PHARMACOLOGY

Must know

1. Hormones of thyroid: physiological and pharmacological actions, indications, contraindications and common side effects of thyroid hormones used for replacement and for pharmaco therapy. Anti-thyroid drugs: pharmacological actions, adverse effects.
2. Hormones of the islets of Langerhans: Drugs used for pharmacotherapy of diabetes mellitus, their contraindications, precluding their use and common side effects. Management of iatrogenic hypoglycemia and diabetic ketoacidosis.
3. Sex hormones: synthetic analogues and antagonists, uses in replacement and pharmacotherapy outlining the rationale for such use, Contraindications and common side effects.
4. Pharmacological approaches to contraception. Side effects, precautions during use & contraindications for the various modalities of drug induced contraception.
5. Uterine stimulants & relaxants: their indications, contraindications and important side effects.
6. Hormones of adrenal cortex and their synthetic analogues: pharmacological actions, therapeutic uses, contraindications, precautions during their use and common side effects. General principles governing the pharmaco therapy with glucocorticoids.

Desirable to know

1. Hormones and drugs affecting calcium metabolism, their therapeutic indications, contraindications and common side effects.
2. Importance of drug induced alterations in prolactin levels.
3. Pharmacology of Anterior Pituitary hormones.

X CENTRAL NERVOUS SYSTEM

Must know

1. Drugs used in epilepsy; selection of appropriate drugs for the various types of epilepsy and adverse effects of the drugs
2. Hypnotics used currently in clinical practice with indications, contraindications, adverse effects and drug interactions of benzodiazepines.
3. Opioid analgesics: pharmacological actions, indications, contraindications and adverse effects of commonly used analgesics.
4. Aspirin and Aspirin like (NSAID's) drugs, their relative advantages and disadvantages, indications, adverse effects and drug interactions.
5. Agents used in the treatment of acute and chronic gout.
6. Role of disease modifying agents in the treatments of rheumatoid arthritis.
7. Pharmacological effects of ethanol in methanol poisoning.

XI PSYCHOPHARMACOLOGY

Must know

Drugs used for psychosis, anxiety, depression and manic depressive illness.

Desirable to know

Names of hallucinogens: actions and abuse potential of cannabis indica, cocaine and opioids.

XII DRUGS IN ANAESTHETIC PRACTICE

Must know

1. General Anesthetics

Names of hallucinogens: actions and abuse potential of cannabis indica, cocaine and opioids.

XII DRUGS IN ANAESTHETIC PRACTICE

Must know

1. General Anesthetics
 - a. Cardinal features of general anesthesia.
 - b. Merits and demerits of commonly used anaesthetic agents.
 - c. Properties of thiopentone sodium as an inducing agent and the basis of its short duration of action
 - d. Complications of general anesthesia and drug interactions with general anesthetics.
2. Preanesthetic adjuvants: Names of drugs used in pre-anesthetic medication and the purpose of using each of them.
3. Local Anesthetics:
 - a. The pharmacological basis of local anaesthetic action and of combination of local anaesthetic agents with adrenaline.
 - b. Common adverse effects of local anesthetics.
 - c. Indications for the complications of spinal anesthesia.

Desirable to know

1. Other anesthetics like ketamine and neuroleptic analgesia.
2. The pharmacology of dantrolene and centrally acting muscle relaxants like diazepam, carisoprodol and baclofen.

XIII CHEMOTHERAPY

Must know

1. General principles of chemotherapy, indications for prophylactic and combined use of chemotherapeutic agents. Chemotherapeutic agents in the order of their choice for various infections and infestations, common side effects, contra indications and precautions.
2. Antiseptics and disinfectants and their uses based on their Pharmacological properties.
3. Anticancer drugs: mechanisms of action, use, Common side effects, contraindication and precautions during use of various anticancer drugs.
4. Chemotherapy of drugs used in tuberculosis, leprosy, malaria, filaria, amoebiasis, Kala- Azar, enteric fever, worm infestation.
5. Anti fungal agents.
6. Chemotherapy of viral infections including possible approaches to treatment of viral infections like AIDS.

Desirable to know

1. Methods to circumvent toxic / side effects of chemotherapeutic agents wherever possible.
2. Chemotherapeutic agents in fungal infections: superficial and systemic.

XIV TOXICOLOGY

Must know

1. General principles of treatment of poisoning.

Desirable to know

1. Heavy metal toxicity and heavy metal antagonists.
2. Management of over dosage with commonly used therapeutic agents.

XV CLINICAL PHARMACOLOGY AND RATIONAL DRUG USE

Must know

1. Principles of prescription writing.
2. Prescriptions of common disorders.
3. Essential drug concept
4. Drugs in children and pregnancy (perinatal pharmacology)
5. Drugs in geriatrics.
6. Drug-drug interactions (with specific examples)
7. Drug resistance
8. ADR monitoring and reporting

Desirable to know

9. Therapeutic drug monitoring.
 10. Clinical use of drugs in hepatic and renal failure.
- XVI Bio-medical Waste: Types, potential risks and their safe management.

SKILLS

1. Plan and institute a line of treatment which is need based, cost effective and appropriate for common ailments taking into consideration:
 - a. Patient
 - b. Disease
 - c. Socioeconomic status,
 - d. Institutional / governmental guideline.
2. Identify irrational prescriptions and explain their irrationality.
3. Persuade patients to stick to therapeutic recommendations especially with reference to dosage and duration of therapy and monitor compliance.
4. Warn patients about important side effects of drugs without alarming them.
5. Recognize drug induced untoward effects and take appropriate steps to all of them.

COMMON AREAS FOR INTEGRATED TEACHING OF PHARMACOLOGY

Sl.NO.	Area	Collaborating department
1	Drugs in anaesthetic practice	Anesthesiology
2	Drugs therapy of psychiatric disorders	Psychiatry
3	Principles of rational use of drugs	Medical, pediatrics, Surgery, Obst. & Gynae.

2	Drugs therapy of psychiatric disorders	Psychiatry
3	Principles of rational use of drugs	Medical, pediatrics, Surgery, Obst. & Gynae.
4	The concept of essential drugs	Preventive and Social Medicine
5	Therapy of hypertension including Diuretics	Medicine and Physiology
6	Therapy of diabetes	Medicine and Physiology
7	Therapy of peptic ulcer	Medicine, Physiology and Surgery
8	Therapy of CCF	Medicine
9	Therapy for Asthma	Medicine
10	Therapy of Malaria	Medicine and Microbiology
11	Therapy of tuberculosis	Medicine , Microbiology
12	Therapy of Leprosy	Medicine and Microbiology

RECOMMENDED BOOKS

Theory

1. K.D. Tripathi, Essentials of Medical Pharmacology, V Edition. M/s. Jaypee Brothers, Post Box, 7193, G-16, EMCA House, 23/23, Bansari Road. Daryaganj New Delhi.
2. R.S. Satoskar, S.D. Bhandarkar, S.S. Ainapure, Pharmacology and pharmacotherapeutics, 18th Edition, Single Volume, M/S. Popular Prakashan, 350. Madan Mohan Marg, Tardeo, Bombay - 400 034.
3. Laurence and Bennet, Clinical Pharmacology, ELBS Edition, 9th Edition.
4. Katzung, Basic and Clinical Pharmacology, 9th Edition, Lange Medical Books, McGrawHill Medical Publishing Division.
5. S.D.Seth Textbook of Pharmacology, 2nd Edition. B.I.Churchil Livingstone.

REFERENCE BOOKS:

Goodman & Gillman, The Pharmacological basis of Therapeutics. 10th Edition (International Edition), Toel G.. Hardman Lee E. Limbird.

PRACTICAL

1. R.D. Budhiraja, Manual of Practical Pharmacy, M/s. Popular Prakashana. Bombay 34, Pages: 101,
2. S.K.Kulkarni, Practical Pharmacology.
3. B.P. Jaju, Pharmacology Practical Exercise Book, Jayapcc Brothers. P.B. No: 719 G-16 EMCA house, 23/23. B.Ansari Road, Daryaganj, New Delhi
4. **Ravinder Rao, Hand Book of Practical Pharmacology.**

COMMUNITY MEDICINE

GOALS

The aim of teaching by the department of Community Medicine is directed towards preparation of the medical student to function as community and primary care physician. Towards this end, by completion of training the MBBS student must be:

1. Aware of the physical, social, psychological, economic and environmental aspect of health and disease.
2. Able to apply the clinical skills to recognize and manage common health problems including their physical, emotional and social aspects at the individual, family and community levels and deal with public health emergencies.
3. Able to define and manage the health problems of the community he/she serves.

OBJECTIVES

To achieve this he/she will be able to:

- a. Organize elementary epidemiological studies to assess the health problems in the area. For this he should be able to design a study, collect data, analyze it with statistical tests, report and be able to participate in a health information system. make a
- b. Prioritise the most important problems and help formulate a plan of action to manage them under National Health Programme guidelines including population control and family welfare program. (He should be able to assess and allocate resources, implement and evaluate the programmes) family and
- c. Demonstrate knowledge of principles of organizing prevention and control of communicable and non-communicable diseases.
- d. Organize health care service for special groups like mothers, infants, under five children and school children, handicapped, adolescents and geriatric, rural, tribal and urban slum dwellers.
- e. Organize health care in case of calamities.
- f. Inculcate values like compassion, empathy to poor, rationale and ethical practice, honesty sincerity, integrity to ensure quality professional practice.
- g. Able to work as an effective leader of the health team within the primary health care set-up.
- h. Able to coordinate with and supervise other members of the health team and maintain liaison with various agencies. (Government, non-government and voluntary organizations).
- i. Able to plan and implement health education programmes.
- j. Able to perform administrative functions of health centers.

- with various agencies. (Government, non-government and voluntary organizations).
- i. Able to plan and implement health education programmes.
- j. Able to perform administrative functions of health centers.
- k. Able to promote community participation especially in areas of disease control, health education and implementation of national programmes.
- l. Aware of national priorities and the goal to be achieved to implement primary health care including health for all.
- m. Understand different types of Bio-medical waste, their potential risks and their management.

COURSE CONTENTS

THEORY

I EVOLUTION OF PUBLIC HEALTH AND CONCEPTS OF HEALTH

Must know

1. Evolution of Public Health.
2. Definition of health; holistic concept of health, appreciation of health as a relative concept, determinants of health.
3. Characteristics of agent, host and environmental factors in health and disease and the multifactorial etiology of disease.
4. Understanding the Natural history of disease and application of interventions at various levels of prevention with appropriate examples.
5. Indices used in measurement of health.
6. Health profile.

II ENVIRONMENT AND HEALTH

Must know

1. a. The concept of safe and wholesome water.
 - b. The requirements of sanitary sources of water.
 - c. Understanding the methods of purification of water on small scale and large scale.
 - d. Various biological standards, including WHO guidelines for third world countries.
2. Concept and methods for assessing quality of water.
3. Sources, health hazards and control of environmental pollution
4. Problem in the disposal of refuse, sullage, human excreta and sewage and its remedies.
5. Awareness of standards of housing and the effect of poor housing on health.
6. Role of vectors in the causation of diseases.
7. Identifying features of and mode of transmission of vector borne diseases.

Desirable to know

1. Methods of vector control with advantages and imitations of each.
2. Mode of action, dose and application cycle of commonly used insecticides and rodenticides.

III HEALTH EDUCATION

(IN FORMATION, EDUCATION, COMMUNICATION)

Must know

1. Communicate effectively with individuals, family and community using tools and techniques of information, education, and communication. To do so, the students should know:
 - a. Principles of communication, methods and evaluation of health education and understand and apply adult education methods.
 - b. Appreciate barriers to effective communication.
 - c. List various methods of health education with their advantages and disadvantages.
 - d. Select and use of appropriate media (simple audio-visual) for effective health education.
 - e. Practice of health education.
2. Use every opportunity for health education of the individual, family and the community.

IV NUTRITION AND DIETETICS

Must know

1. Common sources of various nutrients and special nutritional requirements according to age, sex, activity, physiological condition.
2. Nutritional assessment of individuals, families and the community by selection and using appropriate methods such as: anthropometry, clinical, dietary, laboratory techniques.
3. Plan and recommend suitable diet for individuals and families bearing in mind the local availability of foods, economic status, etc.
4. Common nutritional disorders: protein energy malnutrition, Vitamin A deficiency, anemia, iodine deficiency diseases, fluorosis, food toxin diseases and their control and management.
5. National programmes in nutrition.
6. Nutritional surveillance, education and rehabilitation.

V OCCUPATIONAL HEALTH

Must know

1. Relate the history of symptoms with the specific occupation including agriculture.
2. Employees State Insurance Scheme.

Desirable to know

1. Identification of the physical, chemical biological and social hazards to which workers are exposed to while working in a specific occupational environment.
2. Influence of physical factors like heat, humidity, cold, radiation and noise on the health of the individual and community.
3. General preventive measures against these diseases including industrial accident prevention.
4. Various legislation in relation to occupational health.

VI MEDICAL SOCIOLOGY AND COMMUNITY MENTAL HEALTH

Must know

4. Various legislation in relation to occupational health.

VI MEDICAL SOCIOLOGY AND COMMUNITY MENTAL HEALTH

Must know

1. Conduct of a clinico-social evaluation of the individual in relation to social, economic and cultural aspects, educational and residential background; attitude to health, disease and to health services.
2. Assessment of barriers to good health, recovery from sickness and to lead a socially and economically productive life.
3. Development of good doctor-patient and community relationship.
4. Identification of socio-cultural factors related to health and disease in the context of urban and rural societies.
5. Impact of urbanization of health and disease.
6. National Mental Health Program.

Desirable to know

1. Community psychiatry.

VII FUNDAMENTALS OF BIO-STATISTICS

Must know

1. a. The scope and uses of bio-statistics
- b. Collection of data, common sampling techniques, simple statistical method for the analysis, classification interpretation and presentation of data, frequency distribution, measures of central tendency, measures of variability, laws probability.
- c. Analyze and interpret data.
2. Obtaining health information, computing indices (rates and ratio) and making comparisons.

Desirable to know

1. Apply statistical methods in designing of studies.
 - a. Choosing of appropriate controls.
 - b. Applying tests of significance (large sampling tests)
 - c. Use of statistical tables.

VIII BASIC EPIDEMIOLOGY

Must know

1. Epidemiology: definition, concept and role in health and disease.
2. Use of basic epidemiological tools to make a community diagnosis of the health situation in order to formulate appropriate intervention measures.
3. Definition of the terms used in describing disease transmission and control.
4. Modes of transmission and measures for prevention and control of communicable and non-communicable diseases.
5. Principal sources of epidemiological data.
6. Definition, calculation and interpretation of the measures of frequency of diseases and mortality.
7. Need and uses of screening tests.
8. Accuracy and clinical value of diagnostic and screening test (sensitivity, specificity, predictive values).
9. Planning, collecting, analyzing and interpreting data with community participation to reach a community diagnosis.
10. General principles of epidemiology of communicable and non-communicable diseases of public health importance and their control.
11. Awareness of programmes for control of non-communicable diseases.
12. a. Planning and investigation of an epidemic of communicable disease in a community setting
- b. Institution of control measures and evaluation of the effectiveness of these measures.

Desirable to know

13. The derivation of normal values and the criteria for intervention in case of abnormal values.
14. Applications of computers in epidemiology.

IX EPIDEMIOLOGY OF SPECIFIC DISEASES COMMUNICABLE & NON-COMMUNICABLE DISEASE

Must know

The specific objectives of selected communicable and non-communicable disease of public health importance for which National Disease control/Eradication Programmes have been formulated are described here. For other diseases, the individual teacher would formulate the objectives while drawing the lesson plans. The idea of formulation objectives for a few diseases here is to highlight their importance and emphasize certain learning outcomes.

Communicable Diseases: Intestinal infection: Poliomyelitis, viral hepatitis, Diarrhoeal disease, Cholera, Helminthiasis including Dracunculiasis.

Respiratory infections : Acute Respiratory infections / Tuberculosis, measles, Diphtheria. Whooping cough.

Vector-borne infections: Malaria, Filariasis. Kala Azar, Dengue.

Surface Infections: Sexually Transmitted Diseases. HIV & AIDS. Tetanus, Leprosy Zoonosis: Rabies, Japanese encephalitis, Plague, Kyasanur Forest Disease Non-communicable diseases: Coronary heart diseases Hypertension, Rheumatic heart disease.

Cancers, Diabetes, Blindness and Accidents.

1. Extent of the problem, epidemiology and natural history of the disease.
2. Relative public health importance of particular disease in a given area.
3. Influence of social, cultural and ecological factors on the epidemiology of the disease.
4. Prevention and control of communicable and non-communicable disease by:

2. Relative public health importance of particular disease in a given area.
3. Influence of social, cultural and ecological factors on the epidemiology of Iht disease.
4. Prevention and control of communicable and non-communicable disease by:
 - a. Diagnosing and treating a case and in doing so demonstrate skills in:
 - i. Clinical methods.
 - ii. Use of essential laboratory technique-
 - iii. Selection of appropriate treatment regimes.
 - iv. Follow-up of cases.
 - b. Principles of planning, implementing and evaluating prevention and control measures for the disease at the community level bearing in mind the relative importance of the disease.
5. Institution of programmes for the education of individuals and communities.
- 6 Investigating an epidemic of a disease and the principles of measures of control of tile epidemic.
7. Awareness of National Disease Control Programmes.

