

Course Content

(Based on Medical Council of India, **Attitude, Ethics & Communication(AETCOM) Competencies** for the Indian Medical Graduate, 2018)

Applicable for batch admitted in M.B.B.S Course from Academic Year 2019-20 & onwards

Attitude, Ethics & Communication(AETCOM)

Year: First MBBS

Module No.	Topics & Subtopics	Assessment
1.1	What does it mean to be a doctor ?	Formative: with Internal Assessment examination as decided by respective dept. Summative: SAQ in Paper I : Human Anatomy
1.2	What does it mean to be a patient?	Formative: with Internal Assessment examination as decided by respective dept. Summative: SAQ in Paper I : Physiology
1.3	Doctor – patient relationship	Formative: with Internal Assessment examination as decided by respective dept. Summative: SAQ in Paper I : Physiology
1.4	The foundation of communication-1	Formative: with Internal Assessment examination as decided by respective dept. Summative: SAQ in Paper I : Biochemistry
1.5	The cadaver as our first teacher	Formative: with Internal Assessment examination as decided by respective dept. Summative: SAQ in Paper I : Human Anatomy

Course Content

Human Anatomy

First M.B.B.S. (From August 2019)

(Based on Medical Council of India, Competency based Undergraduate curriculum for the Indian Medical Graduate, 2018. Vol. 1; page no.41-90)

Teaching

Lectures(hours)-220

Self directed learning (hours)- 40 **hours**

Small group teachings/tutorials/Integrated teaching/Practicals(hours)-415
divided equally in all three subjects .

Total(hours) -675 Early clinical exposure(hours)- 90 to be

Competency No.	Topics & Subtopics
1	Anatomical Terminology
AN1.1	Anatomical position planes, movement in our body
AN1.2	Composition of bone & bone marrow
2	General features of bones & Joints
AN2.1	Parts, blood and nerve supply of long bone
AN2.2	Laws of ossification
AN2.3	Features of sesamoid bone
AN2.4	Cartilage
AN2.5	Types of Joints & examples
AN2.6	Nerve supply of joints & Hilton's law
3	General features of Muscle
AN3.1	Classification of muscles
AN3.2	Parts of skeletal muscle
AN3.3	Shunt and spurt muscles

4	General features of skin and fascia
AN4.1	Types of skin& dermatomes in body
AN4.2	Structure & function of skin
AN4.3	Superficial fascia
AN4.4	Deep fascia
AN4.5	Principles of skin incisions
5	General features of the cardiovascular system
AN5.1	Blood Lymph & vascular system
AN5.2	Pulmonary and systemic circulation
AN5.3	Arteries & Veins
AN5.4	Functional Classification of Vessels
AN5.5	Portal System
AN5.6	Anastomoses
AN5.7	Meta-arterioles, sphincters & AV anastomoses
AN5.8	Thrombosis, infarction & aneurysm
6	General Features of lymphatic system
AN6.1	Components & functions of Lymphatic system
AN6.2	Lymph capillaries & Circulation
AN6.3	Lymphoedema & tumor spread

7	Introduction to the nervous system
AN7.1	General plan & components of CNS, ANS, PNS.
AN7.2	Components of nervous tissue & functions
AN7.3	Classifications & parts of neuron
AN7.4	Typical spinal nerve
AN7.5	Principles of innervation of muscles
AN7.6	Loss of innervation of a muscle and applied anatomy
AN7.7	Synapse –types
AN7.8	Ganglia

8	Features of individual bones (Upper Limb)
AN8.1	Bones of upper limb
AN8.2	Joints formed by bones of upper limb
AN8.3	Peculiarities of clavicle
AN8.4	Muscle attachments of bones
AN8.5	Articulated hand
AN8.6	Scaphoid fracture
9	Pectoral region
AN9.1	Pectoralis major & pectoralis minor
AN9.2	Breast
AN9.3	Development of breast

10	Axilla, Shoulder and Scapular region
AN10.1	Boundaries & Contents of axilla
AN10.2	Axillary artery & Vein
AN10.3	Brachial plexus
AN10.4	Axillary lymphnodes
AN10.5	Variation in brachial plexus
AN10.6	Erb's Palsy & klumpke's paralysis
AN10.7	Enlarged axillary lymph nodes
AN10.8	Trapezius and latissimus dorsi
AN10.9	Anastomosis around the scapula & triangle of auscultation
AN10.10	Deltoid and rotator cuff muscles
AN10.11	Serratus anterior
AN10.12	Shoulder joint
AN10.13	Axillary nerve injury during IM injections

11	Arm & Cubital fossa
AN11.1	Biceps & triceps brachii
AN11.2	Important nerves and vessels in arm
AN11.3	Venipuncture of cubital veins
AN11.4	Saturday night palsy

AN11.5	Cubital fossa
AN11.6	Elbow joint anastomosis
12	Forearm & hand
AN12.1	Muscle groups of ventral forearm
AN12.2	Nerves & vessels of forearm
AN12.3	Flexor retinaculum
AN12.4	Carpal tunnel syndrome
AN12.5	Muscles of hand. movements of thumb
AN12.6	Movements of thumb
AN12.7	Vessels & nerves in hand
AN12.8	Claw hand
AN12.9	Fibrous flexor sheaths, synovial sheaths
AN12.10	Infection of Fascial spaces of palm
AN12.11	Muscle groups of dorsal forearm
AN12.12	Nerves and vessels of back of forearm
AN12.13	Wrist drop
AN12.14	Extensor retinaculum
AN12.15	Extensor expansion formation
13	General Features, Joints, radiographs & surface marking
AN13.1	Fascia, compartments, veins & lymphatic of upper limbs
AN13.2	Dermatomes of upper limbs
AN13.3	Joints of upper limb Elbow, Radio-ulnar, wrist & first carpometacarpal joint)

AN13.4	Joints of upper limb Sternoclavicular, Acromioclavicular, Carpometacarpal joints & Metacarpophalangeal joints
AN13.5	Radiographs of UL
AN13.6	Bony landmarks of UL
AN13.7	Surface projection of vessels, testing of muscle
AN13.8	Development of UL
14	Features of individual bones (Lower Limb)
AN14.1	Features of given bones
AN14.2	Joints formed by given bone
AN14.3	Importance of ossification of femur & tibia
AN14.4	Articulated foot
15	Front & Medial side of thigh
AN15.1	Nerves & vessels of thigh
AN15.2	Major Muscles
AN15.3	Femoral triangle
AN15.4	Psoas abscess & Femoral hernia
AN15.5	Adductor canal
16	Gluteal region & back of thigh

AN16.1	Nerves and vessels
AN16.2	Sciatic nerve injury
AN16.3	Trendelenburg sign
AN16.4	Hamstrings muscle
AN16.5	Nerve & vessels of back of thigh
AN16.6	Popliteal fossa

17	Hip Joint
AN17.1	Details of hip joint
AN17.2	Fracture neck of femur
AN17.3	Dislocation
18	Knee joint, Anterolateral compartment of leg & dorsum of foot
AN18.1	Major muscles
AN18.2	Nerves & vessels
AN18.3	Foot drop
AN18.4	Knee joint
AN18.5	Locking and unlocking
AN18.6	Knee joint injuries with its applied anatomy
AN18.7	Osteoarthritis
19	Back of leg & sole
AN19.1	Major muscles
AN19.2	Nerves & Vessels

AN19.3	Peripheral heart
AN19.4	Rupture of calcaneal tendon
AN19.5	Arches of foot
AN19.6	Flat & club foot
AN19.7	Metatarsalgia & plantar fasciitis
20	General Features, joints, radiographs & surface marking
AN20.1	Tibiofibular & ankle joint
AN20.2	Subtalar and transverse tarsal joints
AN20.3	Fascia, venous drainage, lymphatic Retinacula & dermatomes of Lower limb
AN20.4	Enlarged inguinal lymph nodes
AN20.5	Varicose veins & deep vein thrombosis
AN20.6	Radiographs of lower limb
AN20.7	Bony landmarks
AN20.8	Vessels of lower limb palpation
AN20.9	Surface projection nerves & veins
AN20.10	Development of lower limb
21	Thoracic cage
AN21.1	Sternum, Typical Rib, first Rib & typical thoracic vertebra
AN21.2	A typical Ribs & vertebra
AN21.3	Thoracic inlet, cavity and outlet

AN21.4	Intercostal muscles
AN21.5	Typical intercostal nerve
AN21.6	Intercostal vessels
AN21.7	A typical intercostal nerve subcostal artery, superior Artery
AN21.8	Joints of thorax
AN21.9	Mechanics of respiration
AN21.10	Costochondral & interchondral joints
AN21.11	Mediastinum
22	Heart & Pericardium
AN22.1	Pericardium
AN22.2	Each chamber of heart
AN22.3	Coronary arteries
AN22.4	Ischemic heart disease
AN22.5	Coronary sinus
AN22.6	Fibrous skeleton of heart
AN22.7	Conducting system of heart

23	Mediastinum
AN23.1	Oesophagus
AN23.2	Thoracic duct
AN23.3	Superior venacava , Azygos, hemiazygos & accessory hemiazygos veins
AN23.4	Arch of aorta & descending aorta

AN23.5	Thoracic sympathetic chain
AN23.6	Splanchnic nerves
AN23.7	Lymphatic duct
24	Lungs & Trachea
AN24.1	Pleura, Pleural, recess & applied anatomy
AN24.2	Root of lung & bronchial tree
AN24.3	Broncho pulmonary segment
AN24.4	Phrenic nerve
AN24.5	Blood Supply nerve supply Lymphatic drainage of Lungs
AN24.6	Trachea
25	Thorax
AN25.1	Draw & label microanatomy of trachea and lung
AN25.2	Development of pleura, lung & heart
AN25.3	Fetal circulation
AN25.4	Atrial septal defect, Ventricular septal defect, Fallot's tetralogy & Tracheo-oesophageal fistula
AN25.5	Transposition of great vessels, Dextrocardia, Patent ductus arteriosus & Coarctation of aorta
AN25.6	Development of aortic arch arteries, SVC, IVC & coronary Sinus.
AN25.7	Chest Radiograph AP & Lateral view
AN25.8	Barium swallow
AN25.9	Surface projection of pleura heart lungs
26	Skull osteology

AN26.1	Anatomy of skull bones
AN26.2	Skull Norma
AN26.3	Interior of skull
AN26.4	Mandible
AN26.5	Typical and Atypical cervical vertebrae (Atlas & axis)
AN26.6	Bones that ossify in membrane
AN26.7	7th cervical vertebra
27	Scalp
AN27.1	Scalp, Blood supply, nerve supply, Layers & Surgical importance
AN27.2	Emmissary veins
28	Face & parotid region
AN28.1	Facial muscles
AN28.2	Nerve supply of facial muscles
AN28.3	Facial vessels
AN28.4	Facial Nerve
AN28.5	Cervical Lymph node
AN28.6	Superficial muscles of face
AN28.7	Facial Nerve Palsy
AN28.8	Deep facial vein
AN28.9	Parotid gland
AN28.10	Frey's syndrome Can be covered with 28.3

29	Posterior triangle of neck
AN29.1	Sternocleidomastoid
AN29.2	Erb's & Klumpke's palsy
AN29.3	wry neck
AN29.4	Omohyoid, scalenus & levator scapulae

30	Cranial cavity
AN30.1	Cranial fossa
AN30.2	Foramina
AN30.3	Dural venous sinuses
AN30.4	Cavernous sinuses
AN30.5	Visual Pathways

31	Orbit
AN31.1	Extra ocular muscles
AN31.2	Nerves and vessels in the orbit
AN31.3	Horner's syndrome
AN31.4	Lacrimal apparatus
AN31.5	3rd, 4th & 6th Cranial Nerves

32	Anterior Triangle
AN32.1	Anterior triangle
AN32.2	Carotid, muscular, digastric and submental triangles

33	Temporal and Infratemporal regions
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AN33.1	Temporal & infratemporal fossae
AN33.2	Muscle of mastication
AN33.3	Temporomandibular joint
AN33.4	Pterygoid venous plexus
AN33.5	Dislocation with Temporomandibular joint
34	Submandibular region
AN34.1	Submandibular Salivary Gland & Ganglion
AN34.2	Submandibular stones
35	Deep Structures in the neck
AN35.1	Deep Cervical Fascia

AN35.2	Thyroid gland
AN35.3	Subclavian Artery
AN35.4	internal jugular & Brachiocephalic vein
AN35.5	Cervical lymph nodes
AN35.6	Cervical Sympathetic chain
AN35.7	IX, X, XI, & XII, Cranial nerve
AN35.8	Thyroid Swellings
AN35.9	Clinical features of compression by Cervical rib
AN35.10	Fascial Spaces of neck
36	Mouth, pharynx & palate

AN36.1	1) Soft palate 2) Palatine tonsil
AN36.2	Waldeyer's Lymphatic Ring
AN36.3	Pyramidal fossa & Applied
AN36.4	Tonsils & Adenoids with applied anatomy
AN36.5	Clinical significance of Killian's dehiscence
37	Cavity of Nose
AN37.1	Nasal septum, lateral wall of Nose,
AN37.2	Paranasal sinuses
AN37.3	Maxillary sinus –Applied Anatomy
38	Larynx
AN38.1	Intrinsic & Extrinsic muscles of larynx
AN38.2	Anatomical aspects of laryngitis
AN38.3	Recurrent laryngeal nerve Injury

39	Tongue
AN39.1	Tongue
AN39.2	XII Cranial hypoglossal Applied Anatomy
40	Organs of hearing and equilibrium
AN40.1	External ear

AN40.2	Middle ear
AN40.3	Internal ear
AN40.4	Applied Anatomy otitis externa / media
AN40.5	Myringotomy
41	Eyeball
AN41.1	Eyeball
AN41.2	Eyeball applied cataract, glaucoma & central retinal artery occlusion
AN41.3	Intraocular muscles
42	Back region
AN42.1	Vertebral canal
AN42.2	Sub occipital triangle
AN42.3	Semi spinalis capitis & Splenius Capitis
43	Head & neck joints, Histology, Development , Radiography & surface marking
AN43.1	Movements with muscles producing the movements of atlantooccipital joint & atlantoaxial joint
AN43.2	Pituitary , Thyroid, parathyroid & Salivary gland tongue, Epiglottis, Cornea, Retina
AN43.3	Microanatomy of olfactory epithelium, Eyelid, lip. Optic nerve, pineal gland
AN43.4	Development and anomalies of face, palate, tongue, brachial apparatus pituitary gland, Thyroid, Eye
AN43.5	Muscles of facial Expression, extraocular muscles palpation of carotid, superficial temporal, facial arteries, location of internal jugular & Ext. jugular veins. hyoid bone, thyroid cartilage, cricoid cartilage

AN43.6	Surface anatomy thyroid, parotid gland common carotid artery, IJV, SCV, EJV, facial artery.
AN43.7	X-Ray skull AP & Lat. view
AN43.8	Carotid & vertebral Angiogram
AN43.9	Structures in carotid & vertebral angiogram
44	Anterior abdominal wall
AN44.1	Planes, Quadrants of abdomen.
AN44.2	Fascia, nerves & Blood supply of ant. Abdominal wall.
AN44.3	Rectus sheath
AN44.4	Inguinal canal
AN44.5	Inguinal Hernia
AN44.6	Muscles of Ant. Abdominal wall
AN44.7	Common Abdominal Incisions
45	Posterior abdominal wall
AN45.1	Thoracolumbar fascia
AN45.2	Lumbar plexus
AN45.3	Back muscles
46	Male external genitalia
AN46.1	Testis & its descent
AN46.2	Epididymis
AN46.3	Penis
AN46.4	Varicocele
AN46.5	Phimosis & circumcision

47	Abdominal cavity
AN47.1	Lesser & Greater sac
AN47.2	Peritoneal folds & pouches
AN47.3	Ascites & peritonitis
AN47.4	Sub phrenic Abscess

AN47.5	Major Viscera
AN47.6	Accessory spleen, Kehr's sign, Vagotomy, Liver biopsy
AN47.7	Calot's triangle
AN47.8	Portal vein, Inferior Vena Cava, Renal vein
AN47.9	Abdominal aorta, coeliac trunk
AN47.10	Portosystemic Anastomosis
AN47.11	Portal Hypertension
AN47.12	Nerve plexus post. Abdominal wall.
AN47.13	Thoraco abdominal diaphragm
AN47.14	Diaphragmatic Hernia

48	Pelvic wall and viscera
AN48.1	Muscles of pelvic diaphragm
AN48.2	Male & female pelvic viscera
AN48.3	Internal iliac Artery
AN48.4	Sacral plexus
AN48.5	BPH, Uterine anomalies anal fistula
AN48.6	Automatic bladder

AN48.7	BPH & prostate cancer
AN48.8	P/V & P/R examination
49	Perineum
AN49.1	Sup. & deep perineal pouch
AN49.2	Perineal body
AN49.3	Perineal Membrane in male & female
AN49.4	Ischiorectal fossa
AN49.5	Perineal tear, episiotomy perineal abscess & Anal fissure
50	Vertebral Column
AN50.1	Curvatures of vertebral Column

AN50.2	Intervertebral joint & sacroiliac joint, Pubic symphysis
AN50.3	Lumbar puncture
AN50.4	Scoliosis, lordosis, PID, Spina bifida, Spondylolisthesis
51	Sectional Anatomy
AN51.1	Cross section at T8, T10, & L1
AN51.2	Midsagittal section male & female pelvis
52	Histology & Embryology
AN52.1	GIT
AN52.2	Excretory system
AN52.3	Cardiooesophageal junction, Corpus luteum

AN52.4	Development of anterior abdominal wall
AN52.5	Congenital anomalies of Diaphragm
AN52.6	Congenital anomalies of foregut midgut hindgut
AN52.7	Urinary System Development
AN52.8	Reproductive system Development
53	Osteology
AN53.1	Bone – Identification, anatomical position, articulations & attachments
AN53.2	Bony pelvis
AN53.3	Bones of abdominopelvic region
AN53.4	Clinical importance of bones of abdominopelvic region
54	Radio diagnosis
AN54.1	KUB plain X Ray abdomen
AN54.2	(contrast X ray Barium swallow, Barium meal, Barium enema,) Cholecystography, intravenous pyelography & Hysterosalpingography
AN54.3	ERCP, CT abdomen, MRI Arteriography in radio diagnosis of abdomen

55	Surface marking
AN55.1	Surface projections of regions and planes of abdomen , superficial inguinal ring, deep inguinal ring, Mc Burney's point, renal angle & murphy's point
AN55.2	Surface marking of stomach, Liver, Fundus of gall bladder, Spleen, Duodenum, Pancreas, Ileocaecal junction, Kidneys & Root of mesentery
56	Meninges & CSF

AN56.1	Various layers of meninges with its extent & modifications
AN56.2	Formation and circulation of CSF with its applied anatomy
57	Spinal Cord
AN57.1	External features of spinal cord
AN57.2	Extent of spinal cord in child & adult with its clinical implication
AN57.3	Transverse section of spinal cord at mid-cervical & midthoracic level
AN57.4	Ascending & descending tracts at mid thoracic level of spinal cord
AN57.5	Describe anatomical basis of syringomyelia
58	Medulla Oblongata
AN58.1	External features of medulla oblongata
AN58.2	Transverse section of medulla oblongata at the level of 1) pyramidal decussation 2) sensory decussation 3) ION
AN58.3	Cranial nerve nuclei in medulla oblongata with their functional group
AN58.4	Anatomical basis & effects of medial & lateral medullary Syndrome
59	Pons
AN59.1	External features of pons
AN59.2	Transverse section of pons at the upper and lower level
AN59.3	Cranial nerve nuclei in pons with their functional group
60	Cerebellum
AN60.1	External & internal features of cerebellum
AN60.2	Connections of cerebellar cortex and intracerebellar nuclei
AN60.3	Anatomical basis of cerebellar dysfunction

61	Midbrain
AN61.1	External & internal features of midbrain
AN61.2	Internal features of midbrain at the level of superior & inferior colliculus
AN61.3	Anatomical basis & effects of benedikt's and weber's syndrome
62	Cranial nerve nuclei & cerebral hemispheres
AN62.1	Cranial nerve nuclei with its functional component
AN62.2	Surfaces, sulci, gyri, poles & functional areas of cerebral hemisphere
AN62.3	White matter of cerebrum
AN62.4	Parts & major connections of basal ganglia & limbic lobe
AN62.5	Boundaries, parts, gross relation, major nuclei and connections of dorsal thalamus, hypothalamus, epithalamus, metathalamus and subthalamus
AN62.6	Formation, branches & major areas of distribution of circle of willis
63	Ventricular System
AN63.1	Parts, boundaries & features of 3 rd , 4 th & lateral ventricle
AN63.2	Describe anatomical basis of congenital hydrocephalus
64	Histology & Embryology
AN64.1	Micro anatomical features of spinal cord, cerebellum & cerebrum
AN64.2	Development of neural tube, spinal cord, medulla oblongata, pons, midbrain, cerebral hemisphere & cerebellum

AN64.3	Various types of open neural tube defects with its embryological basis
65	Epithelium histology
AN65.1	Types of epithelium under the microscope & describe the various types that correlate to its function
AN65.2	Ultrastructure of epithelium
66	Connective tissue histology
AN66.1	Various types of connective tissue with functional correlation

AN66.2	Ultrastructure of connective tissue
67	Muscle histology
AN67.1	Various types of muscle under the microscope
AN67.2	Classification of various types of muscle and describe the structure-function correlation of the same
AN67.3	Ultrastructure of muscular tissue
	Nervous tissue histology
AN68.1	Multipolar & unipolar neuron, ganglia, peripheral nerve
AN68.2	Structure-function correlation of neuron
AN68.3	Ultrastructure of nervous tissue
69	Blood Vessels
AN69.1	Elastic & muscular blood vessels, capillaries under the microscope
AN69.2	Various types and structure-function correlation of blood vessel
AN69.3	Describe the ultrastructure of blood vessels
70	Glands & Lymphoid tissue
AN70.1	Various exocrine gland under the microscope & distinguish between serous, mucous and mixed acini

AN70.2	Identify the lymphoid tissue under the microscope & describe microanatomy of lymph, node, spleen, thymus, tonsil and correlate the structure with function
71	Bone & Cartilage
AN71.1	Bones under the microscope classify various types & describe the structure – Function correlation of the same
AN71.2	Structure of cartilage under the microscope & describe various types and structure-function correlation of the same
	Integumentary system
AN72.3	Skin and its appendages under the microscope and correlate the structure with function
	Chromosomes
AN73.1	Structure of chromosomes with classification
AN73.2	Technique of karyotyping with its applications
AN73.3	Lyon's hypothesis

	Patterns of inheritance
AN74.1	Various modes of inheritance with examples
AN74.2	Pedigree charts for the various types of inheritance & give examples of diseases of each mode of inheritance
AN74.3	Multifactorial inheritance with examples
AN74.4	Genetic basis & clinical features of Achondroplasia, Cystic Fibrosis, Vitamin D resistant rickets, Haemophilia, Duchene's muscular dystrophy & sickle cell anaemia
75	Principle of Genetics, Chromosomal Aberrations & Clinical Genetics
AN75.1	Structural and numerical chromosomal aberrations
AN75.2	Mosaics and chimeras with example
AN75.3	Genetic basis & clinical features of prader willi syndrome, Edward syndrome & patau syndrome
AN75.4	Genetic basis of variation : polymorphism and mutation

AN75.5	Principles of genetic counselling
76	Introduction to embryology
AN76.1	Stages of human life
AN76.2	Phylogeny, ontogeny, trimester, viability
77	Gametogenesis and fertilization
AN77.1	Uterine changes occurring during the menstrual cycle
AN77.2	Synchrony between the ovarian and menstrual cycles
AN77.3	Spermatogenesis and oogenesis along with diagrams
AN77.4	Stages and consequences of fertilization
AN77.5	Anatomical principles underlying contraception
AN77.6	Teratogenic influences, Fertility & sterility, surrogate motherhood, social significance of "sex-ratio".
78	Second week of development
AN78.1	Cleavage and formation of blastocyst
AN78.2	Development of trophoblast
AN78.3	Process of implantation & common abnormal sites of implantation
AN78.4	Formation of extra –embryonic mesoderm and coelom, bilaminar disc and prochordal plate
AN78.5	Abortion; decidual reaction, pregnancy test
79	3rd to 8th week of development
AN79.1	Formation & fate of the primitive streak
AN79.2	Development of trophoblast , fate of Notochord
AN79.3	Process of neurulation

AN79.4	Describe the development of somites and intra-embryonic coelom
AN79.5	Embryological basis of congenital malformations, nucleus pulposus, sacrococcygeal teratomas, neural tube defects
AN79.6	Describe the diagnosis of pregnancy in first trimester and role of teratogens, alpha-fetoprotein
80	Fetal membranes
AN80.1	Formation , functions & fate of chorion; amnion; yolk sac; allantois & decidua
AN80.2	Formation & structure of umbilical cord
AN80.3	Formation of placenta, its physiological functions, foetomaternal circulation & placental barrier
AN80.4	Embryological basis of twinning in monozygotic & dizygotic twins
AN80.5	Role of placental hormones in uterine growth & parturition
AN80.6	Embryological basis of estimation of fetal age.
AN80.7	Various types of umbilical cord attachments
81	Prenatal Diagnosis
AN81.1	Various methods of prenatal diagnosis
AN81.2	Indications, process and disadvantages of amniocentesis
AN81.3	Indications, process and disadvantages of chorion villus biopsy
82	Ethics in anatomy
AN82.1	Respect and follow the corrected procedure when handling cadavers and other biologic tissue

Paper wise distribution of topics for Prelim & MUHS Annual Examination

Year: First MBBS Subject: Anatomy

Paper	Section	Topics
I	A	MCQs on all topics of the paper I
	B & C	Superior extremity
		General embryology
		Genetics
		Head , neck , face
		Central nervous system
		One short answer question on AETCOM module 1.1 & 1.5
		Scenario based / application questions can be on any topic of the paper I
		For long answer question and scenario based / application questions , region will not be repeated
II	A	MCQs on all topics of the paper II
	B & C	General Anatomy
		General histology
		Gross Anatomy of Abdomen and Pelvis
		Gross Anatomy of Inferior extremity
		Thorax
	Scenario based / application questions can be on any topic of the paper II	
		For long answer question and scenario based / application questions , region will not be repeated

Internal Assessment

Anatomy

Applicable w.e.f August 2019 onwards examination for batches admitted from June 2019 onwards

Sr. No	I-Exam (December)			II-Exam (March)		
	Theory	Practical (Including 05 Marks for Journal & Log Book)	Total Marks	Theory	Practical Including 05 Marks for Journal & Log Book	Total Marks
1	100	50	150	100	50	150

Sr. No	Preliminary Examinations			Sr. No	Remedial internal assessment examination for Non - eligible students		
	III-Exam (July)				October		
	Theory	Practical Including 10 Marks for Journal & Log Book	Total Marks		Theory	Practical Including 10 Marks for Journal & Log Book	Total Marks
1	200	100	300	1	200	100	300

1. There will be 3 internal assessment examinations in the academic year. The structure of Preliminary examinations should be similar to the structure of University examination.
2. There will be only one additional examination for absent students (due to genuine reason) after approval by the Committee Constituted for the same. It should be taken after preliminary examination and before submission of internal assessment marks to the University.
3. First internal assessment examination will be held in December, second internal assessment examination will be held in March and third internal assessment examination will be held in July.
4. Internal assessment marks for theory and practical will be converted to out of 40. Internal assessment marks, after Conversion, should be submitted to university by 7th of August.
5. The student must secure at least 50% marks for total marks (combined in theory and practical / clinical: not less than 40% marks in theory and practical separately) assigned for internal assessment in a particular subject in order to be eligible for appearing at the final university examination of that subject. Internal assessment marks will reflect as separate head of passing at the summative examination.
6. **Remedial internal assessment examination for Non - eligible students:** Student who were not eligible due to less than 50% combined or less than 40% in any theory or practical, will re appear as repeater student for Prelim exam which will be conducted before Supplementary Exam. His/her internal assessment will be calculated on the basis of this Examination marks only. Students who will not be eligible in this Examination will appear with regular batch as repeater student.
7. The internal assessment marks of the remedial examination alone shall be considered and converted into out of 40.
8. **Conversion Formula for calculation of marks in internal assessment examinations**

	First IA	Second IA	Third IA (Prelim)	Total	Internal assessment marks: Conversion formula (out of 40)	Eligibility to appear for final University examination (after conversion out of 40) (40% Separately in Theory and Practical, 50% Combined)	
Theory	100	100	200	400	$\frac{\text{Total marks obtained}}{10}$	16 (minimum)	Total of Theory + Practical <u>Must</u> be 40.
Practical	50	50	100	200	$\frac{\text{Total marks obtained}}{5}$	16 (minimum)	

9. Conversion formula for calculation of marks in Remedial internal assessment examination

	Remedial Exam (Prelim)	Int. Assess. marks conversion formula (out of 40)	Eligibility to appear for Supplementary Exam. (after conversion out of 40) (40% Separately in Theory and Practical, 50% Combined)	
Theory	200	$\frac{\text{Total marks obtained}}{5}$	16 (minimum)	Total of Theory + Practical <u>Must</u> be 40.
Practical	100	$\frac{\text{Total marks obtained}}{2.5}$	16 (minimum)	

While preparing Final Marks of Internal Assessment, the rounding-off marks shall done as illustrated in following table

Internal Assessment Marks	Final rounded marks
15.01 to 15.49	15
15.50 to 15.99	16

First Year MBBS Practical Mark's Structure (Prelim)

Applicable w.e.f August 2019 onwards examination for batches admitted from June 2019 onwards

Anatomy													
Practical									Oral/Viva				Total
Seat No.	Soft Part	Micro Anatomy (10 Spots)	Micro Anatomy slides for Discussion (2 slides)	Axial Skeleton	Embryology Models	Clinical Anatomy Including Genetic charts (2 Spots)	Journal /logbook	Total	Appendicular Skeleton	X - ray	Surface Living Anatomy	Total	PR/Oral Total
	A	B	C	D	E	F	G	H	I	J	K	L	M
Max. Marks	25	10	05	10	10	10	10	80	10	05	05	20	100

(Please Note - The above examination pattern will be applicable to the students admitted from Academic Year 2019-20 and onwards, which is informed to all Medical Colleges vide University letter No MUHS /X-1 /UG /1692 /2020 Date: 28/02/2020)

First Year MBBS Practical Mark's Structure (MUHS Exam)

Applicable w.e.f August 2019 onwards examination for batches admitted from June 2019 onwards

Anatomy												
Practical								Oral/Viva				Total
Seat No.	Soft Part	Micro Anatomy (10 Spots)	Micro Anatomy slides for Discussion (2 slides)	Axial Skeleton	Embryology Models	Clinical Anatomy Including Genetic charts (2 Spots)	Total	Appendicular Skeleton	Radiology	Surface Living Anatomy	Total	PR/Oral Total
	A	B	C	D	E	F	G	H	I	J	K	L
Max. Marks	30	10	10	10	10	10	80	10	05	05	20	100

(Please Note - The above examination pattern will be applicable to the students admitted from Academic Year 2019-20 and onwards, which is informed to all Medical Colleges vide University letter No MUHS /X-1 /UG /1692 /2020 Date: 28/02/2020)

MAHARASHTRA UNIVERSITY OF HEALTH SCIENCES, NASHIK
FORMAT / SKELETON OF QUESTION PAPER

1. Course and Year : First MBBS <i>(applicable w.e.f. Sept. 2020& onwards examinations)</i>	2. Subject Code : Appendix - a		
3. Subject (PSP) : Anatomy / Physiology / Biochemistry (TT) :			
4. Paper : : I	5. Total Marks : 100	6. Total Time : 3 Hrs.	7. Remu. (PS) : Rs. 300/-
			8. Remu. (PM) : Rs. 350/-
9. Web Pattern : []	10. Web Skeleton : []	11. Web Syllabus : []	12. Web Old QP : []

Instructions:

SECTION "A" MCQ

- 1) Fill ● (dark) the appropriate empty circle below the question number once only.
- 2) Use **blue/black** ball point pen only.
- 3) Each Question carries **One mark**.
- 4) A student will not be allotted any marks if he/she overwrites, strikes out or puts white ink on the circle once filled (darkened)
- 5) Do not write anything on the blank portion of the question paper if written anything, such type of act will be considered as an attempt to resort to unfair means.

SECTION "A" MCQ (20 Marks)

- Q1. Multiple Choice Questions (Total 20 MCQ of One mark each) **(4 MCO Should be clinical application based)** (20x1=20)
- a) b) c) d) e) f) g) h) i) j)
k) l) m) n) o) p) q) r) s) t)

SECTION "B"

- Instructions:**
- 1) Use **blue/black** ball point pen only.
 - 2) **Do not** write anything on the **blank portion of the question paper**. If written anything, such type of act will be considered as an attempt to resort to unfair means.
 - 3) **All questions are compulsory**.
 - 4) The number to the **right** indicates **full marks**.
 - 5) Draw diagrams **wherever** necessary.
 - 6) Distribution of syllabus in Question Paper is only meant to cover entire syllabus within the stipulated frame. The Question paper pattern is a mere guideline. Questions can be asked from any paper's syllabus into any question paper. Students cannot claim that the Question is out of syllabus. As It is only for the placement sake, the distribution has been done.
 - 7) Use a common answer book for all sections.

SECTION "B" (80 Marks)

2. Brief answer questions (Any Ten out of Eleven) (10x 2= 20)
- a) b) c) d) e) f) g) h) i) j) k)
3. Short Answer Questions (Any Eight out of Nine) (8x5= 40)
- One SAQ has to be on AETCOM Module **(For Anatomy 1.1, 1.5, For Physiology 1.2, 1.3 & For Biochemistry, 1.4) &**
Minimum 2 SAQs should be Case Based Questions/ Clinically applied Questions.
- a) b) c) d) e) f) g) h) i)
4. Long Answer Questions (Any Two out of Three) (2x 10= 20)
- a) b) c)

Note: All questions should be structured .Wherever necessary; split up of marks should be specified.

MAHARASHTRA UNIVERSITY OF HEALTH SCIENCES, NASHIK
FORMAT / SKELETON OF QUESTION PAPER

1. Course and Year : First MBBS <i>(applicable w.e.f. Sept. 2020& onwards examinations)</i>	2. Subject Code : Appendix - a
3. Subject (PSP) : Anatomy / Physiology / Biochemistry (TT) :	
4. Paper : II	5. Total Marks : 100
	6. Total Time : 3 Hrs.
	7. Remu. (PS) : Rs. 300/-
	8. Remu. (PM) : Rs. 350/-
9. Web Pattern : []	10. Web Skeleton : []
	11. Web Syllabus : []
	12. Web Old QP : []

Instructions:

SECTION "A" MCQ

- 1) Fill ● (dark) the appropriate empty circle below the question number once only.
- 2) Use **blue/black** ball point pen only.
- 3) Each Question carries **One mark**.
- 4) A student will not be allotted any marks if he/she overwrites, strikes out or puts white ink on the circle once filled (darkened)
- 5) Do not write anything on the blank portion of the question paper if written anything, such type of act will be considered as an attempt to resort to unfair means.

SECTION "A" MCQ (20 Marks)

1. Multiple Choice Questions (Total 20 MCQ of One mark each) ***(4 MCQ Should be clinical application based)*** (20x1=20)
a) b) c) d) e) f) g) h) i) j)
k) l) m) n) o) p) q) r) s) t)

SECTION "B"

- Instructions:**
- 1) Use **blue/black** ball point pen only.
 - 2) **Do not** write anything on the **blank portion of the question paper**. If written anything, such type of act will be considered as an attempt to resort to unfair means.
 - 3) **All questions are compulsory**.
 - 4) The number to the **right** indicates **full marks**.
 - 5) Draw diagrams **wherever** necessary.
 - 6) Distribution of syllabus in Question Paper is only meant to cover entire syllabus within the stipulated frame. The Question paper pattern is a mere guideline. Questions can be asked from any paper's syllabus into any question paper. Students cannot claim that the Question is out of syllabus. As It is only for the placement sake, the distribution has been done.
 - 7) Use a common answer book for all sections.

SECTION "B" (80 Marks)

2. Brief answer questions (Any Ten out of Eleven) (10x 2= 20)
a) b) c) d) e) f) g) h) i) j) k)
3. Short Answer Questions (Any Eight out of Nine) (8x5= 40)
Minimum 2 SAQs should be Case Based Questions/ Clinically applied Questions.
4. (2x 10= 20)
a) b) c) d) e) f) g) h) i)
Long Answer Questions (Any Two out of Three)
b) c)

Note: All questions should be structured .Wherever necessary, split up of marks should be specified.

RECOMMENDED BOOKS

- 1) Gray's Anatomy
- 2) Sahana's Human Anatomy
- 3) Chourai's Human Anatomy 3 volumes
- 4) Cunningham's manual of Practical Anatomy
- 5) Regional Anatomy by R. J. Last
- 6) Human Histology by Inderbir Singh
- 7) Atlas of Human Histology- DIFORE
- 8) Surgical Anatomy- McGregor
- 9) Histology- by ham,
- 10) Human Embryology – Inderbir Singh,
- 11) Medical Embryology – Langman,
- 12) Surface Anatomy & Radiology – Halim Das,
- 13) General Anatomy by – Chowrisia
- 14) Text book of Neuroanatomy – Inderbir Singh
- 15) Central Nervous System – Podar Bhagat
- 16) Clinical anatomy for medical students – Richard Snell
- 17) J.S.P. Lumbly at all – M.C.Q's in Anatomy
- 18)Text Book of General Anatomy – V. Subhadra Devi
- 19)Dissection Manual with Regions & Applied Anatomy, Lower Extremity
Abdomen Pelvis and Perineum Vol 2 -1 Edition 2018 - Dr. Mercy Navis
- 20) Dissection Manual with Regions & Applied Anatomy, Head , Neck
&Brain. Mercy Navis
- 21) Clinical Anatomy by-Neeta V Kulkarni.
- 22) Salubris Prep- Manual AETCOM- PRE CLINICAL- Jyoti Gaikwad &
Varsha Navgire.

Course Content

Physiology

First M.B.B.S. (From August 2019)

(Based on Medical Council of India, Competency based Undergraduate curriculum for the Indian Medical Graduate, 2018. Vol. 1; page no.91-118)

Lectures(hours)-160

Self directed learning (hours)-

Teaching hours 25

Small group teachings/tutorials/Integrated teaching/Practicals(hours)-310
divided equally in all three subjects .

Total(hours) -495 Early clinical exposure(hours)- 90 to be

Competency No.	Topics & subtopics
1	General Physiology
PY. 1.1	Structure and Functions of a Mammalian Cell
PY. 1.2	Principles of Homeostasis
PY. 1.3	Intercellular communication
PY. 1.4	Apoptosis – Programmed cell death
PY. 1.5	Transport mechanisms across cell membranes
PY. 1.6	Fluid compartment of the body, its ionic composition & measurements
PY. 1.7	Concept of pH & Buffer systems in the body
PY. 1.8	Molecular basis of resting membrane potential and action potential in excitable tissue
PY. 1.9	Methods used to demonstrate the functions of the cells and its products, its communication and their applications in Clinical care and research.
2	Topic: Hematology
PY. 2.1	Composition & functions of blood components
PY. 2.2	Original, forms, variations and functions of plasma proteins
PY. 2.3	Synthesis and functions of Hemoglobin & explain its breakdown. Describe variants of hemoglobin

PY. 2.4	RBC formation (erythropoiesis & its regulation) and its functions
PY. 2.5	Types of anaemias & Jaundice
PY. 2.6	WBC formation (granulopoiesis) & its regulation
PY. 2.7	Formation of platelets, functions & variations
PY. 2.8	Physiological basis of hemostasis and anticoagulants. Describe bleeding & clotting disorders (Hemophilia, purpura)
PY. 2.9	Different blood groups and clinical importance of blood grouping, blood banking and transfusion
PY. 2.10	Types of immunity , development of immunity and its regulation
PY. 2.11	Estimation Hb, RBC, TLC, RBC indices, DLC, Blood group, BT/CT
PY. 2.12	Tests for ESR, Osmotic fragility, Hematocrit , findings and interpretation of test results etc.
PY. 2.13	Steps for reticulocyte and platelet count
3	Nerve and Muscle Physiology
PY. 3.1	Structure and functions of a neuron and neuroglia; Nerve Growth Factor & other growth factors/cytokines
PY. 3.2	Types, functions & properties of nerve fibers
PY. 3.3	Degeneration and regeneration in Peripheral nerves
PY. 3.4	Structure neuro-muscular junction and transmission of impulses
PY. 3.5	Action of neuro-muscular blocking agents
PY. 3.6	Pathophysiology of Myasthenia gravis
PY. 3.7	Types of muscle fibres and their structure
PY. 3.8	Action potential and its properties in different muscle types (skeletal & smooth)
PY. 3.9	Molecular basis of muscle contraction in skeletal and in smooth muscles

PY. 3.10	Mode of muscle contraction (isometric and isotonic)
PY. 3.11	Energy source and muscle metabolism
PY. 3.12	Gradation of muscular activity
PY. 3.13	Muscular dystrophy: myopathies
PY. 3.14	Ergography
PY. 3.15	Effect of mild, moderate and severe exercise and changes in cardiorespiratory parameters
PY. 3.16	Harvard Step test and impact on induced physiologic parameters in a simulated environment
PY. 3.17	Strength-duration curve
PY. 3.18	Computer assisted learning (i) amphibian nerve – muscle experiments (ii) amphibian cardiac experiments
4	Gastro-intestinal Physiology
PY. 4.1	Structure and functions of digestive system
PY. 4.2	Composition, mechanism of secretion, functions, and regulation of saliva, gastric, pancreatic, intestinal, juices and bile secretion
PY. 4.3	GIT movements, regulation and functions ,defecation reflex. Role of dietary fibre.
PY. 4.4	Physiology of digestion and absorption of nutrients
PY. 4.5	Source of GIT hormones, their regulation and functions
PY. 4.6	Gut-Brain Axis
PY. 4.7	Structure and functions of liver and gall bladder
PY. 4.8	Gastric function tests, pancreatic exocrine function test & liver function tests
PY. 4.9	Physiology aspects of; peptic ulcer, gastro- oesophageal reflux disease, vomiting, diarrhea , constipation, Adynamic ileus, Hirschsprung's disease
PY. 4.10	Clinical examination of the abdomen in a normal volunteer or simulated environment

5	Cardiovascular Physiology (CVS)
PY. 5.1	Functional anatomy of heart including chambers sounds; and Pacemaker tissue and conducting system.
PY. 5.2	Properties of cardiac muscle including its morphology, electrical, mechanical and metabolic functions
PY. 5.3	Events occurring during the cardiac cycle
PY. 5.4	Generation, conduction of cardiac impulse
PY. 5.5	Physiology of electrocardiogram (E.C.G.), its applications and the cardiac axis
PY. 5.6	Abnormal ECG, arrhythmias, heart block and myocardial infarction.
PY. 5.7	Haemodynamics of circulatory system
PY. 5.8	Local and systemic cardiovascular regulatory mechanisms
PY. 5.9	Factors affecting heart rate, regulation of cardiac output & blood pressure
PY. 5.10	Regional circulation including microcirculation, lymphatic, coronary, cerebral, capillary, Skin, foetal, pulmonary and splanchnic circulation
PY. 5.11	Patho-physiology of shock, syncope and heart failure
PY. 5.12	Blood pressure & pulse recording at rest and in different grades of exercise and postures in a volunteer or simulated environment
PY. 5.13	Record and interpret normal ECG in a volunteer or simulated environment
PY. 5.14	Cardiovascular autonomic function tests in a volunteer or simulated environment
PY. 5.15	Clinical examination of the cardiovascular system in a normal volunteer or simulated environment
PY. 5.16	Recording Arterial pulse tracing using finger plethysmography in a volunteer or simulated environment
6	Respiratory Physiology
PY. 6.1	Functional anatomy of respiratory tract

PY. 6.2	Mechanics of normal respiration, pressure changes during ventilation, lung volume and capacities, alveolar surface tension, compliance, airway resistance, ventilation, V/P ratio, diffusion capacity of lungs
PY. 6.3	Transport of respiratory gases: Oxygen and Carbon dioxide
	Regulation of respiration -- Neural & chemical
PY. 6.4	Physiology of high altitude deep sea diving
PY. 6.5	Principles of artificial respiration oxygen therapy, acclimatization and decompression sickness
PY. 6.6	Pathophysiology of dyspnea, hypoxia, cyanosis asphyxia; drowning, periodic breathing
PY. 6.7	Lung function tests & their clinical significance
PY. 6.8	Technique to perform & interpret Spirometry
PY. 6.9	Examination of the respiratory system in a normal volunteer or simulated environment
PY. 6.10	Technique to perform measurement of peak expiratory flow rate in a normal volunteer or simulated environment
7	Renal Physiology
PY. 7.1	Structure and function of kidney
PY. 7.2	Structure and functions of juxta glomerular apparatus and role of renin-angiotensin system
PY. 7.3	Mechanism of urine formation and processes involved
PY. 7.4	Significance & implication of Renal clearance
PY. 7.5	Renal regulation of fluid and electrolytes & acid-base balance
PY. 7.6	Innervations of urinary bladder, physiology of micturition and its abnormalities
PY. 7.7	Artificial kidney, dialysis and renal transplantation
PY. 7.8	Renal Function Tests
PY. 7.9	Cystometry and discuss the normal cystometrogram

8	Endocrine Physiology
PY. 8.1	Physiology of bone and calcium metabolism
PY. 8.2	Synthesis, secretion, transport, physiological actions, regulation and effects of altered (hypo and hyper) secretion of pituitary gland, thyroid gland, parathyroid gland, adrenal gland, pancreas and hypothalamus
PY. 8.3	Physiology of Thymus & Pineal Gland
PY. 8.4	Function tests: Thyroid gland; Adrenal cortex, Adrenal medulla and pancreas
PY. 8.5	Metabolic and endocrine consequences of obesity & metabolic syndrome, Stress response. Outline the psychiatry component pertaining to metabolic syndrome
PY. 8.6	Mechanism of action of steroid, protein and amine hormones
9	Reproductive Physiology
PY. 9.1	Sex determination; sex differentiation and their abnormalities and outline psychiatry and practical implementation of sex determination
PY. 9.2	Puberty: onset, progression, states; early and delayed puberty and outline adolescent clinical and psychological association
PY. 9.3	Male reproductive system: functions of testis and control of spermatogenesis & factors modifying it and outline its association with psychiatric illness
PY. 9.4	Female reproductive system: (a) functions of ovary and its control; (b) menstrual cycle – hormonal, uterine and ovarian changes
PY. 9.5	Physiological effects of sex hormones
PY. 9.6	Contraceptive methods for male and female. Discuss their advantages & disadvantages
PY. 9.7	Effects of removal of gonads on physiological functions
PY. 9.8	Physiology of pregnancy, parturition & lactation and outline the psychology and psychiatry-disorders associated with it

PY. 9.9	Interpret a normal semen analysis report including (a) sperm count, (b) sperm morphology and (c) sperm motility, as per WHO guidelines and discuss the result
PY. 9.10	Physiological basis of various pregnancy tests
PY. 9.11	Hormonal changes and their effects during perimenopause and menopause
PY. 9.12	Common causes of infertility in a couple and role of IVF in managing a case of infertility
10	Neurophysiology
PY. 10.1	Organization of nervous system
PY. 10.2	Functions and properties of synapse, reflex, receptors
PY. 10.3	Somatic sensations & sensory tracts
PY. 10.4	Motor tracts, mechanism of maintenance of tone, control of body movements, posture and equilibrium & vestibular apparatus
PY. 10.5	Structure and functions of reticular activating system, autonomic nervous system (ANS)
PY. 10.6	Spinal cord, its functions, lesion & sensory disturbances
PY. 10.7	Functions of cerebral cortex, basal ganglia thalamus, hypothalamus. Cerebellum and limbic system and their abnormalities
PY. 10.8	Behavioural and EEG characteristics during sleep and mechanism responsible for its production
PY. 10.9	Physiological basis of memory, learning and speech
PY. 10.10	Chemical transmission in the nervous system. (Outline the psychiatry element)
PY. 10.11	Clinical examination of the nervous system: Higher functions, sensory system, motor system, reflexes, cranial nerves in a normal volunteer or simulated environment
PY. 10.12	Normal EEG forms
PY. 10.13	Perception of smell and taste sensation

PY. 10.14	Patho-physiology of altered smell and taste sensation
PY. 10.15	Functional anatomy of ear and auditory pathways & physiology of hearing
PY. 10.16	Pathophysiology of deafness. Hearing tests
PY. 10.17	Functional anatomy of eye, physiology of image formation, physiology of vision including colour vision, refractive errors, colour blindness, physiology of pupil and light reflex
PY. 10.18	Physiological basis of lesion in visual pathway
PY. 10.19	Auditory & visual evoke potentials
PY. 10.20	(i) Testing of visual acuity, colour and field of vision and (ii) hearing (iii) Testing for smell and (iv) taste sensation in volunteer/ simulated environment
11	Integrated Physiology
PY. 11.1	Mechanism of temperature regulation
PY. 11.2	Adaptation to altered temperature (heat and cold)
PY. 11.3	Mechanism of fever, cold injuries and heat stroke
PY. 11.4	Cardio-respiratory and metabolic adjustment during exercise; physical training effects
PY. 11.5	Physiological consequences of sedentary lifestyle
PY. 11.6	Physiology of Infancy
PY. 11.7	Physiology of aging; free radicals and antioxidants
PY. 11.8	Cardio-respiratory changes in exercise (isometric and isotonic) with that in the resting state and under different environmental conditions (heat and cold)
PY. 11.9	Interpretation of growth charts
PY. 11.10	Interpretation of anthropometric assessment of infants
PY. 11.11	Concept, criteria for diagnosis of Brain death and its implications
PY. 11.12	Physiological effects of meditation

