

Appendix- B

SYLLABUS & CURRICULUM

For MD/MS Examinations

(Effective from the Academic Session 2012-13)



Sambalpur University

Jyoti Vihar, Burla- 768019

MBBS

SYLLABUS & CURRICULUM

2012



Sambalpur University
Jyotivihar, Burla, Sambalpur, Odisha-768019

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SAMBALPUR UNIVERSITY
JYOTIVIHAR, BURLA, SAMBALPUR, ODISHA-768019



MBBS SYLLABUS & CURRICULUM
2012

(effected from academic session-2012-13 and PMB Examinations of 2012-13)

CHAPTER-1.

SHORT TITLE AND COMMENCEMENT

- 1.a. These regulations may be called " MBBS Syllabus & Curriculum -2012".
- 1.b. They shall come into force on the date of their publication in the official Gazette and be effective from the session 2012-2013 (i.e. First, Second, Third- Part-I and Third-Part-II MBBS Examinations of 2012-13)
- 1.c. This will supersede all the previous regulations of the university in the context cited.

Syllabus and Curriculum

in

ANATOMY

for

MBBS Course

(I & II Semesters)

2012

GOALS

The broad goal of the teaching of undergraduate students in Anatomy aims at providing comprehensive knowledge of the gross and microscopic structure and development of human body to provide a basis for understanding the clinical correlation of organs or structures involved and the anatomical basis for the disease presentations.

OBJECTIVES

(A) Knowledge :

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

1. Comprehend the normal disposition, inter-relationships, gross, functional and applied anatomy of the various structures in the body.
2. Identify the microscopic structures of various tissues, and organs in the human body and correlate the structure with the functions as a prerequisite for understanding the altered state in various disease processes.
3. Comprehend the basic structure and connections between the various parts of the central nervous system so as to analyze the integrative and regulative functions on the organs and systems and to locate the site of gross lesions according to the deficits encountered.
4. To understand the basic principles of embryology including genetic inheritance and stages involved in development of the organs and systems from the time of conception till birth ; to recognize the critical stages of normal development and the effects of common teratogens, genetic mutations and environmental hazards on it; to explain the developmental basis of the occurrence of major variations, abnormalities and congenital anomalies.

5. To study the basic principles of radiology and newer modalities such as CT Scan, USG, MRI etc., for comprehending deeper structures in a living human body.

(B) Skills :

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

- (a) identify and locate all the structures of the body and mark the topography of the living anatomy.
- (b) identify the organs and tissues under the microscope.
- (c) understand the principles of karyotyping and identify the gross congenital anomalies.
- (d) understand principles of newer imaging techniques and interpretation of Computerized Tomography (CT) Scan, Sonogram etc.
- (e) understand clinical basis of some common clinical procedures i.e., intramuscular & intravenous injection, lumbar puncture and kidney biopsy etc.

(C) Integration

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

TEACHING METHODS & HOURS:

Learning methods	Hr/ wk/semester	Total wks/semester			Total hrs/semester				Hrs in MCI norm
		1 st	2 nd	T	1 st	2 nd	T	G .total	
Theory	5	20	16	36	100	80	180	766	650
Practical	2				40	32	72		
Tutorial/Demo/ Group discussion	2				40	32	72		
Dissection	12				240	192	432		
Integrated Teaching	10hrs during vii to ix semester				10				

WEEKLY CLASS ROUTINE:

Day	9-10 am	10-11 am	11-1pm		1-2 pm	2-3pm	3-5 pm
Mon	X	Ana-Tutorial Gr- D	Histo-Practical Gr-B			Ana-Demo Gr-C	Dissection
Tue	Ana Theory	Ana-Tutorial Gr- A	Histo-Practical Gr-C			Ana-Demo Gr-D	
Wed	X	Ana-Tutorial Gr- B	Histo-Practical Gr-D			Ana-Demo Gr-A	
Thu	Ana Theory	Ana-Tutorial Gr- C	Histo-Practical Gr-A			Ana-Demo Gr-B	
Fri	X	Ana Theory	x	X		x	
Sat	Ana Theory	X	Ana Theory	x		X	

COURSE CONTENT**THEORY:**

chapters	1 st Semester (Aug-Jan) 24wksx5hrs=120hrs	chapters	2 nd Semester (Feb-May) 16wksx5hrs=80hrs
1.Introduction	04hrs	6.Genetics	05hrs
2.General Anatomy	16hrs	7.Central Nervous Systems	20hrs
3.Histology (General + Systemic)	40hrs	8.Special Sense Organs	10hrs
4.Embryology (General + Systemic)	20hrs	9.Cranial nerves	10hrs
5.Gross (Extremities + Thorax)	40hrs	10.Gross(head-neck+ abdomen–pelvis)	35hrs
Total	120hrs	Total	80hrs

CHAPTERS AND TOPICS FOR THEORY CLASSES**Chapter-1.Introduction (4hrs)**

1. Significance of anatomy in medical science, subdivisions of the subject, Nomenclature & terminology:

Chapter.2.General Anatomy (16hrs)

1. Introduction, cellular organelles, cell membrane
2. Skin & subcutaneous tissue
3. Connective tissue
4. Sclerous tissue with ossification
5. Joints, movements
6. Muscle tissue with ultrastructure
7. Nerve tissue including introduction to Autonomic nervous system
8. Blood vascular & lymphatic system

Chapter.3.Embryology(20hrs)

1. Germ cells & their maturation
2. Changes in Reproductive organs at puberty & in pregnancy, Menstrual & Cycle, Contraception

3. Fertilisation, Implantation, Trophoblast, Yolk sac, Gastrulation, Extra-embryonic coelome, Notocord, Neuro-enteric canal, Intra-embryonic mesoderm:
4. Decidua, chorion, yolk sac, connecting stalk:
5. Placenta, umbilical cord, amniotic cavity & Foetal Circulation:
6. Derivatives of, ectoderm, endoderm, mesoderm :
7. Broad aspects of Organogenesis
8. Development of skeletal system, Heart and principal blood vessels and lymphatics, Pharyngeal apparatus, Urinogenetal system, G.I system, Respiratory system, Nervous system
9. Multiple & ectopic Gestation, Hydatidiform mole, placental abnormalities:
10. Teratology

Chapter 4: Medical Genetics- (4hrs)

1. Chromosome Types and numbers, its roll in cell division, karyotyping
2. Chromosomal disorders
3. Genes, Types of Gene and Human Leukocyte Antigen (HLA), Mutation
4. Types of inheritance patterns, Common Genetic Disorders

Chapter 5: Histology(40hrs)

A. General

1. Elementary study of cell activity, cell division, Nature & behaviour of cell injury
2. Introduction, different types of Microscopes, specially compound light microscopes
3. Methods of tissue preparation and H & E staining procedures- General outlines
4. Epithelial tissue-types, and Glandular tissue
5. Cartilage-types
6. Bones-types, with Haversian system
7. Muscles- types

B. Systemic histology

1. General plan of GI tract & Oesophagus
2. Stomach
3. Small gut & Duodenum
4. Large Gut & Vermiform Appendix
5. Liver
6. Salivary glands, Tongue
7. Pancreas & Thyroid
8. Suprarenal glands
9. Testis & Ovary

10. Trachea & Lungs
11. Kidney
12. Ureter, Urinary Bladder
13. Lymph nodes & Palatine tonsil
14. Spleen
15. Skin
16. Uterus & Fallopian tube
17. Vas deferens & Prostate
18. Cerebellum & Spinal cord
19. Thymus & Mammary gland
20. Placenta & umbilical cord

Chapter 6: Gross Human Anatomy (40hrs)

A. Superior Extremity (10hrs)

1. Limb buds and dermatomes: (1)
2. Venous Drainage and Axillary Lymph Nodes: (1)
3. Mammary Gland with applied anatomy: (1)
4. Brachial Plexus, its branches & Applied Anatomy: (1)
5. Shoulder joint with Girdle movement: (1)
6. Elbow, Radio-ulnar & Wrist joints: (2)
7. Small joints of hand, 1st Carpometacarpal joint: (1)
8. Fascial Spaces of Hand with Carpal Tunnel: (2)

B. Inferior Extremity: (10hrs)

1. Venous & Lymphatic drainage with Applied importance: (2)
2. Femoral Triangle, Femoral sheath, with Hernia: (1)
3. Hip joint with applied anatomy: (2)
4. Knee Joint with applied anatomy: (2)
5. Ankle joint, Joints of foot & Mechanism of the foot: (3)

C. Thorax: (15hrs)

1. Mechanism of Thorax & Respiration: (2)
2. Oesophagus, Thoracic duct: (1)
3. Blood supply of heart: (2)
4. Conducting system of heart: (1)
5. Microanatomy of Lungs & Bronchial tree: (3)
6. Development of Cardiovascular System & diaphragm: (6)

D. Abdomen & Pelvis : (20hrs)

1. Inguinal Canal, Inguinal Hernia, Umbilicus with Clinical anatomy: (2)
2. Peritoneum including recesses (with development): (2)
3. Structure of Liver & Biliary apparatus (Intra-& Extra-hepatic): (2)
4. Portal vein with porta-caval anastomosis: (1)
5. Pelvic Diaphragm, Perineum: (3)
6. Structure of spleen & splenic circulation: (1)
7. Structure & blood supply of Kidney: (1)

8. Nerve supply of bladder, mechanism of micturition: (1)
9. Internal iliac artery & its branches: (1)
10. Lymphatics of abdomen & pelvis: (1)
11. Development of G.I Tract, rotation of gut and development of Liver & Pancreas with anomalies: (3)
12. Development of Genito-urinary system: (2)

E. Head & Neck: (15hrs)

1. Deep Cervical fascia with its Applied importance (including Carotid Sheath): (2)
2. Orbit (Extra-ocular muscles mainly): (2)
3. Craniovertebral joints: (1)
4. Intervertebral Joints: (1)
5. Cervical lymph nodes: (1)
6. Temporomandibular joint and Infratemporal fossa: (2)
7. Branchial apparatus, development of face, palate mouth, nose, tongue: (6)

F. Neuro-Anatomy: (25hrs)

1. Introduction, Development of CNS with general Neural arrangement: (2)
2. Spinal cord with Internal organization: (3)
3. Cerebellum: (2)
4. CSF, Sub-arachnoid Cisterns: (2)
5. Organisation of Cerebral cortex: (1)
6. White fibres of Brain: (2)
7. Limbic system (with Olfactory pathways): (1)
8. Blood supply of Brain: (2)
9. Visual and Auditory pathways: (2)
10. Dural venous sinus: (1)
11. 3rd, 4th, and 6th Cranial Nerves: (2)
12. 5th Cranial Nerve: (1)
13. 7th Cranial Nerve: (2)
14. 10th, 11th, and 12th, Cranial Nerves: (2)
15. Middle Ear Cavity: (1)
16. Eye (1)
17. Pituitary with its development: (2)

DISSECTION

Guideline:

Every items of dissection and its collateral study be completed under specific direction of assignments and the work supervised and assessed by a teacher. The Practical Note books shall properly be endorsed and completion test and their results shall form record of practical work done by the student. In this course of dissection, demonstration of bones, viscera and region will be done part-wise to the students in small group. Functions, Developments, Radiography Anatomy and

Surface Anatomy. Principles of Ultrasonography, CT scanning of the structure also be covered.

Parts	1 st semester	Parts	2 nd semester
1.Superior Extremity	80hrs	4.Head & Neck	62hrs
2.Inferior Extremity	80hrs	5.Abdomen & Pelvis	62hrs
3.Thorax	80hrs	6.Brain & Spinal Cord	58hrs
Total	12hrsx20wks =240hrs	Total	12hrsx16wks= 192hrs

A.Superior Extremity: (30hrs) (To be taught during August-September)

1. Bones of Upper limb-Scapula, Clavicle, Humerus, Radius and Ulna, Skeleton of Hand : 7
2. Clavipectoral Fascia & Mammary Gland : 2
3. Axilla : 3
4. Cubital fossa : 1
5. Front of arm : 1
6. Front of forearm with palm : 3
7. Back of Arm, Scapular region : 3
8. Back of forearm with Dorsum of Hand : 3
9. Shoulder Joint : 1
10. Elbow, radio-ulner & wrist joints : 2
11. Small joints of hand : 1
12. Radiology and surface markings : 2
13. Part completion : 1

B. Inferior Extremity: (28 hrs) (To be taught during September – October)

1. Bones of lower limb- Hip, Femur, Tibia, Fibula, Skeleton of foot Femoral triangle, Adductor region, Quadriceps : 4
2. Anterolateral compartment of leg with dorsum of foot : 3
3. Gluteal Region : 2
4. Popliteal fossa : 2
5. Back of thigh : 1
6. Back of leg : 2
7. Sole (prosected part) : 1
8. Hip joint : 1
9. Knee joint : 1
10. Joints of foot and ankle joint : 1
11. Surface marking and radiology : 2
12. Part completion : 1

C. Abdomen: (58hrs) (To be taught during November – January)

1. Vertebrae & bony Pelvis- Cervical, Thoracic, Lumbar, Sacrum & Coccyx, Vertebral column with applied : 9

2. Inguinal region, male external genitalia (scrotum, penis & Testes)	:	4
3. Rectus sheath & anterolateral abdominal wall	:	2
4. Peritoneum with visceral disposition (Lesser sac, Lesser omentum, Epiploic foramen, Pouch of Morrison, Paracolic gutter)	:	2
5. Coeliac trunk with removal of stomach, Ventral branches of Abdominal Aorta	:	2
6. Posterior Abdominal wall with Lumbar plexus	:	2
7. Dissection of Pelvic Walls with internal. Iliac arteries	:	2
8. Stomach	:	2
9. Liver with biliary apparatus	:	3
10. Duodenum- Pancreas- Spleen	:	2
11. Small gut with the Mesentery	:	2
12. Large gut (upto ilic colon)	:	2
13. Sigmoid colon, Rectum and anal canal	:	2
14. Kidney with ureter and suprarenal gland	:	3
15. Urinary bladder, Prostate, Male Urethra, Seminal		
16. Vesicle and Vas deferens	:	4
17. Perineum (prosected part)	:	2
18. Broad ligament, Fallopian tube and ovary	:	3
19. Uterus, Vagina, Female external genitalia, placenta	:	3
20. Sectional anatomy – at TPP level, at L3 level, Coronal & Sagittal section of male and female pelvis	:	4
21. Surface markings	:	1
22. Radiology	:	1
23. Part completion	:	1

D. Thorax : (23hrs) (To be taught during February)

1. Ribs and Sternum	:	3
2. Anterior chest wall, Intercostal spaces & removal of lungs	:	2
3. Mediastinum (Subdivision and Contents, Root of lungs, Arch of aorta, Vagus and Phrenic Nerves, Ligamentum arteriosum, Oesophagus, Thoracic Duct)	:	2
4. Pericaedium with Heart in situ (transverse and oblique sinuses)	:	5
5. Posterior Thoracic Wall (Azygos venous system with Arch of Azygos vein, Splanchnic Nerves)	:	2
6. Lungs, Pleura, Trachea & Bronchial Tree	:	4
7. The Diaphragm	:	1
8. Cross sectional study at T3/T4 & T6/T7 level	:	1
9. .Radiology and Surface markings	:	2
10. Part Completion	:	1

E. Central Nervous System & Eye Ball: (26hrs) (To be taught during March – April)

1. Spinal Cord – Gross anatomy with blood supply	:	3
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2. Brain stem – Gross anatomy with exit of Cranial Nerves	:	3
3. Cerebellum with 4 th Ventricle	:	2
4. Cerebrum – Gross anatomy with sulci and gyri, Subarachnoid cisterns and blood supply	:	3
5. 3 rd Ventricle, basal ganglia, Thalamus and Diencephalons	:	3
6. Transverse section with Internal capsule	:	2
7. Sagittal section	:	2
8. Lateral ventricle	:	2
9. Fornix with rhinencephalon	:	1
10. Eye ball	:	4
11. Part completion	:	1

G. Head & Neck: Total Classes – 45 (To be taught during April – June)

1. Skull – Enumeration of individual skull bones with various Norma, Mandible, Hyoid	:	11
1. Scalp, Face, lacrimal apparatus, Parotid region	:	4
2. Dural venous sinuses, meninges	:	2
3. Posterior triangle	:	2
4. Anterior triangle	:	3
5. Suboccipital triangle (prosected part)	:	1
6. Submandibular region	:	2
7. Temporal and Infratemporal fossa	:	2
8. Temporomandibular joint	:	1
9. Cranial fossa and Orbit	:	2
10. Prevertebral region	:	1
11. Thyroid and parathyroid	:	1
12. Sagittal section of Head & Neck, Nose and nasal septum, Tongue and Oral Cavity, Pharynx. Tonsil, Palate, Larynx	:	8
13. Kidney from back	:	2
14. Radiology and Surface markings	:	2
15. Part completion	:	1

**TOPICS AND HOURS FOR TUTORIALS/GROUP DISCUSSION/DEMONSTRATION:
(36WKSX2HR=72HRS)**

- Tutorials on Soft tissues will be covered in morning hour Tutorial Class.
- Demonstration and discussion on bones , charts, specimens related to chapters as covered in theory classes will be covered during afternoon Demonstration Class.
- Assessment will also be done during these classes.

INTEGRATED TEACHING:

Topics	Participating Depts.
1. Anatomical basis of birth control measures	- Obstetrics & Gynaecology, - Community Medicine - Surgery
2. Postnatal growth and development	- Paediatrics - Community Medicine
3. Antenatal growth and development	Obstetrics & Gynaecology
4. Genetic disorders	Various clinical departments
5. Medical genetics	Biochemistry
6. Neuro-anatomy	Physiology
7. Sex differences and age changes in bones	Forensic Medicine
8. Normal and abnormal cells (cytology)	Pathology
9. Anatomy of some important & common Clinical syndromes	Various clinical department
10. Kinesiology – Movements at various joints	Orthopaedics
11. Embryology basis of important and common Congenital anomalies	- Pediatrics - Obst. & Gynaecology

SCHEME OF EVALUATION

Papers	Total Marks	Univ. examination marks			Int. Ass. marks	
		Theory	Oral	Practical	Theory	Practical
Paper I & II	200	100 (25 each in part A & B of each of paper I & II having 50 marks each)	20	40	20	20
Pass Marks		40% in Theory (including Int. Ass.)	48/120			
		40% in Viva	8/20			
		50% in Theory (including Int. Ass.) including Viva	70/140			
		50% in Practical (including Int. Ass.)	30/60			
		35% in Internal Assessment (theory)	7/20			
		35% in Internal Assessment (practical)	7/20			

	50% of total aggregate	100/200
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INTERNAL ASSESSMENT:

Int. Assessment tests	Timings	Marks			
		Theory	Practical		
			Practical	Oral	Record
1.Part Completion Test -1	Superior Extremity	20	10	8	2
2.Part Completion Test-2	Inferior Extremity	20	10	8	2
3.Part Completion Test-3	Abdomen & Pelvis	20	10	8	2
4.Part Completion Test-4	Thorax	20	10	8	2
5.Part Completion Test-5	Head & Neck	20	10	8	2
6.Part Completion Test-6	CNS	20	10	8	2
7.End 1st Semester Test	Dec' Last Week	40	20	15	5
8.Pre-PMB Test	May' 4 th Week	40	20	15	5
Total Marks		200	200		
Sending Marks	From tests no.1 to 6(A)	120/12	120/10		
	From tests no.7-8(B)	80/8	80/4 (out of 20)		
	Over all (A+B)	(out of 20)	(out of 20)		

UNIVERSITY EXAMINATION:**A. THEORY**

(Total 100 marks): Two papers of 2 hours duration and 50 marks each.

i. Chapters and topics for sections and papers**PAPER-I****(Section n- A)**

Brain and spinal cord, Special Sense Organs, Gross and Regional Anatomy of Head & Neck including Histology and Embryology.

(Section-B)

General Anatomy ,Gross and regional Anatomy of Superior Extremity, Thorax and Associated Systems including Histology and Embryology.

PAPER-II**(Section- A)**

Gross and Regional Anatomy of Abdomen and pelvis including Histology and Embryology

(Section- B)

General Embryology, General Histology, Fundamentals of Genetics, Gross and Regional Anatomy of Inferior Extremity

ii) Pattern of Question Paper :

Structured Essay Questions	20% ≈10	1x5	=5 marks
Short answer questions	60% ≈10	2.5x6	=15 marks
Very short answer questions	20% ≈5	1x5	=5 marks
=====			
Each part total marks			=25 marks
Total marks in each of the paper			=50 marks
Total marks in 2 theory papers			=100 marks

iii) Model question papers:**ANATOMY****Paper I**

Time 2 ½ hours, FM- 50 marks

Answer all questions; The figures in the right hand margin indicate marks; Use separate answer sheets for each section; Draw diagrams wherever necessary.

Section- A

1. Describe internal capsule under the following heading:[2+3+2.5+2.5=10marks]
 - a. situation and relation
 - b. fibers present
 - c. blood supply
 - d. Applied Anatomy
2. Write short Notes on any four: [2.5x4marks=10marks]
 - a. muscles of mastication
 - b. nerve supply of forehead
 - c. development of palate
 - d. histology of tongue
3. Answer the followings: [1x 5 marks=5marks]
 - a. Mention the length of Eustachian tube?
 - b. where does parotid duct open ?
 - c. Name the dangerous layer of scalp?
 - d. Which type of sulcus is the central sulcus ?
 - e. Damage to which nerve results in Bell's palsy?

Section- B

1. Describe brachial plexus under the following headings: [2.5 +2.5+2.5+2.5=10 marks]
 - a. formation
 - b. Relation
 - c. Branches
 - d. applied anatomy
2. Writes short notes on any four: [2.5 mark x 4=10marks]
 - a. Coronary sinus
 - b. Superficial palmar arch
 - c. Quadrangular space
 - d. Symphysis
 - e. Hilum of right lung
3. Fill in the blanks: [1 mark x 5=5marks]
 - i. Pronation and supination movements take place in which joints.?
 - ii. Oesophagus is lined by which type of epithelium ?
 - iii. Damage to which nerve results in wrist drop?
 - iv. Which nerve is involved in carpal tunnel syndrome?
 - v. Mention the Root value of Phrenic Nerve ?

Time 2 ½ hours FM- 50 marks

Answer all questions; the figures in the right hand margin indicate marks; use separate answer sheets for each section; draw diagrams wherever necessary.

Section –A

1. Describe The Diaphragm under the following headings: **[3+2+2+3 marks]**
 - a.Origin
 - b.Openings
 - c.Nerve supply
 - d. Developments
2. Write short note on any four: **[2.5marksx 4]**
 - a. Pectinate line
 - b. Branches of internal iliac artery
 - c. Porta hepatis
 - d. Visceral surface of spleen
 - e. Stomach bed
3. Answer the followings: **[1 x 5 marks]**
 - a. Mention the length of Ureter
 - b. Mention the lining epithelium of epididymis
 - c. Fertilization takes place in which part of fallopian tube?
 - d. Bile duct opens in to which part of duodenum?
 - e. Which is the commonest position of appendix ?

Section –B

1. Describe Arches of foot under the following headings: [2+3+3+2 marks]
 - a. Types
 - b. Formation
 - c. Factors maintaining the arches
 - d. Applied anatomy
2. Write short notes on any four: [2.5 marks x 4]
 - a. Femoral sheath
 - b. Down syndrome
 - c. Umbilical cord
 - d. Obturator nerve
 - e. Great saphenous vein
3. Fill in the blanks: [1 x 5 marks]
 - a. Which nerve is related to neck of fibula ?
 - b. What forms the floor of inguinal canal ?
 - c. How many number of Barr body is present in Turner syndrome?
 - d. Dorsalis pedis artery is the continuation of which Artery ?
 - e. Skin of first interdigital cleft is supplied by which nerve ?

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B. ORAL/VIVA (20marks)

Will be conducted by four panels of examiners with one examiner at each covering following heads.

- Panel-I-(5marks)-Soft Tissues -Above Diaphragm
- Panel-II-(5marks)-Soft Tissues -Below Diaphragm
- Panel-III-(5marks)-Axial Skeleton
- Panel-IV-(5marks)-Appendicular Skeleton

C. PRACTICAL (40 marks)

1. Histology –10 spots=10marks
2. Commenting on one special slide=5marks
3. Identification and Display of dissected part =20 marks
4. Surface marking=5marks

PRACTICAL RECORDS

Practical record is available with the Education section.

TEXT BOOKS:(Latest Editions)

1. Essentials of Human Anatomy - Vol.I, II, III by A.K.Dutta.
2. Cunningham's Manual of Practical Anatomy – Vol. I, II, III.
3. A Synopsis of surgical Anatomy by Mc. Gregor.
4. Essentials of Human Embryology by A. K. Dutta.
5. Human Histology by Inderveer Singh.
6. Neuroanatomy by Inderveer Singh

BOOKS FOR REFERENCE:

1. Grey's Anatomy
2. Grants Method of Anatomy.

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Syllabus and Curriculum

in

PHYSIOLOGY

for

MBBS Course

(I & II SEMESTERS)

2012

GOAL

The broad goal of the teaching of undergraduate students in Physiology aims at providing the student comprehensive knowledge of the normal functions of the organ systems of the body to facilitate an understanding of the physiological basis of health and disease.

OBJECTIVES

a) KNOWLEDGE :

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

- (1) explain the normal functioning of all the organ systems and their interactions for well coordinated total body function.
- (2) assess the relative contribution of each organ system to the maintenance of the milieu interior.
- (3) elucidate the physiological aspects of normal growth and development.
- (4) describe the physiological response and adaptations to environmental stresses.
- (5) list the physiological principles underlying pathogenesis and treatment of disease.

b) SKILLS

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

- (1) conduct experiments designed for study of physiological phenomena.
- (2) interpret experimental/investigative data.
- (3) distinguish between normal and abnormal data derived as a result of tests which he/she has performed and observed in the laboratory.

c) INTEGRATION

At the end of the integrated teaching the student should acquire an integrated knowledge of organ structure and function and its regulatory mechanisms.

TEACHING METHODS & HOURS:

Learning Methods	Hr/ wk/semester	Total wks/semester			Total hrs				Hours In MCI norm
		1 st	2 nd	T	1 st	2 nd	T	G. total	
Theory	5	20	16	36	100	80	180	416	480
Practical	2				40	32	72		
Tutorial/Group discussion/ Sdl	4				80	64	144		
Integrated teaching	20 hrs during vii to ix semester				20				

CLASS ROUTINE

Day	9-10 am	10-11 am	11-1pm		1-2 pm	2-3pm
Mon	Theory	Tutorial Gr-B	Practical Gr-C	Self directed learning Gr-A		Gr.discussion Gr-D
Tue	X	Tutorial Gr-C	Practical Gr-D	Self directed learning		Gr.discussion Gr-A

				Gr-B		
Wed	X	Tutorial Gr-D	Practical Gr-A	Self directed learning Gr-C		Gr.discussion Gr-B
Thu	x	Tutorial Gr-A	Practical Gr-B	Self directed learning Gr-D		Gr.discussion Gr-C
Fri	Theory	X	x	x		Theory
Sat	x	Theory	x	X		Theory

COURSE CONTENT

A. Theory

First semester(100hrs)

1. Introduction-----1hr
2. General physiology-----5hrs
3. Blood-----17hrs
4. ANS & Nerve Muscle Physiology-----13hrs
5. C.V.S-----20hrs
6. Digestion-----11hrs
7. Respiration-----15hrs

Second Semester(80hrs)

1. Kidney, Regulation of fluid and electrolyte -----12hrs
2. Endocrinology-----18hrs
3. Reproductive physiology-----10hrs
4. C.N S-----26hrs
5. Special Sense-----13hrs
6. Skin & Temperature regulation-----3hrs
7. Internal assessment of theory-----6hrs
- Total-----180hrs

Topics for Didactic Lectures (Theory)

CHAPTER-1.INTRODUCTION CLASS -----1HRS

CHAPTER-2.GENERAL PHYSIOLOGY-----5HRS

1. Homeostasis – Definition, Positive and negative feedback with examples and gain
2. Structure and functions of cell and cell organelle
3. Cell membrane and transport through cell membranes
4. Relation between stimulus and response, resting membrane potential, action potential, cellular receptors and bio-potentials
5. Fluid compartments, constituents and determination of different fluid compartments

CHAPTER-3.BLOOD -----17HRS

1. Introduction to blood ,PCV, physical properties, functions of blood.
2. Classification of WBC ,leucopenia ,leucocytosis ,DC, clinical importance, Arneht count ,morphology of granulocytes ,its function and fate.
3. Monocyte ,morphology ,function and fate
4. Immunity-Innate and acquired. Antigen function of thymus & lymphoid tissue .Clone activation of B & T lymphocytes (role of macrophages).
5. Humoral immunity, Immunoglobulins-Structure &functions ,Cell mediated immunity-types of T lymphocytes ,their functions. Applied aspect-Immunisation ,AIDS, Autoimmune diseases.
6. Development of WBC in the bone marrow .General principles of renewal system-precursor cells, control of leucopoiesis leukaemia.
7. RBC morphology-size, MCV, surface area, shape ,metabolic and membrane function, normal count ,variation ,life span ,fate abnormal Hb ,normal values and variation.
8. Erythropoeisis stages ,details of reticulocytes, factors controlling B12,folic acid ,Iron ,minerals, vitamins &Hormones briefly.
9. Fate of RBC, Bilirubin formation, its metabolism, factors influencing breakdown of RBC, ,jaundice ,fragility ,E S R absolute values .Classification of anaemia ,iron metabolism.
10. Haemostasis ,mechanism, factors, platelet development, morphology, total count ,variations, functions and related disorders.
11. Coagulation factors ,mechanism ,factors ,platelet development ,morphology ,total count, variations, functions and related disorders.
12. Anticoagulants ,prevention of intravascular clotting ,thrombosis ,laboratory tests, B.T,C.T,P.T and thromboplastin generation test.
13. Plasma proteins, types ,normal values properties ,separation of isoelectric point, functions , hypoproteinemia ,oedema.
14. Blood group-ABO system, Landsteiners law blood grouping & crossmatching , Rh incompatibility, Erythroblastosis Foetalis ,other blood group systems inheritance ,Paternity tests.

15. Blood transfusion ,collection of blood and its storage ,indication of grouping and cross matching before transfusion, Hazards of blood transfusion.
16. Tissue fluid ,blood volume ,lymph formation and its function .Normal blood volume, method of determination ,variation of blood volume.
17. Different types of I.V. infusion fluids in common use and principles of fluid replacement therapy.

CHAPTER-4.ANS AND NERVE MUSCLE PHYSIOLOGY-----13HRS

1. Introduction, Division and Organisation of ANS
2. Structure supplied by Sympathetic and Parasympathetic nerves and their functions
3. Cholinergic nerves, Acetyl-choline receptors and blocking drugs
4. Adrenergic System, receptors and blocking drugs
5. Autonomic reflexes and Autonomic function tests
6. Physiology of neurons and nerves and classification of nerves
7. Properties of nerve fibres, salutatory conduction, degeneration and regeneration of nerve fibres
8. Synapse: Type, structure, synaptic transmission and properties
9. Classification of muscles, types, structure of skeletal muscles, gross and molecular
10. Neuromuscular junction, its structure and transmission, myasthenia gravis and mechanism of muscle contraction
11. Mechanical properties of muscle contraction, isometric and isotonic contractions, simple muscle curve, effect of multiple stimuli, fatigue, load
12. Chemistry of muscle contraction, heat production and oxygen debt, neurotransmitters and drugs acting on neuromuscular junction
13. Smooth muscles, structure, distribution, nerve supply and functions

CHAPTER-5.CARDIO VASCULAR SYSTEM-----20HRS

1. Functional anatomy of the heart, valves, conducting tissues, nerve supply. Coronary supply to heart and circulation in general
2. Morphological, mechanical and metabolic properties of cardiac muscle. Excitability, refractory period and extra systole.
3. Electrophysiology of cardiac muscle, pre potential, action potential, rhythmicity and conductivity.
4. Electrocardiogram- clinical leads, recording principle, analysis of normal ECG in limb leads and in other leads, cardiac axis reporting of ECG.
5. Cardiac cycle - phases, pressure changes in atria, pressure volume changes in ventricles and pressure changes in aorta and pulmonary artery ECG correlation, ejection fraction.
6. Heart sounds, jugular venous pulse, central and peripheral arterial pulse, murmur.
7. Heart rate, normal range, determination variation and regulation.
8. Venous circulation, morphology, functions, central venous pressure, factors controlling venous return. Cardiac output, normal values and variations
9. Determination of cardiac output and factors controlling cardiac output distribution. Cardiac reserve.

10. Functional anatomy of blood vessels. Dynamics of blood flow and peripheral resistance. Derivation of poiseuille-Hagen formula and Reynold's number
11. Cardiovascular regulatory mechanisms, local and circulatory factors in blood, regulation including reflexes and higher control.
12. Arterial blood pressure, definitions, different values, variations, measurement of blood pressure, effect of posture and gravity.
13. Regulations of blood pressure, short and long term regulatory mechanisms.
14. Coronary circulation
15. Cerebral and neonatal circulation
16. Cutaneous and capillary circulation
17. Hypovolemia, shock and haemorrhage, effect of hypoxia on circulation.
18. Hypertension and heart failure, cardio-pulmonary resuscitation
19. Arrhythmia, abnormal ECG
20. Cardiac function test and Cardiac catheterization.