Desirable to know

1. Level of awareness of causation and prevention of disease amongst individuals and communities.
- 2 Control of communicable and non-communicable diseases by diagnosing and treating a case and in doing so demonstrate skills in:
 - i. Instituting measures, where necessary, for preventing disabilities / deformities.
 - ii. Rehabilitation of the patient.

X DEMOGRAPHY

Must know

1. Definition of demography and family welfare program.
2. Stages of the demographic cycle and their impact on the population, concept of demographic gap and population explosion.
- 3 Definition, calculation and interpretation of demographic indices like birth rate, death rate, fertility rates.
- 4 Reasons for rapid population growth and population dynamics.
5. Need for population control measures and the National Population Policy.

XI. REPRODUCTIVE AND CHILD HEALTH

Must know

1. Need for specialized services for these groups.
2. Magnitude of morbidity and mortality in these groups m the local area and different regions.
3. Local customs and practices during pregnancy, childbirth and lactation and complementary feeding.
4. Concepts of Reproductive child health (RCH) components, including Child Survival and Safe Motherhood, Universal Immunization Programme integrated Child Development Scheme and other existing programmes.
5. Handicapped child.
6. Organization, implementation and evaluation of reproductive child health program components.
7. Identify and describe the different family planning methods and their advantages and shortcomings.
8. Demonstrate skills in motivating a couple for selecting an appropriate family phanning method.
9. Medical Termination of Pregnancy Act, (MTP).

Desirable to know

1. Organizations, technical and operational aspects of the National Family Welfare Programme and participate in the implementation of the programme.

XII SCHOOL HEALTH

Must know

1. Objectives of the School Health Programme.
2. Activities of the Programmes like:
 - a. Carrying out periodic medical examination of the children and the teachers.
 - b. Immunization of the children in the school.
 - c. Health education.
 - d. Mid-day meals.

Desirable to know

1. Obtaining participation of the teachers in the school health programmes including maintenance of record: refining healthy practices; early detection of abnormalities, national school health programmes.

XIII URBAN HEALTH

Must know

1. Common health problems (Medical, Social Environmental, Economical, Psychological) of urban slum dwellers.
2. Organization of health services for slum dwellers.
3. Organization of health services in urban areas.

XIV HEALTH SYSTEM IN INDIA AND NEPAL

XV HEALTH PLANNING & MANAGEMENT INCLUDING DISASTER MANAGEMENT

1. Awareness regarding important health legislation in India such as Birth and Death registration act, Prevention of Food Adulteration (PFA) act, and MTP act.
2. Awareness regarding important health legislation in India such as Child Labour act. Consumer protection act, Prenatal diagnostics act, Human organ transplant act, etc.

Prevention of Food Adulteration (PFA) act, and MTP act.

2. Awareness regarding important health legislation in India such as Child Labour act, Consumer protection act, Prenatal diagnostics act, Human organ transplant act, etc.

XVI INTERNATIONAL HEALTH

XVII GERIATRICS

XVIII Bio-medical Waste: Types, potential risks and their safe management.

SKILLS

PART- 1: General Skills.

The student should be able to:

1. Elicit the clinico-social history to describe the agent, host and environment factors that determine and influence health.
2. Recognize and assist in management of common health problems of the community.
3. Apply elementary principles of epidemiology in carrying out simple epidemiological studies in the community.
4. Work as a team member in rendering health care.
5. Carry out health education effectively for the community.

PART - II: Skills in Relation to Specific Topic

1. Communication

The student should be able to communicate effectively with family members at home, patients at clinics or at homes; individuals, family or a group for health education peers at scientific forums.

2. Team activity

Work as a member of the health team; in planning and carrying out field work like school health.

3. Environmental sanitation

Collect water and stool samples for microbiological evaluation.

4. Communicable and non-communicable diseases (including social problems)

- a. Eliciting clinico-social history and examining the patient for diagnosis and treatment.
- b. Assessing the severity and/or classifying dehydration in diarrhoea, upper respiratory tract infection, dog-bite, leprosy.
- c. Adequate and appropriate treatment and follow-up of leprosy, malaria, filariasis, rabies, upper respiratory tract infections, diarrhoea and dehydration.
- d. Advise on the prevention and prophylaxis of common diseases like vaccine preventable diseases, tetanus, malaria, filariasis, rabies, cholera, typhoid, intestinal parasites.

5. Maternal and Child Health

- a. Antenatal-examination of the mother; application of the risk approach in antenatal care.
- b. Postnatal - assessment of the mother and new born, advice on appropriate family planning method; promotion of breast-feeding; advice on weaning.
- c. Assessment of growth and development of the child - use of the road to health, immunization to the child; identifying high-risk infants.
- d. Skills in vaccine management.

6. Statistics

- a. Simple random Sampling techniques.
- b. Apply appropriate (large sample) tests of significance to make a correct inference.
- c. Sample analysis and presentation of data.
- d. Calculation of various health indices.
- e. Calculation of relative and attributable risks.
- f. Calculation of sensitivity, specificity and predictive values of screening test.

7. Nutrition

- a. Conducting a diet survey.
- b. Community survey and clinical diagnosis of nutritional deficiencies: vitamin A deficiency, iodine deficiency, malnutrition.
- c. Making recommendation regarding diet.

8. Occupational Health

- a. Inspection of work sites.
- b. Recommendation in improving work sites.
- c. Supervision of workers and programmes.

9. Health Management

- a. Be an effective team leader.
- b. Guide and train workers.
- c. Supervision of workers and programmes.

10. Managerial:

- a. Organize antenatal and under-five clinic.
- b. To conduct meetings
- c. Review of records &
- d. Principles of supervision.

FIELD VISITS:

Minimum field visits - 5

Mandatory visits to

1. Primary Health Centre
2. Sub centre
3. Anganwadi
4. Industrial visit
5. Water purification works
6. Clinico-social posting

4. Industrial visit
5. Water purification works
6. Clinico-social posting
7. Family Health Advisory program.

RECOMMENDED BOOKS

THEORY

Level - I

1. K. Park, Park's Text Book of Preventive & Social Medicine, 2002, 17th Edition, M/s Banarasidas Bhanot publishers, Jabalpur,
2. B.K. Mahajan & M.Gupta (1995) Text Book of Preventive & Social Medicine 2nd Edition, Jaypee Brothers.
3. Sathya Swaroop, Introduction to Health Statistics. Latest edition - E & S Living Stone Ltd., Edinburgh, London.
4. B. Sridhar Rao - Text Book of Social Medicine, (1996) or Latest print.

Level - II

1. Suresh Chandra (1997) Essentials of Community Medicine, 1st Edition, New Central Book Agency, 8/1, Chintamani. Daslane, Calcutta.
2. A.P. Kulkarni and J.P. Baride (1998) Text Book of Community Medicine, I Edition, Vora Medical Publication, Bombay.
3. B.S. Nagaraj, Community Medicine without tears 1984, print or Latest, Mysore Printers & Publishing House, Clock Tower Square, Mysore.

PRACTICALS

1. G.K. Rathnaswamy, A hand Book of Medical Entomology, Latest Edition.
2. Gopalan et al, Nutritive Value of Indian Food Stuffs - NIN/ICMR, Hyderabad.

Level - III

1. Donald Hunter, 1978, The Disease of Occupations, 6th Edition or Latest, Hodder & Stoughton. London.
2. International Labour Organization Encyclopedia of Occupational Health & Safety, Volume 1 and 2, 4th Edition, ILO, Geneva, Switzerland.
3. Jallifee, Clinical Nutrition W.H.O Geneva.

MICROBIOLOGY

GOALS AND OBJECTIVES

A MBBS student at the end of the microbiology course will be able to:

1. Describe the mechanisms of host parasite relationship
2. List the normal flora of the human body.
3. Describe the etiology and pathogenesis of common infectious diseases.
4. List the microbes that cause opportunistic infections in humans and describe their pathogenesis.
- a. Choose appropriate laboratory investigations required for a clinical diagnosis.
- b. Sample the right specimen, at the right time. by the right method.
- c. Analyze and interpret the results of laboratory tests.
- d. Perform some simple tests, which help to arrive at rapid diagnosis.
5. Apply the principles of immunology in the pathogenesis, diagnosis and prevention of infectious and non-infectious diseases.
6. Practice the techniques of asepsis, antisepsis and sterilization in day-to-day procedures and apply universal precautions in laboratory and clinical practice.
7. Organize the prevention and control of communicable diseases in the community or hospital.
8. Understand the ecology (microbial) of specialized areas like hospital, water, food and prevent the possible spread of infections.

OBJECTIVES

MBBS student at the end of Microbiology Courses will be able to:

- Describe the etiology and pathogenesis of common infectious diseases.
- Describe the mechanisms of host-parasite relationship.
- Investigate common infectious diseases with particular emphasis to appropriate methods of specimen collection and laboratory diagnosis and proper interpretation of laboratory test results.
- Be aware of salient features of uncommon infectious diseases.
- Apply the principles of immunology in the pathogenesis, diagnosis and prevention of infectious and non-infectious diseases.
- Practice laboratory guided antimicrobial therapy.
- Practice the techniques of asepsis, antisepsis and sterilization in day to day procedures and apply universal precautions in laboratory and clinical practice.
- Organize the prevention and control of communicable disease in the community or hospital.
- Understand different types of Bio-medical waste, their potential risks and their management.

COURSE CONTENTS

THEORY

I INTRODUCTION

Must know

1. Morbidity and mortality data of infectious diseases prevalent in the country with reference to

I INTRODUCTION

Must know

1. Morbidity and mortality data of infectious diseases prevalent in the country with reference to the National Health Programmes and in the local geographic area.

Desirable to know

1. Significant milestones in the history of Microbiology

II GENERAL MICROBIOLOGY

Must know

1. Definitions - infections, parasite, host, vector, zoonosis, contagious disease, infectious disease, epidemic, endemic, pandemic, Zoonosis, Epizootic, Attack rate.
2. Normal flora of the human body.
3. Routes of infection and spread; endogenous and exogenous infections; source and reservoir of infections.
4. Bacterial cell. Morphology limited to recognizing bacteria in clinical samples. Shape, motility and arrangement. Structures, which are virulence, associated.
Physiology: Essentials of bacterial growth requirements.
5. Sterilization, disinfection and universal precautions in relation to patient care and disease prevention. Definition of asepsis, sterilization, disinfection.
6. Antimicrobials: Mode of action, interpretation of susceptibility tests, resistance spectrum of activity.
7. Bacterial genetics.

III IMMUNOLOGY

Must know

1. Basic principles of immunity immunobiology: lymphoid organs and tissues. Antigen, Antibodies, antigen and antibody reactions with relevance to pathogenesis and serological diagnosis.
2. Humoral immunity and its role in immunity
3. Cell mediated immunity and its role in immunity.
4. Immunology of hypersensitivity,
5. Measuring immune functions.
6. Immunological basis of the autoimmune phenomena.
7. Immunodeficiency with relevance to opportunistic infections.
8. Basic principles of transplantation immunity
9. Basic principles of natural immunity.

SYSTEMIC MICROBIOLOGY

IV BACTERIOLOGY

To be considered under the following headings

Morphology, classification according to pathogenicity, mode of transmission, methods of prevention, collection and transport of samples for laboratory diagnosis, interpretation of laboratory reports, rapid bedside diagnosis where feasible, list of antimicrobial agents and control measures with special relevance to the National Control and Eradication programmes, in respect of:

Must know

1. Staphylococci,
2. Streptococci and pneumococci,
3. Neisseriae,
4. Corynebacterium diphtheriae,
5. Mycobacteria: Tuberculosis, M. leprae, atypical mycobacteria,
6. Enterobacteriaceae,
7. Parvobacteria: Haemophilus, Bordetella, Brucella, Pasteurella, Gardnerella,
8. Vibrios: V. cholerae and other medically important vibrios,
9. Campylobacters and Helicobacters,
10. Pseudomonas,
11. Bacillus anthracis,
12. Sporing and non-sporing anaerobes: Clostridia, Bacteroides and Fusobacteria,
13. Chlamydiae: Mycoplasma
14. Actinomycetales: Actinomycetes and Nocardia,
15. Spirochaetes,
16. Rickettsiae

Desirable to know

Listeria monocytogenes

V GENERAL VIROLOGY

Must know

General properties: Basic structure and broad classification of viruses. Pathogenesis and pathology of viral infections. Immunity and prophylaxis of viral diseases. Principles of laboratory diagnosis of viral diseases. List of commonly used antiviral agents. Bacteriophage with relation to virulence mechanism and epidemiology.

Desirable to know

Replication and genetics.

VI SYSTEMIC VIROLOGY

Must know

1. Herpes viruses: List of viruses included, lesions produced, pathogenesis and latency principles and Laboratory diagnosis.
2. Arbo viruses: List of arboviruses prevalent in India, general properties, mode of transmission.

- Must know
1. Herpes viruses: List of viruses included, lesions produced, pathogenesis and latency principles and Laboratory diagnosis.
 2. Arbo viruses: List of arboviruses prevalent in India, general properties, mode of transmission, disease syndromes produced, common diagnostic tests, prevention of spread.
 3. Picorna viruses: Common infections produced, classification and general properties, pathogenesis of poliomyelitis, immunoprophylaxis of poliomyelitis.
 4. Myxoviruses: General properties, classification according to diseases produced, antigenic variations in influenza virus with relevance to vaccine efficacy; measles, mumps and rubella; important features and prophylaxis.
 5. Rabies virus: General properties; antirabies vaccine, antemortem diagnosis in rabies.
 6. Hepatitis virus: List of viruses, pathogenesis, mode of infection, list of diagnostic tests and their interpretation, methods of prevention and control.
 7. Human immunodeficiency virus: Structure with relevance to laboratory diagnosis and type of infection, laboratory tests and their interpretation, universal precautions, specific precautions, recent trends in diagnosis and prophylaxis.
 8. Rota virus: laboratory diagnosis.
 9. Adenovirus- Infections caused and Laboratory diagnosis.

Desirable to know

1. Slow virus infection.
2. Poxviruses.
3. Oncogenic viruses.

VII MYCOLOGY

Must know

General properties of fungi. Classification based on disease: superficial, subcutaneous, deep mycoses opportunistic infections including Mycetozoa, systemic mycoses. General principles of fungal diagnosis, Rapid diagnosis. Method of collection of samples. Antifungal agents.

VIII PARASITOLOGY

1. Protozoans: i) Intestinal,
ii) Genital,
iii) Protozoans in blood
iv) Opportunistic protozoans.
2. Helminths: Cestodes: Taenia, Echinococcus, Hymenolepis
3. Nematodes: Intestinal, Tissue
4. Medical entomology with reference to vectors.

Desirable to know

1. Trematodes of medical importance.

IX CLINICAL / APPLIED MICROBIOLOGY

Must know

1) Streptococcal infections: Rheumatic fever and Rheumatic heart disease, 2) Meningitis. 3) Tuberculosis, 4) Enteric fever. 5) Dysentery, 6) Diarrhoeal diseases, 7) Pyrexia of unknown origin, 8) Eye-infections, 9) leprosy, 10) Sexually transmitted diseases, 11) Poliomyelitis, 12) Hepatitis, 13) Acute-respiratory infections, 14) Central nervous System infections, 15) Urinary tract infections, 16) Pelvic inflammatory disease, 17) Wound infection, 18) Opportunistic infections, 19) HIV infection, 20) Malaria, 21) Filariasis, 22) Zoonotic diseases.

(Integrated teaching suggested for the above topics)

Desirable to know

- 1) Bone and joint infections, 2) Food poisoning, 3) Exanthematous conditions, 4) Organisms used in bioterrorism.

X Bio-medical Waste: Types, potential risks and their safe management.

SKILLS

Must know

1. Do stool exam for ova and cysts; and hanging drop for vibrio for vibrio cholera.
2. Do and examine a wet film of vaginal smear for Trichomonas and fungus.
3. Perform and interpret Gram's stain, and Ziehl-Neelsen or modified Ziehl Neelsen's stain.
4. Perform skin scrapings and do a KOH preparation for fungal infection.
5. Do cell counts and gram stain of CSF and other body fluids.
6. Interpret blood smear for parasites like malaria and filaria.
7. Interpret antimicrobial sensitivity reports.
8. Interpret serological tests such as VDRL, ASLO, WIDAL, HIV, Rheumatoid factor, hepatitis and TORCH infections, Treponema pallidum Haemagglutination. Haemagglutination in Virology. Haemagglutination inhibition.
9. Be able to collect and transport following clinical samples for microbiological tests: Blood, pus, urine, CSF, body fluids, stool, sputum, throat swabs and serum.
10. Adopt universal precautions for self precaution against HIV and hepatitis.