PY. 11.13	History taking and general examination in the volunteer / simulated environment
PY. 11.14	Basic Life Support in a simulated environment

Paper wise distribution of topics

Year: First MBBS Subject: Physiology

Paper	Section	Topics
I	A	MCOs on all topics of the paper I
	B & C	General Physiology
		Blood
		Respiratory System
		Cardio Vascular System,
		Cardio-respiratory and metabolic adjustment during exercise
		Renal system
		Gastro intestinal system
		Life style, aging, Meditation
		AETCOM module no. 1.2 & 1.3
	Scenario based / application questions can be on any topic of the paper I	
	For long answer question and scenario based / application questions , topics will not be repeated	
II	A	MCOs on all topics of the paper II
	B & C	Endocrine Physiology
		Reproductive System, Physiology of Infancy
		Special senses
		Central nervous system including brain death Temperature Regulation & applied
		Nerve muscle physiology
		Scenario based / application questions can be on any topic of the paper II
		For long answer question and scenario based / application questions , topics will not be repeated

Internal Assessment

Physiology

Applicable w.e.f August 2019 onwards examination for batches admitted from June 2019 onwards

Sr. No	I-Exam (December)			II-Exam (March)		
	Theory	Practical (Including 05 Marks for Journal & Log Book)	Total Marks	Theory	Practical Including 05 Marks for Journal & Log Book	Total Marks
1	100	50	150	100	50	150

Sr. No	Preliminary Examinations			Sr. No	Remedial internal assessment examination for Non - eligible students		
	III-Exam (July)				October		
	Theory	Practical Including 10 Marks for Journal & Log Book	Total Marks		Theory	Practical Including 10 Marks for Journal & Log Book	Total Marks
1	200	100	300	1	200	100	300

1. There will be 3 internal assessment examinations in the academic year. The structure of Preliminary examinations should be similar to the structure of University examination.
2. There will be only one additional examination for absent students (due to genuine reason) after approval by the Committee Constituted for the same. It should be taken after preliminary examination and before submission of internal assessment marks to the University.
3. First internal assessment examination will be held in December, second internal assessment examination will be held in March and third internal assessment examination will be held in July.
4. Internal assessment marks for theory and practical will be converted to out of 40. Internal assessment marks, after Conversion, should be submitted to university by 7th of August.
5. The student must secure at least 50% marks for total marks (combined in theory and practical / clinical: not less than 40% marks in theory and practical separately) assigned for internal assessment in a particular subject in order to be eligible for appearing at the final university examination of that subject. Internal assessment marks will reflect as separate head of passing at the summative examination.
6. **Remedial internal assessment examination for Non - eligible students:** Student who were not eligible due to less than 50% combined or less than 40% in any theory or practical, will re appear as repeater student for Prelim exam which will be conducted before Supplementary Exam. His/her internal assessment will be calculated on the basis of this Examination marks only. Students who will not be eligible in this Examination will appear with regular batch as repeater student.
7. The internal assessment marks of the remedial examination alone shall be considered and converted into out of 40.
8. **Conversion Formula for calculation of marks in internal assessment examinations**

	First IA	Second IA	Third IA (Prelim)	Total	Internal assessment marks: Conversion formula (out of 40)	Eligibility to appear for final University examination (after conversion out of 40) (40% Separately in Theory and Practical, 50% Combined)	
Theory	100	100	200	400	$\frac{\text{Total marks obtained}}{10}$	16 (minimum)	Total of Theory + Practical <u>Must</u> be 40.
Practical	50	50	100	200	$\frac{\text{Total marks obtained}}{5}$	16 (minimum)	

9. Conversion formula for calculation of marks in Remedial internal assessment examination

	Remedial Exam (Prelim)	Int. Assess. marks conversion formula (out of 40)	Eligibility to appear for Supplementary Exam. (after conversion out of 40) (40% Separately in Theory and Practical, 50% Combined)	
Theory	200	$\frac{\text{Total marks obtained}}{5}$	16 (minimum)	Total of Theory + Practical <u>Must</u> be 40.
Practical	100	$\frac{\text{Total marks obtained}}{2.5}$	16 (minimum)	

While preparing Final Marks of Internal Assessment, the rounding-off marks shall done as illustrated in following table

Internal Assessment Marks	Final rounded marks
15.01 to 15.49	15
15.50 to 15.99	16

First Year MBBS Practical Mark's Structure Internal Assessment Examinations I & II (Applicable for batch admitted in M.B.B.S Course from Academic Year 2019-20 & onwards)

Physiology

	Hematology	Clinical Examination/Human Physiology expt. / Short exercises	Journal/ Logbook	Oral Viva	Total
	A	B	C	D	E
Max. Marks	15	20	5	10	50

First Year MBBS Physiology Practical Mark's Structure (Prelim exam)

(Applicable w.e.f August 2019 onwards examination for batches admitted from June 2019 onwards)

Seat No.	Exercise 1				Exercise 2	Exercise 3 *	Exercise 4 **		Practical (Total)	Oral/Viva (Total)	PR/Oral Total
	Clinical Examination										
	C.V.S	R.S	C.N.S. & Special Senses	General Exam & Abdomen	Hematology	Short exercise	Human Physiology Experiment	Journal & Log book			
	A	B	C	D	E	F	G	H	I	J	K
Max. Mark's	10.0	10.0	10.0	10.0	10.0	15.0	15.0	10.0	90	10.0	100

*Short exercises 3 marks each(3X5)

1. Case based scenarios/ endocrine disorders photographs .2. Interpretation of function tests. 3. One skeletal graph

4. One cardiac graph 5. Calculation

** **Exercise 4: Human Physiology Experiment** 1. Basic Life Support in a simulated environment 2. ECG 3. Spirometry 4. PEFR 5. EEG Interpretation 6. Ergography 7. Harward step test 8. Perimetry

* **Suggested Methods of Assessment**

Preclinical exam & OSPE

(Please Note - The above examination pattern will be applicable to the students admitted from Academic Year 2019-20 and onwards, which is informed to all Medical Colleges vide University letter No MUHS /X-1 /UG /1692 /2020 Date: 28/02/2020)

First Year MBBS Physiology Practical Mark's Structure(MUHS)

(Applicable w.e.f August 2019 onwards examination for batches admitted from June 2019 onwards)

	Exercise 1				Exercise 2	Exercise 3 *	Exercise 4**	Practical (Total)	Oral/Viva (Total)	PR/Oral Total
	Clinical Examination									
	C.V.S	R.S	C.N.S. & Special Senses	General Exam & Abdomen	Hematology	Short exercises	Human Physiology Experiment			
	A	B	C	D	E	F	G	H	I	J
Max. Mark's	10.0	10.0	10.0	10.0	10.0	15.0	15.0	80	20.0	100

*Short exercises 3 marks each(3X5)

1. Case based scenarios/ endocrine disorders photographs .2. Interpretation of function tests. 3. One skeletal graph

4. One cardiac graph 5. Calculation

** **Exercise 4: Human Physiology Experiment** 1. Basic Life Support in a simulated environment 2. ECG 3. Spirometry 4. PEFR 5. EEG Interpretation
6. Ergography 7. Harward step test 8. Perimetry

* **Suggested Methods of Assessment**

Clinical exam & OSPE

(Please Note - The above examination pattern will be applicable to the students admitted from Academic Year 2019-20 and onwards, which is informed to all Medical Colleges vide University letter No MUHS /X-1 /UG /1692 /2020 Date: 28/02/2020)

MAHARASHTRA UNIVERSITY OF HEALTH SCIENCES, NASHIK
FORMAT / SKELETON OF QUESTION PAPER

1. Course and Year : First MBBS (applicable w.e.f. Sept. 2020& onwards examinations)	2. Subject Code : Appendix - a		
3. Subject (PSP) : Anatomy / Physiology / Biochemistry (TT) :			
4. Paper : I	5. Total Marks : 100	6. Total Time : 3 Hrs.	7. Remu. (PS) : Rs. 300/-
			8. Remu. (PM) : Rs. 350/-
9. Web Pattern : []	10. Web Skeleton : []	11. Web Syllabus : []	12. Web Old QP : []

Instructions:

SECTION "A" MCQ

- 1) Fill ● (dark) the appropriate empty circle below the question number once only.
- 2) Use **blue/black** ball point pen only.
- 3) Each Question carries **One mark**.
- 4) A student will not be allotted any marks if he/she overwrites, strikes out or puts white ink on the circle once filled (darkened)
- 5) Do not write anything on the blank portion of the question paper if written anything, such type of act will be considered as an attempt to resort to unfair means.

SECTION "A" MCQ (20 Marks)

- Q1. Multiple Choice Questions (Total 20 MCQ of One mark each) **(4 MCO Should be clinical application based)** (20x1=20)
- a) b) c) d) e) f) g) h) i) j)
k) l) m) n) o) p) q) r) s) t)

SECTION "B"

Instructions:

- 1) Use **blue/black** ball point pen only.
- 2) **Do not** write anything on the **blank portion of the question paper**. If written anything, such type of act will be considered as an attempt to resort to unfair means.
- 3) **All** questions are **compulsory**.
- 4) The number to the **right** indicates **full** marks.
- 5) Draw diagrams **wherever** necessary.
- 6) Distribution of syllabus in Question Paper is only meant to cover entire syllabus within the stipulated frame. The Question paper pattern is a mere guideline. Questions can be asked from any paper's syllabus into any question paper. Students cannot claim that the Question is out of syllabus. As It is only for the placement sake, the distribution has been done.
- 7) Use a common answerbook for all sections.

SECTION "B" (80 Marks)

2. Brief answer questions (Any Ten out of Eleven) (10x 2= 20)
a) b) c) d) e) f) g) h) i) j) k)
3. Short Answer Questions (Any Eight out of Nine) (8x5= 40)
One SAQ has to be on AETCOM Module **(For Anatomy 1.1, 1.5, For Physiology 1.2.,1.3&For Biochemistry, 1.4) & Minimum 2 SAQs should be Case Based Questions/ Clinically applied Questions.**
a) b) c) d) e) f) g) h) i)
4. Long Answer Questions (Any Two out of Three) (2x 10= 20)
a) b) c)

Note: All questions should be structured .Wherever necessary; split up of marks should be specified.

MAHARASHTRA UNIVERSITY OF HEALTH SCIENCES, NASHIK
FORMAT / SKELETON OF QUESTION PAPER

1. Course and Year : First MBBS <i>(applicable w.e.f. Sept. 2020 & onwards examinations)</i>	2. Subject Code : Appendix - a		
3. Subject (PSP) : Anatomy / Physiology / Biochemistry (TT) :			
4. Paper : II	5. Total Marks : 100	6. Total Time : 3 Hrs.	7. Remu. (PS) : Rs. 300/-
			8. Remu. (PM) : Rs. 350/-
9. Web Pattern : []	10. Web Skeleton : []	11. Web Syllabus : []	12. Web Old QP : []

Instructions:

SECTION "A" MCQ

- 1) Fill ● (dark) the appropriate empty circle below the question number once only.
- 2) Use **blue/black** ball point pen only.
- 3) Each Question carries **One mark**.
- 4) A student will not be allotted any marks if he/she overwrites, strikes out or puts white ink on the circle once filled (darkened)
- 5) Do not write anything on the blank portion of the question paper if written anything, such type of act will be considered as an attempt to resort to unfair means.

SECTION "A" MCQ (20 Marks)

1. Multiple Choice Questions (Total 20 MCQ of One mark each) **(4 MCO Should be clinical application based)** (20x1=20)
- a) b) c) d) e) f) g) h) i) j)
k) l) m) n) o) p) q) r) s) t)

SECTION "B"

Instructions:

- 1) Use **blue/black** ball point pen only.
- 2) **Do not** write anything on the **blank portion of the question paper**. If written anything, such type of act will be considered as an attempt to resort to unfair means.
- 3) **All** questions are **compulsory**.
- 4) The number to the **right** indicates **full marks**.
- 5) Draw diagrams **wherever** necessary.
- 6) *Distribution of syllabus in Question Paper is only meant to cover entire syllabus within the stipulated frame. The Question paper pattern is a mere guideline. Questions can be asked from any paper's syllabus into any question paper. Students cannot claim that the Question is out of syllabus. As It is only for the placement sake, the distribution has been done.*
- 7) Use a common answer book for all sections.

SECTION "B" (80 Marks)

2. Brief answer questions (Any Ten out of Eleven) (10x 2= 20)
a) b) c) d) e) f) g) h) i) j) k)
3. Short Answer Questions (Any Eight out of Nine) (8x5= 40)
Minimum 2 SAQs should be Case Based Questions/ Clinically applied Questions.
4. a) b) c) d) e) f) g) h) i) (2x 10= 20)
Long Answer Questions (Any Two out of Three)
i) b) c)

Note: All questions should be structured .Wherever necessary, split up of marks should be specified.



MARKLIST FOR PRACTICAL / ORAL / VIVA VOCE
(Summer / Winter – 20...Exam (MBBS UG Courses)

(Applicable for batch admitted in M.B.B.S Course from Academic Year 2019-20 & onwards)

Course : FIRST MBBS

Subject : Physiology

CENTRE :

Marks : (Practical = Practical/Clinical + Viva) Min. 50 Max. 100

Date : / /20

Batch :

Seat No.	Practical								Oral/Viva	Total
	C.V.C	R.S	C.N.S. & Special senses	Abdomen	Exercise (2) Hematology	Exercise (3) Short Exercise	Human Physiology Experiment	Practical (Total)	Oral/Viva Total	PR/Oral Total
	A	B	C	D	E	F	G	H	I	J
Max. Marks	10	10	10	10	10	15	15	80	20	100

Note : Both Examiners should jointly conduct practical examination for each student.
 Verified above entries from Answerbooks and we hereby certify that the marks entered against each Seat Number are found correct.

NAME OF EXAMINER		COLLEGE	SIGNATURE WITH DATE	
1			Convener	
2			Internal	
3			External	
4			External	

Books recommended:

1) Textbooks of Physiology :

Guyton - Textbook of Physiology Ganong -
Review of Medical Physiology
S. Wright - Applied Physiology

2) Reference Books :

Best and Taylor - Physiological basis of medical practice
Berne & levy. - Principles of Physiology
Dr. V.G. Ranade - Laboratory Manual and Journal of Physiology Practicals
Ghai's VP Varshney, Mona Bedi- Textbook of Physiology -9 th Edition 2019.
G.K. Pal-Comprehensive Text Book of Medical Physiology.
Dr. Amarnath B. Solepure - Fundamental Human Neurophysiology-First
Edition 2018.

Course Content

(Based on Competency Table published by Medical Council of India. Students/Teachers are directed to refer competency table published on MCI Website for details)

Subject: Biochemistry

Year: First MBBS

Competency No.	Topics & Subtopics
<p>1</p> <p>1.1</p> <p>Describe the molecular and functional organization of a cell and its subcellular components.</p>	<p>Basic Biochemistry</p> <p>Molecular and functional organization of cell and its subcellular components</p>
<p>2</p>	<p>Enzymes</p>
<p>2.1</p> <p>Explain fundamental concepts of enzyme, isoenzyme, alloenzyme, coenzyme & co-factors. Enumerate the main classes of IUBMB nomenclature.</p>	<p>Biochemical nature of enzyme, isoenzyme, alloenzyme, coenzyme & co-factors</p> <p>IUBMB enzyme classification</p>
<p>2.2 Observe</p> <p>the estimation of SGOT & SGPT</p>	<p>Estimation of SGOT (AST)& SGPT (ALT) with its normal range and clinical significance.</p>
<p>2.3</p> <p>Describe and explain the basic principles of enzyme activity</p>	<p>Mechanism of enzyme action, factors affecting enzyme activity, brief concept of enzyme kinetics with special reference to V_{max} & K_m.</p>
<p>2.4</p>	<p>Enzyme inhibition. Various inhibitors as drugs and poisons</p>

Competency No.	Topics & Subtopics
Describe and discuss enzyme inhibitors as poisons and drugs and as therapeutic enzymes	
<p style="text-align: center;">2.5</p> Describe and discuss the clinical utility of various serum enzymes as markers of pathological conditions.	Diagnostic and therapeutic importance of various serum enzymes in various disorders
<p style="text-align: center;">2.6</p> Discuss use of enzymes in laboratory investigations (Enzymebased assays)	Analytical uses of Enzymes in laboratory investigations (enzyme based assays)
<p style="text-align: center;">2.7</p> Interpret laboratory results of enzyme activities & describe the clinical utility of various enzymes as markers of pathological conditions.	Interpret various serum enzymes of liver & biliary tract, Pancreas, cardiac & skeletal muscle in various disorders
<p style="text-align: center;">3</p>	Chemistry & Metabolism of Carbohydrates
<p style="text-align: center;">3.1</p> Discuss and differentiate monosaccharides, di-saccharides and polysaccharides giving examples of main carbohydrates as energy fuel, structural element and storage in the human body	Classification of carbohydrates with examples and functions of monosaccharides giving examples as energy fuel, glycosides and its therapeutic importance, disaccharides with examples and importance, polysaccharides with examples as storage form like glycogen, structural elements like glycosaminoglycan's in the human body, resistant starch, glycemic index, and dietary fiber. Clinical importance of dextran's

3.2	Digestion & absorption, transport and storage of carbohydrates, Lactose intolerance and sucrase deficiency disorders
Describe the processes involved in digestion and assimilation of carbohydrates and storage.	
3.3	

Competency No.	Topics & Subtopics
Describe and discuss the digestion and assimilation of carbohydrates from food.	
3.4	Pathway, energetics, regulation & clinical diseases / disorders of - Glycolysis including Rappaport Leubering cycle, Gluconeogenesis, Glycogenesis, Glycogenolysis , HMP pathway , Uronic acid pathway, Galactose & Fructose metabolism
Define and differentiate the pathways of carbohydrate metabolism(glycolysis, gluconeogenesis, glycogen metabolism, HMP shunt).	
3.5	
Describe and discuss the regulation, functions and integration of carbohydrate along with associated diseases/disorders.	
3.6	TCA cycle Pathway,energetics, regulation & its concepts as amphibolic pathway
Describe and discuss the concept of TCA cycle as a amphibolic pathway and its regulation.	
3.7 To be clubbed with 3.4 & 3.6	Common poisons that inhibit crucial enzymes of carbohydrate metabolism like: Iodoacetate, fluoride & arsenite as poisons that inhibit enzymes of glycolysis Fluoroacetate, arsenite & malonate as poisons that inhibit enzymes of TCA cycle
Describe the common poisons that inhibit crucial enzymes of carbohydrate metabolism (eg: fluoride, arsenate)	

<p style="text-align: center;">3.8 & 3.10</p> <p>3.8: Discuss and interpret laboratory results of analytes associated with metabolism of carbohydrates. (to be clubbed with comp no 11.17- Diabetes Mellitus)</p> <p style="text-align: center;">3.10</p> <p>Interpret the results of blood glucose levels and other Laboratory investigations related to disorders of carbohydrate metabolism.</p>	<p>Interpretation of the results of blood glucose, Glycated hemoglobin & GTT as per WHO guidelines in Diabetes mellitus including gestational diabetes and other laboratory investigation like urinary glucose, urinary ketone bodies.</p> <p>Interpretation of the results of blood & urinary galactose levels in galactosemia.</p> <p>Interpretation of blood G6PD levels</p>
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Competency No.	Topics & Subtopics
<p style="text-align: center;">3.9</p> <p>Discuss the mechanism and significance of blood glucose regulation in health and disease.</p>	<p>Regulation of blood glucose in fed and fasting state in normal health & changes in diabetes mellitus.</p>
<p style="text-align: center;">4</p>	<p style="text-align: center;">Chemistry & Metabolism of Lipids</p>
<p style="text-align: center;">4.1</p> <p>Describe and discuss main classes of lipids (Essential/nonessential fatty acids, cholesterol and hormonal steroids, triglycerides, major phospholipids and sphingolipids) relevant to human system and their major functions.</p>	<p>Definition & classification of lipids including classification of fatty acids, their nomenclature, numbering, functions & biological importance of various lipids like fatty acids, cholesterol , hormonal steroids, triglycerides, major phospholipids and sphingolipids</p>

<p style="text-align: center;">4.2</p> <p>Describe the processes involved in digestion and absorption of dietary lipids and also the key features of their metabolism</p>	<p>Digestion, absorption and transport of lipids along with abnormalities like lipid malabsorption.</p> <p>Metabolism of fatty acids (β-oxidation of even and odd carbon fatty acids), regulation, energetics and disorders associated with oxidation of fatty acids, Formation & fate of ketone bodies, its significance, regulation and associated disorders like ketosis.</p> <p>In brief de novo fatty acid biosynthesis- site & organs, precursors, enzyme complex, product formed & regulatory steps.</p> <p>Biosynthesis of triacylglycerol and fate of triacylglycerol formed in liver & adipose tissue, its significance and regulation, Metabolic role of adipose tissue and disorders of lipid transport and storage like fatty liver.</p> <p>In brief Cholesterol biosynthesis- site & organs, precursors, key enzymes, product formed & regulatory step, metabolic fate & excretion</p>
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Competency No.	Topics & Subtopics
<p style="text-align: center;">4.3</p> <p>Explain the regulation of lipoprotein metabolism & associated disorders.</p>	<p>Metabolism of various lipoproteins and hyperlipoproteinemia's, hypolipoproteinemias, abetalipoproteinemias & Tangiers disease.</p>
<p style="text-align: center;">4.4</p> <p>Describe the structure and functions of lipoproteins, their functions, interrelations & relations with atherosclerosis</p>	<p>Classification structure and functions of lipoproteins- (To be clubbed with 4.1)</p> <p>Metabolic interrelationship between various lipoproteins, Role of lipoproteins in transport of cholesterol and reverse cholesterol transport, atherosclerosis- (To be clubbed with 4.3)</p>

<p style="text-align: center;">4.5 & 4.7</p> <p>Interpret laboratory results of analytes associated with metabolism of lipids</p>	<p>Various lipid profile tests with their biological reference intervals. Interpret lipid profile results in various disorders like hyper/hypolipoproteinemias, diabetes mellitus, nephrotic syndrome, disorders of thyroid etc.</p>
<p style="text-align: center;">4.6</p> <p>Describe the therapeutic uses of prostaglandins and inhibitors of eicosanoid synthesis.</p>	<p>Various eicosanoid classes (prostaglandins, leukotrienes & thromboxanes), their functions. Key features of synthesis of eicosanoids and inhibitors of eicosanoid synthesis, therapeutic uses of prostaglandins</p>
<p style="text-align: center;">4.7</p> <p>Interpret laboratory results of analytes associated with metabolism of lipids.</p>	<p>Same as 4.5</p>
<p style="text-align: center;">5 5.1</p> <p>Describe and discuss structural organization of proteins.</p>	<p>Chemistry and Metabolism of Proteins</p> <p>General nature of amino acid, classification and importance of amino acids with examples, peptide bond formation, biologically important peptides, different levels of protein structure including disulfide & weak bonds with examples and clinical significance.</p>

Competency No.	Topics & Subtopics
<p style="text-align: center;">5.2</p> <p>Describe and discuss functions of proteins and structurefunction relationships in relevant areas e.g. hemoglobin and selected hemoglobinopathies</p>	<p>Definition, various classifications with examples and functions of proteins, plasma proteins, structure - function relationship of proteins like myoglobin, normal & abnormal hemoglobin</p>

<p style="text-align: center;">5.3</p> <p>Describe the digestion and absorption of dietary proteins.</p>	<p>Digestion, absorption and transport of dietary proteins with related disorders like Hartnup disease, cystinuria & glycinuria.</p>
<p style="text-align: center;">5.4</p> <p>Describe common disorders associated with protein metabolism.</p>	<p>Role of transamination & deamination reactions in metabolism of amino acids in the formation of ammonia with their clinical significance.</p> <p>Transport of ammonia, pathway of urea cycle, its significance, regulation and metabolic disorders associated with urea cycle.</p> <p>Metabolic pathways for Glycine, Phenylalanine & Tyrosine, Sulphur containing amino acids (Methionine, Cysteine & Cystine) and branch chain amino acids (Valine, Isoleucine & Leucine), their role in biosynthesis of variety of specialized biomolecules, associated metabolic disorders</p> <p>For Tryptophan- Only important biomolecules formed & clinical significance.</p>
<p style="text-align: center;">5.5</p> <p>Interpret laboratory results of analytes associated with metabolism of proteins.</p>	<p>Interpret laboratory results of protein metabolism for example: Levels of various metabolites in blood or urine in metabolic disorders like- urea cycle disorders, Phenylketonuria, Tyrosinemia, Alkaptonuria, Hartnups disease, MSUD, cystinuria & homocystinuria</p>
<p style="text-align: center;">6</p>	<p style="text-align: center;">Metabolism and Homeostasis</p>
<p style="text-align: center;">6.1</p> <p>Discuss the metabolic processes that take place in specific organs in the body in the fed and fasting states.</p>	<p>Integration of carbohydrate, protein and lipid metabolism at cellular and tissue or organ level with its significance, Metabolic processes with role of specific organs in fed, fasting and starvation states.</p>

Competency No.	Topics & Subtopics
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<p style="text-align: center;">6.2</p> <p>Describe and discuss the metabolic processes in which nucleotides are involved.</p>	<p>Important steps in de novo biosynthesis of purine and pyrimidine nucleotides and their regulation, enzymes of the nucleotide biosynthesis that are inhibited by anticancer drugs, salvage pathway for the synthesis of purine nucleotides with its significance, catabolism of purine and pyrimidine nucleotides.</p>
<p style="text-align: center;">6.3</p> <p>Describe the common disorders associated with nucleotide metabolism.</p>	<p>Disorder of nucleotide metabolism like gout, Lesch-Nyhan syndrome, orotic aciduria, with diagnostic tests & biochemical mechanism of nutritional & drug therapy.</p>
<p style="text-align: center;">6.4</p> <p>Discuss the laboratory results of analytes associated with gout & Lesch-Nyhan syndrome.</p>	<p>Lab results of analytes related with gout & Lesch-Nyhan syndrome. Levels of uric acid in blood & urine and presence of urate crystals in synovial fluid in gout, levels of uric acid in blood</p>
<p style="text-align: center;">6.5</p> <p>Describe the biochemical role of vitamins in the body and explain the manifestations of their deficiency</p>	<p>Sources, biochemical functions, daily requirement and deficiency manifestations of fat soluble vitamins (Vitamin A, D, E & K). Sources, biochemical functions and deficiency manifestations of water soluble vitamins (Thiamine, Riboflavin, Niacin, Pantothenic acid, Pyridoxine, Biotin, Folic acid, Cobalamin and vitamin C)</p>
<p style="text-align: center;">6.6</p> <p>Describe the biochemical processes involved in generation of energy in cells.</p>	<p>Electron transport chain, mechanism of oxidative phosphorylation (chemiosmotic theory), substrate level phosphorylation, Uncouplers & Inhibitors of electron transport chain, shuttle systems for transport of extra-mitochondrial NADH</p>
<p style="text-align: center;">6.7</p> <p>Describe the processes involved in maintenance of normal pH, water & electrolyte balance of body fluids and the derangements associated with these.</p>	<p>Acids, bases and buffers, mechanism of action of buffer, dietary sources of acids, bases, normal pH of body fluids. Role of blood buffers, respiratory system & kidney in regulation of blood pH.</p> <p>Disorders associated with blood pH (acidosis and alkalosis) & their compensatory mechanisms, anion gap & its clinical importance.</p>

Competency No.	Topics & Subtopics
<p style="text-align: center;">6.8</p> <p>Discuss and interpret results of Arterial Blood Gas (ABG) analysis in various disorders.</p>	<p>Total body water and its compartmental distribution, various electrolytes- sodium, potassium and chloride, their distribution and clinical conditions related to their plasma level alterations, maintenance of normal water and electrolyte balance and disorders associated with water and electrolyte imbalance.</p> <p>Interpretation of results of arterial blood gas (ABG) analysis in acidosis and alkalosis.</p>
<p style="text-align: center;">6.9</p> <p>Describe the functions of various minerals in the body, their metabolism and homeostasis.</p>	<p>Dietary food sources, daily requirement, biochemical functions, metabolism and homeostasis of: Calcium, phosphorus & magnesium, trace elements (copper, fluoride, iodine, iron, manganese, selenium & zinc)</p>
<p style="text-align: center;">6.10</p> <p>Enumerate and describe the disorders associated with mineral metabolism.</p>	<p>Clinical conditions related to plasma level alterations of: Calcium, phosphorus & magnesium Trace elements (copper, fluoride, iodine, iron, manganese, selenium & zinc)</p>
<p style="text-align: center;">6.11</p> <p>Describe the functions of heme in the body and describe the processes involved in its metabolism and describe porphyrin metabolism</p>	<p>Structure and functions of hemoglobin, role of 2,3-bisphosphoglycerate (BPG) in oxygen binding and delivery, biosynthesis of heme (iron containing porphyrin), its regulation, functions in the body, disorders of heme biosynthesis (various types of porphyria's), catabolism of heme, various types of jaundice</p>

<p style="text-align: center;">6.12</p> <p>Describe the major types of hemoglobin and its derivatives found in the body and their physiological/ pathological relevance.</p>	<p>Types of normal human hemoglobin, types of normal & abnormal derivatives of hemoglobin, various hemoglobinopathies: Sickle cell anemia, Thalassemia</p>
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Competency No.	Topics & Subtopics
<p style="text-align: center;">6.13</p> <p>Describe the functions of the kidney, liver, thyroid and adrenal glands.</p>	<p>1. Functions of liver, disorders& liver function tests</p> <p>2. Functions of kidney, disorders& kidney function tests</p> <p>3. Functions of Thyroid, disorders& thyroid function tests</p> <p>4. Functions of Adrenals , disorders& Adrenal function tests</p>
<p style="text-align: center;">6.14</p> <p>Describe the tests that are commonly done in clinical practice to assess the functions of these organs (kidney, liver, thyroid and adrenal glands).</p>	
<p style="text-align: center;">6.15</p> <p>Describe the abnormalities of kidney, liver, thyroid and adrenal glands.</p>	
7	Molecular Biology
<p style="text-align: center;">7.1</p> <p>Describe the structure and functions of DNA and RNA and outline the cell cycle</p>	<p>Structure and functions of nucleotides, biologically important nucleotides and their importance, major types of synthetic analogs of nucleotides (antimetabolites) and their clinical significance, structure and functions of DNA and RNA, Phases of cell cycle</p>

<p style="text-align: center;">7.2</p> <p>Describe the processes involved in replication & repair of DNA and the transcription & translation mechanisms.</p>	<p>Replication of DNA in Eukaryotes, inhibitors of DNA replication and different types of repair systems of DNA</p> <p>Transcription in Eukaryotes and posttranscriptional modifications, inhibitors, reverse transcription & its significance</p> <p>Genetic code and wobble hypothesis, Translation in Eukaryotes, inhibitors, chaperons , protein folding and posttranslational modifications</p>
<p style="text-align: center;">7.3</p>	<p>Causes and types of genetic mutations with examples.</p> <p>Regulation of Eukaryotic gene expression</p>

Competency No.	Topics & Subtopics
<p>Describe gene mutations and basic mechanism of regulation of gene expression</p> <p style="text-align: center;">7.4</p> <p>Describe applications of molecular technologies like Recombinant DNA technology, PCR in the diagnosis and treatment of diseases with genetic basis.</p>	<p>Recombinant DNA technology, restriction endonucleases, process of construction of recombinant DNA and its applications in medicine, DNA library, blot transfer techniques- southern blotting, northern blotting & western blotting, mechanism of polymerase chain reaction and its application in medical diagnosis and treatment of genetic diseases.</p>
<p style="text-align: center;">7.5</p> <p>Describe the role of xenobiotics in disease</p>	<p>Mechanisms of biotransformation of xenobiotics & associated diseases.</p>
<p style="text-align: center;">7.6</p> <p>Describe the anti-oxidant defense systems in the body.</p>	<p>Enzymatic and non-enzymatic antioxidant defense systems in the body.</p>

<p style="text-align: center;">7.7</p> <p>Describe the role of oxidative stress in the pathogenesis of conditions such as cancer, complications of diabetes mellitus and atherosclerosis.</p>	<p>Free radical, biological sources of reactive oxygen species (ROS) and oxidative damage, oxidative stress, roll of oxidative stress in cancer, diabetes mellitus & atherosclerosis.</p>
<p style="text-align: center;">8</p>	<p>Nutrition</p>
<p style="text-align: center;">8.1</p> <p>Discuss the importance of various dietary components and explain importance of dietary fiber.</p>	<p>Importance of carbohydrates, lipids, proteins & vitamins, quality of proteins, various types of dietary fibers and their importance in the diet.</p>
<p style="text-align: center;">8.2</p> <p>Describe the types and causes of protein energy malnutrition and its effects.</p>	<p>Protein energy malnutrition, Kwashiorkor and Marasmus their causes and effects.</p>

Competency No.	Topics & Subtopics
<p style="text-align: center;">8.3</p> <p>Provide dietary advice for optimal health in childhood and adult, in disease conditions like diabetes mellitus, coronary artery disease and in pregnancy.</p>	<p>Balanced diet in adult, in childhood and in pregnancy for optimal health, dietary advice in diabetes mellitus & coronary heart disease</p>
<p style="text-align: center;">8.4</p> <p>Describe the causes (including dietary habits), effects and health risks associated with being overweight/ obesity</p>	<p>Causes, effects and health risk associated with overweight/ obesity</p>

<p style="text-align: center;">8.5</p> <p>Summarize the nutritional importance of commonly used items of food including fruits and vegetables (macro-molecules & its importance)</p>	<p>Nutritional importance of commonly used items of food like cereals, pulses, eggs, meat, fish, fruits and vegetables and their normal dietary requirements.</p>
<p style="text-align: center;">9</p>	<p>Extracellular Matrix</p>
<p style="text-align: center;">9.1</p> <p>List the functions and components of the extracellular matrix (ECM).</p>	<p>Types & functions of the extracellular matrix (ECM), Components and functions of proteoglycans, glycoproteins & major proteins of ECM</p>
<p style="text-align: center;">9.2</p> <p>Discuss the involvement of ECM components in health and disease.</p>	<p>Disorders associated with components of ECM like Osteogenesis imperfecta, Marfan's Syndrome , Mucopolysaccharidoses, Scurvy & Menkes Disease</p>
<p style="text-align: center;">9.3</p> <p>Describe protein targeting & sorting along with its associated disorders(It is non-core: N)</p>	<p>Types of protein targeting and sorting, disorders due to defects in mitochondrial targeting signals and defects in peroxisomal matrix protein import.</p>
<p style="text-align: center;">10</p>	<p>Oncogenesis and Immunity</p>

Competency No.	Topics & Subtopics
<p style="text-align: center;">10.1</p> <p>Describe the cancer initiation, promotion oncogenes & oncogene activation. Also focus on p53 & apoptosis</p>	<p>Characteristics of cancer cell, molecular basis of cancer (carcinogenesis) ,various carcinogens and initiator, promoter of carcinogens, oncogenes and proto-oncogenes, tumor suppressor genes (retinoblastoma, RB and p53), mechanisms of apoptosis in physiologic and pathologic conditions .</p>

<p style="text-align: center;">10.2</p> <p>Describe various biochemical tumor markers and the biochemical basis of cancer therapy.</p>	<p>Biochemical tumor markers, biochemical basis of chemotherapy, radiotherapy, hormonal therapy, targeted drug therapy and immunotherapy.</p>
<p style="text-align: center;">10.3</p> <p>Describe the cellular and humoral components of the immune system & describe the types and structure of antibody</p>	<p>Cells of the Immune System, types of immune systems (Innate & adaptive), cellular and humoral components of innate and adaptive immune systems, B cell development and the formation of antibodies, types, structure and mechanism of action of antibodies (Immunoglobulins), primary and secondary response</p>
<p style="text-align: center;">10.4</p> <p>Describe & discuss innate and adaptive immune responses, self/non-self-recognition and the central role of T-helper cells in immune responses</p>	<p>Innate and adaptive immune systems, immunological memory, T lymphocytes development, role of helper T cells (CD4+ T cells) and cytotoxic T cells/killer cells/CD8+ T cells in immune responses, Brief concept of MHC</p> <p>Disorders – Immunodeficiency, autoimmunity & hypersensitivity.</p>
<p style="text-align: center;">10.5</p> <p>Describe antigens and concepts involved in vaccine development.</p>	<p>Antigens, concept involved in vaccine development and their types.</p>
<p style="text-align: center;">11</p>	<p style="text-align: center;">Biochemical Laboratory Tests</p>
<p style="text-align: center;">11.1</p> <p>Describe commonly used laboratory apparatus and equipments, good safe laboratory practice and waste disposal.</p>	<p>Common lab equipments and apparatus like test tubes, pipettes & other glassware , auto pipettes, centrifuge, balances, oven, water bath good safe laboratory practice , management of needle stick injury & latest guidelines of disposal of biomedical waste</p>
<p style="text-align: center;">Competency No.</p>	<p style="text-align: center;">Topics & Subtopics</p>

<p style="text-align: center;">11.2</p> <p>Describe the preparation of buffers and estimation of pH.</p>	<p>Preparation of buffer –acidic and alkaline. Measurement of pH paper and pH meter</p>
<p style="text-align: center;">11.3</p> <p>Describe the chemical components of normal urine.</p>	<p>Chemical constituents of normal urine</p>
<p style="text-align: center;">11.4 & 11.20</p> <p>11.4: Perform urine analysis to estimate and determine normal and abnormal constituents.</p> <p>11.20: Identify abnormal constituents in urine; interpret the findings and correlate these with pathological states.</p>	<p>Physical characteristics and organic constituents of urine. Collection of random & 24 hour urine sample Urine Report: Physical characteristics and abnormal constituents, urine dipsticks</p> <p>Interpretation of Urine Abnormalities</p>
<p style="text-align: center;">11.5</p> <p>Describe screening of urine for inborn errors & describe the use of paper chromatography. Club Paper chromatography of amino acid & TLC from competency no 11.16</p>	<p>Urine: Screening of inborn errors. Paper chromatography for diagnosis of inborn errors</p>
<p style="text-align: center;">11.6</p> <p>Describe the principles of colorimetry. (Club spectrophotometry from competency no 11.18)</p>	<p>Colorimeter- Principle, Beer and Lambert’s law & applications. Principles of spectrophotometry.</p>
<p style="text-align: center;">11.7,11.8, 11.21 & 11.22</p> <p>11.7- Demonstrate the estimation of serum creatinine and creatinine clearance</p> <p>11.8- Demonstrate estimation of serum proteins, albumin and A:G ratio</p> <p>11.21- Demonstrate estimation of glucose, creatinine, urea and total protein in serum.</p> <p>11.22- Calculate albumin: globulin A:G ratio and creatinine clearance</p>	<p>Estimation of serum creatinine, urine creatinine and calculation of creatinine clearance and their clinical interpretation.</p> <p>Estimation of serum proteins, albumin and calculation of A/G ratio and their clinical interpretation.</p> <p>Estimation of plasma glucose, serum urea and their clinical interpretation.</p>
<p style="text-align: center;">11.9</p>	<p>Estimation of serum total cholesterol and HDL cholesterol, their ratio their clinical interpretation.</p>

Competency No.	Topics & Subtopics
<p>Demonstrate the estimation of serum total cholesterol and HDL cholesterol</p> <p style="text-align: center;">11.10</p> <p>Demonstrate the estimation of triglycerides</p>	<p>Estimation of serum triglycerides and their clinical interpretation.</p>
<p style="text-align: center;">11.11</p> <p>Demonstrate estimation of calcium and phosphorous</p>	<p>Estimation of serum calcium and phosphorus their clinical interpretation.</p>
<p style="text-align: center;">11.12</p> <p>Demonstrate the estimation of serum bilirubin</p> <p style="text-align: center;">11.13 & 2.2</p> <p>11.13- Demonstrate the estimation of SGOT/ SGPT</p>	<p>Estimation of serum bilirubin: Total, direct and indirect, their clinical interpretation.</p> <p>Estimation of SGOT (AST)/ SGPT(ALT) and their clinical interpretation.</p>
<p style="text-align: center;">11.14</p> <p>Demonstrate the estimation of alkaline phosphatase</p>	<p>Estimation of serum ALP and their clinical interpretation.</p>
<p style="text-align: center;">11.15</p> <p>Describe & discuss the composition of CSF</p>	<p>Physical characteristics and chemical composition of CSF</p>

<p style="text-align: center;">11.16 & 11.19</p> <p>11.16- Observe use of commonly used equipment's/techniques in biochemistry laboratory including:</p> <ul style="list-style-type: none"> •pH meter •Paper chromatography of amino acid •Protein electrophoresis •TLC, PAGE •Electrolyte analysis by ISE •ABG analyzer •ELISA •Immunodiffusion •Autoanalyser •Quality control 	<p>Principle, application and working of following lab equipment's/techniques: pH meter, paper chromatography of amino acids, protein electrophoresis, TLC, PAGE, Electrolyte analysis by ISE, ABG analyzer, ELISA, immunodiffusion, auto analyzer, quality control, DNA isolation from blood/tissue</p> <p>(Paper chromatography of amino acid ,TLC clubbed with 11.5)</p>
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Competency No.	Topics & Subtopics
<p>•DNA isolation from blood/ tissue</p> <p style="text-align: center;">11.19</p> <p>Outline the basic principles involved in the functioning of instruments commonly used in a biochemistry laboratory and their applications.</p>	

<p style="text-align: center;">11.17</p> <p>Explain the basis and rationale of biochemical tests done in the following conditions:</p> <ul style="list-style-type: none"> - diabetes mellitus, - dyslipidemia, - myocardial infarction, - renal failure, gout, - proteinuria, - nephrotic syndrome, - edema, - jaundice, - liver diseases, pancreatitis, disorders of acid- base balance, thyroid disorders. 	<p>Basis and rationale of biochemical tests required in the following Conditions:</p> <ul style="list-style-type: none"> - Diabetes mellitus-blood & urine glucose, microalbumin, ketone bodies and glycated hemoglobin – (Club with 3.8 & 3.10) - Dyslipidemia-lipid profile (Club with 4.5 & 4.7) - Myocardial infarction –CK, LDH, Troponin (Club with 2.6 & 2.7) - Renal failure & nephrotic syndrome, – BUN, Creatinine, urinary protein, cholesterol (Club with 3.8 & 3.10) - Gout- serum uric acid, synovial fluid analysis (Club with 6.3 & 6.4) - liver diseases & Jaundice- LFTs (Club with 6.1) Pancreatitis- serum amylase and lipase (Club with 2.5& 7 2.7) <p>Disorder of acid base balance- ABG analysis for pH, pO₂, O₂ saturation pCO₂, HCO₃ and base excess (BE) (Club with 6.7,6.8)</p> <ul style="list-style-type: none"> - Thyroid disorder – serum free and total T3 & T4 and serum TSH (Club with 6.1)
<p style="text-align: center;">11.18</p> <p>Discuss the principles of spectrophotometry. (Clubbed with 11.6)</p>	<p>Spectrophotometer –principle & use</p>
<p style="text-align: center;">Competency No.</p>	<p style="text-align: center;">Topics & Subtopics</p>

<p style="text-align: center;">11.19</p> <p>Outline the basic principles involved in the functioning of instruments commonly used in a Biochemistry laboratory and their applications. (Clubbed with & 11.6 & 11.16)</p>	<p>Instruments commonly used in Biochemistry laboratory & their applications.</p>
<p style="text-align: center;">11.20</p> <p>Identify abnormal constituents in urine, interpret the findings and correlate these with pathological states. (Clubbed with 11.4)</p>	
<p style="text-align: center;">11.21</p> <p>Demonstrate estimation of glucose, creatinine, urea and total protein in serum. (Clubbed with 11.7, 11.8)</p>	
<p style="text-align: center;">11.22</p> <p>Calculate albumin: globulin (A/G)ratio and creatinine clearance (Clubbed with 11.7, 11.8)</p>	
<p style="text-align: center;">11.23</p> <p>Calculate energy content of different food items, identify food items with high and low glycemic index and explain the importance of these in the diet.</p>	<p>Energy contents of lipids, carbohydrates & proteins in common food items.</p>
<p style="text-align: center;">11.24</p> <p>Enumerate advantages and/or disadvantages of use of unsaturated, saturated and trans fats in food.</p>	<p>Advantages of unsaturated fats, disadvantages of saturated and trans fats in food</p>

Paper wise distribution of topics
Year: First MBBS Subject: Biochemistry

Paper	Section	Topics	Competency nos. BI
I	A	MCQs on all topics of the paper I	
	B & C	Basic Biochemistry	1.1
		Enzymes	2.1-2.7
		Chemistry & metabolism of carbohydrates	3.1-3.10
		Chemistry & metabolism of lipids	4.1-4.7
		Biological oxidation	6.6
		Xenobiotics	7.5
		Antioxidants & defence system	7.6-7.7
		Nutrition	8.1-8.5
		Extracellular matrix	9.1-9.3
		Oncology , oncogenesis & immunity	10.1-10.5
		Biomedical waste	11.1
		Physical characteristics and chemical composition of CSF	11.15
		Energy contents of lipids, carbohydrates & proteins in common food items, Advantages of unsaturated fats. Disadvantages of saturated and trans fats in food	11.23 & 11.24
	AETCOM- 1.4		
For long answer question and scenario based / application questions, topics will not be repeated.			
II	A	MCQs on all topics of the paper II	
	B & C	Chemistry & metabolism of proteins	5.1-5.5
		Integration & starvation	6.1
		Nucleic acid metabolism	6.2-6.4

	Organ function test	6.13-6.15
	Molecular biology	7.1-7.3
	Genetic engineering	7.4
	Urine: Screening of inborn errors.	11.5
	Principle, application and working of following lab equipments/techniques: pH meter, paper chromatography of amino acids, protein electrophoresis, TLC, PAGE, Electrolyte analysis by ISE, ABG analyzer, ELISA, immunodiffusion, auto analyzer, quality control, DNA isolation from blood/tissue	11.16
For long answer question and scenario based / application questions, topics will not be repeated.		

Internal Assessment

Biochemisry

Applicable w.e.f August 2019 onwards examination for batches admitted from June 2019 onwards

S	I-Exam (December)			II-Exam (March)		
	Theory	Practical (Including 05 marks For Journals And Log Book)	Total Marks	Theory	Practical (Including 05 marks For Journals And Log Book)	Total Marks
1	100	50	150	100	50	150

Preliminary Examinations			Remedial internal assessment examination for Non - eligible students		
III-Exam (July)			October		
Theory	Practical Including 10 Marks for Journal & Log Book	Total Marks	Theory	Practical Including 10 Marks for Journal & Log Book	Total Marks
200	100	300	200	100	300

1. There will be 3 internal assessment examinations in the academic year. The structure of Preliminary examinations should be similar to the structure of University examination.
2. There will be only one additional examination for absent students (due to genuine reason) after approval by the Committee Constituted for the same. It should be taken after preliminary examination and before submission of internal assessment marks to the University.
3. First internal assessment examination will be held in December, second internal assessment examination will be held in March and third internal assessment examination will be held in July.
4. Internal assessment marks for theory and practical will be converted to out of 40. Internal assessment marks, after Conversion, should be submitted to university by 7th of August.
5. The student must secure at least 50% marks for total marks (combined in theory and practical / clinical: not less than 40% marks in theory and practical separately) assigned for internal assessment in a particular subject in order to be eligible for appearing at the final university examination of that subject. Internal assessment marks will reflect as separate head of passing at the summative examination.
6. **Remedial internal assessment examination for Non - eligible students:** Student who were not eligible due to less than 50% combined or less than 40% in any theory or practical, will re appear as repeater student for Prelim exam which will be conducted before Supplementary Exam. His/her internal assessment will be calculated on the basis of this Examination marks only. Students who will not be eligible in this Examination will appear with regular batch as repeater student.
 7. The internal assessment marks of the remedial examination alone shall be considered and converted into out of 40.