CHAPTER-6-DIGESTION-----11HRS

1. Functional anatomy, structure, histology, nerve supply, blood supply, lymphatics of oesophagus, stomach, small and large intestine (G.I. Tract)
2. Salivary glands- Functional anatomy, mechanism of secretion, composition of saliva, its function, regulation of secretion and applied aspect
3. Stomach- Different parts, function, gastric glands, and their distribution, composition & function of gastric juice.
4. Mechanism of HCl secretion, regulation of gastric secretion, pavlov's pouch, applied aspect, peptic ulcer, gastric function tests
5. Pancreas- Structure, composition of pancreatic juice, neural and hormonal regulation of pancreatic secretion, applied
6. Liver and Biliary System- Structure and functions of Liver and Gall Bladder, mechanism of biliary secretion, composition of Bile, entero-hepatic circulation of Bile salts, regulation of secretion and applied
7. Small intestine- Structure, secretion of small intestine, succus entericus, composition, function, regulation of secretion, general principles of absorption
8. Digestion and absorption of carbohydrates and proteins, applied and Lactose intolerance
9. Digestion and absorption of fat
10. Absorption of water, electrolytes and minerals, large intestine function, general principles of movement of G.I. Tract and Deglutition
11. Movement of stomach and intestine-peristalsis, segmentation, pendular movement, anti-peristalsis, gastrocolic reflex defecation

CHAPTER-7.RESPIRATION-----15HRS

1. Introduction- Purpose of respiration, external and internal respiration and processes involved. Physiological anatomy of tracheo-bronchial tree and functions of the parts. Respiratory and non respiratory functions of lungs
2. Pulmonary circulation and mechanism of breathing with breathing muscles
3. Mechanics of breathing- Name the lung volumes and capacities, Intrapleural , Intrapulmonary and Transpulmonary pressure, compliance, airway resistance, pulmonary surfactant, work of breathing, Elastic work
4. Different gas laws, composition of atmospheric, alveolar and expired gases, dead space, partial pressure calculation, respiratory membrane and diffusion of respiratory gases, diffusion capacity, ventilation/perfusion ratio
5. Oxygen carriage- Forms of carriage, oxygendissociation curve, interpretation factors controlling dissociation, dissociation of Hb A, Hb F, Hb S and myoglobin
6. Carbon dioxide carriage- Forms of carriage, chloride shift, Haldane effect, carbon dioxide dissociation curve
7. Neural regulation of respiration- Respiratory centers, organisation and Transection studies
8. Neural reflex regulation of respiration- Vagal hering breuer reflex, lung intact receptors and pulmonary receptors in regulation of respiration and load-detecting reflex
9. Chemical regulation of respiration- Chemical stimuli chemoreceptors
10. Hypoxia- Types and feature, oxygen therapy, hyperbaric oxygen therapy and toxicity
11. Asphyxia apnoea, Dyspnoea, cyanosis, periodic breathing, decompression sickness and breath holding, ARDS, sleep apnoea syndrome, dyspnoea and D Index
12. High altitude physiology and acclimatization
13. Breathing in the foetus, newborn and respiratory, distress syndrome and RDS CPR and artificial respiration
14. Cordio-respiratory changes in exercise and effect of exercise training
15. Pulmonary function tests

CHAPTER-8.KIDNEY, REGULATION OF FLUID & ELECTROLYTE-----12HRS

1. Introduction, functional anatomy of the kidney and functions of the kidney.
2. Blood supply, J G apparatus autoregulation of blood flow.
3. Urine formation, glomerular filtrates its composition and formation, factors controlling G F R, inulin and creatinine clearance test.
4. Tubular reabsorption, secretion, proximal convoluted tubules, distal convoluted tubules &collecting duct.

5. Concentration of urine, counter current multiplier and counter current exchange mechanism.
6. Acidification of urine and role of kidney in acid base balance.
7. Total body water and electrolytes in different compartments. Discussion on increase and decrease of water and electrolytes on cellular and bodily functions.
8. Role of kidney in fluid and electrolyte balance of the body, osmoreceptors and volume receptors, intake and output of water and concept of fluid therapy.
9. Endocrine functions of the kidney. Renin-angiotensin system. Diuresis and Diuretics.
10. Kidney function tests and normal urine.
11. Physiology of micturition, cystometrogram, Micturition reflex, disturbances of micturition.
12. Glomerular nephritis, nephritic syndrome, acute and chronic renal failure. Dialysis(peritoneal & Haemo)&artificial kidney.

CHAPTER-9.ENDOCRINOLOGY-----18HRS

1. General introduction to endocrinology, define hormone and endocrine glands, Neuroendocrine axis & Hypothalamus.
2. Mechanism of hormone action.
3. Pituitary, development ,parts blood supply and pituitary hormones.
4. Growth hormone ,chemistry, functions ®ulation .
5. Dysfunction of growth hormone & Prolactin.
6. Posterior pituitary ,ADH & Oxytocin.
7. Thyroid gland, histology, hormone chemistry ,synthesis ,storage ,release , carriage & degradation, regulation .
8. Functions of thyroid hormone ,regulation , dysfunctions of thyroid hormone &Thyroid function tests.
9. Metabolism of calcium, phosphate & Vit D.
10. Parathyroid gland, hormone chemistry ,functions ,regulation ,dysfunction & calcitonin.
11. Adrenal cortex ,hormone chemistry ,synthesis ,carriage & degradation.
12. Actions of glucocorticoids , mineralocorticoids and androgens.
13. Regulations of hormones of adrenal cortex ,dysfunctions ,corticosteroids.
14. Adrenal medulla and Adrenaline.
15. Pancreas, insulin, chemistry Biosynthetics, release receptors function regulations.
16. Diabetes mellitus synthetic preparation of insulin.
17. Glucagon, chemistry, function and regulation. Stress and hormonal regulation during stress.
18. Local hormones – hormones of heart, kidney, skin and pineal body(melatonin)

Chapter.10.REPRODUCTIVE PHYSIOLOGY-----10 HRS

1. Regulation and functions of Testes, constituents of semen, ejaculation, testicular hormones, puberty
2. Ovary, histology, hormones, oestrogen and progesterone.
3. Menstrual cycle, changes in Ovary, cervical, mucous, Vagina and hormonal regulation
4. Ovulation, detection of ovulation, fertilisation, implantation.
5. Tests of Pregnancy, and physiological changes during pregnancy, investigation of infertility
6. Parturition and its hormonal regulation, functions of placenta
7. Lactation and composition of milk, colostrums, nutritional needs of mother and child during pregnancy and lactation
8. Foeto-placental unit, adjustments of the infant to extra-uterine life(onset of breathing, expansion of lungs at birth, circulatory readjustments at birth, nutrition of the neonate).
9. Physiological basis of contraception in males and females, Safe periods and other methods of contraception
10. Growth and development, aging

CHAPTER.11.CENTRAL NERVOUS SYSTEM-----26 HRS

1. Organisation of nervous system, general arrangement of CNS, development, sensory and motor divisions and cerebral blood flow
2. C.S.F.- Functional anatomy, formation, circulation, absorption, composition, function, lumbar puncture, hydrocephalous, brain oedema, papill oedema, blood C.S.F. barrier and blood brain barrier
3. Sensory receptors – classification, histology(paccinian corpuscle as an example), generator potentials properties(specificity, adaptation and intensity of stimulus.
4. Spinal cord cross section and lumina, position of
5. Sensory pathways to the cortex – spinothalamic tracts, posterior column, spinocervical tract, Lissauer's tract and dermatome
6. Pain- Receptors, pathways, pain control system, referred pain, visceral pain, hyperalgesia, herpes zoster, headache and analgesic drugs
7. Pathways for visceral sensation- Trigeminal lemniscus – origin, relay, location, decussation, termination and sensations carried(table form)
8. Thalamus – location, nuclei, connections, thalamocortical correlation, functions and lesions(thalamic syndrome)

9. Cerebral cortex- in general, lobes, poles, surfaces, Broadman areas, histology, somatic sensory area I and II, body representation, somatic association areas, functions, effects of ablation of parietal lobe
10. Motor cortex- Primary motor cortex, pre motor area, supplementary motor area, body representation, functions and lesions
11. Cortico-spinal tract- origin, course, medullary decussation, position in the spinal cord, termination, function
12. Basal ganglia – nuclear connections, functions and lesions of basal ganglia
13. Descending reticular formation- Extra pyramidal tracts, their origin, course, position in spinal cord, terminations, differences from pyramidal tract functions(role in muscle tone and posture)
14. Muscle tone–Definition, muscle spindle location, histology, innervations, spinal reflex arc and supraspinal control
15. Effects of lesions of pyramidal and extra pyramidal tracts. Hemiplegia – site of lesion, features of shock stage and recovery stage
16. Cerebellum – Parts of physiological division of cerebellum, input and output pathways, connections, neural circuits.
17. Role of cerebellum in voluntary movements, muscle tone, posture and equilibrium, cerebellar lesion
18. Vestibular apparatus – parts, neural connections(medial longitudinal bundle and its role), functions(posture and equilibrium), vestibular and disorders(labyrinthitis)
19. Spinal cord – parts, final common pathways, motor unit functions, monosynaptic reflex, inverse stretch reflex, reciprocal inhibition, flexor reflex, crossed extensor reflex, reflexes of posture and locomotion, scratch reflex, autonomic reflexes, alteration of spinal cord reflexes after injury
20. Spinal cord lesion and diseases- paraplegia, quadriplegia, Brown sequard syndrome, Guillain Barre syndrome, Tabes dorsalis, syringomyelia, leprosy, poliomyelitis, polyneuritis
21. Posture and equilibrium – Organisation, encephalization, posture regulating system, postural reflexes, spinal, decerebrate, decorticate and decerebellate animal, their features and co-ordination, integrative diagram and summary of postural disorders
22. Hypothalamus – nuclei and connections
23. Functions of hypothalamus – detail of feeding and satiety, thirst and central autonomic control
24. Limbic system – parts connections, functions and emotion
25. Reticular activating system, electroencephalogram(recording principle and interpretation), sleep(mechanism and disorders), seizures(etiology and diagnosis)
26. Prefrontal cortex, memory, learning, conditioned reflexes, Alzheimer's disease, Kluver Bucy Syndrome, cortical association areas and speech disorders.

CHAPTER-12.SPECIAL SENSES-----13HRS

EYE

1. Functional anatomy of eye.
2. Aqueous humour its formation, circulation, IOP & applied aspect, lacrimal apparatus
3. Image forming mechanism of eye – fovea, blind spot and accommodation reflex.
4. Errors of refraction, tests of visual activity, perimetry.
5. Retina and visual receptors, photopigment, dark adaptation.
6. Colour vision, colour blindness, tests for colour blindness.
7. Visual pathway and its lesions, visual cortex, Argyl Robertson pupil.
8. Pupillary reflex, electroretinogram, ophthalmoscopy.

EAR

1. Functional anatomy and function of tympanic membrane, middle ear with cochlea
2. Auditory receptor, mechanism of hearing and auditory pathway
3. Auditory cortex in perception of sound deafness, tests of deafness and audiometry

SMELL

1. Receptor, pathways, cerebral and limbic areas associated with taste

TASTE

1. Receptor, pathways, cerebral and limbic areas associated with smell and disorder of smell

CHAPTER-13.SKIN AND TEMPERATURE REGULATION-----3 HRS

1. Skin – functional anatomy, sweat glands, their distribution. Nerve supply, functions of skin
2. Normal body temperature, normal values and variations heat gain and heat loss mechanisms and role of skin in temperature regulation
3. Central hypothalamic regulation of body temperature, fever and antipyretics, heat stroke, hypothermia and cold injury

B.TOPIC AND HOURS FOR TUTORIALS, SEMINAR AND GROUP DISCUSSION (56hours)

Chapter	Topic for Tutorial	Topic for Group discussion
General Physiology	1. Structure & Function of cell.	1. Fluid compartments
	2. Transport across cell membrane	2. Homeostasis
Blood	1. Erythropoiesis	1. Function of Blood
	2. Immunity	2. Anaemia
	3. Blood coagulation & Anticoagulants	3. Jaundice
	4. Blood Group	4. Plasma Proteins
	5. Leucopoiesis	5. Blood transfusion.
Nerve-Muscle Physiology & ANS	1. Neuromuscular Junction	1. Acetylcholine (Ach)
	2. properties of SK Muscle	2. Adrenergic system

	3. Classification of nerve fiber	3. Applied of ANS
	4. Action Potential & RMP	4. Properties of Synapse.
CVS	1. Properties Of Cardiac Muscle	1. ECG
	2. Electrophysiology of cardiac Muscle	2. Blood pressure
	3. Cardiac Cycle	3. cardiac function test
	4. cardiac out put	4. Cardiac Failure
	5. Cardiovascular reflexes	5. Heart Sound & JVP
	6. Heart Rate	6. Shock
	7. Coronary circulation	7. Heart Valves & murmur
	8. Regulation of Blood Pressure	8. Arrhythmia & Heart Block
GI System	1. Gastric Juice	1. Peptic Ulcer
	2. Mechanism of HCl secretion	2. GFT
	3. Digestion & Absorption of fat	3. LFT
	4. pancreatic Juice	4. Intestinal motility and disorder.

Respiration	1. Lung volumes and capacities.	1. Hypoxia
	2. Diffusion capacity and ventilation perfusion Ratio	2. PFT
	3. O ₂ carriage	3. Chloride Shift & Halden effect
	4. Neural Regulation of Respiration	4. ARDS, Caissons' disease
	5. Chemical Regulation	5. High Altitude Physiology
Kidney	1. GFR	1. Kidney Function Tests
	2. Concentration of urine	2. Micturition reflex.
	3. Acid & Base Balance	3. Glomerulonephritis , Nephrotic Syndrome , CRF, ARF,
	4. Water & Electrolyte Balance.	4. Clearance Test.
Endocrinology	1. Mechanism of hormone action	1. ADH & Oxytocin
	2. Growth Hormone	2. Thyroid Function Test.
	3. Thyroid Hormone	3. Calcium & Vit D
	4. Pancreas	4. DM
	5. Glucocorticoid	5. Mineralocorticoid
Reproduction	1. Menstrual Cycle	1. Puberty
	2. Contraception	2. Test Of pregnancy
	3. Spermatogenesis	3. Feto-Placental unit / milk ejection reflex.
Skin & Temp Regulation	1. Regulation of body Temperature	2. Fever, Hyperthermia , Hypothermia,
Central Nervous system	1. CSF	1. CSF & Hydrocephalus.
	2. Classification of receptors	2. Pain pathway and analgesia system.
	3. Basal ganglia	3. Muscle tone
	4. Cerebellum	4. Lesions of various tract.
	5. Tone / Posture & equilibrium	5. Stretch Reflex
	6. Pyramidal tract	6. Limbic System
	7. Extra pyramidal tract	7. Hypothalamus.

	8. Sensory pathways (Ascending tract)	8. Thalamus
	9. Reticular Activating system	9. Learning , Memory, Speech
Special Sense	1. Formation and circulation of Aqueous Humour.	1. Errors of Refraction.
	2. Retina	2. Colour blindness.
	3. Visual pathway	3. Light reflex and accommodation reflex , dark adaptation.
	4. Mechanism of hearing	4. Test of hearing
	5. Smell	5. Taste.

C.TOPICS AND HOURS FOR PRACTICALS(72hours)**A. Experimental Physiology****: 30 hours**

1. Study & Use Of Microscope
2. Study Of Packed Cell Volume & Focusing With Low & High Power Objective Lens & Identification Of Cell (Stained Slide Supplied)
3. Use of oil immersion objective lens & Identification of WBC.
4. Drawing of blood film / Staining & Identification of WBC
5. **Examination** on drawing of blood smear and staining
6. Differential count by finger prick
7. **D.C. (Examination)**
8. Study of Neubauers chambers
9. Enumeration of Total WBC count
10. Enumeration of Total RBC count
11. Repetition of Total WBC & Total RBC count
12. **Examination** on TRBC or TWBC
13. Estimation of Hemoglobin & Determination of Absolute value.
14. Estimation of bleeding time & clotting time & discussion
15. Determination of Blood Group & Discussion on Transfusion.
16. **Examination** on BT, CT, Blood Group, Hemoglobin.
17. Study of ESR & Osmotic fragility
18. Study of bone marrow & Discussion on precursor cells of R.B.C (Erythropoiesis)
19. Study of bone marrow and discussion on precursor cells of W.B.C. (Leukopoiesis)
20. Study of bone marrow and discussion on precursor cells of Platelets

B. Human Physiology**: 42 hours**

1. Recording of normal BP
2. Effect of Exercise on BP
3. Examination of CVS.
4. Demonstration of ECG.
5. Examination Of respiratory system.
6. Revision on Respiratory system/ CVS.
7. Part completion test
8. Recording of i) Vital capacity by student's Spiro meter.
ii) Peak expiration flow rate by peak flow meter.
9. Pulmonary function test.
10. Recording of respiratory movement (Stethography)
11. Part completion test
12. Examination of sensory system.
13. Examination of Motor System.
14. Revision on sensory and Motor System.
15. Examination of cranial nerves.
16. Part completion test
17. Test for Activity of Vision.
18. Test for field of vision.
19. Test for colour Vision.
20. Test for Auditory function.
21. Part completion test
22. Demonstration of experimental graphs of skeletal muscle of frog.
23. Demonstration of experimental graphs of frog heart.

INTEGRATED TEACHING (20hrs)

- (A) Cardiology -4 Hours
- (B) Pulmonary Medicine- 4 Hours
- (C) Radiology -4 Hours
- (D) Ophthalmology -4 Hours
- (E) E.N.T -4 Hours

SCHEME OF EVALUATION

Total Marks	Univ. examination marks			Int. Ass. marks	
	Theory	Oral	Practical	Theory	Practical
200	100 (25 each in part A & B of each of paper I & II having 50 marks each)	20	40	20	20
Pass Marks	40% in Theory (including Int. Ass.)	48/120			
	40% in Viva	8/20			
	50% in Theory(including Int. Ass.) including Viva	70/140			
	50% in Practical(including Int. Ass.)	30/60			
	35% in Internal Assessment (theory)	7/20			
	35% in Internal Assessment(practical)	7/20			
	50% of total aggregate	100/200			

INTERNAL ASSESSMENT SCHEDULE

Internal Assessment tests	Timings	Marks			
		Theory	Practical		
			Practical	Oral	Record
1.Part Completion Test -1	Sep(Month-2) end	20	10	8	2

2.Part Completion Test-2	Oct(Month-3)end	20	10	8	2
3.Part Completion Test-3	Nov(Month-4) end	20	10	8	2
4.Part Completion Test-4	Feb (Month-7) end	20	10	8	2
5.Part Completion Test-5	Mar(Month-8) end	20	10	8	2
6.Part Completion Test-6	Apr(Month-9) end	20	10	8	2
7.End 1 st Semester Test	Dec' Last Week	40	20	15	5
8.Pre-PMB Test	May' 4 th Week	40	20	15	5
Total Marks		200	200		
Sending Marks	From tests no.1 to 6(A)	120/12	120/10		
	From tests no.7-8(B)	80/8	80/4 (out of 20)		
	Over all (A+B)	(out of 20)	(out of 20)		

UNIVERSITY EXAMINATION:**A.THEORY: (100marks for 2 papers)****i) Distribution of chapters- paper and section wise**

Papers	Section-A Chapters	Section-B Chapters
Paper-I	1.General Physiology 2. Cell 3. Autonomic Nervous System 4. Nerve Muscle Physiology	1. Gastro intestinal system 2. Cardiovascular System 3. Respiration

	5. Blood	
Paper-II	1. Endocrine 2. Kidney 3. Skin & Temperature Regulation	1. Central Nervous System 2. Special Sense 3. Reproduction

ii) MODEL QUESTION**PHYSIOLOGY****PAPER-I****Time 2 ½ hours FM- 50 marks**

Answer all questions; the figures in the right hand margin indicate marks; use separate answer sheets for each section; draw diagrams wherever necessary.

Section –A

- a. Describe the intrinsic system of blood coagulation and possible coagulation disorder.

OR

[10 X 1 marks]

Describe the structure of neuro-muscular junction and mechanism of muscle contraction.

- b. Write short notes on :

[5 x 2=10marks]

- Facilitated diffusion
- Hemophilia
- Cholinergic neurons
- Mitochondria
- Cross matching

3. Give reasoning :

[5x1=5marks]

- O-negative blood is called as universal donor
- PCV in venous blood is more than that of arterial blood
- Muscle relaxation is an active process
- Atrophic gastritis leads to pernicious anemia
- Conduction velocity is faster in myelinated fiber

Section-B

- Define cardiac output and cardiac index. Discusses the factors regulating cardiac output.

[40]

OR

[10 X 1=10marks]

Describe the composition, function of pancreatic juice.

2. Write Short notes on :-

[5x2=10marks]

- a. Heart Sound
- c. Gastrin
- d. Ondine curse
- e. FEV
- f. Dyspnoea

3. Fill in the Blanks:-

[5x1=5marks]

- a. All the lung volume can be measured by Spiro meter except which one?
- b. What is Normal Cardiac index ?
- c. Gastrinoma is associated with which syndrome?
- d. The Pulmonary surfactant is secreted by which cells.?
- e. What is the value of Partial pressure of Oxygen in arterial blood ?

PHYSIOLOGY**PAPER-II****Time 2 ½ hours FM- 50 marks**

Answer all questions; the figures in the right hand margin indicate marks; use separate answer sheets for each section; draw diagrams wherever necessary.

Section –A

1. Name the glucocorticoids. Discuss their regulation and function
or

[210 X 1 =10marks]

Define GFR. What are the factors regulating GIR.

2. Write short notes on:-

[5x2=10marks]

- a. Hypothermia.
- b. Myxoedema.
- c. Diabetes insipidus
- d.....
- e.....

3. Give reasoning:-

[5x1=5marks]

- a. Diabetes is more common in elderly people
- b. Glycosuria occurs in diabetes
- c. Non- pitting aedema occurs in myxoedema
- d.....
- e.....

Section-B

- Describe the connection and function basal ganglia.
OR [10 X 1=10marks]
Describe the visual pathway with diagram and effect of lesions at different sites
- Write short notes on:- [5x2=10marks]
 - a. Hypermetropia
 - b. Pankinsonism
 - c. LH Surge
 - d. Blood brain Barrier
 - e. Colour blindness
- Fill in the Blanks:- [5x1=5marks]
 - a. Memory loss occurs in Disease.
 - b. Active form of Testosterone is
 - c. Excess of Hormone gives rise to Conn's syndrome
 - d. Milk ejection depends on hormone
 - e. Fluid inside scalamedia is

-O-

B. Oral/Viva : (Total marks –20)

Paper-I Topics of 1st paper-10 marks-panel –I –one external and one internal examiner.

Paper- IITopics of 2nd paper-10 marks-panel-II-one external and one internal examiner.

C. Practical : (Total marks-40)

1. Haematology

Major- (TLC/TEC/DLC)	-8 marks
Minor-(BT&CT/HB%/Blood group)	-4 marks
2. Instruments/ Mammalian exp.(Dales, Long extension, ECG, Spiro meter, Charts, BMR)

-2x6=12 marks

3. Human physiology

-2x6=12 marks

4. Amphibian exp. (instruments and charts)

-4 marks

PRACTICAL RECORDS:

Physiology practical record.

TEXT BOOKS:

1. Text Book Of Medical Physiology By Hall And Guyton
2. Text Book Of Medical Physiology By A.K Jain
3. Review Of Medical Physiology By W.F.Ganong
4. Text Book Of Medical Physiology By R.L.Bijlani
5. Text Book Of Medical Physiology By Beerne And Levy
6. Text Book Of Medical Physiology By Best And Taylor
7. Practical Physiology By C.L Ghai
8. Practical Physiology By A.K.Jain
9. Practical Physiology By Srivastav

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Syllabus and Curriculum

in

BIOCHEMISTRY

for

MBBS Course

(I & II Semesters)

2012

GOAL

The broad goal of the teaching of undergraduate students in biochemistry is to make them understand the scientific basis of the life processes at the molecular level and to orient them towards the application of the knowledge acquired in solving clinical problems.

OBJECTIVES

a) KNOWLEDGE

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

- (1) describe the molecular and functional organization of a cell and list its subcellular components;
- (2) delineate structure, function and inter-relationships of biomolecules and consequences of deviation from normal;
- (3) summarize the fundamental aspects of enzymology and clinical application wherein regulation of enzymatic activity is altered;
- (4) describe digestion and assimilation of nutrients and consequences of malnutrition;
- (5) integrate the various aspects of metabolism and their regulatory pathways;
- (6) explain the biochemical basis of inherited disorders with their associated sequelae;

- (7) describe mechanisms involved in maintenance of body fluid and pH homeostasis;
- (8) outline the molecular mechanisms of gene expression and regulation, the principles of genetic engineering and their application in medicine;
- (9) summarize the molecular concepts of body defence and their application in medicine;
- (10) outline the biochemical basis of environmental health hazards, biochemical basis of cancer and carcinogenesis;
- (11) familiarize with the principles of various conventional and specialized laboratory investigations and instrumentation analysis and interpretation of a given data;
- (12) the ability to suggest experiments to support theoretical concepts and clinical diagnosis.

b. SKILLS:

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

1. make use of conventional techniques/instruments to perform biochemical analysis relevant to clinical screening and diagnosis
2. analyse and interpret investigative data
3. demonstrate the skills of solving scientific and clinical problems and decision making

c. INTEGRATION

The knowledge acquired in biochemistry should help the

students to integrate molecular events with structure and function of the human body in health and disease

TEACHING METHODS & HOURS

Learning methods	Hr/ wk/semester		Total wks/semester			Total hrs				Hrs in MCI norm
			1 st	2 nd	T	1 st	2 nd	T	G. total	
Theory	3	3	20	16	36	60	48	108	306	240
Practical	2	2				40	32	72		

Tutorial/Group discussion/Sdl	3	3				60	48	108		
Integrated Teaching	20 hrs during 7 th to 9 th semester					20				

WEEKLY ROUTINE AND CLASSES

Day	9-10 am	10-11 am	11-1pm		1-2 pm lunch	2-3pm	
Mon	X	Tutorial Group-C	Practical Group-D			Group discussion Group-A	Self directed learning Group-B
Tue	X	Tutorial Group-D	Practical Group-A			Group discussion Group-B	Self directed learning Group-C
Wed	Theory	Tutorial Group-A	Practical Group-B			Group discussion Group-C	Self directed learning Group-D
Thu	X	Tutorial Group-B	Practical Group-C			Group discussion Group-D	Self directed learning Group-A
Fri	x	X	X	Theory		X	
Sat	x	X	X	Theory		x	

COURSE CONTENTS

Chapters	Topics	Hrs for Theory	Hrs for Tutorial
A. Theory & Tutorial First semester			
1.Cell Biology	a. Organization of cellular structures and their functional roles, b. Cell membranes, mechanism of transport across typical cell membrane	3	2
2.Bio-molecules	(a) Function and classification of carbohydrates, lipids, protein and amino acids. (b) Stereoisomerism and chemistry of Monosaccharides, amino acids, and fatty acids. (c) Structural organization and structure-function relationships of proteins, Hemoglobin and myoglobin, molecular mechanism of O ₂ transport and storage. Molecular basis of sickle cell anemia and thalassemia. (d) Molecular mechanism of muscle contraction. (e) Plasma proteins, their functions and clinical significance.	20	16
3.Enzymology	Basic concept of catalysis, classification, mechanism of enzyme activity, factors affecting enzyme activity, importance of K _m value. Types of enzyme inhibition and their clinical application. Enzyme regulation - modes, mechanisms and importance in the human system. Diagnostic and therapeutic importance of enzymes.	7	6
4.Bioenergetics and Biologic oxidation	concepts of bioenergetics in relation to thermodynamic principles as applied to the human system., Phosphagens Substrate level phosphorylation Organization of Electron transport system, Oxidative Phosphorylation –formation of ATP and its regulation - uncouplers and inhibitors. Formation of free radicals, consequences and disposal of free radicals.	6	5
5.Food assimilation and nutrition	(a) Digestive enzymes, their action on dietary carbohydrates, lipids and proteins. (b) Absorption of glucose, amino acids and lipids. (c) Gastric, pancreatic and intestinal function tests. (d) Functions of dietary ingredients.	5	3
6.Vitamin and Mineral metabolism	Vitamins: Dietary sources, biochemical role, deficiency manifestations, daily requirement and RDA; Hypervitaminoses and Vitamin antagonists in medicine. Minerals: Dietary sources, functional importance, regulation and altered levels of calcium, phosphorus, Zinc, Copper, Iodine, Fluoride Sodium, Potassium, Selenium, Magnesium, Manganese and Chromium. Iron metabolism, hemochromatosis.,	16	5

7.Immunology	(a) Reticuloendothelial system, components and functions of the innate and adaptive immunity. (b) Role of T and B lymphocytes, antigen presentation. (c) Induction of immune response. (d) Cell mediated immune response. (e) Immunoglobulin structure and functions (f) Humoral immune response (g) Fate of antigen antibody complex. (h) Complement system. (i) Generation of antibody diversity. (j) Hypersensitivities. (k) Immunoregulation , autoimmunity, tolerance (l) HLA, disease association & transplantation (m) Immunological techniques, application in medicine (vaccines, immunotherapy, immunoassays and immunodiagnostics.)	3	1
Total		60	38
SECOND SEMESTER			
8. Carbohydrates metabolism:	General concepts and characteristics of metabolic pathways. Role of dietary fibre in health, Glucose Transporters, Glycolysis, TCA cycle, glycogenesis, glycogenolysis and functional significance of HMP shunt and uronic acid pathway Gluconeogenesis, Galactosemias. Overview of Glycogen storage diseases Regulation of Blood Glucose level, Insulin receptor and Insulin Resistance, metabolism in starvation and Diabetes mellitus, Lab diagnosis and monitoring of Diabetes Mellitus; Biochemical basis of acute and chronic complications of Diabetes Mellitus Reactions of the HMP shunt pathway, Uronic acid pathway, basic concepts of Glycogen storage diseases	6	6
9.Lipid metabolism :	Fatty acid oxidation, ketosis, major steps in cholesterol biosynthesis and breakdown. Overview of fatty acid biosynthesis and phospholipid metabolism. Fatty liver and lipotropic factors . Arachidonic acid derivatives-Prostaglandins and biochemical actions. Lipoproteins classification and functions and disorders.	6	6
10.Protein metabolism:	Overview of metabolism of amino acids: phenylalanine, tryptophan, glycine, serine, Sulfur containing amino acids, histidine. Disposal of Ammonia and Urea cycle. Specialized products obtained from amino acid, metabolism and their importance, eg. creatine, melatonin, Melanin, Epinephrine, Thyroxine.	6	6
11.Intermediary metabolism:	Concept and methods of study of intermediary metabolism, inter-relationships of metabolites of carbohydrates, Amino Acids and Lipids. Regulation by hormones in starvation well fed state and Diabetes Mellitus.	3	2
12. Nucleic acids:	Types, Composition and Nucleic acids, Purine and pyrimidine base pairing rules in nucleic acids	3	1

	Sources of atoms of purine and pyrimidine rings Overview of biosynthesis Disorders of Nucleic acid Metabolism- hyperuricemias, Reactions of Biosynthesis of purines and pyrimidine bases. Disorders of pyrimidine metabolism.		
13.Human Genetics and Molecular biology	Organization of Genome, Phases of cell cycle, DNA, RNA metabolism Replication, transcription DNA. Modification of RNA, Translation of mRNA, post translational modification Regulation of Genetic expression, Mutations - Concept and types and DNA Repair mechanisms. Principles and applications in Medicine of Recombinant DNA Technology, polymerase chain reaction (PCR) and gene therapy Splicing of RNA, Prion disease, steps in PCR	12	10
14.Acid –base balance	(a) Regulation of blood pH, acidosis, alkalosis, (b) Renal function for pH regulation. (c) Fluid and Electrolytes balance, Disorders.	4	2
15.Environmental biochemistry, cancer and cancer makers	(a) Xenochemicals, interaction with biomolecules, effects, metabolism, detoxication, (b) Biochemical characteristics of cancer. (c) Environmental pollutants and carcinogenesis.	3	1
16.Hormones	(a) Molecular basis of hormonal action, signal transduction mechanisms. (b) Chemistry, functions and mechanism of action of hormones of the pituitary, thyroid, parathyroid, adrenals, pancreas and gonads. (c) Biosynthesis of steroid hormones their functions and mechanism of action. (d) Pineal body (e) Endorphins and enkephalins. (f) Calcium homeostasis. (g) Hormonal interplay in the regulation of metabolism.	2	1
17.Clinical Biochemistry	1.Hemoglobin Metabolism - Breakdown of Hb, Biochemical basis of jaundice and distinguishing features of different types of jaundice 2. Porphyrias - outline of biosynthesis of Heme, overview of causes and types of porphyrias, lab diagnosis 3. Plasma proteins – Classification, separation techniques, functions and altered levels of plasma protein in diseases. 4. Hepatobiliary function tests – Common tests performed and interpretation of laboratory reports. 5. Thyroid function tests - Common tests performed and interpretation of laboratory reports. 6. Renal function tests - Common tests performed and interpretation of laboratory reports. 7. Energy metabolism a) computation of energy yield from complete oxidation of glucose. b) Concept of Balanced diet c) Nitrogen balance,	3	2

	d) Calorific value of foods. 8. Biochemistry of Cancer - Role of carcinogens in carcinogenesis, Tumor, suppressor genes oncogenes Tumor markers – common parameters and their utility in clinical practice 9. Biochemistry of Atherosclerosis and Diagnosis of Myocardial Infarction ,Biochemical factors causing Atheroma, Hyperlipidemias,Laboratory Diagnosis of Myocardial infarction.		
Total		48	37