PRACTICAL

PRACTICAL EXERCISES IN MICROBIOLOGY

The students would perform the following procedures:

- i) Gram stain, ii) Ziehl Neelsen stain, iii) Modified Ziehl Neelsen stain, iv) Albert stain. v) Hanging drop vi) Wet mount for stool examination, vii) Iodine mount for stool examination, viii) Lactophenol cotton blue mount for fungus examination, ix) Simple stain

I MICROSCOPE

- a) Principles and use of compound Microscope in detail
- b) Dark ground Microscope

I MICROSCOPE

- a) Principles and use of compound Microscope in detail
- b) Dark ground Microscope
Fluorescent Microscope
Phase Contrast Microscope
Electron Microscope

II STERILIZATION :-

- a) Principle, Uses and Demonstration of common sterilization equipment, namely, Autoclave, Hot Air Oven, Serum Inspissator, Arnold Steriliser, Filters.

III CULTURE MEDIA :-

Classification of culture media, Principles, main ingredients and uses of common culture media. Namely-Peptone water, Nutrient Broth, Nutrient Agar, Blood Agar, Chocolate, Mac Conkey, Wilson Blair, TCBS, LJ, Potassium telluride, Dorset egg, Loeffler's serum slope, RCM. milk agar, Selenite F-broth, Blood culture broth. Media for Biochemical reaction – Sugar Fermentation, Urease, Citrate, Indole Media with growth of common organisms for demonstration namely Staphylococci, C. diphtheria, Mycobacterium tuberculosis, Salmonella on W.B., Vibrio on TCBS, Mac-Conkey with LF & NLF, Milk Agar with Staphylococci, Proteus on Nutrient Agar. Antibiotic sensitivity - methods & principles

IV STAINING AND HANGING DROP:

- 1) Demonstration of motility by hanging drops method.
- 2) Gram Stain
- 3) ZN Stain

V PARASITOLOGY:

Examination of faeces for helminthic Eggs, (Round worm, hook worm, whip worm, H. nana)

VI APPLIED BACTERIOLOGY:

- Demonstration of specimen collection.
- Growth on appropriate media
- Biochemical reactions.

Appropriate special tests for the lab-diagnosis of common infectious diseases. Namely:

- 1) Pyogenic Infection
- 2) Enteric Fever
- 3) Bacillary Dysentery
- 4) Cholera
- 5) U.T.I.
- 6) Infantile Diarrhoea
- 7) Tuberculosis

VII DEMONSTRATION OF SEROLOGICAL TEST: Widal Test, VDRL, ELISA.

VIII DEMONSTRATION OF FUNGUS: Growth, Slide mounts of common fungi, Candida,

Aspergillus, Mucor, Rhizopus, Penicillium, Dermatophytes (one or two)

IX USES OF LABORATORY ANIMALS: Rabbit, Guinea pig & Mouse

X DEMONSTRATION OF SLIDES & INSTRUMENTS

XI MEDIA & SPECIMENS (DEMONSTRATION)

The following procedures are only for demonstration. Students will interpret results, but need not perform the procedure of tests. Serological demonstration of- WIDAL, VDRL. Haemagglutination, Haemagglutination inhibition, Complement fixation test, Viral Haemagglutination, ELISA.

XII INTEGRATED TEACHING:

- 1) Enteric fever
- 2) Cholera
- 3) HIV & AIDS
- 4) Tuberculosis
- 5) Hospital infection & Control Measures
- 6) Malaria
- 7) Bio-medical waste management

The following materials are to be procured for the conduct of practical classes.

i. SLIDES

1. Staphylococci
2. Streptococci
3. Gonococci
4. M. tuberculosis
5. M. Leprae
6. C. diphtheriae
7. T. pallidum
8. C. tetani
9. Negative Staining Pneumococci
10. Malarial Parasite
11. Microfilaria
12. Cyclops
13. Hydatid cyst wall
14. Negri Bodies
15. Molluscum contagiosum
16. Rhinosporidiosis
17. Candida
18. Cryptococcus
19. Aspergillus
20. Penicillium
21. Mucor/Rhizopus
22. Pneumococci-Gramstain
23. Y. pestis
24. Mycetoma- H & E Stain
25. Cestode- Segment

ii. MEDIA

1. Without Growth:

Peptone water, Nutrient broth; Nutrient agar Blood agar, Chocolate agar, Mac-Conkey agar, Wilson & Blair medium, T.C.B.S., L.J. Medium, Robertson Cooked meat medium. Milk agar, Selenite F Broth, Blood culture Broth, Dorset egg medium & Loeffler's Serum Slope.

Peptone water, Nutrient broth; Nutrient agar Blood agar, Chocolate agar, Mac-Conkey agar, Wilson & Blair medium, T.C.B.S., L.J. Medium, Robertson Cooked meat medium. Milk agar, Selenite F Broth, Blood culture Broth, Dorset egg medium & Loeffler's Serum Slope.

2. With Growth:

1. Staphylococcus - albus, aureus on Nutrient agar
2. Staphylococcus - albus, aureus on milk agar
3. Potassium tellurite medium with *C. diphtheria*
4. L.J. with *M. tuberculosis*
5. MacConkey with Lf & NLF
6. Wilson & Blair with growth
7. TCBS with growth
8. Proteus - on Nutrient agar or on Blood agar
9. Sugar fermentation - Indole - Negative & Positive
10. Urease- Negative & Positive
11. Citrate- Negative & Positive
12. Sabouraud's glucose agar with *Candida/Aspergillus*
13. Sabouraud's glucose agar with any Dermatophyte.

iii LIST OF INSTRUMENTS

1. Seitz filter
2. Candle filter
3. Macintosh filter's jar
4. VDRL slide
5. Widal rack with tubes
6. Sterile swab
7. Tuberculin syringe
8. Microtitre plate
9. Inoculation loop
10. Pasteur pipette

iv LIST OF SPECIMENS

1. Roundworm
2. Hookworm
3. Whip worm
4. Tapeworm
5. Hydatid cyst
6. Embryonated egg
7. Suckling mouse
8. Guinea worm

V EXPERIMENTAL ANIMALS:

1. Rabbit
2. Guinea pig.
3. Mouse

TERM WISE DISTRIBUTION OF THEORY PORTIONS

III TERM :-

GENERAL BACTERIOLOGY, IMMUNOLOGY & SYSTEMATIC BACTERIOLOGY (COCCI)

IV TERM :-

REMAINING SYSTEMATIC BACTERIOLOGY & PROTOZOLOGY

VI TERM :-

HELMINTHOLOGY, VIROLOGY, MYCOLOGY & APPLIED MICROBIOLOGY.

TEXTBOOKS

1. Textbook of Microbiology, P.Chakraborty, New central book agency (P) Ltd.

REFERENCE BOOKS:

LEVEL-1

1. Greenwood, Medical Microbiology, Ed-15, Churchill Livingstone.
2. Rom (Ivan. M), Essential Immunology, Ed.6, ELBS, Hong Kong.
3. MIMS (Cedric, Playfair) et al, Pathogenesis of Infectious diseases, Academic Press. London.
4. RIPPON, Medical Mycology, Ed.2, W.B. Saunders and Co.
5. KONEMAN (Allen and Janda et al), Diagnostic Microbiology, J.B. Lippincott Co.
6. BELLANTI, Immunology, Ed.3, W.B. Saunders and Company.

LEVEL - II

1. BALOWS, Manual of clinical Microbiology, ASM, Washington DC.
2. STITES (Tarr and Parslow), Medical Immunology, Appleton and Lange USA.
3. ROITT (Brostoff and Male), Immunology, Mosby, London.
4. EMMONS (Binford) et al, Medical Mycology, K.M. Varghese Co., Bombay.
5. MANSON-BARR (BELL), Manson's Tropical diseases, ELBS.
6. BEAVER, (Jung and Corpp), Clinical Parasitology.

LEVEL III

1. TOPELY and WILSON - Principles of Bacteriology, Virology, Immunology, Edward Arnold.
2. BERGEY'S manual, (Holt and Kreig) et al, Determinative bacteriology, Williams and Wilkins, Maryland, USA.
3. ROITT, Encyclopedia of Immunology, Academic Press Ltd., London
4. HOEPRICH, Infectious diseases, Harper and Row Publishers, Philadelphia.
5. MENDEL (Donaglas Aah Benett), Principles and Practice of Infectious diseases, Churchill Livingstone.

DIAGNOSTIC MICROBIOLOGY

1. BAILEY AND SCOTT, Diagnostic Microbiology. Mosby Publishers
2. MACKIE & MACCARTNEY - Vol II (Collee & Duguid) et al, Churchill Livingstone.
3. Clinical Microbiology procedures Handbook, Henry D. et al, ASM.
4. COWAN & STEEL (Barrow & Feltham). Manual for the identification of medical bacteria, Cambridge University Press.
5. STOKES (Ridgeway & Wren), Clinical Microbiology, Edward Arnold. London.
6. Basic Laboratory Procedures in Clinical Bacteriology, WHO, Vandepitte et al. Jaypee.
7. Basic Laboratory Procedures in Medical Parasitology, WHO, Vandepitte et al, Jaypee.

5. STOKES (Ridgeway & Wren), Clinical Microbiology, Edward Arnold. London.
 6. Basic Laboratory Procedures in Clinical Bacteriology, WHO, Vandepitte et al. Jaypee.
 7. Basic Laboratory Procedures in Medical Parasitology, WHO, Vandepitte et al, Jaypee.
 8. COLLINS & Lyne, Microbiological Methods. Butterworth - Heinemann Ltd.
- * Specification mentioned such as edition, number of pages, cost etc.. subject to change with newer edition.

FORENSIC MEDICINE AND TOXICOLOGY

GOALS AND OBJECTIVES

At the end of the course in the Forensic Medicine the MBBS student will:

- Be able to identify, examine and prepare report or certificate in medico legal cases/situations in accordance with the law of land.
- Able to perform medico legal postmortem and interpret findings and results of other relevant investigations to logically conclude the cause, manner and time since death.
- Be aware of medical ethics, etiquette, duties, rights, medical negligence and legal responsibilities of the physicians towards patient, profession, society, state and humanity at large.
- Be aware of relevant legal / court procedures applicable to the medico legal / medical practice.
- Be able to preserve and dispatch specimens in medico legal / postmortem cases and other concerned materials to the appropriate government agencies for necessary examination.
- Manage medico legal implications, diagnosis and principles of therapy of common poisons.
- Be aware of general principles of analytical, environmental, and occupational and preventive aspects of toxicology.
- Understand different types of Bio-medical waste, their potential risks and their management.

COURSE CONTENTS

THEORY

I. Forensic medicine:

Must know

1. History of Forensic Medicine, Definition of forensic medicine and medical jurisprudence, Medical Edquette.
2. Courts in India and their powers: Supreme Court, High Court, Sessions Court, Additional sessions court, magistrate's court.
3. Court procedures: Summons, conduct money, oath, affirmation, perjury, lypes of witnesses. types of examination, recording evidence, court questions, conduct of doctor in witness box, medical examiner system.
4. Medical certification and medico legal reports including dying declaration.
5. Death:
 - a. Definition, types: somatic, cellular and brain death.
 - b. Natural and unnatural death.
 - c. Presumption of death and survivorship.
 - d. Suspended animation.
 - e. Death certification, cause of death as per international classification of diseases - WHO guidelines.
6. Changes after death:
 - a. Cooling of body, Lividity, Rigor morris, cadaveric spasm, cold stiffening and heat stiffening
 - b. Putrefaction, mummification, adipocere and maceration.
 - c. Estimation of time of death.
 - d. Embahning.
7. Inquest by police and magistrate.
8. Identification.
 - a. Definition, corpus delicti
 - b. Identify of living persons; race, age, sex, religion, complexion, stature.
 - c. Identification of criminals, unknown persons, dead bodies and remains of a persons by: hair fiber, teeth, anthropometry, dactylography, loot prints, scars, tattoos, poroscopy, DNA finger printings, Super-imposition.
9. Examination of mutilated human remains: Skeletal retains; and exhumation.
10. Medico legal autopsies -
 - a. Definition of a medico legal post mortem.
 - b. Difference between pathological and medico legal post mortem
 - c. Objectives, procedures, formalities of medico legal autopsies.
 - d. Obscure autopsy
 - e. Special procedures in suspected poisoning.
 - f. Precautions in autopsy of HIV infected body, radiation injury.
11. Mechanical injuries and wounds:
 - a. Definition, classification and differentiation of abrasion, contusion, laceration, chop wounds, incised wounds, stab wounds.
 - b. Accidents due to vehicles: Primary and secondary impact injury crush syndrome, reconstruction of accidents, railway injuries.
 - c. Differences between ante mortem and postmortem injuries.
 - d. Weapons: dangerous weapons and elementary ballistics.
 - e. Wounds due to weapons: Injuries by dangerous weapons fire arm wound blast injuries stab

- c. Differences between ante mortem and postmortem injuries.
 - d. Weapons: weapons, dangerous weapons and elementary ballistics.
 - e. Wounds due to weapons: Injuries by dangerous weapons, fire arm wound blast injuries, stab wounds, incised wound, defense cuts, hesitation cuts self inflicted injuries, fabricated wounds.
 - f. Workman's compensation act.
 - g. Justifiable homicide, culpable homicide and grievous injury.
12. Examination of an injury case:
- a. Differences between accidental; suicidal and homicidal injuries.
 - b. Types of injuries: simple and grievous.
 - c. Wound as a cause of death: primary, secondary.
 - d. Situation and character of wounds: number, direction, extent and age of injury.
 - e. Injuries of various sites.
 - Head: Scalp wounds, fracture of skull, coup, contra coup injuries.
 - Intracranial haemorrhages, its location and extent. Injury to brain, spinal cord, Thoracic, Abdominal, Pelvic viscera,
- f. Wound Certification.
13. Injuries due to physical agents, and their medicolegal importance; cold, heat burns, electricity and lightning.
14. Asphyxial deaths: definitions, causes, types, post mortem appearance and medico legal significance of suffocation, drowning, hanging, throttling, strangulation. Traumatic asphyxia, drowning, Lynching, judicial hanging, bansdola
15. Death due to malnutrition, neglect.
16. Dowry deaths.
17. a. Virginity: Definition and signs. Defloration
- b. Sexual Offences: Rape, Definition, examination of victim and the accused in case of rape, gang rape, custodial rape. Incest, Unnatural Offences –Tribdism, Bestiality, Buccal Coitus, Sodomy.
 - Sexual Perversions:- Sadism, Masochism, Transvestitism, Voyeurism, Indecent assault,
18. Legitimacy, paternity, disputed paternity, medicolegal significance of impotence. Sterility and artificial insemination; super-foetation and super-fecundation; atavism; sterilization.
19. Pregnancy and delivery: Pregnancy: signs of pregnancy in the living and in the dead, Delivery: signs of recent and remote delivery in the living and in the dead; Abortion: natural and artificial therapeutic miscarriage; complications of abortion; investigation in deaths due to abortion. Medical termination of pregnancy act of 1971.
20. Infanticide: Definition and Medico legal consideration: viability: determination of the age of the foetus' method of demonstration of centers of ossification rule of Haase, signs of live birth; Hydrostatic test. Maceration, post -mortem finding to differentiate still birth from a live birth. Battered Baby syndrome and Munchausen syndrome by proxy. Sudden infant death and cot death, Precipitate labour.
21. Biological fluids: examination, preservation, dispatch and identification of blood stains by micro chemical, spectroscopic and precipitation test. Blood grouping in disputed paternity; group specific substances; hazards of blood transfusion.
22. Seminal stains: examination, identification, collection, preservation, dispatch.
23. Bio-medical Waste: Types, potential risks and their safe management.

Desirable to know

Brief update on recent advances: HLA typing, DNA typing.

II. FORENSIC PSYCHIATRY

Must know

1. Definition, types of mental disorders, lucid interval.
2. Mental Health Act (1987).
3. Diagnosis of Mental illness and feigned mental illness.
4. Testamentary capacity, restraint, insanity with reference to civil and criminal responsibilities, doctrine of diminished responsibility, McNaughten's rule.

III. MEDICAL JURISPRUDENCE

1. Indian Medical Council and State Medical Councils: their disciplinary control
2. Indian Medical Register rights and privileges of registered medical practitioner, penal erasure, infamous conduct, and disciplinary committee.
3. Code and law of medical ethics, unethical practice, dichotomy, consumer protection act
4. Professional secrecy, privileged communication.
5. Malpractice: civil, criminal and ethical.
6. Consent, negligence, vicarious liability, the doctrine of Res Ipsa Loquitur, contributory negligence. Consumer Protection Act.
7. Duties of a medical practitioner towards his patient and the society.
8. Human organ Transplantation Act of 1994.
9. PNDT Act. (Revised 1994)
10. Sex determination by Amniocentesis.
11. Euthanasia.
12. Torture medicine
13. The Biomedical Waste (Management & Handling) (Second Amendment) Rules, 2000.