8. Conversion Formula for calculation of marks in internal assessment examinations

	First IA	Second IA	Third IA (Prelim)	Total	Internal assessment marks: Conversion formula (out of 40)	Eligibility to appear for final University examination (after conversion out of 40) (40% Separately in Theory and Practical, 50% Combined)	
Theory	100	100	200	400	$\frac{\text{Total marks obtained}}{10}$	16 (minimum)	Total of Theory + Practical <u>Must</u> be 40.
Practical	50	50	100	200	$\frac{\text{Total marks obtained}}{5}$	16 (minimum)	

9. Conversion formula for calculation of marks in Remedial internal assessment examination

	Remedial Exam (Prelim)	Int. Assess. marks conversion formula (out of 40)	Eligibility to appear for Supplementary Exam. (after conversion out of 40) (40% Separately in Theory and Practical, 50% Combined)	
Theory	200	$\frac{\text{Total marks obtained}}{5}$	16 (minimum)	Total of Theory + Practical <u>Must</u> be 40.
Practical	100	$\frac{\text{Total marks obtained}}{2.5}$	16 (minimum)	

While preparing Final Marks of Internal Assessment, the rounding-off marks shall done as illustrated in following table

Internal Assessment Marks	Final rounded marks
15.01 to 15.49	15
15.50 to 15.99	16

First Year MBBS Practical Mark's Structure Internal Assessment Examinations I & II (Applicable for batch admitted in M.B.B.S Course from Academic Year 2019-20 & onwards)

Biochemistry						
Practical					Oral/Viva	Total
Seat No.	Quantitative Experiment	Quantitative Experiment/Urine organic/Urine Report/Quality Control/Interpolation of lab Report /Interpolation of Special Technique	Spots	Journal/Logbook		
	A	B	C	D	E	F
Max. Marks	15	15	5	5	10	50

First Year MBBS Practical Marks Structure (Prelim)

(Applicable w.e.f August 2019 onwards examination for batches admitted from June 2019 onwards)

Biochemistry

Seat No	Case Based Quantitative Estimation	Urine Report/ Quantitative estimation	Quality Control	Interpretation of lab Reports & special techniques (Minimum 2 Interpretation)	Spots	Journal & Logbook	Practical Total	Viva Voce/ Oral	Practical/Viva Total Marks
	A	B	C	D	E	F	G	H	I
Max. Marks	25	15	10	20	10	10	90	10	100

(Please Note - The above examination pattern will be applicable to the students admitted from Academic Year 2019-20 and onwards, which is informed to all Medical Colleges vide University letter No MUHS /X-1 /UG /1692 /2020 Date: 28/02/2020)

First Year MBBS Practical Marks Structure (MUHS Exam)

(Applicable w.e.f August 2019 onwards examination for batches admitted from June 2019 onwards)

Biochemistry

Seat No	Case Based Quantitative Estimation	Urine Report/ Quantitative estimation	Quality Control	Interpretation of lab Reports & special techniques (Minimum 2 Interpretation)	Spots	Practical Total	Viva Voce/ Oral	Practical/Viva Total Marks
	A	B	C	D	E	F	G	H
Max. Marks	25	15	10	20	10	80	20	100

(Please Note - The above examination pattern will be applicable to the students admitted from Academic Year 2019-20 and onwards, which is informed to all Medical Colleges vide University letter No MUHS /X-1 /UG /1692 /2020 Date: 28/02/2020)

MAHARASHTRA UNIVERSITY OF HEALTH SCIENCES, NASHIK
FORMAT / SKELETON OF QUESTION PAPER

1. Course and Year : First MBBS <i>(applicable w.e.f. Sept. 2020& onwards examinations)</i>	2. Subject Code : Appendix - a
3. Subject (PSP) : Anatomy / Physiology / Biochemistry (TT) :	
4. Paper : : I	5. Total Marks : 100
	6. Total Time : 3 Hrs.
	7. Remu. (PS) : Rs. 300/-
	8. Remu. (PM) : Rs. 350/-
9. Web Pattern : []	10. Web Skeleton : []
	11. Web Syllabus : []
	12. Web Old QP : []

Instructions:

SECTION "A" MCQ

- 1) Fill ● (dark) the appropriate empty circle below the question number once only.
- 2) Use **blue/black** ball point pen only.
- 3) Each Question carries **One mark**.
- 4) A student will not be allotted any marks if he/she overwrites, strikes out or puts white ink on the circle once filled (darkened)
- 5) Do not write anything on the blank portion of the question paper if written anything, such type of act will be considered as an attempt to resort to unfair means.

SECTION "A" MCQ (20 Marks)

- Q1. Multiple Choice Questions (Total 20 MCQ of One mark each) **(4MCQ Should be clinical application based)** (20x1=20)
- a) b) c) d) e) f) g) h) i) j)
k) l) m) n) o) p) q) r) s) t)

SECTION "B"

- Instructions:**
- 1) Use **blue/black** ball point pen only.
 - 2) **Do not** write anything on the **blank portion of the question paper**. If written anything, such type of act will be considered as an attempt to resort to unfair means.
 - 3) **All questions are compulsory.**
 - 4) The number to the **right** indicates **full marks**.
 - 5) Draw diagrams **wherever** necessary.
 - 6) Distribution of syllabus in Question Paper is only meant to cover entire syllabus within the stipulated frame. The Question paper pattern is a mere guideline. Questions can be asked from any paper's syllabus into any question paper. Students cannot claim that the Question is out of syllabus. As It is only for the placement sake, the distribution has been done.
 - 7) Use a common answerbook for all sections.

SECTION "B" (80 Marks)

2. Brief answer questions (Any Ten out of Eleven) (10x 2= 20)
a) b) c) d) e) f) g) h) i) j) k)
3. Short Answer Questions (Any Eight out of Nine) (8x5= 40)
One SAQ has to be on AETCOM Module (**For Anatomy 1.1, 1.5, For Physiology 1.2., 1.3&For Biochemistry, 1.4**) & Minimum 2 SAQs should be Case Based Questions/ Clinically applied Questions.
a) b) c) d) e) f) g) h) i)
4. Long Answer Questions (Any Two out of Three) (2x 10= 20)
a) b) c)

Note: All questions should be structured .Wherever necessary; split up of marks should be specified.

MAHARASHTRA UNIVERSITY OF HEALTH SCIENCES, NASHIK
FORMAT / SKELETON OF QUESTION PAPER

1. Course and Year : First MBBS <i>(applicable w.e.f. Sept. 2020& onwards examinations)</i>	2. Subject Code : Appendix - a
3. Subject (PSP) : Anatomy / Physiology / Biochemistry (TT) :	
4. Paper : : II	5. Total Marks : 100
	6. Total Time : 3 Hrs.
	7. Remu. (PS) : Rs. 300/-
	8. Remu. (PM) : Rs. 350/-
9. Web Pattern : []	10. Web Skeleton : []
	11. Web Syllabus : []
	12. Web Old QP : []

Instructions:

SECTION "A" MCQ

- 1) Fill ● (dark) the appropriate empty circle below the question number once only.
- 2) Use **blue/black** ball point pen only.
- 3) Each Question carries **One mark**.
- 4) A student will not be allotted any marks if he/she overwrites, strikes out or puts white ink on the circle once filled (darkened)
- 5) Do not write anything on the blank portion of the question paper if written anything, such type of act will be considered as an attempt to resort to unfair means.

SECTION "A" MCQ (20 Marks)

1. Multiple Choice Questions (Total 20 MCQ of One mark each) **(4 MCQ Should be clinical application based)** (20x1=20)
- a) b) c) d) e) f) g) h) i) j)
k) l) m) n) o) p) q) r) s) t)

SECTION "B"

- Instructions:**
- 1) Use **blue/black** ball point pen only.
 - 2) **Do not** write anything on the **blank portion of the question paper**. If written anything, such type of act will be considered as an attempt to resort to unfair means.
 - 3) **All** questions are **compulsory**.
 - 4) The number to the **right** indicates **full** marks.
 - 5) Draw diagrams **wherever** necessary.
 - 6) Distribution of syllabus in Question Paper is only meant to cover entire syllabus within the stipulated frame. The Question paper pattern is a mere guideline. Questions can be asked from any paper's syllabus into any question paper. Students cannot claim that the Question is out of syllabus. As It is only for the placement sake, the distribution has been done.
 - 7) Use a common answer book for all sections.

SECTION "B" (80 Marks)

2. Brief answer questions (Any Ten out of Eleven) (10x 2= 20)
- a) b) c) d) e) f) g) h) i) j) k)
3. Short Answer Questions (Any Eight out of Nine) (8x5= 40)
- Minimum 2 SAQs should be Case Based Questions/ Clinically applied Questions.
4. a) b) c) d) e) f) g) h) i) (2x 10= 20)
- Long Answer Questions (Any Two out of Three)
- a) b) c)

Note: All questions should be structured .Wherever necessary, split up of marks should be specified.



MAHARASHTRA UNIVERSITY OF HEALTH SCIENCES, NASHIK
MARKLIST FOR PRACTICAL / ORAL / VIVA VOCE
(Summer / Winter – 20...Exam (MBBS UG Courses))

(Applicable for batch admitted in M.B.B.S Course from Academic Year 2019-20 & onwards)

Course : **FIRST MBBS**

Subject : **Biochemistry**

CENTRE :

Marks : (Practical = Practical/Clinical + Viva) Min. 50 Max. 100

Date : / /20

Batch :

Seat No.	Practical						Oral/Viva	Total
	Case Based Quantitative Estimation	Urine Report/ Quantitative estimation	Quality Control	Interpretation of lab Report & special techniques (Minimum 2 interpretations)	Spots	Practical (Total)	Viva Voce/Oral Total	Practical/Viva Total Marks
	A	B	C	D	E	F	G	H
Max. Marks	25	15	10	20	10	80	20	100

Note : Both Examiners should jointly conduct practical examination for each student.

Verified above entries from Answerbooks and we hereby certify that the marks entered against each Seat Number are found correct.

NAME OF EXAMINER		COLLEGE	SIGNATURE WITH DATE	
1			Convenor	
2			Internal	
3			External	
4			External	

Biochemistry

BOOKS RECOMMENDED:

TEXT BOOKS:

1. Biochemistry by -Pankaja Naik
2. Biochemistry for Medical students by -D.M.Vasudevan & Shree Kumari S.
3. Medical Biochemistry - U.Satyanarayan.

REFERENCE BOOKS:

1. Integrated textbook of Biochemistry by- Indumati V and Sowbhagya Lakshmi.
2. Harper's Biochemistry.
3. Medical Biochemistry by -N.V.Bhagwan.
4. Biochemistry by- L.Stryer.

Distribution of Subject wise AETCOM Modules for Second MBBS

Sr. No.	Subject	AETCOM
1	Pharmacology	2.1, 2.2, 2.3
2	Pathology	2.4, 2.8
3	Microbiology	2.5, 2.6, 2.7

Course Content

(Based on Medical Council of India, Competency based Undergraduate curriculum for the Indian Medical Graduate, 2018. Vol. 2 ; page no.41-59)

Applicable for batch admitted in M.B.B.S Course from Academic Year 2019-20 & onwards

Subject: Community Medicine

Year: First MBBS

Competency No. CM	Topics & subtopics
	Health care of the communtiy
17.1	Health care to community
	Visit to primary/secondary health facility
	Role of physician in health care delivery- Integration with AETCOM module 1.1 What does it mean to be doctor?
17.2	Community diagnosis
17.3	Primary Health Care- Def, Principles
17.4	National Health Policies , MDGs
	SDL- Current national / stale level status of health indicators
17.5	Health Care delivery in India
	Nutrition
5.1	Common sources of various nutrients

	Demonstration: Foods we eat & their nutritive values
	Special nutritional requirements according to age, sex, activity, physiological conditions
	SDL- Foods customs in our families for special groups such as children/ pregnant/lactating women/ill persons (data collection by interviewing 5 homemakers)
5.2	Nutritional assessment at individual level- DOAP
	Nutritional assessment at family and community level -DOAP
5.3	Common nutritional deficiency diseases- Epidemiology , prevention and control
5.4	Diet planning at individual level
	Diet planning at family level
5.5	Nutritional surveillance and rehabilitation
	Visit to Nutritional rehabilitation centre
	Nutrition education
5.6	National Nutritional Policy , National Nutritional Programs
5.7	Food hygiene , food adulteration
	Demonstration of simple tests to identify food adulteration
5.8	Food fortification , food additives
	Concept of Health and Disease
1.1	Concept of Public Health
1.2	Concept , definition , determinants of health
	Determinants of health- Group discussion
1.3	Epidemiological triad , multifactorial causation of disease
	SDL-Identification of multiple causative factors of 2 common diseases(interview in wards/ family visit)

1.4	Natural history of disease
1.5	Levels of Prevention
1.6	Health education , IEC, BCC
1.7	Indicators of health
	Exercise on calculation of indicators
1.8	Demographic profile of India
	Exercise on calculation of demographic indicators , fertility rates
	SDL- Demographic trends in India
1.9	Communication skills in Health
	DOAP-Verbal/non verbal communication
	Empathy- What does it mean to be patient?
	AETCOM module 1.2
1.10	Doctor patient relationship
	SDL- Determinants of doctor patient relationship(Collection of data from patients/ relatives)
	Case discussions – Integration with AETCOM module 1.3
	Principles of health promotion and education
4.1	Methods of health education
	Demonstration of various methods of health education
	Improving communication, barriers in communication- integration with AETCOM module 1.4
4.2	Organization of health educational and counselling activities for individual & family
	Organization of counselling activity in ward/OPDs
	Organization of community based health educational activity(community/school)

4.3	Evaluation of health education & promotion program
	SDL- Preparation of tool for evaluation
	Conducting evaluation of health education & promotion program

Note:

- 1. The observations/ reflections of family / hospital visits , DOAP sessions , Self directed learning activities (SDL) , practicals should be entered in the log book immediately after the assignment.**
- 2. The observer / facilitator / teacher will provide the written brief feedback in the log book for the learner related to the competencies.**

Course Content
Second Professional (from October 2020)
Subject: Community Medicine Theory / Practical

(Based on Medical Council of India, Competency based Undergraduate curriculum for the Indian Medical Graduate, 2018.
Vol. 2; page nos. 41-59)

1. Total Teaching hours :60
2. A. Lectures(hours): 20 B. Self-directed learning (hours) :10
C. Clinical Postings (hours): 4 weeks (20 working days x 3)- 60 hours
D. Small group teachings/tutorials/Integrated teaching/Practicals (hours): 30

Competency Nos.	Topics Subtopics
	Environmental Health Problems
CM3.1	Indicators of air pollution. Health hazards of air, water, noise, radiation and pollution. Prevention and control of environmental pollution.
CM3.2	Safe and wholesome water, sanitary sources of water, water purification processes, water quality standards, concepts of water conservation and rainwater harvesting
CM3.3	Epidemiology , prevention and control of water borne diseases /jaundice/hepatitis/ diarrheal diseases
CM3.4	Solid waste, human excreta , sullage and sewage disposal
CM3.5	Standards of housing and the effect of housing on health
CM3.6	Role of vectors in the causation of diseases. National Vector Borne Disease Control Program
CM3.7	Identifying features and life cycles of vectors of Public Health importance and their control measures
CM3.8	Mode of action, application cycle of commonly used insecticides and rodenticides
	Epidemiology of communicable diseases
CM 7.2	Modes of transmission and measures for prevention and control of communicable
CM8.1	Epidemiological and control measures including the use of essential laboratory tests at the primary care level for communicable diseases
	Epidemiological characteristics and control measures including the use of essential laboratory tests at the primary care level for Airborne infections & Exanthematous fevers e.g TB, Influenza, ARI, Measles, Mumps, Diphtheria, Pertuisis.
	Epidemiological characteristics and control measures including the use of essential laboratory tests at the primary care level for Faeco-oral diseases, Infective hepatitis e.g polio, AGE, Typhoid etc.
	Epidemiological characteristics and control measures including the use of essential laboratory tests at the

Competency Nos.	Topics Subtopics
	primary care level for zoonotic diseases e.g Rabies, Plague, Brucellosis, Leptospirosis etc
	Epidemiological characteristics and control measures including the use of essential laboratory tests at the primary care level for Arthropod borne diseases eg Malaria, Chikungunya, Filaria, JE etc
	Epidemiological characteristics and control measures including the use of essential laboratory tests at the primary care level for Surface infections and STDs eg HIV, Syphilis, Gonorrhoea etc
	Epidemiological characteristics and control measures including the use of essential laboratory tests at the primary care level for Emerging and reemerging diseases eg Ebola virus disease, Nipah
CM8.2	Epidemiological characteristics and control measures including the use of essential laboratory tests at the primary care level for Non Communicable diseases (diabetes, Hypertension, Stroke, obesity and cancer etc.)
CM8.3	Disease specific National Health Programs including their prevention and treatment of a case
CM8.4	Principles and measures to control a disease epidemic
CM 7.7	Steps in the Investigation of an epidemic of communicable disease and the principles of control measures
CM8.5	Principles of planning, implementing and evaluating control measures for disease at community level bearing in mind the public health importance of the disease
CM8.6	Training of health workers in disease surveillance, control & treatment and health education
	Disaster Management
CM13.1	Concept of Disaster management
CM13.2	Disaster management cycle
CM13.3	Man made disasters in the world and in India
CM13.4	National Disaster management Authority
	Hospital waste management
CM14.1	Hospital waste- definition and classification
CM14.3	Laws related to hospital waste management
	Essential Medicine
CM19.1	Essential Medicine List (EML)
CM19.2	Essential medicine in primary health care
CM19.3	Counterfeit medicine and its prevention

Competency Nos.	Topics Subtopics
	Relationship of social and behavioural to health and disease
CM2.1	Clinico socio-cultural and demographic assessment of the individual, family and community
CM2.2	Socio-cultural factors, family (types), its role in health and disease & assessment of socio-economic status
CM2.3	Factors affecting health seeking behaviour and assessment of barriers for the same.
CM2.4	Social psychology, community behaviour and community relationship and their impact on health and disease
CM2.5	Indicators for assessment of poverty , social security measures and its relationship to health and disease

Second Professional - Community Medicine : Proposed List of Practicals / DOAP/ SDL Activities

Competency no.	Practical / DOAP
CM3.2	Visit to water purification plant
	Visit to Dist Public Health Laboratory
	Exercise on interpretation of water analysis report
	DOAP- water collection , estimation of chlorine demand/ residual chlorine content of drinking water , OT test
CM 3.2-3.4SDL	Preparation of Proforma/ checklist for sanitary survey of the community
3.4	Visit to sewage purification plant
3.6	Visit to office of Dist Vector borne Diseases Control Program
3.7	Demonstration: Identifying characteristics of vectors of Public Health Importance – DOAP
SDL	Preparation of Proforma/ checklist for entomological survey of the community
8.1	Visits to the Dist Offices/ Units/ clinics related to implementation of Disease Control Measures of Communicable Diseases

8.1	Visit to Public Health Microbiology / Reference laboratories
8.1	DOAP- Methods of Specimen collection and transportation of various body specimens in various communicable diseases
CM 7.7	Describe and demonstrate the steps in the Investigation of an epidemic of communicable disease and describe the principles of control measures
8.4	DOAP- Analysis & interpretation of disease outbreak data
8.4	DOAP- Preparation of epidemic curve / spot map with the help of given data and its interpretation
8.6	Visit to Dist Training Centre / Dist Disease Surveillance Unit
13.2	DOAP- Preparation of Disaster Preparedness Plan for a Primary Health Centre
13.4	Visit to Civil Defence Dept / Dist Disaster Management Office
14.1 SDL	Conducting Survey of Hospital Wastes Segregation Practices
14.1	DOAP- Hospital waste segregation of various types of hospital wastes
19.2	Visit to hospital pharmacy

Second Professional - Proposed Activities in First Clinical Community Medicine Posting (4 weeks)

Week	Proposed Activities
First and second week	<ul style="list-style-type: none"> a. Clinico socio-cultural and demographic assessment of the individuals and allotted families, b. Sanitary survey of the allotted households c. Assessment of housing conditions in allotted families d. Entomological survey of the allotted households e. Analysis of survey findings of the allotted families and group discussion on important health related issues in the community. f. Organization of health educational activity for the allotted families and allotted community.
Third and fourth week	Epidemiological history taking of common communicable diseases admitted in hospital such as diarrhoeal diseases , jaundice , typhoid , food poisoning , measles , mumps , influenza, diphtheria , pertussis , tuberculosis, malaria, filarial , dengue fever , HIV / AIDS, STDs etc

Note:

1. The observations/ reflections of family / hospital / community visits, DOAP sessions, Self directed learning activities (SDL), practicals should be entered in the log book immediately after the assignment.
2. The observer / facilitator / teacher will provide the written brief feedback in the log book for the learner related to the competencies.

Course Content

Third Professional Part I (from October 2020)

Subject :Community Medicine Theory / Practical

(Based on Medical Council of India, Competency based Undergraduate curriculum for the Indian Medical Graduate, 2018. Vol. 2 ; page nos. 41-59)

1. Total Teaching hours : 105

2. A. Lectures(hours): 40 B. Self directed learning (hours) :5

C. Clinical Postings(hours): 6 weeks(30 working days x 3)- 90 hours

D. Small group teachings/tutorials/Integrated teaching/Practicals(hours): 60

Competency Nos.	Topics & Subtopics
	Epidemiology
CM 7.1	Epidemiology- definition , principles, concepts and uses
CM 7.3	Sources of epidemiological data
CM 7.4	Morbidity and mortality indicators
CM 7.5	Epidemiological study designs
CM 7.6	Screening
CM 7.8	Principles of association, causation and biases in epidemiological studies
CM 7.9	Application of computers in epidemiology
	Basic statistics and its applications
CM6.1	Concepts of research problem ,Research question , research hypothesis for a study
CM6.2	Methods of collection, classification, analysis, interpretation and presentation of statistical data
SGT CM6.3	Application of elementary statistical methods including test of significance in various study designs
CM6.4	Common sampling techniques, simple statistical methods, frequency distribution, measures of central tendency and dispersion

Competency Nos.	Topics & Subtopics
	Epidemiology of non- communicable diseases
CM8.2	Epidemiological and control measures including the use of essential laboratory tests at the primary care level for Non Communicable diseases (diabetes, Hypertension, Stroke, obesity and cancer etc.)
CM8.3	National Health Programs
CM8.5	Principles of planning, implementing and evaluating control measures for disease at community level bearing in mind the public health importance of the disease
CM8.6	Education and training of health workers in disease surveillance, control & treatment and health education
CM8.7	Principles of management of information systems
	Demography and vital statistics
CM9.1	Principles of Demography, Demographic cycle, Vital statistics
CM9.2	Demographic indices including birth rate, death rate, fertility rates
CM9.3	Causes of declining sex ratio and its social and health implications
CM9.4	Causes and consequences of population explosion and population dynamics of India.
CM9.5	Methods of population control
CM9.6	National Population Policy
CM9.7	Sources of vital statistics including census, SRS, NFHS, NSSO etc
	Reproductive maternal and child health
CM10.1	Current status of Reproductive, maternal, newborn and Child Health
CM10.2	Methods of screening high risk groups and common health problems
	Population Genetics: Screening and counselling for genetic conditions
CM10.3	Local customs and practices during pregnancy, childbirth, lactation and child feeding practices
CM10.4	Reproductive, maternal, newborn & child health (RMCH); child survival and safe motherhood interventions

Competency Nos.	Topics & Subtopics
CM10.5	Universal Immunization Program; Integrated Management of Neonatal and Childhood Illness (IMNCI) and other existing Programs.
CM10.6	Family planning methods, their advantages and shortcomings
CM10.7	Basis and principles of the Family Welfare Program including the organization, technical and operational aspects
CM10.8	Physiology, clinical management and principles of adolescent health including ARSH
CM10.9	Gender issues and women empowerment
	Occupational Health
CM11.1	Occupational illnesses including diseases in agricultural workers.
CM11.2	Role, benefits and functioning of the employees state insurance scheme
CM11.3	Specific occupational health hazards, their risk factors and preventive measures Prevention & control of occupational diseases : Medical, Engineering and other legislative measures
CM11.4	Principles of ergonomics in health preservation
CM11.5	Occupational disorders of health professionals and their prevention & management and interpretation and interpretation
	Geriatric services
CM12.1	Concept of Geriatric services
CM12.2	Health problems of aged population
CM12.3	Prevention of health problems of aged population
CM12.4	Describe National program for elderly
	Mental Health
CM15.1	Concept of mental Health
CM15.1	Warning signals of mental health disorder
CM15.1	National Mental Health program
	Health planning and management
CM16.1	Concept of Health planning
CM16.2	Planning cycle
CM16.3	Health management techniques
CM16.4	Health planning in India and National policies related to health and health planning

Competency Nos.	Topics & Subtopics
	International Health
CM18.1	Concept of International health
CM18.2	Roles of various international health agencies
	Recent advances in Community Medicine
CM20.1	Important public health events of last five years
CM20.2	Various issues during outbreaks and their prevention
CM20.3	Describe any event important to Health of the Community
CM20.4	Laws pertaining to practice of medicine such as Clinical establishment Act and Human Organ Transplantation Act and its implications

Third Professional Part I - Community Medicine: List of Practicals / DOAP/ SDL Activities

Competency no.	Practicals / DOAP / SDL Activities
CM 7.4	Exercises on calculation of morbidity and mortality indicators based on given set of data and their interpretation
CM6.1	Demonstration and exercises on Formulation of a research problem , research question & research hypothesis for a study
CM 7.5	Exercise on developing appropriate epidemiological study design and method for a given public health problem.
CM 7.9	Demonstration and hands on training of application of computers in epidemiology. Demonstration and hands on exercises of application of MS- Excel , Epi Info etc.
CM6.2	Demonstration and exercises on the methods of data collection, classification, analysis, interpretation and presentation of statistical data
CM6.3	Demonstration and exercises on the application of elementary statistical methods including test of significance in various study designs and interpretation of statistical tests.
CM6.4	Demonstration and exercises on Common sampling techniques, simple statistical methods, frequency distribution, measures of central tendency and dispersion
CM9.2	Calculation and interpretation of demographic indices including birth rate, death rate, fertility rates
CM9.2 SDL	A small scale survey of local customs and practices during pregnancy, childbirth, lactation and child feeding practices
CM 11.3	Visit to Industry- Assessment of occupational environment and preventive measures Exercise on occupational history taking
CM20.3 SDL	Describe any event important to Health of the Community

Third Professional Part I - Proposed Activities in Second Clinical Community Medicine Posting (6 weeks)

Duration(weeks)	Proposed Activities
<u>Two weeks</u> (Posting in Urban Health Centre / ANC/ FW clinic/ Obstetric wards)	<u>Preventive and Community Obstetrics (including Family Welfare)</u> <ol style="list-style-type: none"> Clinico social assessment of antenatal , postnatal cases Assessment of high risk mothers Neonatal assessment Assessment of eligible couples for family welfare services and health education Organization of community based maternal health services and health educational activity for mothers.
<u>Two weeks</u> (Posting in Urban Health Centre / Under five clinic / Immunization clinic / Paediatric wards)	<u>Preventive and Community Paediatrics . Adolescent Health Care</u> <ol style="list-style-type: none"> Health and Nutritional assessment of underfive child Clinico social case reviews of Nutritional Deficiency Diseases in children and childhood malnutrition Clinico social case reviews of common childhood infections such as ARI , fever with rash , acute GE , malarial fever etc Childhood immunization , organization of immunization session , assessment of cold chain etc School health examination , assessment of school environment , organization of health educational activity for school children
<u>Two weeks</u> (Posting in Urban Health Centre / Medicine wards)	<u>Non communicable diseases and Preventive Geriatrics</u> Clinico social case reviews of chronic non communicable diseases such as hypertension , diabetes mellitus , CHD , Stroke , COPD, Cancer , psychiatric disorders , geriatric health problems , occupational diseases etc.

Note:

- The observations/ reflections of family / hospital / community visits , DOAP sessions , Self directed learning activities (SDL) , practicals should be entered in the log book immediately after the assignment.**
- The observer / facilitator / teacher will provide the written brief feedback in the log book for the learner related to the competencies.**

Paper wise distribution of topics for Prelim & MUHS Annual Examination
Year: III-I MBBS Subject: Community Medicine

Paper	Section	Topics
I	A	MCQs on all topics of the paper I
		Concept of health and disease
		Epidemiology
		Screening for disease
		Communicable diseases & related NHP
		Emerging & Reemerging diseases
		Sociology
		Environmental health
		Occupational Health
		Hospital waste management
		Biostatistics & Vital statistics
		AETCOM Module no. 3.1 & 3.3
II	A	MCQs on all topics of the paper II
		Demography & FP & NHP
		MCH, Geriatrics & related NHP
		Nutrition & related NHP
		Mental Health
		Health education & Communication
		Health planning & Management
		Health care delivery system
		Non communicable Diseases & related NHP
		International health
		Disaster Management

Internal Assessment
Subject: Community Medicine

Applicable w.e.f March 2020 onwards examination for batches admitted from June 2019 onwards

Phase	I-Exam (March)		
	Theory	Practical (Including 10 Marks for Journal- Nutrition & Log Book)	Total Marks
First MBBS	50	50	100

Phase	II-Exam			III-Exam		
	Theory (Jan)	Practical Two weeks after clinical posting (Mid Clinical Posting)	Total Marks	Theory (May)	Practical End of Clinical Posting	Total Marks
Second MBBS	50	50	100 s	50	50	100

Phase	IV-Exam (March)			V-Exam Preliminary examination-August		
	Theory	Practical End of Clinical Posting	Total Marks	Theory	Practical	Total Marks
III MBBS	50	50	100	200	100	300

1. **Assessment in CBME is ONGOING PROCESS,**

No Preparatory leave is permitted.

1. There shall be 5 internal assessment examinations in Community Medicine.
2. The suggested patterns of question paper for first three internal assessment theory examinations is given below. Pattern of the prelims examinations should be similar to the University examinations.
3. Internal assessment marks for theory and practical will be converted to out of 40 (theory) + 40 (practical). Internal assessment marks, after conversion, should be submitted to university within the stipulated time as per directives from the University. **Conversion Formula for calculation of marks in internal assessment examinations.**

Phase	Theory	Practical
Phase I	50	50
Phase II	100	100
Phase III Part I	250	150
Total	400	300
Conversion out of	40	40
Conversion formula	Total marks in 4 IA theory examinations /10	Total marks in 4 IA Practical examinations /7.5
Eligibility criteria after conversion	16	16
	Combined theory + Practical = 40	

4. While preparing Final Marks of Internal Assessment, the rounding-off marks shall done as illustrated in following table.

Total Internal Assessment Marks	Final rounded marks
33.01 to 33.49	33
33.50 to 33.99	34

5. Students must secure at least 50% marks of the total marks (combined in theory and practical / clinical; not less than 40 % marks in theory and practical separately) assigned for internal assessment in order to be eligible for appearing at the final University examination of that subject.
6. Internal assessment marks will not to be added to marks of the University examinations and will be shown separately in mark list.

7. **Remedial measures**

A. **Remedial measures for non-eligible students**

- i) At the end of each internal assessment examination, students securing less than 50% marks shall be identified. Such students should be counseled at the earliest and periodically.
- ii) Extra classes for such students may be arranged. If majority of the students found to be weak in a particular area then extra classes must be scheduled for all such students. Even after these measures, if a student is failed to secure 50% marks combined in theory and practical (40% separately in theory and practical) after prelim examination, the student shall not be eligible for final examination.
- iii) Non eligible candidates are offered to reappear for repeat internal assessment examination/s, which must be conducted 2 months before next University examination. The pattern for this repeat internal assessment examination shall be similar to the final University examination. Only the marks in this examination shall be considered for deciding the eligibility criteria. Following conversion formula shall be used for converting the marks.

	Theory	Practical
Remedial examination (pattern as per final examination)	200	100
Conversion out of	40	40
Conversion formula	Marks in remedial theory examinations /5	Marks in remedial Practical examinations /2.5
Eligibility criteria after conversion	16	16
Combined theory + Practical = 40		

B. Remedial measures for absent students:

If any of the students is absent for any of the 5 IA examinations due to any reasons, following measures shall be taken.

- i. The student is asked to apply to the academic committee of the college for reexamination, through HOD, to ascertain the genuineness of the reason for absentee.
- ii. If permitted by academic committee, an additional examination for such students is to be conducted after prelims examination. Marks for such additional examination shall be equal to the missed examination.
- iii. Even if a student has missed more than one IA examination, he/she can appear for only one additional IA examination. In such scenario, eligibility should be determined by marks obtained in internal assessment examinations for which the candidate has appeared, without changing the denominator.

1st /2nd /3rd MBBS Practical Mark's Structure

Internal Assessment Examinations

(Applicable w.e.f October 2020 onwards examination for batches admitted from June 2019 onwards)

Seat No.	Subject :Community Medicine Practical – 1 st Internal assessment -				
	Spotters marks	Log book	Skill assessment utrition exercises	Viva Voce	Practical Total
Max. Marks	10 marks	10-marks	10 marks	20 marks	50 marks

Seat No.	Subject :Community Medicine Practical – 2 nd Internal assessment			
	Spotters	Log book	Viva Voce	Practical Total
Max. Marks	20 marks	10-marks	20 marks	50 marks

Seat No.	Subject :Community Medicine Practical – 3 rd Internal assessment				
	Spotters marks	Log book	Clinico-epidemiological case	Viva Voce	Practical Total
Max. Marks	10 marks	10 marks	20 marks	10 marks	50 marks

Seat No.	Subject :Community Medicine Practical – 4 th Internal assessment				
	Spotters marks	Log book	Clinico-epidemiological case	Viva Voce	Practical Total
Max. Marks	10 marks	10 marks	20 marks	10 marks	50 marks

Method of Clinico epidemiological Case evaluation

Sr.no.	Head	Marks allotted
01	Identifying and socio demographic information (with house landmark, facilities for health care)	05
02	Present and past illness history (with risk factors , exposures) Environmental , behavioural and family information	05
03	Demonstration of relevant clinical signs/skills	05
05	Management plan and relevant control measures at individual, family and community level	05
	Total	20

III-I MBBS Practical Mark's Structure (Prelim exam)

Applicable w.e.f October 2021 onwards examination for batches admitted from June 2019 onwards

Subject: Community Medicine						
Practical					Oral/Viva	Total
Seat No.	Spotters	Statistical Ex	Clinicoepidemiological case	Skill assessment (10 skills) *	Viva/ voce	Practical & Oral
Max. Marks	20	20	20	20	20	100

- As per MCI competency based document

Method of Clinico epidemiological Case evaluation

Sr.no.	Head	Marks allotted
	Identifying and socio demographic information (with house landmark, facilities for health care)	05
	Present and past illness history (with risk factors , exposures) Environmental , behavioural and family information	05
	Demonstration of relevant clinical signs/skills	05
	Management plan and relevant control measures at individual, family and community level	05
	Total	20

III-I MBBS Practical Mark's Structure (University exam)

Applicable w.e.f October 2022 onwards examination for batches admitted from June 2019 onwards

Subject: Community Medicine						
Practical					Oral/Viva	Total
Seat No.	Spotters	Statistical Ex	Clinicoepidemiological case	Skill assessment (10 skills) *	Viva/ voce	Practical & Oral
Max. Marks	20	20	20	20	20	100

Format for Internal Assessment Theory Paper
IA – 1, IA – 2, IA – 3 & IA - 4

Question No.	Type of Question	No. of Questions	Max. Marks
1.	MCQ	10	10 (1 marks each)
2.	SAQ	5 (Any four out of 5)	28 (7 marks each)
3.	LAQ	1 (Compulsory)	12
		Total	50

MAHARASHTRA UNIVERSITY OF HEALTH SCIENCES, NASHIK
FORMAT / SKELETON OF QUESTION PAPER-1

1. Course and Year : III-I- MBBS <i>(applicable w.e.f. October 2022 & onwards examinations)</i>	2. Subject Code :
3. Subject (PSP) : Community Medicine (TT) :	
4. Paper : I	5. Total Marks : 100
6. Total Time : 3 Hrs.	7. Remu. (Rs) : Rs. 300/-
	8. Remu. (Rs) : Rs. 350/-
9. Web Pattern : []	10. Web Skeleton : []
11. Web Syllabus : []	12. Web Old QP : []

Instructions:

SECTION "A" MCQ

- 1) Put in the appropriate box below the question number once only.
- 2) Use blue ball point pen only.
- 3) Each question carries **One mark**.
- 4) Students will not be allotted mark if he/she overwrites strikes or put white ink on the cross once marked.

SECTION "A" MCQ (20 Marks)

1. Multiple Choice Questions (Total 20 MCQ of One mark each) (20 x1 = 20)
- a) b) c) d) e) f) g) h) i) j)
- k) l) m) n) o) p) q) r) s) t)

SECTION "B"

Instructions:

- 1) Use **blue/black** ball point pen only.
- 2) **Do not** write anything on the **blank portion of the question paper**. If written anything, such type of act will be considered as an attempt to resort to unfair means.
- 3) **All questions are compulsory**.
- 4) The number to the **right** indicates **full marks**.
- 5) Draw diagrams **wherever necessary**.
- 6) Distribution of syllabus in Question Paper is only meant to cover entire syllabus within the stipulated frame. The Question paper pattern is a mere guideline. Questions can be asked from any paper's syllabus into any question paper. Students cannot claim that the Question is out of syllabus. As It is only for the placement sake, the distribution has been done.
- 7) Use a common answerbook for all sections.

SECTION "B"

2. Short Answer Questions (One Question AETCOM(3.1 and 3.3)(compulsory) (7x1=07)
- a)
3. Short Answer Questions (Answer Any 3 out of 4) (7x3=21)
- a) b) c) d)
4. Structured Long Answer Questions (Compulsory) (12x1=12)
- a)
5. Short Answer Questions (Answer Any 4 out of 5) (7x4=28)
- a) b) c) d) e)
6. Structured Long Answer Questions (Compulsory) (12x1=12)
- a)

MAHARASHTRA UNIVERSITY OF HEALTH SCIENCES, NASHIK

FORMAT / SKELETON OF QUESTION PAPER-

1. Course and Year : III-I- MBBS <i>(applicable w.e.f. October 2022& onwards examinations)</i>	2. Subject Code :
3. Subject (PSP) : Community Medicine (TT) :	
4. Paper : II	5. Total Marks : 100
6. Total Time : 3 Hrs.	7. Remu. (Rs) : Rs. 300/-
	8. Remu. (Rs) : Rs. 350/-
9. Web Pattern : []	10. Web Skeleton : []
11. Web Syllabus : []	12. Web Old QP : []

Instructions:

SECTION "A" MCQ

- 1) in the appropriate box below the question number once only.
- 2) Use blue ball point pen only.
- 3) Each question carries **One mark**.
- 4) Students will not be allotted mark if he/she overwrites strikes or put white ink on the cross once marked.

SECTION "A" MCQ (20 Marks)

1. Multiple Choice Questions (Total 20 MCQ of One mark each) (20 x1 = 20)
 - a) b) c) d) e) f) g) h) i) j)
 - k) l) m) n) o) p) q) r) s) t)

Instructions:

SECTION "B"

- 1) Use **blue/black** ball point pen only.
- 2) **Do not** write anything on the **blank portion of the question paper**. If written anything, such type of act will be considered as an attempt to resort to unfair means.
- 3) **All** questions are **compulsory**.
- 4) The number to the **right** indicates **full** marks.
- 5) Draw diagrams **wherever** necessary.
- 6) Distribution of syllabus in Question Paper is only meant to cover entire syllabus within the stipulated frame. The Question paper pattern is a mere guideline. Questions can be asked from any paper's syllabus into any question paper. Students cannot claim that the Question is out of syllabus. As It is only for the placement sake, the distribution has been done.
- 7) Use a common answerbook for all sections.

SECTION "B"

2. Short Answer Questions (Answer Any 4 out of 5) (7x4=28)
 - a) b) c) d) e)
3. Structured Long Answer Questions (Compulsory) (12x1=12)
 - a)
4. Short Answer Questions (Answer Any 4 out of 5) (7x4=28)
 - a) b) c) d) e)
5. Structured Long Answer Questions (Compulsory) (12x1=12)
 - a)

BOOKS RECOMMENDED.

1. Text book of Community Medicine, Kulkarni A.P. and Baride J.P.
2. Park "s Textbook of Preventive and Social Medicine,
3. Principles of Preventive and Social Medicine, K. Mahajan
4. Textbook of Community Medicine, B. Shridhar Rao.
5. Essentials of Community Medicine, Suresh Chandra.
6. Textbook of Biostatistics, B. K. Mahajan
7. Review in Community Medicine, V.R. Sheshu Babu.
8. Reference Book for Community Medicine: "Principles and practice of Biostatistics", Author: Dr. J.V. Dixit

FURTHER READINGS.

Epidemiology and Management for health care for all P.V. Sathe and A.P. Sathe. Essentials of Preventive Medicine O.P. Ghai and Piyush Gupta.

Maharashtra University of Health Sciences Nashik



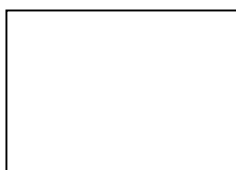
COMMUNITY MEDICINE LOGBOOK

For

**1st, 2nd & 3rd PROFESSIONAL MBBS
STUDENTS AS PER COMPETENCY
BASED CURRICULUM**

First Edition:2020

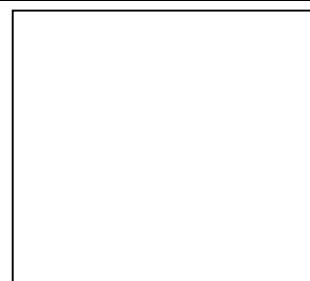
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Logo of college

Name of the College:.....

Personal details:



Paste recent self attested photo here

Name of the student:	
Date of admission to MBBS Course:	
College Roll No:	
Permanent Address:	
E mail ID:	
Mobile Number:	
Self:	
Parent:	

Preface

The Medical Council of India has revised the undergraduate medical education curriculum so that the Indian Medical Graduate (IMG) is able to recognize **“Health for all”** as a national goal. He/she should also be able to fulfil his/her societal obligations. The revised curriculum has specified the competencies that a student must attain and clearly defined teaching learning strategies for the same. With this goal in mind, integrated teaching, skill development, AETCOM and self-directed learning have been introduced. There would be emphasis on communication skills, basic clinical skills and professionalism. There is a paradigm shift from the traditional didactic classroom-based teaching to learning environments where there is emphasis on learning by exploring, questioning, applying, discussing, analysing, reflecting, collaborating and doing. The recognition of this need is enshrined by a greatly enhanced allocation of time to these methods and also the assessment techniques. With this view in mind the log book has been designed as per the guidelines of competency Based curriculum.

Instructions

- 1) This logbook is prepared as per the guidelines of MCI for implementation of Competency based curriculum for 1st, 2nd & 3rd Professional MBBS students in the subject of Community Medicine.
- 2) Students are instructed to keep their logbook entries up to date.
- 3) Students are expected to write their reflections on all activities of Self-Directed Learning (SDL) and Visits.
- 4) Students also have to write reflections on AETCOM Module **3.1 and 3.3**
- 5) Reflections should be structured using the following guiding questions:
 - What happened? (What did you learn from this experience)
 - So what? (What are the applications of this learning)
 - What next? (What knowledge or skills do you need to develop so that you can handle this type of situation?)
- 6) The logbook assessment will be based on multiple factors like
 - Attendance
 - Active participation in the sessions,
 - Timely completions
 - Quality of write up of reflections
 - Overall presentation

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- AETCOM – Competencies for IMG, 2018, Medical Council of India.

FIRST PROFESSIONAL

List of Competencies

Competency No	COMPETENCY - The student should be able to
CM1.9	Demonstrate the role of effective Communication skills in health in a simulated environment
CM 1.10	Demonstrate the important aspects of the doctor patient relationship in a simulated environment
CM4.3	Demonstrate and describe the steps in evaluation of health promotion and education program
CM5.2	Describe and demonstrate the correct method of performing a nutritional assessment of individuals, families and the community by using the appropriate method
CM5.4	Plan and recommend a suitable diet for the individuals and families based on local availability of foods and economic status, etc in a simulated environment
CM9.2	Define, calculate and interpret demographic indices including birth rate, death rate, fertility rates

Reflection on Competencies

Topic:

Date:

Signature of Teacher-in- charge

Reflection on Competencies

Topic:

Date:

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Date:

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Reflection on Self-directed learning Experience

Topic:

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Reflection on Self-directed learning Experience

Topic:

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Reflection on Self-directed learning Experience

Topic:

Date:

Signature of Teacher-in- charge

Reflection on Self-directed learning Experience

Topic:

Date:

Signature of Teacher-in- charge

College Name:

CERTIFICATE

This is to certify that,

Mr/Ms. _____

Roll No. _____ has satisfactorily attended/completed all assignments mentioned in this logbook as per the guidelines prescribed by Medical Council of India, for First Professional MBBS Competency Based Curriculum in the subject of Community Medicine.

Teacher- Incharge

**Professor and Head
Department of Community Medicine**

Date: _____ / _____ / _____

Place: _____

SECOND PROFESSIONAL



List of Competencies

Competency No	COMPETENCY The student should be able to
CM2.1	Describe the steps and perform clinico-socio-cultural and demographic assessment of the individual, family and community
CM2.2	Describe the socio-cultural factors, family (types), its role in health and disease & demonstrate in a simulated environment the correct assessment of socio-economic status
CM2.3	Describe and demonstrate in a simulated environment the assessment of barriers to good health and health seeking behavior

Reflection on Competencies

Topic:

Date:

Signature of Teacher-in- charge

Reflection on Competencies

Topic:

Date:

Signature of Teacher-in- charge

Reflection on Competencies

Topic:

Date:

Signature of Teacher-in- charge

Reflection on Competencies

Topic:

Date:

Signature of Teacher-in- charge

Reflection on Self-directed learning Experience

Topic:

Date:

Signature of Teacher-in- charge

Reflection on Self-directed learning Experience

Topic:

Date:

Signature of Teacher-in- charge

Reflection on Self-directed learning Experience

Topic:

Date:

Signature of Teacher-in- charge

Reflection on Self-directed learning Experience

Topic:

Date:

Signature of Teacher-in- charge

CLINICAL POSTING:
from.....to.....

S.NO.	DATE	FAMILY VISIT/ CLINICAL DIAGNOSIS	TEACHER'S SIGN

Reflections

Topic:

Date:

Signature of Teacher-in- charge

Reflections

Topic:

Date:

Signature of Teacher-in- charge

Reflections

Topic:

Date:

Signature of Teacher-in- charge

Reflections

Topic:

Date:

Signature of Teacher-in- charge

Reflections

Topic:

Date:

Signature of Teacher-in- charge

Reflections

Topic:

Date:

Signature of Teacher-in- charge

VISIT:

COMPETENCY No.	VISIT	DATE	TEACHER'S SIGN.
3.2	Visit to water purification plant		
	Visit to Dist Public Health Laboratory		
	Exercise on interpretation of water analysis report		
3.4	Visit to sewage purification plant		

Reflection on visit:

Topic:

Date:

Signature of Teacher-in- charge

Reflection on visit:

Topic:

Date:

Signature of Teacher-in- charge

Reflection on visit:

Topic:

Date:

Signature of Teacher-in- charge

Reflection on visit:

Topic:

Date:

Signature of Teacher-in- charge

College name:

CERTIFICATE

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Teacher- Incharge

**Professor and Head
Department of Community Medicine**

Date: ____ / ____ / ____

Place: _____

SECOND PROFESSIONAL

List of competencies

Competency No	COMPETENCY The student should be able to
CM3.7	Identify and describe the identifying features and life cycles of vectors of Public Health importance and their control measures
CM8.6	Educate and train health workers in disease surveillance, control & treatment and health education

Reflection on Competencies

Topic:

Date:

Signature of Teacher-in- charge

Reflection on Competencies

Topic:

Date:

Signature of Teacher-in- charge

Reflection on Self-directed learning Experience

Topic:

Date:

Signature of Teacher-in- charge

Reflection on Self-directed learning Experience

Topic:

Date:

Signature of Teacher-in- charge

Reflection on Self-directed learning Experience

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Topic:

Date:

Signature of Teacher-in- charge

Reflections

Topic:

Date:

Signature of Teacher-in- charge

Reflections

Topic:

Date:

Signature of Teacher-in- charge

VISIT:

COMPETENCY No.	VISIT	DATE	TEACHER'S SIGN.
3.6	Visit to office of Dist Vector borne Diseases Control Program		
8.1	Visits to the Dist Offices/ Units/ clinics related to implementation of Disease Control Measures of Communicable Diseases		
8.1	Visit to Public Health Microbiology / Reference laboratories		
8.6	Visit to Dist Training Centre / Dist Disease Surveillance Unit		
13.4	Visit to Civil Defence Dept / Dist Disaster Management Office		
19.2	Visit to hospital pharmacy		

Reflection on visit:

Topic:

Date:

Signature of Teacher-in- charge

Reflection on visit:

Topic:

Date:

Signature of Teacher-in- charge

Reflection on visit:

Topic:

Date:

Signature of Teacher-in- charge

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Date:

Signature of Teacher-in- charge

Reflection on visit:

Topic:

Date:

Signature of Teacher-in- charge

THIRD PROFESSIONAL

List of competencies

Competency No	COMPETENCY The student should be able to
CM6.2	Describe and discuss the principles and demonstrate the methods of collection, classification, analysis, interpretation and presentation of statistical data
CM6.3	Describe, discuss and demonstrate the application of elementary statistical methods including test of significance in various study designs
CM6.4	Enumerate, discuss and demonstrate Common sampling techniques, simple statistical methods, frequency distribution, measures of central tendency and dispersion
CM7.4	Define, calculate and interpret morbidity and mortality indicators based on given set of data
CM7.6	Enumerate and evaluate the need of screening tests
CM7.7	Describe and demonstrate the steps in the Investigation of an epidemic of communicable disease and describe the principles of control measures
CM9.2	Define, calculate and interpret demographic indices including birth rate, death rate, fertility rates

Reflection on Competencies

Topic:

Date:

Signature of Teacher-in- charge

Reflection on Competencies

Topic:

Date:

Signature of Teacher-in- charge

Reflection on Competencies

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Signature of Teacher-in- charge

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Reflection on Self-directed learning Experience

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Date:

Signature of Teacher-in- charge

Reflection on Self-directed learning Experience

Topic:

Date:

Signature of Teacher-in- charge

Reflection on Self-directed learning Experience

Topic:

Date:

Signature of Teacher-in- charge

CLINICAL POSTING:
Fromto.....