B. PRACTICAL SKILLS- 37hrs		
1.Demonstration of Instruments	Use conventional techniques. And basic instruments to perform biochemical analysis in bio-fluids for clinical screening and diagnosis. Use of colorimeter, Centrifuge, Glucometer, Flame photometry , Electrophoresis ,Chromatography ,pH meter	10hr
2.Sampling	Collect Blood for Biochemistry Parameters Transport, Storage of biofluids for biochemical analysis Check for preanalytical errors	4hrs
3.Tests for Monosaccharides	Molisch's test, Barfoed's test, Feh test, Seliwanoff's test, Rapid furfural test and test for Osazones	4hrs
4.Tests for Disaccharides	Molisch's test, Benedict's test, Barfoed's test, seliwan test, inversion test for sucrose and test for osazones.	4hrs
5.Colour reactions of Proteins	Biuret test, xanthoproteic test, million's test, cole aldehyde test, sakaguchi test, lead acetate test, ninhydrin test.	4hrs
6. Precipitation reactions of Proteins	Heller's test, lead acetate test, sulphosalic acid test, trichloroacetic test, precipitation by alcohol, half saturation test, full saturation test and heat coagulation test	4hrs
7. Spectroscopic examination of Hb-derivatives	Oxy-Hb, Deoxy-Hb ,Meth-Hb, Carboxy-Hb	1hr
8. Estimation of Blood sugar	GOD-POD method	1hr
9. Estimation of Blood urea	DAM method	1hr
10.Estimation of serum creatinine &Urine creatinine	Jaffe's method	1hr
11. Estimation of serum total proteins, albumin and A/G ration	Biuret. BCG.	1hr
12. Estimation of serum total bilirubin	Diazo method	1hr
13. Estimation of serum cholesterol	Chod-PAP kit.	1hr
14. Estimation of serum calcium	OC PC method, trinder's method.	1hr

15. Estimation of serum phosphorus (inorganic)	Kit Method, Fiske Subbarao	1hr
16. Estimation of SGPT (ALT)	Kit method	1hr
17. Estimation of SGOT (AST)	Kit method	1hr
18. Estimation of serum alkaline phosphatase	Kit method, King Armstrong method.	1hr
19. Estimation of serum amylase	Iodometric	1hr
20. Urine analysis -normal	Physical characteristics and normal, organic and inorganic constituents.	5hrs
21. Urine analysis-abnormal	Abnormal constituents of urine	5hrs
22. Clinical Lab report analysis	Analyse and interpret investigative data a) Individual and Composite reports b) Functional tests / organ profiles Cardiac, Thyroid, Renal, Hepatobiliary tests Bone parameters, Lipid profile, Diabetic profile etc. c) Interpretation of Blood Gas Analysis, d) Electrolyte analysis(ISE), c) Chromatograms, Electropherograms	12hrs
23. Principles of laboratory practice	General principles of assays of biochemical parameters Photometric assays, Beer Lamberts Law, ELISA and RIA Techniques. Principles and application of chromatography and electrophoresis. Principles and applications of Radioisotopes in Medicine. Use of Blood Gas Analysis Concept of dry chemistry methods for qualitative and quantitative analysis of biochemical parameters.	4hrs
24. Universal precautions	Universal precautions to be taken during laboratory procedures	1hrs
25. Rational Diagnostic Methods	Apply concepts of Rational Diagnostic Methods and tests in laboratory Medicine.	2hrs
Total	40+32=72hrs	

SCHEME OF EVALUATION

Internal Assessment tests		Timings	Marks			
			Theory	Practical		
				Practical	Oral	Record
1.Part Completion Test -1		Sep(Month-2) end	20	10	8	2
2.Part Completion Test-2		Oct(Month-3)end	20	10	8	2
3.Part Completion Test-3		Nov(Month-4) end	20	10	8	2
4.Part Completion Test-4		Feb (Month-7) end	20	10	8	2
5.Part Completion Test-5		Mar(Month-8) end	20	10	8	2
6.Part Completion Test-6		Apr(Month-9) end	20	10	8	2
7.End 1 st Semester Test		Dec' (month-5) Last Week	40	20	15	5
8.Pre-PMB Test		May'(month-10) Last Week	40	20	15	5
Total Marks			200	200		
From tests no.1 to 6(A)			120/12	120/10		
From tests no.7-8(B)			80/8	80/4		
Total Marks	Univ. examination marks				Int. Ass. marks	
	Theory		Oral	Practical (out of 20)	Theory	Practical
200	Over all (A+B) (25 each in part A & B of each of paper I & II having 50 marks each)	100 (out of 200)	20 (out of 20)	40 (out of 20)	20	20
Pass Marks	40% in Theory(including Int. Ass.)	48/120				
	40% in Viva	8/20				
	50% in Theory(including Int. Ass.)including Viva	70/140				
	50% in Practical(including Int. Ass.)	30/60				
	35% in Internal Assessment (theory)	7/20				
	35% in Internal Assessment(practical)	7/20				
	50% of total aggregate	100/200				

ASSESSMENT SCHEDULE**UNIVERSITY EXAMINATION:****A.THEORY**

i) (Total 100Marks): Two papers of 2.5 hours duration and 50 marks each.

Distribution of chapters for sections and papers:**Paper-I****Section-A**

Cell biology, structures, compartmentation, functions, biological membranes, chemistry of macromolecules, Hemoglobin, myoglobin, plasma proteins, nucleic acid biochemistry,

Section-B

Nutrition and dietetics, bioenergetics and biological oxidation, hormones, vitamins and coenzymes and radioisotopes and its application in medicine.

Paper-II**Section- A**

Metabolism of carbohydrates, protein, amino acid, lipids, nucleotides, metabolism, water, electrolyte and mineral metabolism.

Section-B

Enzyme and enzyme kinetics with isoenzymes (application in medicine).
Molecular biology, Immunology, Function test- Gastric, Renal, Liver, Thyroid, Regulation Acid Base Balance, Environmental biochemistry, Cancer biochemistry and Xenobiotics, Human Genetics.

ii) Pattern of Question Paper :

Structured Essay Questions	20% ≈ 10	5marks x1	=5marks
Short answer questions	60% ≈ 10	2.5marks x 6	=15marks
Very short answer questions	20% ≈ 5	1mark x 5	=5marks
Each part total marks			25 Marks
Total marks in each of the paper			50 marks
Total Marks in 2 theory papers			100marks

iii) MODEL QUESTION

Biochemistry

Paper I**Time 2 ½ hours, FM- 50 marks**

Answer all questions; the figures in the right hand margin indicate marks;
use separate answer sheets for each section; draw diagrams wherever necessary.

Section-A

1. Very Short answer type

[0.5marks x10=5marks]

- a) Which enzyme is deficient in Alkaptonuria ?
- b) NADH oxidation in mitochondria gives rise to how many ATPs ?
- c)
- d)
- e)
- f)
- g)
- h)
- i)
- j)

2. Write shortly on :

[2.5 marks x6=15marks]

- a. PCR
- b. Modified structure essay questions
- c. Porphyria
- d. Sickle cell anaemia
- e.
- f.....

3. How are reducing equivalents arranged in the mitochondria respiratory chain?
Describe the process of oxidation, phosphorylation in detail with suitable diagram?

[1+2+2=5]**Section-B**

1. Very Short answer type

[0.5marks x10=5marks]

- a)Vegetables are source of which vitamins ?
- b) From which compound polyamines are synthesized?
- c) FIGLU is a product of which metabolism ?
- d) prime required for glycogen synthesis ?
- e) Name the key enzymes for- **Fatty Acid** synthesis.

[54]

- f) Name the key enzymes for-Heme synthesis, (1)
 g) Give the normal Blood level (range) of Creatinine.
 h) Give the normal Blood level (range) of Calcium.
 i)
 j).....

2. Write shortly on :

[2.5 marks x6=15marks]

- a. PCR
 b. Modified structure essay questions
 c.
 d.
 e.
 f.

3. Modified structure essay questions

[1+1+3=5marks]

Paper II

Time 2 ½ hours, FM- 50 marks

Answer all questions; the figures in the right hand margin indicate marks;

use separate answer sheets for each section; draw diagrams wherever necessary.

Section-A

1. Very Short answer type

[0.5marks x10=5marks]

- a)
 b)
 c)
 d)
 e)
 f)
 g)
 h)
 i)

2. Write shortly on :

[2.5 marks x6=15marks]

- a. PCR, b.....c.....d.....e.....f.....g.....

3. Modified structured essay type questions

[1+1+3=5marks]

Section-B

1. Write short notes

[2.5marks x6=15 marks]

- a. significance of dietary fibers in diet.
- b. name the tumor markers and their significance LCAT
- b. xenobiotics
- c.....
- d.....
- e.....
- f.....

2. Read the following case history and answer the given question briefly. **[5marks]**

A 40 year old woman was admitted with recurrent pain in abdomen. who developed jaundice after 2 days. History revealed acute pain **after** intake of fatty foods, Routine examination showed the presence of Bile salts and Bile pigments but not urobilinogen **in** urine.

- a) What is the type of jaundice ? 1 mark
- b) What is the most likely cause? 1 mark
- c) Which blood tests are to be done in patient ? 2 marks

3. Modified structure essay questions

[1+1+3=5marks]**INTEGRATED TEACHING**

Topics	Departments
1. Molecular and functional organisation of cell	Anatomy and Physiology
2. Digestion and absorption	Physiology
3. Endocrinology	Physiology, Pathology and
Clinical departments	
4. Fluid, Electrolyte and acid-base homesostasis	Clinical departments
5. Nutrition and Dietetics Dietetics,	Community, Medicine, Paediatrics
6. Genetics	Anatomy

7. Function tests

Clinical departments, Physiology

TEXT BOOKS:

1. Harper's review of Biochemistry
2. Textbook of Biochemistry by D M Vasudevan and Srikumari
3. Medical Biochemistry by Dinesh Puri

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Syllabus and Curriculum

in

PATHOLOGY

for

MBBS Course

(III to V Semesters)

2012

I. GOAL

The broad goal of the teaching of undergraduate student in Pathology is to provide the students with a comprehensive knowledge mechanisms and cause of disease, in order to enable him/her to achieve a complete understanding of the natural history and clinical manifestations of the disease.

II. LEARNING OBJECTIVES

a) KNOWLEDGE

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

1. describe the structure and ultrastructure of a sick cell, mechanisms of cell degeneration, cell death and repair and be able to correlate structural and functional alterations.
2. explain the pathophysiological processes which govern the maintenance of homeostasis, mechanisms of their disturbance and the morphological and clinical manifestations associated with it.
3. describe the mechanisms and patterns to tissue response to injury such that she/he can appreciate the pathophysiology of disease processes and their clinical manifestations.
4. correlate normal and altered morphology (gross and microscopic) of different organ systems in common diseases to the extent needed for understanding of disease processes and their clinical significance.

b. SKILLS

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

1. describe the rationale and principles of technical procedures of the diagnostic laboratory tests and interpretation of the results;
2. perform the simple bed-side tests on blood, urine and other biological fluid samples;
3. draw a rational scheme of investigations aimed at diagnosing and managing the cases of common disorders;
4. understand biochemical/physiological disturbances that occur as a result of disease in collaboration with pre clinical departments.

c. INTEGRATION

At the end of training he/she should be able to integrate the causes of disease and relationship of different etiological factors (social, economic and environmental) that contribute to the natural history of diseases most prevalent in India.

TEACHING METHODS & HOURS

	Hr/wk/semester			Total wks/semester				Total hrs					
Learning Methodology	iii	iv	v	iii	iv	v	T	iii	iv	v	T	G. total	Hrs in MCI Norm
Theory	3	3	3	18	18	12	48	54	54	36	144	320	300
Practical	2	1	1					36	18	12	63		
Tutorial/ Demonstration/ Group	1	2	2					18	36	24	72		

Discussion												
Integrated Teaching	30 hrs in 6 th to 9 th semesters									30		

WEEKLY ROUTINE AND CLASS DISTRIBUTION:

3 rd semester	9am-10am	10-1pm	1-2pm	2pm-3pm	3pm-4pm	4-5pm
Mon	X	Clinical Posting	Lunch	X	Practical-Gr-AB	
Tue	X			Theory-LT-IV	Practical-Gr-CD	
Wed	X			X	Practical-Gr-A	
Thu	Theory-LT-IV				Practical-Gr-B	
Fri	X				Tutorial-Gr-AB	---
Sat	X			Theory-LT-IV	---	Tutorial-Gr-CD
4 th / 5 th Semester	9AM-10AM	10-1PM	1-2PM	2PM-3PM	3PM-4PM	4-5PM
Mon	---	Clinical Posting	Lunch	Theory-LT-III	---	Tutorial-Gr-CD
Tue	Theory-LT-III			---	---	Tutorial-Gr-AB
Wed	---			Theory-LT-III	Practical-Gr-CD	---
Thu	---			---	Practical-Gr-AB	---
Fri	Theory-LT-III			---	Gr.Dis.-Gr-AB	---

Sat				---	-----	Gr.Dis.- Gr-CD
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COURSE CONTENT

B. Topics for didactic lectures (Theory): (Semester wise) (3rd semester) 54hrs

1. General Pathology: 27hrs

a. General -6hrs

History and scope of pathology, structure and ultrastructure of a sick cell, mechanism of reversible and irreversible injury to the cell with structural and functional alternation, Apoptosis, Intercellular accumulations, pigments amyloidosis, pathological calcification.

b. Cellular adaption: 4hrs

Hypertrophy, Atrophy, Hyperplasia, Metaplasia and dysplasia,

Mechanism of tissue to injury:

c. Acute inflammation-7hrs,

Chemical moderators of inflammation,

d. Chronic inflammation-2hrs

Granuloma,

e. Repair and healing-2hrs

f. Hemodynamics-6hrs

Pathological Process which governs the maintenance of homeostasis, mechanism of their disturbances and morphological and clinical manifestation associated with it which include oedema, Congestion, Thrombosis, Embolism and infarction.

2. Neoplasia: 9hrs

Definition , Nomenclature, Types of neoplasm, Characteristic of benign and malignant neoplasms, Epidemiology and carcinogenesis, Mechanism involved in genesis of a tumour, Paraneoplastic syndrome, Immune Surveillance.

3.Hereditary disorders: 6 hrs

Chromosomal Aberrations, Mendelian disorders with special emphasis of lysosomal storage disease.

4.Environmental pathology-2hrs

including radiation pathology,

5.Nutrition Disorders:2hrs

Pathology of infection leprosy, Tuberculosis and syphilis.

6.Immunity:8hrs

Types and mechanisms of hypersensitive reaction , Mechanism involved in tolerance and autoimmunity and autoimmune disease.

4th semester-54hrs

7.Systemic Pathology: 45hrs

Study of etiology, Pathogenesis, Pathology (including macro and microscopic changes) in organs and tissue and laboratory diagnosis of :

Disease of heart and circulatory system, Respiratory system, GI system including Liver, Gall Bladder and Pancreas, Lymph nodes and Spleen, Kidney and lower Urinary system , Prostate Disease of male and female genital system.

8.Haematology:9hrs

Disorder of blood in health and diseases: anaemias, Polycythemia, Leucocytosis, Leucopenia, Leukemia, Pancytopenia, Hypersplenism, Multiple myeloma, Bleeding disorders, Blood transfusion and its hazards.

5th Semester- 36hrs

9.Special Pathology:20hrs

a.Pathology of endocrine organs-10hrs

Thyroid, Endocrine Pancreas, Diabetes, Parathyroid, Adrenals and pituitary,

b.Disease of CNS and peripheral nervous system-6hrs

Meningitis, encephalitis, tumors

c.Disease involving bones, Joints and muscle-2hrs

Outline of myopathies

d.Disease of skin:-2hrs

Dermatitis, Lichen, Psoriasis, Common tumors of skin, Squamous cell carcinoma, Basal cell, Carcinoma and melanomas.

e.Tumors of pediatrics age group-2hrs

10.Clinical Pathology:16hrs

a.Study of body fluids, Urine, CSF, Seminal fluids , transudates and exudates and various changes leading to diagnosis,

b.Chemical Pathology:Study of metabolism and changes in blood and tissue fluids of important biochemical components,Glucose tolerances test and Gastric fluid analysis.

c.Organ Function tests-Liver function test, Renal function test etc, Serum enzymes in diagnosis disease.

CHAPTER DETAILS (36hrs)

A. General Pathology

A 1. Cell Injury

Must know

- Cause and mechanism: Ischemic, Toxic, Free- radical induced, Apoptosis
- Reversible cell injury: Types, morphology, hyaline and fatty change
- Irreversible injury: Necrosis and gangrene
- Calcification: Dystrophic and metastatic
- Extra cellular accumulations: Amyloidosis – classification, pathogenesis, morphology and pigment deposition such as melanin, bilirubin, hemosiderin and

carbon

A 2. Inflammation and Repair

Must know

- Chronic inflammation: Causes, types, non-specific and Granulomatous with examples.
- Wound healing and repair by primary and secondary union and factors modifying them. Healing at specific sites like bone.

A 3. Hemodynamic disturbances

Must know

- Oedema: Pathogenesis and types
- Chronic venous congestion: Lung, Liver and Spleen
- Thrombosis and Embolism: Formation, Types and Fate, Effect on tissues
- Infarction: Types and Common sites
- Shock: Pathogenesis, types and morphology

A 4. Growth Disturbance and Neoplasia

Must know

- Atrophy, Hypertrophy, Hyperplasia, Aplasia, Malformation, Metaplasia, Dysplasia and Intraepithelial Neoplasia including carcinoma in situ, Premalignant conditions
- Neoplasia: Causes, Classification, Histogenesis and molecular basis, Biological behaviour, Benign versus Malignant, Nomenclature
- Malignant Neoplasms: Grade and Stage, metastasis and invasion
- Carcinogenesis: Environmental carcinogens, viral, chemical, occupational, hereditary
- Laboratory Diagnosis of cancer, Tumor markers, Paraneoplastic syndromes, Gross and microscopic features, clinical correlation, mode of spread and prognosis of common benign and malignant tumors. Diagnosis of neoplasia-benign and malignant.

Desirable to know

- Tumor and host interaction, Tumor immunology

A 5. Immunopathology

Must know

- Immune system: Organization, cells, antibodies and regulation
- Hypersensitivity: types and examples
- Immune deficiency: primary and secondary
- Autoimmune Diseases both organ specific and systemic with specific examples like SLE,
- Hashimoto thyroiditis
- Organ Transplantation: Immunologic basis of rejection, Graft versus Host reaction

Desirable to know

- Specific Organ Transplantation like Bone marrow, Stem cell, Renal
- Use of immunopathology in laboratory diagnosis like immunofluorescence, immunohistochemistry, flow cytometry

Note: The topic of immunopathology is generally also covered in details by Microbiology and Biochemistry Departments, hence it would be useful to integrate with the other departments and prepare specific departmental objectives so as to avoid overlap in the matter taught.

A 6. Infectious Diseases**Must know**

- Etiopathogenesis, gross and microscopic features, clinicopathological correlation, relevant investigations and complications of commonly prevalent infections like Mycobacterial diseases: Tuberculosis and Leprosy Bacterial Diseases: Pyogenic, Typhoid, Meningococcal, Syphilis, Bacillary
- Dysentery Fungal diseases, Actinomyosis, Rhinosporidiosis, Opportunistic infections Parasitic diseases: Malaria, Filariasis, Kala Azar, Amebiasis, Cysticercosis, Hydatid
- Viral diseases: Herpes, Hepatitis, Rabies, Dengue HIV infection and AIDS: Aetiology, Mode of transmission, Diagnostic procedure and handling of infected material and health education

Note: The above mentioned infections are also covered in details by Microbiology Department, hence it would be useful to integrate with them and prepare specific departmental objectives so as to avoid overlap in the matter taught

A 7. Miscellaneous Disorders**Must know**

- Autosomal and sex-linked disorders
- Metabolic disorders like Diabetes Mellitus, Lysosomal Storage disorders
- Nutritional disorders – Protein Energy Malnutrition, Vitamin deficiency
- Occupational and environmental pathology – Radiation Injury, Pneumoconiosis

Desirable to know

- Pathology of alcohol and smoking
- Cystic fibrosis
- Obesity

B Systemic Pathology**B 1. Hematopathology****Must know**

- Constituents of blood and bone marrow, regulation of hematopoiesis
- Anemia: Classification and clinical features, Laboratory approach
- Nutritional anemia: Iron deficiency, Vitamin B12 and Folate deficiency
- Hemolytic Anemia: Classification and Laboratory diagnosis, Thalassemia, Hemoglobinopathy like Sickle cell anemia, Hereditary Spherocytosis, G6PD deficiency, Acquired hemolytic anemia: Autoimmune hemolytic and Microangiopathic hemolytic anemia, hemolytic disease of newborn
- Aplastic Anemia, PNH, Pancytopenia, myelophthisic anemia
- Leucocyte disorders like Leucocytosis, Leukemoid reaction, Leucopenia
- Leukemia: Acute and Chronic – classification and diagnosis
- Other chronic myeloproliferative disorder
- Myelodysplastic syndromes
- Hemostatic disorders: Platelet deficiency, ITP, Coagulation disorders like Hemophilia, Von Willebrand Disease, DIC
- Plasma cell dyscrasia
- Blood transfusion practice: Grouping, Cross Matching, Donor selection, Component therapy, Rational Use of blood transfusion, Adverse reactions and transmissible infections

B 2. Cardiovascular Pathology

Must know

- Rheumatic Heart Disease
- Infective endocarditis
- Hypertension
- Atherosclerosis and Ischemic heart Disease

Desirable to know

- Congenital Heart Diseases like VSD, ASD, Fallot's Tetralogy, PDA
- Pericardial Diseases
- Cardiomyopathy
- Vasculitis and Aneurysm
- Cardiac tumors like Myxoma

B 3. Respiratory Pathology

Must know

- Structure of bronchial tree and alveoli, normal and altered lung function, concept of obstructive and restrictive lung disease
- Inflammatory diseases of lung like Chronic Obstructive Pulmonary disease, Emphysema, Chronic Bronchitis, Bronchial Asthma, Bronchiectasis, Pneumonia, Lung Abscess, Pulmonary Tuberculosis
- Lung tumors: etiopathogenesis and types

Desirable to know

- Hyaline Membrane Disease and ARDS
- Interstitial lung disease

- Nasopharyngeal and Laryngeal tumors
- Mesothelioma

B 4. Pathology of Gastrointestinal tract

Must know

- Oral pathology: Leucoplakia, Premalignant conditions and Carcinoma
- Salivary gland pathology: Common benign and malignant tumors, Sjogren Syndrome
- Diseases of esophagus: Barrett Esophagus and Carcinoma
- Gastritis – types, H. Pylori infection
- Tumors of stomach: benign and malignant
- Inflammatory diseases of intestine: Typhoid, Tuberculosis, Amebic colitis, Ulcerative colitis, Crohn's disease
- Intestinal tumors: Polyps, Carcinoma, Lymphoma and Carcinoid
- Appendicitis

Desirable to know

- Hirschsprung disease
- Malabsorption disorders
- Pancreatitis and Pancreatic tumors

B 5. Liver and Biliary Tract pathology

Must know

- Jaundice: types, etiopathogenesis, differential diagnosis
- Hepatitis: Acute and Chronic
- Cirrhosis: Etiology, classification, Post necrotic, alcoholic, metabolic morphology, complications
- Alcoholic liver disease
- Gall bladder diseases: Cholecystitis, cholelithiasis, carcinoma
- Tumors of liver: hepatocellular carcinoma, metastasis

Desirable to know

- Liver function tests
- Liver failure
- Portal hypertension

B 6. Lymphoreticular Pathology

Must know

- Lymphadenopathy – Causes, Lymphadenitis, infectious and non-infectious
- Lymphoma: Hodgkin and Non- Hodgkin – classification scheme and morphology of selected lymphomas
- Diseases of spleen – splenomegaly, hypersplenism

B7. Urinary tract pathology

Must know

- Renal function tests
- Urinalysis
- Acute and Chronic renal failure
- Glomerulonephritis: Post streptococcal, Crescentic, Secondary
- Nephrotic Syndrome
- Acute tubular necrosis
- Urinary tract infection and Pyelonephritis
- Nephrolithiasis
- Renal tumors : Renal cell carcinoma, Wilms Tumor
- Urinary bladder: cystitis, urothelial carcinoma

Desirable to know

- Renal vascular disorders
- Polycystic kidney disease
- End-stage renal disease
- Renal tuberculosis

B 8. Pathology of Reproductive System

Must know

- Diseases of cervix: Cervical carcinoma, PAP stain, Screening and diagnosis
- Hormonal influences and histology of different phases of endometrium
- Endometrial hyperplasia and carcinoma, Smooth muscle tumor, Endometriosis
- Trophoblastic diseases: Hydatidiform mole and Choriocarcinoma
- Ovarian tumors
- Diseases of breast – fibrocystic disease, Fibroadenoma, Breast Carcinoma, Phylloides tumor
- Disease of penis- premalignant and carcinoma
- Nodular hyperplasia of prostate and carcinoma prostate
- Tumors of testis

Desirable to know

- Semen analysis and investigation of infertility
- Pelvic inflammatory disease
- Vulval and vaginal diseases
- Genital tuberculosis

B 9. Pathology of Musculoskeletal system

Must know

- Osteomyelitis – Acute, chronic, tuberculosis
- Metabolic bone disease – Rickets, Osteomalacia, Osteoporosis
- Tumors: Classification, Osteosarcoma, Chondrosarcoma, Giant cell tumor, Ewing's sarcoma, Metastatic bone tumors

Desirable to know

- Paget's disease of bone

- Muscular dystrophies
- Arthritis: Rheumatoid, Osteoarthritis, Tuberculous
- Tumors of jaw: like Ameloblastoma

B 10 Endocrine Pathology**Must know**

- Non neoplastic lesions of thyroid: Thyroid function tests, Iodine deficiency, Goitre, Autoimmune thyroiditis, Myxedema and thyrotoxicosis
- Tumors of thyroid
- Adrenal diseases: Hyperfunction and hypofunction, Tumors
- Parathyroid hyperplasia and adenoma
- Pituitary hyperfunction and hypofunction, tumors
- Multiple endocrine neoplasia

B 11. Neuropathology**Must know**

- CSF and its disturbances
- Inflammatory disorders: Meningitis and Brain abscess
- CNS tumors: Astrocytoma and Meningioma: classification

Desirable to know

- Degenerative diseases like Alzheimer's and PRION disease
- Cerebrovascular diseases: Hemorrhage, Aneurysm, Infarction
- Traumatic lesions
- Peripheral neuropathy and demyelinating diseases

B 12. Miscellaneous**Must know**

- Skin tumors like Melanoma, Basal cell carcinoma, Squamous cell carcinoma

Desirable to know

- Bullous lesions of skin
- Dermatological conditions like Psoriasis, cutaneous tuberculosis
- Diseases of eye like Retinoblastoma

I. PRACTICAL:

Each students shall attend practical classes in pathology and shall write down the procedures and findings of their works in a note book prescribed for the purpose and submit the same for the signature by their respective teachers at the end of the class. The practical records must be evaluated at each internal assessment tests.

II. Acquisition of Skills

- a) Be able to collect, store and transport materials for various pathological tests including histopathology, cytopathology, hematopathology, Blood bank and clinical pathology in a proper manner.
- b) Describe accurately and arrive at a logical diagnosis of common macroscopic Specimens (gross appearance) such as pneumonia, cirrhosis, gangrene etc
- c) Interpret and arrive at a conclusive diagnosis in the microscopic analysis of common diseases like tuberculosis, carcinoma, acute inflammation etc.
- d) Perform with accuracy and reliability various hematological procedures such as Hemoglobin estimation, Total and differential leucocyte count, peripheral smear staining and reporting.
- e) Calculate red cell indices and interpret the significance f) Perform independently complete examination of urine and detect abnormal findings and interpret the results
- g) Perform independently grouping of blood.
- h) Be aware of the procedure for common tests like Bleeding time, Clotting time, ESR, PCV, bone marrow examination, semen analysis and interpret abnormal findings.
- i) Interpret abnormal laboratory (biochemical, hematological and serological) values of common diseases.
- j) Adopt universal precautions for self protection against HIV and hepatitis

Topics and hours for Practicals:

1. One third of the allotted practical hours be devoted to-(21hrs)

- a) **Perform** a complete **urine examination** and detect abnormalities and correlate clinically.
- b) **Perform** with accuracy and reliability various **hematological procedures** such as
 - Hemoglobin estimation,
 - Total and differential leucocyte count,
 - Peripheral smear staining and reporting
 - Blood grouping
 - Sickling slide test
- c) **Observing or performing under guidance and interpret** abnormal findings of tests like
 - Bleeding time, Clotting time, ESR, Platelet count

- PCV, Bone marrow examination, Reticulocyte Count.
- Semen analysis
- CSF analysis
- Peritoneal fluid analysis
- Pleural fluid analysis
- Hb-electrophoresis
- High performance liquid chromatography.
- Red cell indices.

2. One third of the practical hours allotted should be devoted to **Identify and interpret gross and microscopic feature of**-(21hrs)

- a) Acute inflammation like acute appendicitis, pneumonia, meningitis
- b) Chronic cholecystitis
- c) Granulomatous inflammation like tuberculosis
- d) Granulation tissue and Ulcer
- e) Typhoid, tuberculous and amebic ulcers
- f) Common infections like Leprosy, Malaria, Filarial lymphnode, Rhinosporidiosis, Hydatid disease, Actinomycosis, Mycetoma, Molluscum contagiosum
- g) Fatty liver, Amyloidosis, Venous congestion of lung, liver and spleen
- h) Types of necrosis
- i) Common benign and malignant tumors like Squamous cell carcinoma, Basal cell carcinoma, Adenocarcinoma, Hemangioma, Lipoma, Melanoma, metastatic tumors etc
- j) Common systemic diseases like Cirrhosis, Pyelonephritis, Peptic ulcer, Rheumatic Heart Disease, Bronchiectasis, Osteomyelitis
- k) Specific tumors of various organs like Cervical cancer, Uterine leiomyoma, Seminoma, Osteosarcoma, etc.

3. One third of the allotted practical hours to be devoted to **case studies and autopsy**-(21hrs)

- a) Discussion of case studies based on the actual clinical and laboratory findings of patients along with gross and microscopic findings wherever applicable to learn clinicopathological correlation.
- b) Observation of post mortem examination if undertaken and discuss the

clinicopathological correlation. In case clinical post mortems are not available then got-up specimens may be arranged to enable students to appreciate such cases.

TOPICS FOR TUTORIALS-GROUP DISCUSSION:

(Important topics are again discussed for the purpose of reinforcement; the topics which can not be covered in didactic lectures are covered, museum specimens, charts, lab reports are also to be covered.)

III - Semester: 1hr/week (18 weeks) = 18hrs

IV - Semester: 1hr/wk (for 18 weeks) = 18hrs

V - Semester: 1hr/wk (for 9 weeks) = 9hrs

Teaching and learning methodology

The stress should be on teaching basic fundamentals of the disease process and applied aspects relevant to the clinical subjects

a) General Pathology –

- Taught in semester-3
- Taught with the help of didactic lectures followed by practical pertaining to the topic.
- Besides microscopic examination of slides, fresh specimens obtained during surgical operations may be shown.
- Students to be encouraged to do self learning and small topics may be given to them in advance for group discussion and presentation.
- At the end of one topic tutorials may be arranged to facilitate learning

b) Hematology and Systemic Pathology – Second and Third Semester

The following modalities may be adopted

1. Didactic lecture
2. Case based discussion
3. Clinicopathological conferences

4. Practical demonstration of gross and microscopic features of cases
5. Seminars where the students are encouraged to speak and discuss on various topics that are allotted to them in advance.
6. Fortnightly tutorials where the students will be asked to prepare a topic and the tutor will ask questions, discuss problems and clarify doubts regarding the topic.
7. Other modalities that should be encouraged include Problem Based learning, Integrated teaching modules and self-learning tools including web-based learning.

SCHEME OF EVALUATION

Total marks marks	Univ. examination marks			Int. Ass. marks	
	Theory	Oral	Practical	Theory	Practical
50	80(20 each in part A & B of each of paper I & II having 40 marks each)	15	25	15	15
Pass Marks	40% in Theory (including Int. Ass.)	38/ 95			
	40% in Viva	6 /15			
	50% in Theory (including Int. Ass.) including Viva	55 /110			
	50% in Practical (including Int. Ass.)	20/40			
	35% in Internal Assessment (theory)	5.25 / 15			
	35% in Internal Assessment (practical)	5.25/15			
	50% of total aggregate	75/150			

Internal Assessment Schedule:

Internal Assessment	Timings	Marks		
		Theory	Practical	
			Oral-Practical	Record

1 st	End 3 rd semester Jan' last week	50	45	5
2 nd	End 4 th semester July last week	50	45	5
3 rd	5 th semester-Pre-PMB test Oct' last week	50	45	5
Total marks		150	150	
Sending marks		Total marks /10 (out of 15)	Total marks / 10 (out of 15)	

PROFESSIONAL MBBS EXAMINATION

A.THEORY

i)(Total 80 Marks):- Two papers of 2 hours duration and 40 marks each.