IV TOXICOLOGY

Must know

1. General aspects of poisoning

IV TOXICOLOGY

Must know

1. General aspects of poisoning
Duties of doctor in cases of poisoning, medicolegal autopsy ill poisoning, preservation and dispatch of viscera for chemical analysis. Role of Forensic Science laboratory. Laws related to poisons.
2. Types of poison, diagnosis, principles of therapy and medico legal aspects of:
 - a. Corrosive poisons; strong mineral acids like carbolic acid, oxalic acid, Sulphuric acid, Nitric acid, Hydrochloric acid, Alkalies.
 - b. Metallic poisons: Lead, Mercury, Copper, Arsenic.
 - c. Animal poisons: Snakes, Scorpions, Bees, Wasps.
 - d. Deliriant: Dhatura, Cannabis and Cocaine
 - e. Somniferous agents: Opium, Morphine and Pethidine
 - f. Inebriants: Methyl and ethyl alcohol.
 - g. Gaseous poisons: Carbon monoxide, carbon dioxide, War gases.
 - h. Anaesthetic agents: Chloroform and ether.
 - i. Cardiac poisons: Aconite, Cerebra thevatia and Nerium odorum, Oleanders, Hydrocyanic acid.
 - j. Miscellaneous: Aspirin, Paracetamol, Barbiturates, Diazepam and Antihistamines
 - k. Insecticides: Organophosphorous compound, Endrin, Kerosene, Turpentine, Rodenticides.
 - l. Food poisoning: Botulism.
 - m. Organic vegetables: Abrus, Calotropis.

Desirable to know

- a. Inorganic non metallic poisons: phosphorous.
- b. Metallic poisons: Antimony, Nitrites and Arsenic
- c. Vegetable Alkaloids.
- d. Spinal poisons: strychnine
- e. Paralytic agents.
- f. War gases and industrial gases: MIC
- g. Sedatives: Chloral hydrate and Bromides.
- h. Mechanical Poisons.
- i. Drug Dependence.

PRACTICALS

1. Demonstration of ten medico legal autopsies
2. Age estimation from bones, x-rays, dentition
3. Injuries and weapons
4. Examination of intoxicated persons
5. Possible videotape of examination of victim and accused in sexual offences
6. Specimens of poisons

SKILLS

1. Examine & prepare certificates in the following medico-legal situations:
 - a) injured patient
 - b) sexual offences
 - c) determination of age
 - d) intoxicated patient
2. Prepare proper certificates of birth and death
3. Prepare dying declaration
4. Give evidence in a court of law as an expert witness
5. Collect and do proper labeling, preservation and dispatch of medico-legal specimens
6. Witness and record the finding and issue a report for a medico legal autopsy
7. Diagnose and manage common acute and chronic poisonings

PRACTICAL EXERCISES

1. Medico Legal Autopsies - Witnessing and recording (10 cases)
2. Age estimation of an individual by Physical, Dental and Radiological examination
3. Examination of skeletal remains
4. Study of:
 - a) Lethal Weapons
 - b) Wet specimen / models / Photography / Micro slides - Like sperms, Diatoms, Hairs, Human & Animal RBCs.
 - c) Poisons
5. Medical certificates / Medico-legal reports, Physical fitness, sickness and death certificates, injury report, drunkenness, sexual offences.
6. Students should be taken to courts whenever possible to acquaint themselves with the court proceedings.

Note: Practical Exercises conducted shall be entered in the practical record book edited and published by Karnataka Medico legal society.

RECOMMENDED BOOKS:

1. Narayanareddy K.S., The Essentials of Forensic Medicine & Toxicology, 25th Edition, 2006, Published by K. Suguna Devi, Hyderabad.
2. Apurbanandy, Principles of Forensic Medicine, 2nd Edition, 2001, Pages 606, Published by New Central Book Agency.
3. Parikh C.K., Parikh's Textbook of Medical Jurisprudence and Toxicology, 7th Edition, 2001, CBS. Publishers, Bangalore.
4. Chhoberi P.V., Forensic Medicine - Orient Longman Limited

- Central Book Agency.
3. Parikh C.K., Parikh's Textbook of Medical Jurisprudence and Toxicology, 7th Edition, 2001, CBS. Publishers, Bangalore.
 4. Guharaj P.V., Forensic Medicine, -, Orient Longman Limited.
 5. C.A. Franklin, Modi's Medical, jurisprudence and Toxicology, 21st Edition, Rs. Published by M. Tripathi Private Limited, Bombay.
 6. Parikh C.K., Medico Legal Post Mortem in India. Published by Medical Publication.
 7. Keith Simpson, Bernard Knight, Forensic Medicine, Ninth Edition, 1985, ELBS.
 8. Pillay V.V., Text Book of Forensic Medicine, Paras Publication, III edition, 2004.
- * Specification mentioned such as edition, number of pages, cost etc., subject to change with newer edition.

MEDICINE

Course Description

As specified by Medical Council of India

a) Goal

The broad goal of teaching of undergraduate students in Medicine is to have the knowledge, skills and behavioral attributes to function effectively as the first contact physician.

b) Objectives

Knowledge

At the end of the course, the student shall be able to:

1. Diagnose common clinical disorders with special reference to infectious diseases, nutritional disorders, tropical and environmental diseases.
2. Outline various modes of management including drug therapeutics especially dosage, side effects, toxicity, interactions, indications and contra-indications.
3. Propose diagnostic and investigative procedures and ability to interpret them.
4. Provide first level management of acute emergencies promptly and efficiently and decide the timing and level of referral, if required.
5. Recognize geriatric disorders and their management.

Skills

At the end of the course, the student shall be able to:

- (1) Develop clinical skills (history taking, clinical examination) to diagnose various common medical disorders and emergencies.
- (2) Refer a patient to secondary and/or tertiary level of health care after having instituted primary care.
- (3) Perform simple routine investigations like haemogram, stool, urine, sputum and biological fluid examinations.
- (4) Assist the common bedside investigative procedures like pleural tap, lumbar puncture, bone marrow aspiration/biopsy and liver biopsy.

Integration

- (1) With Community Medicine and Physical Medicine and Rehabilitation to have the knowledge and be able to manage important current national health programmes, also to be able to view the patient in his/her total physical, social and economic milieu.
- (2) With other relevant academic inputs which provide scientific basis of clinical medicine e.g. anatomy, physiology, biochemistry, microbiology, pathology and pharmacology.

Departmental Objectives

At the end of clinical postings in General Medicine, the medical student will:

- Be able to evaluate each patient as a person in society and not merely as a collection of organ systems.
- Have developed an interest in and care for all types of patients.
 - Be able to discern the hopes and fears of patients, which inevitably underlie the symptom complexes and know how to handle these emotions, both in himself and in others.
- Possess adequate knowledge in the sciences of Medicines and be able to
 - Elicit a good clinical history, and physical findings, elucidate the clinical problems based on these and discuss the means of solving the problems by the use of differential diagnosis.
- Requisition for relevant laboratory tests and perform common side lab procedures.
- Outline the principles of management of various diseases.
- Have an open attitude to the developments in medicine so as to be aware of the need to keep abreast of new knowledge.
- Learn to be adaptable to new ideas and new situations where resources may be limited.
 - Possess knowledge of and perform certain procedures.
 - Understand the ethical and legal implications of his medical decisions.

c) Course Contents

Knowledge

I. Clinical methods in the practice of medicine

1. Clinical approach to the patient: The art of medicine, doctor patient relationship, communication skill and doctor's responsibilities.
2. Clinical Approach to disease and care of patient; Diagnostic possibilities based on interpretation of history, physical findings and laboratory investigations and principles of rational management.

II. Common symptoms of disease

1. Pain: Pathophysiology, clinical types, assessment and management
2. Fever: Pathophysiology of heat regulation, its disturbances, clinical types, clinical assessment and management

- II. Common symptoms of disease
 1. Pain: Pathophysiology, clinical types, assessment and management
 2. Fever: Pathophysiology of heat regulation, its disturbances, clinical types, clinical assessment and management.
 3. Cough, expectoration and hemoptysis.
 4. Dyspnoea, tachypnea, and cyanosis.
 5. Common urinary symptoms including dysuria, oliguria, nocturia, polyuria, incontinence and enuresis.
 6. Edema and Anasarca.
 7. Shock and cardiovascular collapse.
 8. Cardiac murmurs: functional and organic.
 9. Anorexia, nausea and vomiting.
 10. Constipation and diarrhoea.
 11. Hematemesis, melena and hematochezia.
 12. Jaundice and hepatomegaly.
 13. Abdominal swelling and ascites.
 14. Weight loss and weight gain.
 15. Fainting, syncope and seizures; headache, dizziness and vertigo.
 16. Paralysis, movement disorders and disorders of gait,
 17. Coma and other disturbances of consciousness.
 18. Pallor and bleeding.
 19. Enlargement of lymphnodes and spleen.
 20. Joint pain, and pain in the extremities and back.
- III. Nutrition/Exposure to Physical and Chemical Agents
 1. Nutrition and dietary management.
 - i) Nutritional requirements.
 - ii) Protein calorie malnutrition in adults.
 - iii) Obesity.
 - iv) Vitamin deficiency and excess.
 2. Fluid and electrolyte balance; acidosis and alkalosis in particular relevance to vomiting, diarrhoea, uremia and diabetic ketoacidosis.
 3. Poisoning: phenobarbitone, organophosphorous compounds, sedative/hypnotic, and other common poisons in the locality.
 4. Acute and chronic effects of alcohol and their management.
 5. Venoms, stings, insect bites: poisonous snakes, insects and scorpions.
 6. Disturbances of temperature: heat stroke, heat exhaustion and cold exposure.
 7. Drowning, electrocution and radiation hazards.
- IV. Infections
 1. Approach to infectious diseases, diagnostic and therapeutic principles.
 2. General principles of rational use of antibiotics and other chemotherapy against the following:
 - i) Common gram positive infections.
 - ii) Common gram negative infections.
 - iii) Enteric fever.
 - iv) Cholera, gastroenteritis, food poisoning and dysentery
 - v) Influenza and other common viral respiratory infections
 - vi) Rabies.
 - vii) Tetanus.
 - viii) Herpes simplex and herpes zoster.
 - ix) Amoebiasis and worm infestations.
 - x) Malaria, filariasis, leishmaniasis.
 - xi) Common exanthemata.
 - xii) HIV infections and infections in the immuno-compromised conditions.
 - xiii) Common sexually transmitted diseases.
 - xiv) Common fungal infections.
 - xv) Viral encephalitis.
 - xvi) Tuberculosis.
 - xvii) Leprosy.
 - xviii) Infectious mononucleosis
 - xix) Brucellosis
- V. Haematology
 1. Definition, prevalence, etiological factor, pathophysiology, pathology, recognition, investigations and principles of treatment of:
 - i) Anemias: iron deficiency, megaloblastic and common haemolytic anemias (thalassemia, sickle cell and acquired hemolytic).
 - ii) Common bleeding disorders (thrombocytopenia and hemophilia).
 - iii) Agranulocytosis and aplastic anemia.
 2. Leukemias.
 3. Lymphomas.
 4. Blood group and transfusion: Major blood group systems and histo compatibility complex, concepts of transfusion and component therapy; indications for transfusion therapy, precautions to be taken during blood transfusion, hazards of transfusion and safe handling of blood and blood products.
- VI. Respiratory System
 1. Physiology and diagnostic methods: Sputum examination, X-ray chest, pulmonary function tests

to be taken during blood transfusion, hazards of transfusion and safe handling of blood and blood products.

VI. Respiratory System

1. Physiology and diagnostic methods: Sputum examination, X-ray chest, pulmonary function tests and bronchoscopy.
2. Upper respiratory infections.
3. Pneumonias.
4. Bronchiectasis and lung abscess.
5. Bronchial asthma and tropical eosinophilia.
6. Chronic obstructive airway disease and cor pulmonale.
7. Acute and chronic respiratory failure.
8. Disease of pleura: effusion, empyema, pneumothorax.
9. Pulmonary tuberculosis.
10. Neoplasms of lung.
11. Common occupational lung diseases.

VII. Cardio vascular System

1. ECG, X-rays chest with reference to common cardiovascular diseases.
2. Coronary artery disease.
3. Rheumatic fever and rheumatic heart disease.
4. Infective endocarditis.
5. Hypertension and hypertensive heart disease.
6. Acute and chronic heart failure.
7. Common congenital heart disease in adolescents and adults: ASD, VSD, PDA, TOF and Coarctation of aorta.
8. Common cardiac arrhythmias.
9. Acute and chronic pericarditis, pericardial effusion and cardiac tamponade.
10. Common aortic diseases; peripheral vascular disease: arterial and venous.

VIII. Gastro-Intestinal, Tract

1. Stool examination, endoscopy in reference to common gastrointestinal diseases.
2. Acid peptic disease.
3. Malabsorption syndrome.
4. Inflammatory bowel disease and irritable bowel syndrome.
5. Acute and chronic hepatitis.
6. Cirrhosis of liver.
7. Abdominal tuberculosis.

IX. Emergency Medicine

1. Cardiopulmonary resuscitation.
2. Acute pulmonary oedema.
3. Hypertension emergencies.
4. Diabetic keto acidosis and hypoglycemia.
5. Status epilepticus.
6. Acute severe bronchial asthma.
7. Shock and anaphylaxis.
8. Acute myocardial infarction.
9. Upper GI bleeding and hepatic coma.
10. Diagnosis and management of comatose patient.
11. Management of unknown poisoning.

X. Neurological System

1. Cerebro vascular diseases.
2. Meningitis: viral, bacterial and tuberculous.
3. Peripheral neuropathy.
4. Epilepsy.
5. Extra pyramidal diseases.
6. Common compressive and non-compressive spinal cord syndromes.
7. Motor system disease, motor neuron disease.
8. Myasthenia gravis.
9. Common myopathies
10. Degenerative, nutritional and metabolic diseases of the nervous system.

XI. Nephrology and Urinary System

1. Acute renal failure.
2. Chronic renal failure.
3. Glomerulo nephritides and nephrotic syndrome.
4. Urinary tract infections / pyelonephritis.
5. Tubulointerstitial diseases and toxic neuropathies.

XII. Connective Tissue Disorders

1. Rheumatoid arthritis.
2. Degenerative joint disease including cervical spondylosis.
3. Systemic lupus erythematosus, systemic sclerosis and other collagen vascular diseases.
4. Gout.

XIII. Endocrines

1. Diabetes mellitus.
2. Hypo and hyperthyroidism; Iodine deficiency disorders.
3. Cushing's syndrome and Addison's disease.
4. Pituitary disorders: Acromegaly and Sheehan's syndrome

1. Diabetes mellitus.
2. Hypo and hyperthyroidism; Iodine deficiency disorders.
3. Cushing's syndrome and Addison's disease.
4. Pituitary disorders: Acromegaly and Sheehan's syndrome.
5. Calcium and phosphorus metabolism: parathyroid and metabolic bone disease.

XIV. Geriatrics

Geriatric medicine: general principles of dealings with health problems of the elderly.

Skills

1. Obtain a proper relevant history, and perform a humane and thorough clinical examination including internal examinations (per-rectal and per-vaginal) and examinations of all organs/systems.
2. Arrive at a logical working diagnosis after clinical examination.
3. Order appropriate investigations keeping in mind their relevance (need based) and cost effectiveness.
4. Plan and institute a line of treatment which is need based, cost effective and appropriate for common ailments taking into consideration:
 - i) Patient.
 - ii) Disease.
 - iii) Socio-economic status.
 - iv) Institutional/governmental guidelines.
5. Recognise situations, which call for urgent or early treatment at secondary, and tertiary centers and make a prompt referral of such patients after giving first aid or emergency treatment.
6. Assess and manage fluid/electrolyte and acid-base imbalance.
7. Interpret abnormal biochemical laboratory values of common diseases.
8. Interpret skiagrams of common diseases.
9. Identify irrational prescriptions and explain their irrationality.
10. Interpret serological tests such as VDRL, ASLO, Widal, HIV, Rheumatoid factor, Hepatitis and TORCH infections.
11. Demonstrate empathy and humane approach towards patients, relatives and attendants.
12. Demonstrate interpersonal and communication skills befitting a physician in order to discuss the illness and its outcome with patient and family.
13. Develop a proper attitude towards patients, colleagues and other staff.
14. Maintain an ethical behavior in all aspects of medical practice.
15. Develop a holistic attitude towards medicine taking in social and cultural factors in each case.
16. Obtain informed consent for any examination/procedure.
17. Appreciate patients right to privacy.
18. Write a complete case record with all necessary details.
19. Write a proper discharge summary with all relevant information.
20. Write a proper referral note to secondary or tertiary centers or to other physicians with all necessary details.
21. Assess the need for and issue proper medical certificates to patients for various purposes.
22. Adopt universal precautions for self protection against HIV and hepatitis and counsel patients.
23. Perform skin sensitivity tests for drugs and serum.
24. Record and interpret ECG and be able to identify common abnormalities like myocardial infarction and arrhythmias.
25. Start intravenous line and infusion.
26. Do venous cutdown.
27. Give intm dermal, subcutaneous, intm muscular, intra venous injections.