S.NO.	DATE	CLINICAL DIAGNOSIS	TEACHER'S SIGN

Reflections

Topic:

Date:

Signature of Teacher-in- charge

Reflections

Topic:

Date:

Signature of Teacher-in- charge

Reflections

Topic:

Date:

Signature of Teacher-in- charge

Reflections

Topic:

Date:

Signature of Teacher-in- charge

Reflections

Topic:

Date:

Signature of Teacher-in- charge

Reflections

Topic:

Date:

Signature of Teacher-in- charge

VISIT:

COMPETENCY No.	VISIT	DATE	TEACHER'S SIGN.
CM 9.2	A small scale survey of local customs and practices during pregnancy, childbirth, lactation and child feeding practices		
CM 11.3	Visit to Industry- Assessment of occupational environment and preventive measures Exercise on occupational history taking		
CM 8.1	Visit to Public Health Microbiology / Reference laboratories		
CM 8.6	Visit to Dist Training Centre / Dist Disease Surveillance Unit		
CM 13.4	Visit to Civil Defence Dept / Dist Disaster Management Office		
CM 19.2	Visit to hospital pharmacy		

Reflection on visit:

Topic:

Date:

Signature of Teacher-in- charge

Reflection on visit:

Topic:

Date:

Signature of Teacher-in- charge

Reflection on visit:

Topic:

Date:

Signature of Teacher-in- charge

Reflection on visit:

Topic:

Date:

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Reflection on visit:

Topic:

Date:

Signature of Teacher-in- charge

Reflection on visit:

Topic:

Date:

Signature of Teacher-in- charge

College Name:

CERTIFICATE

This is to certify that,

Mr/Ms. _____

Roll No. _____ has satisfactorily attended/completed all assignments mentioned in this logbook as per the guidelines prescribed by Medical Council of India, for Third Professional Competency Based Curriculum in the subject of Community Medicine.

Teacher- Incharge

**Professor and Head
Department of Community Medicine**

Date: ____/____/____

Place: _____

4. AETCOM Module

Module 3.1: Clinician who understands and provides preventive, promotive, palliative and holistic care with compassion.

List of competencies

S. No	The student should be able to
1.	Demonstrate ability to communicate to patients in a patient, respectful, nonthreatening, non-judgmental and empathetic manner

Module 3.3: Communicator with patients, family, colleagues and community.

List of competencies

S. No	The student should be able to
1.	Administer informed consent and appropriately address patient queries to a patient undergoing a surgical procedure in a simulated environment

Reflection on AETCOM MODULE

Topic:

Date:

Signature of Teacher-in- charge

Reflection on AETCOM MODULE

Topic:

Date

Signature of Teacher-in- charge

College Name:

FINAL CERTIFICATE (before prelims)

This is to certify that,

Mr/Ms. _____

Roll No. _____ has satisfactorily attended/completed all assignments mentioned in this logbook as per the guidelines prescribed by Medical Council of India, for First, Second and Third Professional MBBS Competency Based Curriculum in the subject of Community Medicine.

Teacher- In charge

**Professor and Head
Department of Community Medicine**

Date: ____ / ____ / ____ Place: _____

7. Record of Internal Assessment Examinations

Sr. No	Exam no	Theory	Practical including Viva	Signature of student	Signature of Teacher
1	I Internal Assessment	/50	/50		
2	II Internal Assessment	/50	/50		
3	III Internal Assessment	/50	/50		
4	IV Internal Assessment	/50	/50		
5	PRELIMS	/200	/100		
6	TOTAL				

Note: Above information is for the benefit of students and parents. In case of any discrepancy departmental record will be treated as final.

Course Content

(Based on Medical Council of India, Competency based Undergraduate curriculum for the Indian Medical Graduate, 2018. Vol. 2 ; page no.41-59)

Applicable for batch admitted in M.B.B.S Course from Academic Year 2019-20 & onwards

Subject: Community Medicine

Year: First MBBS

Competency No. CM	Topics & subtopics
	Health care of the communtiy
117.1	Health care to community
	Visit to primary/secondary health facility
	Role of physician in health care delivery- Integration with AETCOM module 1.1 What does it mean to be doctor?
17.2	Community diagnosis
17.3	Primary Health Care- Def, Principles
17.4	National Health Policies , MDGs
	SDL- Current national / stale level status of health indicators
17.5	Health Care delivery in India
	Nutrition
5.1	Common sources of various nutrients

	Demonstration: Foods we eat & their nutritive values
	Special nutritional requirements according to age, sex, activity, physiological conditions
	SDL- Foods customs in our families for special groups such as children/ pregnant/lactating women/ill persons (data collection by interviewing 5 homemakers)
5.2	Nutritional assessment at individual level- DOAP
	Nutritional assessment at family and community level -DOAP
5.3	Common nutritional deficiency diseases- Epidemiology , prevention and control
5.4	Diet planning at individual level
	Diet planning at family level
5.5	Nutritional surveillance and rehabilitation
	Visit to Nutritional rehabilitation centre
	Nutrition education
5.6	National Nutritional Policy , National Nutritional Programs
5.7	Food hygiene , food adulteration
	Demonstration of simple tests to identify food adulteration
5.8	Food fortification , food additives
	Concept of Health and Disease
1.1	Concept of Public Health
1.2	Concept , definition , determinants of health
	Determinants of health- Group discussion
1.3	Epidemiological triad , multifactorial causation of disease
	SDL-Identification of multiple causative factors of 2 common diseases(interview in wards/ family visit)

1.4	Natural history of disease
1.5	Levels of Prevention
1.6	Health education , IEC, BCC
1.7	Indicators of health
	Exercise on calculation of indicators
1.8	Demographic profile of India
	Exercise on calculation of demographic indicators , fertility rates
	SDL- Demographic trends in India
1.9	Communication skills in Health
	DOAP-Verbal/non verbal communication
	Empathy- What does it mean to be patient?
	AETCOM module 1.2
1.10	Doctor patient relationship
	SDL- Determinants of doctor patient relationship(Collection of data from patients/ relatives)
	Case discussions – Integration with AETCOM module 1.3
	Principles of health promotion and education
4.1	Methods of health education
	Demonstration of various methods of health education
	Improving communication, barriers in communication- integration with AETCOM module 1.4
4.2	Organization of health educational and counselling activities for individual & family
	Organization of counselling activity in ward/OPDs
	Organization of community based health educational activity(community/school)

4.3	Evaluation of health education & promotion program
	SDL- Preparation of tool for evaluation
	Conducting evaluation of health education & promotion program

Note:

1. The observations/ reflections of family / hospital visits , DOAP sessions , Self directed learning activities (SDL) , practicals should be entered in the log book immediately after the assignment.
2. The observer / facilitator / teacher will provide the written brief feedback in the log book for the learner related to the competencies.

Curricula for II M.B.B.S.

Pathology

1. Goal

The goal of teaching pathology is to provide undergraduate students comprehensive knowledge of the causes and mechanisms of disease, in order to enable them to achieve complete understanding of the natural history and clinical manifestations of the disease.

2. Educational objectives

(a) Knowledge

At the end of one and half years, the student shall be able to -

- i. describe the structure and ultrastructure of a sick cell, the mechanisms of the cell degradation, cell death and repair.
- ii. Correlate structural and functional alterations in the sick cell.
- iii. Explain the Patho physiological processes which governs the maintenance of homeostasis, mechanism of their disturbances and the morphological and clinical manifestation associated with it.
- iv. describe the mechanisms and patterns of tissue response to injury to appreciate the Pathophysiology of disease processes and their clinical manifestations.
- v. Correlate the gross and microscopic alterations of different organ systems in common diseases to the extent needed to understand disease processes and their clinical significance.
- vi. Develop an understanding of neoplastic change in the body in order to appreciate need for early diagnosis and further management of neoplasia.
- vii. Understand mechanisms of common haematological disorders and develop a logical approach in their diagnosis and management.

(b) Skills

At the end of one and half years, the student shall be able to -

- i. Describe the rationale and principles of technical procedures of diagnostic laboratory tests.
- ii. Interpret diagnostic laboratory tests and correlate with clinical and morphological features of diseases.
- iii. Perform simple bedside tests on blood, urine and other biological fluid samples.
- iv. Draw a rational scheme of investigations aimed at diagnosing and managing common disorders.
- v. Recognise morbid anatomical and histopathological changes for the diagnosis of common disorder.

(c) Integration

At the end of one and half years, the student shall be able to integrate the causes and mechanisms of disease most prevalent in India with their natural history for the understanding of their clinical course and management.

3. Total duration of teaching 3 Semesters (III, IV and V)
Minimum 315
working days.

Total number of teaching hours allotted to the discipline **300 hrs**

Distribution of teaching hours

A) Theory (lectures & tutorials)	.....101
	..... 58
Total	.....159
B) Practicals	.....110
C) Revision & Evaluation (Internal)	.....31

4. Syllabus

a. Learning methods

Distribution of teaching hours

DIVISIONS PRACTICALS	A) LECTURES (1 hr)	B) TUTORIALS (2 hrs)	C) (2 1/2 hrs)
1. General Pathology	35	07	12
2. Haematology	15	04	07
3. Systemic Pathology	47	13	18
4. Clinical Pathology	03	04	05
5. Autopsy	01	01	02
	-----	-----	-----
TOTAL	101	29x2	44x2.5
	-----	-----	-----

b. & c. Sequential organization of course contents

The Broad area of study shall be:-

- General Pathology (including general neoplasia)
- Systemic Pathology (including systemic neoplasia)
- Haematology
- Clinical Pathology

A) GENERAL PATHOLOGY : (n=35)

1. Definitions and causes of diseases:-

Must know:- Able to recall common definitions in Pathology and causes of cell injury.

2. Modes of cell injury:-

Must know:- Able to appreciate mechanisms of cell injury & relate them to the morphological changes.

3. Necrosis & gangrene:-

Must know:- Able to recognize types of necrosis and gangrene at gross and microscopic levels.

Desirable to know:- Apoptosis and its relevance.

4. Intracellular accumulations and alterations:-

Must know:- Able to list the types of intracellular accumulations & alterations in reversible cell injury along with alterations in cell organelles and cytoskeleton.

5. Cellular Adaptations/ Growth disturbances:-

Must know:- Define the various growth disturbances and appreciate the clinical significance of each.

6. Acute inflammation:-

Must know:- Define and describe changes occurring in acute inflammation and integrate the changes with morphological patterns of injury.

7. Chemical mediators of Inflammation:-

Must know:- Definition, Classification, description of each type, role of acute chronic inflammation.

8. Chronic inflammation (including granulomatous):-

Must know:- differentiate it from acute inflammation, describe aetiology, patterns and systemic effects of granulomas.

9. Regeneration and repair (general):-

Must know:- Define & describe regeneration and repair and understand the mechanisms and list factors modifying repair.

10. Repair in specialized tissues:-

Must know:- Describe repair in fractures and parenchymal organs and list modifying factors and complications.

11. Oedema:-

Must know:- Define oedema, classify and describe pathogenesis & correlate morphology with clinical significance with emphasis on transudate and exudate.

12. Shock:-

Must know:- Define, classify and understand pathogenesis, recognize the of mediators and stages of shock.

13. Thrombosis:-

Must know:- Describe etio-pathogenesis, fate, morphology and effects of thrombosis.

14. Embolism and Infarction:-

Must know:- Enumerate types of embolism and infarction, recognize morphological changes and correlate clinical significance.

15. Hyperaemia and Haemorrhage:-

Must know:- Definitions, morphology of acute and chronic congestions, clinical significance of haemorrhage.

16. Disturbances of pigment metabolism:-

Must know:- State the type of pigment disturbances and describe the changes associated with common disturbances like lipofuscin, melanin, Hemosiderin and Bilirubin.

17. Disturbances of Mineral metabolism:-

Must know:- Describe the types and morphological changes of calcification.
Desirable to know:- Disturbances of other minerals like zinc etc.

18. Genetic disorders:-

Must know:- Normal karyotype, classification of genetic disorders, types of genetic change, Down's syndrome, Klinefelter's syndrome, Turner's syndrome
Desirable to know:- Lysosomal storage disorders, glycogen storage diseases, methods of disease diagnosis.

19. Hypersensitivity reactions:-

Must know:- Classify, differentiate between different types of Hypersensitivity reactions.
Desirable to know:- Be conversant with transplant rejections.

20. Autoimmune diseases:-

Must know:- Understand mechanisms of autoimmunity and diagnose common autoimmune diseases; overview of SLE.

21. Amyloidosis:-

Must know:- Definition, physical characters, chemical characters, classification, pathogenesis morphology, clinical correlation and lab diagnosis.

22. AIDS:-

Must know:- Understand the natural history of the disease and recommend relevant investigations in the management.

23. Typhoid fever:-

Must know:- Correlate Pathogenesis with morphology and clinical features of the disease.

24. Syphilis:-

Must know:- Classify and describe lesions in various stages of syphilis

25,26,27 (3 lectures) Tuberculosis:-

Must know:- Appreciate the importance of tuberculosis in the present day Context, its Pathogenesis & basic histopathology. List and describe the various pulmonary lesions of tuberculosis. Describe changes in various organs in TB and understand their functional correlation, sequelae, lab diagnosis and TB in AIDS.

28. Leprosy:-

Must know:- Classify, differentiate between different types of leprosy and describe the diagnostic histologic features and sequelae.

29. Fungal diseases:-

Desirable to know:- Classification and be conversant with relevance of fungal diseases in the world with emphasis on opportunistic fungal infections.

30. Malaria:-

Must know:- Identify, morphological features in vivax and falciparum malaria and recommend lab investigations in the management.

31 & 32. Neoplasia - Nomenclature and classification:-

Must know:- Define important terms, classify and differentiate benign from malignant neoplasms.

Desirable to know: Precancerous conditions

33. Neoplasia - Carcinogenesis:-

Must know:- Understand carcinogenesis and analyse the mechanism of genetic changes in carcinogenesis.

34. Neoplasia - Biology and Lab diagnosis:-

Must know:- Understand the tumour host interactions in neoplasia and recommend the diagnostic workup for detection of cancer.

35. Neoplasia - Spread, grading and staging:-

Must know:- Biology of tumour growth, metastases, types, mechanisms, clinical correlations, grading of cancer and staging of cancer.

B) HAEMATOLOGY : (n=15)

1. Introduction to haematology and hemopoiesis:-

Must know:- Understand the importance of haematology in clinical practice and enumerate the stages of hemopoiesis.

2. Anaemias (general):-

Must know:- Definition, classify anaemia by various methods, clinical features and lab approach to anaemias.

3. Iron deficiency anaemia:-

Must know:- Definition, causes, haematological features, morbid anatomical features, laboratory diagnosis and differential diagnosis.

4. Megaloblastic anaemia:-

Must know:- Definition, causes, haematological features, morbid anatomical features, laboratory diagnosis and differential diagnosis.

5. Haemolytic anaemia:-

Must know:- Definition, classification, Pathogenesis and haematological features.

6. Haemoglobinopathies:-

Must know:- Definition, classification, Lab diagnosis of Thalassaemia and Sickle cell anaemia.

7&8. Haemorrhagic disorders:-

Must know:- Classify haemorrhagic disorders, describe clinical distinction between Purpuras and Coagulation disorders and laboratory screening tests for haemorrhagic disorders. Normal coagulation and fibrinolytic mechanism. Describe etio-pathogenesis, clinical significance and lab diagnosis of haemophilia and DIC. Describe etio-pathogenesis, morphological features (haematological and morbid anatomical) clinical significance and lab diagnosis of ITP.

9. Leukocytic disorders:-

Must know:- Leukocytosis, Leukopenia and Leukemoid reactions.

10. Acute Leukaemias:-

Must know:- Classify and differentiate different types of acute Leukaemias.

11. Chronic Leukaemias:-

Must know:- Definition, general features, classification, aetiology, haematological change, morbid anatomy, clinical course and lab. investigations.

12. Paraproteinemia:-

Desirable to know:- Understand the relevance of paraproteinemia's and integrate the various diagnostic modalities with the diagnosis.

13. Aplastic Anaemias:-

Desirable to know:- Aplastic anaemias and Agranulocytosis.

14. Blood groups:-

Must know:- Appreciate the relevance of blood groups in haematology and transfusion medicine. Erythroblastosis foetalis

15. Blood Transfusion:-

Must know:- Indications, selection of blood donors, autologous transfusions, complications of blood transfusions, investigation of suspected transfusion reactions.

C) SYSTEMIC PATHOLOGY : (n=46)

1. Atherosclerosis:-

Must know:- Definition, etiopathogenesis, gross and microscopic description, complications and clinical correlation.

2. Hypertension:-

Must know:- Relate the mechanisms of the disease to the clinical course and sequelae.

3. Other diseases of blood vessels:-

Must know:- Develop an index of suspicion for vasculitides and aneurysms.

4. Ischaemic heart disease:-

Must know:- Incidence, risk factors, Pathogenesis, morphological changes, clinical course, complications and investigations.

5. Congenital heart disease:-

Desirable to know:- Correlate the anatomical malformations of disorders to the clinical consequences of the disease.

6. Rheumatic heart disease:-

Must know:- Incidence, etiopathogenesis, morbid anatomy, histopathology, lesions in the organs, clinical course and sequelae.

7. Endocardial and pericardial diseases:-

Must know:- Infective endocarditis - Pathogenesis, morphology, differential diagnosis of cardiac vegetations, aetiology and basic morphology of different forms of pericarditis.

8. Cardiomyopathies:-

Desirable to know:- Recognize the disorders as part of differential diagnosis in primary myocardial diseases.

9. Pneumonias:-

Must know:- Aetiology, classification, gross, histopathological description in different forms and complications.

10. Lung Abscess and Bronchiectasis:-

Must know:- Etiopathogenesis, morphological appearances and complications.

11. Chronic Bronchitis and Emphysema:-

Must know:- Pathogenesis, types of emphysema, definition of chronic bronchitis, morbid anatomy and cardiac sequelae.

12. Occupational lung diseases:-

Must know:- Types, etiopathogenesis, gross anatomical differences between different forms and sequelae.

13. Tumours of lung and pleura:-

Must know:- Classification, aetiology, gross appearances, histological description of important forms, natural history, pattern of spread, Para neoplastic syndromes and secondary Pathology.

14. Lesions of oral cavity and salivary glands:-

Must know:- Differential diagnosis of swelling of salivary glands, oral cancer - etiopathogenesis, gross and histopathological descriptions.

15. Gastritis and Peptic Ulcer:-

Must know:- Definition of peptic ulcer, etiological factors, gross and microscopic appearances and sequelae.

Desirable to know:- Overview of aetiology and types of gastritis.

16. Ulcers of Intestines:-

Must know:- Etiological classifications, Morphological appearances of typhoid, tubercular, amoebic ulcers and bacillary dysentery. Differential diagnosis of different forms of ulcers.

17. Idiopathic Inflammatory Bowel disease:-

Must know:- Enumerate similarities and differences between the two component disorders viz., Crohn's disease and ulcerative colitis.

18. Tumours of upper GIT:-

Must know:- Etiopathogenesis, morphological features of carcinoma oesophagus, classification and morbid anatomy and histopathology of gastric carcinomas.

Desirable to know:- Overview of carcinoid tumours of GIT.

19. Tumours of lower GIT:-

Must know:- Pathology of carcinoma colon.

Desirable to know:- Intestinal polyps & GI stromal tumours.

20. Viral Hepatitis:-

Must know:- Aetiology, clinical source and enzymology, salient histological features and sequelae.

21. Alcoholic liver disease:-

Must know:- Pathogenesis, morphological manifestations and correlation with clinical features.

22. Cirrhosis:-

Must know:- Etiopathogenesis, classification, important histological features and differential diagnosis.

23. Tumours of liver, Pancreas and gall bladder:-

Must know:- Pathology of Hepatocellular carcinoma.

Desirable to know:- Pathology of tumours of Pancreas and gall bladder.

24. Diabetes mellitus:-

Must know:- Classification, pathogenesis of system involvement, sequelae and complications.

25. Acute nephritis and rapidly progressive GN:-

Must know:- Understand and integrate clinical and pathologic features of these syndromes.

26. Nephrotic syndrome:-

Must know:- Integrate clinical and pathological features of this disorder.

27. Renal failure:-

Must know:- Definitions, criteria, aetiology, systemic manifestations and investigations.

28. Pyelonephritis and interstitial Nephritis:-

Must know:- Aetiology, Pathogenesis of Pyelonephritis acute and chronic morphological features and clinical correlation.

29. Tumours of kidney and Pelvis:-

Must know:- Classification, Morphological features, clinical course including Para neoplastic syndromes of common tumours.

30. Tumours of testis and Prostate:-

Must know:- Classification, salient morphological features of most common tumours and clinical course.

31. Tumours of Cervix and Uterus:-

Must know:- Etiopathogenesis, salient morphological features, dysplasia and role of cytological screening.

32. Tumours of Ovary and trophoblastic tissue:-

Desirable to know:- Classification and morphological description of important types.

33. Non-neoplastic and Neoplastic lesions of the breast:-

Must know:- Classification, morphological features and grading of carcinoma breast and differential diagnosis of breast swellings.

34. Non-neoplastic lesions of lymph nodes and Spleen:-

Must know:- Aetiology, differential diagnosis, morphological features of common causes of lymphadenopathy, common causes and appearances of splenomegaly.

35. Hodgkin's Lymphoma:-

Must know:- Definition, classification, salient diagnostic features and clinical course.

36. Non-Hodgkin's Lymphoma:-

Must know:- Definition, classification, salient diagnostic features and clinical Correlation.

Desirable to know:- Extra nodal lymphomas.

37. Tumours of skin - Non-pigmented:-

Must know:- Classification, morphological features of most common types and natural history.

38. Tumours of skin - Pigmented:-

Must know:- Classification, morphological features of common naevi, natural history of malignant melanoma.

39 &40. Soft tissue tumours :-

Must know:- Classification, morphological features of lipomatous, fibrous and blood vessel tumours. Morphological features of neural, muscle and fibro histiocytic tumours.

41. Non-neoplastic lesions of bone and joints:-

Must know:- Etiopathogenesis and morphological changes of common arthritis and osteomyelitis.

42 & 43. Tumours of bone, cartilage and joints:-

Must know:- Classification, radiological and pathological features of important bone tumours (Osteosarcoma, Osteochondroma, GCT and Ewing's sarcoma).

44. Inflammatory and neoplastic conditions of CNS:-

Must know:- Morphological features and differential diagnosis of meningitis.

Desirable to know:- Classification, morphological features of important CNS tumours, clinical course and sequelae (Meningioma and Gliomas).

45. Lesions of Thyroid:-

Must know:- Differential diagnosis of thyroid nodule.

46. Myopathies:-

Desirable to know:- Differential diagnosis of common muscle disorders.

D) CLINICAL PATHOLOGY : (n=3)

1. Differential diagnosis of Jaundice:-

Must know:- The differential diagnosis and laboratory investigations in jaundice

2. Renal function tests:-

Must know:- Laboratory approach to a case of renal dysfunction

1. Diabetes mellitus:-

Must know:- Laboratory diagnosis of Diabetes mellitus

E) AUTOPSY : (n=1)

Must know:- Indications and techniques of medical autopsies

Tutorials

GENERAL PATHOLOGY:

1. Cell injury and cell death
2. Cellular accumulations
3. Inflammation and repair
4. Circulatory disturbances
5. Immunological disorders
6. Infections
7. Neoplasia

HAEMATOLOGY:

1. Anaemias
2. Leukaemias
3. Interpretation of haematological case charts and identification of instruments
4. Haemorrhagic disorders

SYSTEMIC PATHOLOGY:

1. Atherosclerosis and IHD
2. Rheumatic heart disease
3. Pneumonias
4. Tumours of lung
5. Oral cancer
6. Peptic Ulcer
7. Cirrhosis
8. Glomerulonephritis
9. Carcinoma Breast
10. Carcinoma Cervix
11. Bone Tumours
12. Museum specimens
13. Museum specimens

CLINICAL PATHOLOGY:

1. Glucose Tolerance Test
2. Renal Function Tests
3. Differential Diagnosis of Meningitis
4. Identification of needles and instruments used in clinical pathology

AUTOPSY:

CPC of common diseases like 1. Tuberculosis 2. Myocardial infarction 3. Carcinoma/sarcoma 4. Hypertension by students (2 or 3)

d. Term-wise distribution

1st term: 1. General Pathology 2. General Neoplasia 3. Haematology & Transfusion Medicine
2nd term: 1. Systemic Pathology 2. Systemic Neoplasia 3. Clinical Pathology
3rd term: Tutorials & Revision.

e. Practicals: Total hours, number & contents

Total hours : 110

Number : 44

Contents :

A) GENERAL PATHOLOGY: (n=12)

1. Microscopy and tissue processing
2. Identify the common types of cells by light microscopy
3. Intracellular accumulation
4. Acute inflammation
5. Chronic inflammation and Repair
6. Thrombosis, embolism, infarction and gangrene
7. Oedema and congestion
8. Disturbances of pigment metabolism
9. Tuberculosis
10. Leprosy
11. Amyloidosis
12. Disturbances of growth (Atrophy, hypertrophy, hyperplasia, metaplasia, Dysplasia, hypoplasia)

B) HAEMATOLOGY: (n=7)

1. Collection of specimen, anticoagulants and common haematological tests (Hb)
2. Common Haematological Counts (TLC, DLC) & Interpretation of ESR
3. Haemopoiesis
4. Investigations in Anaemia
5. Investigations in Leukaemia
6. Investigations in haemorrhagic disorders
7. Blood Banking

C) SYSTEMIC PATHOLOGY: (n=18)

1. Diseases of blood vessels (Atherosclerosis, syphilitic aortitis)
2. Diseases of Heart (IHD & RHD)
3. Pneumonias
4. Tumours of lung
5. Diseases of kidney
6. Gross and Microscopic features of peptic ulcer and duodenal ulcer
7. Gross and Microscopic features of other intestinal ulcers
8. Tumours of GIT
9. Diseases of Liver
10. Lymphomas
11. Diseases of male and female genital system
- 12 & 13. Tumours of breast
14. Tumours of skin (Pigmented)
15. Tumours of skin (non-pigmented)
16. Soft tissue tumours
17. Tumours of bone
18. Diseases of thyroid

D) CLINICAL PATHOLOGY: (n=5)

1. Urine RE - Carryout a bedside routine urine examination and interpret the results.
2. Pregnancy test and Semen Analysis - (Practical demonstration).
3. Common cytological preparations (lecture demonstration).
4. CSF examination.
5. Serous effusion examination.

E) AUTOPSY: (n=2)

- 1 & 2) To study and describe five autopsy reports.

For the batches joining in June 2001 and later

List of Slides and Specimens that should be shown during the Pathology Practical Classes

These are grouped under two headings: The students

- 1) must see (M)
- 2) desirable to see (D)

Please note that this will be applicable for the batch which will be joining Pathology term in June / July 2001 and later.

DRAWING SLIDES:

HISTOPATHOLOGY:

1. Kidney cloudy change (M)
2. Fatty change liver (M)
3. Uterus - leiomyoma with hyaline change (M)
4. Kidney - amyloid (M)
5. Lymph node - caseous necrosis (M)
6. Kidney - infarct (Coagulation necrosis) (M)
7. Acute ulcerative appendicitis (M)
8. Pyogenic meningitis (M)
9. Lepromatous leprosy - skin (M)
10. Tuberculoid leprosy - skin (M)
11. Actinomycosis (M)
12. Granulation tissue (M)
13. Ileum - typhoid ulcer (M)
14. Tuberculous lymphadenitis (M)
15. Amoebic colitis (M)
16. Lung - haemosiderin pigment or CPC (M)
17. Liver - CPC (M)
18. Artery - recent / organised thrombus (M)
19. Hashimoto's thyroiditis (D)
20. Skin - papilloma (M)
21. Squamous cell carcinoma (M)
22. Adenocarcinoma - Colon (M)
23. Lymph node - metastasis (M)
24. Skin - capillary haemangioma (M)
25. Cavernous haemangioma (M)
26. Benign cystic teratoma (Dermoid cyst) (M)
27. Stomach - chronic peptic ulcer (M)
28. Liver - Viral hepatitis (Massive/ sub-massive necrosis) (D)
29. Liver- portal and biliary cirrhosis (M)
30. Lung - lobar and broncho pneumonia (M)
31. Lung - fibrocaseous tuberculosis (M)
32. Heart - rheumatic myocarditis (D)
33. Heart - healed infarct (M)
34. Aorta - atherosclerosis (M)
35. Kidney - crescentic glomerulonephritis (M)
36. Kidney - chronic glomerulonephritis (M)
37. Kidney - chronic pyelonephritis (M)
38. Kidney - RCC (D)
39. Benign prostatic hyperplasia (M)
40. Testis - seminoma (M)
41. Uterus - leiomyoma (M)
42. Products of conception (M)
43. Hodgkin's lymphoma (M)
44. Brain - tuberculous meningitis (M)
45. Brain - meningioma (D)
46. Bone - osteogenic sarcoma (M)
47. Bone - chondroma (M)
48. Bone - osteoclastoma (M)

49. Skin - melanoma and nevus (M)
50. Breast - fibroadenoma (M)
51. Breast - carcinoma (M)
52. Thyroid - colloid goitre (D)
53. Thyroid - papillary carcinoma (D)
54. Skin - basal cell carcinoma (M)

HAEMATOLOGY:

1. Acute blast cell leukaemia (M)
2. Chronic myeloid leukaemia (M)
3. Eosinophilia (M)
4. Iron deficiency anaemia (M)
5. Haemolytic anaemia (M)
6. Macrocytic anaemia (M)
7. Leucocytosis (M)
8. Various biochemical charts - LFT , GTT , CSF, etc (M)

LIST OF SPECIMEN:

1. Cell injury and adaptation (Degeneration)

- a) Liver - fatty change (M)
- b) Kidney - cloudy change (M)
- c) Aorta - atheroma (M)
- d) Atheroma with calcification (D)
- e) Kidney stones (M)

2. Amyloidosis

- a) Kidney - amyloidosis (M)
- b) Spleen - amyloidosis (M)

3. Necrosis and Gangrene

- a) Kidney - infarct (M)
- b) Spleen - infarct (M)
- c) Intestine - gangrene (M)
- d) Foot - gangrene (M)
- e) Lymph node - caseation (M)

4. Acute inflammation

- a). Lobar pneumonia (M)
- b) Kidney - abscess (D)
- c) Liver - abscess (D)
- d) Mycetoma - foot (D)
- e) Acute appendicitis (M)
- f) Purulent meningitis (M)
- g) Fibrinous pericarditis (M)

5. Chronic inflammation

a) Syphilitic aortitis (D)

6. Repair

a) Heart - healed infarct (M)

7. Specific inflammation

a) Ileum - typhoid (M)

b) Amoebic colitis (M)

c) Amoebic liver abscess (M)

8. Chronic specific granulomatous inflammation

a) Intestine - TB ulcer (M)

b) Brain - TB meningitis (M)

c) Lymph node - TB (M)

d) Lung - miliary TB (M)

e) Fibrocaseous TB (M)

9. Pigment disorders

a). Liver and spleen - Prussian blue reaction (D)

b). Liver and spleen - malaria (M)

c). Skin - melanoma (any site) (M)

10. Disorders of vascular flow and shock

a). Liver - CPC (M)

b). Lung - CPC (M)

11. Thrombosis embolism and infarction

a) Thrombus - artery / vein (M)

b) Infarction - kidney / spleen / brain (M)

c) Intestine gangrene (M)

12. Immunopathology

a) Heart - Rheumatic carditis (M)

b) Kidney - acute glomerulo nephritis (M)

c) Thyroid - Hashimoto's thyroiditis (D)

13. Growth disorders

a) Heart - LVH (M)

b) Kidney - atrophy and compensatory hypertrophy (M)

c) Kidney - Hydronephrosis (M)

14. Neoplasm

- a) Papilloma skin (M)
- b) Adenomatous polyp (M)
- c) Fibroadenoma - breast (M)
- d) Squamous cell carcinoma - skin (M)
- e) Adenocarcinoma - colon (M)
- f) Metastasis - lung (M)
- g) Leiomyoma - uterus (M)
- h) Soft tissue - lipoma (M)
- j) Haemangioma - any site / type (M)
- k) Melanoma (M)
- l) Dermoid cyst (M)
- m) Teratoma (M)

15. Alimentary System

- a) Oesophagus carcinoma (M)
- b) Stomach - chronic peptic ulcer (M)
- c) Perforated peptic ulcer (M)
- d) Stomach - carcinoma (linitis plastica) (M)
- e) Intestine - TB ulcer (M)
- f) Colon - Amoebic colitis / bacillary colitis / carcinoma ulcerative / carcinoma polypoidal growth (M)

16. Liver

- a) Acute diffuse necrosis (D)
- b) Amoebic abscess (M)
- c) Micronodular / macronodular / mixed cirrhosis (M)
- d) Hepatoma (M)
- e) Metastasis (M)

17. Respiratory system

- a) Lung - lobar / bronchopneumonia (M)
- b) Bronchogenic carcinoma (M)
- c) Lung - abscess (D)
- d) Fibrocaceous TB (M)

18. Cardiovascular System

- a) Rheumatic endocarditis (D)
- b) Fibrinous pericarditis (M)
- c) Mitral stenosis (M)
- d) Aortic stenosis (M)
- e) Bacterial endocarditis (M)
- f) Recent myocardial infarct (D)
- g) Healed myocardial infarct (M)
- h) Atheroma aorta (M)
- j) Atheroma with complications (M)

19. Urinary System

- a) Flea bitten kidney (M)
- b) Large white kidney (M)
- c) Shrunken granular kidney (M)
- d) Acute pyelonephritis (M)
- e) RCC (D)
- f) Wilm's tumour (D)
- g) Papillary carcinoma - Urinary bladder (D)

20. Male Reproductive System

- a) SCC - penis (M)
- b) Seminoma - testis (M)
- c) Teratoma - testis (M)
- d) Benign prostatic hyperplasia (M)

21. Female Reproductive System

- a) Uterus - leiomyoma (M)
- b) Carcinoma cervix (D)
- c) Ovary - cyst adenocarcinoma (D)
- d) Ovary - dermoid cyst (D)

21. Lymphoreticular System

- a) Lymph node - TB Lymphadenitis (M)
- b) Lymph node - lymphoma (M)
- c) Spleen - infarct (M)

22. Central Nervous System

- a) Brain - purulent meningitis (M)
- b) Brain - tuberculous meningitis (M)
- c) Tuberculoma (D)
- d) Meningioma (D)
- e) Glioma (D)
- f) Haemorrhage - CVA (D)

23. Bone lesions

- a) Chronic osteomyelitis (D)
- b) Osteoclastoma (M)
- c) Osteogenic sarcoma (M)
- d) Multiple myeloma (D)

24. Skin lesions

- a) Squamous cell carcinoma (M)
- b) Basal cell carcinoma (D)
- c) Melanoma - skin (any site) (M)

25. Diseases of Endocrine organs

- a) Breast - fibroadenoma (M)
- b) Breast - carcinoma (M)
- c) Thyroid - multinodular goitre (M)
- d) Thyroid - solitary nodule / adenoma (M)

f. Books recommended:

- a) Text book of Pathology by Robbins
- b) Text book of General Pathology Part I & II by Bhende and Deodhare
- c) Clinical Pathology by Talib
- d) Text book of Pathology by Harsh Mohan
- e) Text book of Pathology by Muir
- f) Haematology De Gruchi
- g) IAPM text book of Pathology


Reference books:

- a) Anderson's text book of Pathology Vol I & II
- b) Oxford text book of Pathology Vol. I, II & III
- c) Pathology by Rubin and Farber
- d) Pathologic basis of Disease Robbins

5. Evaluation

Methods

Theory, Practicals and Viva

 **Pattern of Theory Examination including Distribution of Marks, Questions, Time.**

Nature of Question Paper

Faculty with : *SECOND MBBS*
Year

Subject : **PATHOLOGY**

Paper : *I*

Total Marks : *40*

Time : *2 Hours*

Section "A" (8 Marks)

Instructions:-

- 1) Fill (dark) the appropriate empty circle below the question number once only..
- 2) Use **blue/black** ball point pen only.
- 3) Each question carries **one / half mark**.
- 4) **Students will not be allotted mark if he/she overwrites strikes or put white ink on the cross once marked.**
- 5) Do not write anything on the blank portion of the question paper. If written anything, such type of act will be considered as an attempt to resort to unfair means.

Section "A" : MCQ (8 marks)

Question No.	Question Description	Division of Marks	Total Marks
1.	Total MCQs : 16	16 X ½	08

Section "B" & "C" (32 Marks)

Instructions:-

- 1) All questions are compulsory.
- 2) The number to the right indicates full marks.
- 3) Draw diagrams wherever necessary.
- 4) **Answer each section in the respective answerbook only. Answers written in the inappropriate sectional answer books will not be assessed in any case.**
- 5) Do not write anything on the blank portion of the question paper. If written anything, such type of act will be considered as an attempt to resort to unfair means.

Section "B" : BAQ (20 Marks)

Question No.	Question Description	Division of Marks	Total Marks
2.	Brief answer questions (Attempt any five out of six) a) b) c) d) e) f)	5 X 4	20

Section "C" : LAQ (12 Marks)

Question No.	Question Description	Division of Marks	Total Marks
3.	Attempt any two out of three: <i>Long answer question only</i> a) b) c)	2 X 6	12

Faculty with Year : **SECOND MBBS**

Subject : **PATHOLOGY**

Paper : **II**

Total Marks : **40**

Time : **2 Hours**

Section "A" (8 Marks)

Instructions:-

- 1) Fill (dark) the appropriate empty circle below the question number once only..
- 2) Use **blue/black** ball point pen only.
- 3) Each question carries **one / half mark**.
- 4) **Students will not be allotted mark if he/she overwrites strikes or put white ink on the cross once marked.**
- 5) Do not write anything on the blank portion of the question paper. If written anything, such type of act will be considered as an attempt to resort to unfair means.

Section "A" : MCQ (8 marks)

Question No.	Question Description	Division of Marks	Total Marks
1.	Total MCQs : 16	16 X ½	08

Section "B" & "C" (32 Marks)

Instructions:-

- 1) All questions are compulsory.
- 2) The number to the right indicates full marks.
- 3) Draw diagrams wherever necessary.
- 4) **Answer each section in the respective answerbook only. Answers written in the inappropriate sectional answer books will not be assessed in any case.**
- 5) Do not write anything on the blank portion of the question paper. If written anything, such type of act will be considered as an attempt to resort to unfair means.

Section "B" : BAQ (20 Marks)

Question No.	Question Description	Division of Marks	Total Marks
2.	Brief answer questions (Attempt any five out of six) a) b) c) d) e) f)	5 X 4	20

Section "C" : LAQ (12 Marks)

Question No.	Question Description	Division of Marks	Total Marks
3.	Attempt any two out of three: Long answer question only a) b) c)	2 X 6	12

Direction:- Only short answer questions may be permitted from the portions marked as "Desirable to know"

c. Paper wise distribution of theory topics and number of questions:-

A)

Paper I:- General Pathology inclusive of general neoplasia

Haematology inclusive of transfusion medicine.

Out of 3 LAQs in Section C, 2 questions should be from General Pathology and General Neoplasia and one question should be from Haematology inclusive of transfusion medicine.

B)

Paper II:- Systemic Pathology inclusive of systemic Neoplasia and Clinical Pathology.

Out of 3 LAQs in Section C, 2 questions should be from Systemic Pathology and Systemic Neoplasia and one question should be from Clinical Pathology.

d. Marking scheme

Each paper of 40 marks as shown in the above table.

e. Nature of practicals and duration

Practicals

Marks 26

a. 10 Spots 2 minutes each (4 specimen, 1 instrument, 3 histopathology slides, 1 haematology slide and 1 chart)	10
Identification - 1/2 mark	] together 1 mark for each spot
Specific short question - 1/2 mark	
b. Urine Examination - Physical and two abnormal constituents	05
c. Histopathology slides : Diagnosis and discussion	03
d. Haematology examination	
i) Peripheral blood smear stain and report	03
ii) Hb/TLC/Blood group	05

Total	26

f. Viva : duration and topic distribution

Viva consists of two tables; on each table the student will face 2 examiners for 5 minutes each :

Table - I General and Systemic Pathology - 7 marks

Table - II Clinical Pathology and Haematology - 7 marks
Total 14 marks

Number of Students for Practical Examination should not exceed more than 30 / day

(4 for general Pathology, 4 for Systemic Pathology, 7 for Clinical Pathology including hematology)

g. Plan for internal assessment

The time table for internal assessment will be as follows :

Theory	15
Practical	15

Scheme of internal assessment

From the batches which have joined before June 2001

Examination Head	Semester/term wise distribution	Total No of marks
Theory	III Semester	
	a). Mid-term test (MCQ) single best response	30
	b). III Semester examination	80
	IV Semester	
	a). Mid-term (MCQ) single best response	30
	b). IV Semester examination	80
	V Semester	
	a). Prelims examination	80
	Total theory	----- 300 (reduced to out of 15) -----

Practicals	III Semester examination	40
	IV Semester examination	40
	Prelims examination	40

	Total Practical	120
		(reduced to out of 12)

Journal	Year ending	03
	Total internal assessment	30

From the batches joining in June 2001 and later

Examination Head	Semester/term wise distribution	Total No of marks
Theory	III Semester Term ending examination	50
	IV Semester Term ending examination	50
	V Semester a). Prelims examination	80
	Total theory	180 (reduced to out of 15)
Practicals	III Semester examination	40
	IV Semester examination	40
	Prelims examination	40
	Total Practicals	120 (reduced to out of 12)
Journal	Year ending	03
Total internal assessment		30

Vth semester

Prelims examination on the basis of University pattern (Theory, practical and viva) :
Minimum 4 weeks gap between Prelims and University examination.

For the terminal theory examination 28 MCQs (1/2 mark each), 10 SAQs (option of 10 of any 12; 2 marks each) and 2 LAQs (option of 2 of any 3; 8 marks each) will be administered. The total time will be 2 hours 30 mins. This will be followed by practicals (total time 1 ½ hours). To familiarize the students with the `viva` methodology, the marks for the practical may be kept 20 while 20 marks may be given for the viva on theory topics (total 40 marks).

Prelim pattern will be as per the University exam with 2 papers in theory, each of 2 hours duration.

2. MICROBIOLOGY

1. Goal

The goal of teaching Microbiology is to provide understanding of the natural history of infectious diseases in order to deal with the etiology, pathogenesis, pathogenicity, laboratory diagnosis, treatment, control and prevention of these infections and infectious diseases.

2. Educational objectives

(a) Knowledge

The student at the end of one and half years should be able to: -

- i. state the etiology, pathogenesis and methods of laboratory diagnosis and apply that knowledge in the diagnosis, treatment, prevention and control of communicable diseases caused by microorganisms.*
- ii. understand commensal, opportunistic and pathogenic organisms of human body and describe host parasite relationship.*
- iii. know and describe the pathogenesis of diseases caused by microorganisms.*
- iv. state the sources and modes of transmission of pathogenic and opportunistic micro-organisms including knowledge of insect vectors & their role in transmission of infectious diseases.*
- v. choose appropriate laboratory investigations required for clinical diagnosis.*

(b) Skills

- i. plan and interpret laboratory investigations for diagnosis of infectious diseases and correlate the clinical manifestations with the etiological agent.*
- ii. identify common infectious agents with the help of laboratory procedure, acquire knowledge of antimicrobial agents, use of antimicrobial sensitivity tests to select suitable antimicrobial agents for treatment.*
- iii. perform simple laboratory tests, which help to arrive at rapid diagnosis.*
- iv. be conversant with proper methods of collection, storage & transport of clinical material for microbiological investigations.*
- v. understand the principles of immunology and its application in the diagnosis and prevention of infectious diseases including immunization schedule, acquire knowledge of the scope of immunotherapy and different vaccines available for the prevention of communicable diseases.*
- vi. understand methods of disinfection and sterilization and their application to control and prevent hospital and community acquired infections including universal biosafety precautions and waste disposal.*
- vii. recommend laboratory investigations regarding bacteriological examination of food, water, milk and air.*
- viii. the student should be well equipped with the knowledge of prevalent communicable diseases of national importance and of the newer emerging pathogens.*

(c) Attitude

- i. the student will be regular, sincere, punctual and courteous and regular in studies.
- ii. the student will follow all the rules laid down by the department and participate in all activities.
- iii. the student will understand the importance of, and practice asepsis, waste segregation and appropriate disposal.
- iv. the student will understand the importance of, and practice the best methods to prevent the development of infection in self and patient. (E.g. hand washing, using aprons for hospitals in hospitals only, regularly washing the aprons, wearing gloves (as and when required / handling specimens etc.).
- v. the student will understand the use of the different antimicrobial agents including antibiotics to use judiciously and prevent misuse, (prescribing attitude).
- vi. the student will understand the significance of vaccinations and will receive appropriate vaccines (e.g. TT, Hepatitis B and any other as per needs).
- vii. the student will wash his/her hands with soap after each practical class.
- viii. the student will leave the area allotted for his practical neat and tidy.
- ix. the student will discard the slides in the appropriate container provided for the same.
- x. the student will report any injury sustained in class, immediately.
- xi. the student will report any breakage occurring during class times immediately.
- xii. the student may give suggestions to improve teacher student association.

3. Total duration of para-clinical teaching

3 semesters

Total 360 teaching days

**Total number of teaching hours allotted for Microbiology
(As per MCI guidelines 1997).**

250 hrs

4. Syllabus

a. Learning methods

Lectures, practicals

Distribution of teaching hours

A) Theory (lectures & tutorials)	..... 71
	..... 26

Total	..... 97
B) Practical and Revision	..... 120
C) Assessments	..... 33

Total	..... 250

b. & c. Sequential organisation of contents and their division

The areas of study in Microbiology will include General Microbiology, Systemic Microbiology including Bacteriology, Immunology, Mycology, Virology, Rickettsia, Chlamydia, Parasitology and Applied microbiology in relation to infections and diseases of various systems of the body.