Papers	Section-A Chapters	Section-B Chapters
Paper-I	(General Pathology) 1.Cell injury, degeneration, 2. Inflammation 3.Cell Growth & Neoplasias	(General Pathology) 1.Genetic Disorders. 2.Immunological Disorders. 3.Fluid & Hemodynamic
Paper-II	1.Systemic Pathology	1.Haematology 2.Clinical Pathology

ii) Pattern of questions

Structured essay type	1x4marks	=4marks
Very short type-	0.5marksx8	=4marks
Short type-	3marksx4	=12 marks
TOTAL IN EACH SECTION:		=20marks
TOTAL IN EACH PAPER:		=40marks
TOTAL FOR THEORY ON THE SUBJECT:		=80marks

iii)MODEL THEORY QUESTIONS:

PATHOLOGY

Paper I

Time -2 hours, FM- 40 marks

Answer all questions; the figures in the right hand margin indicate marks;

use separate answer sheets for each section; draw diagrams wherever necessary.

SECTION-A

1. Write shortly on the following: (any tone) [1x4 marks=4marks]
 - a. Pathology of the rheumatic heart disease
 - b. Peripheral blood and bone marrow picture of rnegaloblastic anaemia
2. Write short notes on the following: (any six) [6x2marks=12marks]
 - a. Ewing's sarcoma
 - b. Seminoma
 - c. Jaundice
 - d. Morphology of carcinoma of stomach
 - e. Complications of diabetes mellitus.
3. Answer very shortly : [0.5x8=4marks]
 - (a) Which is the most common type of lung cancer in women and non-smokers ?
 - (b) Leather bottle type of stomach is a feature which pathological condition ?
 - (c) Give an example of anaemia where Bence Jones protein is seen ?
 - (d) Give an example of wet gangrene ?
 - (e) Name the cell responsible in cell mediated immunity.
 - (f) Give an example of point mutation that causes anaemia ?
 - (g) Auer rods are derived from which type of granules?
 - (h) Auto-immune haemolytic anaemia is an example of which type of hypersensitivity reaction.

SECTION-B

1. Write shortly on the following: (any one) [1x4 marks=4marks]

- a. Pathology of the rheumatic heart disease
- b. CSF finding in pyogenic meningitis.

2. Write short notes on the following: (any six) [6x2marks=12marks]

- a. Ewing's sarcoma
- b. Seminoma
- c. Jaundice
- d. Morphology of carcinoma of stomach
- e. Complications of diabetes mellitus.

3. Answer very shortly : [0.5x8=4marks]

- (a) Which is the most common type of lung cancer in women and non-smokers ?
- (b) Leather bottle type of stomach is a feature which pathological condition?
- (c) Give an example of anaemia where Bence Jones protein is seen?
- (d) Give an example of wet gangrene?
- (e) Name the cell responsible in cell mediated immunity.
- (f) Give an example of point mutation that causes anaemia?
- (g) Auer rods are derived from which type of granules?
- (h) Auto-immune haemolytic anaemia is an example of which type of hypersensitivity reaction.

B. PRACTICAL EXAMINATION:

- Spot-5marks
- Urine-4marks
- Hematology-4marks
- Histology practical-8marks
- Pathology practical-4marks
- **Total-25 marks**

C.VIVA:

By one external and one internal in each panel to cover 15marks.

Panel-I-Systemic Pathology including Lymphnodes-7.5marks

Panel-II-General, Clinical Pathology and Hematology-7.5marks

AREAS OF INTEGRATED TEACHING AND PARTICIPATING ALLIED DEPARTMENTS

- | | |
|---------------------------------------|---|
| 1. Anemia | : Medicine, Gynecology, Pediatrics |
| 2. Bleeding disorders | : Medicine, Pediatrics |
| 3. Tuberculosis | : Medicine, Pulmonary Medicine, Pediatrics |
| 4. Nephrotic and Nephritic syndromes: | Medicine, Pediatrics |
| 5. Cirrhosis | : Medicine, Surgery |
| 6. Ischemic heart disease | : Medicine, Cardiology, Community medicine |
| 7. Diabetes Mellitus | : Medicine, Community medicine |
| 8. Jaundice | : Medicine, Surgery, Pediatrics |
| 9. Peptic ulcer | : Surgery, Medicine |
| 10. Carcinoma breast | : Surgery |
| 11. Splenomegaly | : Medicine, Pediatrics |
| 12. Leukemia | : Medicine, Pediatrics |
| 13. Bone tumors | : Orthopedics |
| 14. Carcinoma Cervix | : Gynecology, Community Medicine |
| 15. HIV/AIDS | : Medicine, Microbiology, Community medicine, Pediatrics. |
| 16. Leprosy | : Dermatology, Community Medicine, Dermatology. |
| 17. Autoimmune diseases | : Medicine, Pediatrics |

RECORDS

Pathology practical records maintained by the student.

BOOKS

1. Robbin's Pathologic Basis of Disease *Ramzi S. Cotran, Vinay Kumar, Stanley L Robbins* WB
2. Saunders Co., Philadelphia.
3. Basic Pathology Robbins WB Saunders Co., Philadelphia
4. General Pathology *JB Walter, MS Israel*. Churchill Livingstone, Edinburgh.
5. Underwood's Pathology, International Student Edition
6. Text book of Pathology by Harsh Mohan
7. Practical Pathology by Uma Chaturvedi and Tejindar Singh

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Syllabus and Curriculum
in
MICROBIOLOGY
for
MBBS Course
(III TO V Semesters)
2012

GOAL:

The goal of teaching microbiology to undergraduate medical students is to provide an understanding of infectious disease in order to deal with the etiology, pathogenesis, laboratory diagnosis, treatment and control of infection.

LEARNING OBJECTIVES :

a. KNOWLEDGE

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

1. state the infective micro-organisms of the human body and describe the host parasite relationship.
2. list pathogenic micro-organisms (bacteria, viruses, parasites, fungi) and describe the pathogenesis of the diseases produced by them.
3. state or indicate the modes of transmission of pathogenic and opportunistic organisms and their sources, including insect vectors responsible for transmission of infection.
4. describe the mechanisms of immunity to infections.
5. acquire knowledge on suitable antimicrobial agents for treatment of infections and scope of immunotherapy and different vaccines available for prevention of communicable diseases.
6. apply methods of disinfection and sterilization to control and prevent hospital and community acquired infections.
7. recommend laboratory investigations regarding bacteriological examination of food, water, milk and air.

(b). SKILLS

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

1. plan and interpret laboratory investigations for the diagnosis of infectious diseases and to correlate the clinical manifestations with the etiological agent.
2. identify the common infectious agents with the help of laboratory procedures and use antimicrobial sensitivity tests to select suitable antimicrobial agents.
3. perform commonly employed bed-side tests for detection of infectious agents such as blood film for malaria, filaria, gram staining and AFB staining and stool sample for ova cyst.
4. Use the correct method of collection, storage and transport of clinical material for microbiological investigations.

C. INTEGRATION

The student should understand infectious diseases of national importance in relation to the clinical, therapeutic and preventive aspects.

TEACHING METHODS & HOURS

Learning	Hr/wk/semester			Total wks/semester				Total hrs					
Methodology	iii	iv	V	iii	iv	v	T	lii	iv	v	Total	G. total	Hrs in MCI Norm
Theory	2	2	2	18	18	12	45	36	36	24	96	240	250
Practical	2	1	1					36	18	12	66		
Tutorial/ Demonstration/ Group Discussion	1	1	1					18	18	12	48		
Integrated Teaching	40 hrs during 7 th to 9 th semesters							40			40		

WEEKLY ROUTINE AND CLASS DISTRIBUTION:

Day	9-10 pm	2 – 3 pm	3 – 4 pm	4—5pm
Mon	XXXX	Xxxx	4 th /5 th semester Practical-Gr-CD	xxxx
Tues	XXXX	4 th /5 th Semester Theory	4 th /5 th Semester Practical-Gr-AB	xxxx
Wed	XXXX	3 rd Semester Theory	3 rd semester practical-Gr-CD 4 th /5 th semester-Tutorial-AB-1hr-4-5pm	
Thurs	xxxx	XXXX	3 rd semester practical-Gr-AB 4 th /5 th semester-Tutorial-Gr-CD-1hr-4-5pm	
Fri	3 rd Semester Theory	4 th /5 th Semester Theory	Xxxx	3 rd semester Tutorial-Gr-CD

Sat	XXXX	XXXX	3 rd semester Tutorial-Gr-AB	xxxx
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TOPICS FOR DIDACTIC LECTURE:

Mentioned below are the approximate hours of duration for covering a chapter.

A.GENERAL BACTERIOLOGY – 11 CLASSES of 1 hour each :

1. Introduction and history --- 1 Class
2. Morphology, staining & Microscopy --- 1 Class
3. Classification & Structure of Bacteria --- 1 Class
4. Growth & Nutrition of Bacteria --- 2 Classes
5. Sterilization and disinfection --- 3 Classes
6. Culture media and culture methods, Isolation and identification of bacteria (brief discussion, but details in practical exercise) --- 1 Class
7. Bacterial Genetics (Short introduction to basic principles. Details of Gene transfer and role in human disease). --- 2 Classes

B.IMMUNOLOGY – 16 CLASSES :

1. Bacterial Pathogenicity Sources and Spread of infection in community. --- 1 Class
2. Introduction to Immunity & Antigen --- 1 Class
3. Antibody and Immunoglobulin --- 1 Class
4. Complement --- 1 Class
5. Antigen Antibody Reactions Precipitation, Agglutination, CFT, IFT, RIA, ELISA, Neutralisation --- 2 Classes
6. Structure and Function of Immune system --- 1 Class
7. Immuno response --- 2 Classes
8. Immuno deficiency diseases --- 1 Class
9. Hypersensitivity and Autoimmunity --- 3 Classes
10. Immunology of Transplantation, MHC, and Malignancy. --- 2 Classe
11. Immunoprophylaxis --- 1 Class

C.SYSTEMATIC BACTERIOLOGY – 40 CLASSES:

1. Staphylococcus - - - 2 Classes
2. Streptococcus - - - 2 Classes
3. Pneumococcus - - - 1 Class
4. Neisseria - - - 1 Class

5. Corynebacterium	-	- - -	1 Class
6. Bacillus	-	- - -	1 Class
7. Clostridia and Non-sporing anaerobes		- - -	4 classes
8. Mycobacteria	-	- - -	3 Classes
9. Enterobacteriaceae		- - -	6 Classes
10. Vibrio		-----	1 Classes
11. Pseudomonas, Aeromonas, Plesiomonas, Alkaligenes, Acinetobacter		- - -	3 classes
12. Pasteurella, Yersinia, Francisella	-	- - -	2 Classes
13. Brucella	-	- - -	1 Class
14. Bordetella	-	- - -	1 Class
15. Haemophilus	-	- - -	1 Class
16. Spirochaetes	-	- - -	4 Class
17. Mycoplasma	-	- - -	1 Class
18. Actinomyces & Nocardia	-	- - -	1 Class
19. Chlamydia	-	- - -	1 Class
20. Rickettsia	-	- - -	1 Class
21. Campylobacter and Helicobacter	-	- - -	1 Class
21. Miscellaneous Bacteria	-	- - -	2 Classes.

D. VIROLOGY – 23 CLASSES

1. Introduction : Virus, virion, viroid, prion, virusoid	- - - -	1 class
Structure, General Properties, Classification		
4. Virus Multiplication	- - - -	1 class
2. Cultivation	-	1 class
3. Virus & Host Interaction Viral Assay	-	1 class
5. Principles of Lab. Diagnosis of Viral diseases	- - - -	1 class
6. Prophylaxis, Chemotherapy, Interferon	- - - -	1 class
7. Bacteriophage and its life cycle	- - - -	1 Class
7. Herpes Virus	- - - -	2 classes
8. Adenovirus and Poxvirus	- - - -	1 class
9. Picorna	-	2 classes
10. Orthomyxo	-	1 class
11. Paramyxo	-	1 class
12. Arbo	-	2 classes
13. Rhabdo	-	1 class
14. Hepatitis Virus	-	2 classes
15. Retroviruses and HIV	-	2 classes
16. Oncogenic Viruses, Slow Virus & Rubella	--	1 class
17. Miscellaneous (Rota virus, SARS etc.)	--	1 Class

E. APPLIED MICROBIOLOGY – 11 CLASSES :

1. Collection and transport of different clinical	--	1class
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Materials to microbiology laboratory

2. U.T.I.	-	-	-	1 class
3. Meningitis & Encephalitis		-	--	1 class
4. Respiratory infections	-	-	-	1 class
5. Gastroenteritis & Food Poisoning		-	--	1 class
6. P.U.O.		-	--	1 class
7. Reproductive Infection, Sexually transmitted infections and diseases		-		1 class
8. Pyogenic including anaerobic infections		-		1 class
9. Hospital waste management		-	-	1 class
10. Universal Safety Precautions and PEP for HIV		-		1 class
11. Nosocomial infections & its control		-	-	1 class

F. PARASITOLOGY – 28 CLASSES

1. Introduction and classification		-		1 class
2. Entamoeba	|			
3. Giardia		-	-	3 classes
4. Leishmania		-	-	2 classes
5. Trypanosoma		-	-	1 class
6. Malaria Parasite		-	-	3 classes
7. Toxoplasma & Balantidium coli		-	-	2 classes
8. Hook Worm		-	-	1 class
9. Round Worm		-	-	1 class
10. Trichuris and Enterobius		-	-	1 class
11. Strongyloides		-	-	1 class
12. Trichinella		-	-	1 class
13. Wuchereria and other tissue nematodes		-	-	3 classes
14. Diphyllbothrium		-	-	1 class
15. T. Saginata, T. Solium		-	-	1 class
16. Echinococcus		-	-	1 class
17. Trematodes		-	-	3 classes
18. Others (larva migrans, sparganum, dracunculus etc.)				2 class

G. MYCOLOGY – 9 CLASSES :

1. Morphology, Classification & Superficial mycosis	--		1 class
2. Dermatophytes	-	-	1 class
3. Deep mycosis		--	1 class
4. Subcutaneous Mycosis including Maduromycosis	--		1 class
Rhinosporidiosis, Chromomycosis etc.			
5. Pathogenic yeasts, cryptococcus		--	1 class
6. Pathogenic yeast like fungi candida albicans		--	1 class
7. Rhinosporidiosis	-	-	1 class
8. Dimorphic fungi	-	-	2 class

SEMESTER WISE DISTRIBUTION OF SYLLABUS :

Semester	Theory to be covered	Duration
3 rd (36 hrs)	General Bacteriology (complete)	12hrs
	Immunology(complete)	12 hrs
	Parasitology (part)	12 hrs
4 th (36hrs)	Parasitology (rest)	10 hrs
	Systematic Bacteriology (part)	12 hrs
	Virology (part)	14 hrs
5 th (24hrs)	Systematic Bacteriology (rest)	12 hrs
	Virology (rest)	9 hrs
	Mycology	9hrs
	Applied Microbiology	6 hrs.

TOPICS FOR PRACTICALS: TOTAL: 66 hours

A.DIFFERENT METHODS OF STAINING	7 CLASSES
1. Simple Stain	- 1 class
2. Gram's Stain	- 2 class
3. Acid fast stain of sputum smear	- 2 classes
4. Spore Stain (1) Acid Fast, (2) Malachite green	- 1 class
5. Albert Stain	- 1 class
B. Motility By Hanging Drop -	- 2 Classes
C. Microscopic Examination Of Faeces	- 5 Classes
D. Study Of Different Culture Media	- 2 Classes
E. Isolation & Identification Of Following	- 14 Classes
Bacteria:	Staphylococcus, Beta hemolytic streptococci, Streptococcus viridans, Pneumococcus, Esch. Coli, Klebsiella, Proteus, Pseudomonas, Salmonella, Shigella, Vibrio
Fungi:	Aspergillus, Candida, Dermatophytes

TOPICS FOR TUTORIALS & DEMONSTRATIONS (48 hours)

- A. Serology: V.D.R.L. Widal, ELISA, Blood Grouping, - 2 Classes
Other Agglutination test by kits, ICT
- B. Slides : - 3 Classes
P. vivax, P. falciparum, Rhinosporidiosis, Aspergillus, Candida, I.C.D.C., Acid fast bacilli in skin ; Spore stain: Modified Acid fast stain, Malachite green stain, Capsule Stain: Negative stain, Congo red stain Metachromatic granules: Albert stain, Neisser's stain
- C. Demonstration of different equipments & instruments -
--1 class
- D. Demonstration of KOH mount of skin scrapings &

Dermatophytes	- 1class
E. Museum Specimens	1 class.
F. Viral models: Bacteriophages, Adeno virus, Rhabdo Virus, HIV,etc:	1 class
G. Vaccines:	- 1 class

INTEGRATED TEACHING & APPLIED MICROBIOLOGY-	30 Hours
A. Collection, Transport, Microscopy, Culture, Interpretation, antibiotic sensitivity of clinical specimens like urine, pus, sputum, blood, throat swab, CSF, etc	-- 10 classes
B. HIV & AIDS : Counseling, Testing, Reporting, Universal precautions, Biomedical waste management	-- 5 classes
C.Diagnosis, Treatment of Malaria, Filaria,TB, Leprosy,	-- 15classes

SCHEME OF EVALUATION

Total marks marks	Univ. examination marks			Int. Ass. marks	
	Theory	Oral	Practical	Theory	Practical
150	80(20 each in part A & B of each of paper I & II having 40 marks each)	15	25	15	15
Pass Marks	40% in Theory(including Int. Ass.)	38/ 95			
	40% in Viva	6 /15			
	50% in Theory (including Int. Ass.) including Viva	55 /110			
	50% in Practical (including Int. Ass.)	20/40			
	35% in Internal Assessment (theory)	5.25 / 15			
	35% in Internal Assessment (practical)	5.25/15			
	50% of total aggregate	75/150			

INTERNAL ASSESSMENT SCHEDULE:

Timing	Theory	Practical	
		Practical-oral	Record
End-3rd semester	50 marks	45 marks (Gram staining= 30	5 marks

		marks, Spotting= 15 marks)	
End-4th semester	50 marks	45 marks (Z.N.Staining =15marks, Stool examination =15marks, Spotting=15marks)	5marks
Pre-PMB test (5th semester)	50 marks	45 marks (Gram stain=10marks, ZN stain=10marks, Stool examination=10marks, Spotting = 15marks)	5marks
Total	150 marks	150 marks	
Sending Marks	150/10 (out of 15)	150/10 (out of 15)	

UNIVERSITY EXAMINATION:**A. THEORY:**

i) There will be two papers for 40 marks each; each paper having two sections of equal mark distribution. Each paper will have one long question and one short question.

ii) Division Of Subjects For Theory Examination:

Paper-I

Section: A – 20marks General Bacteriology and
Applied microbiology

Section: B - 20marks Parasitology and Immunology.

Paper-II

Section: A - 20marks Systematic Bacteriology

Section: B – 20marks Mycology and Virology.

Each section will be evaluated by either one internal or one external examiner.

iii) Question pattern

Structured essay type- 4marksx1 =4marks

Very short type- 05marksx8 =4marks

Short type- 2marksx6 =12 marks

Total in each section =20marks

Total in each paper =40marks

Total in theory

=80marks

iv) MODEL QUESTION

MBBS QUESTION SAMBALPUR UNIVERSITY

MICROBIOLOGY

Paper-I

Duration= 2hrs.

FM=40

[Answer All Questions. Right Hand Margin Figures Are Indicative Of Marks. Use Separate Answer Books For Answering Section-A And Section-B.]

Section: A (Gen. Bacteriology & Applied Microbiology)

1. Define Sterilization, Disinfection and Antiseptics. Describe the operation of one instrument used for sterilization in Bacteriology. [1+3=4marks]

2. Write in Brief: [2marksx6=12]

- a) Luis Pasteur
- b) Bacterial Capsule
- c) Plasmid
- d) Endo-toxin
- e) Enrichment Media
- f) Lawn Culture

3. Write in few words [0.5marksx8=4]

- a) Name four bacteria causing U.T.I
- b) Name two bacteria causing gas gangrene
- c) Name two culture media for transport of stool.
- d) Name two oxidase positive bacteria
- e) Name the specific test for laboratory diagnosis of syphilis
- f) Name the selective culture media for H. influenza
- g) Name the agents causing trachoma

- h) Name four bacteria responsible for hospital acquired infection.

Section: B (Parasitological, Immunology)

1. Name the Parasites causing fever. Mention the life cycle of any one of them.
[1+3=4marks]
2. Write in Brief: [2marksx6=12]
 - a) Hapten.
 - b) B. Lymphocytes
 - c) Type III hyper sensitivity reaction
 - d) Graft rejection
 - e) Adoptive Immunity
 - f) Casoni's test
3. Write in few words [0.5marksx8=4]
 - a) Name the intermediate host of Plasmodia
 - b) Name the causative agent of larva migrans
 - c) Name the habitat of Enterobius vermicularis
 - d) Name the clinical features of book worm infestation
 - e) Name live vaccines
 - f) Name the Immunoglobulins not involved in classical path way of complement fixation test
 - g) Name the Antigen presenting Cells
 - h) Name the cells involved in Delayed Type of Hyper sensitivity.

Paper-II

Duration= 2hrs FM=40

[Answer All Questions. Right Hand Margin Figures Are Indicative of Marks. Use Separate Answer Books For Answering Section-A And Section-B.]

Section: A (Systematic Bacteriology)

1. Classify streptococci. Mention the pathogenesis of non-suppurative complication of Group-B streptococcal infections. [1+3=4marks]

2. Write in Brief: [2marksx6=12]
 - a) Indole test
 - b) Coagulase test
 - c) Naglers reaction
 - d) Primary Atypical Pneumonia
 - e) Mantoux test
 - f) Salmonella food poisoning

3. Write in few words [0.5markx8=4]
 - a) Toxins of staphylococcus
 - b) Diarrhea producing E.coli
 - c) Bacteria producing swarming growth
 - d) Toxins of Shigella
 - e) Bacteria causing relapsing fever
 - f) Pathogenesis of tetanus
 - g) Name non-pathogenic treponemes
 - h) Bacteria causing madura foot

Section: B (Virology, Mycology)

1. Name the viruses producing hepatitis. Enumerate the laboratory parameters in diagnosis of Hepatitis B virus infection with their significance.
(1+3=4marks)
2. Write in Brief: (2marksx6=12)
 - a) Laboratory diagnosis of fungal infection of skin.
 - b) Germ tube test
 - c) Otomycosis
 - d) Negribodies
 - e) Neuraminidase
 - f) Rota virus
3. Write in few words (0.5markx8=4)
 - a) Enumerate methods of culture of viruses in laboratory
 - b) Name four DNA viruses
 - c) Name four viruses produce hemorrhagic fever
 - d) Name four enveloped viruses
 - e) Name the dimorphic fungi
 - f) Name four fungi produce deep mycosis
 - g) Name two aseptate fungi
 - h) Name two fungi produce toxins

B. PRACTICAL- 25 Marks

- 1.Z.N.Staining =5marks,
- 2.Stool examination=5marks,
- 3.OSCE-Spots=5marks,

C. VIVA- 15 Marks

To be conducted by two panels of examiners each panel consisting of one external and one internal covering paper-I and paper-II chapters respectively for 7.5 marks each.

PRACTICAL RECORD:

The practical record in Microbiology is published by the S.S.G. Society, College Union of VSS Medical College, Burla and is available at the

education section of the college. This is edited from time to time by the Professor & Head, Microbiology Department in consultation with other faculties as and when required.

BOOKS:

- 1.Jawetz, Melnick & Adelberg's Medical Microbiology
- 2.Text book of Microbiology by Greenwood
- 3.Text book of Microbiology by Ananthnarayan & Paniker
- 4.Parasitology – Protozoology & Helminthology by K.D.Chatterjee
- 5.Text Book of Parasitology:by P.Chakraborty
- 6.Practical Medical Microbiology by Mackie & Mc Cartney.

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Syllabus and Curriculum

in

PHARMACOLOGY

for

M.B.B.S. Course

(III TO V Semesters)

2012

GOAL

To produce quality medical graduates who are competent to undertake the responsibilities as medical professionals of first contact, who are competent by knowledge, skills and attitude to cater to the preventive, promotive, curative and rehabilitative needs of patients in particular and people at large.

LEARNING OBJECTIVES

(a) Knowledge & Intellectual skills

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

1. Understand the general principles of drug action and handling of drugs by the body in normal individuals including children, elderly, women during pregnancy & lactation; special situations like renal, hepatic disease and genetic variations.
2. Prescribe drugs rationally by :
 - (a) Understanding the importance of both non-drug treatment and drug treatment.
 - (b) Selecting and prescribing drug(s) based on suitability, tolerability, efficacy and cost according to the needs of the patient for prevention, diagnosis and treatment of common ailments.
 - (c) Choosing the most appropriate formulation for the clinical condition.
 - (d) Using antimicrobials judiciously for therapy and prophylaxis.

(e) Avoiding simultaneous use of drugs resulting in harmful interaction.

3. Prescribe drugs for the control of fertility and be aware of the effects of drugs on the foetus.
4. Apply pharmacokinetic principles in clinical practice pertaining to the drugs used in commonly encountered clinical conditions and essential medicines.
5. Prescribe rationally, in a legible manner, using appropriate format and terms, medicines for common ailments and all National Health programmes.
6. Foresee, prevent and manage adverse drug events and drug interactions
7. Understand and implement the essential medicines concept for improving the community health care
8. Understand and apply the principles of pharmacoeconomics
9. Apply the concept of evidence based medicine in practice.
10. Describe the clinical presentation and management of common poisonings including the bites and stings.
11. Judiciously use “over the counter” drugs and be aware of ill effects of social use of intoxicants.

(b) Psychomotor Skills

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

1. Write a correct, complete and legible prescription for common ailments including the conditions in the National Health Programmes.
2. Calculate the drug dosage using appropriate formulae for an individual patient.
3. Administer the required dose of different drug formulations using appropriate devices and techniques (e.g., hypodermic syringes, inhalers, transdermal patches etc).
4. Advice and interpret the therapeutic monitoring reports of important drugs
5. Recognize and report adverse drug reactions to suitable authorities.
6. Analyse critically, drug promotional literature for proprietary preparations, in terms of the (a) pharmacological actions of their ingredients (b) claims of pharmaceutical companies (c) economics of use (d) rational or irrational nature of fixed dose drug combinations.
7. Retrieve drug information from appropriate sources, especially electronic resources.

(c) Attitudes & Communication skills

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

1. Communicate to patients regarding the optimal use of drug formulations, devices and storage of medicines.
2. Follow the drug treatment guidelines laid down for diseases covered under the National Health Programmes and be capable of initiating, monitoring treatment, recording progress, and assessing outcomes.
3. Motivate patients with chronic diseases to adhere to the line of management outlined by the health care provider.
4. Appreciate the relationship between cost of drugs and patient compliance.
5. Exercise caution in prescribing drugs likely to produce dependence and recommend the line of management.
6. Understand the legal aspects of prescribing drugs.

7. Evaluate the ethics, scientific procedures and social implications involved in the development and introduction of new drugs.

TEACHING METHODS & HOURS

Learning Methods	Hr/wk/semester			Total wks/semester				Total hrs					Hrs in MCI norm
	iii	iv	v	iii	iv	v	T	iii	iv	v	T	G. total	
Theory	3	4	4	18	18	12	48	54	72	48	174	358	300
Practical	2	1	1					36	18	12	76		
Tutorial /Gr.Discussion	1	2	2					18	36	24	78		
Integrated Teaching	30 hrs during 6 th to 9 th semesters										30			30

WEEKLY ROUTINE AND CLASS DISTRIBUTION:

3 rd semester	9am-10am	10-1pm	1-2pm	2pm-3pm	3pm-4pm	4-5pm
Mon	--	Clinical Posting	Lunch		Practical-Gr-CD	
Tue	--			Theory-LT-IV	Practical-Gr-AB	
Wed	--			--	--	
Thu	Theory-LT-IV			--	--	
Fri	--			--	Tutorial-Gr-CD	--
Sat	--			Theory-LT-IV	--	Tutorial-Gr-AB
4 th /5 th	9am-10am	10-1pm	1-2pm	2pm-3pm	3pm-4pm	4-5pm

semester						
Mon	--	Clinical Posting	Lunch	Theory-LT-III	--	Tutorial-Gr-CD
Tue	Theory-LT-III			--	--	Tutorial-Gr-AB
Wed	--			Theory-LT-III	Practical-Gr-AB	--
Thu	--			--	Practical-Gr-CD	--
Fri	Theory-LT-III			--	--	Gd-Gr-CD
Sat	--			--	Gd-Gr-AB	---

COURSE CONTENT

A. THEORY

III Semester (54hrs):

1. General principles of Pharmacology(20hrs)

- Orientation, general introduction, important definitions, scope, branches, brief history, general principles, drug nomenclature, etc -1hr
- Sources of drugs and routes of drug administration -1hr
- Pharmacokinetics -6hrs
- Pharmacodynamics -9hrs
- Factors modifying drug action - 1hr
- Drug-drug interaction -1hr
- Concept of essential medicines and rational use of drugs -1hr

Desirable to Know

Pharmacogenomics, Pharmacogenetics,
Molecular mechanism of drug action,
Phases of clinical trials, Drug regulations & Drug acts,
Legal aspects, Inventory control

2. Drugs affecting the autonomous nervous system(15hrs):

- General introduction - 1hr
- Drugs affecting parasympathetic nervous system - 6hrs
- Drugs affecting sympathetic nervous system - 7hrs
- Drugs affecting ganglionic transmission - 1hr

3. Drugs affecting peripheral nervous system(4hrs)

- a. Skeletal muscle relaxants - 2hrs
- b. Local anaesthetics - 2hrs

4. Autacoids (7hrs)

- a. Histamine, Serotonin, Ergot alkaloids, Bradykinin- 4hrs
- b. Prostaglandin, Leukotrienes & Platelet activating factors- 3hrs

Drugs affecting Gastrointestinal tract functions(8 hrs)

- a. Physiology of gastric acid secretion, treatment of gastric acidity, peptic ulcer and GERD- 4hrs
- b. Antiemetics, prokinetics- 2hrs
- c. Drugs for constipation and diarrhea- 2hrs

Desirable to Know

Drugs used in obesity , Drugs for biliary and pancreatic disease, Drugs used in inflammatory bowel disease.