SURGERY

Course Description

a) Goal

The broad goal of the teaching of undergraduate students in Surgery is to enable them capable of delivering efficient first contact surgical care,

b) Objectives

Knowledge

At the end of the course, the student shall be able to:

- (1) Describe aetiology, pathophysiology, principles of diagnosis and management of common surgical problems including emergencies, in adults and children;
- (2) Define indications and methods for fluid and electrolyte replacement therapy including blood transfusion;
- (3) Define asepsis, disinfection and sterilization and recommend judicious use of antibiotics;
- (4) Describe common malignancies in the country and their management including prevention;
- (5) Enumerate different types of anaesthetic agents, their indications, mode of administration, contra indications and side effects.

Skills

At the end of the course, the student should be able to:

- (1) Diagnose common surgical conditions both acute and chronic, in adult and children;
- (2) Plan various laboratory tests for surgical conditions and interpret the results;
- (3) Identify and manage patients of haemorrhagic, septicemic and other types of shock,
- (4) Be able to maintain patent air-way and resuscitate.

- (2) Plan various laboratory tests for surgical conditions and interpret the results;
- (3) Identify and manage patients of haemorrhagic, septic and other types of shock;
- (4) Be able to maintain patent air-way and resuscitate.
 - (i) a critically injured patient;
 - (ii) patient with cardio-respiratory failure;
 - (iii) a drowning case;
- (5) Monitor patients of head, chest, spinal and abdominal injuries, both in adults and children;
- (6) Provide primary care for a patient of burns;
- (7) In the situations identified in SI. No: 3, 4, 5, and 6, calling for urgent or early surgical intervention, refer at the optimum time to appropriate centres;
- (8) Acquire principles of operative surgery, including pre-operative, operative and post operative care and monitoring;
- (9) Treat open wounds including preventive measures against tetanus and gas gangrene;
- (10) Diagnose neonatal and paediatric surgical emergencies and provide sound primary care before referring the patient to secondary/tertiary centers;
- (11) Identify congenital anomalies and refer them for appropriate management

In addition to the skills referred above in items (1) to (10), he shall have observed/assisted/performed the following:

- (a) Incision and drainage of abscess;
 - (b) Debridement and suturing open wound;
 - (c) Venesection;
 - (d) Excision;
 - (e) Biopsy of surface malignancy;
 - (f) Catheterisation and nasogastric intubation;
 - (g) Circumcision;
 - (h) Meatotomy;
 - (i) Vasectomy;
 - (j) Peritoneal and pleural aspirations;
 - (k) Diagnostic proctoscopy;
 - (l) Hydrocele operation;
 - (m) Endotracheal intubation;
 - (n) Tracheostomy and cricothyroidotomy;
 - (o) Chest tube insertion.
- (12) Counsel and guide patients and relatives regarding need, implications and problems of surgery in the individual patient;
 - (13) Develop adequate and right attitude in dealing with surgical problems of patients;
 - (14) Organise and conduct relief measures in situations of mass casualties.
 - (15) Effectively participate in the National Health Programmes especially the Family Welfare Programme.
 - (16) Discharge effectively medico-legal and ethical responsibilities.

Integration

The undergraduate teaching in surgery shall be integrated at various stages with different pre and para and other clinical departments,

c) Course Contents

1. Introduction to Surgery, Historical background and progress made.
2. Haemorrhage and Shock:
 - a. Etiology b. Pathology c. Symptomatology, d. Management
3. Fluid, Electrolyte and Acid Base Balance, Nutrition
 - a. Introduction to Physiology of fluids and Electrolytes
 - b. Dehydration and over hydration
 - c. Specific electrolyte losses and symptomatology and management.
 - i. Hypokalaemia ii. Hyponatraemia iii. Hypocalcaemia iv. Acidosis
 - v. Alkalosis vi. Acid Base balance
 - d. Electrolyte changes in specific diseases
 - i. Pyloric obstruction ii. Intestinal obstruction iii. Anuria
 - e. Various replacement fluids in Surgery, mode of administration and complications.
 - f. Blood grouping, Blood transfusion and its hazards
 - g. Nutrition - pre-operative, post-operative, intravenous alimentation.
4. Skin tumours, Burns, Skin Grafting
5. Arterial diseases:
 - a. Investigations
 - b. Assessment of a case of peripheral vascular disease
 - c. Thrombosis and Embolism
 - d. Thromboangitis obliterans
 - e. Arterio sclerosis
 - f. Atherosclerosis and Aneurysms
 - g. Gangrene
 - h. Conservative management of an ischaemic limb
 - i. Surgical management of an ischaemic limb - direct arterial surgery.
6. Venous diseases:
 - a. Varicose veins
 - b. Superficial and deep vein thrombosis
 - c. Chronic venous ulcers.
7. Lymphatics and Lymphnodes:

- a. Varicose veins
 - b. Superficial and deep vein thrombosis
 - c. Chronic venous ulcers.
7. Lymphatics and Lymphnodes:
- a. Lymphangitis and lymphatic obstruction (filariasis)
 - b. Diseases of lymphnodes
 - i. Acute inflammation
 - ii. Chronic inflammation
 - iii. The Reticulosis
8. Wounds, wound healing and wound management
9. Acute non-specific and specific infections
10. Chronic, specific infections
11. Tumours, Cysts, Ulcers and Sinuses and Fistulae
12. Infections of the hand and foot
13. Diseases of muscles, tendons, bursae and fascia.
14. Hernia' Inguinal hernia, b. Femoral hernia, c. Umbilical hernia d. Epigastric hernia
- e. Incisional Hernia- Complications and Management
15. Umbilical Granuloma
16. Umbilical Fistula
17. Umbilical adenoma or raspberry turnout
18. Abdominal wall - Anatomy, Incisions, Burst abdomen, Desmoid tumor.
- 19. FACE:**
- a. Development and Congenital anomalies
 - b. Cleft lip and cleft palate
 - c. Carcinoma lip
 - d. Rodent ulcer
 - e. Fascio-Maxillary injuries
- 20. TEETH:**
- a. Dental Caries, Alveolar abscess
- 21. GUMS:**
- Gingivitis and pyorrhoea, tumours of the alveolus (epulis), odontomes, tumors of the jaw.
- 22. MOUTH:**
- a. Ranula
 - b. Cancrum Oris
 - c. Lingual and Sublingual dermoids
 - d. Carcinoma cheek
- 23. TONGUE:**
- a. Hyperkeratosis and leukoplakia
 - b. Carcinoma tongue
- 24. SALIVARY GLANDS:**
- a. Inflammation
 - b. Salivary calculi
 - c. Neoplasm
- 25. NECK:**
- a. Branchial cyst and fistula
 - b. Cystic Hygroma and solitary lymphatic cyst
 - c. Thoracic outlet syndrome
 - d. Cervical lymphadenitis
 - e. Differential diagnosis of swellings of the neck
 - f. Sternomastoid tumor.
- 26. THYROID GLAND, THYROGLOSSAL TRACT AND ENDOCRINES**
- a. Development, Anatomy, Physiology and Investigations
 - b. Different Non-toxic goitre, Toxic goitre
 - c. Single nodule in the thyroid gland
 - d. Hashimoto's disease
 - e. Riedel's thyroiditis
 - f. Carcinoma of the thyroid
 - g. Thyroglossal cyst and fistula
 - h. Parathyroids and adrenals and thymus.
- 27. BREAST:**
- a. Anatomy and lymphatic drainage
 - b. Inflammation of the breast
 - c. Benign breast diseases, nipple discharge
 - d. Malignant tumors of the breast
- 28. SYMPATHETIC SYSTEM:**
- a. Anatomy

- d. Malignant tumors of the breast
- 28. SYMPATHETIC SYSTEM:**
 - a. Anatomy
 - b. Indications for sympathectomy
 - c. Cervical sympathectomy
 - d. Lumbar sympathectomy
- 29. CRANIO - CEREBRAL INJURIES:**
 - a. Mechanism, Pathology and Investigations and Management
 - b. Cerebral concussion, contusion and laceration
 - c. Acute extradural haematoma
 - d. Acute intracerebral and chronic subdural haematoma
 - e. Acute intracerebral haematoma
 - f. Fractures of the skull

30. DISEASES OF THE BRAIN:

- a. Intracranial abscesses
- b. Intracranial tumors
- c. Hydrocephalus

31. DISEASES OF THE NERVES:

- a. Injuries of nerves and nerve regeneration
 - b. Facial nerve
- c. Radial, Ulnar and Median nerve, Lateral P0pliteal nerve

32. GENITO URINARY SYSTEM:

Symptomatology and investigations of a genito-urinary case

KIDNEYS AND URETER:

- a. Congenital anatomy -Polycystic kidney
- b. Trauma
- c. Anuria and dialysis
- d. Hydronephrosis
- e. Renal and Ureteric calculi
- f. Tuberculosis of kidney
- g. Neoplasms

33. URINARY BLADDER:

- a. Congenital anomaly- Ectopia vesicae
- b. Trauma- Rupture bladder
- c. Retention of urine and cystitis
- d. Vesical calculi

34. PROSTATE:

- a. Surgical anatomy
- b. Benign enlargement
- c. Carcinoma

35. URETHRA:

- a. Rupture
- b. Stricture and its complications

36. PENIS, TESTIS AND SCROTUM:

Penis: a. Phimosis, Paraphimosis, Pre-cancerous conditions of the penis, Carcinoma penis.

Testis: a. Undescended testis and testicular torsion

- b. Varicocele
- c. Hydrocele and Haematocele
- d. Tubercular epididymitis and acute epididymo-orchitis
- e. Neoplasms

Scrotum: Fournier's gangrene, Carcinoam-scrotum

VASECTOMY AND RECANALISATION:

- a. Indications
- b. Techniques
- c. Complications with special on family planning

37. CARDIOTHORACIC SYSTEM:

- a. Injuries to the thorax
- b. Infections: i. Empyema thoracis
 - ii. Suppurative conditions of the lungs and pleura
- c. Malignancy: i. Carcinoma of the lungs
 - ii. Miscellaneous

OESOPHAGUS:

- a. I) Investigations of G.I.tract-gncral
 - II) Dysphagia, differential diagnosis, investigations, management
- b. Achalasia cardia
- c. Reflux ocsophagitis and hiatus hernia
- d. Carcinoma oesophagus

38. STOMACH AND DUODENUM:

- c. Reflux oesophagitis and hiatus hernia
- d. Carcinoma oesophagus
- 38. STOMACH AND DUODENUM:
 - a. Congenital pyloric stenosis
 - b. Acute dilatation of the stomach
 - c. Peptic ulcer
 - d. Complications of Peptic ulcer
 - e. Malignancy
- 39. SPLEEN:
- 40. LIVER
 - a. Trauma
 - b. Liver abscess
 - c. Portal hypertension
 - d. Neoplasms of the liver
 - e. Cysts of the liver
- 41. GALL BLADDER AND BILE DUCTS
 - a. Anatomy and Physiology
 - b. Investigations
 - c. Cholelithiasis
 - d. Cholecystitis
 - e. Obstructive Jaundice
- 42. PANCREAS:
 - a. Acute pancreatitis
 - b. Chronic pancreatitis
 - c. Pancreatic cysts
 - d. Carcinoma pancreas.
- 43. PERITONEUM:
 - a. Acute and chronic peritonitis
 - b. Subphrenic abscess
 - c. Mesenteric cyst
 - d. Abdominal Tuberculosis
- 44. INTESTINES:
 - a. Congenital deformities
 - b. Surgical aspects of intestinal amoebiasis
 - c. Crohn's disease
 - d. Ulcerative colitis
 - e. Large intestinal tumors
- 45. INTESTINAL OBSTRUCTION:
 - a. Pathology
 - b. Signs and symptoms
 - c. Management
- 46. SPECIFIC OBSTRUCTIONS:
 - a. Intussusception
 - b. Volvulus of sigmoid and small bowel
 - c. Paralytic ileus.
- 47. APPENDIX:
 - a. Appendicitis
 - b. Complications and Management
 - c. malignancy
- 48. RECTUM AND ANAL CANAL:
 - a. Anatomy
 - b. Imperforate anus
 - c. Ano-rectal abscess
 - d. Haemorrhoids, Fissures, Fistulae
 - e. Ano-Rectal carcinoma
 - f. Rectal polyp
 - g. Prolapse rectum

Recommended Books

1. Baily & Love, A Short Practice of Surgery, Ed. 23, (International Students Editions); 2000
2. Das S, Clinical Methods in Surgery, Ed. 4, S Das 13 Old Mayors, Calcutta; 1996.

OBSTETRICS AND GYNECOLOGY

Course Description

Obstetrics and Gynaecology is a branch of medicine that deals with the female reproductive system and the fetus during pregnancy, childbirth, and the postnatal period.

Course Description

Obstetrics and Gynaecology to include family welfare and family planning

a) Goal

The broad goal of the teaching of undergraduate students in Obstetrics and Gynaecology is that he/she shall acquire understanding of anatomy, physiology and pathophysiology of the reproductive system and gain the ability to optimally manage common conditions affecting it.

b) Objectives

Knowledge

At the end of the course, the student shall be able to:

- (1) Outline the anatomy, physiology and pathophysiology of the reproductive system and the common conditions affecting it;
- (2) Detect normal pregnancy, labour, puerperium and manage the problems he/she is likely to encounter therein;
- (3) List the leading causes of maternal and perinatal morbidity and mortality;
- (4) Understand the principles of contraception and various techniques employed, methods of medical termination of pregnancy, sterilisation and their complications;
- (5) Identify the use, abuse and side effects of drugs in pregnancy, pre menopausal and post-menopausal periods;
- (6) Describe the national programme of maternal and child health and family welfare and their implementation at various levels;
- (7) Identify common gynaecological diseases and describe principles of their management;
- (8) State the indications, techniques and complications of surgeries like Caesarean section, laprotomy, abdominal and vaginal hysterectomy, Fothergill's operation and vacuum aspiration for Medical Termination of Pregnancy (MTP).

Skills

At the end of the course, the student shall be able to:

- (1) Examine pregnant women, recognise high risk pregnancies and make appropriate referrals;
- (2) Conduct a normal delivery, recognise complications and provide postnatal care;
- (3) Resuscitate new born and recognise congenital anomalies;
- (4) Advise a couple on the use of various available contraceptive devices and assist in insertion and removal of intra-uterine contraceptive devices;
- (5) Perform pelvic examination, diagnose and manage common gynaecological problems including early detection of genital malignancies;
- (6) Make a vaginal cytological smear; perform a post coital test and wet vaginal smear examination for Trichomonas vaginalis, Monilia, Gram's stain for Gonorrhoea;
- (7) Interpret data of investigations like biochemical, histopathological radiological, ultrasound etc.

Integration

The student shall be able to integrate clinical skills with other disciplines and bring about coordination of family welfare programme for the national goal of population control.

e) Course Contents

OBSTETRICS

I. OBSTETRICS: BROADER PERSPECTIVES

1. Vital statistics, birth rate, maternal mortality, perinatal and neonatal mortality, live birth, still birth, abortion, period of viability including definition of all above

II. ANATOMY OF THE FEMALE REPRODUCTIVE TRACT

1. Basic Anatomy:

Relationship to other pelvic organs. Applied anatomy as related to Obstetrics and Gynaecological surgery

III. PHYSIOLOGY OF CONCEPTION

1. Ovulation, menstruation, fertilisation and implantation
2. Gametogenesis.

IV. DEVELOPMENT OF FOETUS AND PLACENTA

1. Basic embryology, factors influencing foetal growth and development, anatomy of placenta
2. Teratogenesis, placental barrier

V. DIAGNOSIS OF PREGNANCY

1. Clinical features, differential diagnosis, principles underlying the pregnancy tests
2. Immunological tests and their interpretation, ultrasonogram

VI. MATERNAL CHANGES IN PREGNANCY

1. Genital tract, cardiovascular system and Haematology
2. Respiratory and gastrointestinal system.

VII. ANTENATAL CARE

1. Objectives of antenatal care; assessment of period of gestation, detection of abnormality with the help of gravidogram; clinical monitoring of maternal and foetal well-being; detection of normal foetal pelvic relation (obstetrical palpation); advise regarding nutrition; prescribing in pregnancy; immunisation against tetanus; basic investigations.
2. Foetal well-being; biophysical monitoring; pelvic assessment.

VIII. NORMAL LABOUR

Physiology, mechanism in occipito anterior presentation, monitoring, partogram; conduct of labour; pain relief.