A) GENERAL MICROBIOLOGY: (n=10)

No	Topic of lecture	Must know (MK)	Desirable to know (DK)	Hrs
1.	Introduction and Historical background	Definitions: Medical Microbiology, pathogen, commensal, symbiont etc. To cover Anton van Leewenhoek, Pasteur, Lister, Koch, Flemming etc. In History: Scope to cover the importance of Med. Microbiology on diagnosis and prevention of infectious diseases.	Micro-organisms as models in Molecular Biology and Genetic engineering.	1
2.	Morphology of bacteria and Classification	Bacterial cell and its organelles, morphological classification, methods of studying bacteria, staining methods & their principles Grams & Zeil Nelson staining, their importance in presumptive diagnosis, negative staining, dark ground illumination, phase contrast and fluorescent microscopy, briefly about electron microscopy. Principles and applications of all microscopes.		1
3.	Physiology of bacteria including growth requirements & metabolism	Nutrition, respiration (anaerobic & aerobic) and growth of bacteria, growth curve, physical factors influencing growth. Culture media: Definition, classification and application.	Important constituents of culture media.	1
4.	Sterilization	Definition of sterilization, disinfection, asepsis, antiseptics. Ubiquity of bacteria, modes of killing microbes and preventing them, factors determining selection of the mode, factors adversely affecting sterilization. Enumeration of physical methods of sterilization including principle & their application.	Working and efficacy testing of autoclave, inspissator and hot air oven. Central Sterile Supply Department (CSSD) – concept only.	1
5.	Disinfectants	Asepsis and antiseptics, modes of Action of chemical agents on microbes. Phenols, Halogens, Aldehydes, Acids, Alcohol, heavy metals, oxidizing agents etc. Universal biosafety precautions.	Dyes, soaps and detergents. Concentration and contact time.	1
6.	Waste disposal	Definition of waste, classification, segregation, transport and disposal.		1

7.	Bacterial genetics and drug resistance to antimicrobial agents.	Introduction – codon, lac operon, mutation, transformation, transduction & conjugation, R factor, mode of action of antimicrobials on bacteria, mechanism of drug resistance and antimicrobial susceptibility tests, steps taken to minimize emergence of resistant strains (Antibiotic policy, formulation),		1
8.	Host parasite relationship and bacterial infections	Commensal, pathogenic and opportunistic organisms, their pathogenic factors and modes of transmission. Microbial factors: spores, capsule, toxins, enzymes, intracellular parasitism, antigenic variation & extrinsic factors etc. leading to establishment of infection. Types of infection: primary, secondary, general, local, natural, nosocomial, iatrogenic, zoonotic.		1
9.	Normal flora	Introduction – various sites, types and role		1
10.	Methods of identification of bacteria. Diagnosis of infectious diseases (direct and indirect)	Principles of laboratory diagnosis of infectious diseases. General procedures for collection transport, processing of specimens for microbiological diagnosis.	PCR, RIA, DNA probes.	1

B) IMMUNOLOGY: (n=12)

No.	Topic	Must know	Desirable to know	Hrs
1	Introduction	Definition of immunity, types of immunity, factors responsible, mechanism of innate immunity, active and passive immunity, local immunity.	Herd immunity	1
2	Antigens, HLA	Definition, types, antigen determinants, properties of antigen. MHC- concept, class- I, II & III functions, indication of typing, MHC restriction.	Nature of determinants, e.g. of haptens, e.g. of cross- reactive antigen.	1
3	Antibodies	Definition, nature, structure of immunoglobulins, papain digestion, understand isotypic, allotypic and idiotypic markers, immunoglobulin classes, physical and biological properties of immunoglobins.,	Pepsin digestion, amino acid sequence, immunoglobulin domain, abnormal immunoglobins.	1
4	Serological reactions	Definition, characteristics, titre, sensitivity & specificity, antigen- antibody interaction- primary, secondary & tertiary, prozone phenomenon, principle, types and application of precipitation, agglutination, complement fixation, enzyme immunoassay, radioimmunoassay, immunofluorescence test, neutralization and opsonisation.	Techniques of precipitation and their uses, blocking antibodies, antiglobulin reactions, co-agglutination, in vitro test, techniques of EIA, IF & electron microscopy.	2

5	Immune response	Types, development, role of --thymus, bone marrow, lymph nodes & spleen, cells of lymphoreticular system, morphology and role of T subsets, NK cells, B cells , plasma cells and macrophages, B & T cell activation, antigen processing and presentation, primary and secondary immune response, principle and uses of monoclonal antibodies, factors affecting antibody production, CMI- definition, types, role of T cell and macrophages, definition of immune tolerance and mechanism of tolerance.	Lymphokines and their role, clonal selection, mechanism of immunoregulation, theories of antibodies formation, techniques of monoclonal antibody formation, detection of CMI, types of immunotolerance.	2
6	Complement	Definition, synthesis, pathways, activation, role & biological functions, components, measurement.	Regulation of complement activation, complement deficiency	1
7	Hypersensitivity	Definition, classification, , difference between immediate and delayed reaction, mechanism of anaphylaxis, manifestations of anaphylaxis, types of anaphylaxis, atopy, e.g. of anaphylactic reaction, tests for anaphylaxis, mechanism and e.g. of type-II & type-III reactions, mechanism & types of delayed hypersensitivity.	Desensitization in anaphylaxis, type V reaction, ADCC, Shwartzman phenomenon.	1
8	Autoimmunity	Definition, mechanism, classification, pathogenesis.		1
9	Transplantation & tumour immunology	Types of transplants, mechanism of transplant rejection, prevention of graft rejection, GVH reaction, IR to tumours, tumour antigens, mechanism of IR to tumours.	Type of tumour antigens, immune surveillance.	1
10.	Immuno-Deficiency	Classification, examples, laboratory tests for detection, manifestations.		1

8	Bacillus Methods of anaerobiosis & classification. Non sporing anaerobes (1 hour)	MK	MK	MK	DK	MK	MK	MK	-	MK	MK	MK	-
9	Clostridium welchii, tetani, botulinum (1 hour)	MK	DK	MK	-	-	-	MK	-	-	MK	-	-
10	Enterobacteriaceae (1 hour)	MK	MK	DK	DK	MK	MK	MK	DK	-	MK	-	-
11	Salmonella typhi (1 hour)	MK	MK	DK	DK	MK	MK	MK	DK	-	MK	-	MK
12	Shigella (1 hour)	MK	MK	DK	DK	MK	MK	MK	DK	-	MK	-	-
13	Vibrio & Campylobacter (1 hour)	MK	MK	DK	DK	MK	MK	MK	-	-	MK	-	-
14	Pseudomonas (1 hour)	-	MK	DK	DK	MK	MK	MK	-	-	MK	-	-
15	Other GNB (1 hour)	List only	MK	DK	-	-	MK	-	-	-	MK	-	-
16	Newer bacteria (1 hour)	List only	MK	DK	-	-	-	-	-	-	MK	-	-
17	Spirochete (1 hour)	MK	MK	DK	-	MK	-	MK	-	-	MK	-	DK
18	Actinomycosis & Nocardia (1 hour)	DK	MK	DK	-	-	-	-	-	-	MK	-	-
19	Rickettsia (1 hour)	MK	MK	-	-	-	-	-	-	-	MK	-	-
20	Chlamydia & Mycoplasma (1 hour)	MK	MK	-	-	-	-	-	-	-	MK	-	-
21	Bacteriology of air, water, milk and food (1 hour)	-	-	MK	DK	MK	MK	MK	-	MK	MK	MK	-

D) MYCOLOGY: (n=4)

No	Topic	Must know	Desirable to know	Hrs
1	Introduction to Mycology	Nature of fungus (definition, differences with bacteria), characteristics of fungi, common terminologies, brief account of types of sporulation and morphological classification of fungi. Methods of identification, Infections produced, Lab Diagnosis, processing of skin, hair and nail,	Growth requirements, ecological, medical and industrial importance of fungi (brief account).	1
2	Agents of Superficial mycosis	Enumerate, predisposing factors, morphological features, Lab. Diagnosis	Colony characteristics of dermatophytes	1
3	Subcutaneous mycosis	Enumerate, predisposing factors, Mycetoma, Rhinosporidiosis, Pathogenesis, Lab. Diagnosis	-	1
4	Systemic mycosis Opportunistic fungal infections	Classification, predisposing factors, Candida, Cryptococcus, Histoplasma morphology, pathogenesis, lab. Diagnosis Classification, predisposing factors, Mucor, Aspergillus, Pneumocystis carinii	Cultural characteristics	1

E) VIROLOGY: (n=12)

Morphology, pathogenesis, laboratory diagnosis, prevention and control for all viruses (Must know).

No	Topic of lecture	Must know	Desirable to know	Hrs
1	General Virology	Size, shape, symmetry, structure, resistance, multiplication, properties and classification of viruses, pathogenesis, bacteriophages, concept of virions	-	1
2	Laboratory diagnosis of viral infections	Collection of samples, transport, cultivation and methods of diagnosis	-	1
3	Viral immunity	Viral immunity, interferon, viral vaccines	-	1
4	Pox viruses	Small pox and Molluscum	-	1
5	DNA viruses	Papova, Adeno, Herpes viruses (Herpes simplex, Varicella zoster, CMV, EBV)	-	1
6	Respiratory viruses	Orthomyxo and Paramyxoviruses, Ag shift and drift	Rhinoviruses	1
7	Picornaviruses	Polio, Coxsackie, Enteroviruses, Viruses causing diarrhoea – Rota viruses, Immunity (polio)	-	1
8	Hepatitis viruses	Hepatitis viruses, immunity and laboratory diagnosis	-	1
9	Arboviruses	Dengue, KFD, Japanese encephalitis – definition, classification, enumeration in India, Pathogenesis, laboratory diagnosis and control	-	1

10	Rhabdoviruses	Rabies	-	1
11	Slow and Oncogenic viruses	Characteristics of slow virus infections, pathogenesis and laboratory diagnosis and viruses associated with it	-	1
12	Retroviruses	HIV/AIDS, Immunity, USP	-	1

F) PARASITOLOGY: (n=11)

Must know –

- Geographical distribution
- Habitat
- Morphology (different stages) found in human beings
- Life cycle
- Pathogenesis
- Laboratory diagnosis
- Treatment
- Control
- Immunoprophylaxis

No	Topic of lecture	Must know	Desirable to know	Hrs
1	Introduction to medical Parasitology	Parasites: their nature, classification, and explanation of terminologies, epidemiology, emerging parasitic infections, (pathogenicity and laboratory diagnosis)		1
2	E. histolytica	Amoebic infections		1
3	Free living amoebae and flagellates	Free living amoebae, PAME, Giardia & Trichomonas		1
4	Hemoflagellates	L. donovani: life cycle, morphology, pathogenicity, and lab. Diagnosis etc.	Brief account of Trypanosomes	1
5	Malaria	Malarial parasites: life cycle, morphology, pathogenicity, laboratory diagnosis etc.		1
6	Misc. Pathogenic protozoa	Toxoplasma,	Cryptosporidium, Isospora, B.coli	1
7	Cestodes	Taenia saginata & solium, Echinococcus granulosus, life cycle, morphology, pathogenicity and laboratory diagnosis.	Brief mention of other cestodes	1
8	Trematodes	Schistosomiasis: life cycle, morphology, pathogenicity & lab diagnosis.	Brief account of Fasciola hepatica	1
9	Intestinal Nematodes	A.duodenale, A. lumbricoides, E. vermicularis, T. tritura	brief mention of S. stercoralis, life cycle, morphology laboratory diagnosis	2
10	Tissue Nematodes	W. bancrofti, D. medinensis, in brief T. spiralis		1

TUTORIALS (APPLIED MICROBIOLOGY) : (n=26)

Regular tutorials, student seminars & symposia shall be conducted in addition to lectures.

Students must know:

- Micro-organisms causing diseases & pathological lesions
- Methods of collection & transportation of specimens
- Methods of laboratory diagnosis
- Serological response produced by organisms
- Interpretation of laboratory report

No	Topic of Tutorial	Hrs
1	Gastrointestinal infections (diarrhoea and dysentery) and their laboratory diagnosis	2
2	Upper respiratory tract infection (patch and sore throat) and their laboratory diagnosis	2
3	Lower respiratory tract infection (pneumonia, bronchitis, bronchiolitis etc.) and their laboratory diagnosis	2
4	Urinary tract infection and their laboratory diagnosis	2
5	Infections of the central nervous system (meningitis, encephalitis, brain abscess) and their laboratory diagnosis	2
6	Wound infections and pyogenic infections	2
7	Septicemia and laboratory diagnosis and PUO	2
8	Eye infections and their laboratory diagnosis	2
9	Sexually transmitted disease (STD) and their laboratory diagnosis (genital ulcerative disease)	2
10	Role of laboratory in cross infection, Nosocomial infections / outbreak / epidemic	2
11	Vehicles and vectors of communicable disease & zoonosis	2
12	Preventive inoculations, immunomodulation and immunotherapy	2

Suggested topics for integrated teaching:

- ◆ Tuberculosis and Leprosy
- ◆ Pyrexia of Unknown Origin (PUO) MBBS.
- ◆ Sexually Transmitted Diseases
- ◆ Hepatitis
- ◆ HIV / AIDS
- ◆ Malaria
- ◆ Diarrhoea and Dysentery

Note: Each topic may be allotted 3
be covered in 2nd and 3rd term of 2nd

d. Term-wise distribution

First term (4 months)	Theory- 32 hours	Practical- 32 hours
Second term (5 ½ months)	Theory- 66 hours	Practical- 44 hours
Third term (4 months)	Theory- 48 hours	Practical- 32 hours
Total teaching hours	254 hours	

System-wise distribution

TERM	BROAD TOPICS	NO. OF CLASSES		TUTORIALS (2 hours)
		Lectures (1 hour)	Practicals (2 hours)	
First term	General Microbiology	10	28	-
	Systemic Bacteriology	18	24	-
Second term	Systemic bacteriology	3	19	-
	Immunology	12	4	-
	Virology	12	4	-
	Mycology	5	4	-
	Parasitology	11	24	-
Third term	Applied microbiology	-	-	26

e. Practicals : Total hours, number & contents : (n=100)

No	Topic	Hrs
1.	Introduction to Microbiology, Microscopy and Micrometry.	4
2.	Morphology and physiology of bacteria and methods staining.	4
3.	Growth requirements of bacteria (media) and identification of bacteria (biochemical reactions).	4
4.	Scheme for laboratory diagnosis of infectious diseases and collection, storage and transport of microbiological specimens and laboratory animals.	4
5.	Sterilization- the physical agents. Sterilization- the chemical agents and method of waste disposal.	4
6.	Serological tests for diagnosis of microbial infections.	4
7.	Staphylococci and other gram-positive cocci.	4
8.	Streptococci and Pneumococci.	4
9.	Gram negative cocci	4
10.	C. diphtheriae and other gram positive non sporing bacilli	4
11.	Mycobacteria	4
12.	Spore bearing aerobic and anaerobic bacilli.	4
13.	Enteric gram-negative bacilli – lactose fermenters - E.coli etc	4
14.	Non lactose fermenters – Salmonella and Shigella	4
15.	V. cholerae and other Vibrio like organisms	4
16.	Other gram-negative bacilli including Pseudomonas, Proteus and hospital acquired infection.	4
17.	Spirochetes	4
18.	Actinomycetes, Nocardia and Fungi.	4
19.	Rickettsia, Chlamydia, Mycoplasma and Viruses	4
20.	Introduction to Parasitology and Protozoal infections (including Isospora & Cryptosporidium)	4
21.	Haemoflagellates	4
22.	Plasmodia and toxoplasma.	4
23.	Cystodes and trematodes	4
24.	Intestinal nematodes	4
25.	Extra-intestinal nematodes.	4

The number of practicals and lectures can be changed as per the needs.

[Introduction Of “ Bio -Me dical W aste” topi c in su bject of Microbiol o g y & P reventi ve
& Social Medicine](#)

f. Books recommended:

- | | | |
|--------------------------------------|---|--|
| 1. Textbook of Microbiology | - | <i>R. Ananthanarayan
C. K. Jayaram Panikar</i> |
| 2. A Textbook of Microbiology | - | <i>P. Chakraborty</i> |
| 3. Textbook of Medical Microbiology | - | <i>Rajesh Bhatia & Itchpujani</i> |
| 4. Textbook of Medical Microbiology | - | <i>Arora and Arora</i> |
| 5. Textbook of Medical Parasitology | - | <i>C. K. Jayaram Panikar</i> |
| 6. Textbook of Medical Parasitology | - | <i>Arora and Arora</i> |
| 7. Textbook of Medical Parasitology | - | <i>S.C.Parija</i> |
| 8. Microbiology in clinical practice | - | <i>D. C. Shanson</i> |
| <i>A Textbook of Parasitology</i> | - | <i>Dr. R.P. Karyakarte and Dr. A.S. Damle</i> |

Reference books:

- | | |
|--|---|
| 1. Mackie McCartney practical Medical Microbiology- | <i>Colle JG , Fraser AG</i> |
| 2. Principles of Bacteriology, Virology & Immunology vol. 1,2,3,4,5- | <i>Topley Wilsons</i> |
| 3. Medical Mycology (Emmons)- | <i>Kwon – Chung</i> |
| 4. Review of Medical Microbiology (Lange)- | <i>Jawetz</i> |
| 5. Immunology- | <i>Weir DM</i> |
| 6. Medical Microbiology- | <i>David Greenwood, Richard Stack, John Pentherer</i> |
| 7. Parasitology- | <i>KD Chatterjee</i> |
| 8. Medical virology- | <i>Timbury MC</i> |
| 9. Mackie McCartney Medical, Microbiology vol.1- | <i>Duguid JP</i> |
| 10. Microbial infections- | <i>Marmion BP, Swain RHA</i> |

5. Evaluation

a. Methods

Theory, Practical & Viva

No		Total marks
1	Theory (2 papers – 40 marks each)	80
2	Oral (Viva)	15
3	Practical	25
4	Internal assessment (theory –15, practicals –15)	30
	TOTAL	150

Passing : A candidate must obtain 50% in aggregate with a minimum of 50% in Theory including oral and minimum of 50% in practicals and 50% in internal assessment (combined theory and practical).

b. Pattern of Theory Examination including Distribution of Marks, Questions, Time.

Nature of Question Paper

Faculty with : *SECOND MBBS*
Year

Subject : **MICROBIOLOGY**

Paper : *I*

Total Marks : *40*

Time : *2 Hours*

Section "A" (8 Marks)

Instructions:-

- 1) Fill (dark) the appropriate empty circle below the question number once only..
- 2) Use **blue/black** ball point pen only.
- 3) Each question carries **one / half mark**.
- 4) **Students will not be allotted mark if he/she overwrites strikes or put white ink on the cross once marked.**
- 5) Do not write anything on the blank portion of the question paper. If written anything, such type of act will be considered as an attempt to resort to unfair means.

Section "A" : MCQ (8 marks)

Question No.	Question Description	Division of Marks	Total Marks
1.	Total MCQs : 16	16 X ½	08

Section "B" & "C" (32 Marks)

Instructions:-

- 1) All questions are compulsory.
- 2) The number to the right indicates full marks.
- 3) Draw diagrams wherever necessary.
- 4) **Answer each section in the respective answerbook only. Answers written in the inappropriate sectional answer books will not be assessed in any case.**
- 5) Do not write anything on the blank portion of the question paper. If written anything, such type of act will be considered as an attempt to resort to unfair means.

Section "B" : BAQ (20 Marks)

Question No.	Question Description	Division of Marks	Total Marks
2.	Brief answer questions (Attempt any five out of six) a) b) c) d) e) f)	5 X 4	20

Section "C" : LAQ (12 Marks)

Question No.	Question Description	Division of Marks	Total Marks
3.	Attempt any two out of three: Long answer question only a) b) c)	2 X 6	12

Faculty with Year : SECOND MBBS

Subject : MICROBIOLOGY

Paper : II

Total Marks : 40

Time : 2 Hours

Section "A" (8 Marks)

Instructions:-

- 1) Fill (dark) the appropriate empty circle below the question number once only..
- 2) Use **blue/black** ball point pen only.
- 3) Each question carries **one / half mark**.
- 4) **Students will not be allotted mark if he/she overwrites strikes or put white ink on the cross once marked.**
- 5) Do not write anything on the blank portion of the question paper. If written anything, such type of act will be considered as an attempt to resort to unfair means.

Section "A" : MCQ (8 marks)

Question No.	Question Description	Division of Marks	Total Marks
1.	Total MCQs : 16	16 X ½	08

Section "B" & "C" (32 Marks)

Instructions:-

- 1) All questions are compulsory.
- 2) The number to the right indicates full marks.
- 3) Draw diagrams wherever necessary.
- 4) **Answer each section in the respective answerbook only. Answers written in the inappropriate sectional answer books will not be assessed in any case.**
- 5) Do not write anything on the blank portion of the question paper. If written anything, such type of act will be considered as an attempt to resort to unfair means.

Section "B" : BAQ (20 Marks)

Question No.	Question Description	Division of Marks	Total Marks
2.	Brief answer questions (Attempt any five out of six) a) b) c) d) e) f)	5 X 4	20

Section "C" : LAQ (12 Marks)

Question No.	Question Description	Division of Marks	Total Marks
3.	Attempt any two out of three: Long answer question only a) b) c)	2 X 6	12

A) MICROBIOLOGY PAPER I

- General Microbiology
- Systematic bacteriology including Rickettsia, Chlamydia and Mycoplasma
- Related applied microbiology.

B) MICROBIOLOGY PAPER II

- Parasitology
- Mycology
- Virology
- Immunology
- Related applied Microbiology.

d. Marking scheme

Each paper of 40 marks as shown in the above table.

e. Nature of practicals and duration

Practical examination in MICROBIOLOGY will be of 26 marks and oral (viva) of 14 marks of THREE hours duration.

Q.1: Gram staining	5
Q.2: Zeil – Nelson's staining	5
Q.3: Stool examination for Ova/cyst	6
Q.4: Spot identification (Ten spots)*	10
Total-	26

(*Spots- Microscopic slides, Mounted specimen, Instruments used in laboratory, Serological tests, Inoculated culture medium, Sterile culture medium, Vaccines / serum).

f. Viva (Two tables)	Marks
A: General & Systemic Microbiology	7
B: Mycology, Parasitology, Virology, Immunology	7

g. Plan for internal assessment

Marks for Internal Assessment:

Theory:	15
Practical:	15

From the batches which have joined before June 2001

Theory examination

Internal assessment for theory shall be calculated on the basis of two term ending examinations (Ist & IInd), two mid term examinations in Ist & IInd term & one preliminary examination at the end of the course (total 5 examinations) till the batch of Nov.2000 admission appears for University examination.

Marks Distribution for theory examination: (Internal assessment)

Examination	MCQ		SAQ		LAQ		Total	Time
	Marks	No.	Marks	No.	Marks	No.		
Ist & IInd midterm	10	20	20	10/12	-	-	30	1 hr
Ist & IInd term	28	56	24	12/14	28	4/5	80	3 hr

MCQ = Multiple choice questions, SAQ = Short answer questions, LAQ = Long answer questions

Preliminary examination (as per the University pattern – 2 papers, 3 h each) 80 marks

Internal assessment marks for theory will be computed to 15 out of total 300 marks.

Practicals (Internal assessment):

Three term ending practicals only.

Marks Distribution of Practicals:

I st term ending examination	40
II nd term ending examination	40
Preliminary Practical examination	40
Total-	120

Internal assessment marks for Practicals have to be computed out of 12 marks at the end of the curriculum and add marks for journals out of 3. Thus, total marks for practical assessment will be 15.

From the batches joining in June 2001 and later

Pattern for computation of ' Internal Assessment ' in the subject of Microbiology. (Applicable to the batch joining in June 2001)

THEORY:

Internal assessment shall be computed on the basis of three term ending examinations (two terminals & one preliminary examination before the university examination).

EXAMINATION	No.of Papers	Pattern	Duration of each paper	Total Marks
1 ST TERMINAL	One -50 Marks	MCQs- 28(14 Marks) SAQs- 10/12 (20 Marks) LAQs- 2/3 (16 Marks)	2 Hours 30 Minutes	50
2 ND TERMINAL	One - 50 marks	MCQs- 28(14 Marks) SAQs- 10/12(20Marks) LAQs- 2/3 (16 Marks)	2 Hours 30 Minutes	50

PRELIMINARY (As per final University pattern)	Two - 40 marks each	Each paper- MCQs- 28(14 Marks) SAQs- 6/7(12Marks) LAQs- 2/3 (14 Marks) (Total- 40 Marks, each paper)	2 Hours each paper	80
TOTAL				180

Final internal assessment in THEORY shall be computed on the basis of actual marks obtained out of 180, reduced to marks out of 15.

PRACTICAL:

Internal assessment in PRACTICALS shall be computed on the basis of three term ending examinations and the marks allotted to practical record book.

EXAMINATION	PATTERN	MARKS	TOTAL
1 ST TERMINAL	Exercise(eg.Gram's Stain)	10	40
	Spotting	10	
	Viva	20	
2 ND	Exercise/Exercises(eg .Gram's & Z.N. Stain)	10	40
	Spotting	10	
	Viva	20	
PRILIMINARY EXAM As per University pattern	Gram's Stain	5	40
	Ziehl-Neelson Stain	5	
	Stool Exam.	5	
	Spotting	10	
	Viva	15	
TOTAL			120

Actual marks obtained out of 120 shall be reduced to out of 12. Add marks obtained out of 3 for Practical Record Book. Total internal assessment marks for Practical shall be out of (12+3) 15.

Total Internal Assessment : Theory --- 15

Practical -- 15

Total: 30

Pharmacology and Pharmacotherapeutics

1. Goal

The broad goal of teaching pharmacology to undergraduate students is to inculcate in them a rational and scientific basis of therapeutics.

2. Educational objectives

(a) Knowledge

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

- i. describe the pharmacokinetics and pharmacodynamics of essential and commonly used drugs
- ii. list the indications, contraindications, interactions and adverse reactions of commonly used drugs
- iii. indicate the use of appropriate drug in a particular disease with consideration of its cost, efficacy and safety for -
 - individual needs, and
 - mass therapy under national health programmes
- iv describe the pharmacokinetic basis, clinical presentation, diagnosis and management of common poisonings
- v Integrate the list the drugs of addiction and recommend the management
- vi. Classify environmental and occupational pollutants and state the management issues
- vii. Explain pharmacological basis of prescribing drugs in special medical situations such as pregnancy, lactation, infancy and old age
- vii explain the concept of rational drug therapy in clinical pharmacology
- viii state the principles underlying the concept of `Essential Drugs`
- ix evaluate the ethics and modalities involved in the development and introduction of new drugs

(b) Skills

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

- i. prescribe drugs for common ailments
- ii. identify adverse reactions and interactions of commonly used drugs
- iii. interpret the data of experiments designed for the study of effects of drugs and bioassays which are observed during the study
- iv. scan information on common pharmaceutical preparations and critically evaluate drug formulations
- v. be well-conversant with the principles of pharmacy and dispense the medications giving proper instructions

(c) Integration

Practical knowledge of rational use of drugs in clinical practice will be acquired through integrated teaching vertically with pre-clinical & clinical subjects and horizontally with other para-clinical subjects.

3. Total duration of para-clinical teaching
(III,IV,V)

3 Semesters

Total 360 teaching days

Total number of teaching hours allotted to Pharmacology 300 hours

4. Syllabus

a. Learning methods

Lectures, tutorials, Practicals

Distribution of teaching hours

Theory

• <i>lectures</i>	.....109 ± 5
• <i>tutorials</i>	.....17 ± 5
Total	126 ± 10

B) Practicals120 ± 5

C) Revision & Evaluation (Internal Assessment)60

b. & c. Sequential organisation of contents & their division

A) INTRODUCTION: *Pharmacology - a foundation to clinical practice*

(N=1)

Development of the branch of pharmacology; Scope of the subject; role of drugs as one of the modalities to treat diseases, definition of drug; nature and sources of drugs; subdivisions of pharmacology rational pharmacotherapy

B) GENERAL PHARMACOLOGY: (N=7 ± 2)

Pharmacokinetics: Absorption, Distribution, Biotransformation, Elimination
(n=3) Pharmacodynamics: Principles of Drug Action, Mechanisms of drug action,

Receptors (Nature, Types, Theories, Principles, Regulation) (n=1)

Application to pharmacotherapeutics: Relevance of Pharmacokinetics and dynamics in clinical practice, Sequale of repeated administration of drug (n=2)

Adverse Drug Reactions (n=1)

Adrenergic agonists	(n=1)
Adrenergic antagonists I: □-blockers	(n=1)
Adrenergic antagonists II: □-blockers	(n=1)
Cholinergic agonists	(n=1)
Anticholinesterases	(n=1)
Antimuscarinic drugs	(n=1)
Skeletal muscle relaxants	(n=1)

A) CARDIOVASCULAR SYSEM INCLUDING DRUGS AFFECTING COAGULATION AND THOSE ACTING ON KIDNEYS: (N=14 ± 2)

General Considerations and Overview of antihypertensive therapy;	
Diuretics	(n=2)
Angiotensin Converting Enzyme (ACE) inhibitors	(n=1)
Sympatholytics & vasodilators	(n=1)

Management of hypertension

Antianginal: Nitrates & others	(n=1)
Calcium channel blockers	(n=1)

Pharmacotherapy of chest pain

Anticoagulants & Coagulants	
Thrombolytics & Antiplatelet Agents	(n=2)

Drugs for CCF: Digitalis glycosides, Others agents (n=2)

Management of CCF

Antiarrhythmic Agents (n=1)

Agents used for the management of shock (n=1)

Hypolipidaemic drugs (n=1)

Role of Nitric oxide and endothelin to be covered in CVS
DK

E) HEMATOLOGIC PHARMACOLOGY: ERYTHROPOIETIC FACTORS: (N=8 ± 2)

General Considerations of iron deficiency anaemia and megaloblastic anaemia (n=1)

Erythropoietin, GM-CSF (n=1)

Management of anaemia

F) NEUROPSYCHIATRIC PHARMACOLOGY INCLUDING INFLAMMATON, PAIN & SUBSTANCE ABUSE (N=15 ± 2)

General Considerations (n=1)

Sedative-Hypnotics (n=2)

Psychopharmacology: Antianxiety; Antipsychotics; Antidepressants (n=3)

Antiepileptics (n=2)

Therapy of neurodegenerative disorders:

Anti-Parkinsonian agents; cerebral vasodilators/nootropics (n=1)

Local anaesthetics (n=1)

Analgesics: Opioids; NSAIDs (n=3)

Pharmacotherapy of pain including migraine

Pharmacotherapy of rheumatoid arthritis and gout

Substance abuse: Management of opioid, alcohol and tobacco addictions (n=1)

G) MISCELLANEOUS TOPICS - I: (N=6 ± 2)

Autocoids (*to be covered before pain lectures*) (n=1)

Antiallergics: Antihistaminics (n=1)

Drugs used for bronchial asthma (n=1)

Pharmacotherapy of cough

Drugs acting on immune system:

Immunostimulants, immunosuppressants; pharmacology of vaccines & sera (n=1)

Drugs acting on the uterus (n=1)

- Antimicrobial agents: (n=7)
- Sulphonamides & Cotrimoxazole
 - Quinoline derivatives
 - Penicillins, Cephalosporins & Other \square Lactams
 - Aminoglycosides
 - Macrolides
 - Tetracyclines & Chloramphenicol

Pharmacotherapy of UTI

- General principles of Antimicrobial use (n=1)
 Antimycobacterial therapy: Anti-Kochs agents; Anti-leprotic agents (n=3)

Pharmacotherapy of tuberculosis

Antiprotozoal agents:

- Antiamoebic, Antimalarials and Anti Kala azar (n=3)

Pharmacotherapy of malaria

Anthelmintics (n=1)

(against intestinal Nematodes and Cestodes; extra intestinal Nematodes and Trematodes)

Antifungal agents (n=1)

Antiviral agents including antiretroviral agents (n=2)

Pharmacotherapy of STDs (n=1)

Principles of cancer chemotherapy and their adverse drug reactions (n=1)
(individual agents and regimes need not be taught)

I) ENDOCRINOLOGY: (N=12 \pm 2)

Introduction to endocrinology

(including Hypothalamic and Anterior Pituitary hormones) (n=1)

Steroids (n=2)

Glucocorticoids: Use and Misuse

Oestrogens & antagonists (n=1)

Progestins & antagonists (n=1)

Oral contraceptives & profertility agents (n=1)

TOXICOTHERAPY INCLUDING CANCER CHEMOTHERAPY: (N=22 ± 2)

Fertility control

General considerations (n=1)

Agents affecting calcification (n=1)

Antidiabetic agents: Insulin; Oral antidiabetic drugs (n=2)

Pharmacotherapy of Diabetes Mellitus

J) AGENTS USED IN GASTROINTESTINAL DISORDERS: (N=2)

Pharmacotherapy of nausea & vomiting (n=1)

Pharmacotherapy of peptic ulcer (n=1)

Management of dyspepsia

Management of diarrhoea and constipation

K) PERIOPERATIVE MANAGEMENT: to be covered as a *case study*

Preanaesthetic medication

Preparation of surgical site: antiseptics etc.

Local Anaesthetics

Skeletal muscle relaxants

Drugs used in post-operative period: analgesics, antiemetics etc.

L) MISCELLANEOUS TOPICS – II (N=5-7)

Drug-Drug Interactions (n=1)

Drug use at extremes of age, in pregnancy & in organ dysfunction (n=2)

Use of chelating agents in heavy metal poisonings; Environmental & occupational toxicants and principles of management (particularly cyanide and CO) (n=1)

Ocular pharmacology (n=1)

Dermatopharmacology (n=1)

General Anesthetics...

DK

Pharmacotherapy of glaucoma and conjunctivitis

M) RATIONAL PHARMACOTHERAPY: (N=4)

Prescription writing and P-drug concept

Rational Drug Use; Essential Drug List (EDL)

Criticism with reference to Fixed Drug Combinations (FDCs)

Use and misuse of commonly used preparations: vitamins, antioxidants, enzymes etc.

d. Term-wise distribution

I term

Introduction

General pharmacology

Autonomic pharmacology

Drugs acting on cardiovascular system including drugs affecting coagulation and those acting on the kidneys

II term

Prescription writing and P-drug concept

Rational use of drugs; Essential drug list

Neuro-psychiatric pharmacology including inflammation, pain and substance abuse

Miscellaneous topics - I

Chemotherapy

Endocrinology

III term

Agents used in gastro-intestinal disorders

Peri operative management

Miscellaneous topics

Criticism with reference to FDCs

Use and misuse of commonly used preparations: vitamins, antioxidants, enzymes etc.

e. Practicals: Total hours, number & contents

Total hours: 120

Number: 18

Contents:

I term practicals

(N=7)

Introduction to Practical Pharmacology, Prescription Writing, Pharmacokinetics I, Routes of Administration: Oral, Routes of Administration: Topical, Routes of Administration: Parenteral, Pharmacokinetics II: Applied Pharmacokinetics

II term practicals

(N=7)

Pharmacodynamics I (Isolated Tissue, Cat NM junction), Pharmacodynamics II (Dog: BP and Respiration), Screening Techniques for New Drugs, Adverse Drug Reactions, Rational Pharmacotherapy I, Rational Pharmacotherapy II, Sources of Drug Information including scrutiny of Promotional Literature

III term practicals

(N=4)

Case Study 1, Case Study 2

Revision Practicals (n=2)

f. Books recommended :

1. Basic & Clinical Pharmacology. Katzung BG (Ed), Publisher: Prentice Hall International Ltd., London.
2. Pharmacology & Pharmacotherapeutics. Satoskar RS, Bhandarkar SD (Ed), Publisher: Popular Prakashan, Bombay.
3. Essentials of Medical Pharmacology. Tripathi KD (Ed), Jaypee Brothers, publisher:Medical Publishers (P) Ltd.
4. Clinical Pharmacology. Laurence DR, Bennet PN, Brown MJ (Ed). Publisher: Churchill Livingstone

Reference books :

2. Goodman & Gilman's The Pharmacological Basis of Therapeutics. Hardman JG & Limbird LE (Ed), Publisher: McGraw-Hill, New York.
3. A Textbook of Clinical Pharmacology. Roger HJ, Spector RG, Trounce JR (Ed), Publisher: Hodder and Stoughton Publishers.

5. Evaluation

Methods

Theory, Practical & viva

b. Pattern of Theory Examination including Distribution of Marks, Questions & Time

Nature of Question Paper

Faculty with Year : SECOND MBBS

Subject : PHARMACOLOGY & THERAPEUTICS

Paper : I

Total Marks : 40

Time : 2 Hours

Section "A" (8 Marks)

Instructions:-

- 1) Fill (dark) the appropriate empty circle below the question number once only..
- 2) Use **blue/black** ball point pen only.
- 3) Each question carries **one / half mark**.
- 4) **Students will not be allotted mark if he/she overwrites strikes or put white ink on the cross once marked.**
- 5) Do not write anything on the blank portion of the question paper. If written anything, such type of act will be considered as an attempt to resort to unfair means.

Section "A" : MCQ (8 marks)

Question No.	Question Description	Division of Marks	Total Marks
1.	Total MCQs : 16	16 X ½	08

Section "B" & "C" (32 Marks)

Instructions:-

- 1) All questions are compulsory.
- 2) The number to the right indicates full marks.
- 3) Draw diagrams wherever necessary.
- 4) **Answer each section in the respective answerbook only. Answers written in the inappropriate sectional answer books will not be assessed in any case.**
- 5) Do not write anything on the blank portion of the question paper. If written anything, such type of act will be considered as an attempt to resort to unfair means.

Section "B" : BAQ (20 Marks)

Question No.	Question Description	Division of Marks	Total Marks
2.	Brief answer questions (Attempt any five out of six) a) b) c) d) e) f)	5 X 4	20

Section "C" : LAQ (12 Marks)

Question No.	Question Description	Division of Marks	Total Marks
3.	Attempt any two out of three: Long answer question only a) b) c)	2 X 6	12

Faculty with Year : SECOND MBBS

Subject : PHARMACOLOGY & THERAPEUTICS

Paper : II

Total Marks : 40

Time : 2 Hours

Section "A" (8 Marks)

Instructions:-

- 1) Fill (dark) the appropriate empty circle below the question number once only..
- 2) Use **blue/black** ball point pen only.
- 3) Each question carries **one / half mark**.
- 4) **Students will not be allotted mark if he/she overwrites strikes or put white ink on the cross once marked.**
- 5) Do not write anything on the blank portion of the question paper. If written anything, such type of act will be considered as an attempt to resort to unfair means.

Section "A" : MCQ (8 marks)

Question No.	Question Description	Division of Marks	Total Marks
1.	Total MCQs : 16	16 X ½	08

Section "B" & "C" (32 Marks)

Instructions:-

- 1) All questions are compulsory.
- 2) The number to the right indicates full marks.
- 3) Draw diagrams wherever necessary.
- 4) **Answer each section in the respective answerbook only. Answers written in the inappropriate sectional answer books will not be assessed in any case.**
- 5) Do not write anything on the blank portion of the question paper. If written anything, such type of act will be considered as an attempt to resort to unfair means.

Section "B" : BAQ (20 Marks)

Question No.	Question Description	Division of Marks	Total Marks
2.	Brief answer questions (Attempt any five out of six) a) b) c) d) e) f)	5 X 4	20

Section "C" : LAQ (12 Marks)

Question No.	Question Description	Division of Marks	Total Marks
3.	Attempt any two out of three: Long answer question only a) b) c)	2 X 6	12

c. Topic distribution

- A) **PHARMACOLOGY PAPER I** includes General Pharmacology including drug-drug interactions; Autonomic Nervous System, Cardiovascular System including drugs affecting Coagulation and those acting on the Kidneys; Haematinics; Agents used in Gastro-Intestinal Disorders; Ocular pharmacology; Drug use at extremes of age, in pregnancy & in organ dysfunction; Diagnostic & Chelating agents; Environmental & Occupational Pollutants; Vitamins
- B) **PHARMACOLOGY PAPER II** includes Neuro-Psychiatric Pharmacology including Antiinflammatory-Analgesics and Addiction & its management; Pharmacology in Surgery (particularly peri-operative management); Chemotherapy including Cancer Chemotherapy; Endocrinology; Dermatology; Miscellaneous Topics I (Lipid-derived autacoids; Nitric Oxide; Allergy - Histaminics & Antihistaminics including anti-vertigo; Anti Asthmatics; Anti-tussive agents; Immunomodulators; Vaccines & sera; Drugs acting on the uterus)

d. Marking scheme

Each paper of 40 marks as shown in the above table.

e. Nature of practicals and duration

Practical Heads	Marks 26
Prescription writing	5
• Long	(3)
• Short	(2)
Criticism	8
• Prescription & rewriting	(4)
• Fixed dose formulation	(4)

Clinical Pharmacy

(dosage forms, routes of administration, label information and instructions)

- | | |
|--|----------|
| i. Spots | 8 |
| a Experimental Pharmacology – Graphs, Models for evaluation, Identification of a drug, Interpretation of data | (2) |
| b Human Pharmacodynamics - Drug Identification – urine analysis, eye chart, - Subjective / objective effects of a drug | (2) |
| c Therapeutic problems based on pharmaceutical factors - Outdated tablet, Bioavailability, Dosage form, Ethics and Sources of drug information | (2) |
| d Recognition of ADRs & interaction of commonly used drugs | (2) |

For each of the 4 groups (a, b, c & d) 2 spot questions each of 1 mark to be asked.

Time distribution:

For prescription and criticism the time given will be ½ hour.

For clinical pharmacy practical viva will be taken on pre-formed preparations and/or marketed formulations. The students may be asked to write labels and instructions to be given to the patients or demonstrate how specific dosage forms are administered and state the precautions to be taken/ explained to the patients while using them. The time for this will be 5 min.

For spots 20 min will be given (2 min per spot).

Thus the total time for the practical examination will be 1 hour.

f. Viva: duration and topic distribution

Viva	14 marks
Duration	10 mins
Four examiners	5 mins with each candidate
Two examiners	for topics of paper I - systems to be distributed
Two examiners	for topics of paper II - systems to be distributed
At each table marks will be given out of 7.	

g. Plan for internal assessment

The time-table for internal assessment will be as follows:

For the batches which have joined before June 2001

I term

1st midterm: After 60 teaching days (MCQs, and SAQs)

1st term ending: After 120 teaching days (Theory and Pharmacy Practicals)

II term

2nd midterm: After 60 days of 2nd term (MCQs and SAQs)

2nd term ending: At the end of 2nd term (Theory and Practicals: Exptal/Clinical Pharmacy)

IIIrd term

Prelims examination on the basis of University pattern -Theory, Practicals and Viva
(*Minimum 4 weeks gap mandatory between Preliminary and University examinations*)

For each mid-term examination 40 MCQs (each worth 1/2 mark) will be administered to the students along with 5 SAQs (each of 2 marks with an option of 5 out of 6). The total time will be 1 hour and the total marks will be 30.

The term ending examination will be of 80 marks and the nature of questions will be as per University exam.

This will be followed by practical (total time 1½ hours).

To familiarize the students with the „viva-vocé“, the marks for the practical may be kept at only 20, while 20 marks be reserved for viva on theory topics (total 40 marks).

For the batches joining in June 2001 and later

I term

1st term ending: After 120 teaching days (Theory and Pharmacy Practicals)

II term

2nd term ending: At the end of the 2nd term (Theory and Practicals: Exptal/Clinical Pharmacy)

IIIrd term

Prelims examination on the basis of University pattern -Theory, Practicals and Viva
(*Minimum 4 weeks gap mandatory between Preliminary and University examinations*)

For the terminal theory examination students will be evaluated by a combination of 28 MCQs (each worth 1/2 mark), 10 SAQs (each of 2 marks with an option of 10 out of 12) and 2 LAQs (option of 2 out of 3 each worth 8 marks). The total time allotted for this 50 marks paper will be 2hours 30minutes.

This will be followed by practicals (total time 1½ hours).

To familiarize the students with the „viva-vocé“, the marks for the practical may be kept at only 20, while 20 marks be reserved for viva on theory topics (total 40 marks).

Prelim pattern will be as per the University exam with 2 papers in theory, each of 2 hours duration.

FORENSIC MEDICINE AND MEDICAL JURISPRUDENCE
INCLUDING TOXICOLOGY

1. Goal

The broad goal of teaching undergraduate students Forensic Medicine is to produce a physician who is well informed about Medico-legal responsibility during his/her practice of Medicine. He/She will also be capable of making observations and inferring conclusions by logical deductions to set enquiries on the right track in criminal matters and associated medico-legal problems. He/She acquires knowledge of law in relation to Medical practice, Medical negligence and respect for codes of Medical ethics.

2. Educational objectives

(a) Knowledge

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

- i. identify the basic Medico-legal aspects of hospital and general practice
- ii. define the Medico-legal responsibilities of a general physician while rendering community service either in a rural primary health centre or an urban health centre
- iii. appreciate the physician's responsibilities in criminal matters and respect for the codes of Medical ethics
- iv. diagnose, manage and identify also legal aspect of common acute and chronic poisonings
- v. describe the Medico-legal aspects and findings of post-mortem examination in cases of death due to common unnatural conditions and poisonings
- vi. detect occupational and environmental poisoning, prevention and epidemiology of common poisoning and their legal aspects particularly pertaining to Workmen's Compensation Act
- vii. describe the general principles of analytical toxicology

(b) Skills

A comprehensive list of skills and attitude recommended by Medical Council of India Regulation, 1997 desirable for Bachelor of Medicine and Bachelor of Surgery (MBBS) Graduate for Forensic Medicine and

Toxicology

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

- i. make observations and logical inferences in order to initiate enquiries in criminal matters and Medico-legal problems
 - a. *to be able to carry on proper Medico-legal examination and documentation/Reporting of Injury and Age*
 - b. *to be able to conduct examination for sexual offences and intoxication*
 - c. *to be able to preserve relevant ancillary materials for medico - legal examination*
 - d. *to be able to identify important post-mortem findings in common unnatural deaths*
- ii. diagnose and treat common emergencies in poisoning and chronic toxicity
- iii. make observations and interpret findings at post-mortem examination
- iv. observe the principles of medical ethics in the practice of his profession

(c) Integration

Department shall provide an integrated approach towards allied disciplines like Pathology, Radiology, Forensic Sciences, Hospital Administration etc. to impart training regarding Medico-legal responsibilities of physicians at all levels of health care. Integration with relevant disciplines will provide scientific basis of clinical toxicology e.g. Medicine, Pharmacology etc.

3. Total duration of Para-clinical teaching	3 Semesters
	Total 360 teaching days
Total number of teaching hours allotted for Forensic Medicine & Toxicology	100 hours

4. Syllabus

a. Learning methods

Lectures, tutorials, practical demonstrations

Distribution of teaching hours

b. & c. Sequential organisation of contents & their division

Topic wise distribution

The course is designed to meet the needs of a General Practitioner and includes the following topics:

1.	Forensic Medicine	40 Hrs
2.	Toxicology	20 Hrs
3.	Medical Jurisprudence	12 Hrs
4.	Legal Procedures in Medico-Legal cases	08 Hrs
5.	Court attendance when medical evidence is being recorded	04 Hrs
6.	Integrated approach towards allied disciplines	06 Hrs
7.	Tutorial and Seminars	10 Hrs

Total: 100 Hrs

Part – 1 Forensic Medicine: (N=40)

Contents & division

Note: Must Know (MK), **Desirable to Know (DK)** and *** is Nice to Know (NK)**

A) DEFINITION, SCOPE RELEVANT TO SUBJECT

1. History of Forensic Medicine
2. **Need, Scope, Importance and probative value of Medical evidence in Crime Investigation**

B) PERSONAL IDENTITY NEED AND ITS IMPORTANCE.

1. **Data useful for Identification of Living and Dead**
2. **Age estimation and its medico-legal Importance**
3. Sex determination and its medico-legal importance
4. Other methods of establishing identity: Corpus Delicti, **Dactylography, Tattoo marks**, Deformities, Scars and other relevant factors
5. Identification of decomposed, Mutilated bodies and skeletal remains
6. Medico legal aspect of *DNA fingerprinting - a brief introduction
7. **Medico - legal aspect of blood and blood stains**

Collection, Preservation and Dispatch of Specimen for Blood and other ancillary material for identification and Medico-legal examination

C) MECHANICAL INJURIES AND BURNS

- 1. Definition and classification of injuries: Abrasions, Contusions, Lacerations, Incised and Stab injury, Firearm and Explosion injury, Fabricated and Defence injury**
- 2. Medico-legal aspect of injury/hurt, simple and grievous hurts, murder, Ante - mortem, Postmortem Wounds, Age of the injury, cause of death and relevant sections of I.P.C., Cr.P.C.**
- 3. Causative Weapon and appearance of Suicidal, Accidental and Homicidal injuries**
4. Physical methods of Torture and their identification
- 5. Reporting on Medico-legal cases of Hurts**
6. **Regional injuries:** Head injury, cut throat injuries and Road traffic accident injuries
7. **Thermal injuries:** Injuries due to heat and cold, Frostbite, Burns, Scalds and Bride burning
8. Injuries due to Electricity, Lightening

Collection, Preservation and Dispatch of Specimen for Blood and other ancillary material for Medico-legal examination

D) MEDICO-LEGAL ASPECTS OF SEX, MARRIAGE AND INFANT DEATH

- 1. Sexual Offences and perversions:** Natural (**Rape**, Adultery, and Incest), Unnatural (**Sodomy, Bestiality** and Buccal coitus) Lesbianism, perversions and **relevant sections of I.P.C. and Cr.P.C.**
2. Fertility, **Impotence**, Sterility, **Virginity**, and Nullity of marriage and divorce on Medical ground
3. **Pregnancy, Delivery**, Paternity, Legitimacy, Artificial Insemination, *Fertilisation in Vitro, *Sterilization (Family Planning Measures)
4. **Abortions, Medical Termination of pregnancy, criminal abortions**, Battered Baby Syndrome, Cot deaths and relevant sections of I.P.C. and Cr.P.C., **M.T.P. Act of 1971 and foetal sex determination Act**
5. **Infant death (Infanticide)**
 - i. Definition Causes, Manners and Autopsy features
 - ii. **Determination of age of Foetus and Infant**
 - iii. **Signs of live-born, stillborn and dead born child**

Collection, Preservation and Dispatch of Specimen: Hair, seminal fluid/ stains and other ancillary material for medico-legal examination, examination of seminal stains and vaginal swabs

E) MEDICO-LEGAL ASPECTS OF DEATH

- 1. Definition and concept of death, stages, modes, Signs of death and its importance**
- 2. Changes after death**, Cooling, Hypostasis, Changes in eye, Muscle changes, Putrefaction, Saponification, Mummification, **Estimation of time since death**
- 3. Death Certification**, Proximate causes of death, causes of sudden deaths, Natural deaths. Presumption of death and survivorship, disposal and preservation of dead
4. Introduction to *The Anatomy Act, *The Human organ transplantation Act. 1994
- 5. Medico-legal aspects and findings of post-mortem examination in cases of death due to common unnatural conditions**
- 6. Sudden unexpected death**, deaths from starvation, cold and heat and their medico-legal importance
- 7. Medico-legal aspects of death from Asphyxia, Hanging, Strangulation, Suffocation and Drowning**

F) MEDICO-LEGAL AUTOPSY

- 1. Autopsy: Objectives, Facilities, Rules and Basic techniques, Proforma for reporting medico-legal autopsy**
- 2. Exhumation**, examination of mutilated remains, Obscure autopsy and **post-mortem artifacts**

Collection, preservation and despatch of material for various investigations to Forensic Science Laboratory

G) *FORENSIC PSYCHIATRY

- 1. Definition, General terminology** and * Basic concept of normality and abnormality of human behaviour, Civil and Criminal responsibility
2. Examination, Certification, restraint and admission to Mental Hospital
3. Mental Health Act – Principles and Objectives

Part – 2 Toxicology: (N=20)

A) POISONS AND THEIR MEDICO-LEGAL ASPECTS

- 1. Definition of poison, General consideration and Laws in relation to poisons**\Narcotic drugs and psychotropic substances Act, *Schedules H and L drugs, *Pharmacy Act, **Duties and responsibilities of attending physician**
- 2. Common poisons and their classification, Identification of common poisons**, Routes of administration, Actions of poisons and factors modifying them, **Diagnosis of poisoning (Clinical and Confirmatory) , Treatment/ Management of cases of acute and chronic poisonings**
3. Addiction and Habit forming drugs, drug dependence

4. **Occupational and environmental poisoning, prevention and Epidemiology of common poisoning and their legal aspects particularly pertaining to Workmen's Compensation Act**
5. **Medico-Legal aspects and findings of postmortem examination in cases of death due to poisonings**

B) POISONS TO BE STUDIED

1. **Corrosive: Euphoric Acid, Nitric Acid, Hydrochloric Acid, Carbohic Acid and Oxalic Acid, Sodium and Potassium and Ammonium Hydro-Oxide**
2. **Non-metallic, Metallic Poisons and Industrial hazards: Phosphorus and compounds of Lead, Arsenic, Mercury, Copper, and Glass powder**
3. **Plant Poisons: Castor, Croton, Capsicum, Semicarpus Anacardium (Bhilawa), Calatropis Gigantea, Abrus Precatorius (Ratti), Dhatura, Cannabis Indica, Cocaine, Opium, Aconite, Yellow Oleander, Strychnine**
4. **Animal and Bacterial Poisons: Snakes, Scorpion and Food poisoning**
5. **Alcohol (Drunkeness) Ethyl Alcohol, Methyl Alcohol, Kerosene, Barbiturates**
6. **Asphyxiant & Gaseous Poisons: Carbon Monoxide, War gases, Hydrocyanic acid, and Cyanides**
7. **Insecticides, pesticides and Miscellaneous poisons: Organo-Phosphorus Compounds, Organo-Chloro Compounds, Carbamates (Carbaryl) and Rodenticides (Phosphides)**

Collection, Preservation and forwarding of evidence, remains of poison, body discharges and viscera etc. to Forensic Science Laboratory in cases of poisoning

C) FORENSIC SCIENCE LABORATORY: (BRIEF)

1. **Aims, objects, general knowledge about Forensic Science Laboratory**
2. **General principles of analytical toxicology**

Part – 3 Medical Jurisprudence: (N=12)

A) LEGAL AND ETHICAL ASPECTS OF PRACTICE OF MEDICINE

1. The **Indian Medical Council**, the Act, Formation and Functions;
State Medical Council: Formation, Functions, and Registration
2. **Rights and obligations of Registered Medical Practitioners and patient, Duties of physicians and patients, Euthanasia**
3. **Infamous conduct, Professional secrecy and privileged communications**
4. **Codes of Medical Ethics, medical etiquette, Medical Negligence and contributory negligence, Precautionary measures and defences for Medical Practitioners against legal actions, Medical/Doctors indemnity insurance, Consumer Protection Act relevant to medical practice**
5. **Medical Ethics and prohibition of Torture & care of Torture Victims**

B) DEFINITION OF HEALTH AND ITEMS TO CERTIFY ABOUT HEALTH

- 1. Common medico-legal problems in Hospital practice, Consent in Medical Examination and treatment, under treatment/ Sickness and Fitness certificate, maintenance of medical records**
2. Social, Medical, Legal and Ethical problems in relation to AIDS

C) ACTS AND SCHEMES RELATED TO MEDICAL PROFESSION IN BRIEF:

Workmen's compensation Act, * Mental Health Act, Medical Practitioner Act, Protection of human rights Act, 1993, * National Human Rights Commission, * Human Organ Transplantation Act and other relevant sections of I.P.C., Cr.P.C. and I.E. Act. Maharashtra civil medical code, Hospital administration manual

Part – 4 Legal procedures in medico-legal cases: (N=8)

- A. Medico-Legal Investigations of death** in suspicious circumstances, different **Inquest**, type of offences
- B. Types of Criminal courts and their powers**, punishments prescribed by law, **kinds of witnesses, Evidence, Documentary Medical evidence**, Dying declaration and Dying deposition
- C. The Trial of criminal cases, Rules and Conventions to be followed by Medical Witness at Medical evidence, subpoena, conduct money**
- D. Relevant Sections from the Indian Evidence Act, Indian Penal code and Criminal Procedure code**

NOTE: Must know, desirable to know and „* „, is nice to know

d. Term-wise distribution

Terms Tuts/Sem/Allied	Lectures	Non – Lectures	Pracs.	Demos.
I Term	15	08	06	06
II Term	15	10	05	06
III Term	10	07	04	08
<hr/>				
Total	40	25	15	20

This period of training is the minimum suggested. Adjustments whenever required, depending on availability of time, be made

e. Practicals (including demonstrations) : Total no.of hours & contents

Practicals will be conducted in the laboratories.