IV Semester(72hrs):**1. Drugs acting on the central nervous system(19 hrs)**

- a. Neurotransmission in CNS - 1hr
- b. General anaesthetics - 2hrs
- c. Hypnotics and sedatives - 2hrs
- d. Antidepressants - 2hrs
- e. Antipsychotics and antimanic drugs - 3hrs
- f. Antiepileptic drugs - 2hrs
- g. Drug therapy for neurodegenerative disorders - 2hrs
- h. Opioid analgesics and antagonists - 3hrs
- i. Alcohol - 2hrs

2. Non- steroidal anti- inflammatory drugs (4hrs)**3. Chemotherapy of microbial diseases (32hrs)**

- a. Introduction to chemotherapy and general considerations - 3hrs
- b. Sulphonamides -1hr
- c. Quinolones -2hrs
- d. Penicillins, Cephalosporins & other beta lactam antibiotics -4hrs
- e. Aminoglycosides - 2hrs
- f. Macrolides, ketolides, Lincosamides, Oxazolidinones& other antibacterial agents - 3hrs
- g. Broad spectrum antibiotics: Tetracycline & Chloramphenicol -2 hrs
- h. Chemotherapy of Tuberculosis and Leprosy - 4hrs
- i. Antifungal drugs - 2hrs
- j. Antiviral drugs for non-retroviral infections - 1hr
- k. HIV and antiretroviral drugs - 2hrs

- l. Anthelmintics - 1hr
- m. Antimalarial drugs - 3 hrs
- n. Antiamoebic & other antiprotozoal drugs - 2hrs
- 4. Hormones and hormone antagonists (17hrs)
 - a. Hypothalamic releasing factors and anterior pituitary hormone- 2hrs
 - b. Thyroid hormones and antithyroid drugs - 2 hrs
 - c. Insulin and antidiabetic drugs - 4hrs
 - d. Adrenocorticosteroids, their analogues and antagonists - 3hrs
 - e. Estrogens, Progestins & Contraceptives - 4 hrs
 - f. Androgens and antiandrogens - 2hrs

V Semester (36hrs)

- 1. Drugs affecting Renal and Cardiovascular system - (19hrs)
 - a. Diuretics - 4 hrs
 - b. Drug therapy of Hypertension - 3hrs
 - c. Drug therapy of angina pectoris - 2hrs
 - d. Drug therapy of cardiac arrhythmias - 4hrs
 - e. Drug therapy of heart failure - 4hrs
 - f. Drug therapy of dyslipidemia - 2 hrs
- 2. Respiratory system - (3hrs)
 - a. Drug therapy of bronchial asthma - 2hrs
 - b. Drug therapy of cough - 1hr
- 3. Drugs affecting blood and blood formation - 7hrs
 - a. Hematopoietic agents, vitamins, antioxidants - 3hrs
 - b. Drugs affecting coagulation, fibrinolysis and platelet formation-4hrs
- 4. Chemotherapy of Neoplastic diseases - 7hrs

TOPICS AND HOURS FOR PRACTICALS:

Topics	Hours
(3 rd semester=18wksx2hrs=36hrs; 4 th semester=18wksx1hr=18hrs; 5 th semester=12wksx1hr=12hrs; Total=76hrs)	
3rd Semester Experimental Pharmacology (18 hrs)	
1. Introduction to Experimental Pharmacology	2 hr
2. Study of effect of drugs (Mydriatics/Miotics/Local anaesthetics) on rabbits' eye	2 hr
3. Identification of unknown drugs on rabbit's eye	
4. Study of effect of Agonists/Antagonists on frog rectus abdominis muscle	

5. Identification of unknown drugs on frog rectus abdominis muscle	2 hr
6. Study of effect of stimulants and depressants on perfused frog's heart in situ	2 hr
7. Identification of unknown drugs on perfused frog's heart in situ	
8. Study of effect of known stimulants and depressants on rabbit's intestine	2 hr
9. Identification of unknown drugs on rabbit's intestine	
	2 hr
	2 hr
	2 hr
	2 hr

Topics	Hours
3rd Semester	
Clinical Pharmacy (18 hrs)	
1. Introduction to Practical Pharmacy & Dosage forms like Oral, Parenteral, Topical and others	2 hr
2. Preparation of Mixtures	4 hr
3. Preparation of Lotions	2 hr
4. Preparation of Powders	4 hr
5. Preparation of Ointments	2 hr
6. Preparation of Emulsions	2 hr
7. Critical appraisal of drug promotional literatures	2 hr
4th semester	
Demonstrations (18 hrs)	
1. Evaluate the analgesic effects of NSAIDs and opioids on the albino rats using Analgesiometer.	2 hr
2. Evaluate the anticonvulsant effects of drugs on the albino rats using Convulsiometer	
3. Evaluate the spontaneous motor activity of drugs on the albino rats using Actophotometer	
4. Evaluate the bronchodilator effects of drugs on the Guinea pig using Histamine aerosol apparatus	2 hr
5. Bone densitometer (measurement of bone mass density)	
6. Nebuliser	2 hr
7. Interpretation of Graphs, structures, identification of common dosage forms, indigenous drugs	
8. Instruments	2 hr
9. Computer Assisted Learning (EP Dog)	
	2 hr
	2 hr
	2 hr

	2 hr 2 hr
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4th & 5th Semester**THERAPEUTICS PRACTICAL (36 hrs)**

1. Diarrhoea , constipation, vomiting	2 hr
2. Peptic Ulcer	2 hr
3. Malaria	2 hr
4. Tuberculosis	2 hr
5. Leprosy	2 hr
6. Filariasis, helminthiasis	2 hr
7. Bronchial Asthma	1 hr
8. Iron deficiency anemia	1 hr
9. Epilepsy	2 hr
10. Type 2 Diabetes Mellitus	2 hr
11. Hypertension	1 hr
12. AMI	1 hr
13. CHF	1 hr
14. Migraine	1 hr
15. Insomnia	1 hr
16. UTI	2 hr
17. Dengue, swine flu	2 hr
18. AIDS	2 hr
19. Rheumatic fever	2 hr
20. Rheumatoid arthritis	2 hr
21. Enteric fever	1 hr
22. Drug induced Parkinsonism	1 hr
23. Methyl alcohol poisoning	1 hr
24. Thyrotoxic crisis and hypothyroidism	1 hr
25. URTI	1 hr
26. Scabies and Pediculosis	1 hr
27. Meningitis	1 hr
28. Community acquired pneumonia	1 hr
	1 hr
	1 hr
	1 hr
	1 hr
	1 hr
	1 hr

	1 hr
	1 hr
	1 hr
	1 hr

TOPICS FOR TUTORIALS

(Important topics are again discussed for the purpose of reinforcement and also the topics which can not be covered in didactic lectures are covered)

III Semester: 1hr/week (18 weeks) = 18hrs

1. Drug invention and development
2. Pharmacokinetics
3. Drug use in pregnancy and lactation
4. Drug use in children and elderly, liver & Kidney diseases
5. Parasympathomimetics
6. Parasympatholytics & Atropine Poisoning

7. Sympathomimetics
8. Sympatholytics
9. Anticholinesterases, Organophosphorous Poisoning & Myasthenia gravis
10. Skeletal Muscle Relaxants
11. Pharmacotherapy of shock
12. Pharmacology of Glaucoma
13. Drug-drug interaction
14. Adverse drug reaction monitoring
15. Pharmacotherapy of Migraine
16. Pharmacodynamics
17. General principles of treatment of poisoning including snake bite & animal stings

IV Semester: 2hr/wk(for 18weeks) = 36hrs

1. Oxytocics
2. Drug therapy of Gout
3. Drug therapy of Rheumatoid arthritis
4. Substance dependence
5. Immunostimulants
6. Immunosuppressants-Part 1
7. Immunosuppressants- Part 2
8. Antiseptics and disinfectants
9. Management of hypothyroidism & hyperthyroidism
10. Management of malaria
11. Management of amoebiasis, Filariasis & helminthiasis
12. Heavy metal chelating agents
13. Renin – angiotensin system & its modulators – Part – I
14. Renin – angiotensin system & its modulators – Part – II
15. Central acting muscle relaxants
16. Tocolytics
17. General principles of antimicrobial therapy
18. Vasopressin

V Semester: 2hr/wk(for 9weeks) =18hrs

1. Drugs affecting calcium balance (PTH, Calcitonin, Vit.D) Part-I
2. Drugs affecting calcium balance (PTH, Calcitonin, Vit.D) Part-II
3. Drug treatment of obesity
4. Drug treatment of erectile dysfunction
5. Management of stroke
6. Hormonal contraceptives
7. Cephalosporins
8. Penicillins
9. Monoclonal antibodies in therapy
10. Management of pain

INTEGRATED TEACHING**Topics****Relevant Depts.**

- | | |
|--|-------------------------------------|
| 1. Peptic ulcer | Medicine. |
| 2. Bronchial asthma and COPD | Im.med, Pediatrics, Medicine. |
| 3. Urinary tract infection | |
| 4. Glaucoma | Medicine, Pediatrics. |
| 5. Hypertension and hypertensive emergencies, Congestive cardiac failure | Medicine. |
| 6. Angina and Acute myocardial infarction | Medicine, Pediatrics. |
| 7. Diabetes | |
| 8. Thyroid disorders | |
| 9. Epilepsy | Medicine |
| 10. Tuberculosis and Leprosy | |
| 11. Osteoarthritis, Gout, Rheumatoid arthritis | Medicine, Pediatrics. |
| 12. HIV infection & AIDS | Medicine, Pediatrics. |
| 13. Toxicology | Medicine, Pediatrics. |
| 14. Vaccines | Medicine, Pediatrics. |
| 15. Nutritional deficiencies, Anaemia | Im. & medicine, Com. Medicine. |
| Desirable to know | Medicine, Pediatrics. |
| 16. Contraceptives | Medicine, Pediatrics, Microbiology. |
| 17. Fever and antipyretics | Medicine, Pediatrics. |
| 18. Pain and analgesia | Im, Pediatrics, Medicine |
| 19. Insomnia | Im, Pediatrics, OG, Medicine |
| 20. MDP & Schizophrenia | |
| 21. Substance abuse | Im, CM, Pediatrics. |

Subject	Total	Univ. examination marks			Int. Ass. marks	
		marks	Theory	Oral	Practical	Practical
Pharmacology	150	80	Medicine, Psychiatry, Pediatrics, CM	15	25	15
		(20 each in part A & B of each of paper I & II having 40 marks each)				
Pass Marks		40% in Theory(including Int. Ass.)	38/ 95			
		40% in Viva	6 /15			
		50% in Theory(including Int. Ass.) including Viva	47.5 /95			
		50% in Practical(including Int. Ass.)	20/40			
		35% in Internal Assessment (theory)	5.25 / 15			
		35% in Internal Assessment(practical)	5.25/15			
		50% of total aggregate	75/150			

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Internal Assessment Schedule:

Total marks – 30

Internal	Timings	Marks
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[108]

Assessment		Theory	Practical		
			Practical	Oral	Record
1 st	End 3 rd semester Jan' last week	30	15	10	5
2 nd	End 4 th semester July last week	30	15	10	5
3 rd	5 th semester-Pre-PMB test-Oct' last week	30	15	10	5
Total marks		90	90		
Sending marks		Total marks / 6 (out of 15)	Total marks / 6 (out of 15)		

UNIVERSITY PROFESSIONAL MBBS EXAMINATION**A. THEORY**

i. (total 80 Marks): - Two papers of 2 hours duration and 40 marks each.

ii. Paper I – Chapters:

Section A: 20 marks

1. General Pharmacology including Pharmacokinetics, Pharmacodynamics, Adverse drug effects and Drug-drug interactions, Essential drugs, Drug therapy of pregnancy, old age and lactation.
2. Drugs acting on Autonomic Nervous System.
3. Drugs acting on Peripheral Nervous System including Skeletal muscle relaxants and local anaesthetics.

Section B: 20 marks

1. Drugs acting on Central Nervous System, Opioids, substance dependence, Antimigraine drugs.
2. Cardiovascular drugs including hypolipidemic drugs.
3. Diuretics & Anti-diuretics

Paper II – Chapters:

Section A: 20 marks

1. Autacoids and related drugs including NSAIDs, Drug therapy of Gout and Rheumatoid Arthritis
2. Antimicrobial drugs & Chemotherapy of infectious diseases.
3. Drugs acting on respiratory system.

Section B: 20 marks

1. Drugs affecting blood and blood formation including Coagulants, Anticoagulants and Antiplatelet agents
2. Hormones and related drugs including oxytocin and drugs acting on uterus.
3. Drugs acting on G.I.T.
4. Chemotherapy of neoplastic diseases.
5. Miscellaneous drugs: Immunosuppressants and Immunostimulants, Antiseptics and Disinfectants, Ectoparasitocides, Chelating agents, Monoclonal Antibodies in therapy.

iii. Question pattern

Structured essay type-	4marksx1	=4marks
Very short type-	05marksx8	=4marks
Short type-	2marksx6	=12 marks
Total in each section		=20marks
Total in each paper		=40marks
Total in theory		=80marks

iv.MODEL THEORY QUESTIONS:**PHARMACOLOGY****Theory Paper-I**

Total Marks: 40

Time : 2 hours

[Answer all questions .Figures in right margins indicate marks.Use separate answer books to write section-A and B.]

Section-A

Q.1) Define pharmacokinetics ?.What are the processes involved in it? Give four examples of pharmacokinetic drug drug interaction. [1+1+2=4marks]

Q.2) Answer to the followings in brief:-

[2marks×6=12marks]

- a) Classify beta-blockers
- b) Give the therapeutic uses of anticholinergic drugs.
- c) Compare and contrast between succinylcholine and vecuronium.
- d) Therapeutic basis of use of timolol in glaucoma.
- e) Enzyme inducers.
- f) Toxicities of local anaesthetics.

Q.3) Answer to the following in very short:-

[0.5marks×8=4marks]

- a) Examples of drugs undergoing zero order metabolism.
- b) Examples of drugs given by sublingual route.
- c) Two therapeutic uses of parasympathomimetics.
- d) Two therapeutic uses of sympathomimetics.
- e) Two contraindication to use of beta blockers.
- f) Name two nasal decongestants.
- g) Name two selective α -1 blockers.
- h) Define pharmacodynamics.

Section B

Q.1) Define hypnotics. Name the various groups of hypnotics and discuss the therapeutic uses of diazepam.

[1+1+2=4marks]

Q.2) Answer the following:-

[2marks×6=12marks]

- a) Classify antidepressant drugs
- b) Therapeutic basis of combining carbidopa with levodopa.
- c) Therapeutic basis of use of nitroglycerine in angina pectoris.
- d) Adverse effect of thiazide diuretics.
- e) Therapeutic basis of use of ACEIs in heart failure.
- f) Clinical uses and adverse effects of loop diuretics

Q.3) Write briefly about :-

[0.5marks×8=4marks]

- a) Drugs used in absence seizure.

- b) AV nodal blockers.
- c) Class 1B antiarrhythmics.
- d) Adverse reactions to HMG CoA reductase inhibitors.
- e) Clinical uses of anti diuretics.
- f) Side effect of ACE inhibitors.
- g) Antidote of benzodiazepine overdose.
- h) Explain cheese reaction.

PHARMACOLOGY

Theory Paper-II

Total Marks: 40

Time : 2 hours

[Answer all questions .Figures in right margins indicate marks.Use separate answer books to write section-A and B.]

Section-A

Q1) What do you mean by ACT? Give two examples of ACT and explain its therapeutic basis of use.

[2+2=4marks]

Q.2) Answer the following:-

[2marks×6=12marks]

- a) Name the drugs used in gout and mention their adverse effects.
- b) Name the disease modifying anti rheumatic drugs and mention their adverse effects.
- c) Name the third generation cephalosporins and give their therapeutic uses.
- d) Adverse effects of NSAIDs.
- e) Drug treatment of severe acute asthma.
- f) Therapeutic uses of fluroquinolones.

Q.3) Write briefly about :-

[0.5marks×8]

- a) Therapeutic uses of Prostaglandins.
- b) Long acting β - agonists.
- c) Anti-anaerobic antibiotics.
- d) Cough suppressants.
- e) Penicillinase resistant penicillins.
- f) 4th generation cephalosporins.
- g) Clinical uses of primaquine.
- h) Treatment of lepra reaction.

Section B

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Q.1) Name the various groups of anti diabetic drugs. Mention the side effects and contraindications of sulfonylureas. **[2+2=4marks]**

Q.2) Write short notes on:- **[2marks×6=12marks]**

- Therapeutic basis of use of aspirin in coronary artery diseases.
- LMW heparins.
- Drugs used in peptic ulcer.
- Imatinib
- Tamoxifen
- Non contraceptive health benefits of combination OC pills.

Q.3) write briefly about:- **[0.5marks×8=4marks]**

- Adverse effect of chronic use of glucocorticoids.
- Drugs for treatment of scabies.
- Antispasmodics.
- Immunosuppressant's.
- Ant thyroid drugs.
- Insulin analogues.
- Post coital pills.
- Anti tumour antibiotics.

B. PRACTICAL EXAMINATION (25 MARKS)

Prescription writing	3 marks
Prescription auditing	3marks
Spotting	5marks
Pharmacypractical	7marks
ExperimentalPharmacology	7marks

C. ORAL(VIVA) EXAMINATION (15 MARKS)

To be conducted by 2 panels of examiners comprising of one external and one internal in each to cover chapters under paper-I and paper-II separately for 7.5 marks each.

RECORDS

As available in education section.

BOOKS

- Basic and Clinical Pharmacology by Bertram G, Katzung; Lange publications
- Principles of Pharmacology by H L Sharma, K K Sharma; Paras publications
- Essentials of Medical Pharmacology by K D Tripathi, Jaypee Brothers
- Clinical Pharmacology by DR Lawrence, PN Bennet & MJ Brown, Churchill Livingstone.

- 5) Pharmacology and Pharmacotherapeutics by RS Satoskar, SD Bhandarkar, SS Ainapure; Popular Prakashan
- 6) Rang and Dale's pharmacology by H P Rang, M M Dale, J M Ritter, P K Morore, Elsevier/Churchill Livingstone
- 7) Goodman & Gilman's - The Pharmacological Basis of Therapeutics (reference); Tata McGraw Hill
- 8) Fundamental of Experimental Pharmacology by MN Ghosh

Syllabus and Curriculum
in
FORENSIC MEDICINE
(INCLUDING MEDICAL JURISPRUDENCE AND TOXICOLOGY)
for
MBBS Course
(III TO V Semesters)
2012

GOAL :

The goal of teaching Forensic Medicine to undergraduate student is to impart knowledge of legal procedures involved in practice of medical profession and to apply the knowledge of medical science for the purpose of executing justice in courts of law. Further the teaching will help the students to know of medical ethics and etiquette to be followed during the practice of medicine.

OBJECTIVES :**(A) KNOWLEDGE**

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

appear in a court of law as a Registered Medical Practitioner and give evidence in cases of Homicide, Assault, Sexual offences, Alcoholic intoxication, Drug dependence and other cases requiring medical opinion.

Practice medicine in the society following medical ethics and etiquette as prescribed by the Indian Medical Council.

(B) SKILL

1) To conduct autopsy on medico-legal cases and issue post-mortem certificate. To examine cases of wound (Assault, Homicide etc.) at the hospital and issue required medico-legal certificate (wound certificate)

2) To treat cases of poisoning and issue certificate to court and police.

(C) INTEGRATION

The student will be able to integrate and apply knowledge of Anatomy, Physiology, Biochemistry, Pathology, Microbiology, Medicine, Surgery and Obstetrics & Gynaecology for the purpose of legal procedures and execution of justice.

TEACHING METHODS & HOURS

Learning method	hr/wk/ semester	total wks/semester	Total hrs	Hrs in MCI norm

	iii	iv	v	iii	iv	v	total	iii	iv	v	total	G.Total	
Theory	1	1	1	18	18	9	45	18	18	9	45	155	100
Practical	1	1	1					18	18	9	100		
Tutorial/ Gr.Discussion	1	1	1					18	18	9			
Int. teaching	10hrs in 6 th to 9 th semesters							10					

WEEKLY ROUTINE

Day	9-10am	10-1pm	1-2pm	3-4 pm	4-5 pm
MON	III Semester Theory LT-IV	Clinical Posting	LUNCH	IV/V-semester Tutorial-Gr(B)	XXXX
TUE	Xxxx			IV/V-semester Tutorial-Gr-D	XXXX
WED	Xxxx			III-semester Practical-Gr-A	III-semester Practical-Gr-B & IV/V-semester Tutorial-Gr-C
THU	IV/V semester Theory LT-III			III-semester Practical-Gr-D	III-semester Practical-Gr-C & IV-semester Fmt-T-(A)
FRI	Xxxx			III-semester Tutorial GrB- Odd Wk Gr-A- Even Wk	III-semester Tutorial Gr-A-Odd Wk

				IV/V-semester Practical-Gr-C	IV/V-semester Practical-Gr-D
SAT	XXXX			XXXX	III-semester Tutorial Gr-D- Odd Wk Fmt-T(C)- Even Wk
				IV/V-Semester Practical Group- D	IV/V-Semester Practical Group A

COURSE CONTENT**CHAPTERS FOR DIDACTIC THEORY CLASSES****(3RD SEMESTER)=18HRS****1. IDENTIFICATION -8hrs**

Definition and data to establish identity-race, religion, sex, age, stature, complexion and features, external peculiarities, anthropometry, dactylography, and poroscopy-superimposition technique-Forensic

Odontology-Medico-legal importance of age and sex.

2. THANATOLOGY (DEATH) -12hrs

Types of death-modes of death and their patho-physiology-causes of death, classification and medico-legal aspects of natural death

3. POST MORTEM CHANGES

Signs of death and changes following death and their medico-legal importance-Adipocere, mummification, embalming-Estimation of post mortem interval (time of death)-Presumption of death and survivorship.

4. MEDICO-LEGAL AUTOPSY

Protocol, Technique, Post mortem report.

Examination of set of bones.

Exhumation.

5. MEDICAL JURISPRUDENCE

Legal Procedure – Inquests, subpoena, Conduct money, Procedure of Criminal trial, Record of evidence, types of evidence, Medical evidence, types of witness.

6. MECHANICAL INJURIES INCLUDING REGIONAL INJURIES

Abrasion, contusion, laceration, incised wound, stab wound, chop wound, fire arm injuries, blast injuries, head injuries, spinal injuries, chest injuries, road traffic accident injuries and Homicide & types of homicide.

Simple and Grievous injuries – causes of death from wounds

7. ANAESTHETIC AND OPERATIVE DEATHS.**8. MEDICAL LAW AND ETHICS**

Laws governing medical profession :-

Indian Medical Council and State Medical Council organisations, functions, and powers – Rights and privileges of Registered Medical Practitioner. Infamous Conduct. Professional negligence (malpractice), Acts and laws relating to human organ donation and transplantation, PNDT Act.

9. DUTIES OF MEDICAL PRACTITIONER

Doctrine of Res ipsa loquitur, Contributory negligence, vicarious responsibility consent, Euthanasia.

(4TH SEMESTER)=18HRS

10. VIOLENT ASPHYXIAL DEATHS

Classification-Hanging, Strangulation by ligature Throttling, Smothering, Gagging, Overlaying, Burking, Choking, Drowning and Sexual asphyxia

11. DEATH DUE TO COLD, HEAT, ELECTRICITY AND RADIATION.

12. IMPOTENCE AND STERILITY

Definition, causes, and medico-legal importance.

Sterilization and Artificial insemination and their medico-legal importance.

13. VIRGINITY, PREGNANCY AND DELIVERY

Definition, diagnosis and medico-legal importance, Pseudocyesis, Super fecundation, Superfoetation Legitimacy and Paternity and their medico-legal importance.

14. SEXUAL OFFENCES

Classification- Rape – definition, examination of victim and the accused – Incest, Unnatural sexual offences, types and their medico-legal importance. Sexual Perversion – types and their medico-legal importance – Indecent assault.

Examination of seminal fluid.

(5TH SEMESTER)=9HRS

15. ABORTION

Definition, classification, methods of procuring abortion, diagnosis and evidences of abortion, medico-legal questions arising in suspected cases of abortion. Medical Termination of Pregnancy Act.

16. INFANTICIDE

Definition, still birth, dead birth and live birth signs of live birth and autopsy in suspected case of infanticide

Causes of death and medico-legal importance. Abandoning of infants, concealment of birth, Battered baby syndrome, Cot death.

17. EXAMINATION OF BLOOD STAINS AND HAIR AND SUSPECTED BIOLOGICAL AND FIBRES STAINS.

18. ORGANISATION OF FORENSIC SCIENCE LABORATORY

Locard's principle; Lie detection, Narcoanalysis, Hypnosis.

19. FORENSIC PSYCHIATRY

Delusion, Hallucination, Illusion, Impulse, Obsession, Delirium, Lucid interval
Classification of unsoundness of mind and medico – legal aspects. Restraint of the insane.

20. TOXICOLOGY

General consideration-Law on poisons, classification of poisons. Diagnosis of poisoning in the live and dead. Duties of the medical practitioner in suspected case of poisoning. General principles of treatment of poisoning Corrosive poisons, Non-metallic poisons, Insecticides and weed killers, Metallic poison, Organic irritant poison, someferous poisons, Inebriants, Deliriants, spinal poisons, food poisoning, cardiac poisons, Asphyxiants, war gases Curare, Conium. Drug dependence and Addiction.

TOPICS FOR PRACTICALS /TUTORIALS=45HRS EACH=90HRS

Third semester-18hrs

1. Identification- Age estimation from bones, x-rays and sex from bones.

Age estimation by subject (preferably child).

2. Weapons.

3. Wet specimens

4. photographs.

Fourth semester-18hrs

1. Microscopy-slides-spermatozoa, diatoms, nucleated RBC ,non-nucleated RBC

2. Trace evidence

3. Biologocal stains

Fifth semester-9hrs

1. Toxicological specimens and poison plants

2. Demonstrations of 10 medico-legal autopsies and report writing(variety cases).

3. Briefing about Drunken case and sexual offence cases.

4. Training to issue Medico legal certificates with SPMP Technique.

(Injury certificate, Potency certificate, Drunkenness certificate, Birth certificate, Age certificate, Death certificate, Sickness leave certificate, Fitness certificate and drafting consent, Highlight about documentation of identification marks and writing report).

TOPICS FOR INTEGRATED TEACHING AND PARTICIPATING ALLIED DEPARTMENT:

- | | |
|--|---|
| 1. MTP act | :OG |
| 2. PC-PNDT act | :OG |
| 3. Death and dying and the law | :Medicine, Pediatrics |
| 4. Organ transplant | :Medicine, Surgery |
| 5. Poisoning | :Pediatrics, medicine |
| 6. Consumer protection Law
and Medical Practice | :OG, Pediatrics, Medicine, surgery. |
| 7. Medicolegal case | :OG, Pediatrics, Ortho, Surgery. |
| 8. Ethics in clinical practices | :CM, medicine, surgery, OG, Pediatrics. |
| 9. Child abuse | :Pediatrics. |
| 10. Adoption and law | :Pediatrics, Og, CM. |
| 11. Unclaimed body | :OG, Pediatrics, Medicine, Surgery |
| 12. Alcoholism | :Medicine |

SCHEME OF EVALUATION

Subject	Total marks	Univ. examination marks			Int. Ass. marks	
		Theory	Oral	Practical	Theory	Practical
FMT	100	40(20 each in part A & B)	10	30	10	10
Pass Marks		40% in Theory (including Int. Ass.)	20/50			
		40% in Viva	4/10			

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	50% in Theory (including Int. Ass.) including Viva	30/60
	50% in Practical (including Int. Ass.)	20/40
	35% in Internal Assessment (theory)	3.5/10
	35% in Internal Assessment (practical)	3.5/10
	50% of total aggregate	50/100

INTERNAL ASSESSMENT SCHEDULE:**TOTAL MARKS – 20**

Internal test	Timings	Marks			
		Theory	Practical		
			Practical	Oral	Record
1 st	End 3 rd semester Jan' last week	40	15 (skeletal remains-5; radiology-5; spot-5)	5	5
2 nd	End 4 th semester July last week	40	15 (skeletal remains-5; radiology-5; spot-5)	5	5
3 rd	5 th semester- Pre-PMB test Oct' last week	40	15 (skeletal remains-5; radiology-5; spot-5)	5	5
Total marks		120	60		
Sending marks		Total marks /12 (out of 10)	Total marks / 6 (out of 10)		

UNIVERSITY PROFESSIONAL MBBS EXAMINATION**A. THEORY**

- i. One paper of 2 hours duration with Section-A and B each of 20 marks totalling to 40 marks.

ii. Distribution of topics for theory paper**Section A: 20 marks**

Identification, legal procedures, death, Postmortem changes, autopsy procedures, exhumation, mechanical injuries, regional injuries, fire arms, medicolegal aspects of wounds.

Section B: 20 marks

Medical Ethics, Mechanical Asphyxia, Virginity, Pregnancy, Delivery, MTP, Infanticide, Sterility, Impotence, Artificial Insemination, Sexual offences, Thermal injuries, electrocution, Forensic Psychiatry, Toxicology

iii. Pattern of Question Paper:

a. Structured essay question	
Or	
Short answer question	5x3marks=15 marks
b. Very short answer questions	0.5x10=5 marks
Each section total marks	20 Marks
Total marks in the paper	40 marks

iv) Model Theory Questions:**FMT****THEORY PAPER – I****TOTAL MARKS – 40****TIME – 2 HOURS**

[(Answer all questions; use separate Answer Books for Section-A and B;

Figures in right hand margin indicate marks]

Section-A

1. Five short answer question of 3 marks each out of total 6 questions. **[3x5=15marks]**
 - a. What is Subpoena? What are the powers of different levels of magistrate court in India? **1+2 marks**
 - b. Classify the mechanical injuries, Differentiate between incised wound and stab wound? **1.5+1.5 marks**
 - c. What are the immediate changes after death ? Differentiate between 'mummification' and 'adipocere formation' ? **1+2 marks**
 - d. Sites of selection for suicidal fire arm wound ? **3marks**
 - e. Instantaneous rigor **3marks**
 - f. Exhumation **3marks**
2. Ten very short answer type question without any choice bearing 0.5 marks each e.g. **[0.5X10=5marks]**
 - a. Suggilation is commonly known as _____.
 - b. Cephalic index for dolichoclephalic skull is _____
 - c. What is the percentage of whorl type of finger print ?
 - d. Which caliber is larger 0.38 or 9mm ?
 - e.
 - f.
 - g.
 - h.
 - i.

j.....

Section-B

- Five short answer question of 3 marks each out of total 6 questions.

(3x5=15marks)

e.g.

- Classify sex offences. What do you mean by transvertism. [2+1]
- What is sodomy. Physical signs of a habitual passive agent. [1+2]
- What is statutory rape? What are the signs of sexual intercourse in a young rape victim. [1+2]
- Define hanging. Differentiate between hanging & strangulation [1+2]
- What are the different type of delusions ? Differentiate between delusion & illusion ? [1.5+ 1.5]
- Management of Opium poisoning? [3]

- Ten very short answer type question without any choice bearing 0.5 marks each

(0.5X10=5marks)

e.g.

- Amount of punishment for gang rape is _____?
- Which IPC or IPCs deal with criminal abortion ?
- In India infanticide is dealt under which IPC ?
- Give an example of illusion
- e.....
- f.....
- g.....
- h.....
- i.....
- j.....

B. PRACTICAL : 30 marks

Question No.	Questions	marks
1	Skeletal remains	3
2	Dental examination	3
3	Radiological examination	3
4	Spotting	4
5	Issue of Drunkenness Certificate	2
6	Issue of Medico legal certificate	3
7	Weapon examination report	3
8	Examination of formalin preserved specimen & opinion	3
9	Examination of poison & viscera packing procedure	3
10	Injury report	3
Total		30

C. VIVA : 10 marks

Table-I and Table-II will be covering chapters under Paper-I and Paper-II respectively to be jointly evaluated by one external and one internal at each table for 5 marks each.

PRACTICAL RECORDS

Practical record book should be maintained with entry of 10 postmortem reports and various practical exercises.

BOOKS

- 1.K.S. Narayan Reddy,: Essentials of Forensic Medicine and Toxicology, Medical Book Company Hyderabad.
2. Krishan Vij., :Text Book of Forensic Medicine and Toxicology; B.I. Churchill Livingston, New Delhi.
3. Modi J.P. : Text Book of Medical Jurisprudence and Toxicology, edited by B.V. Muthiharan , Levis Nexes Butterworth.
4. Pillay V.V.. :Forensic Medicine and Toxicology, Jaypee Brothers.
5. Apurba Nandy: Principles of Forensic Medicine; Newcentral Book Agency, Calcutta.
6. Parikh C.K. : Text book of Medical Jurisprudence Forensic Medicine and Toxicology; CBS Publishes and Distributers, New Delhi.
7. Subramanyam B.V. : Forensic Medicine, Toxicology and Medical Jurisprudence, Modern Publishers, New Delhi.

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Syllabus and Curriculum
in
COMMUNITY MEDICINE
for
MBBS Course
(III TO VII Semesters)
2012

GOAL

To ensure that the medical graduate becomes a basic doctor for the Country and acquires broad public health competencies needed to solve health problems of the community and to deliver holistic medical care with emphasis on health promotion, disease prevention, and cost-effective interventions and follow up in accordance with the Institutional goals.

OBJECTIVES

The medical graduate should

- Inculcate scientific temper, logical and scientific reasoning, clarity of expression, and ability to gather and analyze information.
- Conceptualize people as the focus of the lifetime service of a doctor and be ready to help always and specially in time of need, minimize the suffering of people and have the ability to “think globally and act locally”;
- Apply the basic epidemiological principles to investigation of diseases, outbreaks, and health promotion and disease prevention;
- Contribute to health systems’ performance as a member of the health team in the generation and efficient utilization of human and logistic resources;
- Foster healthy lifestyles in the individual and the community level to prevent environmental degradation and to promote social harmony;

- Identify the health needs of populations and population subgroups through planning, intervention, monitoring and evaluation.
- Provide patient-centered comprehensive primary health care including referral, continuing care and follow-up in a variety of healthcare setting.
- Seek further expertise through continued self- learning and ensure research competencies in
 - i) Accessing and appraising scientific information
 - ii) Preparation of reports and maintaining records
 - iii) Presentation of research findings and publishing.
- Have personal characteristics and attitudes required for professional life such as personal integrity, sense of responsibility and ability to show concern for other individuals.

CURRICULUM**Core Principle**

- It's directed towards achieving the Institute's Goal.
- The learning environment should be designed to create a positive attitude among students regarding the importance of PSM/SPM/CM/CH as a discipline.
- Develop positive attitude regarding the importance of Community Medicine as a discipline
- All teaching and learning activities should be student centered.

Strategy

1. Knowledge translation
2. Community based learning
3. Competency based learning
4. Life-long learning
5. Evidence based practice
6. Patient centered care
7. Community-oriented (each teaching-learning session should have focus on the local context).
8. Integrated
9. Problem based
 - o Multidisciplinary in its approach.
 - o Experiential learning to be encouraged both inside and outside the class room
 - o Field experience in PHC settings
 - o Communities to become 'laboratories' for skill learning
 - o Multiple learning experiences e.g. case studies, project work,
 - o exposure to role models, role play; workshops, seminars etc. should be used.

Educational resources

- Working with people and their problems as the rich source of resource
- Physical facilities in class room, field settings and clinical encounters
- Information technology facilities and related technical resources
- Expertise in pedagogy and adult learning

Duration

The community medicine curriculum is taught throughout the undergraduate period, including the internship incorporating both vertical and horizontal integration.