IX. ABNORMAL OBSTETRICS

Complications of early pregnancy

1. Abortions; definition, types, causes

- pain relief.
- IX. ABNORMAL OBSTETRICS**
 Complications of early pregnancy
 1. Abortions: definition, types, causes
 Management of incomplete, inevitable abortion
2. Recurrent abortions
3. Induced abortion.
 Aetiopathology, impact on maternal and foetal health, principals of management
4. Ectopic pregnancy: Causes, clinical features, differential diagnosis of acute abdomen, and conservative management of ectopic pregnancy and Principles of surgical management.
5. Trophoblastic diseases: Aetiopathology, clinical, features, differential diagnosis, principles of management, follow up.
 6. Laboratory investigations and ultrasonography in 1st trimester of pregnancy.
7. Hyperemesis gravidarum:
 Definition, aetiology, clinical features and management.
8. Pregnancy induced hypertension:
 a) Definition: early detection; investigations; principles and management of pregnancy induced hypertension and eclampsia
 b) Aetiopathology, differential diagnosis of convulsions in pregnancy, complications of eclampsia.
9. Anemia in pregnancy:
 Aetiology, classification, diagnosis, investigations, adverse effects in the mother and labour, management.
 10. Other medical disorders like heart disease/diabetes mellitus and urinary tract infection
 a) Clinical features; early detection; effect of pregnancy on the disease and impact of the disease on pregnancy
 b) Complications of the diseases
11. Gynaecological Disorders in Pregnancy:
 Fibroid in Pregnancy, ovarian tumour, Retroverted gravid uterus, Genital prolapse and pregnancy, Cancer cervix with pregnancy
- X. NORMAL PUERPERIUM**
1. Breast feeding
 Physiology of lactation, care of breasts; counseling regarding breast feeding, mastitis and breast abscess
2. Care of newborn
 Assessment of maturity, detect asphyxia, principles of resuscitation, common problems
- XI. MEDICAL TERMINATION OF PREGNANCY**
 1. Legal aspects; indications, methods; complications
 2. Management of complications.
- XII. FAMILY PLANNING AND CONTRACEPTION**
 Various methods and devices; selection of patients; counseling of couples; side effects; failures and complications; Laparoscopic sterilisation, Vasectomy, Tubectomy
- XIII. OPERATIVE OBSTETRICS**
 Indications; technique, and complications for episiotomy, vacuum extraction; low forceps, instrumental evacuation; menstrual regulation. Indications aris steps of operation; caesarean section; assisted breech delivery, external cephalic version; cervical cerclage; intra-amniotic instillation, Destructive operations.
 Post-caesarean pregnancy
 Risk, identification of scar dehiscence.
- XIV. PHARMACO-THERAPEUTICS IN OBSTETRICS**
 Oxytocin, Antihypertensives, Tocolytics, anticonvulsants, maternal drug in take etc.
- XV. SAFE MOTHERHOOD, OBSTETRICS CARE AND THE SOCIETY.**
- XVI. SPECIAL TOPICS IN OBSTETRICS**
 a. High Risk Pregnancy, Immunology in obstetrics, Intrapartum foetal monitoring, Foetal distress, Shock in obstetrics, Blood coagulation disorders in obstetrics.
b. Causes And Prevention Of Maternal Morbidity And Maternal Mortality In Hospital And Community Settings.
 c. Medico legal aspects.
 d. Day care in obstetrics.
 e. Reproductive and Child Health programme (RCH).
 f. Current topics in obstetrics; Women's Health; Gender issues.

GYNAECOLOGY

- I. PHYSIOLOGICAL VAGINAL DISCHARGE**
 1. Clinical characteristics: Biology of vagina, cytology of vagina, natural defence mechanism against infections, bacterial flora of vagina.
- II. PATHOLOGICAL VAGINAL DISCHARGE**
 1. Aetiology, characteristics; clinical recognition; investigation, treatment of common causes; genital hygiene.
- III. ABNORMAL AND EXCESSIVE MENSTRUAL BLEEDING**
- IV. AMENORRHOEA**

genital hygiene.

III. ABNORMAL AND EXCESSIVE MENSTRUAL BLEEDING

IV. AMENORRHOEA

1. Primary and Secondary amenorrhoea; Causes, principles of management

V. DYSFUNCTIONAL UTERINE BLEEDING

1. Aetiopathology, classification; clinical aspects and diagnosis, principles of investigation and management
2. Hormone therapy, management options

VI. FERTILITY AND INFERTILITY

1. Causes in male and female; Physical examination of both female and male partners; essential investigations and interpretation
2. Management options; principles of Medically Assisted Reproductive Technology (MART)

VII. ENDOMETRIOSES AND ALLIED STATES

1. Aetiopathology; clinical features; principles of investigation and management
2. Implications in health and fertility

VIII. GENITAL INJURIES AND FISTULAE

1. Injuries of female genital tract; Causes; prevention; clinical features; principles of management
2. Diseases of Urinary system

IX. GENITAL INFECTIONS INCLUDING STD, AIDS AND PELVIC TUBERCULOSIS, INFECTIONS AFFECTING INDIVIDUAL ORGANS

1. Aetiology, pathology, clinical features, differential diagnosis, principles of basic investigation and medical therapy
2. STD in the female
Tuberculosis of female genital tract
3. Long term implications; surgical management.

X. DISPLACEMENTS OF UTERUS, GENITAL PROLAPSE

1. Aetiology, clinical features; diagnosis principles of management; preventive aspects.

XI. BENIGN TUMOURS OF PELVIC ORGANS CERVICAL, UTERINE, OVARIAN

1. Aetiology, clinical features; diagnosis, principles of management; preventive aspects

XII. TUMOURS OF PELVIC ORGANS CENTRAL, UTERINE, OVARIAN

Aetiopathology, clinical features; differential diagnosis; principles of management

1. Carcinoma cervix
Aetiopathology, clinical features; classification, screening procedures, investigations, diagnosis and principles of management
2. Carcinoma of endometrium
3. Malignant ovarian tumors
4. Carcinoma vulva and miscellaneous
5. Radiotherapy in gynaecology
6. Chemotherapy in gynaecology
7. Imaging techniques in gynaecology
8. Endoscopy in gynaecology
9. Diseases of breast
10. Operative gynaecology
Dilatation & Curettage in gynaecology and fractional curettage
Endometrial biopsy and tubal patency test
Electric cauterisation of cervix, cryosurgery, cervical biopsy
Amputation of cervix, trachelorrhaphy
Fothergill's operation, vaginal hysterectomy with pelvic floor repair
Abdominal hysterectomy
Laparotomy for ovarian tumours.

Recommended Books

Obstetrics:

1. Mudaliar & Menon - Clinical Obstetrics, 9th edition, Orient Longman.
2. Dutta D.C., Text book of Obstetrics including Perinatology and Contraception, 4th edition, New Central Book Agency (P) Ltd., New Delhi, 1998.
3. Dawn C.S., Text book of Obstetrics and Neonatology, 14th edition, Dawn Books, Calcutta, 2000.
4. Holland and Brews, Text book of Obstetrics, 16th edition, B. I. Publication, New Delhi, 1998.
5. Shirish Iq. Daffery, Manual of Obstetrics, 16th edition, B I Churchill Livingstone, 1998.

Reference books

1. Williams Obstetrics- Cunningham, McDonald & Gant, 20th edition.
2. Dewhurst's Text book of Obstetrics & Gynaecology by Whitfield C.R, 5th edition.

Gynaecology

1. Padubidri V.G and Shirish N. Daffary, Shaw's A Text book of Gynaecology, 12th edition B. L Churchill Livingstone, New Delhi, 1999.Rs. 290.
2. Dutta DC, Text book of Gynaecology, 2nd edition, 1997.
3. Dawn CS, Text book of Gynaecology & Contraception, 12th edition, Dawn Books 1995.

Reference books

1. Jeffcoate Principles of Gynaecology, by V.R. Trindall, 5th edition, Bullerworth Heinmans, 1997.

PEDIATRICS

Pediatrics including Neonatology

a) Goals

The course includes systematic instructions in management of common diseases of infancy and childhood, evaluation of growth and development, nutritional needs, and immunization schedule in children, social pediatrics and counseling is also dealt in the course. The aim of teaching for undergraduate medical students is to impart appropriate knowledge and skills to optimally deal with major health problems and also to ensure optimal growth and development of children

b) Objectives

Knowledge

At the end of the course student will be able to:

1. Describe normal growth and development during foetal, neonatal, child and adolescence period.
2. Describe the common pediatric disorders and emergencies in terms of epidemiology, etiopathogenesis, clinical manifestations, diagnosis, rational therapy and rehabilitation.
3. State age related requirements of calories, nutrients, fluids, drugs etc. in health and disease.
4. Describe preventive strategies for common infectious disorders, poisonings, accidents and child abuse.
5. Outline national programmes relating to child health including immunization programmes.

Skills

At the end of the course, the student shall be able to:

1. Take a detailed pediatric history, conduct an appropriate physical examination of children including neonates, make clinical diagnosis, conduct common bedside investigative procedures, interpret common laboratory investigation results and plan and institute therapy.
2. Distinguish between normal newborn babies and those requiring special care and institute early care to all newborn babies including care of preterm and low birth weight babies.
3. Take anthropometric measurements, resuscitate newborn infants at birth, prepare oral rehydration solution, perform tuberculin test, administer vaccines available under current national programmes, perform venesection, start an intravenous line and provide nasogastric feeding.
4. Would have observed procedures such as lumbar puncture, liver and kidney biopsy, bone marrow aspiration, pleural tap and ascitic tap.
5. Provide appropriate guidance and counseling in breast feeding.
6. Provide ambulatory care to all sick children, identify indications for specialized/inpatient care and ensure timely referral of those who require hospitalization.
7. Be aware and analyse ethical problems that arise during practice and deal with them in an acceptable manner following the code of ethics.

Integration

The training in pediatrics should prepare the student to deliver preventive, promotive, curative and rehabilitative services for care of children both in the community and at hospital as part of a team in an integrated form with other disciplines eg. Anatomy, Physiology, Forensic medicine, Community Medicine and Physical Medicine and Rehabilitation.

c) Course Contents

VITAL STATISTICS:

1. Introduction to age related disorders
IMR, PMR, EPMR,
Child Mortality and Morbidity.

2. Preventive pediatrics

Different national programmes - ICDS, MCH, RCH, CSSM, IMCI, RCH

NEONATOLOGY:

3. High risk pregnancy and high risk neonates.
4. Classification of newborn & Gestational age assessment.
5. Normal newborn & newborn care.

GROWTH & DEVELOPMENT:

6. Growth and development, parameters of growth, growth monitoring.
7. Developmental milestone and assessment of development.

NUTRITION:

8. Normal nutritional requirements of different age groups.
9. Breast feeding & lactation failure management.
10. Infant feeding.
11. Protein Energy malnutrition Part I.
12. Protein Energy malnutrition Part II.
13. Vitamin deficiencies -Fat soluble.
14. Vitamin deficiencies - Water soluble.

INFECTIONS:

1. Exanthematous illness: Measles, Rubella, chickenpox, Mumps etc.
2. Typhoid fever.
3. Tuberculosis part- 1.
4. Tuberculosis part - 2.
5. Parasitic infestations.
6. Acute central nervous system infections - bacterial.
7. Acute central nervous system infections - viral.

1. Tuberculosis part 2.
5. Parasitic infestations.
6. Acute central nervous system infections - bacterial.
7. Acute central nervous system infections - viral.
8. Malaria- symposium.

NEONATOLOGY

9. Respiratory distress in new bom.
10. Birth Injuries
11. Low birth weight babies.
12. Congenital anomalies (Diaphragmatic hernia, Cleft palate, Cleft lip, Pyloric stenosis).

NEONATOLOGY:

1. Neonatal jaundice.
2. Prolonged cholestatic jaundice.
3. Neonatal infection.

GENETICS:

4. Genetic terminology and definitions, Common genetic disorders (Down Syndrome).

PEDIATRIC EMERGENCIES:

5. Shock in children.
6. Poisoning in Children - Prevention/Management
7. Snake bite and Scorpion sting.

CENTRAL NERVOUS SYSTEM:

8. Cerebral palsy.
9. Mental retardation other than cerebral palsy.
10. Hydrocephalus.
11. Seizure disorders (including febrile seizures).

GASTROENTEROLOGY:

12. Viral Hepatitis.
13. Cirrhosis of liver.

NEPHROLOGY:

14. Nephritis.
15. Nephrotic syndrome.
16. Urinary tract infection.

CARDIOLOGY:

17. Rheumatic fever.
18. Cyanotic congenital heart diseases.
19. Acyanotic congenital heart diseases.

ENDOCRINOLOGY:

1. Common endocrinal disorders - hypothyroidism.
2. Juvenile diabetes.
3. Short stature-evaluation.

RESPIRATORY SYSTEM:

4. Acute upper respiratory tract infections including Croup syndrome.
5. Acute LRTI (Pneumonia & Bronchiolitis).
6. Foreign body and suppurative lung disease.

EMERGENCIES:

7. Fluid & Electrolyte disturbances.

HAEMATOLOGY:

8. Leukemia lympho-reticular malignancy.
9. Nutritional anaemia.
10. Hemolytic anaemia

NEONATOLOGY:

11. Neonatal seizures

INFECTIONS:

12. HIV infection (prenatal / perinatal / postnatal)
13. Dengue hemorrhagic fever.

BEHAVIOURAL PROBLEM

14. Pica, Enuresis, Breath holding attack.

MISCELLANEOUS:

15. JRA.
16. Communication skills and counseling the parents.
17. Ethical consideration in pediatric practice with case illustrations (2 cases).

The topics for integrated teaching involving other faculties.

1. Bleeding & coagulation disorders.
2. Coma.
3. PUO.
4. Jaundice.
5. Anaemia.
6. High risk pregnancy and neonate (with Obstetrics and Gynecology).
7. Renal failure.
8. Rheumatic Heart Disease.
9. Portal hypertension.
10. Tuberculosis.
11. Malaria.
12. Fetal & postnatal development (with Obstetrics and Gynecology).
13. Cerebral palsy.

Demonstration:

1. Nutritional exhibition.
2. Immunisation:

Demonstration:

1. Nutritional exhibition.

2. Immunisation:

Administration of vaccines, vaccine preventable diseases, National immunization programme, individual vaccines, Newer vaccines, pulse polio, cold chain.

3. Gastroenteritis, DTU.

4. Bronchial asthma including management of status asthmaticus.

5. Resuscitation of newborn.

6. Developmental assessment.

7. Pediatric procedures.

Note: The number of classes mentioned are suggestive

Text Books Recommended

1. Indian Association of Pediatrics (IAP), Textbook of Pediatrics, Reprint, Jaypee.

2. Ghai O.P., Textbook of Pediatrics, 5 edn., Interprint, 1996.

3. Meharban Singh, Textbook of Neonatology, 5th edn., Sagar Publications.

4. Meharban Singh, Clinical Methods, 12th edn., W B Saunders and Company Ltd., 2000.

5. Hutchison's Clinical Methods, 20th Ed. Reprinted 1996.

Books for Selected Reading

1. Behrman and Vaughan, Nelson Textbook of Pediatrics, 18th edn., W.B.Saunders and Company.

2. Forfar & Ameal, Textbook of Pediatrics, 5th edn., Cambell & Meintosh.

PSYCHIATRY

Course Description

a) Goal

The aim of teaching the undergraduate student in Psychiatry is to impart such knowledge and skills that may enable to diagnose and treat common Psychiatric disorders, handle Psychiatric emergencies and to refer complicated/unusual manifestations and refer Psychiatric disorders to the specialist.

b) Objectives

Knowledge

At the end of the course, the student shall be able to:

- (1) Comprehend nature and development of different types of normal human behaviour like learning, memory, motivation, personality and intelligence;
- (2) Recognise difference between normal and abnormal behaviour,
- (3) Classify psychiatric disorders;
- (4) Recognize clinical manifestations of the following common syndromes and plan their appropriate management: organic psychosis, functional psychosis, schizophrenia, affective disorders, neurotic disorders, personality disorders, psycho-physiological disorders, drug and alcohol dependence, psychiatric disorders of childhood and adolescence;
- (5) Describe rational use of different modes of therapy in psychiatric disorders.

Skills

The student shall be able to

- (1) Interview the patient and understand different methods of communications in patient- doctor relationship;
- (2) Elicit detailed psychiatric case history and conduct clinical examination for assessment of mental status;
- (3) Define, elicit and interpret psycho-pathological symptoms and signs;
- (4) Diagnose and manage common psychiatric disorders;
- (5) Identify and manage psychological reactions and psychiatric disorders in medical and surgical patients in clinical practice and in community setting.

Integration

Training in Psychiatry shall prepare the students to deliver preventive, promotive, curative and rehabilitative services for the care of patients both in the family and community and to refer advance cases to a specialised Psychiatry/Mental Hospital. Training should be integrated with the department of Medicine, Neuro-Anatomy, Behavioural Sciences and Forensic medicine.

Departmental Objectives

At the end of the course, the student will be able to Comprehend nature and development of different aspects of normal human behavior like learning, memory, motivation, personality, and intelligence.

Recognize difference between normal and abnormal behaviour.

Classify psychiatric disorders.

Recognize clinical manifestations of common syndromes, and plan their appropriate management.

Describe rational use of different modes of therapy in psychiatric disorders.

c) Course Contents

1. History aspects of the diagnosis and treatment of mental illness; concept of mental health v/s mental illness; classification system currently in use in psychiatry.
2. Eliciting a detailed psychiatric history and conduction of a mental status examination; defining, eliciting and interpreting psycho pathological symptoms and signs.
3. Concept of underlying normal and abnormal human behaviour; principles of learning, memory, personality and intelligence; psychopathology (cf. Behavioral sciences).
4. Classification of the different types of psychoses; differences between psychoses and neuroses; difference between functional and organic psychoses.
5. Clinical features, diagnosis and management of:

4. Classification of the different types of psychoses; differences between psychoses and neuroses; difference between functional and organic psychoses.
5. Clinical features, diagnosis and management of:
 - a. Schizophrenia.
 - b. Mania and depression.
 - c. Anxiety disorders and hysteria.
 - d. Dementia.
 - e. Alcoholism.
 - f. Drug abuse.
6. Clinical recognition and initial therapy of psychiatric emergencies.
7. Clinical features, diagnosis and management of psychiatric disorders of childhood and adolescence.
8. Use of questionnaires in psychology.
9. Use of intelligence tests.
10. Personality disorders.