Objective will be to assess proficiency in skills, conduct of experiment, interpretation of data and logical conclusion.

Emphasis should be on candidate's capacity in making observations and logical inferences in order to initiate enquiries in criminal matters and medico-legal problems.

Total Marks: 25 + 15 = 40

Contents:

Part 1 Forensic Medicine

Report on:

- 1. Estimation/Certification of Age**
- 2. Recording of fingerprints**
- 3. Examination/Certification of the Injured
[Prescribed Forms]**
- 4. Examination of the Causative Agents in cases of Injuries
(e.g. Weapons, Instruments)**
 - a. Hard and blunt weapons**
 - b. Sharp cutting, sharp pointed and Sharp Heavy cutting weapons**
 - c. Firearm weapons**
- 5. Sexual offences :**
 - a. Examination/Certification of Victim**
 - b. Examination/Certification of Accused**
- 6. Examination of Foetus to opine about age**
- 7. Examination of Bones and teeth for Medico-legal purpose to determine age, sex, stature, cause of death, time since death**
 - a. Skull and Mandible**
 - b. Scapula, Sternum and Upper limb bones**
 - c. Sacrum and hip bone/ Pelvic bone**
 - d. Lower limb bones**

Study of:

- 8. Medical certification of cause of Death as per Birth and Death registration Act [Prescribed Forms]**
- 9. Studies of Skiagrams** for estimation of age, bony injury, foreign body, and pregnancy
- 10. Photograph of different events of Medico-legal importance** and post-mortem changes
- 11. Study of Various museum specimens** of medico-legal significance
- 12. Study of Various slides** of medico-legal significance
- 13. Demonstration of Instruments:**
 - a. Used in treatment of acute poisoning cases**
 - b. Used for causing abortions**
 - c. Used for carrying out autopsy**

[Standard human autopsy dissection Box/set]

Part 2 Forensic Toxicology

1. Examination/Certification of Alcoholic [Prescribed Forms „A“ & „B“]
2. Study of Common poisons:

[Sulphuric Acid, Nitric Acid, Hydrochloric Acid, Carboic Acid and Oxalic Acid, Sodium and Potassium Hydro-Oxide, Phosphorous, Lead, Arsenic, Mercury, Copper, Glass powder, Castor, Croton, Capsicum, Semicarpus Anacardium (Bhilawa), Calatropis Gigantea, Abrus Precatorius (Ratti), Dhatura, Cannabis Indica, Opium, Aconite, Yellow Oleander, Strychnine, Snakes, Scorpion, Alcohol, Methyl Alcohol, Kerosene, Barbiturates, Organophosphorus compounds, Organo Chloro compounds, Carbamates (Carbaryl)] and other commonly used poisons, antidotes and preservatives

Part 3 Medical Jurisprudence

Study of Medical Certificates [Prescribed Forms]

- a. Sickness Certificate
- b. Fitness Certificate
- c. Certificate of Physical fitness
- d. * Medical certificate prescribed under Mental Health Act : 1987
- e. * Medical Certificate of Sound/ Unsoundness of mind.

Part – 4 Legal procedures in medico-legal cases

Study of the various prescribed Forms:

Consent to surgery Anaesthesia and other Medical services, Request for sterilization, Consent to access to hospital records, Authorization for Autopsy, Dead body Challan used for sending a dead body for post-mortem examination, Request for the second inquest by Magistrate on the dead body, Provisional post-mortem certificate, Post-mortem form, Pictorial Post-mortem form, Form for the Final cause of death, Forms for despatch of exhibits other than the viscera to chemical analyser, Forms for despatch of Viscera for Histopathological Examination, Form for dispatch of viscera to chemical analyser, Forensic Science Laboratory report form, Summons to witness.

Each student shall attend and record as a clerk

- a. As many as possible cases / items of medico-legal importance
- b. 10 cases of medico-legal autopsies

Both above „a“ and „b“ should be recorded in the approved Proforma in the single Journal. The Journal should be scrutinised by the teacher concerned and presented for the inspection and evaluation during the university examination.

Each student shall attend the court at least 2 cases when Medical Evidence is being recorded.

f. Books recommended

1. **Modi's Textbook of Medical Jurisprudence and Toxicology Ed. 22, 1999, by B.V. Subramanyam, Butterworth**
2. The Essentials of Forensic Medicine & Toxicology by K.S. Narayan Reddy
3. Parikh's Textbook of Medical Jurisprudence and Toxicology.
4. **Text Book of Forensic Medicine – J.B. Mukherjee VOL 1 & 2**
5. **Principles of Forensic Medicine - A. Nandy**
6. Toxicology at a Glance by Dr S.K. Singhal
7. Bernard Knight et. All: Cox's Medical Jurisprudence & Toxicology

Reference books

1. Russell S. Fisher & Charles S. Petty: Forensic Pathology
2. Keith Simpson: Forensic Medicine
3. Jurgen Ludwig: Current Methods of autopsy practice.
4. Gradwohl – Legal Medicine
5. A Doctors Guide to Court – Simpson
6. Polson C.J. : The essentials of Forensic Medicine
7. Adelson, L.: The Pathology of Homicide.
8. Atlas of Legal Medicine (Tomro Watonbe)
9. Sptiz, W.U. & Fisher, R.S.: Medico-legal Investigation of Death.
10. A Hand Book of Legal Pathology (Director of Publicity)
11. Taylor's Principles & Practice of Medical Jurisprudence. Edited by A.Keith Mant, Churchill Livingstone.
12. Ratanlal & Dhirajlal, The Indian Penal Code; Justice Hidayatullah & V.R. Manohar
13. Ratanlal & Dhirajlal, The Code of Criminal procedure; Justice Hidayatullah & S.P. Sathe
14. Ratanlal & Dhirajlal, The Law of Evidence; Justice Hidayatullah & V.R. Manohar
15. Medical Law & Ethic in India – H.S. Mehta
16. Bernard Knight : Forensic Pathology
17. Code of medical ethics : Medical Council of India, approved by Central Government, U/S 33 (m) of IMC Act, 1956 (Oct 1970)
18. Krogman, W.M.: The human skeleton in legal medicine.
19. FE Camps, JM Cameren, David Lanham : Practical Forensic Medicine
20. V.V. Pillay : Modern Medical Toxicology.

5. Evaluation

a. Methods

Theory, Practical & viva

b. Pattern of Theory Examination including Distribution of Marks, Questions, Time

Nature of Question Paper

Faculty with Year : SECOND MBBS

Subject : FORENSIC MEDICINE & TOXICOLOGY

Paper : --

Total Marks : 40

Time : 2 Hours

Section "A" (8 Marks)

Instructions:-

- 1) Fill (dark) the appropriate empty circle below the question number once only..
- 2) Use **blue/black** ball point pen only.
- 3) Each question carries **one / half mark**.
- 4) **Students will not be allotted mark if he/she overwrites strikes or put white ink on the cross once marked.**
- 5) Do not write anything on the blank portion of the question paper. If written anything, such type of act will be considered as an attempt to resort to unfair means.

Section "A" : MCQ (8 marks)

Question No.	Question Description	Division of Marks	Total Marks
1.	Total MCQs : 16	16 X ½	08

Section "B" & "C" (32 Marks)

Instructions:-

- 1) All questions are compulsory.
- 2) The number to the right indicates full marks.
- 3) Draw diagrams wherever necessary.
- 4) **Answer each section in the respective answerbook only. Answers written in the inappropriate sectional answer books will not be assessed in any case.**
- 5) Do not write anything on the blank portion of the question paper. If written anything, such type of act will be considered as an attempt to resort to unfair means.

Section "B" : BAQ (20 Marks)

Question No.	Question Description	Division of Marks	Total Marks
2.	Brief answer questions (Attempt any five out of six) a) b) c) d) e) f)	5 X 4	20

Section "C" : LAQ (12 Marks)

Question No.	Question Description	Division of Marks	Total Marks
3.	Attempt any two out of three: Long answer question only a) b) c)	2 X 6	12

c. Topic distribution in the theory paper

Section A & C: Forensic Medicine, Toxicology, Medical Jurisprudence, Legal Procedure

Section B: Forensic Medicine, Toxicology and/or Medical Jurisprudence

d. Marking scheme

As shown above

e. Nature of practicals and duration

Practicals

Marks 30

Report on: Six Exercises [With available resources] Time: About 2 hrs.

1. An Injured **OR** Age of the child
OR An Alcoholic **OR** Sexual offence 07 Marks
2. Bone **OR** Determination of age of Foetus 05 Marks
3. Weapon 05 Marks
4. Certificate of Sickness, fitness **OR** Death. 05 Marks
5. Report on TWO Poison 04 Marks
6. Report on any TWO articles: [Skiagram **OR**
Photographs **OR** Slides **OR** Museum
Specimens **OR** Instruments] 04 Marks

TOTAL **30 Marks**

In respect of items 1 to 6, students will be expected to prepare their Reports as if they would be required to submit it to the investigating authority concerned within the time allotted, and the examiners will be assessing proficiency in skills, conduct of experiment, interpretation of data and logical conclusion. Emphasis should be on candidate's capacity in making observations and logical inferences in order to initiate enquiries in criminal matters and medico-legal problems.

f. Viva : duration and topic distribution

Viva-vocé:

Time: About 20 Min

There will be TWO tables examining each student separately on the topics „a“ and „b“.

Viva 10 marks
Duration 20 mins
Four examiners 10 mins with each candidate
Two examiners for topics a. Toxicology and Medical Jurisprudence
Two examiners for topics b. Forensic Medicine and Legal Procedures
At each table marks given will be out of 5 and then added together (total out of 10)

g. Plan for internal assessment

The time-table for internal assessment will be as follows:

SCHEME OF INTERNAL ASSESSMENT WITH FREQUENCY OF EXAMINATIONS FOR THE BATCHES WHICH HAVE JOINED BEFORE JUNE 2001

Marks for internal assessment „A“ shall be calculated on the basis of two mid terminals & three terminal college examinations conducted. During mid terminal (periodical examination) assessment should be done by MCQs of Single Best Response type.

Marks for internal assessment „B“ shall be calculated on the basis of three terminal college examinations (7 marks) & day-to-day class practical work and Record (3 marks).

Department will maintain a register for periodic evaluation of their students. The internal assessment will be done separately for theory and practical examinations.

A total of 5 (five) examinations will be conducted as under:

FREQUENCY AND MARKING OF EXAMINATION FOR INTERNAL ASSESSMENT

Termwise distribution	Theory/Practical (Total Marks)
I Term	
One Midterm	15 / no practicals
1 st Terminal	40 / 25
II Term	
One Midterm	15 / no practicals
2 nd Terminal	40 / 40
III Term	
One term ending Preliminary	40 / 40

SCHEME OF INTERNAL ASSESSMENT WITH FREQUENCY OF EXAMINATION FOR THE BATCHES JOINING IN JUNE 2001 AND LATER

I term

1st term ending: After 120 teaching days (Theory and Practicals)

II term

2nd term ending: At the end of the 2nd term (Theory and Practicals)

III term

Prelims examination on the basis of University pattern -Theory, Practicals and Viva
(*Minimum 4 weeks gap mandatory between Preliminary and University examinations*)

For the terminal theory examination students will be evaluated by a combination of 28 MCQs (each worth 1/2 mark), 6 SAQs (each of 2 marks with an option of 6 out of 7) and 2 LAQs (option of 2 out of 3 each worth 7 marks). The total time allotted for this 40 marks paper will be 2 hours.

This will be followed by practicals (total time 1½ hours). The marks for the I term practicals will be 25 and for the II term will be 40.

To familiarize the students with the „viva-vocé“, for the I term the marks for the practicals may be kept as 15, while 10 marks be reserved for viva on theory topics (total 25 marks); for the II term the marks for the practicals may be kept as 30, while 10 marks be reserved for viva on theory topics (total 40 marks).

Prelim pattern will be as per the University exam.

REVISED INTERNAL ASSESSMENT EXAMINATION SCHEME w.e.f. JUNE 2007 EXAMINATION

YEAR :- Second MBBS

SN	Subject	1 st Term End			2 nd Term End			Preliminary Examination		
		Semester	Theory	Practical	Semester	Theory	Practical	Semester	Theory	Practical
			(A)	(B)		(C)	(D)		(E)	(F)
1.	Pharmacology	III	50	40	IV	50	40	V	80	40
2.	Pathology	III	50	40	IV	50	40	V	80	40
3.	Microbiology	III	50	40	IV	50	40	V	80	40
4.	FMT	III	20	20	IV	20	20	V	40	40

(B) Calculation Method:-

- I) Theory Marks to be send to the University out of 15 Except FMT $= \frac{(A)+(C)+(E)}{12} = \frac{50+50+80}{12} = \frac{180}{12} = 15$
- II) Practical Marks to be send to the University out of 15 Except FMT $= \frac{(B)+(D)+(F)}{8} = \frac{40+40+40}{8} = \frac{120}{8} = 15$
- III) For FMT Theory Marks to be send to the University out of 10 $= \frac{(A)+(C)+(E)}{8} = \frac{20+20+40}{8} = \frac{80}{8} = 10$
- IV) For FMT Practical Marks to be send to the University out of 10 $= \frac{(B)+(D)+(F)}{8} = \frac{20+20+40}{8} = \frac{80}{8} = 10$

**MAHARASTRA UNIVERSITY OF HEALTH
SCIENCES, NASHIK**

III M.B.B.S.

MEDICINE

(i) **GOAL**

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

(ii) **OBJECTIVES** :

(a) 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.

(iii) **SKILLS** :

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

- (1) develop clinical skills (history taking, clinical examination and other instruments of 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 hemogram, 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.

A course of systematic instruction in the principles and practice of medicine, including medical disease of infancy;

- a. Lecture - demonstrations, seminars and conferences in clinical medicine during the 3 years shall run concurrently with other clinical subjects.;
- b. Instructions in comprehensive medical care;
- c. Instructions in applied anatomy and physiology and pathology throughout the period of clinical studies;
- d. Instructions in dietetics, nutrition and principles of nursing Medical and in simple ward procedure e.g. should be imparted during clinical concurrently.

iv) Attitude :

- a. The teaching and training in clinical medicine must aim at developing the attitude in students to apply the knowledge & skills he/she acquires for benefit and welfare of the patients.
- b. It is necessary to develop in students a sense of responsibility towards holistic patient care & prognostic outcomes.
- c. Students should develop behavioural skills and humanitarian approach while communicating with patients, as individuals, relatives, society at large & the co- professionals.

Curriculum for Theory Lecture series & Tutorials and LCD for General Medicine including Psychiatry, Tb. & Dermatology

TERM	DAY	TIME	LECTURES	TOPIC
4 th	MON	8-9	20	Introduction to Medicine
5 th	MON	8-9	15	Infectious Diseases/Tropical diseases
	FRI	8-9	15	Cardiovascular System
6 th	TUE	12-1	20	GIT, Liver, Pan.
	THU	8-9	20	Chest + Miscellaneous
	MON	8-9	20	TB
	TUE	8-9	20	Psychiatry
	SAT	8-9	15	Skin
7 th	FRI	8-9	15	Neurology
	THU	12-1	15	Haematology/Haemato-oncology
	FRI	2-4	30	Tutorials
	MON	2-3	20	Skin / STD
8 th	TUE	8-9	20	Endo + Misc + Genetics (3 Lectures.)
	THU	8-9	20	Nephro. +Clinical Nutrition
	TUE	2-4	40	Tutorial Medicine, Skin, Tb, Psychiatry,

	WED	2-4	40	Tutorial
9 th	TUE	12-1	15	LCD Medicine (10) Skin 1 Psychiatry (1)
	MON	2-4	30	Tb(1) LCD Medicine (7)

The above timetable is general outline to guide the planning of curriculum at college level. However, flexibility may be exercised to the extent that there may be minor re-scheduling of course contents day-wise or term-wise. It must be ascertained that the course contents are covered fully and total hours allotted for the subjects are effectively implemented.

Note :- These are suggested time tables. Adjustments where required, depending upon the availability of time and facility, be made.

SYLLABUS

(General Instruction: 1) **The Lectures** Stated below shall cover knowledge about applied aspects of basic & allied sciences, practical approaches in the management of patients in the outdoor & indoor settings as well as their management in the community. Special emphasis shall be placed on preventive aspects, National Health Programs & dietetics & nutrition.)

2) **During practical teaching & training in wards**, OPD & field works proper emphasis should be given to common health problems in addition to other diseases. Emphasis should be given to learning of tacit knowledge & skills in diagnosis & interpretation of finding & Lab. data.

INTRODUCTION TO MEDICINE : 4 TH SEMESER

Lect.01. : History of Medicine.

Lect.2/3. : Concept & objectives of history taking. Diagnosis, Provisional Diagnosis, Differential diagnosis.

Lect.04. : Symptomatology of Cardiovascular Diseases.

Lect.05. : Symptomatology of Respiratory diseases.

Lect.06. : Symptomatology in Nervous system.

Lect.07. : Symptomatology in Gastrointestinal and Hepatobiliary diseases.

Lect.08. : Approach towards a patient with Fever / Oedema.

Lect.09. : Approach towards a patient with anaemia / jaundice.

Lect.10. : Approach towards a patient with Lymphadenopathy.

Lect.11. : Investigations (Non- Invasive)

X-rays, USG

C.T. / M.R.I. Scan

Secretions examinations

Peripheral smear

Lect.12.: Investigations (Invasive)
Bone marrow
F.N.A.C.
Liver biopsy
Lymph node biopsy
Endoscopies
Lumber puncture.

Lect.13/14.: Review of common diseases in India.

Lect.15/16,: Revision.

Lect.17.: Examination.

Lect.18/20: Buffer.

INFECTIOUS DISEASES : 5 TH SEMESTER

Lect.01:Introduction.

Infections – types, Modes of Infection transmission, Incubation period
Host defenses, Immunity & Immunization & Management including
Prevention Lect.02 :

Viral hepatitis. Lect.3/4/5:

Tetanus/ Diphtheria Lect.6/7:

Malaria

Lect.08: Rabies Lect.09:

Typhoid fever

Lect.10/11: Gastroenteritis

Lect.12: Plague / Dengue

Lect.13/14: (HIV) Infection & AIDs.

Lect.15.: Examination.

Note :- The course contents in above topics should also cover applied aspects in basic sciences like Anatomy, Physiology, Bio-Chemistry, Micro- Biology, Pharmacology, Pathology, FMT while giving training on Clinical features, investigations, Diagnosis, D/D treatment & prevention.

CARDIOVASCULAR SYSTEM : 5 TH SEMESTER

Lect.01 : Introduction

Functions / anatomy / physiology and its applications
Various terminologies used

Lect.2/3: Methods of evaluation

Non - invasive
Invasive

Lect.04 : Arrhythmias

Concept & Classification
Presentation Diagnosis
Pharmacotherapy in short

Lect.05: Cardiac arrest.

Lect.06: C.C.F.

Types
Presentations
Pathophysiology
Management

Lect.07: C.H.D.

Aetiology and classification
CHD in adults & its importance

Lect.08: Rheumatic fever

Lect.09: Presentation and haemodynamics of various Valvular lesions including investigations, Diagnosis, D/D treatment & Prevention.

Lect.10: Infective endocarditis

Lect.11/12: C.A.D, (Coronary artery disease)

Lect.13: Pericardial diseases and cardiomyopathy

Lect.14: Hypertension

Lect.15: Examination.

GASTROENTEROLOGY, HEPATOBILIARY SYSTEM & PANCREAS :
6 TH SEMESTER

Lect.01: Introduction to GIT

- Oral Cavity
- Ulcers
- Bleeding
- Pigmentation
- Oral manifestation of systemic diseases

Lect.2/3: Oesophagus

- Inflammation, Dysphagia

Lect.4/5: Stomach Peptic

- ulcers
- Aetiopathogenesis
- Clinical features
- Investigations
- D/D and management
- Acute and Chronic gastritis

Lect.6/7. Small and large intestine diseases

- Secretions & functions
- MAS Mal –absorption-syndrome
- Tuberculosis of Abdomen

Lect.08: Ulcerative colitis & Crohn’s disease

Lect.09: Liver.

- Introduction
- LFT & their interpretation

Lect.10/11: Hepatitis - Acute & Chronic

Lect.12/13: Cirrhosis of liver

Lect.14: Gall bladder diseases

Lect. 15/16: Pancreas

- Functions
- Investigations
- Acute and Chronic pancreatitis
- Manifestation and D/D & treatment.

Lect.17/18: Misc. & Revision.

Lect.19: Examination.

RESPIRATORY SYSTEM : 6 TH SEMESTER

- Lect.01: Applied Anatomy and physiology of R.S.
- Lect.02: P.F.T. (Pulmonary Function Testing)
- Lect.03: Resp. Infection- Pneumonias.
- Lect.04: Chronic bronchitis and emphysema
- Lect.5/6: Bronchiectasis and lung abscess.
- Lect.07: Bronchial asthma
- Lect.08: Malignancies
- Lect.09: Mediastinum and its disorders.
- Lect.10: Pleural disease - Emphasis on pneumothorax
- Lect.11: Pleural effusion.
- Lect.12: Occupational lung disease. Its concept and short review
- Lect.13: Revision - Fungal & Parasitic diseases
- Lect. 14:Respiratory emergencies & Introduction to mechanical ventilators

Collagen Vascular Disorders

- Lect.1: Allergy - Concept & hypersensitivity, Autoimmunity
- Lect.2: Collagen disease.
- Lect.3: Rheumatoid arthritis
- Lect.4: Sero negative arthritis
- Lect.5: Revision HIV , Alcohol related disease
- Lect.6: Examination

TUBERCULOSIS : 6 TH SEMESTER

- Lect.01: History and introduction
- Lect.2/3: Pathogenesis and pathology
- Lect.04: Role of host related factors
- Lect.05: Microbiology of AFB
- Lect.06: Clinical features of pulmonary tuberculosis and its investigations
- Lect.07: Anti – Tubercular drugs
Pharmacology & Schedules of treatment.
- Lect.8/9: Resistant tuberculosis
DOTS
Prophylaxis - Drugs /BCG/ Tuberculin test.
HIV & TB.
- Lect.10: Extra - pulmonary tuberculosis
Plural effusion
Empyema
Others
- Lect.11/12: Revision
- Lect.13: Examination

NEUROLOGY: 7 TH SEMESTERS

- Lect.01: Introduction
Applied anatomy & physiology
History taking in neurology
- Lect.02: Investigations
- Lect.3/4: CVD (Cerebro Vasular Disease)
Types & its differential diagnosis
Predisposing factors
Diagnosis and management
- Lect.05: S.O.L. (Space Occupying Lesions)
- Lect.06: Encephalitis and meningitis
- Lect.07: Epilepsy
- Lect.08: Cerebellar syndrome

Lect.09: Parkinsonism

Lect.10: Peripheral neuropathy

Lect.11: Muscle disorders in brief

Lect.12/13: Spinal cord disorders

Lect.14: CSF

Formation and absorption

Status in various disorders

Lect.15: Examination.

HEMATOLOGY: 7 TH SEMESTER

Lect.01: Introduction

Cell line of hemopoiesis

Stimulating factors

Physiology and Anatomy of RBCs.

Lect.02: Anemias

Introduction

Classification

Symptoms & signs in general

Basic investigations & its interpretation

Lect.03: Microcytic hypochromic anaemias

Fe Kinetics

C/F, investigations of Fe deficiency.

Treatment of Fe deficiency.

D/D - Sideroblastic / thalassemic.

Lect. 04: Macrocytic anaemias

Kinetics of B-12 and Folic acid

C/F, investigations and management of B-12 / FA deficiency.

Lect.05: Anaemias (continued)

Brief of Chronic infections and inflammation

Hemolytic anaemias

Lect.06: Hemoglobinopathies

Lect.07: Hypoplastic / Aplastic anemia

Definition

Classification

Diagnosis and management

Lect.08: Introduction to WBCs.

Agranulocytosis - Aetiology & its significance

Leukemias (AML, ALL, CML, CLL)

Lect.09: Management of leukemia

Lect.10: Lymphomas

Hodgkin's disease / NHL (Non-Hodgkin's lymphoma)

Lect.11: Approach to a patient with bleeding disorders

Recognition

Investigations

Physiology of Platelets

Therapy

Lect.12: Blood groups & Blood Transfusion & Component Therapy

Lect.13-14: Revision

Lect. 15: Examination.

ENDOCRINOLOGY : 8 TH SEMESTER

Lect. 01: Introduction - Hormones

Concept

Types

Action

Endocrine system

General

Control

Lect.2/3: Pituitary

Anatomy

Regulation

Disorders of Ant. Pituitary

Acromegaly

A.G. Syndrome

Disorders of Post. Pituitary

Hypopituitarism

Lect.4/5: Thyroid

Anatomy

Regulation
Goiter
Hypothyroid state & hyperthyroid state
Classifications
Management

Lect.6/7: Adrenal gland

Anatomy
Regulation
Addison's & Cushing syndrome
Recognition
Investigations
Management
Pheochromocytoma

Lect.08: Vit. D. Metabolism.

Ca. Metabolism and its relations to parathyroid
Diagnosis & management of related disorders.

Lect.9/10: Diabetes Mellitus

Lect.11: FSH < H. Oestrogens Progesterone's

Significance
Disorders
Its recognition and diagnosis
Management

Lect.12: Multiple endocrine-syndrome and paraneoplastic syndrome Overview.
Diabetes insipidus.

Miscellaneous

Lect.13/14 : Poisoning

Suicidal / Homicidal / Accidental
Chemical / Biological / Corrosives / Drugs
Concepts of management
Optimum Barbiturate
DDT
Organophosphorus

Lect.15: Hyperpyrexia and Heat exhaustion
Aetiology
Pathophysiology
C / F. Types
Management
Preventive measures

Lect.16 : Electrical injury
Types
Manifestations
Management
Lightening

Lect.17: Shock
Types
Pathophysiology / Complications
Management

Lect.18/19: Revision

Lect.20: Examination

NEPHROLOGY, NUTRITION : 8 TH SEMESTER

NEPHROLOGY :

Lect.01: Anatomy & Physiology of Urinary system

Lect.02: R.F.T. (Renal Function Tests)

Lect.03: Acute Glomerulonephropathy

Lect.04: Chronic Glomerulonephropathy

Lect.05: Infections of urinary system.

Lect.06: Nephrotic syndrome

Lect.07: Approach towards common problem

- i. Proteinuria
- ii. Hematuria
- iii. Renal colics

Lect.08: Acute & Chronic renal failure Lect.09:

Dialysis - Diet - Drugs. In renal failure

Lect.10:Revision

Lect.11: Examination

Genetics (3 lectures)

Lect.1 : Introduction

Lect.2 : Common genetic disorders

Lect.3 : Application of Genetic Engineering in Medicine

NUTRITION :

Lect.11: Concepts of carbohydrate, proteins, fats, vitamins and minerals. Balanced diet.

Lect.12: Protein energy malnutrition.

Lect.13/14: Vitamin deficiency state
Scurvy / Beriberi / Pellagra / Vit.A

Lect.15: Obesity / Asthenia
Diagnosis
"Complications and management

Lect.16: Revision

Lect.17: Examination.

[Introduction of " Brain Death and Organ Donation" topic in subjects of Physiology , Preventive & Social Medicine, Psychiatry, Medicine & Surgery](#)

Recommended Books:

1. Hutchinson"s Clinical Methods by Hunter and Bomford,
2. The Principles and practise of Medicine - Sir Stanley Davidson
3. Text book of Medical Treatment - Dunlop and Alstead.
4. Savill"s system of Clinical Medicine - E. C. Warner.
5. Principles of internal Medicine - Harrison.
6. API Text Book of Medicine.
7. **Reference Book (Clinical Medicine) : "Clinical Examination in Medicine": Author: Dr. A. P. Jain**
8. **"Manual of Clinical Practical Medicine" : 1) Dr. G.S.Sainani
2) Dr. V.R. Joshi
3) Dr. Rajesh G. Sainani**
9. **"Essentials of Dermatology and Sexually Transmitted Diseases"- Dr.Ramji Gupta.**

SKIN

DERMATOLOGY / STD/ LEPROSY

Goals :

The aim of teaching the Under graduate students in Dermatology, S.T.D. and Leprosy is to impart such knowledge and skills that may enable him to diagnose and treat common ailments and to refer rare diseases or complications and unusual manifestations of common diseases to the specialist.

OBJECTIVES :

Knowledge :

At the end of the course of Dermatology, Sexually Transmitted Diseases & Leprosy 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 comparative knowledge of various modes of topical therapy.
3. Demonstrate the mode of action of commonly used drugs, their doses, side effects / toxicity, indications and contraindication & interactions.
4. Describe commonly used modes of management including the medical & Surgical procedures available for the treatment of various diseases and to offer a comparative plan of management for a given disorder.

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 the bed-side diagnosis, especially the examination of scrapings for fungus, preparation of slit smears and staining for AFB for leprosy patients and for STD cases :
4. take a skin biopsy for diagnostic purposes ;
5. Manage common diseases recognizing the need for referral for specialized care, in case of inappropriateness of therapeutic response.

Structures and functions of Skin and its appendages

Pruritus

Infections (Bacterial , Chlamidia, Mycoplasma, Fungal & Viral)

Infestations (Ecto and Endoparasites)

Nutritional disorders

Allergic Disorders

Leprosy

STD

HIV & Skin Papulesquamous

disorders Collagen Vascular

Disorders

Pigmentory disorder

Drug reactions.

Recommended Books:

9.Reference Book of Medicine : “Essentials of Dermatology, Sexually Transmitted Diseases”

Author:

Dr.

Ramji

Gupta

Chest

TUBERCULOSIS AND RESPIRATORY DISEASES:

(i) GOAL :

The aim of teaching the undergraduate student in Tuberculosis and Chest Diseases is to impart such knowledge and skills that may enable him/her to diagnose and manage common ailments affecting the chest with the special emphasis on management and prevention of Tuberculosis and especially National Tuberculosis control programme.

(ii) OBJECTIVES :

(a) KNOWLEDGE :

At the end of the course of Tuberculosis and Chest diseases, the student shall be able to:

- 1) demonstrate sound knowledge of common chest diseases, their clinical manifestations, including emergent situations and of investigative procedures to confirm their diagnosis“
- 2) demonstrate comprehensive knowledge of various modes of therapy used in treatment of respiratory diseases;

- 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 medical and surgical procedures available for treatment of various diseases and to offer a comprehensive plan of management inclusive of National Tuberculosis Control Programme.

(b) **SKILLS :**

The student shall be able to :

- 1) interview the patient, elicit relevant and correct information and describe the history in chronological order;
- 2) conduct clinical examination, elicit and interpret clinical findings and diagnose common respiratory disorders and emergencies;
- 3) perform simple, routine investigative and office procedures required for making the bed side diagnosis, especially sputum collection and examination for etiologic organisms especially Acid Fast Bacilli (AFB), interpretation of the chest x-rays and respiratory function tests;
- 4) interpret and manage various blood gases and PH abnormalities in various respiratory diseases.
- 5) Manage common diseases recognizing need for referral for specialized care, in case of inappropriateness of therapeutic response;
- 6) Assist in the performance of common procedures, like laryngoscopic examination, pleural aspiration, respiratory physiotherapy, laryngeal intubation and pneumo-thoracic drainage/aspiration

(c) **INTEGRATION:**

The broad goal of effective teaching can be obtained through integration with departments of Medicine, Surgery, Microbiology, Pathology, Pharmacology and Preventive and Social Medicine

Lect. 01 : History and introduction.

Lect. 2/3: Pathogenesis and pathology

Lect. 04: Role of host related factors.

Lect. 05: Microbiology of AFB

Lect. 06: Clinical features of pulmonary tuberculosis

Lect. 07: Anti-tuberculous drugs
-Pharmacology & schedules of drug therapy

Lect. 8/9: Resistant tuberculosis
DOTS
Prophylaxis - Drugs / BCG / Tuberculin test.
HIV & TB

Lect 10 Extra - Pulmonary tuberculosis
Pleural Effusion
Others.

Lect 11/ 12: Revision

Lect. 13: Examination.

Respiratory System :

1. Applied anatomy & Physiology of R.S.
2. Lung function tests
3. Respiratory infections, pneumonias, fungus,
4. Bronchiectasis & lung Abscess.
5. Bronchial Asthma.
6. Lung & Pleural Malignancies.
7. Mediastinum & its disorders.
8. Pleural Diseases
9. Occupational Lung Disease
10. Respiratory emergencies.

Lecture cum Demos (Resp system)

1. Lung function test and blood gas Analysis and Resp. alkalosis & Acidosis.
2. Chest bronchios emphysema
3. Suppurative lung diseases
4. Bronchogenic carcinoma & other malignancies with Mediastinal obstruction
5. Pleural disease - pneumothorax, pyopneumothorax, Pleural

L.C.D. In T.B.

1. Haemoptysis
2. Drug resistance
3. TB & HIV

Psychiatry

(i) **GOAL** :

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

(ii) **OBJECTIVES** :

(a) **KNOWLEDGE** :

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

1. comprehensive nature and development of different aspects of normal human behaviour like learning, memory, motivation, personality and intelligence;
2. recognize differences between normal and abnormal behaviour;
3. classify psychiatric disorders;
4. recognize clinical manifestations of the following common syndromes and plan their appropriate management of organic psychosis, functional psychosis, schizophrenia, affective disorders, neurotic disorders, personality disorders, psychophysiological disorders, drug and alcohol dependence, psychiatric disorders of childhood and adolescence;
5. describe rational use of different modes of therapy in psychiatric disorders.

(b) **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.

(c) **INTEGRATION** :

Training in Psychiatry shall prepare the students to deliver preventive, promotive, curative and re-habilitative services for the care of patients both in the family and community and to refer advanced cases for a specialized Psychiatry / Mental Hospital. Training should be integrated with the departments of Medicine, Neuro-Anatomy, Behavioral and Forensic Medicine.

4th or 5th semester 5 lectures

2. Motivation (including) frustration, conflicts etc.) Emotion (including mind-body relationship)
3. Learning (different types) memory (Types of memory, cause of forgetting etc.)
4. Intelligence, emotional Quotient including M.R. and sifted child.
5. Personality-Different types with mental mechanisms
6. Difference between normal and abnormal behaviour. Doctor-Patient relationship and communication skills

In 8th & 9th Semester remaining 15 lectures.

1. Psychiatric classification. Difference between functional and organic psychosis. Difference between psychosis and neurosis.
2. Schizophrenia including drugs and rehabilitation.
3. Affective disorders including pharmacotherapy
4. Affective disorders including non-pharmacotherapy treatment.
5. Anxiety disorders-Generalised anxiety, disorders, panic disorders.
6. O.K.D. and Phobias.
7. Somatoform disorders.
8. Alcohol dependence
9. Psycho-Physiological disorders.
10. Scholastic problems.
11. Behavioural disorders.
12. Sexual disorders.
13. Psychiatric emergencies including suicide and organic brain disorders.
14. Psychotherapies including behaviour therapy.

Introduction of “ Brain Death and Organ Donation” topic in subjects of Physiology ,
Preventive & Social Medicine, Psychiatry, Medicine & Surgery

Paediatrics

Paediatric including Neonatology

The course includes systematic instructions in growth and development, nutritional needs of a child, immunization schedules and management of common diseases of infancy and childhood including scope for Social Paediatrics and counseling.

(i) **GOAL** :

The broad goal of the teaching of undergraduate students in Paediatrics is to acquire adequate knowledge and appropriate skills for optimally dealing with major health problems of children to ensure their optimal growth and development.

(ii) **OBJECTIVES** :

(a) **KNOWLEDGE** :

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

- (1) Describe the normal growth and development during foetal life, neonatal period, childhood and adolescence and outline deviations thereof;
- (2) Describe the common paediatric disorders and emergencies in terms of Epidemiology, aetiopathogenesis, clinical manifestations, diagnosis, rational therapy and rehabilitation;
- (3) Age related requirements of calories, nutrients, fluids, drugs etc, in health and disease;
- (4) Describe preventive strategies for common infectious disorders, malnutrition, genetic and metabolic disorders, poisonings, accidents and child abuse;
- (5) Outline national Programmes relating to child health including immunization Programmes.

(b) **SKILLS** :

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

- (2) take a detailed paediatric 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.
- (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 saline and provide nasogastric feeding :
- (4) Conduct diagnostic procedures such as a lumbar puncture, liver and kidney biopsy, bone marrow aspiration, pleural tap and ascitic tap;
- (5) Distinguish between normal newborn babies and those requiring special care and institute early care o all new born babies including care of preterm and low birth weight babies, provide correct 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 :

(C) INTEGRATION :

The training in paediatrics 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 team in an integrated form with other disciplines, eg Anatomy, Physiology, Forensic Medicine, Community Medicine and Physical Medicine and Rehabilitation.

LIST OF LECTURE/ SEMINARS

Lectures : 3rd / 4th Semester :

1. Introduction of Paediatrics.
2. History taking in children.
3. Examination of Children.
4. Normal Growth
5. Normal Development.
6. Introduction to newborn and normal newborn baby.
7. Temperature regulation in newborn.
8. Breast feeding and lactation management.
9. Infant and child feeding (include complimentary feeding)
10. Normal fluid and electrolyte balance in children.
11. Immunization.

Lecturers : 7th / 8th / 9th Semester :

1. Birth Asphyxia
2. Low Birth Weight Babies.
3. Neonatal Respiratory Distress.
4. Jaundice in newborn.
5. Neonatal Infections.
6. Neonatal convulsions.
7. PEM and its management.
8. Vitamin and micronutrient deficiencies.
9. Nutritional anaemia in infancy and childhood.
10. Acute diarrhoea.
11. Hypothyroidism in children.
12. Congestive heart failure - diagnosis and management.
13. Congenital heart disease.
14. Rheumatic heart disease.
15. Hypertension in children.
16. Acute respiratory infections.
17. Bronchial asthma.
18. Nephrotic syndrome
19. Acute glomerulonephritis and hematuria
20. Abdominal pain in children.
21. Chronic liver disease including ICC.
22. Haemolytic anaemia including thalassemia.
23. Leukaemias.
24. Bleeding and coagulation disorders.
25. Seizure disorders.
26. Cerebral Palsy.
27. Common exanthematous illness.
28. Childhood tuberculosis

Other Lectures to be covered :

1. Fluid and electrolyte balance -pathophysiology and principles of Management.
2. Acid-base disturbances - pathophysiology and principles of management.
3. Adolescent growth and disorders of puberty.
4. Congenital heart disease.
5. Acute respiratory infections, Measles, Mumps, Chicken pox
6. Other childhood malignancies.
7. Coagulation disorders - Haemophilia
8. Mental retardation.
9. Approach to a handicapped child.
10. Acute flaccid paralysis.
11. Behaviour disorders.
12. Meningitis.
13. Diphtheria, Pertussis and Tetanus.
14. Childhood tuberculosis.
15. HIV infection.
16. Malaria.
17. Neurocysticercosis.
18. Enteric fever.

19. Immunization.
20. Paediatric prescribing.
21. Common childhood poisonings.

Integrated Seminar Topics :

Convulsions

Coma

PUO

Jaundice

Portal hypertension

Respiratory failure

Shock

Rheumatic Heart Disease

Hypertension

Diabetes mellitus

Hypothyroidism

Anemia Bleeding

Renal failure

Tuberculosis

Malaria

HIV infection

Neurocysticercosis

Perinatal asphyxia (with obstetrics)

Intrauterine growth retardation (with obstetrics)

In trodu ctio n of “ In tigrate d Man a ge me n t of Neo n a ta l And Ch ild ho od Illn e ss”

Topic in MBBS Syllabus

Preventive and Social Medicine / Community Medicine (PSM)

- A. The teaching of Social & Preventive Medicine shall place throughout the teaching period.
- B. Field experience in rural health is included in pre-clinical as well as during clinical period
- C. During the students attendance at various departments which is now required under medicine and surgery, such as infectious diseases. T.B. Leprosy, V.D. etc. emphasis shall be laid as much on the preventive as on the clinical and Therapeutic aspects of these diseases.
- D. In addition to the teaching undertaken by the department of Social & Preventive Medicine, a joint programme with other departments is essential in order to give the students a comprehensive picture of man, his health and illness.
- E. Stress shall be laid on national programmes, including those of control of communicable diseases and family planning and health education.
- F. An epidemiological units as an integrate part of every hospital in order to achieve a comprehensive study disease by the students should be established.
- G. The objective of the internship shall be clearly defined and that a proper training programme is oriented for this period. Objectives, and the methods by which the internship could be made into a satisfying and fruitful experience. Sharpening and for planning in this phase of education shall be done.
- H. As regards the qualifications of the teachers it is highly important that All teachers in Social and A preventive Medicine should have as far as possible had adequate administrative experience in addition to the teaching experience. They should also be encouraged to acquire skills in clinical subject specially related to community medicine.
- I. Practical Skills : Due stress shall be laid on the students acquiring practical skill in the following procedures.

Community Medicine including Humanities (Preventive and Social Medicine)

(Phase I,II and Part 1st of Phase III M.B.B.S.)

GOALS :

The broad goal of the teaching of undergraduate students in community medicine is to prepare them to function as community and first level physicians in accordance with the institutional goals.

OBJECTIVES :

Knowledge :

At the end of the course the student shall be able

- Explain the principles of sociology including demographic population dynamics.
- Identify social factors related to health, disease and disability in the context of urban and rural societies.
- Appreciate the impact of urbanization on health and disease.
- Observe and interpret the dynamic of community behaviours.
- Describe the elements of normal psychology and social psychology.
- Observe the principles of practice of medicine in hospital and community settings.
- Describe the health care delivery systems including rehabilitation of the disabled in the country.
- Describe the National Health Programmes with particular emphasis on maternal and child health programmes, family welfare planning and population control.
- List the epidemiological methods and techniques.
- Outline the demographic pattern of the country and appreciate the roles of the individuals, family, community and socio-cultural milieu in health and disease.
- Describe the health information systems.
- Enunciate the principles and components of primary health care and the national health policies to achieve the goal of “Health for all”.
- Identify the environmental and occupational hazards and their control.
- Describe the importance of water and sanitation in human health.
- To understand the principles of health economics, health administration, health education in relation to community.

Skills :-

At the end of the course, the student shall be able to make use of

- The principles and practice of medicine in hospital and community settings and familiarization with elementary practices.
- Use the Art of communication with patients including history taking and medico social work.
- Use epidemiology as a scientific tool to make rational decisions relevant to community and individual patient intervention.
- Collect, analyse, interpret and present simple community and hospital base data.
- Diagnose and manage common health problems and emergencies at the individual, family and community levels keeping in mind the existing health care resources and in the context of the prevailing socio-culture beliefs.
- Diagnose and manage common nutritional problems at the individual and community level.
- Plan, implement and evaluate a health education programme with skill to use simple audio-visual aids.
- Interact with other members of the health care team and participate in the organization of health care services and implementation of national health programmes.

Integration:

Develop capabilities of synthesis between cause of illness in the environment or community and individual health and respond with leadership qualities to institute remedial measures for this.

Course Content :

Total hours of teaching in community medicine and Humanities are 376. The distribution of them shall be as follows.

Phase	Semester	Theory	Practical Hours
I	I & II	30	30
II	III & IV	68	132
III Part1 st	VI & VII	50	66

Community Medicine (P.S.M.)

List of theory lectures

Phase I (1st and 2nd semester) 30 Hours

1. Introduction – Evolution of Community Medicine.
2. Health – Definition, spectrum of health and factors affecting – indicators of health.
3. Health Problem of World – Urban and Rural – Indian Health.
4. Health Care Delivery system in India – Urban and Rural.
5. Demography, Demographic cycle, Population trends – World and India.
6. Fertility and factors affecting it.
7. Family welfare and Population control.
8. Medical ethics and Doctor – patient relationship – Consumer Protection Act.
9. Sociology and Social factors effecting health.
10. Social Psychology – introduction, Group Behaviour, Motivation Personality.
11. Economics and health.
12. Health Education and Communication.
13. Hospital Management.
14. Nutrition and Health.
 - Constituents of food.
 - Food and food groups.
 - Diet planning and recommended dietary allowances.
 - Nutritional diseases.
 - Iodine deficiency disorders.
 - Diseases due to vitamin and mineral imbalance
 - Toxins in the food.
 - Assessment of Nutritional status.
 - Examination

Phase II – (3rd and 4th Semester) 68 Hours

General Epidemiology

- The concepts of disease.
- Natural history of disease.
- Epidemiological triad.
- Dynamics of diseases transmission.

- Concept of disease control.

Epidemiology

- Definition, types, measurements in epidemiology, epidemiological studies, and clinical trial, investigation of an epidemic.**
- Uses of epidemiology.**
- Screening for disease.**
- Disinfection, sterilization and control of Hospital acquired infections.**
- Immunity.**

Environmental health

- Introduction to environment health.**
- Water in relation to health and disease.
- Air pollution and ecological balance.
- Housing and health.
- Effects of radiation on human health (Ionizing, Non-ionizing & Nuclear warfare)
- Effects of Noise on human health.
- Meteorological environment.
- Solid waste disposal.
- Disposal of hospital waste.
- Liquid waste disposal

Medical entomology

Arthropods of medical importance and their control.

Biostatistics (Theory and Practical)

Introduction and uses.

Data- Types, Collection and Presentation.

Centering constants.

Measures of Variation.

Normal distribution.

Sampling methods and Sampling variability.

Tests of significance.

- SE of difference between two means.
- SE of difference between two proportions
- X^2 test. (Chi-square)
- Students „t“ test
 - Paired .
 - Unpaired.
- Statistical fallacies.

Computers in Medicine

There use at all the stages to be demonstrated. The students should use computers in analysis and presentation of data

Epidemiology of communicable diseases.

- Air borne infections.
- Exanthematous fevers.
- Chicken pox, Rubella, and Measles
- Factors responsible to eradicate small pox.
- Influenza and ARI.**
- Diphtheria and Pertussis

- Tuberculosis.
- Faeco-oral infections.
- Poliomyelitis.
- Hepatitis.
- Enteric Fever and Cholera
- Bacillary and Amoebic dysentery.
- Soil transmitted Helminths.
- Tetanus
- Rabies and other Viral Zoonotic disease.
- Leprosy.
- Leprosy.
- Malaria
- Filariasis.
- Arthropod borne viral diseases.
- Sexually transmitted diseases and their control.
- A.I.D.S.

Examinations at the end of 3rd and 4th semester.

(Phase III (6th and 7th Semester)

50 hrs.

(Teaching in 7th semester includes tutorials also.)