Curriculum Outcomes

Knowledge

At the end of the course the student should be

1. Explain the principles of sociology and identify social factors related to health, disease and disability and appreciate the role of the individual, family and community in health and disease
2. Observe and interpret the dynamics of community behavior
3. Observe the principles and practice of medicine in hospital and community setting.
4. Describe the health care delivery system including rehabilitation of the disabled in the Country
5. Describe the National Health Programs under National Health Mission
6. List epidemiological methods and describe their application to control and prevention of diseases and health events in the community
7. Describe the steps of outbreak investigation and its application
8. Apply methods of biostatistics and techniques in management of Health
9. Outline demographic pattern of the Country and its relation to Health
10. Describe methods of collection of vital statistics and its application in planning and implementation of health care delivery
11. Describe issues in environmental health including water, basic sanitation and environmental hazards
12. Impact of climate change on Health
13. Describe occupational hazards and diseases in various work setting, home and community – its control and prevention, prevention, Law and Safety measures
14. Describe maternal and child health problems
15. Understand basic and applied nutrition; assess nutritional status of the community
16. Diagnose and manage nutritional health problem
17. Describe School health Problem
18. Describe National Health Programs, Policies of the Country
19. Describe management information system, principles of health education and behaviour change communication
20. Describe disaster management and steps to control its impact on Health
21. Describe methods of biomedical waste management
22. Describe the planning and health management

23. Describe levels of health care and functions of health facilities at all levels under health care delivery system
24. Describe the role of PPP, NGO and International Health Agencies
25. Describe Millennium Development Goals

SKILL

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

1. Identify common ailments and manage them with ethical, humane and empathetic approach
2. Use tools of epidemiology in decision making relevant to Community and individual patient intervention
3. Able to interpret data for action at his or her level
4. Able to apply the principle of epidemiology in outbreak investigation and management of communicable and non communicable disease
5. Able to monitor, evaluate and supervise national health programs
6. Able to manage human resources adequately
7. Skilled in material management
8. Plan , organize and implement various health program including health education using available resources
9. Able to involve community in various programs
10. Able to interact with workers of different sectors to enable inter sectoral coordination
11. Able to become a successful team leader, communicator, health advocate, manager, scientist, educator, community physician and a person
12. Able in applying Communication skill and ethical practice

Curriculum implementation

- For theoretical concepts—classroom and faculty based laboratories
- For real life practice—rural and urban field practice areas
- Patients who come to the facilities for health care reflect the situation existing in the community. Teaching learning methods should enable the students to relate to these real life situations of the community.

Subject contents

- Exposure to all relevant areas of public health/community medicine
- Basic and Applied Epidemiology, Biostatistics, Demography, Environmental and Occupational Health, Sociology, Family

Health, Health Promotion, Health education, Community

Diagnosis and Health Research, ,International Health

- Competencies in Gender issues, Violence and Injury prevention,
Adolescent Health, Substance Abuse, Rationale Use of Drugs, Climate Change,
Ethics and Behavioral Sciences
- Health system competencies involving Management Science,
Leadership, Health Planning, Health Economics, Global Trade
Agreements, District Health Systems, Disaster Management,
International Health Regulations, Public Health Laws
- Priority health issues and diseases of public health importance in the country
context

Interaction with health and related sectors

- Constant dialogue and interaction with health and related sectors for purposes of
illustrating practices in the community.
- New concepts and practices such as public-private partnership to be introduced to
students.

Assessment and audit

- Focus on achievement of the objectives and competencies provided to students
- Multiple methods of assessment to be used
- Modern Methods of assessment to include assessment of problem solving ability
- Appropriate components to be evaluated at the final qualifying examination
- Student's feedback to be collected as a method of measuring effectiveness of
teaching
 1. Daily assessment by tutor
 2. End point assessment
 3. Clinical Assessment: History taking, Management of ailment,
demonstration of procedure taught
 4. Presentation of field exercise
 5. MCQ and Short Essay type Questions after completion of each chapter
 6. Viva Voce
 7. Records

Monitoring and evaluation

- Observation of student performance in community settings
- Ability to work in teams should be evaluated rather than mere assessment of individual performance.
- Presence of mind, instant decision-making, appropriateness of referral, community diagnosis, use and interpretation of statistical data, logical and rational plan of patient management, cost effectiveness of the proposed solutions should be evaluated.
- Feed back of a 360 degrees nature to be obtained from teachers, students, organizers of community based teaching, administrators and community representatives. The findings should be considered preferably in an academic seminar and be used for further improvement.

Linkage with Ministry of Health

Adequate consultations and rapport be undertaken with Ministry of Health with respect to field practice areas, District hospitals and other organizational arrangements involving the link ministry.

- Criteria and extent of linkage to be worked out and documented.

Review and renewal of Curriculum of Community Medicine

Issues in public health are constantly evolving and review and renewal of the program should be continuously undertaken in the backdrop of the vision document of MCI on Medical Education..

- Adaptation of mission and objectives of undergraduate programs in public health.
 - Constant review of competencies, educational resources and organizational structure.
 - Institutional review of the public health program along with the whole curriculum may be considered at the end of graduation of one batch of students.

TEACHING METHODS & HOURS

Total teaching Hours= 290hours [Lecture/Demonstration/Practical/Tutorial]

+ 12 weeks Clinical/Field Posting [Survey/Presentation/Talk

Theory

1 st semester	20wksx	1hr	=20hrs
2 nd semester	16wks	1hr	=16hrs
3 rd semester	18wksx	2hr	=36hrs
4 th semester	18wks x	2hr	=36hrs
5 th semester	9wks x	2hr	=18hrs
6 th semester	18wks x	2hr	=36hrs
7 th semester	9wks x	2hr	=18hrs
Total.....			=144hrs

Practical

1 st semester	.....		=0hrs
2 nd semester	.....		=0hrs
3 rd semester	18wksx	1hr	=18hrs
4 th semester	18wks x	1hr	=18hrs
5 th semester	9wks x	1hr	=9hrs
6 th semester	18wks x	2hr	=36hrs
7 th semester	9wks x	2hr	=18hrs
Total.....			=99hrs

Tutorial /group discussion/demonstration

1 st semester	20wksx	1hr	=20hrs
2 nd semester	16wks x	1hr	=16hrs
3 rd semester	18wksx	½ hr	=9hrs
4 th semester	18wks x	1hr	=18hrs
5 th semester	9wks x	1hr	=9hrs
6 th semester	18wks x	1hr	=18hrs
7 th semester	9wks x	1hr	=9hrs
Total.....			=99hrs

Integrated teaching

7 th to 9 th semester	x	15hrs	=15hrs
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Sum total

Theory.....		=144hrs
Practical		=99hrs
Tutorial/Gd		=99hrs
Int.tchg.		=15hrs

Grand total	.....	=357hrs
MCI norm	.....	=60hrs (I-PMB)+ 200=360 hrs

Clinical posting

3 rd semester	x3hrs/day	=4wks
4 th -5 th semester	x3hrs/day	=4wks
6 th -7 th semester	x3hrs/day	=6wks
Total	.....	=14wks
MCI norm	.....	=14wks

CLASS ROUTINE

Semester	Type	Day/Time /Venue
III	Theory	Wednesday/2-3 PM/LT-4
	Practical/Demo	Monday/4-5 PM/LT-2/Group-A
		Tuesday/4-5 PM/LT-2/Group-B
		Wednesday/4-5 PM/LT-2/Group-C
		Thursday/4-5 PM/LT-2/Group-D
	Tutorial/Gd	Monday/4-5 PM/LT-2/Group-A
		Tuesday/4-5 PM/LT-2/Group-B
		Wednesday/4-5 PM/LT-2/Group-C
		Thursday/4-5 PM/LT-2/Group-D
IV/V	Theory	Wednesday/2-3 PM/LT-2
	Practical/Demo	Monday/4-5 PM/LT-2/Group-A
		Tuesday/4-5 PM/LT-2/Group-B
		Wednesday/4-5 PM/LT-2/Group-C
		Thursday/4-5 PM/LT-2/Group-D
	Tutorial/Gd	Monday/4-5 PM/LT-2/Group-A
		Tuesday/4-5 PM/LT-2/Group-B
		Wednesday/4-5 PM/LT-2/Group-C

VI/VII	Theory	Thursday/4-5 PM/LT-2/Group-D Wednesday/2-3 PM/LT-2
	Practical/Demo	Monday/4-5 PM/LT-2/Group-A Tuesday/4-5 PM/LT-2/Group-B Wednesday/4-5 PM/LT-2/Group-C Thursday/4-5 PM/LT-2/Group-D
	Tutorial/Gd	Monday/4-5 PM/LT-2/Group-A Tuesday/4-5 PM/LT-2/Group-B Wednesday/4-5 PM/LT-2/Group-C Thursday/4-5 PM/LT-2/Group-D

COURSE CONTENT**First Semester:****Chapter-I Social Sciences and Health****Theory****18 hours**

- | | | |
|----|---|-----|
| 1. | Introduction to Humanities, Preventive Medicine,
Public Health, Community Medicine | 1hr |
| 2. | Definition of Society, community, family etc. | 2hr |
| 3. | Cultural factors influencing health and disease
in urban, rural and slum settings. | 2hr |
| 4. | Impact of urbanization in health and disease | 2hr |
| 5. | Social organization and community participation. | 2hr |
| 6. | Measurement of socioeconomic status and its
Importance in health and disease | 1hr |
| 7. | Interview techniques and questionnaire | 2hr |
| 8. | Method social research in relation to health | 1hr |
| 9. | Definition, scope, method & branches of Psychology. | 1hr |
| 10 | Social Psychology | 2hr |
| 11 | Factors affecting behavior and attitudes | 1hr |

12 Method to change attitude and behavior. 1hr

Field Visit+ Role Play: 12 hours

1. Anganwadi center, Sub-center, Primary Health center:
Structure, Function, community participation
, Interview techniques 10 hrs
2. Doctor patient relationship (Role Play) 2hr

Second Semester:

Chapter-I Social Sciences and Health

Theory: 10 hours

1. Interpersonal relationship 1hr
 2. Role and role conflict. 1hr
 3. Communication skill 1hr
 4. Need of counseling in various situations 1hr
 5. Group dynamics. 2hr
 6. Introduction to medical ethics, professional etiquettes 2hr
 7. Health education-definition, principles, methods 2hr
- IEC strategy,

Field visit: 5 visits x 2 hours 20 hours

District HQ, Medical College: structure and function,

Example of health education

Desirable to know:

1. Medico-social work
2. Study Skills, learning Techniques, use of Computers and information retrieval including use of internet
3. Management of time.
4. Stress management and coping skills.
5. Concepts of sociology and behavioural sciences as relevant to practice of Community Medicine. Health behaviour and factors affecting it
6. Society, community, social stratification, social problems, social security, interrelation between socio-cultural factors and health and Socio-economic class.
7. Psychosocial problems affecting health, Drug addiction, alcoholism
8. & juvenile delinquency.

3rd Semester:

Theory

Chapter-II

No of classes

Concepts of Health & Disease

(6 hrs)

Must know

1. Concept of health and well being
2. Concepts of disease /Causation/ Natural history of disease.
Risk factors,
- 3 Concepts of control
4. Changing pattern of disease.
5. Concepts of community diagnosis & treatment.
6. Disease classification

Desirable to know:

1. Evolution of Public Health
2. Art of Medicine
3. Hygiene
4. History of Public Health
5. ICD-10 and ICD-11

Chapter-III

Environmental Health

5hours

1. Water: Concepts of safe and wholesome water, sanitary sources of water, waterborne diseases, water purification processes. 2hrs
2. Concepts of solid waste and human excreta and sewage disposal. 2hrs
3. Awareness of standards of housing and the effect of housing on health. 1hr

Desirable to know:

1. Rain water harvesting
2. Health and Global warming
3. Personal hygiene

Chapter-IV**No of classes****Must know****Health Care Delivery****(7hrs)**

- | | | |
|----|--|-----|
| 1. | Primary health care, Health for all | 1hr |
| 2. | Health care delivery: health problem and resources | 1hr |
| 3. | Primary health care in India | 2hr |
| 5. | Health programs in India | 3hr |

Desirable to know:

1. Voluntary health Agencies in India
2. Central Government Health Services Scheme
3. International Health Agencies

Chapter- V**Occupational Health****No of classes****10hours****Must know**

- | | | |
|----|--|-----|
| 1. | Working environment /Hazards/Diseases | 1hr |
| 2. | Pneumoconiosis | 2hr |
| 3. | Lead poisoning/Occupational Cancer/Dermatitis | 2hr |
| 4. | Other occupational problems/diseases | 1hr |
| 5. | Protection and prevention of occupational diseases | 2h |
| 6. | Factory Act/ ESI/ Occupational health in India | 2hr |

Desirable to know:**Chapter- VI.****No of classes**

Nutrition and Health**8 hours****Must know**

- | | |
|--|-----|
| 1. Concept/ Classification of food | 1hr |
| 2. Micronutrients: Vitamins/Mineral | 1hr |
| 3. Common nutrition related health disorders
(PEM,VAD,Fluorosis,Anemia) | 3hr |
| 4. Nutritional assessment /survey | 1hr |
| 5. Nutritional surveillance, education and rehabilitation. | 1hr |
| 6. National Nutritional Programs. | 1hr |

Desirable to know:

1. Social and cultural factors in nutrition and health
2. National Nutrition policy
3. Food Security
4. Forborne disease

Tutorial: 18 classes

1. Dimensions and determinants of health
2. Spectrum of disease, Ice berg phenomenon
3. Health hazards of air, Ventilation, noise, radiation
4. Biomedical waste management
5. Community development, primary health care,
6. Millennium Development Goals
7. National and International health agencies
8. Food fortification, additives and adulteration, food hygiene
9. Nutritional requirements at different periods of life (RDA)
10. WHO Growth Chart
11. Dietary guidelines

12. Question & Answer on chapters- 5 classes**Practical: 18 classes**

- | | |
|--------------------------|---|
| 1. Entomology: | 8 |
| 2. Environmental Health: | 1 |
| 3. Biostatistics: | 6 |
| 4. Nutrition: | 3 |

Clinical posting**OPD 2 weeks****Observe/ Assist/ Perform under supervision:**

1. NIS vaccines

2. Cold chain
3. Techniques of injections
4. Immunization card
5. Record and Report

Evaluation:

1. Presentation & Record

UHC**2 weeks**

1. Management of common ailments of urban community.
2. Family study-I: Environmental health and demography of family

Evaluation

1. Health Talk
2. Presentation of family study
3. Records

4th Semester:**Theory- 36 classes****Chapter-VII****Epidemiology****12 hours**

- | | |
|--|------|
| 1. Epidemiology: definition and concepts and approach. | 1hr |
| 2. Measurements: Rates and Ratio | 1hr |
| 3. Descriptive Epidemiology | 1hr |
| 4. Case control study | 1hr |
| 5. Cohort study | 1 hr |
| 6. Experimental epidemiology | 2 hr |
| 7. Diseases transmission: Dynamics and mode | 2hr |
| 8. Outbreak Investigation | 1hr |
| 9. Uses of epidemiology and its role in health and disease | 1hr |
| 10. Screening for disease | 1hr |

Desirable to know:

1. Application of computers in epidemiology.
2. International Health Regulation
3. Bradford Hill's Criteria

Chapter-VIII**No of classes**

Genetics and health**4hours****Must know**

- | | |
|---------------------------------------|------|
| 1. Common Genetic disorders | 2hrs |
| 2. Population genetics and prevention | 2hrs |

Desirable to know

1. Molecular genetics
2. Human Genome Project
3. Gene Therapy
4. Ethical issues in Genomics

Chapter-IX**Mental Health, Hospital Waste Management, Disaster Management****05 hours**

- | | |
|-----------------------------------|-------------|
| 1. Epidemiology | 1hr |
| 2. Alcoholism and Drug dependence | 1h r |
| 3. Hospital Waste management | 1 hr |
| 4. Disaster management | 2hr |

Desirable to know:

1. World Federation for mental health
2. World mental health day
3. Drug de-addiction centres
4. Childhood mental illness

Chapter-X**Biostatistics(to be covered in Practical)****Demography and family planning****04hours**

- | | |
|----------------------------|---|
| 1. Demographic cycle | 1 |
| 2. Demographic trends | 1 |
| 3. Family Planning/Welfare | 1 |
| 4. Contraception | 1 |

Desirable to know:

1. National Family Welfare Program.
2. Recent advances in contraception
3. Unmet needs

Chapter-XI**No of classes****Health Of School Children, Adolescents And Elderly****04hrs**

1. School health program

- | | |
|----------------------------------|---|
| 2. Adolescent Health | 1 |
| 3. Life style and healthy ageing | 1 |

Desirable to know:

1. Policy for Old Person
2. Social Security
3. Geriatrics
4. Gerontology
3. Adolescent Reproductive & Sexual Health

Chapter-XII**No of classes****Epidemiology of communicable diseases****07 classes**

- | | |
|-----------------------------|---|
| 1. Smallpox/Chickenpox | 1 |
| 2. Measles | 1 |
| 3. Mumps/Rubella | 1 |
| 4. Meningococcal meningitis | 1 |
| 5. Cholera | 1 |
| 6. Viral Hepatitis | 2 |

Practical: 18 classes

1. Rate, Ratio/Standardization
2. Incidence and Prevalence
3. Relative Risk ,Odds Ratio
4. Epidemic curve Vaccines.
5. Contraceptives
6. Water Analysis

Tutorial 18 classes

1. Dynamics of disease transmission
2. Modes of transmission and measures for prevention
3. Disease prevention/ control/Surveillance/Disinfection
4. Population Pyramid
5. Problems of the elderly
6. National Population policy
7. Food poisoning
8. Soil transmitted Helminthiasis
9. Zoonosis
10. Leptospirosis
11. Yaws
12. Parasitic Zoonosis

Q & A on chapters

Clinical posting**1. Project**

N.B. Project report analysis and preparation within 12 days Each Faculty will guide a small group of 5 to 6 students

Evaluation:

1. Group wise presentation of the project assigned to them.

5th Semester: 18 classes**Chapter-XIII****No of classes****Health planning and management****6 hrs****Must know**

- | | |
|----------------------------------|------|
| 1. Planning cycle | 1hrs |
| 2. Health management | 2hrs |
| 3. Health planning in India | 2hrs |
| 4. Evaluation of Health Services | 1hr |

Desirable to know:

1. Pareto Analysis
2. SWOT Analysis
3. Performance Appraisal
4. Supportive Supervision

Chapter-XII (Contd)**o8 Hours****Communicable diseases**

- | | |
|-------------------------------------|---|
| 1. Typhoid | 2 |
| 2. Diarrhoeal diseases ² | |
| 3. Filariasis | 1 |
| 4. Japanese Encephalitis | 1 |
| 5. Plague | 1 |
| 6. Rabies | 2 |
| 7. Tetanus | 1 |

Chapter-XIV**Non communicable diseases****o4 classes**

- | | |
|----------------------------|---|
| 1. CHD | 1 |
| 2. Hypertension | 1 |
| 3. Stroke | 1 |
| 4. Rheumatic Heart Disease | 1 |

Practical 9 classes

1. Project proposal
2. Micro Plan

3. Spotting
4. Demonstration

Tutorial 9 classes

1. Yellow Fever
2. Arboviral Infection
3. Nosocomial Infection
4. Anthrax
5. Dracunculiasis
6. Leishmaniasis
7. Features of chronic diseases
8. **Q & A on chapters**

Clinical Posting:

Students will be divided into two groups; one will go for field study and other one will attend the museum and vice versa.

Field Study: OMFED Plant, HINDALCO Plant, Community Health Center, Water Treatment Plant

Museum: Specimens, Charts, Models.

6th semester :**Chapter-XIII (Continued)****No of classes****Epidemiology of communicable diseases****17hours**

- | | |
|-------------------------|---|
| 1. Influenza/Swine flu | 2 |
| 2. TB | 4 |
| 3. Polio | 3 |
| 4. Malaria | 3 |
| 5. Dengue /chickengunea | 2 |
| 6. Leprosy | 3 |

Chapter-XIV(Contd).**No of classes****Epidemiology of non-communicable diseases****07 hours****Must know**

- | | |
|--------------------------|---|
| 1. Diabetes | 1 |
| 2. Obesity | 1 |
| 3. Cancer | 3 |
| 3. Road Traffic Accident | 1 |
| 4. Blindness | 1 |

Chapter-X**No of classes****Must know****12 hours****Reproductive and child health**

- | | |
|---|-----|
| 1. Maternal Health | 1hr |
| 2. Morbidity and mortality | 1 |
| 3. Causal factors | 1 |
| 4. Reproductive and Child Health | 2 |
| 5. Antenatal, natal and post natal care | 2 |
| 6. Essential and emergency obstetrics care | 2 |
| 7. Newborn care | 2 |
| 7. Child health: Morbidity and mortality - causes and factors | 1 |

JSY,VHND,DNSSK,YASODA.ASHA,ICDS.

Desirable to know

1. PNDT Act,
2. SHG

Practical 18 classes

1. Fertility Indicators
2. RCH Indicator
3. TB Indicators
4. Leprosy Indicators
5. Malaria Indicator
6. Child health Indicator
7. RI Micro Plan
8. Problem solving exercises
9. Epidemic Curve

Tutorial

1. Infant feeding
2. Growth monitoring and promotion
3. JSY
4. ,VHND,
5. JSSK,
6. YASODA.
7. ASHA,
8. ICDS
9. Trachoma
10. Drug resistance
11. Elimination foci of Malaria
12. Roll back Malaria

Clinical Posting- UHC

Family Study-II: Clinical Social Case studies on ANC, PNC. Medical Termination of Pregnancy case, Protein-Energy Malnutrition

7th Semester: **18 classes**

Chapter-XIII (Contd)

- | | |
|--------------------------------------|----|
| 1. STD/HIV | 4 |
| 2. Emerging & re-emerging diseases | 2 |
| 3. Leading health problems in India | 1 |
| 4. Leading health problems in Odisha | 1 |
| 5. Revision | 10 |

Desirable to know:

1. Future Cancer Vaccines
2. Recent Advances in chronic disease
3. Cancer Registry

Tutorial: **18 classes**

1. Smoking and alcohol related disorders
2. Drug abuse
3. Modern epidemics
4. Approach to answer questions
5. Viva examination
6. Spotting
7. Problem solving exercises
8. Statistic problems

9. Family study

Practical :**18 classes**

1. Biostatistics
2. Health Education
3. Spotting
4. Revision

CLINICAL POSTING:

Group A will attend IMNCI and Group B will go to OPD and vice versa.

IMNCI (Group A)
12 days course study in Community Medicine and Pediatrics 12 th day: Simulation exercise and evaluation: IMNCI Record
OPD (Group B) Optional vaccines, Manage adverse effects of vaccines Antirabies vaccines Rabies antisera Evaluation: Practical Record

CLINICAL POSTINGS AND FIELD VISITS

Semester	Opd	Uhc	Field visit / Museum	Project	Imnci	Total
3 rd	2wks (immunization)	2wks (Family study-I)	--	--	--	4wks
4 th /5 th	--	--	2wks	2wk	--	4wks
6 th /7 th	2wk (1 st group)	2wk (Family study-II)	--	--	2wk (2 nd group)	6wks

i. IMMUNIZATION OPD

Observe/ Assist/ Perform under supervision:

3rd semester-

- NIS vaccines
- Cold chain
- Techniques of injections
- Immunization card
- Record and Report

7th semester

- Optional vaccines
- Manage adverse effects of vaccines
- Antirabies vaccines
- Rabies antisera

Evaluation

- Presentation

ii. URBAN HEALTH CENTRE

1. Management of common ailments of urban community.
2. Family study-I: Understand the environmental health / Demography of families allotted to the students.
3. Family study-2 (Clinico-social study)
4. Describe the existing health care delivery system in the community.
5. Study a health related problem in the community.

Clinic Social Case studies on ANC., PNC., Medical termination of pregnancy case, protein-energy malnutrition, Scabies, Fungal infection, Diarrhoeal disease, Upper respiratory infection, leprosy, Tuberculosis, STD, Filariasis, Obesity.

Post Polio Paralysis , Hypertension, Diabetes, Cancer early stage, family planning case counseling ..

Evaluation

- Health Talk
- Presentation of project
- Field Performance
- Interpersonal communication skill
- **Viva**
- **Records**

iii. IMNCI**IMNCI (Half of the Group)**

12 days course study in Community Medicine and Pediatrics Details==12days schedule

- a) The whole class will be divided into groups of 15-20 students each-one group will be posted at a time for IMNCI training by rotation.
- b) Each day for the allotted group, there shall be a 'THEORETICAL BRIEFING' for 1hour at CM department. Practical (IMNCI) hall from 9.30am-10.30am followed by 'CLINICAL PRACTICE CLASS' at Pediatrics dept for 1 hour from 11am-12noon. The group will be preferably sub-grouped into batches of 5-8 and each batch to be given hand on skill training by one faculty.
- c) The students will be supplied 'STUDENT'S HAND BOOK' on the first day of the training by the concerned department..
- d) They will come prepared with a full reading of the scheduled chapter for the next day from the book.
- e) Charts for case analysis and work up will be supplied at the practice class each day.
- f) There shall be an EVALUATION on the last day at CM dept. on one 'case simulation exercise' test and at Pediatrics dept. on one 'case exercise' test. This shall count towards internal assessment in the concerned departments.
- g) During the III-Professional MBBS-Part-I-Examination in CM there shall be one 'IMNCI case simulation exercise' in Practical examination for few marks.
- h) During the III-Professional MBBS-Part-II-Examination in Pediatrics there shall be one 'IMNCI case exercise' in Practical examination for few marks.

Evaluation-12th day: Simulation exercise

iv. MUSEUM

v. FIELD VISIT

vi. PROJECT

SCHEME OF EVALUATION

Total marks	Univ. examination marks			Int. Ass. Marks	
	Theory	Oral	Practical/ clinical	Theory	Practical
200	120 (30 each in part A & B of each of paper I & II having 60 marks each)	10	30	20	20
Pass marks	40% in Theory (including Int. Ass.)	56/140			
	40% in Viva	4/10			
	50% in Theory (including Int. Ass.) including Viva	75/150			
	50% in Practical(including Int. Ass.)	25/50			
	35% in Internal Assessment (theory)	7/20			
	35% in Internal Assessment (practical)	7/20			
	50% of total aggregate	100/200			

SCHEME OF INTERNAL ASSESSMENT SCHEDULE:

Timing	Theory	Practical		
		Practical	Clinical	
			Postings	Marking
1 st semester	50	--	--	--
3 rd semester	--	--	OPD	20

				(Record-5 Presentation-10 Skill-5)
			Family study-I	20 (Record-5 Presentation-10 Skill-5)
4 th semester	50	50 (Viva-10, OSCE(spots)-10, Exercise -20, Records- 10)	Project	30 (IMRD Format-5 Statistical Skill-5 Scientific Writing-5 Impact-5 Presentation-5 Viva-5)
5 th semester	---	--	Field Visit & Museum	20 (Record (Field Experience & Museum Teachings)-10 Queries On Museum Specimen: 10)
6 th semester	50	50 (Viva-10, OSCE(spots)-10, Exercise -20, Records- 10)	Family study-II	20 (Record-5 Presentation-5 Skill-5 Viva: 5)
7 th semester (Pre-PMB test)	50	50 (Viva-10, OSCE(spots)-10,	OPD	20 (Record-5 Presentation-10 Skill-5)
			IMNCI	20

		Exercise -20, Records- 10)		(Record-5 Case Simulation Exercise-15= (biodata-1,assess- 2.5,classify-2.5,identify treatment-2, treat- 2,referral-2.5, follow up / counseling- 2.5)
Total	200	150	150	
Sending Marks	200/10 (out of 20)	300/15 (out of 20)		

UNIVERSITY EXAMINATION:**A. THEORY:**

- i. There shall be 120 marks for two theory papers of 60 marks each answered in 3 hrs each.
- ii. Chapter distribution for Theory Papers and sections:

Parts	Paper I	Paper II
Section-A	Concept of Health and Disease Principles of Epidemiology & Epidemiological Methods Screening of Diseases Occupational Health Social Science & Health	Communicable & Non-communicable Disease Demography & Family Planning Nutrition & Health Mental Health International Health
Section-B	Environmental Health Biostatistics Genetics & Health Health Education & Communication Health care delivery system	Preventive Obstetrics, Paediatric & Geriatrics Health Planning & Management National Health Programmes Bio-waste management Disaster management

iii. PATTERN OF QUESTIONS**Distribution of marks in each question paper for section in a paper :**

Type of question	Weightage	No of questions	Marks in each section of each paper
Very Short Answer Type (VSQ)	20%	0.5 mark eachX12	06
Structured Essay Answer Type (SEQ)	20%	6marks x1	06
Short Answer Type(SQ)	60%	2 marks eachX4 2.5 marks each x4	18
Total for Section-A or section-B			30
			Such 4 sections =40 marks

iv. MODEL QUESTION**PAPER – I****Time- 3hours****Marks-60****SECTION -A****30 marks**

[Read all questions carefully and give specific answer. Don't write more than what is asked. Use separate answer books to answer Section-A and B. Figures at the right hand margin indicate marks.]

1. Who is the chairman of Medical Benefit Council? Enumerate the benefits provided to the employees. Describe briefly about the extra benefits given under this council. [0.5+2+3.5=6]
2. Write briefly. [2.5x4=10]
 - a. Community Diagnosis
 - b. Doctor –patient relationship
 - c.
 - d.
3. Answer in brief. [2x4=8]

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- a. Enumerate four personality traits
- b. Enumerate four criteria for screening test
- c. Who are affected by commonest occupational cancer?
- d. Enumerate the Preventive measures of Bagassosis.

4. Write the correct answer

[0.5x6=3]

- A. In which of the following fibrosis is nodular and present in the upper part of the lungs?
 - a. Asbestosis
 - b. Anthracosis
 - c. Silicosis
 - d. Farmer's Lung
- B. One of the following is a utilization rate
 - a. Bed turn-over ratio
 - b. Population-bed ratio
 - c. Bed disability days
 - d. Prevalence
- C. Which one of this is the characteristic of an "Elementary Family"
 - a. One parent is dead
 - b. It consists of married couple and their dependant children only.
 - c. Number of married couples and children live together in the same household.
 - d. It's a household consisting of three generations
- D. Whose smoking habits were studied by Doll & Hill in their famous cohort study on smoking and Lung Cancer in October, 1951?
- E. Which one are the most cost-effective interventions of "Health Promotion"?
- F. The study which proceeds from "effect to cause" is called----- study.

5. Give a tick mark wherever appropriate:

[0.5x6=3]

- a. Fatigue is an effect of noise. True/False
- b. Case detection is otherwise known as "Prescriptive screening". True/False
- c. Pasteurization of milk is an example of pre current disinfection. True/False
- d. Illness is a state of social dysfunction. True/False
- e. Cholera is often called the "Father of Public Health. True/False
- f. Fear is the most common emotion of man. True/False

SECTION-B

30 marks

[157]

Q1. Which diseases are borne by tiger mosquitoes? Describe the habits of this mosquito. What measures are required to control this vector? [1+2+3=6]

Q2. Answer shortly

[2.5x4=10]

- a. Positive Eugenics
- b. Histogram
- c.
- d.

Q3. Answer in brief

[2x4=8]

- a. Enumerate 4 sources of health information.
- b. Define primary health care
- c. Write the characteristics of a good message
- d. Write the names of 4 types of mechanical ventilation

Q4. Fill in the blanks

[0.5x6=3]

- a. The combination of smoke and fog is called-----.
- b. Sewage contains-----% of water.
- c. Best form of communication is -----.
- d. In a group approach of health communication----- there is no discussion among members.
- e. Eggs of Anopheles are ----shaped.
- f. ----- is the art of winning friends and influencing people.

Q5. Give tick mark whichever is appropriate

[0.5x6=3]

- a. Counseling implies force, not choice. True/ False
- b. Equity means fair chance. True/ False
- c. Learning is a memorizing one, not an action. True/ False
- d. The Socratic Method is an example of non verbal communication. True/ False
- e. Range is by far the most frequently used measure of dispersion. True/ False

- f. The disinfecting action of chlorine is mainly due to the hypochlorous acid. True/
False

v. MODEL QUESTION

PAPER – II

Time- 3hours

Marks-60

SECTION -A

30 marks

Read all questions carefully and give specific answer. Don't write more than what is asked. Use separate answer books to answer Section-A and B. Figures at the right hand margin indicate marks.

1. Enumerate the National Nutritional Programs. What are the objectives of ICDS program? Who are the beneficiaries and what are the services provided under ICDS program?

[1.5+1+1+2.5=6]

2. Answer shortly.

[2.5x4=10]

- a. What are the different stages of demographic cycle?
- b. Prevention of Hepatitis-B
- c.
- d.

3. Answer in brief.

[2x4=8]

- a. Define blindness
- b. List four zoonotic diseases.
- c. What is GOBI-FFF?
- d- Write two advantages and two disadvantages of Condom.

4. Answer very shortly.

[0.5x6=3]

- a. The numerator in Annual parasite incidence (API) is
- b. An arm circumference less than indicates malnutrition.
- c. Name the vaccine for JE.
- d. Write the formula for Gross Fertility Rate (GFR).

e.Reconstructive surgery in leprosy is an example of secondary prevention.

True/False

f. Hypertension is an iceberg disease. True /False

5. Fill in the blanks:-

[0.5x6]

a. Causative organism of Scabies is-----

b. Number one risk factor of stroke is-----

c. Demographic goal of NRR=1 can be achieved only if the CPR exceeds – per cent.

d. The major contribution to total fat intake is from visible fat. True/False

e. The Red Cross was founded by -----.

f. Government of India has launched the National mental health program in the year-----

SECTION-B

30 marks

Q1. Define low birth weight. What is its prevalence in India? What are its causes and outcome? Describe measures to reduce LBW.

[0.5+0.5+2+3=6]

Q2. Write shortly on :

[2.5x4=10]

a .Mother & child protection card

b. Network Analysis

c.

d.

3. Answer the following in brief.

[2x4=8]

a. Enumerate 4 types of disposal technologies for health care waste.

b. Draw a diagram showing the management sequence of a sudden onset disaster.

c. What is S.W.O.T Analysis?

d. What are the salient features of RNTCP?

4. Find out whether the following statements are true or false. Give tick mark wherever appropriate.

[0.5x6=3]

a. Kangaroo mother care is meant for low birth weight babies.