Skills

Do psychiatric evaluation and recognise common psychiatric illnesses.

ORTHOPAEDICS

a) Objectives

Knowledge

The student shall be able to:

- 1) Explain the principles of recognition of bone injuries and dislocations;
- 2) Apply suitable methods to detect and manage common infections of bones and joints;
- 3) Identify congenital, skeletal anomalies and their referral for appropriate correction or rehabilitation;
- 4) Recognize metabolic bone diseases as seen in this country;
- 5) Explain etiology, pathogenesis, manifestations, diagnosis of neoplasm affecting bones.

Skills

At the end of the course, the student shall be able to:

- (1) Detect sprains and deliver first aid measures for common fractures and sprains and manage uncomplicated fractures of clavicle, Colle's fracture, phalanges fractures;
- (2) Use techniques of splinting, plaster, immobilization;
- (3) Manage common bone infections;
- (4) Describe indications for sequestrectomy, amputations and corrective measures for bone deformities;
- (5) Advise aspects of rehabilitation for polio, cerebral palsy and amputation.

Application

Be able to perform certain orthopedic skills, provide sound advice of skeletal and related conditions at primary or secondary health care level.

Integration

Integration with anatomy, surgery, pathology, radiology and forensic medicine be done.

b) Course Contents

I. TRAUMATOLOGY:

Injuries of Bone and joint:

Fracture - general types - healing of fractures - principles and management - diagnosis - methods of reductions - immobilization --complications of fractures - management of open fractures - pathological fractures.

Injuries of shoulder - arm - forearm. Fracture clavicle, injuries of Acromio clavicular joints. Fracture scapula, upper end of humerus. Dislocation of shoulder-acute and recurrent. Fracture shaft humerus. Fractures around the elbow, radius, ulna.

Monteggia fracture, dislocation - Injuries around the wrist. Fracture scaphoid bone.

Dislocation of lunate.

Injuries of the hand: Incidence - closed injury - fracture - metacarpal - Bennett fracture & dislocation, open injuries - tendon injuries - tendon injuries

Pop slab application.

Injuries - Lower Extremity:

Dislocation of hip, Fracture neck of femur, trochanteric fracture, fracture shaft femur. Injuries of knee - fracture tibia - fracture dislocation ankle - fracture calcaneum. Traction splintage - below knee slab and above knee slab.

Injuries so the Spine:

Incidence - mechanism, types, clinical features - cord injury - traumatic Paraplegia, Nerve injury: Anatomy of a peripheral nerve- pathology - classification - diagnosis - management - Radial, Ulnar, Median, Sciatic, Lateral Popliteal.

Vascular Injuries:

Types, sub fascial compression, Brachial artery injury, Popliteal artery injury, Tibia artery injury.

Amputations: General indications - levels, technique above knee amputation, below knee stump, Syme's amputation - upper limb amputation, prosthesis.

COLD ORTHOPAEDICS:

I. Deformities: General - congenital - acquired - principles of management, splints, Club foot, CDM - Congenital skeletal limb deficiencies,

COLD ORTHOPAEDICS:

I. Deformities: General - congenital - acquired - principles of management, splints, Club foot, CDM - Congenital skeletal limb deficiencies,

II. REGIONAL CONDITIONS:

Neck - Torticollis - Inter vertebral disc prolapse. Cervical rib Shoulder, elbow - peri arthritis - painful arc syndrome, Tennis elbow,

Cubitus Varus - Valgus.

Wrist and Hand: wrist drop - claw hand, ganglion. Dupuytren's contracture, deQuervain's disease, trigger thumb - Carpal tunnel syndrome

Spine: Backache - examination - Spondylolisthesis

Hip: Clinical Examination - Perthe's disease

Knee: Genu valgum, varum, recurvatum- recurrent dislocation of Patella

Semi membranous - Bursa.

Foot: Planter Fasciitis - Flat foot - Foot drop

III. NEURO MUSCULAR DISORDERS:

Cerebral Palsy: Clinical features, management

Anterior Poliomyelitis: Pathology; clinical features management, surgery.

Leprosy: Pathology - Orthopaedic problems - Claw hand, Foot drop - Wrist drop -Rehabilitation.

Infections: Pyogenic osteomyelitis - acute, chronic, subacute - Brodie's abscess -Mycotic infection- Syphilitic lesions.

Metabolic disorders: Rickets - Osteomalacia - Osteopetrosis, Scurvy - Gout

Miscellaneous: Paget disease - Bone cyst - Medullary deformities

Diseases of joints: Clinical examination - synovial fluid: normal, septic arthritis -

Rheumatic and Rheumatoid diseases, Haemophilic arthritis.

IV. BONE AND JOINT TUBERCULOSIS:

Aetio pathogenesis - clinical features - management. Tuberculosis of spine, Pott's paraplegia, Tuberculosis of hip, knee and other joints.

Tumours: benign and malignant bone tumours

Benign: Osteo chondroma, Enchondroma

Malignant: Osteosarcoma, Osteoclastoma, Ewing's tumour, Multiple myeloma, secondaries

V. PHYSICAL MEDICINE AND REHABILITATION:

c) Books recommended

1. Natarajan M., Textbook of Orthopaedics - Vol. I & II

2. Maheshwari, Textbook of Orthopaedics.

3. Crawford Adams, Outline of Orthopaedics - Fractures and dislocation, 9th edition, ELBS, 1987.

4. Crawford Adams, Outline of Orthopaedics, Ed. 11, ELBS; 1990.

5. Baily & Love, A Short Practice of Surgery, Ed. 23, (International Students Edition); 2000.

6. Graham Apley, System of Orthopaedics.

7. Dss S, Clinical Methods in Surgery, Ed. 4, S Das 13 Old Mayors, Calcutta; 1996.

ANESTHESIOLOGY

Course Description

a) Objectives

At the end of the training, the students should be able to:

1. Enumerate different types of anaesthetic agents, their indications, mode of admission, contradictions and side effects;
2. Perform cardio-pulmonary resuscitation with the available resources and transfer the patient to a bigger hospital for advanced life support.
3. Set up intravenous infusion.
4. Clear and maintain airway in an unconscious patient.
5. Perform endotracheal intubation.
6. Administer oxygen correctly.
7. Perform simple nerve block

b) Course Contents

1. history and scope of anesthesiology
2. anatomy of upper airway;
3. physiology of respiration, O ₂ /O ₂ Transport, Various methods of oxygen therapy and its indications.
4. pre-Operative evaluation/ pre-medication
5. inhalation anaesthetic agents, stages of anaesthesia
6. the principles and mechanism of administration of general anaesthetics, Balanced anaesthesia
7. IPPV, endotracheal intubation
8. muscle relaxants
9. spinal / epidural anaesthesia
10. Local Anaesthesia: the pharmacology of local anaesthetics, their use and how to perform simple nerve blocks like -- infiltration anaesthesia, -- Digital block,

nerve blocks like -- infiltration anaesthesia, -- Digital block, -- Ankle block, -- pudendal and paracervical blocks, Management of complication of regional anaesthesiology.
11. Cardio pulmonary resuscitation (C P R) basic, including use of simple ventilator.
12. Monitoring
13. ICU, role of anaesthesiologists in ICU
14. shock
15. blood transfusion, and fluid electorol balance(Basic)
16. sites of respiratory obstruction and management of airway in an unconscious patient.
17. Poisoning
18. Role of anaesthesiologists in acute and chronic pain relidf.

Recommended Book

1. Dripps R.D. et. al., Introduction to Anaesthesia, W. B. Saunders, Philadelphia, 1972.
2. Lee J.A., Synopsis of Anaesthesia Loyd-Lukee, London.
3. Wylie W.D., A Practice of Anaesthesia, Yearbook Medical Publishers, Chicago, 1962

OPHTHALMOLOGY

Course Description

a) Goals and objectives:

MBBS Student at the end of training in Ophthalmology will be able to:

- Identify the abnormal conditions of the eye.
- Recognise and give medical treatment for those conditions, which are unlikely to cause blindness.
- Recognise and give immediate first aid treatment and arrange for immediate referral in those conditions threatening to produce blindness.
- Describe the national objectives in the prevention of blindness, and be an active participant in the implementation of National Programme for Control and Prevention of Blindness. (NPCB).

b) Course contents:

Theory

I) Introduction

II) Basic Sciences

1) Anatomy: Development of the eye.

Coats of the eye

Blood supply, Nerve supply of the eye.

Pupillary pathways, visual pathways.

Extra-ocular muscles. Ocular motor nerves.

2) Physiology: Physiology of vision.

Tear film.

Aqueous humor formation.

3) Pharmacology: Ophthalmic preparation and routes of administration.

Antibiotics, Antivirals and Anti-fungal drugs.

Cycloplegics, antiglaucoma drugs.

4) Pathology: Histopathology of Retinoblastoma, Malignant melanoma, squamous cell carcinoma, basal cell carcinoma etc.,

5) Elementary Optics: Reflection, refraction, Optical system of Normal eye, Reduced eye, Strum's conoid, Estimation of Refraction.

III) Diseases of the Eye

1) CONJUNCTIVA

MUST KNOW

Acute infective conjunctivitis: Bacterial conjunctivitis - purulent conjunctivitis, Ophthalmia neonatorum; Membraneous conjunctivitis.

Chlamydial conjunctivitis - Trachoma.

Viral conjunctivitis.

Allergic conjunctivitis: Simple, Phlyctenular, Vernal, Conjunctival Degenerations; terygium, Pinguecula, Concretions.

DESIRABLE TO KNOW:

Chronic conjunctivitis, Inclusion conjunctivitis, Pseudomembraneous conjunctivitis, Mucocutaneous diseases affecting conjunctiva, Conjunctival tumours.

2) CORNEA

MUST KNOW

Comeal ulcer :Etiology clinical features, complications and treatment of bacterial, viral and ungal corneal ulcers, Vitamin A deficiency and keratomalacia ,Exposure keratitis ,Ncruparalytic keratitis, Intertitial keratitis, Aetiology, clinical features and treatment. Basics of Eye donation and Keratoplasty.

DESIRABLE TO KNOW

Other forms of deep keratitis

paracardial keratitis, interstitial keratitis, Aetiology, clinical features and treatment. Basics of Eye donation and Keratoplasty.

DESIRABLE TO KNOW

Other forms of deep keratitis.
Degenerations and dystrophies of cornea ,keratoconus.
Kerato-refractive surgery.

3) SCLERA

MUST KNOW

Clinical features and differential diagnosis, investigations and treatment of Episcleritis and Scleritis .

DESIRABLE TO KNOW:

Scleromalacia perforans, Blue sclera.

4) UVEAL TRACT

MUST KNOW

Classification of Uveitis.
Acute anterior uveitis – aetiology,clinical features, complications differential diagnosis and management.

Purulent uveitis: Endophthalmitis, Pan-Ophthalmitis.

DESIRABLE TO KNOW

Association of systemic diseases in uveitis, Chronic uveitis, Cyclitis, Posterior uveitis
Degenerative changes in the uveal tract. Congenital anomalies - Coloboma of Iris and Choroid.

5) LENS

MUST KNOW

Classification of cataract

Senile cataract: Aetiology, clinical features and evaluation. Differential diagnosis from open angle glaucoma. Surgical management of cataract, and complications of cataract surgery.

Aphakic corrections Intra-ocular lens implantation, Congenital cataract - types.

Awareness of Amblyopia, assessment and early reference.

Degeneration and opacities

DESIRABLE TO KNOW

Other forms of cataract - Complicated, Traumatic, Metabolic, Toxic and After cataract.
Recent advances in cataract surgery-phacoemulsification

6) VITREOUS

Vitreous detachment, Asteroid hyalosis, Synchrony Scintillans,
Vitreous haemorrhage - causes and treatment.

7) GLAUCOMA

MUST KNOW

Classification

Angle closure glaucoma : Risk factors, mechanism, clinical features and management.

Differential diagnosis of Red Eye

Open angle glaucoma : Risk factors, cardinal signs, medical and surgical treatment.

Differential diagnosis from cataract.

Congenital glaucoma : Clinical features and management.

DESIRABLE TO KNOW

Secondary glaucomas - Lens induced, Inflammatory, Neovascular, Traumatic, Intraocular tumours,
Steroid induced.

8) RETINA

MUST KNOW

Fundus changes in: Diabetes mellitus, Hypertension, Toxaemia of pregnancy, Renal diseases, Haematological diseases, AIDS, Myopia.

Diabetic Retinopathy - Risk factors, assessment and treatment, role of Laser photo-coagulation.

Retinal vascular diseases - CRAO, CRVO, Eale's disease.

Retinal detachment: Risk factors, clinical features, treatment.

DESIRABLE TO KNOW

Retinal degeneration - Retinitis pigmentosa, Familial lipid degenerations.

Retinal infections - Toxoplasma, Toxocara, CMV.

Other: Phacomatosis.

9) OPTIC NERVE

MUST KNOW

Papilloedema: Aetiology and fundus picture differential diagnosis from Papillitis

Papillitis: Aetiology and fundus picture, Retrobulbar neuritis.

Optic atrophy - Primary, Secondary, Vascular, Glaucomatous.

DESIRABLE TO KNOW

Toxic amblyopia, Optic nerve coloboma.

10) INTRA-OCULAR TUMOURS

Retinoblastoma - Clinical features and treatment, differential diagnosis of leucocofia

Malignant melanoma - Clinical features and treatment.

11) SQUINT

Classification

Differentiation of esotropic and non esotropic squint, types, aetiology, assessment and principles of

Malignant melanoma - Clinical features and treatment.

11) SQUINT

Classification

Differentiation of paralytic and non paralytic squint, types, aetiology, assessment and principles of management of concomitant squint.

Awareness of Amblyopia, assessment & early reference.

12) ORBIT

Causes of proptosis

Clinical features and treatment of Orbital cellulitis and cavernous sinus thrombosis.

Common tumours of the orbit.

13) LACRIMAL SYSTEM

Causes of Epiphora

Aetiology, Clinical features, Complications and Management of congenital and acquired acute and chronic Dacryocystitis.

Dry Eye - Diagnosis and management.

14) LIDS

Inflammations - Blepharitis, Hordeolum

Anomalies in the position - Trichiasis, Entropion, Ectropion, Symblepharon,

Ankyloblepharon, Lagophthalmos, Ptosis, Turnouts of the lids.

15) REFRACTIVE ERRORS

MUST KNOW

Types, clinical presentation & optical correction of Myopia, Hypermetropia, Astigmatism, Presbyopia, Aphalida.

DESIRABLE TO KNOW -

Anisometropia, Anisokonia, Anomalies of Accommodation & Convergence.

16) INJURIES

MUST KNOW

Perforating injuries: Mechanical effects, immediate and late complications including Sympathetic ophthalmitis and Endophthalmitis. Immediate management and referral.

Contusion injuries: Mechanical effects, delayed complications and referral, Chemical burns, Immediate first-aid, assessment and referral.

DESIRABLE TO KNOW

Other forms of injuries, industrial, retained intraocular foreignbody.

Medico Legal Aspects of Injuries.

17) OPHTHALMIC SURGERY

Cataract surgery

Anti-glancoma operations.

Enucleation, Evisceration, Exentation, Dacryocystectomy. DCR

18) COMMUNITY OPHTHALMOLOGY

Definition and types of blindness.

Causes of blindness.

Objectives of NPCB and Trachoma control project.

Organisation of Ophthalmic screening and cataract surgery camps.

19) MISCELLANEOUS

Symptomatic disturbance of vision.

Hemianopia, Amblyopia, Amaurosis, Night blindness, Colour blindness, Word-blindness, Malingering.

Ocular emergencies - trauma, chemical burns, acute congestive glaucoma endophthalmitis, sudden loss of vision. Investigative Ophthalmology - Ophthalmic

ultrasound, computerised visual field testing, ERG, VEP, CT Scan.

Recent advances - types and uses of lasers in Ophthalmology.

Skills

i) Clinical Examination Skills

1. Visual acuity test. Use of pinhole.
2. Colour vision test.
3. Confrontation visual field test.
4. Cover test.
5. Ocular motility test.
6. Assessment of Corneal sensation - Wick test
Corneal surface - Placido's disc.
Corneal ulcer - Fluorescein staining.
7. Assessment of AC depth.
8. Pupillary size and reaction.
9. Distant Direct Ophthalmoscopy for lens opacities.
10. Direct Ophthalmoscopy.

ii) Procedures

1. Instillation of eye drops
2. Irrigation of conjunctival sac.
3. Ophthalmic patch and bandage.
4. Epilation of eye lashes.
5. Eversion of upper eye-lid.
6. Use of Lid retractors to examine infant's eyes *
7. Lacrimal syringing test *
8. Digital tonometry

5. Eversion of upper eye-lid.
6. Use of Lid retractors to examine infant's eyes *
7. Lacrimal syringing test *
8. Digital tonometry
9. Use of Schiötz tonometer *
10. Removal of extraocular foreignbody *
11. Sub-conjunctival injection *

*These procedures are for observation only.