- Community development programmes and multisectoral development.
 - Comprehensive medical care and Primary health care.
 - National Health Policy.
 - Maternal and Child Health care.
 - Epidemiology of Non-communicable diseases.
 - Occupational health.
 - Problems of adolescence including Drug dependence.
 - Geriatrics
 - Vital statistics – sources and uses, Census, Fertility statistics.
 - Management information system.
 - Mental health.
 - Genetics in public health.
 - Health planning and management.
 - National Health Programmes.
 - International health and Voluntary Health Agencies.Tutorials.
- Examination at the end of 6th and 7th semester.

Practicals

Phase I (Ist And 2nd semester)

-

30 hours.

Field visit-

Every Medical College should have adequate transport facilities to take medical undergraduate for field visits. In the phase I total 15 visits, each of 2 hours duration or total 10 visits – each of 3 hours duration (depending on distances) are to be planned by the departments of community medicine. The broad outline of place for educational field visits is given below.

- Hospital visits (O.P.D., Casualty, Immunization clinic, different wards, Kitchen, FW Centre, PPP, Blood Bank, Sterilization section, Infectious disease ward, Minor operation theatre, etc.)
- Rural Health Training Centre.
- Primary Health Centre.
- Urban Health Centre.
- District Health Office (DHO).
- District Training Team (DTT)/IEC Bureau.
- District Tuberculosis Centre.
- Public Health Laboratory.
- District Malaria Office.
- Remand Home.
- Rehabilitation Centre.

IIIrd Semester, 1st Clinical Posting - **66 hours.**

Lecture – Cum – Demonstration, at appropriate places

SN	Topic	Demonstration
1	Visit to Urban / Rural health Training Centre.	Functions of UHC/ RHTC Manpower & Duty arrangements
2	Immunization Programme	I (demonstration)
3	Immunization Programme	II (Cold Chain)
4	Care of ANC mother	Demonstration of Antenatal case
5	Care of Infant	Demonstration of case
6	Post-natal case of mother/child.	Demonstration of case
7	Contraceptive devices	Situation to be given and sex education.
8	Exclusive breast feeding	Visit to Baby Friendly Hospital
9	Weaning foods	Demonstration
10	Nutritional demonstration	Explain nutritive values of Indian foodstuff
11	Nutritional assessment	Demonstration
12	Anthropometric measurements	Demonstration
13	Nutritional deficiency disorders	With A/V aids or case, Road to Health Chart
14	Protein Energy Malnutrition	With A/V aids or case, ORS preparation
15	Diarrhoea as a community health problem	With A/V aids or case
16	ARI as a community health problem	With A/V aids or case
17	Elementary essential drugs	Visit to drug store, Inventory control
18	Examination	

4th Semester 2nd Clinical Posting - **66 hours.**

The board guidelines for planning programmes are as follows.

- 1) Posting for family care study - 6 days
 - Principle of clinical epidemiology
 - Morbidity Survey.
 - Data analysis and presentation.
- 2) Posting for School Health - 6 days
 - Health check-up of school children.
 - Data analysis and presentation.
 - Health education activities in the school by the students.
- 3) Visit to anganwadi and ICDS scheme block - 2 days
- 4) Visit to Home for aged and discussion - 2 days

- on geriatric health problems
- 5) Students' seminars on topics like - 5 days
- Disaster management
 - Road traffic accidents
 - Population explosion etc.
- 6) Examinations - 3 days.

Phase III (6th and 7th Semester)

3rd Clinical Posting -

66 hours.

Posting : Clinical case presentation by students

1. Introduction to infectious diseases – history taking
 2. Exanthematous fever.
 3. Diarrhoea / Cholera / Dysentery.
 4. Tuberculosis
 5. Leprosy.
 6. Dog – bite case.
 7. Tetanus.
 8. PUO / Enteric fever / Malaria.
 9. S.T.D. / AIDS.
 10. Hepatitis
 11. Introduction to non- communicable diseases.
 - Rheumatic heart disease.
 - Cancer.
 - Obesity / diabetes.
- Examinations.

MARKS OF INTERNAL ASSESSMENT :-

Theory –20 marks and practical 20 marks. The students must secure at least 50% , marks of the total marks fixed for internal assessment in the subject in order to clear the subject.

D) Theory	
1) 3 rd Semester	50 Marks
2) 4 th Semester	50 Marks
3) 6 th Semester	50 Marks
<hr/>	
Total	150 Marks
	Converted it to out of 10 marks
4) Prelim exam. Theory Paper I	- 60 Marks
Paper II	- 60 Marks
<hr/>	
Total	120 Marks,
	Convert it to out of 10 marks

Total Theory Internal Assessment marks will be 20.

II) Practicals -

1) 1 st Clinical rotation exam. -	3 rd Semester -	50 Marks
2) 2 nd Clinical rotation exam. -	4 th Semester -	50 Marks
3) 3 rd Clinical rotation exam. -	6 th Semester -	50 Marks
<hr/>		Total 150 Marks
		Convert it to out of 10 marks
4) Prelim exam.	-	40 Marks
<hr/>		10 Marks for Journals
Total		50 Marks
		Convert it to out of 10 marks

Total Practical Internal Assessment marks will be 20.

Introduction of “ Brain Death and Organ Donation” topic in subjects of Physiology , Preventive & Social Medicine, Psychiatry, Medicine & Surgery

Introduction Of “Bio-Medical Waste” topic in subject of Microbiology & Preventive & Social Medicine

In trodu ctio n of “ In tigrated Man a ge me nt of Neo n a ta l And Ch ild ho od Illn e ss”

Topic in MBBS Syllabus

BOOKS RECOMMENDED.

1. Text book of Community Medicine, Kulkarni A.P. and Baride J.P.
2. Park's Textbook of Preventive and Social Medicine, Park
3. Principles of Preventive and Social Medicine, K. Mahajan
4. Textbook of Community Medicine, B. Shridhar Rao.
5. Essentials of Community Medicine, Suresh Chandra.
6. Textbook of Biostatistics, B. K. Mahajan
7. Review in Community Medicine, V.R. Sheshu Babu.
8. **Reference Book for Community Medicine: "Principles and practice of Biostatistics", Author: Dr. J.V. Dixit**

FURTHER READINGS.

Epidemiology and Management for health care for all P.V. Sathe and A.P. Sathe.

Essentials of Preventive Medicine O.P. Ghai and Piyush Gupta.

Record Book:

- 1) The case records will have to be entered in a record book separately for General Medicine, for Paediatrics and for PSM.
- 2) In the record book of General Medicine, number of case records for Medicine shall be 12, for Skin & V.D. & Leprosy shall be 3, for Psychiatry shall be 2 and for Chest & TB shall be 3 cases.
- 3) The certificate of satisfactory completion of all Clinical postings will be entered based on similar certificates from all postings in all the above subjects.
- 4) In addition, details of the marks secured in the posting ending examination shall be entered on the second page on which the calculations of the internal assessments shall also be stated. Record book will not carry any marks but its satisfactory completion will be a prerequisite for appearing in examination.

University Examinations in Medicine and Allied Subjects at a Glance

MEDICINE :-

Theory 2 papers of 60 marks each	= 120 marks
Paper I - General Medicine	
Paper II - General Medicine(Including Psychiatry, Dermatology, STD shall contain one question on basic sciences and allied subject.)	
Oral (viva) interpretation of X-Ray, ECG etc.	= 20 marks
Clinical (Bedside)	= 100 marks
Internal Assessment	= 60 marks
(Theory 30 Marks, Practical 30 Marks)	
Grand Total	= 300 marks

PAEDIATRICS :- (Including Neonatology)

Theory – One paper	= 40 marks
(Shall include one question on basic sciences & allied subjects)	
Oral (Viva)	= 10 marks
Clinical	= 30 marks
Internal Assessment	= 20 marks
(Theory 10 Marks, Practical 10 Marks)	
Grand Total	= 100 marks

COMMUNITY MEDICINE :-

Theory 2 papers of 60 marks each	= 120 marks
Includes problems showing applied aspects of management at primary level including essential drugs, occupational (agro based) diseases rehabilitation and social aspects of community.	
Oral (Viva)	= 10 marks
Practical /Project evaluation	= 30 marks
Internal Assessment	= 40 marks
(Theory 20 Marks, Practical 20 Marks)	
Grand Total	= 200 marks

Criteria of passing in various subjects at III MBBS Examination

SN	Subject	Theory Paper ./ Oral/ Practical / Internal Assessment		Maximum Marks in each of the subject	Minimum marks required to pass in each part of any subject		Minimum marks required to pass in each subject out of
01)	Community Medicine	a) Theory	Paper - I	60	60	65	100 <hr/> 200
			Paper - II	60			
		b) Oral		10			
		c) Practical		30		15	
		d) Internal Assessment	Theory	20		20	
	Practical	20					
02)	General Medicine	a) Theory	Paper I	60	60	70	150 <hr/> 300
			Paper II	60			
		b) Oral		20			
		c) Practical		100		50	
		d) Internal Assessment	Theory	30		30	
	Practical	30					
03)	Paediatrics	a) Theory	Paper	40	20	25	50 <hr/> 100
		b) Oral		10			
		c) Practical		30		15	
		d) Internal Assessment	Theory	10		10	
			Practical	10			

It is compulsory to obtain 50% marks in theory.

It is mandatory to obtain 50% marks in theory+viva/oral.

(The Frequency & other details of Internal Assessment Examinations shall be as stated in circular dated 15/02/01 table no III & IV. of General

Guidelines for U.G. teaching & training & Internal Assessment. Passing in Internal Assessment is prerequisite for eligibility to clear the subject. For passing in Internal Assessment student should secure minimum 30 out of 60 marks (theory & practical combined)

The Internal Assessment Examination shall consist of one clinical case paired with viva-voce for the periodical tests. However, the preliminary examination shall be carried out in a pattern similar to final University examination.

University (Final) Exam : General Medicine

Paper I (60 Marks) Time 3 hours.	Paper II (60 Marks) Time 3 hours.
Section A – Marks 15 MCQs – 30 Items each of ½ mark Time 30 minutes (Shall cover whole course syllabus stated in Section B and C of Paper I below)	Section A – Marks 15 MCQs 30 Items each of ½ mark Maximum time 30 minutes (Shall cover whole course syllabus stated in Section B and C of Paper I below)
Section B – (Total Marks 25) Two long questions Each of 8 marks & 3 Short Answer Questions of 3 marks each. (3 out of 5 SAQs by choice. On course contents of - Cardiovascular System, Gastrointestinal System, Hepatobiliary System & Pancreas, Haematology, Haemato-oncology & Genetics)	Section B – (Total Marks 25) <i>Two long Questions each of 8 marks and 3 short answer questions (out of 5 SAQs) on course contents of</i> Neurology, Psychiatry, Dermatology, Veneroleprology` & Collagen Disorders
Section C – (Total Marks 20) One long Question of 8 marks and 4 (out of six) SAQs of 3 marks each on course contents of Endocrinology, infectious diseases/Tropical Disease, Miscellaneous	Section C – (Total Marks 20) One long question of 8 marks and 4 (out of six) SAQs of 3 marks each on course contents on Respiratory Diseases, Tuberculosis & Clinical Nutrition and Nephrology
The Max Time for Section B & C shall be of 2 hrs. + 30 minutes	The Max time for section B and C shall be of 2 hrs. and 30 minutes

MCQ Section A shall be given to the candidates in the beginning of examination. After 30 min. section A will be collected following which B & C shall be given. The time given Section B & C together is two and half hours. This applies to paper I & II.

(one of the short answer questions shall be on basic & allied sciences.)

Final University Exam : Practical Exam :

Shall comprise of total 120 marks . with divisions as below :-

(A) Clinical Bed side :

One Long case - 50 Marks

Two short case - 25 Marks each

Total - 100 Marks

Long Case / The time for case taking for student is 45 min. & for examination is 10 min.

Short Case / The same for each short case is 10 min. & 5 min. respectively

(B) Oral Viva Voce and interpretation of investigation materials (like X-Rays, ECGs, etc. – 20 marks

Viva at Two Tables Each for 10 marks There should be even & balanced distribution of the course contents on these tables, between Internal & External examiners. This should include, specimens, instruments, microscopy & drugs on table no 1 & emergencies, radio-diagnostics, electrodiagnostic & Biochemical Lab. investigations on table no 2 as applicable to the course contents of final M.B.B.S. Exam.

(C) The marks of Internal Assessment shall be sent to the University before the commencement of the Theory Examination.

Note – In the event when I.A. could not be held on the specified time due to technical reasons or otherwise, then it should be held during the vacation.

IIIrd MBBS EXAM. PATTERN
FINAL MBBS EXAMINATION IN Paediatrics

Evaluation

Internal assessment: 20 (Theory 10 +Practical 10)

Plan of Internal assessment in Paediatrics (as per university circular on 9th February 2001) Marks of Internal Assessment should be sent to University confidentially before the commencement of Theory examination.

- Passing in internal assessment will be pre-requisite for clearing the subject.
Combined theory and practical of internal assessment will be considered for passing in internal assessment.

Internal assessment in Theory -

- 1 . Examinations during semesters : This will be carried out by conducting two theory examinations at the end of 6th and 8th semesters (50 marks each).
Total of 100 marks to be converted into 5 marks.(A/5)
- 2 . Prelim examination : This shall be carried out during 9th semester.
One theory papers of 40 marks as per university examination.
Total of 40 marks to be converted into 5 marks. (B/5)

Total marks of Internal assessment of Theory will be addition of A and B.

Internal assessment in Practical

Examinations at end of Clinical postings:

- 1 There will be practical examination at the end of each clinical posting of Paediatrics.: 6th and 8th semester. Each examination will be of 50 marks.
Total of 2 examinations – 100 marks , will be converted to 5 marks.(C/5)

2. Prelim examination:

This will be conducted for 40 marks as per university examination pattern and marks will be converted to 5 (D/5).

Total marks of Internal assessment of Practical will be addition of C and D.

Duration 10 Minutes

(Instruments, X-ray, Drugs, Emergency in Paediatrics.)

It is directed to interpretation of investigations

Clinical :One long case :30 marks :30 min. for taking case and 10 minutes for assessment

|| Oral (viva voce) :10 marks:10 min. duration

- | | |
|---------------|---------|
| 1.Dark Room | 5 marks |
| 2.Instruments | 5 marks |

FINAL EXAMINATION :- IN PSM

The distribution of marks at final examination

Theory : two papers of 60 marks each	120 Marks
Oral (Viva)	10 Marks
Practicals	30 Marks
Internal assessment	40 Marks
<input type="checkbox"/> (Theory 20 Marks)	
<input type="checkbox"/> (Practical 20 Marks)	

Total 200 Marks

PATTERN :

THEORY : TWO PAPERS OF 60 MARKS EACH 120 MARKS :-

- Paper I include Concepts in Health & Disease, Sociology / Humanities, Epidemiology, Biostatistics, Communicable and non- communicable diseases, Genetics and Environmental Health.
- Paper II includes Demography & Family Planning, Maternal and child health Nutrition, Occupational Health, Mental Health, Health Education, Health Planning & Management, Health Care Delivery System , National Health Programmes, International Health,
- These are broad divisions. There are some chances of overlapping.

NATURE OF THEROY QUESTION PAPERS :

Final MBBS Examination of subject-PSM

Theory

Paper –I

Paper -II

Section A : 30 MCQs

½ Mark each
Should cover whole course
content Of the Paper I
stated in Section B & C
below (Max time = 30 min)

Section A : 30

½ Mark each
Should cover whole course
content Of the Paper II
stated in Section B & C
below (Max time = 30 min)

Section B: Total Marks =25
2. LAQs, each of 8 Marks
3. (out of 5) SAQs.
each of 3 marks on

Epidemiology, Bio-statistics
& communicable & non
communicable diseases

Section B: Total Marks =25
2. LAQs, each of 8 Marks
3. (out of 5) SAQs.
each of 3 marks on

Demography & Family Planning
Maternal and child health,
Nutrition, Occupational health;

Section C: Total Marks =20
One LAQ of 8 marks
& 4 (out of 6) SAQs
each of 3 marks

On
Concepts in Health & Disease,
Sociology / Humanities
Genetics & environmental
Health

Section C: Total Marks =20
One LAQ of 8 marks
& 4 (out of 6) SAQs
each of 3 marks

On
Mental Health, Health Education,
Health Planning & Management
Health care delivery system.
National Health Programmes
International Health

The full time for section B plus section C shall be of 2½ hrs. of Paper I and 2½ hrs for Paper II.

MCQ Section will be given to candidates first. After 30 minutes the Section B & C will be given to the candidates.

PATTERN AT PRACTICAL EXAMINATION

	Marks
Orals (Viva)	10
Practical	30

The distribution of 30 marks of practical shall be -

- 1) Spots - 10 Marks (5 spots of 2 marks each) Time 10 min.
- 2) Exercises - 10 Marks (5 marks for Bio-Stat. & 5 marks for Epidemiological exercises) Time 10 min.
- 3) Clinical case Presentation - 10 Marks Time 45 min.

Total 30 Marks

It is compulsory to obtain 50% marks in theory.
It is mandatory to obtain 50% marks in theory+viva/oral.

COURSE OF SURGERY AND ITS ALLIED SPECIALITIES FOR THIRD M.B.B.S.

[Inclusion of the book "Manipal Manual of Surgery" as references book for M.B.B.S. Course.](#)

These guidelines are based on MCI recommendations.
Teaching has to be done keeping in mind the goals and objectives to be achieved by medical student

SURGERY and allied specialties-

(i) GOAL:

The broad goal of the teaching of undergraduate students in Surgery is to produce graduates capable of delivering efficient first contact surgical care.

(ii) OBJECTIVES:

The departmental objectives, syllabus and skills to be developed in the department of surgery during undergraduate medical education are presented herewith. These are prepared taking into consideration of various aspects and institutional goals given below:

1. A medical student after graduation may have different avenues of his/her professional career and may work either as a first contact physician in a private, semi-private or public sector or may take up further specialization in surgery or other specialties.
2. He may have to work in different settings such as rural, semi-urban or urban which may have deficient or compromised facilities.
3. These are based on the various health services research data in our community.
4. These are also based on following institutional goals in general;

At the end of the teaching/ training the undergraduate will be able to:

- Diagnose and manage common health problems of the individual and the community appropriate to his/her position as a member of the health team at primary, secondary and tertiary levels.
- Be competent to practice curative, preventive, promotive and rehabilitative medicine and understand the concepts of primary health care.
- Understand the importance and implementation of the National Health Programmes in the context of national priorities.
- Understand the socio-psychological, cultural, economic and environmental factors affecting health and develop humane attitude required for professional responsibilities.
- Develop the ability for continued self-learning with a scientific attitude of mind and acquire further expertise in any chosen area of medicine.

A. 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, contraindications and side effects

B. 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; septicæmic and other types of shock.
4. Be able to maintain patent air-way and resuscitate:
 - A A critically injured patient.
 - B Patient with cardio-respiratory failure;
 - C 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. Acquire principles of operative surgery, including pre-operative, operative and post operative care and monitoring;
8. Treat open wounds including preventive measures against tetanus and gas gangrene.
9. Diagnose neonatal and paediatric surgical emergencies and provide sound primary care before referring the patient to secondary/territory centers;
10. 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:

- i. Incision and drainage of abscess;
- ii. Debridement and suturing open wound;
- iii. Venesection;
- iv. Excision of simple cyst and tumours.
- v. Biopsy and surface malignancy
- vi. Catheterisation and nasogastric intubation;
- vii. Circumcision
- viii. Meatotomy;
- ix. Vasectomy;
- x. Peritoneal and pleural aspirations;
- xi. Diagnostic proctoscopy;
- xii. Hydrocoele operation;
- xiii. Endotracheal intubation
- xiv. Tracheostomy and cricothyroidotomy;
- xv. Chest tube insertion.

Human values, and Ethical practice

- .Adopt ethical principles in all aspects of his clinical practice. Professional honesty and integrity are to be fostered. Surgical care is to be delivered irrespective of the social status, caste, creed or religion of the patient.
- .Develop communication skills, in particular the skill to explain various options available in management
- .Be humble and accept the limitations in his knowledge and skill and to ask for help from colleagues and specialist in the field when needed.
- Respect patient's rights and privileges including patient's right to information and right to seek a second opinion

© INTEGRATION

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

LEARNING METHODS

Lectures, Tutorials bedside clinics and lecture cum demonstrations

Distribution of Teaching hours -

- Lectures - 160 hours**
- Tutorials and revision - 140 hours**
- Bedside clinics - 468 hours five clinical postings totalling 26 weeks including Anaesthesiology**
- Clinical postings in General Surgery -**
 - 3rd Semester - 6 weeks
 - 5th Semester - 4 weeks
 - 7th Semester - 4 weeks
 - 8th Semester - 6 weeks
 - 9th Semester - 6 weeks

Sequential organisation of contents and their division -

GENERAL SURGERY LECTURES

4TH Term

General Surgery : Part I 16 Lectures

6th Term 3 modules

- Module 1
 - Vascular Surgery : 8 Lectures
 - Tropical Surgery : 4 Lectures
 - Gen. Surgery Remaining 16 Lectures
- Module 2
 - Head and Neck surgery
 - Endocrine surgery 16 Lectures
- Module (3)
 - Breast surgery 4
 - Plastic & Reconstructive Surgery 6
 - Neurosurgery 6 16 Lectures

7th Term: 3 modules

- Module (1)
 - Cardio Thoracic surgery 8
 - Paediatric surgery 8 16 Lectures
- Module (3)
 - Liver)
 - Spleen) 16 Lectures
 - Pancreas)
 - Biliary Tract)
 - Portal Hypertension.)
- Module (3)
 - Upper Gastro intestinal Tract + Peritoneum 16 Lectures

2. Surgical aspects of diabetes mellitus.
3. Bites and stings.
4. Organ transplantation - Basic principles.
5. Nutritional support to surgical patients.

II. RESUSCITATION.

1. Fluid electrolyte balance.
2. Shock: Aetiology, pathophysiology and management.
3. Blood transfusion : Indication and hazards.
4. Common postoperative complications.

III. COMMON SKIN AND SUBCUTANEOUS CONDITIONS.

1. Sebaceous cyst, dermoid cyst, lipoma, haemangioma, neurofibroma, premalignant conditions of the skin, basal cell carcinoma, naevi and malignant melanoma.
2. Sinus and fistulae. Pressure sores; prevention and management.

IV. ARTERIAL DISORDERS.

1. Acute arterial obstruction : diagnosis and initial management; types of gangrene ; diagnosis of chronic arterial insufficiency with emphasis on Burger's disease, athrosclerosis and crush injuries.
2. Investigations in cases of arterial obstruction. Amputations;
3. Vascular injuries : basic principles of management.

V. VENOUS DISORDERS.

1. Varicose veins: diagnosis and management; deep venous thrombosis: diagnosis, prevention, principles of therapy; thrombophlebitis.

LYMPHATICS AND LYMPH NODES.

1. Diagnosis and principles of management of lymphangitis, lymphedema, acute and chronic lymphadenitis; cold abscess, lymphomas, surgical manifestations of filariasis.

VII. BURNS.

1. Causes, prevention and first aid management; pathophysiology; assessment of depth and surface area, fluid resuscitation; skin cover; prevention of contractures.

VIII. SCALP, SKULL AND BRAIN.

1. Wounds of scalp and its management: recognition, diagnosis and monitoring of patients with head injury including unconsciousness; Glasgow coma scale recognition of acute / chronic cerebral compression.

IX. ORAL CAVITY, JAWS, SALIVARY GLANDS.

1. Oral cavity: I) Cleft lip and palate; Leukoplakia; retention cyst; ulcers of the tongue.
II) Features, diagnosis and basic principles of management of carcinoma lip, buccal mucosa and tongue, prevention and staging of oral carcinomas.
2. Salivary glands: I) Acute sialoadenitis, neoplasm: diagnosis and principles of treatment.

IX. B. Epulis, cysts and tumours of jaw: Maxillofacial injuries; salivary fistulae

X. NECK.

1. Branchial cyst; cystic hygroma.
2. Cervical lymphadenitis: Non-specific and specific, tuberculosis of lymphnodes, secondaries of neck.

X. B. Thoracic outlet syndrome: diagnosis.

XI. THYROID GLAND

1. Thyroid: Surgical anatomy, physiology, investigations of thyroid disorders; types, clinical features, diagnosis and principles of management of goitre, thyrotoxicosis and malignancy, thyroglossal cyst and fistula.

XI. B. Thyroiditis, Hypothyroidism.

XII. PARATHYROID AND ADRENAL GLANDS.

1. Clinical features and diagnosis of hyperparathyroidism, adrenal hyperfunction/hypofunction.

XIII. BREAST.

1. Surgical anatomy; nipple discharge; acute mastitis, breast abscess; mammary dysplasia; gynaecomastia; fibroadenomas.
2. Assessment and investigations of a breast lump.
3. Cancer breast : diagnosis, staging, principles of management.

XIV. THORAX.

1. Recognition and treatment of pneumothorax, haemothorax, pulmonary embolism: Prevention/ recognition and treatment, flail chest; Stove in chest ; Postoperative pulmonary complications.

XIV. B. Principles of management of pyothorax; cancer lung.

XV. HEART AND PERICARDIUM.

1. Cardiac tamponade
2. Scope of cardiac surgery.

XVI. OESOPHAGUS.

1. Dysphagia: Causes, investigations and principles of management.
2. Cancer oesophagus : Principles of management.

XVII. STOMACH AND DUODENUM.


1. Anatomy; Physiology, Congenital hypertrophic pyloric stenosis; aetiopathogenesis, diagnosis and management of peptic ulcer, cancer stomach; upper gastrointestinal haemorrhage with special reference to bleeding varices and duodenal ulcer.

XVIII. LIVER

1. Clinical features , diagnosis and principles of management of : Amoebic liver abscess, hydatid cyst and portal hypertension. Liver trauma.

XVIII. B. Surgical anatomy; primary and secondary neoplasms of liver.

XIX. SPLEEN

-  Splenomegaly: causes, investigations and indications for splenectomy; splenic injury.

XX. GALL BLADDER AND BILE DUCTS

1. Anatomy, physiology and investigations of biliary tree; clinical features, diagnosis, complications and principles of management of cholelithiasis and cholecystitis; obstructive jaundice.

XX. B. Carcinoma of gall bladder, choledochal cyst.

XXI. PANCREAS.

1. Acute pancreatitis : Clinical features, diagnosis, complications and management.
2. Chronic pancreatitis, pancreatic tumours.

XXII. PERITONEUM, OMENTUM, MESENTERY AND RETROPERITONEAL SPACE.

1. Peritonitis : Causes, recognition and principles of management; intraperitoneal abscess.
- XXII B. Laparoscopy and laparoscopic surgery.
- XXIII. SMALL AND LARGE INTESTINES
1. Diagnosis and principles of treatment of : Intestinal amoebiasis, tuberculosis of intestine, carcinoma colon; lower gastrointestinal haemorrhage; Enteric fever, parasitic infestations.
- XXIII. B. Ulcerative colitis, premalignant conditions of large bowel.
- XXIV. INTESTINAL OBSTRUCTION.
1. Types, aetiology, diagnosis and principles of management; paralytic ileus.
- XXV. ACUTE ABDOMEN.
1. Causes, approach, diagnosis and principles of management.
- XXVI. APPENDIX
1. Diagnosis and management of acute appendicitis, appendicular lump and abscess.
- XXVII. RECTUM.
1. Carcinoma rectum: diagnosis, clinical features and principles of management; indications and management of colostomy.
- XXVII. B. Management of carcinoma rectum; prolapse of rectum.
- XXVIII. ANAL CANAL .
1. Surgical anatomy. Clinical features and management of: fissure, fistula in ano, perianal and ischiorectal abscess and haemorrhoids; Diagnosis and referral of anorectal anomalies.
- XXVIII. B. Anal carcinoma.
- XXIX. HERNIAS.
1. Clinical features, diagnosis, complications and principles of management of : Umbilical, Inguinal, epigastric and femoral hernia.
 2. Omphalitis.
- XXIX . B. Umbilical fistulae, Burst abdomen, ventral hernia.
- XXX. GENITO- URINARY SYSTEM.
1. Symptoms and investigations of the urinary tract.
- XXXI. KIDNEY AND URETER
1. Investigations of renal mass; diagnosis and principles of management of urolithiasis, hydronephrosis, pyonephrosis, and perinephric abscess, congenital anomalies of kidney & Ureter and renal tumours.
 2. Renal tuberculosis.
- XXXII. URINARY BLADDER.
1. Causes, diagnosis and principles of management of haematuria, anuria and acute retention of urine.
- XXXIII. PROSTATE AND SEMINAL VESICLES.
1. Benign prostatic hyperplasia: diagnosis and management.
- XXXIII. B. Carcinoma prostate.
- XXXIII. URETHRA AND PENIS
1. Diagnosis and principles of management of Phimosi s, paraphimosis and carcinoma penis.
 2. Principles of management of urethral injuries.
 3. Urethral strictures.
- XXXV. TESTES AND SCROTUM
1. Diagnosis and principles of treatment of undescended testis; torsion testis; Hydrocoele, hematocoele, pyocoele, varicocele, epididymo-orchitis and testicular tumours.

XXXVI PAEDIATRIC SURGERY

1. Oesophageal atresia and Intestinal atresia
2. Anorectal malformations
3. Constipation in children: Hirschsprung's disease, Acquired megacolon,
4. Congenital diaphragmatic hernia
5. Extrophy, Epispadias complex and hypospadias
6. Spinal diastrophism and Hydrocephalus
7. Urinary tract infections in children- Vesicoureteral reflux, posterior urethral Valves, Vesico Ureteral Junction obstruction/Duplex ureter, Obstructive uropathy in Children : Hydronephrosis, Hydroureteronephrosis
8. Testicular Maldescent
9. Umbilical Hernia, Exompholos: Major/minor
10. Wilm's Tumours:Neuroblastoma, Ganglioneuromatoma, Ganglioneuroma, Endo-dermal Sinus Tumours.
11. Hamartomas in Children: Lymphangioma and Cystic hygroma, Haemangioma.

Biliary Atresia and Surgical jaundice

Suggested lecture program

Distribution of syllabus in respective semesters

This is suggested programme and can vary at institute

Total 300 hours of teaching has to be done in General Surgery including Tutorials

Details of syllabus is given separately below after distribution as per semester

4 th Semester : 16 Lectures

- 1) Introduction to Surgery
- 2) Body response to injury
- 3) Wound and wound healing
- 4) Acute infection, Boils, Carbuncle etc
- 5) Chronic infections
- 6) Tetanus and Gas gangrene
- 7) Neoplasm General Consideration
- 8) Surgical Nutrition
- 9) Pre operative and Post operative Care
- 10) Sepsis and Anti Sepsis
- 11) Burns
- 12) Shock
- 13) Fluid and Electrolyte Balance
- 14) Monitoring of surgical Patients
- 15) Hemostasis and Blood transfusion.

6th Term 3 modules

Module 1

General surgery

- a. Polytrauma
- b. Missiles and their effects & blast injuries
- c. Management of war wounds
- d. Surgical diseases skin conditions
- e. Minimally invasive surgery
- f. Principal of Radiotherapy
- g. OT Techniques
- h. AIDS in surgery
- i. Foot including Diabetic Foot
- j. Hand and hand infection

Vascular Surgery

* ARTERIAL DISORDERS.

1. Acute arterial obstruction: diagnosis and initial management; types of gangrene ; diagnosis of chronic arterial insufficiency with emphasis on Burger's disease, athrosclerosis and crush injuries.
2. Investigations in cases of arterial obstruction. Amputations;
3. Vascular injuries : basic principles of management.
4. Surgically correctable Hypertension

* VENOUS DISORDERS.

1. Varicose veins: diagnosis and management; deep venous thrombosis : diagnosis, prevention, principles of therapy; thrombophlebitis.

LYMPHATICS AND LYMPH NODES.

Diagnosis and principles of management of lymphangitis, lymphedema, acute and chronic lymphadenitis; cold abscess, lymphomas, surgical manifestations of filariasis.

□ *Module 2*

HEAD, FACE, NECK

8 lectures

1. ORAL CAVITY , JAWS, SALIVARY GLANDS.

1. Oral cavity :
 - I) Cleft lip and palate; Leukoplakia ; retention cyst; ulcers of the tongue.
 - II) Features, diagnosis and basic principles of management of carcinoma lip, buccal mucosa and tongue, prevention and staging of oral carcinomas.
2. Salivary glands :
 - I) Acute sialoadenitis, neoplasm : diagnosis and principles of treatment
 - II) Salivary fistulae

2. Epulis, cysts and tumours of jaw: maxillofacial injuries

3 NECK

1. Branchial cyst; cystic hygroma.
 2. Cervical lymphadenitis : Non specific and specific,
 3. Tuberculosis of lymphnodes, secondaries of neck.
- ##### 4. Thoracic outlet syndrome : diagnosis.

2. ENDOCRINE SURGERY

8 lectures

A. THYROID GLAND

D) Thyroid : Surgical anatomy, physiology, investigations of thyroid disorders; types, clinical features, diagnosis and principles of management of goitre, thyrotoxicosis and malignancy, thyroglossal cyst and fistula.

ii) Thyroiditis, Hypothyroidism.

B. PARATHYROID AND ADRENAL GLANDS.

Clinical features and diagnosis of hyperparathyroidism,

Tumours of the adrenal gland

Adrenal hyperfunction/ hypofunction

C. Diseases of thymus

□ Module 3

1. NEURO-SURGERY

6 lectures

1. Head injury
2. Intracranial tumours & other ICSOL
3. Congenital anomalies of brain & spinal cord
4. Surgery of peripheral nerves & diseases

2. Surgery of Breast

5 lectures

1. Surgical anatomy; nipple discharge; acute mastitis, breast abscess; mammary dysplasia; gynaecomastia; fibroadenomas.
2. Assessment and investigations of a breast lump.
3. Cancer breast : diagnosis, staging, principles of management

3. PLASTIC & RECONSTRUCTIVE SURGERY 6 lectures

1. Management of burns
2. Skin grafting including flaps
3. Injuries of the hand
4. Infections of the hand

7 th Semester

Module (1)

Cardio Thoracic surgery	8
Paediatric surgery	8

16 lectures

□ CARDIO-THORACIC SURGERY

1. Injuries of the chest
2. Tumours of the lung & bronchial tree
3. congenital heart disease
4. Acquired heart disease
5. Surgery of ischaemic heart disease
6. Diseases of pericardium
7. Cardiac arrest

Paediatric Surgery

1. Oesophageal atresia and Intestinal atresia
2. Anorectal malformations
3. Constipation in children: Hirschsprung's disease, Acquired megacolon,
4. Congenital diaphragmatic hernia
5. Extrophy, Epispadias complex and hypospadias
6. Spinal diastrophism and Hydrocephalus
7. Urinary tract infections in children- Vesicoureteral reflux, posterior urethral Valves, Vesico Ureteral Junction obstruction/Duplex ureter, Obstructive uropathy in Children : Hydronephrosis, Hydroureteronephrosis
8. Testicular Maldescent
9. Umbilical Hernia, Exompholos : Major/minor
10. Wilm's Tumours: Neuroblastoma, Ganglioneuromatoma, Ganglioneuroma, Endo-dermal Sinus Tumours.
11. Hamartomas in Children : Lymphangioma and Cystic hygroma, Haemangioma.
12. Biliary Atresia and Surgical jaundice

Module 2

□ **TROPICAL SURGERY**

1. Surgical consideration in Amoebiasis & Enteric fever
2. Filariasis, Dracontiasis & Ascariasis
3. Hydatid disease
4. Leprosy, Madura foot, Tropical ulcer Actinomycosis

□ **HEPATOBIILIARY PANCREATIC SURGERY +SPLEEN**

A.LIVER

- Clinical features, diagnosis and principles of management of: Amoebic liver abscess, Liver trauma
- Surgical anatomy; primary and secondary neoplasms of liver.

SPLEEN

- Splenomegaly: causes, investigations and indications for splenectomy: splenic injury.

GALL BLADDER AND BILE DUCTS

- Anatomy, physiology and investigations of biliary tree; clinical features, diagnosis, complications and principles of management of cholelithiasis and cholecystitis; obstructive jaundice.
- Carcinoma of gall bladder, choledochal cyst.

PANCREAS.

- Acute pancreatitis: Clinical features, diagnosis, complications and management.
- Chronic pancreatitis, pancreatic tumours.

PORTAL HYPERTENSION

- Clinical presentation, Investigation and management

Module 3

Upper gastrointestinal Tract and Peritoneum

- PERITONEUM, OMENTUM, MESENTERY AND RETROPERITONEAL SPACE.
 1. Peritonitis: Causes, recognition and principles of management;
 2. Intraoperative abscess
- OESOPHAGUS.
 1. Dysphagia: Causes, investigations and principles of management.
 2. Cancer oesophagus: Principles of management.
- STOMACH AND DUODENUM.
 1. Anatomy; Physiology, Congenital hypertrophic pyloric stenosis; aetiopathogenesis, diagnosis and management of peptic ulcer, cancer stomach; upper gastrointestinal haemorrhage with special reference to bleeding varices and duodenal ulcer.
- SMALL INTESTINES
 1. Diagnosis and principles of treatment of, tuberculosis of intestine.

8th Semester

Module 1

Lower gastrointestinal Tract and abdominal wall

- Acute Abdomen
- INTESTINAL OBSTRUCTION.

Types, aetiology, diagnosis and principles of management; paralytic ileus
Aetiology, Clinical Features. Investigations and management
- Abdominal Wall
 1. Features, diagnosis, complications and principles of management of:
Umbilical, epigastric hernia., incisional; hernia ventral hernia
- LARGE INTESTINES
Ulcerative colitis, premalignant conditions of large bowel carcinoma colon;
lower gastrointestinal haemorrhage;, parasitic infestations.
- APPENDIX
Diagnosis and management of acute appendicitis,
Appendicular lump and abscess.
- RECTUM.
Carcinoma rectum: diagnosis, clinical features and principles of
management; indications and
Management of colostomy.
Management of carcinoma rectum;
Prolapse of rectum.
- ANAL CANAL
Surgical anatomy. Clinical features and management of: fissure, Fistula in
ano, perianal and ischioanal abscess and haemorrhoids; Diagnosis and
referral of anorectal anomalies.
Anal carcinoma.
- Umbilicus and Abdominal wall
Umbilical fistulae, Burst abdomen, ventral hernia.

Module 2

Upper genito-urinary Tract and Organ Transplantation

- GENITO- URINARY SYSTEM.
- Symptoms and investigations of the urinary tract.
- KIDNEY AND URETER
 - Anatomy and Embryology of Kidney and ureter
 - Congenital anomalies of kidney & Ureter
 - Investigations of renal mass;
 - Diagnosis and principles of management of urolithiasis,
 - Hydronephrosis, pyonephrosis, perinephric abscess,
 - Renal tumours.
 - Renal tuberculosis.

Module 3

Upper genito-urinary Tract and Hernia

- URINARY BLADDER.
 - Causes, diagnosis and principles of management of haematuria, Anuria and Acute retention of urine.
- PROSTATE AND SEMINAL VESICLES.
 - Benign prostatic hyperplasia: diagnosis and management.
 - Carcinoma prostate.
- URETHRA AND PENIS
 - Diagnosis and principles of management of Phimosis , paraphimosis and. Principles of management of urethral injuries.
 - Urethral strictures.
 - Carcinoma penis
- TESTES AND SCROTUM.
 - Diagnosis and principles of treatment of undescended testis; torsion testis; Hydrocoele, hematocele, pyocele, Varicocele, epididymo-orchitis and Testicular tumours
- HERNIAS.
 - Clinical features, diagnosis, complications and principles of management of: Umbilical, Inguinal, epigastric and femoral hernia.

[Introduction of “ Brain Death and Organ Donation” topic in subjects of Physiology . Preventive & Social Medicine, Psychiatry, Medicine & Surgery](#)

RECOMMENDED BOOKS FOR GENERAL SURGERY

TEXT BOOKS:

- 1 . Charles V. Mann, R.C.G. Russel, Norman S., Williams,
Bailey and Love’s Short Practice of Surgery, 23rd Edition, 2000 Chapman and Hall.
2. K.Das: Clinical Methods in Surgery, 8th Edition, 1968, Suhas Kumar Dhar, Calcutta.
3. JSP Lumley : Hamilton Bailey’s Physical Signs 18th Edn Butterworth/Heinemann.

- 1997,
4. Somen Das ; A Practical Guide to Operative Surgery, 4th Edition, 1999, s. Das,
Calcutta

REFERENCE TEXT BOOKS

1. .James Kyle : Pye's Surgical handicraft, Indian edition, k.m. Varghese Company David C.
2. Sabiston ; Text Book of surgery : The Biological basis of Modern Surgical Practice, 15th Edition, 1971, W.B. Saunders.
3. Seymour I. Schwartz, G. Tom Shines, Frank C. Spencer, Wendy Cowles Husser: Principles of Surgery, Vol. 1 & 2, 7th Edition, 1999, Mc Graw Hill
4. R.F. Rintoul : Farquharson's Text Book of Operative Surgery, 8th Edition, 1995, Churchill Livingstone.
5. Sir Charles Illingworth, Bruce m. Dick: A Text Book of Surgical Pathology, 12th Edition, 2979, Churchill Livingstone.
6. R.W.H. McMinn : Last's Anatomy: Regional and Applied; 10th Edition, 1999, Churchill Livingstone

Goals and objectives of Allied Subjects

(B) ORTHOPAEDICS

(A) KNOWLEDGE

The student shall be able to:

1. Explain the principles of recognition of bone injuries and dislocation.
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 etiogenesis, manifestations, and diagnosis of neoplasm affecting bones.

(B) 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, Colles's forearm, phalanges etc.
2. Use techniques of splinting, plaster, immobilization etc.
3. Manage common bone infections, learn indications for sequestration, amputations and corrective measures for bone deformities;
4. Advise aspects of rehabilitation for Polio, Cerebral Palsy and Amputation.

(C) APPLICATION

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

(D) INTEGRATION

LEARNING METHODS

Lectures, Tutorials bedside clinics and lecture cum demonstrations

Distribution of Teaching hours -

- Lectures - 50 hours
- Tutorials and revision - 50
- **Clinical postings in Orthopaedics**
Total clinical Posting of 10 weeks of 180 hours
5th Semester - 4 weeks
6th Semester - 4 weeks
9th Semester - 2 weeks

Course contents and suggested lecture program of Orthopaedics (Total 100 hours)

This is suggested programme and can vary at institute

Total 100 hours of teaching has to be done in Orthopaedics including Tutorials

Details of syllabus is given separately below after distribution as per semester

- **6th Semester** **Lectures 1 to 16**
- 8 th Semester Lectures 1 17 to 32
- 8th Semester Lectures 2 33 to 48

Topic : General Orthopaedics

Lectures

1. Introduction and scope of Orthopaedics Traumatology and Orthopaedic Diseases. Idea about Scheme of Examination.
 2. Definition and Classification of Fracture and Dislocation Signs, symptoms and diagnosis of sprain, contusion fracture and dislocation.
 3. First aid measures in Poly-trauma patient, spinal cord Injury patients and knowledge about various splints.
 4. & 5 Principles of Management of sprain, Fracture and Dislocation with emphasis on various aspects of closed reduction, immobilization including internal fixation and rehabilitation.
 - 6,7,8 Complications of fracture and its management with specific reference to malunion Delayed union, Non union, Myositis Ossificans, Sudeck's dystrophy, Volkman's ischaemia, Avascular Necrosis, Fat embolism, secondary Osteoarthritis and injury to Muscles, Tendon, nerve and Blood vessels.
-
1. Plaster technique, plaster complications and plaster disease.
 2. Fracture Healing in cortical and cancellous bones and factors affecting fracture healing.

Topic : Orthopaedic Traumatology

3. Fracture clavicle, scapula, neck humerus and shaft humours.
4. Supracondylar fracture humerus with complications.
5. Fracture Forearm bones, Monteggia and Galeassi fracture dislocations, fracture olecranon head and neck radius.
6. Fracture scaphoid, Metacarpals and phalanges.
7. Colles fracture and Complications.
8. Dislocation (Acute and Recurrent) of shoulder and elbow.
9. Fracture of Vertebrae with complications.
10. Fracture of Pelvis with complications.
11. Fracture Neck femur and trochanteric fracture.
12. Fracture shaft femur and fractures around knee.
13. Meniscus and ligaments injury at knee.
14. Fracture Tibia-fibula, fracture in tarsals, Metatarsals and phalanges.
15. Fracture dislocation around ankle,
16. Dislocation of Hip, knee, ankle, tarsals and small bones in foot.

Topic : Orthopaedic Diseases

25,26 Congenital skeletal anomalies with emphasis on congenital

Talipes Equino varus (CTEV). :-

27. Congenital dislocation of hip (CDH), Osteogenesis Imperfecta, spina
28. Bifida and Torticollis.
29. Osteochondritis – various types.
30. Post Polio Residual Palsy with stress on preventive and rehabilitation aspect.

30. Acute Osteomyelitis.
31. Chronic Osteomyelitis.
32. Pyogenic arthritis of Hip, knee.
- 33,& 34. Osteo-articular Tuberculosis with special reference to
Tuberculous of Hip, knee and elbow.:-
35. Tuberculosis spine and paraplegia.
36. Fungal Infections and leprosy in Orthopaedics.
37. Cerebral palsy, Diagnosis and rehabilitation.
38. Rheumatoid arthritis.
39. Degenerative arthritis.
40. Nerve injuries and principles of management.
41. Amputation and Disarticulation – Indications methods and complications.
42. Metabolic bone disease : Rickets, Osteomalacia and Osteoporosis.
- 43,& 44 Tumours of bones and its classification. Benign :- Osteochondroma,
Giant cell tumour Unicameral Bone cyst, Aneurysmal cyst.
- 45,46 Malignant- Osteogenic sarcoma, Ewing's tumour,
Fibrosarcoma, Chondrosarcoma, Multiple Myeloma, Secondaries from
Primary Carcinoma (Metastatic tumours)
47. Back ache,
48. Frozen shoulder, Tennis Elbow, Dequervain's disease, Dupuytren's
Contracture Osgood – Schlatter;s disease, planter fasciitis.

Practical and Lecture cum Demonstration Classes, in MBBS in Orthopaedics

Once a week class for two hours in 8th/9th semester.

Topics of Demonstrations :-

1. Plaster technique and splint applications.
 2. Traction application, Orthopaedic appliances demonstration, Demonstration of
Physiotherapy equipments.
 3. Specimens of sequestrum and Tumours, Madura foot etc.
 4. Common instruments and Implants.
- 5 to 7. Common X-rays of traumatology, bony infection, joint infection and tuberculosis, Malunited Colle's fracture, forearm or Supracondylar Humerus fracture. 8 to 10. Chronic osteomyelitis case, knee effusion case, Non union case, Bony tumour case.

Seminar Topics :-

1. Osteomyelitis.
2. Tuberculosis.
3. Bone tumours
4. First aid and Acute trauma Life saving (ATLS) measures.

Tutorial Topics :-

15. Supracondylar fracture Humerus.
16. Colle's fracture.
17. Fracture neck femur.
18. Spine examination, Pott's spine and paraplegia
19. CTEV.
20. Shoulder, Elbow and wrist examination.
21. Hip examination.
22. Knee, ankle foot examination.
23. Nerve examination and nerve injuries.

Internal assessment:

- Two Term ending examination at the end of Posting of 50 marks each
Total 100 out of 450 marks under general surgery.

C) ANAESTHESIOLOGY

DEPARTMENTAL OBJECTIVES:

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

1. Perform cardio-pulmonary resuscitation with the available resources and transfer the patients to a bigger hospital for advanced life support.
2. Set up intravenous infusion.
3. Clear and maintain airway in an unconscious patient.
4. Administer oxygen correctly.
5. Perform simple nerve block.
6. Exhibit awareness of the principles of administration of general and local anaesthesia.

SKILLS:

1. Start I V line and infusion in adults, children and neonates.
2. Do venous cutdown.
3. Insert, manage a CVP line.
4. Conduct CPR (Cardiopulmonary resuscitation) and first aid in newborns, children and adults including endotracheal intubation.
5. Perform nerve blocks like infiltration, digital and field blocks.
6. Do lumbar puncture.
7. Administer O₂ by mask, catheter, and O₂ tent and be able to handle O₂ cylinder.

LEARNING METHODS

Lectures, Tutorials bedside clinics and lecture cum demonstrations

Distribution of Teaching hours -

- **Lectures - 20 hours**
- **Tutorials and revision -**
- **Bedside clinics - 36 hours, one clinical postings
2 weeks in Anaesthesiology**

COURSE CONTENTS:

1. Cardiopulmonary resuscitation (CPR) - basic and advanced, including use of simple ventilators.
2. Anatomy of upper airway, sites of respiratory obstruction and management of airway in an unconscious patient.
3. Various methods of oxygen therapy and its indications.
4. The pharmacology of local anaesthetics, their use and how to perform simple nerve blocks like - Infiltration anaesthesia, digital block, ankle block, pudendal and paracervical blocks.
5. Management of complications of regional anaesthesia. The principles of administration of general anaesthesia.

D) Radiology :Diagnosis & Imaging

Goals :

- Realisation of the basic need of various radio-diagnostic tools.
- Radio-diagnostic Techniques to be adopted indifferent clinical situations in diagnosis of ailments.

Objectives :

- **Knowledge: -**

The student shall be able to

1. Understand basics of X-ray / USG production, its utility and hazards
2. Appreciate and diagnose radiological changes in diseases of Chest, Abdomen, Skeletal system, Gastro-intestinal system, Genito-urinary System & CNS
3. Learn about various Imaging techniques like nuclear medicine, computerised tomography (CT), Ultrasound, magnetic resonance imaging (MRI), conventional & Digital subtraction Angiography (DSA).