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- b. Apgar score provides an estimate of the physical conditions of the baby.
- c. Child death rate includes infant mortality.
- d. The shortest cycle minus 18 days gives the first day of the fertile period
- e. Lippes loop is L-shaped device made of polyethylene.
- f. Focal spray of DDT is to be undertaken only where *P. Vivax* cases are detected.

5. Fill in the blanks.

[0.5x6=3]

- a. Progestasert, the T-shaped device is filled with -----mg of Progesterone.
- b. Young age dependency ratio includes---- in the numerator.
- c. The benefit in cost- benefit analysis are expressed in ---- term.(monitory, results achieved)
- d. Millennium Development Goal consists of --- targets.
- e. Mass Drug Administration for lymphatic filariasis includes ---- and ----.
- f. Wild Polio Virus type---- has been wiped out from the surface of the Earth.

0-0-0

B. PRACTICAL:

Type of Evaluation	Marks
Epidemiological Exercise	5
Statistical Exercise	5
Family Study	10
(OSPE)Spotting	10
Total	30

C. VIVA:

Panels	Area	Marks
Panel 1 (one external and one internal)	Paper-1 chapters	5
Panel 2 (one external and one internal)	Paper-2 chapters	5
Total		10

INTEGRATED TEACHING

Sl. no	Area	Collaborating Departments
1.	Growth and development in underfive children	Anatomy and Paediatrics
2.	Acute diarrhoeal diseases	Physiology and Paediatrics
3.	Disaster preparedness	Anesthesiology
4.	Maternal and child health	Obstetrics & Gynecology and Family Planning Paediatrics
5.	Surveillance of vaccine preventable diseases	Microbiology, TBCD, Pediatrics, Medicine.
6.	Nutrition	Pediatrics, OG, Medicine.
7.	Iron deficiency anemia	Pediatrics, OG, Medicine.
8.	Communicable diseases with National Health programme like	
	a. HIV/AIDS	
	b. Tuberculosis	

- c. Malaria
- d. Polio
- e. Diarrhoeal diseases
- f. Leprosy
- g. Zoonotic diseases

9. Lifestyle related diseases with preventive aspects like

- a. Diabetes
- b. Hypertension
- c. Stroke
- d. Obesity
- e. Cancers

10. Jaundice

11. Alcoholism

12. Death and Dying

13. Geriatric medicine

14. Adolescent Health

15. Rational drug use

16. Contraception

17. Industrial health

18. Ethical issues

INTERNSHIP

Period :There shall be a period of compulsory internship for two months in this discipline after the final examination in MBBS as detailed in BOOK-365,the interns' logbook.

RECORDS

- 1. Practical record
- 2. IMNCI record
- 3. Clinical & Field Practice Record
- 4. Intern's Logbook(Book 365)

BOOKS

1. Text Book of Preventive Medicine by Park
2. Methods in Bio-statistics by B.K. Mahajan
3. Epidemiology by Bradford Hill

REFERENCE BOOKS

1. Textbook of Preventive and Social Medicine by Gupta & Ghai
- 2 Textbook of Preventive and Social Medicine by Gupta & Mahajan
3. Essentials of Community Medicine by Suresh Chandra
4. Introduction to Biostatistics by Sathya Swaroop
5. National Health Programme by Jugal Kishore
- 6.National Health Programme by D K Taneja
- 7.Essential Preventive Medicine, O.P.Ghai & P. Gupta.
- 8.Maxcy-Rosenua -Last Public Health and Preventive Medicine, J.M. Last & R.B. Wallace.
- 9.Human Nutrition and Dietetics, Davidson & Passmore.
- 10.The Disease of Occupation, D. Hunter.
- 11.Preventive Medicine for the Doctors his community, Leavel and Clark.
- 12.Health Policies and Programme in India, D.K. Taneja.
- 13.National Health Programme of India, J. Kishore.

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Syllabus and Curriculum
in
OPHTHALMOLOGY
for
MBBS Course
(III TO VII Semester)
2012

GOAL:

The broad goal of the teaching of students in ophthalmology is to provide such knowledge and skills to the students that shall enable him 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

OBJECTIVES

a. KNOWLEDGE

At the end of the course, the student should have 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 minimise 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 of control of blindness and its implementation at various levels
8. eye care education for prevention of eye problems
9. role of primary health centre 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

b. SKILLS:

At the end of the course, the student should 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, Schiotz tonometry, Staining for 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 organise community surveys for visual check up;
8. Assist to organise primary eye care service through primary health centres;
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 neurosciences, Otorhino-laryngology, General Surgery and Medicine.

TEACHING METHODS & HOURS

Theory

4 th semester	18wks x	1hr	=18hrs
5 th semester	12wks x	1hr	=18hrs
6 th semester	18wks x	2hr	=36hrs
7 th semester	9wks x	2hr	=18hrs

Total..... =90hrs

Tutorial /demonstration

6th semester 18wks x 2hr =36hrs

7th semester 9wks x 2hr =18hrs

Total..... =54hrs

Integrated teaching

7th to 9th semester x 10hrs =10hrs

Sum total

Grand total =154hrs

MCI norm =100hrs

Clinical posting

4th-5th semester x3hrs/day =4wks

6th-7th semester x2wks =4wks

Total =8wks

MCI norm =8wks

CLASS ROUTINE

Semester	Type	Day/Time /Venue
IV/V	Theory	Friday/8-9am/LT-4
VI/VII	Theory	Monday/2-3 pm/LT-2
		Thursday/8-9am/LT-2
	Tutorial/Demo	Monday/4-5 pm/Group-D
		Tuesday/4-5 pm/Group-A
		Wednesday/4-5 pm/Group-B
		Thursday/4-5 pm/Group-C

COURSE CONTENT

Theory

Chapter.1.INTRODUCTION-5hrs

Anatomy of the eye—including visual pathway, Extraocular muscles

Physiology—Aqueous humour formation, tear film, fields

Pharmacology— Ophthalmic preparations, modes of administration,

Antibiotics, antivirals, antifungals, antiglaucoma drugs,
mydriatics and cycloplegics, ocular toxicity of systemic,
ocular medication.

Elementary Optics: Strums' conoid, donders eye

Chapter.2.CONJUCTIVA-12hrs

Must know:

Acute Conjunctivitis, Trachoma, Allergic conjunctivitis, Pinguecula,
Pterygium, Xerosis/bitot spots.

Desirable to know:

Cheonic conjunctivitis, Dry eye, Membranous conjunctivitis, Inclusion
conjunctivitis.

Chapter.2.CORNEA-12hrs

Must know:

Corneal inflammations: Corneal Ulcers—bacterial, fungal, viral

Vitamin A Deficiency and keratomalacia

Exposure keratitis, Neuroparalytic keratitis

Corneal blindness, Eye banking, eye donation,

keratoplasty Arcus senilis

Desirable to know:

Deep/Interstitial keratitis, Degenerations and dystrophies, Overview of
Keratorefractive surgery.

Chapter.3.SCLERA-2hrs

Must know:

Scleritis, episcleritis.

Chapter.4.UVEAL TRACT-10hrs

Must know:

Iridocyclitis, Panophthalmitis, Endophthalmitis

Desirable to know:

Systemic associations of uveitis, Choroiditis, Coloboma iris

Chapter.5.LENS-12hrs

Must know:

Age related cataract and its management, Congenital Cataract,
Awareness of amblyopia, Diabetic Cataract, Cataract Surgery

Desirable to know:

Other forms of cataract: complicated cataract, Metabolic, traumatic, toxic, posterior capsular opacification

Chapter.6.VITREOUS-2hrs

Must know:

Vitreous hemorrhage—causes

Desirable to know:

Synchisis syntillans, Asteroid hyalosis

Chapter.7.GLAUCOMAS-10hrs

Must know:

Angle Closure glaucoma, Open angle glaucoma, Steroid glaucoma

Desirable to know:

Secondary glaucomas, Congenital glaucoma

Chapter.8.RETINA-5hrs

Must know:

Fundus changes in Diabetes, Hypertension,

Pregnancy induced hypertension,

Hematological disorders, Myopia, Photocoagulation

Retinal Vascular diseases –Central retinal occlusion, Central retinal vein occlusion

Desirable to know:

Retinopathy of prematurity, Retinitis pigmentosa, retinoblastoma.

Chapter.9.OPTIC NERVE-4hrs

Must know:

Papilledema, Optic neuritis, Optic atrophy.

Chapter.10.SQUINT-2hrs

Must know:

Awareness of amblyopia, Types of squint (Paralytic, Non paralytic)

Chapter.11. ORBIT-2hrs

Must know:

Common causes of proptosis, Orbital cellulites,

Cavernous sinus thrombosis

Chapter.12. LACRIMAL SYSTEM-7hrs

Must know:

Dacryocystitis–Congenital, Acute, Chronic. Dry eye

Chapter.13. LIDS-5hrs

Must know:

Inflammations, ectropion entropion, trichiasis, ptosis, lagophthalmos, symblepharon

Chapter.14. REFRACTIVE ERRORS-10hrs

Must know:

Myopia, hypermetropia, Astigmatism, Presbyopia aphakia/pseudophakia, Anisometropia

Chapter.15.INJURIES-4hrs

Must know:

Chemical injuries and first aid treatment, Open globe injuries,

Closed globe injuries.

Desirable to know:

Siderosis bulbi, Chalcosis, medico legal aspects

Chapter.16.COMMUNITY OPHTHALMOLOGY-5hrs

Must Know

Visual hygiene

Definition and types of blindness.

Causes of blindness

Promotion of eye donation, Eye banking

NPCB, Vision 2020, Eye camps

Chapter.17.MISCELLANEOUS-10hrs

Must Know

Systemic Diseases Affecting the Eye- Tuberculosis.,

Syphilis, Leprosy, AIDS, Diabetes, Hypertension

Symptomatic disturbances of vision

Overview of Recent Advances in Ophthalmology

Desirable to know:

Lasers in Ophthalmology.

Clinical postings-(4+4=8weeks)

A.CASES TO BE COVERED:

1. Conjunctiva
2. Pterigium.
3. Pinguecula
4. Conjunctivitis.
5. Sub Conj. Haemorrhage.

6. Cornea
7. Corneal Opacity.
8. Corneal Ulcer.
9. Corneal Abscess.
10. Corneal Transplant
11. Sclera
 - Scleritis, Epi Scleritis.
 - Staphyloma.
14. Uvea
 - Iridocyclitis.
15. Lens
 - Cataract.
 - Aphakia
 - IOLs
 - Complications
16. Glaucoma
 - Types, Signs, Symptoms & Management
17. Squint
18. Lids
 - Entropion
 - Ectropion
 - Ptosis

OBSERVING SURGERIES IN OT

Must observe:

Cataract surgery, enucleation, trabeculectomy, pterygium surgery

Desirable to watch:

Keratoplasty.

CLINICAL SKILLS AND OPHTHALMIC PROCEDURES

Clinical Teaching include the following

1. History taking.
2. Examination of Anterior segment.
3. Vision Testing- Determine visual activity/Test colour vision.
4. Flourescion staining
5. Rocording of intra-ocular tension.
6. Sub-conjunctival injections.
7. Learning of Retino scopy & prescription of glass
(Basic Knowledge)
8. Removal of conjunctival and corneal foreign body
9. Learning of cautensation of corneal ulcer.
10. Practising Lacrimal passage irrigation.
11. Use of Ophthalmoscope.
12. Distant direct ophthalmoscopy for diagnosis of cataract.

TUTORIAL-CUM-DEMO:

1. Instruments
2. Charts
3. Drugs
4. Equipments
5. Lab reports
6. Images-x-ray,ct.
7. Etc.

SCHEME OF EVALUATION

Total marks	Univ. examination marks			Int. Ass. Marks	
	Theory	Oral	Practical / Clinical	Theory	Practical
100	40 (20 each in part A & B in Paper-I)	10	30	10	10
Pass marks	40% in Theory (including Int. Ass.)	20/40			
	40% in Viva	4/10			
	50% in Theory (including Int. Ass.) including Viva	30/60			
	50% in Practical(including Int. Ass.)	15/30			
	35% in Internal Assessment (theory)	3.5/10			
	35% in Internal Assessment (practical)	3.5/10			
	50% of total aggregate	50/100			

INTERNAL ASSESSMENT SCHEDULE:

Tests and Timing	Theory	Practical
		Clinical-practical-oral
Mid-4 th semester	20	Xxx
4 th /5 th semester End ward posting	xxx	20 (Viva-5, Instruments-10 Case Records- 5)
6 th semester	20	Xxx
6 th /7 th semester	xxx	20

End ward posting		(Case record-5,Viva-5,Case-5, Instruments-5)
7 th semester (Pre-PMB test)	20	20 (Dark room-4,Instruments-4, Case -4,Viva-4,Case record-4)
Total	60	60
Sending Marks	60/6 (out of 10)	60/6 (out of 10)

UNIVERSITY EXAMINATION :**A.THEORY:**

- i. There shall be 40 marks for one theory paper consisting of 20 marks each in section-A and section-B to be answered in separate answerbooks over a time of 2hours.

ii. Chapter distribution for Section A & B:

Section A 20 Marks

Ant. Segment and its diseases.

Section B 20 Marks

Refraction. Posterior segment and its diseases.

Community Ophthalmology.

iii. Pattern of questions

Type of question	Weightage	No of questions	Marks in each section of each paper
Very Short Answer Type (VSQ)	20%	0.5 mark eachX8	04
Structured Essay Answer Type (SEQ)	20%	4marks x1	04

Short Answer Type(SQ)	60%	2 marks eachX6	12
Total for Section-A or section-B			20
Total in the paper			40 marks

iii) MODEL QUESTION**OPHTHALMOLOGY****PAPER-I****MARKS-40****TIME-2HR**

[Answer all questions; Each Section to be answered in separate Answer Book;

Illustrate your answer with suitable diagrams; Right hand margin figures are indicative of marks]

SECTION A

[Anterior segment diseases]

1. A 50 year old woman complains of progressive painless visual loss in both eyes. Discuss the differential diagnosis. [2+2 = 4 marks]

2. Write short notes on: [2 marksx6=12 marks]

- a) Complicated cataract
- b) Keratomalacia
- c) Ring Synechia
- d) Vernal catarrh
- e) Field defects in open angle glaucoma
- f) K.P Marks

3. Answer very shortly in a few words: [0.5marksx8=4marks]

a.....

b.....

c.....

d.....

e.....

f.....

g.....

h.....

SECTION B

[Posterior segment & Adnexal diseases]

1. Discuss the fundus pictures and treatment of diabetic retinopathy.

[2+2=4 marks]

2. Write short notes on:

[2marks x 6 = 12marks]

a) Hypertensive Retinopathy

b) Optic atrophy

c) Berlins edema

d) Entropion

e) Rhegmatogenous retinal detachment

f) Ophthalmic assistance

3. Answer very shortly in a few words:

[0.5marksx8=4marks]

a.....

b.....

c.....

d.....

e.....

f.....

g.....

h.....

B.PRACTICAL: (total 30 marks)

Clinical case discussion- 2cases	20 marks
Dark room procedure	5 marks
Instruments	5 marks

C.VIVA: (10marks)

PRACTICAL RECORD

Case record book for ward postings .

LIST OF BOOKS

1. Parson's diseases of the Eye, 19th Edition.
2. Clinical Ophthalmology – Kanski

000

Syllabus and Curriculum
in
OTO-RHINO-LARYNGOLOGY
[180]

for
MBBS Course
(III TO VII Semester)

2012

GOAL

The broad goal of teaching of undergraduate students in Otorhinolaryngology is that the undergraduate student have acquired adequate knowledge and skills for optimally dealing with common disorders and emergencies and principles of rehabilitation of the impaired hearing.

OBJECTIVES

a. KNOWLEDGE

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

1. describe the basic pathophysiology of common ENT diseases and emergencies.
2. adopt the rational use of commonly used drugs, keeping in mind their adverse reactions.
3. suggest common investigative procedures and their interpretation.

b. SKILLS

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

1. examine and diagnose common ENT problems including the pre-malignant and malignant disorders of the head and neck.
2. manage ENT problems at the first level of care and be able to refer whenever necessary.
3. Assist/carry out minor surgical procedures like ear syringing, ear dressings, nasal packing etc.

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4. assist in certain procedures such as tracheostomy, endoscopies and removal of foreign bodies.

c. INTEGRATION:

The undergraduate training in ENT will provide an integrated approach towards other disciplines especially neurosciences, ophthalmology and general surgery.

TEACHING METHODS & HOURS**Theory**

4 th semester	18wks	x	1hr	=18hrs
5 th semester	12wks	x	1hr	=18hrs
6 th semester	18wks	x	2hr	=36hrs
7 th semester	9wks	x	2hr	=18hrs
Total.....				=90hrs

Tutorial /demonstration

6 th semester	18wks	x	2hr	=36hrs
7 th semester	9wks	x	2hr	=18hrs
Total.....				=54hrs

Integrated teaching

7 th to 9 th semester	x	10hrs	=10hrs
Sum total			
Grand total	.....		=154hrs
MCI norm	.....		=70hrs

Clinical posting

4 th -5 th semester	x3hrs/day	=4wks
6 th -7 th semester	x3hrs/day	=4wks
Total	.....	=8wks

MCI norm =8wks

CLASS ROUTINE

Semester	Type	Day/Time /Venue
IV/V	Theory	Saturday/8-9am/LT-4
VI/VII	Theory	Thursday/9-10am/LT-2
		Friday/9-10am/LT-2
	Tutorial/Demo	Monday/4-5 pm/Group-A
		Tuesday/4-5 pm/Group-B
		Wednesday/4-5 pm/Group-C
		Thursday/4-5 pm/Group-D

COURSE CONTENTS; (90hrs)

Ear	-30hrs
Nose,PNS	-20hrs
Throat	-15hrs
Head,neck	-5hrs
Recent advance	-5hrs
Misc.	-15hrs

Chapter-1.APPLIED BASICS

Must know:

1. Anatomy of External, Middle and Inner Ear.
2. Physiology of hearing and equilibrium.
3. Anatomy and Physiology of Nose and Para nasal Sinuses.
4. Anatomy of Oral Cavity, Oropharynx.
5. Anatomy of Larynx and Physiology of Phonation.

6. Anatomy of Oesophagus.

7. Anatomy of Neck.

Chapter-2.EXTERNAL EAR

Must know:

Wax, Perichondritis, Otitis Externa, Furuncle, Otomycosis, Foreign bodies, Otagia

Desirable to know:

Malignant Otitis externa, Pre-auricular Sinus.

Chapter-3.MIDDLE EAR

Must know:

Acute Otitis media, Chronic otitis media– safe and unsafe, Otitis media with effusion, Complications of CSOM, Facial palsy, Otosclerosis, Myringoplasty, Conductive deafness.

Desirable to know:

Tympanoplasty

Chapter-4.DISEASES OF INNER EAR

Must know:

Menieres disease, Sensorineural deafness, Deaf child, Hearing aid, Vertigo, Tinnitus and Ototoxicity.

Desirable to know:

Rehabilitation of the hearing impaired, Acoustic neuroma. Cochlear implant.

Chapter-5.NOSE AND PARANASAL SINUSES

Must know:

Vestibulitis, Deviated nasal septum, Septal hematoma, Septal abscess, Nasal polyposis, Epistaxis, Atrophic Rhinitis, Nasopharyngeal angiofibroma, Acute and Chronic sinusitis, complications of Sinusitis, Foreign bodies in the nose, CSF Rhinorrhoea, Allergic Rhinitis and Rhinosporidiosis.

Desirable to know:

Fracture nasal bones, maxilla and Wegener's granuloma, choanal atresia, leprosy and tuberculosis of nose.

Chapter-6.DISEASES OF ORAL CAVITY & OROPHARYNX

Must know:

Tonsillitis- Acute and Chronic, Quinsy, Leukoplakia, erythroplakia, aphthous ulcer, candidiasis, Malignancy of tongue, tongue tie, Submucous fibrosis. Adenoid, Acute chronic Pharyngitis and Retropharyngeal abscess.

Desirable to know:

Malignancy of nasopharynx and Para Pharyngeal abscess.

Chapter-7.DISEASES OF LARYNX AND TRACHEA

Must know:

Stridor, Voice and Speech disorders, foreign bodies in air passages, Malignancy of Larynx, Laryngotracheal trauma, Acute and Chronic inflammations of larynx, Laryngeal paralysis, Puberphonia and Hysterical aphonia.

Desirable to know:

Congenital lesions of larynx, voice rehabilitation and Laryngeal stenosis, vocal cord nodule.

Chapter-8.DISEASES OF OESOPHAGUS:

Must know:

Dysphagia, Foreign bodies of food passages.

Desirable to know:

Disorders of Oesophagus

Hiatus hernia & pharyngeal pouch

Chapter-9.DISEASES OF NECK:

Lymphadenitis, metastatic neck benign and malignant tumors of neck, broncheal sinus, salivary gland tumors. emergency airway management.

Chapter-10.FUNDAMENTAL PRINCIPLES OF ENT SURGERIES.

1. Tonsillectomy
2. Adenoidectomy
3. Tracheostomy
4. Antral wash
5. Septoplasty
6. Caldwell Luc Surgery
7. Anterior Nasal packing
8. Direct Laryngoscopy
9. Oesophagoscopy
10. Myringoplasty
11. Modified radical mastoidectomy
12. Radical mastoidectomy
13. Biopsy for diagnosis of carcinoma of tongue, etc
14. Neck node biopsy

Chapter.11.PREVENTIVE ENT:

1. Prevention of Deafness.
2. Detection of Congenital and Childhood deafness.
3. Hearing Rehabilitation.
4. Prevention & identification of malignancy of Larynx, Tongue.

TUTORIAL-DEMONSTRATION

X-RAYS:

1. X-ray paranasal sinus-Water's view
2. X-ray paranasal sinus-Caldwell view
3. X-ray paranasal sinus-Lateral view
4. X-ray nasopharynx – lateral view
5. X-ray mastoid-Oblique lateral view
6. X-ray mastoid-Town's view
7. X-ray neck-Lateral view
8. X-ray neck-Anteroposterior view

INSTRUMENTS:

1. Thudicum nasal speculum.
2. Killiani self retaining nasal speculum
3. Tielley lichwitz antrum puncture trocar and cannula
4. Higginson's rubber syringe
5. Ballenger's swivet knife
6. Walsham's forceps
7. Luis forceps
8. Tilley's forceps
9. St clair thomson post nasal mirror
10. Simpson's antral syringe
11. Jobson hornes probe and ring curette
12. Siegle pneumatic speculum
13. Tuning fork
14. Barany noise box
15. Head mirror
16. Toynbee ear speculum
17. Boyle Davis mouth gag
18. Lack's tongue depressor
19. Draffins bipod metallic stand
20. Eve's tonsillar snare
21. St Clare Thomson Adenoid curette with / without cage
22. Trousseau's trocheal dilator
23. Jackson's metallic tracheostomy tube
24. Direct laryngoscope

25. Chevalier Jackson's oesophagoscope

26. Negus bronchoscope

CLINICAL POSTINGS: (total 8weeks)

4weeks in 4th/5th semester

4weeks in 6th/7th semester

The students would be posted in the ENT department (OPD-8days ,Ward and OT-10days) for a total period of 8weeks on rotation basis in 2 phases . They would learn the basic ENT examination, become familiarised with diagnosing the common ENT diseases and learning the elementary management , including communication skills.

OPD **7 days**

[Introductory classes on clinical methodology of history taking and examination of the ear, nose, throat, head & neck each .]

OPD postings. **14 days**

To observe certain common investigations and minor procedures like audiological tests, caloric test, syringing, antral lavage, nasal packing, foreign body removal from ENT, Examination of the ears under microscope, nasal endoscopy, Flexible laryngoscopy etc.

OT postings. **7 days**

To observe certain common ENT surgeries like adenotonsillectomy, septoplasty, upper aero-digestive tract endoscopies, intranasal antrostomy, Caldwell- Luc operation, tracheostomy, microotological and microlaryngeal surgeries, etc

OPD-ward; **28 days**

Case discussions with emphasis on common ENT disorders.

i. Common diseases and work up-pahse-II-30days-6th/7th semester.

1. Ear:

- a. Ear Discharge
- b. Pain in Ear
- c. Hearing loss
- d. Facial Paralysis
- e. Vertigo
- f. Tinnitus

2. Nose:

- a. Nasal Obstruction
- b. Nasal discharge
- c. Epistaxis
- d. Mass in the nose
- e. Headache

3. Throat:

- a. Sore throat

- b. Hoarseness
- c. Dysphagia
- d. Stridor / Dyspnoea

4. Head & Neck:

- a. Neck swellings & sinus
- b. Foreign bodies in the aerodigestive tract
- c. Neck trauma
- d. Emergency airway & its management

ii. Skill to learn independently

1. Skill of using a head mirror and know how to focus the light
2. Skill of using the different instruments in the ENT OPD as diagnostic tools eg. Tongue depressor, nasal speculum, Ear probe, laryngeal mirror, posterior nasal mirror, Ear speculum, tuning fork etc.
3. Skill of holding and using the Otoscope to be able to visualize the ear drum and its mobility. The student should be able to distinguish a healthy and unhealthy eardrum, a safe and unsafe ear disease.
4. Skill of doing the various tuning fork tests viz. Rinne's, Weber's and Absolute bone conduction tests.
5. Skill to identify and palpate the anatomical landmarks in ENT
6. Skill to Examine the ear, nose, throat & neck
7. Skill to Clean the ear
8. Skill of doing ear syringing
9. Skill to distinguish the types of hearing loss by learning the analysis of the tuning fork test & Audiograms.
10. Skill of Performance of maneuvers like Valsalva's etc
11. Skill of Testing the functions of various cranial nerves
12. Skill of Check for spontaneous nystagmus
13. Skill for doing the Tests for nasal patency
14. Skill to be able to perform maneuvers to maintain and establish the airway in case of emergency.
15. Skill to Suction a tracheostomy

iii. Skill to learn Under assistance

1. Remove wax
2. Perform indirect laryngoscopy and posterior rhinoscopy
3. Remove foreign bodies from the ear & nose
4. Perform Anterior nasal packing
5. Cautery.
6. ear packing
7. etc.

iv. Observe (Exposure to selective operative procedures.)-OT-

1. Septoplasty
2. Tonsillectomy & Adenoidectomy

3. Myringoplasty
4. Myringotomy
5. Mastoidectomy
6. Oesophagoscopy
7. Pure tone audiometry

INTEGRATED TEACHING

Topics like Tuberculosis, Systemic disorders as related to multi organ involvement, occupational and environment issues, Noise pollution, pre operative assessment may be dealt with by integrated teaching methods like Symposia, Panel discussions.

Headache, cough, dysphagia, allergic disorders, and haemoptysis may also be covered by integrated teaching methods.

The student should compulsorily undergo a basic life support course where the skills of endotracheal intubations and tracheotomy are reinforced. This may be assisted by the use of dummies and mannequins.

SCHEME OF EVALUATION

Total marks	Univ. examination marks			Int. Ass. Marks	
	Theory	Oral	Practical/ Clinical	Theory	Practical
100	40 (20 each in part A & B in Paper-I)	10	30	10	10
Pass marks	40% in Theory (including Int. Ass.)	20/40			
	40% in Viva	4/10			
	50% in Theory (including Int. Ass.) including Viva	30/60			
	50% in Practical(including Int. Ass.)	15/30			
	35% in Internal Assessment (theory)	3.5/10			
	35% in Internal Assessment (practical)	3.5/10			
	50% of total aggregate	50/100			

INTERNAL ASSESSMENT SCHEDULE:

Tests and Timing	Theory	Practical
		Clinical-practical-oral
Mid-4 th semester	20	Xxx
4 th /5 th semester End ward posting	Xxx	20 (x-ray-5, Instruments-5, viva-5 Case Records- 5)
6 th semester	20	Xxx

6 th /7 th semester	Xxx	20
End ward posting		(case-5,x-ray-5,instruments-5,spot-3,record-2)
7 th semester	20	20
(Pre-PMB test)		(case-5,x-ray-5,instruments-5,spot-3,record-2)
Total	60	60
Sending Marks	60/6 (out of 10)	60/6 (out of 10)

UNIVERSITY EXAMINATION :**A.THEORY:**

- i. There shall be 40 marks for one theory paper consisting of 20 marks each in section-A and section-B to be answered in separate answerbooks over a time of 2 hours.

ii. Chapter distribution for Section A & B:

Section A 20 Marks

Nose and Ear

Section B 20 Marks

Pharynx and larynx

iii. Pattern of questions

Type of question	Weightage	No of Questions	Marks in each section section-A or Section-B
Very Short Answer Type (VSQ)	20%	0.5 mark eachX8	04
Structured Essay Answer Type (SEQ)	20%	4marks x1	04
Short Answer Type(SQ)	60%	2 marks eachX6	12
Total for Section-A or section-B			20
Total in the paper			40 marks

iii. MODEL QUESTION

**ENT
PAPER—I
MARKS-40
TIME-2HRS**

[Answer all questions. Use separate answer books to answer Section-A and Section-B. Marks are indicated as figures at the right margin.]

SECTION-A- Nose and Ear

1. 12 year old patient presented with complaints of bilateral otorrhoea of 4 years duration. The discharge was copious and mucoid. Discuss the diagnosis and management of the above patient. (2+2=4marks)

2. Write short notes on: (2marksx6=12 marks)

- a) Rhinosporidiosis
- b) Little's area of septum
- c) Ototoxic drugs
- d) Atrophic Rhinitis
- e) Nasal Myiasis

3. write very short answer in a few words only. [0.5marksx8=4marks]

- a.....
- b.....
- c.....
- d.....
- e.....
- f.....
- g.....
- h.....

SECTION B-Larynx and Pharynx

1. Describe the clinical features and complications of a case of Peritonsillar abscess. Outline its management. [(2+2=4marks)]

2. Write short notes on: [2marksx6=12 marks]

- a) Vocal cord nodules
- b) Acute retropharyngeal abscess
- c) Complications following adenoidectomy
- d) Laryngocele
- e) Myringotomy

3. Write very short answer in a few words only. [0.5marksx8=4marks]

- a.....
- b.....
- c.....
- d.....
- e.....
- f.....
- g.....
- h.....

UNIVERSITY EXAMINATION :

A.THEORY- one paper for 40 mark with 2sections to be answered in 2hrs.

B.VIVA- 10 Marks

C.PRACTICAL-

Two cases	20 Marks (10 marks each)
Instrument	5 Marks
X – Ray	3 Marks

BOOKS

Text Books

- 1. Diseases of the Ear, Nose & throat – Logan turner
- 2. Text book of Diseases of Ear, nose & throat – Simon Hal

Reference books:

1. Logan Turner; Text Book of ENT
2. Scott Brown's Otolaryngology - 5 volumes
3. P.L Dhingra ; Text book of ENT
4. Text Book of Ear, Nose and Throat – Mohammad Maqbool.
5. Diseases of Ear, Nose and Throat – P.L.Dhingra.
6. Fundamentals of Ear, Nose and Throat – S.K. De.

Practical books :

- 1.A short practice of Otolaryngology – K.K. Ramlingam.

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**Syllabus and Curriculum
in**

MEDICINE

for

MBBS Course

(III to IX Semesters)

2012

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.

OBJECTIVES

(a) KNOWLEDGE

At the end of the course, the student should 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.

(b) SKILLS;

At the end of the course, the student should 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 haemogram, stool, urine, sputum and biological fluid examinations.
4. Assist the common bedside investigative procedures like pleural tap, lumbar puncture, bone marrow aspiration/biopsy and liver biopsy.

(c). INTEGRATION;

1. with community medicine and physical medicine and rehabilitation to have the knowledge and be able to manage important current national health programs, also to be able to view the patient in his/her total physical, social and economic milieu.
2. Integrate with other relevant academic inputs such as Anatomy, physiology, biochemistry, microbiology, pathology and pharmacology which provide scientific basis of clinical medicine

TEACHING HOURS

The subjects to be covered in **practical/demonstrations** are enlisted after theory syllabus. **Clinical postings** for medicine will be for a period of 26week including 2week of introductory class for the whole batch.

The **seminars/ group discussions /tutorials and integration** with other specialties will be done as described later. Each group shall consist of 35-40 students.

CLINICAL POSTING- TEACHING SCHEDULE

The group of the students posted in medicine will be divided into six smaller sub groups and shall be posted in six units of medicine department.

Each small group posted in a unit will be exposed to bedside case discussion according to a teaching schedule prepared by the unit for different faculties and post graduates on week days. Each student can have direct one to one interaction with the teacher regarding the case.

PRACTICAL/ DEMONSTRATIONS/TUTORIALS- TEACHING SCHEDULE

The whole class consisting of 150 students will be divided into four groups consisting of 35 students. Each group will be taught by a faculty/SR/PG student during 3-5 PM.

INTEGRATED TEACHING :

This will be done once in a month while the whole class will attend. Topics of interest be discussed involving faculty from other departments as follows.

Topic	Participating Departments
1. Diabetic Foot ulcer	Medicine, Surgery, Microbiology
2. Respiratory Failure-	Medicine, TBCD, Anaesthesiology
3. Myelodysplastic Synd.	Medicine, Pathology
4. HIV infection	Medicine, Dermatology, TBCD, Microbiology, OG.