Recommended Books

1. Stephen JH Miller, Parson's Diseases of the Eye, 18th Edition, Churchill Livingstone Pvt. Ltd., 1990 (Reprint 1994),
2. Keith Lyle, May & Worth's Manual of Diseases of the Eye, 13th Edition, CBS Publishers & Distributors, New Delhi.
3. Khurana AK, Ophthalmology, 1st Edition, 2000, New Age International (P) Ltd., New Delhi,
4. Khurana AK, Practical Ophthalmology, 1st Edition, 1996, New Age International (P) Ltd., New Delhi,
5. Vasudev Aanand Rao, Text Book of Diseases of the Eye, 3a Edition, 1999, All India Publishers and Distributors, Chennai,
6. Chatterjee BM, Handbook of Ophthalmology, 4th Edition, 1995, CBS Publishers and Distributors, New Delhi,
7. Agarwal ML, Gupta LC, Sanjeev Agarwal, Ophthalmology for Undergraduate Students, 1st Edition, 1996, Jaypee Brothers, New Delhi,
8. J Kanaski, Clinical Ophthalmology, 4th Edition, 1999, Reed Education & Professional Publishing,
9. Gupta AK, Usha K Raina, Alope Gupta, TextBook of Ophthalmology, 1a Edition, 1998, B. I. Churchill Livingstone, New Delhi,

OTORHINOLARYNGOLOGY

Course Description

a) Goals

The goal of training in this subject is to make the candidate familiar with common problems. He should be competent enough to diagnose and treat routine problems. He should be in a position to identify the cases, which require specialist care and identify the deaf individuals at the earliest and refer them for proper rehabilitation.

b) Objectives

At the end of the course, the student should be able to:

Knowledge

1. Describe surgical anatomy and physiology of Ear, Nose and Throat and Head and Neck
2. Describe basic Patho-Physiology of common ear, nose and throat diseases and emergencies.
3. Suggest common investigative procedure and their interpretation.
4. Describe common infective conditions of ENT and treat them.
5. Identify congenital deafness as early as possible.

Skills

1. Examine and diagnose common disorders of the Ear, Nose and Throat region and manage at first level of care.
2. Recognize premalignant and malignant cases of head and neck region at an early stage.
3. Remove foreign bodies in the ear and nose.
4. Perform life saving surgical procedures like tracheostomy.
5. Should be familiar with drainage of intra oral and neck abscesses.
6. Able to do anterior and posterior nasal packing to control epistaxis.

Integration

Neurosurgery - Knowledge of intracranial complications caused by diseases of ENT region (meningitis, intracranial abscess, cavernous sinus thrombophlebitis)

Ophthalmology - Knowledge of orbital complications of sinonasal disease.

General Surgery - General principal of surgical management like wound healing, acid base balance, blood transfusion and sterilization.

c) Course Contents

Diseases of the Ear

Surgical anatomy: external, middle and inner ear.

Physiology of hearing and vestibular function.

Examination of the Ear: Tuning Fork tests; hearing assessment in children – broad outline, referred pain in the ear, otalgia, tinnitus.

Deafness: Types and causes

Diseases of the external ear: perichondritis, otitis externa, cerumen, foreign body, furunculosis, keratosis.

Diseases of middle ear: Acute and Chronic suppurative otitis media, Obturans, Otitis media with effusion, Otosclerosis, Cholesteatoma.

Audiometry - pure tone

Functional examination of inner ear (vestibule): caloric test, positional nystagmus test

Deaf mutism.

Meniere's disease.

Complications of otitis media: Mastoiditis (acute and chronic), lateral Sinus thrombosis, labyrinthitis, otogenic brain abscess

Deaf mutism.

Meniere's disease.

Complications of otitis media: Mastoiditis (acute and chronic), lateral Sinus thrombosis, labyrinthitis, otogenic brain abscess.

Mastoidectomy- principles.

Tumours of the ear- Glomus, Acoustic neuroma.

Diseases of Nose and Para nasal sinuses (PNS)

Surgical anatomy and physiology of nose and P.N.S including olfaction.

Congenital diseases of the Nose, Cleft lip and Palate and Choanal Atresia.

Diseases of external nose - furunculosis, vestibulitis, Rhinophyma, rodent ulcer.

Trauma, nose & PNS - fracture of nasal bones, blowout fracture of orbit, fracture of maxilla with Leforte's classification.

Foreign body in the nose - Classification of foreign bodies & management of animate and inanimate foreign bodies, Rhinolith.

Causes of epistaxis and management.

Diseases of nasal septum- Haematoma, abscess, DNS, perforation.

Diseases of nasal cavity - Acute rhinitis, Nasal Diphtheria, Granulomatous conditions of the nose, allergic rhinitis, vasomotor rhinitis, atrophic rhinitis, fungal infections of nose and paranasal sinuses.

Diseases of PNS: Acute and Chronic sinusitis. Complications of sinusitis and management.

Sino nasal polyposis- Diagnosis and management.

Basic principles of FESS (Functional Endoscopic Sinus Surgery)

Tumours of the nose and PNS - Benign tumours like papilloma, inverted papilloma, fibrous dysplasia.

Malignant tumours like squamous cell carcinoma, Melanoma,

Olfactory neuroblastoma.

Diseases of the Nasopharynx

Surgical anatomy and physiology of nasopharynx.

Nasopharyngeal carcinoma --diagnosis and management.

Adenoid -diagnosis and management.

Juvenile angiofibroma: Diagnosis and management

Diseases of the Pharynx

Surgical anatomy and physiology of oral cavity, oropharynx, tonsils, Waldeyer's ring, Anatomy of retropharyngeal and parapharyngeal spaces.

Physiology of mastication.

Diseases of the tonsils: acute and chronic tonsillitis, Vincent's angina, Diphtheriatic tonsillitis - diagnosis and management.

Neck space infections and abscess - Retropharyngeal, parapharyngeal abscess, peritonsillar abscess, Ludwig's angina.

Surgical anatomy and physiology of salivary glands, submandibular Sialadenitis,

Salivary calculi, Parotitis, tumours of salivary glands.

Diseases of the Larynx

Surgical anatomy and Physiology of Larynx with reference to phonation and respiration.

Acute infection of the larynx - Acute laryngitis, LTB, Diphtheretic laryngitis, Acute epiglottitis.

Stridor - Causes of stridor and management.

Hoarseness of voice - History taking, causes, management.

Chronic infections of Larynx - Chronic nonspecific and specific laryngitis, granulomatous conditions of larynx.

Neurological infections of larynx - Cord palsy - Diagnosis and management.

Tumours of larynx - Diagnosis of laryngeal tumours and management.

Diseases of Trachea

Surgical anatomy of trachea, stridor, tracheostomy in detail.

Oesophagus

Surgical anatomy, physiology of deglutition.

Causes of dysphagia, diagnosis and management.

Diseases such as congenital atresia, injuries (traumatic and chemical),

Foreign body, Oesophagoscopy Neurological problems and oncology.

Bronchoscopy - Indication, contraindication and complications of foreign body in bronchus.

Recommended Books

1. Logan and Tumer's Diseases of the ENT, edited by AGB Maran (Wright), 10 Ed, Butter worth. K. M. Verghese & Co, Bombay,
2. Ramalingam KK, A Short Practice of Otolaryngology, 2nd Ed, All India Publishers and Distributors, Chennai,
3. Mohd Magbool, Text book of ENT Diseases, 8th Ed. Jaypee Publishers.
4. SK De Fundamentals of Ear, Nose and Throat, 6th Ed. The New Book Stall,
5. Ramanjaneyulu P, Diseases of Ear Nose & Throat, Paras Publishing.
6. Dhingra P. L. Diseases of Ear Nose & Throat 2nd Ed. Churchill Livingston.
7. Bhargava, Text book of ENT, 5th ed. Usha Publications, Mumbai,
8. Boies, Fundamentals of Otolaryngology.

References

1. Ballyntyne Groove - Synopsis of Otolaryngology
2. Ballenger - Text Book of Otorhinolaryngology
3. Saunders - Text Book of E.N.T.

DERMATOLOGY

(Including sexually transmitted diseases)

Course Description

a) Goal

The aim of teaching the undergraduate student in Dermatology, Sexually Transmitted Diseases (STD) and Leprology is to impart such knowledge and skills that may enable him to diagnose and treat common ailment and to refer rare diseases or complications/unusual manifestations of common diseases, to the specialist.

b) Objectives

Knowledge

At the end of the course of Dermatology, Sexually Transmitted diseases and Leprology, the student shall be able to:

- (1) Demonstrate sound knowledge of common diseases, their clinical manifestations, including emergent situations and of investigative procedures to confirm their diagnosis;
- (2) Demonstrate comprehensive knowledge of various modes of topical therapy;
- (3) Describe the mode of action of commonly used drugs, their doses, side-effects/toxicity, indications and contra-indications and interactions;
- (4) Describe commonly used modes of management including the medical and surgical procedures available for the treatment of various diseases and to offer a comprehensive plan of management for a given disorder.
- (5) Diagnose and manage emergencies specially recognizing the need for referral when appropriate and necessary.

Skills

The student shall be able to:

- (1) Interview the patient, elicit relevant and correct information and describe the history in a chronological order;
- (2) Conduct clinical examination, elicit and interpret physical findings and diagnose common disorders and emergencies;
- (3) Perform simple, routine investigative and laboratory procedures required for making bedside diagnosis, especially for STD cases; examination of scraping for fungus, preparation of slit smears and AFB staining for leprosy patients.
- (4) Take a skin biopsy for diagnostic purpose;
- (5) Manage common diseases recognizing the need for referral for specialized care in case of inappropriateness of therapeutic response.

c) Course Contents

I. Diseases caused by Nutritional and Environmental Factors

II. Infective Disorders: Pyodermas, Common Viral, and Common Fungal.

III. Melanocyte, Pigment Metabolism And Other Disorders of Pigmentation

1. Vitiligo: diagnosis.

2. Ichthyosis.

3. Disorders of Pigmentation: Albinism and Chloasma.

V. Allergic Disorders.

1. Urticaria, Atopic dermatitis, and Contact dermatitis.

VII. Dermatitis and Eczema

VIII. Vesiculobullous Diseases

1. Pemphigus

2. Vesiculobullous diseases: Pemphigoid and Dermatitis herpetiformis.

IX. Alopecia and Hirsutism

X. Structure and Functions of Sebaceous Glands and Diseases

1. Acne.

2. Seborrhoeic dermatitis.

3. Other Diseases of sebaceous glands.

4. Pityriasis capitis.

XI. Structure, Functions And Diseases Of Sweat Glands

1. Miliaria.

2. Hyperhidrosis.

XII. Leprosy

1. Pathology, Clinical features, Diagnosis, Reactions, Management, Deformities, and Control programme.

XIII. Psoriasis

XIV. Sexually transmitted diseases

1. Genital ulcerative diseases.

2. Genital discharge diseases.

XV. Dermatological therapy

XVI. Lichen Planus

Skills

1. Perform skin scrapings and do a KOH preparation for fungal infections.
2. Prepare slit skin and nasal smear for lepra bacilli.

SKILLS

1. Perform skin scrapings and do a KOH preparation for fungal infections.
2. Prepare slit skin and nasal smear for lepra bacilli.

Recommended Books

1. Davidson's Principles and Practice of Medicine. 18th Ed 1999, Churehil Livingston, London.
2. API Text Book of Medicine 6th Ed 1999.
3. Hutchison's Clinical Methods. 20th Ed Reprinted 1996.
4. Chambeifiain's Symptoms and Signs in Clinical Medicine 12th Edition 1997.

Reference Books

1. Harrison's Principles of Internal Medicine 14th Ed 1998, Mc. Grant Hill.
2. Macleod's Clinical Examination ISE 9th Ed 1995.

RADIOLOGY

(Radio Diagnosis and Radio Therapy)

a) Goal

The broad goal of teaching the undergraduate medical students in the field of Radio diagnosis should be aimed at making the students realise the basic need of various radio diagnostic tools in medical practice. They shall be aware of the techniques to be undertaken in different situations for the diagnosis of various ailments as well as during prognostic estimations.

b) Objectives

Knowledge

The student shall be able to:

- (1) Understand basic of x-rays production, its uses and hazards.
- (2) Appreciate and diagnose changes in bones – like fractures, infections, tumours and metabolic bone diseases;
- (3) Identify and diagnose various radiological changes in disease conditions of chest and mediastinum, skeletal system, Gastro intestinal Tract, Hepatobiliary system and Genito Urinary (G.U) system;
- (4) Learn about various imaging techniques, including isotopes Computerized Tomography (C.T), Ultrasound, Magnetic Resonance Imaging (M.R.I) and D.S.A.

Skills

At the end of the course the student shall be able to:

- (1) Use basic protective techniques during various imaging procedures;
- (2) Interpret common x-ray, radio-diagnostic techniques in various community situations;
- (3) Advise appropriate diagnostic procedures in specialized circumstances to appropriate specialists.

Departmental Objectives

At the end of the course in Radiodiagnosis, the student should:

- (1) Be familiar with various imaging techniques, their advantages and disadvantages.
- (2) Be aware of indications for common x-ray investigations and view to be taken for various organs.
Know the indications for C.T. Scan and Ultrasound.
- (3) Be aware of radiation hazards and protection with reference to self, patient and the public.

c) Course Contents

I. RESPIRATORY SYSTEM

1. Diagnosis of common conditions like tuberculosis, consolidation, pleural effusion, pneumothorax, lung abscess, collapse, bronchogenic carcinoma and mediastinal masses.
2. Differential diagnosis of mediastinal masses.
3. Indications for bronchography, tomography and CT scan.

II. CARDIOVASCULAR SYSTEM

1. Normal topography of heart, cardiomegaly.
2. Common rheumatic heart diseases and pericardial effusion.

III. GASTROINTESTINAL SYSTEM

1. Diagnosis of acute abdominal conditions like intestinal obstruction, perforation.
2. Indications and contraindications for Barium studies.
3. Differential diagnosis of calcification and stones on plain x-ray.
4. Diagnosis of gastric ulcer / duodenal ulcer / cancer stomach / oesophageal cancer on Barium studies.

IV. OBSTETRICS AND GYNAECOLOGY

1. Radiation hazards to a pregnant woman and child. Appropriate time to take x-rays during pregnancy and the number of views to be taken.

V. SKELETAL SYSTEM

1. Diagnosis of common fractures, caries spine, osteomyelitis of bones, nutritional deficiencies like rickets, and common bone tumours and diseases of joints.

VI. CENTRAL NERVOUS SYSTEM

- I. Signs of raised intra cranial tension, ICT on plain x-rays of skull.

VII. EXCRETORY SYSTEM

1. Identification of renal claculi.

Skill

1. Interpret skiagrams of common diseases.

8) RADIOTHERAPY

Skill

1. Interpret skiagrams of common diseases.

d) RADIOTHERAPY

Course Description

a) Goal

The broad goal of teaching the undergraduate medical students in the field of Radiotherapy is to make the students understand the magnitude of the ever-increasing cancer problem in the country. The students must be made aware about steps required for the prevention and possible cure of cancers.

b) Objectives

Knowledge

The student shall be able to:

- (1) Identify symptoms and signs of various cancers and their steps of investigations and management;
- (2) Explain the effect of radiation therapy in human beings and the basic principles involved in it;
- (3) Know about radioactive isotopes and their physical properties;
- (4) Be aware of the advances made in radiotherapy in cancer management and knowledge of various radio therapeutic equipment while treating a patient.

Skills

At the completion of the training programme, the student shall be able to:

- (1) Take a detailed clinical history of the case suspected of having a malignant disease;
- (2) Assist various specialists in administration of anticancer drugs and in application and use of various radiotherapeutic equipment, while treating a patient.

Departmental Objectives

At the end of training in Radiotherapy, the student should be able to:

- (1) Exhibit awareness of the principles of radiotherapy, the radio-responsiveness of various tumours and management of common cancers like cervical, breast and oral cancers.
- (2) Refer for further consultation at appropriate time without delay.
- (3) State general complications of irradiation and their management.
- (4) List common chemo-therapeutic drugs and toxicity of the same.
- (5) Implement health education programmes regarding prevention and early diagnosis of tobacco related cancers, cervical cancers, and breast cancers.
- (6) Know the general outlines of use of radio-isotopes in diagnosis and therapy.

c) Course Contents

1. Physical principles of radiotherapy.
2. Principles of chemotherapy.
3. Prevention of cancer.
4. Early diagnosis of cancer.
5. Principles of nuclear medicine.
6. Radio responsiveness of various tumours and management.
7. Common radiation reactions and management.
8. Radiotherapy in some of the commonly seen cancers.
9. Chemotherapy in certain cancers like childhood tumours, leukemia and lymphomas.
10. Radio-isotopes in diagnosis and therapy.