Skills: -

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

1. Interpret various radiological findings and their consequences
2. Use basic protective techniques during various Imaging procedures
3. Advise appropriate Diagnostic procedures to arrive at an appropriate diagnosis.

LEARNING METHODS

Lectures, Tutorials bedside clinics and lecture cum demonstrations

Distribution of Teaching hours -

- Lectures - 20 hours
- Tutorials and revision -
- Bedside clinics - 36 hours, one clinical postings
2 weeks in Radiology

I: BONES & JOINTS :

Congenital dislocation of hip, congenital syphilis, Achondroplasia, Osteogenesis Imperfecta.

Infection : Osteomyelitis, Tuberculosis of Bone & Spine.

Lesions of Joints : Septic / Tuberculous Arthritis, Rheumatoid, Arthritis, Ankylosing Spondylitis, Osteo-Arthritis, Gout.

Bone Tumours: Ewing's, Osteogenic Sarcoma, Giant Cell Tumour Neurofibroma.

Lymphoreticular system & Haemopoietic Disorders : Thalassaemia, Sickle Cell disease, Lymphomas, Multiple myeloma, plasmacytoma, Haemophilia.

Metabolic & Endocrine Disorders of Bone: Rickets & Osteomalacia, Scurvy, Osteoporosis, Acromegaly, and Hyperparathyroidism.

Skeletal trauma: General Principles.

II: Chest:

Methods of examination, Normal X-ray Chest, Bronchopulmonary Segments.

Interpretation of Abnormal Chest X-ray : Silhouette sign, Air Bronchogram,

Interstitial Shadows, Alveolar Shadows, Honeycomb Lung, Cavitations, Calcification, Hilar Shadow, Mediastinum, Pleura.

Bronchography.

Bronchogenic Carcinoma.

Miliary Shadows, Pulmonary Tuberculosis, Solitary Pulmonary Nodule, Bronchiectasis, Primary complex.

III : CARDIO-VASCULAR SYSTEM

Normal Heart : Methods of examination.

Cardiomegaly, Pericardial Effusion.

Acquired Heart Diseases: Valvular Heart Disease, Ischaemic Heart Disease.

Congenital Heart Disease.

Aortic Aneurysms, Co-arcuation of Aorta.

IV : GASTRO-INTESTINAL TRACT & ABDOMEN :

Barium Examination of GI Tract.

Acute Abdomen.

Oesophagus: Carcinoma, Strictures, Varices, Achalasia, and Hiatus Hernia.

Stomach & Duodenum : Ulcer disease, Malignancy.

Intestine: Intestinal Obstruction, Volvulus, Ulcerative Colitis,

Intussusceptions, Malignancy, Hirschsprung's Disease, Koch's Abdomen Diverticular Disease, Polyps.

V : HEPATO-BILARY SYSTEM. PANCREAS :

Liver : Abscess, Hepatoma, Cirrhosis, Portal Hypertension, and Splanchnicography.

Gall-Bladder : Calculus Disease, Malignancy, PTC, ERCP.

Pancreas : Pancreatitis, Malignancy.

VI : URORADIOLOGY:

Method of Examination : Intravenous Urography (IVP)

Calculus Disease, PUJ Obstruction, PU Valves, Renal Artery Stenosis,

Wilm's Tumour, Renal Cell Carcinoma, GU Koch's.

VII : OBSTETRICS & GYNAECOLOGY :

Hysterosalpingography (HSG), Intra-Uterine Foetal Death, Fibroid, Ovarian Tumours, Ultrasonography & Transvaginal US.

VIII: CENTRAL NERVOUS SYSTEM :

Raised Intracranial Tension, Intracranial Calcification, Head Injury, Cerebrovascular Accident, Ring Enhancing Lesions in Brain, Spinal Neoplasms, Myelography.

IX: MISCELLANEOUS:

Radiation Hazards, Radiation Protection.

Imaging Modalities :

USG, CT, MRI : Principles, Applications, Advantages, Limitations, Developments.

Angiography : Seldinger Technique, Conventional Angiogram, DSA, Carotid, Coronary, Renal Angiograms, Aortogram.

Contrast Media : Barium Sulphate, Water Soluble & Oily Contrast.

Interventional Radiology : Developments, Angioplasty, Embolisation.

Mammography: Principles & Applications.

Internal assessment:

- Term ending examination at the end of Posting of 50 marks out of Total 450 marks under general surgery.

Dentistry for MBBS students under Surgery

GOALS

- Comprehensive understanding of Dentistry, Orofacial structures, the Dentition, Maxillary and Mandibular jaws and the Diagnosis, Treatment, Prevention, Restoration and Rehabilitation of the common dental problems

OBJECTIVES

A. KNOWLEDGE

- Various Diseases, Syndromes, Lesions, Disorders manifesting and affecting the Oral cavity, the Jaws and the TM joint.
- Effects of Dental Caries, Gingival and Periodontal diseases and Malocclusion.

B. SKILLS

- Examination of the Oral cavity and the TM Joint
- Local Anaesthesia Administration. Dental block
- Exodontia.
- Emergency management of Maxillofacial Trauma.
- Plaque control and Oral health care regimen.

Learning methods

▮ Total teaching hours: 10

▮ Theory lectures: 10 in 7th Semester

Clinical Postings; 2weeks each in 7th semester

Internal assessment:

- Term ending examination at the end of Posting of 50 marks out of Total 450 marks under general surgery.

COURSE

III MBBS, 7Th SEMESTER LECTURES: 10 Hours.

1. Scope of Dentistry
Introduction of various branches of Dentistry.
Basic Understanding of Dental Epidemiology
Effects of deleterious Habits on Dentition and Orofacial structures.
2. Development and Growth of Jaws & Orofacial structures.
Development & Eruption of teeth, Deciduous & Permanent.
Occlusion.
Preventive Care in Paediatric patients.
3. Dental Caries
Gingival & Periodontal Diseases.
Developmental Anomalies.
Cysts & Tumours of Oral cavity.
Neoplasms of Oral cavity.
Oral Microbiology.
4. Orofacial Pain & its Management
5. Maxillofacial Trauma and Management of patient.
6. Oral Medicine
Systemic diseases, the relevance of medications prescribed & their Oral Manifestations.
Infections of Orofacial structures esp. periodontal diseases & their Manifestations in Systemic conditions.
Relationship between Oral and systemic health.
Women's Oral health care in Reproductive phase.
7. Interdisciplinary team approach in the management of a patient in Dentistry involving Paediatrics, Plastic surgery, ENT Surgery, Neurosurgery, Ophthalmic surgery, Gen. Surgery, Medicine, Orthopaedics, Dermatology, Endocrinology and OB-GYN.

8. Rehabilitation of lost Oral structures.
Implantology.
9. Dentofacial Deformities and Surgical corrections.
10. Biomaterials used in Dentistry.
Emerging technologies in Contemporary Dentistry.
Molecular Dentistry.
Integration with anatomy, surgery,
pathology radiology and Forensic Medicine be done.

CLINICAL POSTING in DENTISTRY - 2 WEEKS

1. L.A. Administration, Techniques for different Blocks.
2. Exodontia
3. Preliminary Management of Maxillofacial Trauma
4. Pathological conditions of Oral cavity.
5. Oral and Maxillofacial Radiography & Imaging
6. Maxillo Facial Prosthodontics

Criteria of passing in various surgical subjects at III MBBS Examination

SN	Subject	Theory Paper / Oral/ Practical / Internal Assessment		Maximum Marks in each of the subject	Minimum marks required to pass in each part of any subject		Minimum marks required to pass in each subject out of
01)	Otorhinolaryngology	a) Theory	Paper - I	40	20	25	50 100
		b) Oral		10			
		c) Practical		30	15		
		d) Internal Assessment	Theory	10	10		
	Practical	10					
02)	General Surgery	a) Theory	Paper I	60	60	70	150 300
			Paper II	60			
		b) Oral		20			
		c) Practical		100	50		
		d) Internal Assessment	Theory	30	30		
	Practical	30					
03)	Obstetrics and Gynaecology	a) Theory	Paper I	40		50	100 200
		b) Oral		20			
		c) Practical		60	30		
		d) Internal Assessment	Theory	20	40		
	Practical	20					

04)	Ophthalmology	a) Theory	Paper - I	40	20	25	50 100
		b) Oral		10			
		c) Practical		30		15	
		d) Internal Assessment	Theory	10		10	
Practical	10						

It is compulsory to obtain 50% marks in theory.

It is mandatory to obtain 50% marks in theory+ viva/oral.

FINAL MBBS EXAMINATION IN SURGERY

Evaluation : Methods – Internal assessment, Theory, Practical and Viva

Internal Assessment (Formative Assessment)

Theory – 30 Practical - 30 Total 60

- Marks of Internal Assessment should be sent to University before the commencement of Theory examination.
- Passing in internal assessment is essential for passing ,as Internal assessment is separate head of passing. in examination.
- It will also be considered for grace marks as per existing rules
- Combined theory and practical of internal assessment will be considered for passing in internal assessment.
- Student will be allowed to appear for both theory and practical exam independent of marks obtained in internal assessment but he if fails in that head even after including the grace marks he will be declared “Fail in that Subject”

Internal assessment in Theory -

Examinations during semesters:

This will be carried out by conducting two theory examinations during 6th and 8th semesters (100 marks each).

Total of 200 marks to be converted into 15 marks.(A/15)

Prelim examination :

This shall be carried out during 9th semester. Two theory papers of 60 marks each as per university examination Pattern

Total of 120 marks to be converted into 15 marks. (B/15)

Total marks of Internal assessmentfor Theory will be addition of A and B.

Internal assessment in Practical

Examinations at end of Clinical postings:

There will be practical examination at the end of each clinical posting of General Surgery. (3rd, 5th, 7th and 8th semester) Each examination will be of 50 marks. Total of 4 examinations - 200 marks.

These marks and marks from Orthopaedics 100, Radiology 50, Dentistry 50 and Casualty 50 will be added. - Total 450 marks will be converted to 15 marks.(C/15)

Prelim examination:

This will be conducted for 120 marks as per university pattern and marks will be converted to 15 (D/15).

Total marks of Internal assessment for Practical will be addition of C and D.

Record BOOK

Case record will have to be entered in a record book.

A combined record book of General surgery, Orthopaedics, Causality, Anaesthesiology, Dentistry and radiology will have to be maintained

Minimum of five histories have to be recorded in each posting

The certificate of satisfactory completion of all clinical posting will be required from Head Of the department of Surgery. This will be base on multiple similar certificates from all postings in all subjects

In addition it will have details of all marks in posting ending exam on second page and calculation of internal assessment

Record book will not carry any marks but it will be prerequisite for Appearing for examination.

Pattern of theory examination including distribution of marks, Questions and Time

Theory

1. There shall be two theory papers - Paper I and II, carrying 60 marks each.
2. Each paper will have three sections, A, B and C. Each paper will be of 3 hours duration.
3. Section A will be MCQ in each paper. Section B and C will have to be written in separate answer sheets. Both will have Long Answer Question (LAQ) and Short Answer Questions (SAQ)
4. The topic covered in each section shall be as follows :-

A. Paper I

- Section A – MCQ : will cover whole syllabus of Paper I
- Section B- General principles of Surgery, Oncology, head, face, neck, Breast, Endocrine Surgery and Trauma
- Section C - Orthopaedic surgery.

B. Paper II

- Section A – MCQ : will cover whole syllabus of Paper II
- Section B- Gastrointestinal Tract including colon rectum and anal canal
 - Liver, pancreas and biliary tract, Spleen. Paediatric Surgery
- Section C - Urology, Cardio thoracic surgery and Plastic surgery
Dental surgery, Radiology and Radiotherapy, Anaesthesiology.

Paper I - 3 hrs - 60 marks

Section . A - MCQ - 30 x ½ marks each – 15 marks

- 30 minutes
- Separate paper
- Single based response
- MCQ will cover whole syllabus of Paper I

Section . B - General Surgery 25 Marks

- 2 LAQS – 8 marks x 2 = 16 marks
- 3/5 SAQS – 3 marks = 9 marks

Topics - General principles of Surgery, Oncology, head, face, neck, Breast, Endocrine Surgery and Trauma..

NB : Shall contain one question on basic Sciences and allied subjects

Sec. C –Orthopaedics Surgery : 20 marks

- Topic; All topics in Orthopaedics
- Orthopaedics examiner will set this part of paper and to be evaluated by Orthopaedics examiner.
 - 1 LAQS (Long answer questions) – 8 marks
 - 4/6 SAQS(Short answer questions) x 3 marks each = 12 marks

Time Sec. B & C – Two and half hours.

Section B and C to be written in separate answer sheets.

*MCQ section A will be given to candidates at the beginning of the examination. After 30 minutes Section A will be collected.
Section B and C paper will then be handed over to candidates.*

PAPER II - Time 3 hrs - 60 marks

Section . A - MCQ - 30 x ½ marks – 15 marks

- 30 minutes
- Separate paper
- Single based response
- MCQ will cover whole syllabus of Paper II

Section . B – **Marks: 25 marks**

Topics :Gastrointestinal Tract including colon rectum and anal canal
Liver, pancreas and Biliary tract, Spleen, Paediatric surgery.

- 2 LAQS – 8 marks x 2 = 16 marks
- One question clinical Problem solving.
- 3/5 SAQS – 3 marks = 9 marks

NB : Shall contain one question on basic Sciences and allied subjects

Section . C – **Marks: 20 marks**

Topics: Urology, Cardio thoracic surgery and plastic surgery
Dental surgery, Radiology and Radiotherapy, Anaesthesiology.

- 1 LAQS – 8 marks
- 4/6 SAQS x 3 marks each = 12 marks

Time Sec. B & C – Two and half hours.

Section B and C to be written in separate answer sheets.

MCQ section A will be given to candidates at the beginning of the examination. After 30 minutes Section A will be collected. Section B and C paper will then be handed over to candidates.

PRACTICAL EXAMINATION - 120 marks

Clinical examination

- Clinical cases
 - Long case I – Gen, Surgery. – 50 marks
 - Short case I - Orthopaedics – 25 marks
 - Short case II – Gen. Surgery -- 25 marks

Time for Long cases- 30 minutes for taking history and clinical examination.

10 minutes for viva

Time for 2 short cases - 20 minutes for taking history and clinical examination.

10 minutes for viva.

Viva examination - Duration and topic distribution (Total 20 marks)

- Tables – Viva will be directed towards **interpretation of investigation**

At two tables, each for ten marks. Time- 10 minutes at each table

- Instruments + Operations, – 10 marks
- Surgical Pathology, Imaging sciences and Orthopaedics – 10 marks

Marks of VIVA will be added to Theory marks
It is compulsory to obtain 50% marks in theory.
It is mandatory to obtain 50% marks in theory+viva/oral.

OPHTHALMOLOGY

These guidelines are based on MCI recommendations.

Teaching has to be done keeping in mind the goals and objectives to be achieved by medical student

(i) GOAL

The broad goal of the teaching of students in ophthalmology is to provide such knowledge and skills to the student that shall enable him/her to practice as a clinical and as a primary eye care physician and also to function effectively as a community health leader to assist in the implementation of National Programme for the prevention of blindness and rehabilitation of the visually impaired.

(II) OBJECTIVES

(a) KNOWLEDGE

At the end of the course, student shall have the knowledge of

1. Common problems affecting the eye,
2. Principles of management of major ophthalmic emergencies,
3. main systemic diseases affecting the eye;
4. Effects of local and systemic diseases on patient's vision and the necessary action required to minimize the sequelae of such diseases;
5. Adverse drug reactions with special reference to ophthalmic manifestations;
- 6, Magnitude of blindness in India and its main causes;
7. National programme for control of blindness and its implementation at various levels.
8. Eye care education for prevention of eye problems
9. Role of primary health center in organization of eye camps;
10. organization of primary health care and the functioning of the ophthalmic assistant;
11. Integration of the national programme for control of blindness with the other national health Programmes.
12. Eye bank organization

SKILLS

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

1. Elicit a history pertinent to general health and ocular status;
2. Assist in diagnostic procedures such as visual acuity testing, examination of eye, Schiottz tonometry, Staining of Corneal pathology, confrontation perimetry, Subjective refraction including correction of presbyopia and aphakia, direct ophthalmoscopy and conjunctival smear examination and Cover test;
3. Diagnose and treat common problems affecting the eye;
4. Interpret ophthalmic signs in relation to common systemic disorders,
5. Assist/observe therapeutic procedures such as subconjunctival injection, corneal conjunctival foreign body removal, carbolic cautery for corneal ulcers, Nasolacrimal duct syringing and tarsorrhaphy;
6. Provide first aid in major ophthalmic emergencies;
7. Assist to organize community surveys for visual check up;
8. Assist to organize primary eye care service through primary health centers.
9. Use effective means of communication with the public and individual to motivate for surgery in cataract and for eye donation.
10. Establish rapport with his seniors, colleagues and paramedical workers, so as to effectively function as a member of the eye care team.

(C) INTEGRATION

The undergraduate training in Ophthalmology will provide an integrated approach towards other disciplines especially Neuro-sciences, ENT, General Surgery and Medicine.

LEARNING METHODS

- | Total teaching hours: 100
- | Theory lectures: 70(4th,6th,7th term.)
- | Tutorials :30(7th term)
- | Clinical Postings Two clinical postings of 4weeks
First in 4th semester and second in 6th semester and 3rd posting of 2 weeks in 7th term
Bedside clinics 10 weeks of three hours per day 180 hours

SYLLABUS OF III MBBS IN OPHTHALMOLOGY

INTRODUCTION ANATOMY & PHYSIOLOGY OF THE EYE COMMON DISEASE OF EYE.

A) Conjunctiva.

Symptomatic conditions: - Hyperemia, Sub conjunctival Haemorrhage.

Diseases: - Classification of Conjunctivitis

- :- Mucopurulent Conjunctivitis
- :- Membranous Conjunctivitis Spring Catarrh.
- :- Degenerations :- Pinguecula and Pterigium
- B) Cornea:
 - Corneal Ulcers: Bacterial, Fungal, Viral, Hypopyon.
 - :- Interstitial Keratitis.
 - :- Keratoconus.
 - :- Pannus
 - :- Corneal Opacities.
 - :- Keratoplasty.
- C) Sclera :
 - :- Episcleritis.
 - :- Scleritis.
 - :- Staphyloma.
- D) Uvea
 - :- Classification of Uveitis
 - :- Gen. Etiology, Investigation and Principles Management of Uveitis.
 - :- Acute & Chronic Iridocyclitis.
 - :- Panophthalmitis.
 - :- End Ophthalmitis.
 - :- Choroiditis.
- E) Lens :
 - I) Cataract – Classification & surgical management of cataract.
 - :- Including Preoperative Investigation.
 - :- Anaesthesia.
 - :- Aphakia.
 - :- IOL Implant
- F) Glaucoma :
 - :- Aqueous Humor Dynamics.
 - :- Tonometry.
 - :- Factors controlling Normal I.O.P.
 - :- Provocative Tests.
 - :- Classifications of Glaucoma.
 - :- Congenital Glaucoma.
 - :- Angle closure Glaucoma.
 - :- Open Angle Glaucoma.
 - :- Secondary Glaucoma
- G) Vitreous :
 - :- Vitreous. Opacities.
 - :- Vitreous. Haemorrhage.
- H) Intraocular Tumours :
 - :- Retinoblastoma.
 - :- Malignant Melanoma
- I) Retina :
 - :- Retinopathies : Diabetic, Hypertensive Toxaemia of Pregnancy.
 - :- Retinal Detachment.
 - :- Retinitis Pigmentosa, Retinoblastoma
- J) Optic nerve :
 - :- Optic Neuritis.
 - :- Papilloedema.
 - :- Optic Atrophy.

- K) Optics :
- :- Principles : V.A. testing Retinoscopy, Ophthalmoscopy.
 - :- Ref. Errors.
 - :- Refractive Keratoplasty.
 - :- Contact lens, Spectacles
- L) Orbit :
- :- Proptosis – Aetiology, Clinical Evaluation, Investigations & Principles of Management
 - :- Endocrinal Exophthalmos.
 - :- Orbital Haemorrhage.
- M) Lids :
- :- Inflammations of Glands.
 - :- Blepharitis.
 - :- Trichiasis, Entropion.
 - :- Ectropion.
 - :- Symblepharon.
 - :- Ptosis.
- N) Lacrimal System :
- :- Wet Eye.
 - :- Dry Eye
 - :- Naso Lacrimal Duct Obstruction
 - :- Dacryocystitis
- O) Ocular Mobility :
- :- Extrinsic Muscles.
 - :- Movements of Eye Ball.
 - :- Squint : Gen. Aetiology, Diagnosis and principles of Management.
 - :- Paralytic and Non Paralytic Squint.
 - :- Heterophoria.
 - :- Diplopia.
- P) Miscellaneous :
- :- Colour Blindness.
 - :- Lasers in Ophthalmology – Principles.
- Q) Ocular Trauma : - Blunt Trauma.
- :- Perforating Trauma
 - :- Chemical Burns
 - :- Sympathetic Ophthalmitis

- 2) Principles of Management of Major Ophthalmic Emergencies :
 - :- Acute Congestive Glaucoma.
 - :- C. Ulcer.
 - :- Intraocular Trauma.
 - :- Chemical Burns.
 - :- Sudden Loss of vision
 - :- Acute Iridocyclitis.
 - :- Secondary Glaucomas
- 3) Main Systemic Diseases Affecting the Eye :
 - :- Tuberculosis.
 - :- Syphilis.
 - :- Leprosy.
 - :- Aids.
 - :- Diabetes.
 - :- Hypertension
- 4) Drugs :
 - :- Antibiotics
 - :- Steroids.
 - :- Glaucoma Drugs.
 - :- Mydriatics.
 - :- Visco elastics.
 - :- Fluoresceine.
- 5) Community Ophthalmology :
 - :- Blindness : Definition Causes & Magnitude
 - N.P.C.B. – Integration of N.P.C.B. with other health
 - :- Preventable Blindness.
 - :- Eye care.
 - :- Role of PHCs in Eye Camps.
 - :- Eye Banking.
- 6) Nutritional :- Vit. A. Deficiency.

Clinical Ophthalmology cases To Be Covered

MBBS

History taking & Eye examination

Assessment of visual function.

Conjunctiva

- :- Pterigium.
- :- Pinguecula
- :- Conjunctivitis.
- :- Sub Conj. Haemorrhage.

Cornea

- :- Corneal Opacity .
- :- Corneal Ulcer.
- :- Corneal Abscess.
- :- Corneal Transplant

- Sclera :- Scleritis, Epi Scleritis.
:- Staphyloma.
- Uvea :- Iridocyclitis.
- Lens :- Cataract.
:- Aphakia
:- IOLs
:- Complications

Glaucoma – Types, Signs, Symptoms & Management

Squint

- Lids :- Entropion
:- Ectropion
:- Ptosis.

OPHTHALMOLOGY - MBBS

TUTORIALS	TOPICS	(Total 30 Hours)
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SURGICAL TECHNIQUES

- Cataract :- ECCE
:- ICCE
:- IOL Implantation
:- Phaco-emulsification.
- Pterigium
 - Chalazion
 - Glaucoma
 - Foreign Body Removal
 - Enucleation
 - Keratoplasty
 - Basic of squint, L 10

Instruments

- OPD
- Operative
- Basic Examination and Diagnostic instruments
Tonometer, Sac Syringing, Slip Lamp.

FINAL MBBS EXAMINATION IN OPHTHALMOLOGY

Evaluation

Internal assessment: 20 (Theory 10 +Practical 10)

Plan of Internal assessment in Ophthalmology

- Marks of Internal Assessment should be sent to University before the commencement of Theory examination.
- Passing in internal assessment is essential for passing, as Internal assessment is separate head of passing. in examination.
- It will also be considered for grace marks as per existing rules
- Combined theory and practical of internal assessment will be considered for passing in internal assessment.
- Student will be allowed to appear for both theory and practical exam independent of marks obtained in internal assessment but he if fails in that head even after including the grace marks he will be declared “Fail in that Subject”

Internal assessment in Theory -

1. Examinations during semesters : This will be carried out by conducting two theory examinations during 4th and 6th semesters (50 marks each).

Total of 100 marks to be converted into 5 marks.(A/5)

2. Prelim examination : This shall be carried out during 9th semester.

One theory papers of 40 marks as per university examination.

Total of 40 marks to be converted into 5 marks. (B/5)

Total marks of Internal assessment- Theory will be addition of A and B.

Internal assessment in Practical

Examinations at end of Clinical postings:

1. There will be practical examination at the end of each clinical posting of Ophthalmology.,4th and 6th semester. Each examination will be of 50 marks. Total of 2 examinations – 100 marks , will be converted to 5 marks.(C/5)

2. Prelim examination:

This will be conducted for 40 marks as per university pattern and marks will be converted to 5 (D/5).

Total marks of Internal of-of Practical will be addition of C and D.

Evaluation Methods - Theory, Practical and Viva

Pattern of theory examination including distribution of marks, questions and time

Pattern of theory examination including distribution of marks

1. There shall be one theory papers , carrying 40 marks
2. The paper will have two sections, A and B
3. The paper will be of 2.5 hours duration.
4. Section A will be MCQ in each paper. Section B will have to be written in separate answer sheets.

THEORY : 40 marks Duration Two and half hours (2.5) hours

MCQ section A will be given to candidates at the beginning of the examination.

After 30 minutes Section A will be collected. Section B of paper will then be handed over to candidates.

Section A :30 min. duration

Twenty eight single MCQs- 1/2 mark each : 14 marks

- || Separate paper
- || Single based response
- || MCQ will cover whole syllabus

Section B : 2 hours duration

- || Two long questions (LAQ) of 7 marks each : 14 marks
(will contain some preclinical/paraclinical aspects)
- || Three /five (SAQ)short notes -4 marks each : 12 marks

PRACTICAL : 40 marks

Clinical : One long case :30 marks :30 min. for taking case and 10 minutes for assessment

- || Oral (viva voce) :10 marks:10 min. duration
 - 1.Dark Room 5 marks
 - 2.Instruments 5 marks

Marks of VIVA will be added to Theory marks

It is compulsory to obtain 50% marks in theory.

It is mandatory to obtain 50% marks in theory+viva/oral.

Course of OTORHINOLARYNGOLOGY

These guidelines are based on MCI recommendations.

Teaching has to be done keeping in mind the goals and objectives to be achieved by medical student

1. GOAL

The basic idea of undergraduate students teaching and training in otolaryngology is that he /she should have acquired adequate knowledge and skills for optimally Dealing with common disorders, emergencies in E.N.T .and basic principles of impaired hearing rehabilitation.

2. OBJECTIVES

(a) KNOWLEDGE

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

- (1) Describe the basic pathophysiology and common Ear, Nose, Throat diseases and emergencies.
- (2) Adopt the rationale use of commonly used drugs,keeping in mind their side effects
- (3) Suggest common investigative methods and their interpretation.

(b)SKILLS

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

1. Examine and diagnose common ear ,nose ,throat problems including premalignant and malignant diseases of head and neck.
2. Manage ear ,nose ,throat (E.N.T)problems at the first level of care and be able to refer whenever and wherever necessary.
3. Assist/do independently basic E.N.T. procedures like ear syringing, Ear dressings, nasal packing removal of foreign bodies from nose, ear, throat.
4. Assist in certain procedures like tracheostomy, endoscopies.
5. Conduct CPR (cardiopulmonary resuscitation).
6. Be able to use auroscope, nasal speculum, tongue depressor, tuning fork and head mirror.

INTEGRATION

The undergraduate training in E.N.T. will provide an integrated approach towards other disciplines especially neurosciences, ophthalmology and general surgery.

LEARNING METHODS

1. Total teaching hours : 70
2. Theory lectures : 48(4th,6th,7th term.)
3. Tutorials : 22(7th term)
4. Clinical Postings Two clinical postings of 4weeks
First in 4th semester and second in 6th semester
Bedside clinics – 8 weeks of three hours per day 144 hours

Course distribution and Teaching Programme

This is suggested programme and can vary at institute

Total 70 hours of teaching has to be done in ENT including Tutorials

Details of syllabus is given separately below after distribution as per semester

Theory lectures will be taken once a week and their distribution will be as below:

1. 4th term :16(nose and Paranasal sinuses/throat)	
a. NOSE AND P.N.S. :	10
b. THROAT AND NECK:	6
2. 6th term :16 (Remaining topics of throat, head and neck and /ear)	
a. THROAT AND NECK:	8
b. EAR :	8
3. 7 th term :	16 lectures
a. RECENT ADVANCES AND OTHERS :	4
b. EAR	12
Total Theory lectures	48

Tutorials 7th Term 22 hours teaching

THEORY LECTURES: 4th, 6th, 7th term (one hour per week)

Topics	No.of lectures
<u>Throat</u>	
• Anatomy/physiology	1
• Diseases of buccal cavity	1
• Diseases of pharynx	2
• Tonsils and adenoids	2
• Pharyngeal tumours and related Topics (trismus, Plummer. Vinson Syndrome etc.)	1
• Anatomy /physiology/examination Methods/symptomatology of larynx	2
• Stridor /tracheostomy	2
• Laryngitis /laryngeal trauma/ Laryngeal paralysis/ foreign body larynx/ Bronchus, etc.	2
• Laryngeal tumours	1
Nose and paranasal sinuses	
• Anatomy /physiology/ exam.	
• Methods /symptomatology	2
• Diseases of ext. nose/cong. Conditions	1
• Trauma to nose/p.n.s/Foreign Body. / Rhinolith	1
• Epistaxis	1
• Diseases of nasal septum	1
• Rhinitis	1
• Nasal polyps/nasal allergy	1
• Sinusitis and its complications	1
• Tumours of nose and Para nasal sinuses	1

EAR

• Anatomy /physiology		2
• Methods/methods of examination	1	
• Cong.diseases/ ext.ear /middle ear		1
• Acute/chronic supp. otitis media Aetiology, clinical features and its Management/complications	6	
• Serous/adhesive otitis media	1	
• Mastoid/middle ear surgery		1
• Otosclerosis/tumours of ear	2	
• Facial paralysis/Meniere"s disease		2
• Tinnitus /ototoxicity	2	
• Deafness/hearing aids/rehabilitation Audiometry	2	

FINAL MBBS EXAMINATION IN OTORHINOLARYNGOLOGY

Evaluation

Internal assessment: 20 (Theory 10 +Practical 10)

- Marks of Internal Assessment should be sent to University before the commencement of Theory examination.
- Passing in internal assessment is essential for passing, as Internal assessment is separate head of passing. in examination.
- It will also be considered for grace marks as per existing rules
- Combined theory and practical of internal assessment will be considered for passing in internal assessment.
- Student will be allowed to appear for both theory and practical exam independent of marks obtained in internal assessment but he if fails in that head even after including the grace marks he will be declared **“Fail** in that Subject

Internal assessment in Theory -

- 1 **Examinations during semesters:** This will be carried out by conducting two theory examinations during 4th and 6th semesters (50 marks each). Total of 100 marks to be converted into 5 marks.(A/5)
- 2 **Prelim examination :** This shall be carried out during 7th semester. One theory papers of 40 marks as per university examination. Total of 40 marks to be converted into 5 marks. (B/5)
- 3 **Total marks of Internal assessment-** Theory will be addition of A and B.

Internal assessment in Practical

Examinations at end of Clinical postings:

There will be practical examination at the end of each clinical posting of ENT, 4th and 6th semester) Each examination will be of 50 marks.

Total of 2 examinations – 100 marks , will be converted to 5 marks.(C/5)

Prelim examination:

This will be conducted for 4 0 marks as per university pattern and marks will be converted to 5 (D/5).

Total marks of Internal assessment-of Practical will be addition of C and D.

Methods - Theory, Practical and Viva

Pattern of theory examination including distribution of marks, questions and time

1. There shall be one theory paper , carrying 40 marks
2. The paper will have two sections, A and B
3. The paper will be of 2.5 hours duration.
4. Section A will be MCQ in each paper. Section B will have to be written in separate answer sheets.
5. MCQ section A will be given to candidates at the beginning of the examination. After 30 minutes Section A will be collected. Section B of paper will then be handed over to candidates.

THEORY: 40 marks Duration: Two and half hours (2.5) hours

Section A :30 min. duration

1. Twenty eight MCQs- 1/2 mark each: 14 marks
2. Separate paper Single based response
3. MCQ will cover whole syllabus

Section B : 2 hours duration

1. Two long questions (LAQ) of 7 marks each : 14 marks
(will contain some preclinical / paraclinical aspects)
2. Three /five (SAQ)short notes - 4 marks each : 12 marks

PRACTICAL : 40 marks

Clinical

1. One long case :20 marks :30 min. For examination and 10minutes for assessment
2. One short case :10 marks :15 min.for examination and 5 minutes for assessment

Oral (viva voce): 10 marks: 10 min. duration

(Instruments, x-rays, specimens, audiograms)

- **Marks of VIVA will be added to Theory marks**
- **It is compulsory to obtain 50% marks in theory.**

It is mandatory to obtain 50% marks in theory+viva/oral. _____

OBSTETRICS & GYNAECOLOGY

These guidelines are based on MCI recommendations Teaching has to be done keeping in mind the goals and objectives to be achieved by medical student

(i) 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 & gain the ability to optimally manage common conditions affecting it.

(II) OBJECTIVES;

(A) KNOWLEDGE:

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

- Outline the anatomy, physiology and pathophysiology of the reproductive system and the common conditions affecting it.
- Detect normal pregnancy, labour puerperium and manage the problems he/she is likely to encounter therein,
- List the leading causes of maternal perinatal morbidity and mortality.
- Understand the principles of contraception and various techniques employed, methods of medical termination of pregnancy, sterilization and their complications.
- Identify the use, abuse and side effects of drugs in pregnancy, pre-menopausal and post-menopausal periods;
- Describe the national programme of maternal and child health and family welfare and their implementation at various levels.
- Identify common gynaecological diseases and describe principles of their management.
- State the indications, techniques and complications of surgeries like Caesarian Section, laparotomy, abdominal and vaginal hysterectomy, Fothergill's

operation and vacuum aspiration for Medical Termination of Pregnancy
(MTP)

(B) SKILLS

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

- 1.Examine a pregnant woman; recognize high-risk pregnancies AND make appropriate referrals
- 2.conduct a normal delivery, recognize complications and provide postnatal care;
3. Resuscitate the newborn and recognize the 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, Moniliasis and gram stain for gonorrhoea;
- 7.interpretation of data of investigations like biochemical, histopathological, radiological ultrasound etc.

(C) 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.

(D) GENERAL GUIDELINES FOR TRAINING:

1. attendance of a maternity hospital or the maternity wards of a general hospital including

(i) antenatal care

the management of the puerperium and

a minimum period of 5 months in-patient and out-patient training including family welfare planning

2. of this period of clinical instruction, not less than one month shall be spent as a resident pupil in a maternity ward of a general hospital.
3. during this period, the student shall conduct at least 10 cases of labour under adequate supervision and assist 10 other cases.
4. a certificate showing the number of cases of labour attended by the student in the maternity hospital and/or patient homes respectively, shall be signed by a responsible medical officer on the staff of the hospital and shall state:

(a) that the student has been present during the course of labour and personally conducted each case, making the necessary abdominal and other examinations under the supervision of the certifying officer who shall describe his official position.

(b) That satisfactory written histories of the cases conducted including wherever possible antenatal and postnatal observations, were presented by the student and initialed by the supervising officer

LEARNING METHODS

Lectures, Tutorials bedside clinics and lecture cum demonstrations

Distribution of Teaching hours -

- Lectures - 130 hours
- Tutorials and revision - 170 hours
- Bedside clinics - 468 hours

DIDACTIC LECTURES

<u>SEMESTER</u>	<u>HOURS/WEEK</u>	<u>TOTAL</u>
4	1 / WEEK	17
6	3 / WEEK	48
7	3 / WEEK	48
8	1 / WEEK	17
TOTAL		130

B) CLINICAL DEMONSTRATIONS, PRACTICAL DEMONSTRATIONS,

SEMINARS ETC.

<u>SEMESTER</u>	<u>HOURS/WEEK</u>	<u>TOTAL</u>
8	4 / WEEK	68
9	6 / WEEK	102
TOTAL		170

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TOTAL TEACHING HOURS	300
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Suggested lecture program

Distribution of syllabus in respective semesters

This is suggested programme and can vary at institute

Total 300 hours of teaching has to be done in OB GY including Tutorials

Details of syllabus is given separately below after distribution as per semester

*

4th Semester :OBSTETRICS :

1. Applied anatomy of female genital tract.
2. Development of genital tract
3. Physiology of menstruation
4. Puberty and menopause
5. Physiology of ovulation / conception / implantation.
6. Early development of human embryo.
7. Structure, function and anomalies of placenta.
8. Physiological changes during pregnancy / diagnosis of pregnancy.
9. Antenatal care, nutrition in pregnancy, detection of high-risk pregnancy.
10. Normal labour - Physiology, mechanism, clinical course and management, pain relief in labour.
11. Normal puerperium and breast-feeding.
12. Examination and care of newborn.
13. Contraception - Introduction and basic principles
14. Maternal mortality and morbidity, perinatal mortality and morbidity.
National health
Programme - safe-motherhood, reproductive and child health, social obstetrics.

6TH Semester: GYNAECOLOGY & FAMILY PLANNING

GYNAECOLOGY

1. Development of genital tract, congenital anomalies and clinical significance, Chromosomal abnormalities and intersex.
2. Physiology of Menstruation, Menstrual abnormalities - Amenorrhoea, Dysmenorrhoea, Abnormal Uterine Bleeding, DUB.
3. Puberty and its disorders, Adolescent Gynaecological problems.
4. Menopause & H R T.
5. Infections of genital tract, Leucorrhoea, Pruritus vulvae, Vaginitis, Cervicitis, PID, Genital TB, Sexually transmitted infections including HIV infection.
6. Benign & Malignant tumours of the genital tract.
Leiomyoma, carcinoma cervix, carcinoma endometrium, chorio carcinoma, ovarian tumors. Benign & Malignant Lesions of Vulva
7. Radiotherapy & Chemotherapy in Gynaecology.
8. Other gynaecological disorders - Adenomyosis, Endometriosis
9. Genital Prolapse, Genital Tract displacement,
10. Urinary disorders in Gynaecology, Perineal tears, Genital Fistulae, RVF & VVF.

FAMILY PLANNING :

1. Demography and population Dynamics.
2. Contraception - Temporary methods.
Permanent methods.
1. MTP Act and procedures of MTP in first & second trimester.
2. Emergency contraception. :

7TH Semester : OBSTETRICS & NEWBORN

1. Complications in early pregnancy.

- Hyperemesis gravidarum / abortion / ectopic pregnancy / gestational trophoblastic disease.
2. Obstetrical complications during pregnancy.
APH - Accidental hemorrhage. Placenta praevia.
3. Poly hydramnios / oligohydramnios, multifetal pregnancy.
4. Medical disorders in pregnancy.
Anemia, Heart disease. Hypertensive disorder, PIH and Eclampsia, Diabetes, jaundice, pulmonary disease in pregnancy.
5. Infections in pregnancy
Urinary tract diseases, sexually transmitted infections including HIV, malaria, TORCH etc.
6. Gynaecological and surgical conditions in pregnancy.
Fibroid with pregnancy, ovarian tumours, acute abdomen, genital prolapse.
7. High risk pregnancy, pre-term labour, post term pregnancy, IUGR, IUFD, pregnancy wastages, Rh incompatibility, post caesarean pregnancy.
8. Induction of labour.
9. Abnormal position & presentation : Occipito posterior, Breech, Transverse, Face & Brow, Compound, Cord Presentation and prolapse.
10. Abnormal labour - abnormal uterine action, CPD.
Obstructed labour, uterine rupture.
11. Third stage complications - Retained placenta, PPH, Shock, Uterine inversion, Fluid Embolism.
12. Puerperial Sepsis and Other Complications in puerperium.
13. Evaluation of Foetal Health during pregnancy and labour.
14. Drugs used in obstetric practice.
15. Operative procedures in Obstetrics : Caesarean Section, Instrumental Vaginal Delivery. Forceps, Vacuum,
16. Maternal Mortality and morbidity, Perinatal mortality and morbidity. National program - safe motherhood, reproductive and child health , Social Obstetrics.

NEW BORN :

1. Examination and care of new born & low birth weight babies.
2. Asphyxia and neonatal resuscitation.
3. Diagnosis of early neonatal problems.
4. Birth injuries, jaundice, infection.
5. Anencephaly & Hydrocephalus and other Congenital Anomalies of fetus.

8TH Semester : PREVENTIVE ONCOLOGY

1. Preventive Oncology

2. Principles of gynaecological surgical procedures
3. Pre and post operative care in Gynaecology
4. Ultrasonography and Radiology, in Gynaecology
5. Endoscopy in in Gynaecology
6. Drugs and hormones in Gynaecology
7. Surgical procedures in obstetrics
8. Maternal mortality
9. Perinatal mortality
10. Recurrent pregnancy wastages
11. High risk pregnancy
12. Rural obstetrics
13. Drugs in Pregnancy
14. Drugs in obstetric practice

In addition, integrated teaching with other departments like anatomy, physiology, biochemistry, pathology, microbiology, Forensic Medicine and Preventive and Social medicine to be organized for selected topics.

LIST OF TOPICS INTEGRATED TEACHING: 8TH TERM

1. Development of genital tract - any malformations
of genital tract and their clinical significance - Anatomy
2. Fetal physiology - fetal circulation Physiology
3. fetal malformations - genesis- Embryology
4. CIN Pathology
5. ARF Physiology Medicine
6. Coagulation failure Pathology Medicine
7. Diabetes, heart disease Medicine
8. USG Radiology
9. Infections in pregnancy Microbiology
10. Medico-legal aspects Forensic Medicine
11. Nutrition in pregnancy and lactation PSM
12. Evidence based obstetrics PSM
13. Drugs in pregnancy Pharmacology

SCHEME FOR EXAMINATION FOR FINAL MBBS

EXAMINATION IN OBSTETRICS AND GYNAECOLOGY

Methods – Internal assessment, Theory, Practical and Viva

- **Internal assessment: 40 (Theory 20 +Practical 20)**
 - Marks of Internal Assessment should be sent to University before the commencement of Theory examination.
 - Passing in internal assessment is essential for passing ,as Internal assessment is separate head of passing. in examination.
 - It will also be considered for grace marks as per existing rules
 - Combined theory and practical of internal assessment will be considered for passing in internal assessment.
 - Student will be allowed to appear for both theory and practical exam independent of marks obtained in internal assessment but he if fails in that head even after including the grace marks he will be declared “**Fail** in that Subject”

Internal assessment in Theory -

Examinations during semesters : This will be carried out by conducting two theory examinations during 6th and 8th semesters (100 marks each). Total of 200 marks to be converted into 10 marks.(A/10)

Prelim examination : This shall be carried out during 9th semester. Two theory papers of 40 marks each as per university examination. Total of 80 marks to be converted into 10 marks. (B/10)

Total marks of Internal assessment- Theory will be addition of A and B.

Internal assessment in Practical

Examinations at end of Clinical postings:

There will be practical examination at the end of each clinical posting of OBGY. Each examination will be of 50 marks. Total of all exams marks will be converted to 10 marks.(C/10)

Prelim examination:

This will be conducted for 60 marks as per university pattern and marks will be converted to 10 (D/10). Total marks of Internal assessment- Practical will be addition of C and D.

Evaluation Methods - Theory, Practical and Viva

Pattern of theory examination including distribution of marks, questions and time

Pattern of theory examination including distribution of marks

1. There shall be two theory papers - Paper I and II, carrying 40 marks each.
2. Each paper will have three sections, A , B and C. Each paper will be of 2.5 hours duration.
3. Section A will be MCQ in each paper. Section B will have SAQ and Section C LAQ answer sheet.
4. MCQ section A will be given to candidates at the beginning of the examination.
5. After 30 minutes Section A will be collected. Section B & C of paper will then be handed over to candidates

PAPER I

Topics - Obstetrics including social obstetrics and newborn care

.Section A :30 min. duration

- || Twenty eight MCQs- /2 mark each : 14 marks
 - o Single based response
- || MCQ will cover whole syllabus of Paper I

Section B & C : 2 hours duration

- o **Section B** - Three /five (SAQ)short notes -4 marks each 12 marks
- o **Section C** - Two long questions (LAQ) of 7 marks each 14 marks

(will contain some preclinical/Para clinical aspects)

PAPER II :

Topics :Gynaecology, Family Welfare and Demography -

Section A :30 min. duration

- || Separate paper
- || Twenty eight MCQs- 1/2 mark each 14 marks
- || Single based response
- || MCQ will cover whole syllabus of Paper II

Section B & C : 2 hours duration

Section B - Three /five (SAQ)short notes -4 marks each 12marks

Section C - Two long questions (LAQ) of 7 marks each 14 marks
(will contain some preclinical/Para clinical aspects)

Scheme Of Practical & Oral Examination For Obstetrics & Gynaecology

PRACTICAL : Total – 60 Marks

- 1) LONG CASE : 40 Marks
 - A) History 10 Marks
 - B) Clinical Exam 10 Marks
 - C) Investigations & diagnosis 10 Marks
 - D) Management 10 Marks
- 2) SHORT CASE : 10 Marks
 - A) Presentation 05 Marks
 - B) Discussion 05 Marks
- 3) FAMILY PLANNING 10 Marks

Total : 60 Marks

4) ORAL / VIVA 20 Marks

- A) Obstetric Viva 10 Marks
- B) Gynaecology Viva 10 Marks

TOTAL MARKS FOR PRACTICAL & ORAL (60+20) = 80 Marks

Marks of VIVA will be added to Theory marks

It is mandatory to obtain 50% marks in theory+viva/oral.

REVISED INTERNAL ASSESSMENT EXAMINATION SCHEME w.e.f. JUNE 2007 EXAMINATION

YEAR: - Third (I) MBBS

SN.	Subject	1 st Term End			2 nd Term End			Preliminary Examination		
		Semester	Theory	Practical	Semester	Theory	Practical	Semester	Theory	Practical
			(A)	(B)		(C)	(D)		(E)	(F)
1.	PSM	IV	60	20	VI	60	20	VII	120	40
2.	ophthalmology	VI	40	40	-	-	-	VII	40	40
3.	ENT	VI	40	40	-	-	-	VII	40	40

(B) Calculation Method:-

I) For PSM Theory Marks to be send to the University out of 20 = $\frac{(A)+(C)+(E)}{12} = \frac{60+60+120}{12} = \frac{240}{12} = 20$

II) For PSM Practical Marks to be send to the University outof 20 = $\frac{(B)+(D)+(F)}{4} = \frac{20+20+40}{4} = \frac{80}{4} = 20$

III) For Ophthalm & ENT Theory Marks to be send to the University out of 10 = $\frac{(A)+(C)+(E)}{8} = \frac{40+0+40}{8} = \frac{80}{8} = 10$

IV) For Ophthalm & ENT Practical Marks to be send to the University out of 10 = $\frac{(B)+(D)+(F)}{8} = \frac{40+0+40}{8} = \frac{80}{8} = 10$

REVISED INTERNAL ASSESSMENT EXAMINATION SCHEME w.e.f. JUNE 2007 EXAMINATION

YEAR: - Third (II) MBBS

SN.	Subject	1 st Term End			2 nd Term End			Preliminary Examination		
		Semester	Theory	Practical	Semester	Theory	Practical	Semester	Theory	Practical
			(A)	(B)		(C)	(D)		(E)	(F)
1.	Medicine	VI	60	60	VIII	60	60	IX	120	120
2.	Surgery	VI	60	60	VIII	60	60	IX	120	120
3.	Obstetrics/Gynecology	VI	40	40	VIII	40	40	IX	80	80
4.	Pediatrics	VI	20	20	VIII	20	20	IX	40	40

(B) Calculation Method:-

- I) For Medicine & Surgery Theory Marks to be send to the University out of 30 = $\frac{(A)+(C)+(E)}{8} = \frac{60+60+120}{8} = \frac{240}{8} = 30$
- II) For Medicine & Surgery Practical Marks to be send to the University out of 30 = $\frac{(B)+(D)+(F)}{8} = \frac{60+60+120}{8} = \frac{240}{8} = 30$
- III) For Obstetrics/Gynecology Theory Marks to e send to the University out of 20 = $\frac{(A)+(C)+(E)}{8} = \frac{40+40+80}{8} = \frac{160}{8} = 20$
- IV) For Obstetrics/Gynecology Practical Marks to be send to the University out of 20 = $\frac{(B)+(D)+(F)}{8} = \frac{40+40+80}{8} = \frac{160}{8} = 20$
- V) For Pediatrics Theory Marks to be send to the University out of 10 = $\frac{(A)+(C)+(E)}{8} = \frac{20+20+40}{8} = \frac{80}{8} = 10$
- VI) For Pediatrics Practical Marks to be send to the University out of 10 = $\frac{(B)+(D)+(F)}{8} = \frac{20+20+40}{8} = \frac{80}{8} = 10$

Note:- For Surgery and Orthopedics Scheme will be as follows, however these marks should be combined and send to the University out of 30.

SN.	Subject	1 st Term End			2 nd Term End			Preliminary Examination		
		Semester	Theory	Practical	Semester	Theory	Practical	Semester	Theory	Practical
			(A)	(B)		(C)	(D)		(E)	(F)
1.	Surgery	VI	48	48	VIII	48	48	IX	96	96
2.	Orthopedics	VI	12	12	VIII	12	12	IX	24	24

SECTION C :

INTERNSHIP PROGRAMME

Internship discipline related and curriculum in family welfare shall be according to norms laid down by Medical Council of India

SECTION D :

CURRICULAI FOR THE FAMILY WELFARE :

It shall be as per M.C.I. and is included in respective subjects.