TEACHING HOURS:

Theory

3 rd semester	18wksx	2hr	=36hrs
4 th semester	18wks x	1hr	=36hrs
5 th semester	9wks x	1hr	=9hrs
6 th semester	18wks x	2hr	=36hrs
7 th semester	9wks x	2hr	=18hrs
8 th semester	18wks x	4hr	=72hrs
9 th semester	9wks x	4hr	=36hrs
Total.....			=252hrs

Tutorial/demo

1 st semester	.....	=0hrs
2 nd semester	.....	=0hrs
3 rd semester	.....	=0hrs
4 th semester	.....	=0hrs

5 th semester	.....	=0hrs
6 th semester	18wks x 1hr	=18hrs
7 th semester	9wks x 1hr	=9hrs
6 th semester	18wks x 2hr	=36hrs
7 th semester	9wks x 2hr	=18hrs
Total.....		=81hrs

Integrated teaching

7 th to 9 th semester	x 15hrs	=15hrsSum total
Theory.....		=252hrs
Tutorial/Demo.....		=81hrs
Int.tchg.		=15hrs
Grand total		=358hrs
MCI norm		=300hrs

Clinical posting

3 rd semester	x3hrs/day	=2+6=8wks
6 th /7 th semester	x3hrs/day	=6wks
8 th /9 th semester	x3hrs/day	=6wks
Total		=20wks
MCI norm		=20wks

CLASS ROUTINE

Semester	Type	Day/Time /Venue
III	Theory	Tuesday/8-9am/LT-4 Friday /8-9am/LT-4

IV/V	Theory	Tuesday /8-9am/LT-3
VI/VII	Theory	Monday/8-9am/LT-2
		Saturday/2-3pm/LT-2
	Tutorial/Demo	Friday/3-4pm/Group-B
		Friday/4-5pm/Group-C
		Saturday/3-4pm/Group-D
		Saturday/4-5pm/Group-A
VIII/X	Theory	Monday/9-10am/LT-1
		Wednesday/8-9am/LT-1
		Thursday/8-9am/LT-1
		Saturday/8-9am/LT-1
	Tutorial/Demo	Monday/3-5pm/Group-D
		Tuesday/3-5pm/Group-A
		Wednesday/3-5pm/Group-B
		Thursday/3-5pm/Group-C

Medicine Theory Syllabus for MBBS Student

[*--- subjects DESIRABLE TO KNOW;

§--- to be covered by allied subjects like TBRD,SVD,Psychiatry.

- The topics without asterisk are MUST KNOW subjects]

1.Infectious Diseases**Total– 43Hrs**

Sl. No.	Subject	Time Period
1	Introduction to infectious diseases and sepsis	2hrs
2	Approach to the acutely ill infected febrile patients	1 hr
3	Infections of skin, muscle and soft tissue	1 hr
4	Sexually transmitted diseases : overview and clinical approach	1 hr
5	Hospital – acquired infections	1 hr

[200]

6	Infections in compromised host	1 hr
7	Streptococcal and enterococcal infections	1 hr
8	Staphylococcal infections	1 hr
9	Pneumococcal infections	1 hr
10	Tetanus	1hr
11	Botulism & clostridial infections (Gas gangrene etc) *	1hr
12	Meniongococcal infections	1hr
13	Gonococcal infections	1 hr
14	Typhoid fever	1 hr
15	Shigellosis (Bacillary dysentery)	1 hr
16	Pseudomonal infections	1 hr
17	Cholera, other infectious diarrhoea and food poisoning	1hr
18	Brucellosis *	1hr
19	Plague*	1hr
20	Leptospirosis	1 hr
21	Syphilis	1 hr
22	Mycoplasma infection, Chlamydial infections	1 hr
23	Rickettsial diseases	1hr
24	Fungal infections (Candida, cryptococcal, histoplasma, pneumocystis, asperagillus, others)	1hrs
25	Tuberculosis(to be taught by faculty of TB and CD)§	3hrs
26	Leprosy (To be taught by faculty of Dermatology)§	2hrs
27	Non tuberculous mycobacterial infections *	1hr
28	Actinomycosis and nocardiosis *	1hr
29	Infections due to anaerobic organisms*	1hr
30	HIV infection & acquired immunodeficiency syndromes (AIDS) including NACO Guidelines for diagnosis and management	3 hrs

31	Influenza and parainfluenza infections, Severe acute respiratory syndrome (SARS)	1hr
32	Measles, Mumps & Rubella *	1hr
33	Herpes simplex infections	1hr
34	Varicella zoster infections (Chicken pox & herpes zoster)	1hr
35	Cytomegalovirus and Epstein-Barr virus infections	1hr
36	Arboviral and rodent borne viral infections (Dengu, chikungunya, Japanese encephalitis, KFD etc.)	2hrs

2. Tropical Diseases**Total–15 hrs**

Sl. No.	Subject	Time Period
1	Malaria	4hrs
2	Intestinal & extraintestinal amoebiasis	2 hrs
3	Filaria & Tropical pulmonary eosinophilia	1 hr
4	Kalaazar	1 hr
5	Trypanosomiasis *	1 hr
6	Toxoplasmosis *	1 hr
7	Tapeworm infestations including cysticercosis and hydatid cyst	2 hrs
8	Round worm & pinworm infestation	1 hr
9	Hookworm infection	1 hr
10	Other intestinal nematodes	1hr

3. Nutritional Disease**Total– 9 hrs**

Sl. No.	Subject	Time Period
1	Protein energy malnutrition in adults	1hr

2	Vitamin deficiency & excess syndromes in adults	3 hrs
3	Obesity	2 hrs
4	Anorexia nervosa & bulimia*	1 hr
5	Disease due to trace elements deficiency	1 hr
6	Enteral & parenteral nutritional therapy	1 hr

4.Environmental Disorders & Poisoning**Total– 17 hrs**

Sl. No.	Subject	Time Period
1	Snake bite and other venomous bites	2hrs
2	Ectoparasite infestations; Arthropod bites & stings	1hrs
3	Heat and cold related disorders	1hrs
4	Altitude and pressure related disorders *	1hrs
5	Air pollution *	1 hr
6	Drowning and near drowning	1 hr
7	Electrical injuries (Electric shock, lightening), Radiation injury	1 hr
8	Insecticide poisoning (Organophosphorus, organochlorine, carbamates, pyrethroid etc.)	2hrs
9	Oleander poisoning, Dhatura & other poisoning (Mushroom etc.)	2hr
10	Poisoning due to drugs (Benzodiazepines, antihistamine, antipsychotic, antiepileptic, chloroquine & quinine, opioid.)	2hrs
11	Poisoning due to rodenticides	1hr
12	Corrosive poisoning (acids & alkali)	1 hr
13	Heavy metal poisoning.*	1 hr

5. Geriatric Disorders**Total– 3 hrs**

1	Biology of ageing, principles of geriatric medicine	1 hr
2	Common geriatric problems and their prevention (Intellectual impairment, depression, urinary incontinence, falls, immobility, iatrogenic drug reaction etc.)	2hrs

6. Alimentary System**Total – 24 hrs**

1	Achalasia, Gastroesophageal reflux disease (GERD) and other oesophageal disorders	2hrs
2	Gastritis including H.pylori infection	1hrs
3	Peptic ulcer disease	2hrs
4	Gastric malignancies *	1 hr
5	Malabsorption syndrome*	1hrs
6	Inflammatory bowel disease	2hrs
7	Irritable bowel syndrome	1hr
8	Peritonitis	1hr
9	Abdominal tuberculosis	1hr
10	Acute viral hepatitis	2hrs
11	Chronic hepatitis (B,C, Autoimmune etc.)	2hrs
12	Alcoholic liver disease, Cirrhosis of liver and portal Hypertension	2hrs
13	Tumours of liver*	1hr
14	Toxic and drug induced hepatitis	1hr
15	Fatty liver, Nonalcoholic fatty liver disease (NAFLD)	1hr
16	Acute and chronic pancreatitis	2 hrs

7. Cardiovascular System**Total – 26 hrs**

1	Heart failure and its management	2hrs
2	Rheumatic fever	1hr
3	Mitral stenosis	1 hr
4	Mitral regurgitation	1hr
5	Aortic valve disease (Aortic stenosis & regurgitation)	2hrs
6	Atherosclerosis	1hr
7	Coronary artery disease , chronic stable angina, Acute coronary syndromes (unstable angina, Non-ST segment elevation and ST-segment elevation myocardial infarction)	3 hrs
8	Myocarditis	1hr
9	Pericarditis (pericarditis, pericardial effusion, chronic constrictive pericarditis)	2 hrs
10	Cardiomyopathies (Dilated, Hypertrophic, Restricted)*	2hrs
11	Hypertension (including JNC guidelines)	3 hrs
12	Infective endocarditis	1hr
13	Congenital heart disease (Atrial septal defect, ventricular septal defect, patent ductus arteriosus, tetralogy of Fallot, coarctation of aorta)	3hrs
14	Aortic aneurysm and aortic dissection *	1 hr
15	Cor pulmonale	1 hr
16	Cardiac tumors (myxoma etc.), cardiac manifestations of systemic disease.*	1 hr
17	Deep vein thrombosis	1hr

8. Respiratory System**Total – 11 hrs**

1	Bronchial asthma	2hrs
2	Chronic obstructive pulmonary disease	2hrs
3	Bronchiectasis	1 hr

4	Lung abscess	1 hr
5	Pneumonias	2hrs
6	Pleurisy, pleural effusion, empyema and Pneumothorax	2 hrs
7	Pulmonary hypertension, pulmonary thromboembolism	1hr

N.B.: The remaining Respiratory diseases will be taught by faculty from TB & Chest Department

9. Hematology & Oncology

Total – 22 hrs

1	Anemias – iron deficiency and other hypochromic microcytic anemias	2hrs
2	Megaloblastic anemias	1hr
3	Aplastic anemia, myelodysplasia and other related Bone marrow failure syndrome	2hrs
4	Hemoglobinopathies and Hemolytic anemias	3hrs
5	Leukaemias (AML, ALL, CML, CLL)	3hrs
6	Disorders of coagulation and bleeding	1hr
7	Primary and secondary polycythemias *	1hr
8	Hodgkin's & Non-Hodgkin lymphoma	2 hrs
9	Multiple myeloma and other plasma cell disorders	1hr
10	Haematopoietic stem cell transplantation(Bonemarrow transplantation & others)	1 hr
11	Transfusion biology and therapy	1 hr
12	Approach to patient with cancer ,Principles of cancer treatment	2 hrs
13	Metastatic cancer *	1 hr
14	Paraneoplastic syndrome *	1 hr

10. Endocrinology

Total – 14 hrs

1	Diabetes mellitus	4 hrs
2	Pituitary disorders (Hyper & Hypopituitarism)	1 hrs
	Hypothalamic disorder, Hypogonadism *	1hr
3	Thyroid disorders (Thyrotoxicosis, Hypothyroidism, thyroiditis etc.)	3 hrs
4	Addison's disease and cushing's syndrome	2 hrs
5	Phaeochromocytoma	1 hr
6	Diabetes insipidus	1 hr
7	Parathyroid disease	1 hr

11. Metabolic and Bone Disorders**Total – 5 hrs**

1	Gout and other crystal induced arthropathies	1hr
2	Hemochromatosis	1hr
3	Wilson's disease	1hr
4	Porphyrias	1hr
5	Osteoporosis	1hr

12. Nervous System**Total – 26 hrs**

1	Diseases of the cranial nerves (Trigeminal Neuralgia, Bell's palsy etc.)	2hrs
2	Pyogenic meningitis & brain abscess	2hrs
3	Tuberculous meningitis	1hr
4	Seizures and Epilepsy	2hrs
5	Cerebrovascular disease	3hrs
6	Viral encephalitis	1hr
7	Multiple sclerosis & other demyelinating diseases	1hr

8	Hydrocephalous	1hr
9	Motor neurons disease	1hr
10	Freidrich's ataxia and other spinocerebellar ataxias*	1 hr
11	Brain tumors *	1hr
12	Extrapyramidal syndromes (Parkinson's disease & other movement disorders)	1hr
13	Transverse myelitis, Spinal cord compression & syringomyelia	2hrs
14	Subacute combined degeneration	1hr
15	Peripheral neuropathies including Guillain-Barre Syndrome	2hrs
16	Muscle disease (Muscular, dystrophy, myositis, other myopathies, periodic paralysis)*	2 hrs
17	Myaesthesia gravis and other neuromuscular junction disorders*	1hr
18	Alzheimer's disease and other dementias *	1hr

13. Kidney Diseases**Total – 13 hrs**

1	Acute kidney injury	1hr
2	Chronic kidney disease	2hrs
3	Renal replacement therapy-Principles of dialysis & transplantation	2hrs
4	Glomerulo nephritis	2hrs
5	Nephroitic syndrome	1hr
6	Urinary tract infection	1hr
7	Polycystic kidney disease and other inherited renal disease	1hr
8	Renal calculi *	1hr
9	Renovascular diseases*	1hr
10	Tubulointerstitial diseases*	1hr

14. Disorders of immune system, connective tissue and joints**Total – 11hrs**

1	Introduction to immune system and autoimmunity	1hr
2	Primary immunodeficiency*	1hr
3	Rheumatoid arthritis	2hr
4	Systemic lupus erythematosus	1hr
5	Polyarteritis nodosa and other vasculitides	1hr
6	Progressive systemic sclerosis	1hr
7	Sjogren's syndrome and mixed connective tissue disease	1hr
8	Spondyloarthropathies (Ankylosing Spondylitis and others)	1hr
9	Other arthritides – osteoarthritis, infectious arthritis etc.	2hrs

15. Miscellaneous**Total – 9hrs**

1	Microbial, chemical and radiation <i>Bioterrorism</i>	2hrs
2	Brain death, Organ donation and preservation	2hrs
3	Disorders of fluid and electrolytes	2hrs
4	Clinical pharmacology and therapeutics*	1hr
5	Pain management and palliative care*	1hr
6	Medical ethics*	1hr

17. Emergency and critical care medicine**Total – 22 hrs**

1	General principles of critical care management (Physiology of critically ill, scoring system, outcome and cost, ICU set up, ethical issues)	2hrs
1	Anaphylaxis And Its Management	1hr
2	Shock (Hypovolemic, cardiogenic, septic & other forms)	3hrs

3	Cardiovascular collapse and arrest, cardio-pulmonary resuscitation	2hrs
4	Acute left ventricular failure, pulmonary oedema	2hrs
5	Cardiac tamponade	1hr
6	Malignant hypertension, and Hypertensive crises	1hr
7	Acute severe asthma	1hr
8	Status epilepticus	1hr
9	Acute GI bleeding	1hr
10	Hypoglycemic coma	1 hr
11	Thyroid storm and myxoedema coma	1hr
12	Acute adrenal insufficiency	1hr
13	Tension pneumothorax	1hr
14	Management of cardiac arrhythmias	2hrs
15	Management of fulminant hepatic failure and hepatic encephalopathy	1hr

18. Common symptoms and signs of diseases**Total – 40 hrs**

1	Pain	1hr
2	Chest discomfort & palpitation	1hr
3	Abdominal pain	1hr
4	Headache	1hr
5	Back & neck pain	1hr
6	Fever(including fever of unknown origin)	2hrs
7	Faintness, syncope, Dizziness, vertigo	2hrs
8	Motor weakness (Monoplegia, hemiplegia, paraplegia, quadriplegia)	2hrs
9	Numbness, tingling, sensory loss	1hr
10	Disturbances of conscious and Coma	1 hr
11	Abnormal movements	1hr
12	Ataxias	1hr
13	Speech abnormalities*	1hr
14	Cough and hemoptysis	1hr
15	Clubbing of fingers and Cyanosis	1hr
16	Dyspnoea	1hr
17	Oedema	1hr
18	Dysphagia	1hr
19	Anorexia, Nausea, Vomiting	1hr
20	Constipation and diarrhoea	2hrs
21	Hematemesis and melaena	1hr
22	Jaundice	1hr
23	Abdominal swelling and ascites	1hr
24	Hepatomegaly, splenomegaly & hepatosplenomegaly	2hrs

25	Lymphadenopathy	1hr
26	Weight loss and Weight gain	1hr
27	Common urinary symptoms- Oliguria ,polyuria ,nocturia ,pyuria ,dysuria, hematuria, and enuresis	2hrs
28	Sexual dysfunction	1hr
29	Anemia	1hr
30	Bleeding & thrombosis	1hr
31	Acidosis and alkalosis	1 hr
32	Arthralgia,arthritis,myalgia	1hr

N.B: Syllabus for Dermatology, Psychiatry and TB and Chest disease will be provided by concerned specialities. The respective chapter will be taught by concerned disciplines. However the questions from above will be asked in general medicine.

COURSES TO BE COVERED IN DIFFERENT SEMISTER

3RD SEMESTER – 1. Cardiovascular system ,

2. Respiratory system

3. Common symptoms and signs

4th SEMESTER – 1. Cardiovascular system 2. Alimentary system

3. Common symptoms and signs

5th SEMESTER – 1. Alimentary system

6th SEMESTER – 1. Alimentary system

2. Infectious disease

3. Tropical disease

4. Hematology & oncology

5. Bioterrorism

7th SEMESTER – 1. Infectious disease

2. Nutritional disease

3. Geriatric disease

4. Diseases of immune system, connective tissue and joints.

5. Hematology & oncology.

8th SEMESTER –

1. Endocrine disease
2. Metabolic and Bone disease
3. Nervous system
4. Emergency medicine and critical care
5. Brain Death, Organ donation, Organ preservation

9th SEMESTER –

1. Nervous system
2. Kidney disease
3. Environmental disorders, poisoning and snake bite
4. Emergency medicine and critical care

TUTORIAL/DEMONSTRATION topics

Sl. No.

Topic

3rd SEMESTER

- (1). Description of instruments used in clinical examination: Stethoscope, sphygmomanometer, thermometer, patellar hammer, tuning fork, ophthalmoscope, pencil torch, measuring tape etc
(To be taught in introductory classes.)

6TH SEMESTER

- (2). Sterilization and asepsis.
- (3). Universal precautions
- (4). Method of giving injections:
 - a. Different types of syringes and needles.
 - b. Different type of injections: Indications contraindications, precaution, procedure of giving injections, complications of intramuscular, subcutaneous, intravenous, intra dermal, femoral tap, intrathecal etc.
- (5). Examination of blood at bedside. Hb, DC, TLC, ESR, Peripheral smear study, sickling test, parasites & others
- (6). Examination of urine and stool-bedside tests.
- (7). Examination of sputum.
- (8). Bed side blood glucose estimation by glucometer.

- (9). Collection of samples for bacteriological culture (blood, urine, stool, pus, sputum, throat swab, CSF, Peritoneal and pleural fluid etc.)
- (10). Lumbar puncture – L.P. needle, indications, contraindications, precautions, procedure, labeling of samples, complications etc. CSF finding in important disorders.

7TH SEMESTER

- (11). Thoracentesis – Aspiration needle, indications, contraindications, precautions, procedure, labeling of samples, complications, examination of pleural fluid.
- (12). Paracentesis of abdomen – Aspiration needle, indications, contraindications, precautions, procedure, labeling of samples, complications, examination of peritoneal fluid..
- (13). Bonemarrow aspiration & biopsy – Bone marrow needles, indications, contraindications, precautions, procedure, complications.
- (14). Liver biopsy – Different needles for biopsy (Vim – Silverman, Menghini etc), indications, contraindication, precaution, procedure, complications.
- (15). Introduction of nasogastric tube – Description of the nasogastric tube procedure, indications, contraindications precautions, complications, gastric content examination.
- (16). Stomach wash – Stomach tube/ pump, indications, contraindications, procedure complications.

8TH SEMESTER

- (17). Catheterization of bladder: Different types of urinary catheter including Foley's, indications, contraindication, precaution especially to avoid iatrogenic rupture of urethra, procedure, complications.
- (18). Defibrillation & DC shock, cardiopulmonary resuscitation, mechanical ventilation including demonstration of devices & equipments.
- (19). Nebulizers, metered dose inhalers and dry powder inhalers – Demonstration of devices, procedures for using them..
- (20). Endotracheal intubation – Endotracheal tube – indication, contraindication, precaution, procedure for maintaining patency of tube , complications. (may be taught by anaesthesiologist)
- (21). ECG – Procedure, preliminary concept & interpretation – Demonstration of ECG machines and procedures for recording.
- (22). Peripheral and Central vein access & venesection.
- (23). Arterial blood gas analysis-basic concepts.
- (24). Upper GI endoscopy, ERCP, Colonoscopy-basic principles.
- (25). Liver and Renal function tests.
- (26). Bronchoscopy-basic concepts.

9TH SEMESTER

- (27). Imaging studies
 - a. Radiological – X-ray chest, abdomen, skeletal X-rays, Demonstration of X-rays and interpretation.
 - b. CT Scan & MRI –Principles & demonstration of images

- c. Ultrasonogram & Echocardiography – Principles.
- (28). Principles of prescription writing – verification of drugs or medicines brought from chemist, checking of expiry date, alteration of color etc.
- (29). Communication with patients & care takers.
- (30). Avoidance of Medical litigations, consent for examination & treatment, Medicine and consumer protection act.

SCHEME OF EVALUATION

Total marks	Univ. examination marks			Int. Ass. marks	
	Theory	Oral	Practical	Theory	Practical
300	120 (30 each in part A & B of each of paper I & II having 60 marks each)	20	100	30	30
Pass Marks	40% in Theory(including Int. Ass.)	60/150			
	40% in Viva	8/20			
	50% in Theory (including Int. Ass.) including Viva	85/170			
	50% in Practical(including Int. Ass.)	65/130			
	35% in Internal Assessment (theory)	10.5/30			
	35% in Internal Assessment(practical)	10.5/30			
	50% of total aggregate	150/300			

SCHEME FOR INTERNAL ASSESSMENT

Total Marks= Theory (30) + Practical (30) = 60 marks

a.Theory : 30 Marks

Internal assessment examination for theory will be held during 4th ,6th ,8th and 9th semesters, Average of the above will be taken in to consideration.

b.Practical : 30 Marks

Internal assessment examination for practical will be held at the end of clinical posting i.e. at the end of 3rd, 6th/7th,8th/9th semesters.

Different aspects of the practical to be covered are as follows.

Internal Assessment Schedule:**Total marks – 30**

MEDICINE				
Timings	Marks			
	Theory	Practical		
		Clinical	Oral	Record
3 rd semester	X	15	10	5
4 th /5 th semester	30	x	x	x
6 th /7 th semester	30	15	10	5
8 th semester	30	15	10	5
Pre-PMB test Mid-9 th semester Dec' 3 rd week	30	15	10	5
Total marks	120	120		
Sending marks in Medicine(M)	Total marks /10 (out of 12)	Total marks / 10 (out of 12)		
Sending marks in Allied subjects(N)	A+B+C (out of 3)	A+B+C (out of 3)		
Overall Sending marks	M+N (out of 15)	M+N (out of 15)		

INTERNAL ASSESSMENT FOR ALLIED SUBJECTS					
Subjects	Timings	Marks			
		Theory	Practical		
			Clinical	Oral	Record
Derma, VL	4 th /5 th semester	x	15	4	1
	8 th /9 th semester	20	15	4	1
	Total	20	30	8	2
	Sending marks (A)	Total marks /40 (out of 1)	Total marks / 40 (out of 1)		
TBCD	4 th /5 th semester	x	15	4	1
	8 th /9 th semester	20	15	4	1
	Total	20	30		
	Sending marks (B)	Total marks /40 (out of 1)	Total marks / 40 (out of 1)		
Psychiatry	4 th /5 th semester	x	15	4	1
	Total	20	15	4	1
	Sending marks (C)	Total marks /20 (out of 1)	Total marks / 20 (out of 1)		
Total	Sending marks in Allied subjects	A+B+C (out of 3)	A+B+C (out of 3)		

UNIVERSITY EXAMINATION**A.THEORY :**

i.Two Papers of 3 hours during carrying 60 marks with two part A&B carrying 30 marks each to be answered .The following Chapters will be included in Medicine Paper –I and II respectively for theory Examination purpose.

ii.section and paperwise chapter distribution;**Medicine Paper – I (60 marks)****Part-A**

Infectious and tropical disease, Nutritional disorders, Environmental disorders, poisoning & snake bite, Geriatric disorders.

Part-B

Alimentary System disease, Cardiovascular system diseases, Hematological diseases & Oncology, Bioterrorism., Brain death, organ donation and preservation.

Medicine Paper – II (60 marks)**Part-A**

Nervous system disorders, Diseases of the immune system, connective tissue and joints, Kidney disease, Fluid and electrolytes, Acidosis and alkalosis. Endocrinological disease, Metabolic and Bone Diseases and Basic science

Part-B

Emergency Medicine, Respiratory Diseases, Tuberculosis, Psychiatry, Skin –VD- Leprosy.

(5% marks (6marks) from each segment in this section will be set totaling to 25% of Medicine Theory Paper marks)

iii.Pattern of Question Paper ::

Type of question	% marks	No of questions in each of part-A & B of paper-I and part-A of paper-II	No. of questions Subject wise in Part-B of Paper-II
Structured Essay Questions-	20%	1x6marks= 6 marks	1x6marks One question from Emergency Medicine
Very Short Answer Questions	20%	12x0.5marks=6 marks	0.5markx12 3 questions of 0.5 mark each one each from TB,RD,SVD,Psychiatry
Short Answer Questions	60%	6x3marks=18marks	3marksx6 2 from Emergency Medicine and 1 each from TB, RD, SVD, Psychiatry.
Each part total marks		30 Marks	

MODEL QUESTION IN MEDICINE FOR MBBS

General Medicine

Paper- I

Full Marks- 60

Time- 3 hours

[Use separate Answer books for Part- A & Part- B. Each part consists of 30.Marks are as displayed at the right margin]

Section- A

What is severe falciparum malaria? Describe it's clinical features and management.

1+2+3=6

Answer the following questions

1x6=6

- i.Name the antidotes for organophosphorous poisoning and their mechanism of action.
- ii. Name the different Nonnucleoside reverse transcriptase inhibitors used in AIDS and their adverse effects.
- iii. Rose spots are seen in which infectious disease? What are the other salient clinical features of that disease.
- iv. Give a immunization schedule for Tetanus in a 18 yr old boy who has not been given it earlier.
- v. What are the drugs used for prevention and treatment of H1N1 influenza.
- vi. Enumerate the drugs for treatment of extra intestinal amoebiasis with dose and duration.

Write short notes

3x6=18

- i. Complications of Obesity
- ii. Updated modified Jone's criteria
- iii. Clinical features of Cobra bite & management
- iv. Common problem in Geriatric age
- v. Heat stroke
- vi. Vitamin- A deficiency

Part- B

What are the complications of cirrhosis of liver? Discuss the pathogenesis and management of hepatic encephalopathy.

2x3=6

Answer the following questions

1x6=6

- i. Enumerate the proton pump inhibitors with their therapeutic indications.
- ii. Enumerate the electrocardiographic features of acute myocardial infarction.
- iii.What are the causes of aplastic crises in a patient of sickle cell anemia?
- iv.Which microorganisms can be used for bioterrorism?
- v. Describe the peripheral blood picture of chronic myeloid leukaemia in accelerated phase.
- vi. How many components are there in a typical pericardial rub?

Write short notes on:-

3x6=18

- i. Management of ulcerative colitis
- ii. Management of ST elevation myocardial infarction.
- iii. Clinical features of Tubercular Peritonitis.
- iv. Iron deficiency anemia
- v. Thalidomide.
- vi. Atrial fibrillation

MODEL QUESTION IN MEDICINE FOR MBBS

General Medicine

Paper-II

Full Marks- 60

Time- 3 hours

Use separate Answer books for Part- A & Part- B.

Each part consists of 30.Marks are as displayed at the right margin

Part- A

Discuss the pathogenesis, clinical features and management of acute bacterial meningitis. 2x3=6

Answer the following questions

1x6=6

- i. Enumerate the DMRDS used in Rheumatoid arthritis.
- ii. What is the consequence of rapid correction of hyponatremia?
- iii. How do you treat a case of hypokalemic periodic palsy?
- iv. What is a anion gap?
- v. Define nephritic syndrome.
- vi. Enumerate the manifestation of reactive arthritis.

Write short notes on:-

3x6=18

- i. Post streptococcal glomerulonephritis.
- ii. Bell's palsy.
- iii. Antinuclear antibody.
- iv. Todd's palsy.
- v. Arterial blood gas analysis.
- vi. Lofgren's syndrome/

Part- B

What is diabetic ketoacidosis? Discuss the clinical features and management of Diabetic Ketoacidosis ?

1+2+3=6

Answer the following questions:-

1x6=6

- i. Enumerate the criteria for diagnosis of diabetes mellitus.
- ii. What is pretibial myxedema?
- iii. Enumerate the cardiovascular manifestation of hypothyroidism.
- iv. What is DOTS?

v. What are the drugs used in MDT?

vi. What is conversion reaction?

Write short notes:-

3x6=18

i. Management of gout.

ii. Latent Tuberculosis.

iii. Lobar pneumonia.

iv. Obsessive-compulsive neurosis.

v. Lepra reaction

vi. Status epilepticus.

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B.PRACTICAL-CLINICAL EXAMINATION-100marks

1 long case.....1 hour.....50 marks

2 short cases.....15 min each.....25x2=50 mark

C.ORAL EXAMINATION = Total 20 marks

Panel-I(Team of one external and one internal)-10marks

Chart, Images, Clips, X-Rays, Lab Reports = 10 marks (Paper I Subjects)

Panel-II (Team of one external and one internal)=10marks

Instruments, drugs

(Paper II subjects, including Pshy, Skin & STD, TB & Resp Disease, Emergency.)

RECORDS

1.case records in medicine

2.intern's logbook(Book-365)

BOOKS

1.Davidsons- Principle and Practice of Medicine

2.Text Book of Medicine- Kumar & Clarke

3.API Text book of Medicine'

4.Hutchinson's Clinical Methods of Medicine

5.Mcleod's Clinical Methods of Medicine

REFERENCE BOOKS

1.Harison's Principle of Internal Medicine

2.Cecil's Text Book of Medicine

3.Oxford Textbook of Medicine

4.Manson & Bahr's Tropical Diseases.

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Syllabus And Curriculum
In
PSYCHIATRY
For
MBBS Course
(III to IX Semesters)

GOAL

The aim of teaching 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 complication / unusual manifestation of common disorders and rare psychiatric disorders to the specialist.

OBJECTIVES

a. KNOWLEDGE:

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

- (1) comprehend 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, schizo-phrenia, affective disorders, neurotic disorders, personality disorders, psycho-physiological disorders, drug and alcohol dependence, psychiatric disorders of childhood and adolescence;
- (5) describe rational use of different modes of therapy in psychiatric disorders.

b. SKILLS:

The student should 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 should prepare the students to deliver preventive, promotive, curative and re-habilitative services for the care of the patients both in the family and community and to refer advanced cases to specialized psychiatry/mental hospital. Training should be integrated with the departments of medicine, neuro anatomy, behavioral science and forensic medicine.

TEACHING METHODS & HOURS**Theory /tutorial-demo**

8 th semester	1hr	x	18wks	=18hrs
9 th semester	1hr	x	9wks	=9hrs
Integrated Teach.				=10hrs
Total				=37hrs
Clinical posting				
4 th /5 th semester	2wks	x	3hr/day	=2wks
MCI NORM				=2wks

COURSE CONTENT : (TOTAL—20HRS)**Curriculum:**

- 1.Introduction and classification of psychiatric disorders.
- 2.Psychological testing.
- 3.Anxiety disorders (panic disorder,generalized anxiety disorder, phobic disorder, stress disorder, obsessive-compulsive disorder).
- 4.Mood disorders
- 5.Schizophrenia.
- 6.Somatoform disorders
- 7.Personality disorders
- 8.Counselling and psychological therapies
- 9.Alcoholism and drug dependence

COURSE OUTLINES: theory /tutorial classes-

- Mood disorders.
- Major depressive episodes
- Unipolar
- Bipolar
- Dysthymic
- Atypical
- Maniac episodes
- Anxiety disorders.
- Acute anxiety states
- Panic disorders
- Generalized anxiety disorders
- Psychic Traumatic disorders
- Obsessive-compulsive disorders
- Phobic disorders
- Schizophrenia.
- Alcoholism.
- Addiction.
- Psychosexual disorders in men and women.

CLINICAL POSTING :(2WEEKS DURING 4TH-5TH SEMESTER)

1. Case discussion for diagnosis and management of common Psychiatric disorders like-

Anxiety
Depression
Schizophrenia
Manic depressive psychosis
Phobias
Eating disorders

2. Understand the Symptomatology to reach the Differential Diagnosis:

Skills:

History taking in psychiatry

Clinical examination of patients

Counseling and psychoanalysis especially in patients with suicidal and homicidal attitude.

Interpretation of related radiological and laboratory investigations

General medication and prescription writing in psychiatry

Procedures:

Psychotherapy

Electroconvulsive Therapy (ECT)

Electroencephalogram (EEG)

SCHEME OF EVALUATION:

The internal assessment tests in allied subjects of Medicine(TBCD,Psychiatry,DVL) shall be conducted by the parent department ,but marks shall be submitted to Medicine department for inclusion in Internal assessment.Out of Internal assessment marks in Medicine ~25% marks in Theory(3marks out of total 15marks) and Practical(3marks out of total 15marks) with equal weightage from each allied subject.Thus there shall be 1 mark in Theory and 1 mark in Practical for Internal assessment in Psychiatry to be decided by a schedule of tests as described here.

INTERNAL ASSESSMENT SCHEDULE:**TOTAL MARKS – 30**

Medicine				
Timings	Marks			
	Theory	Practical		
		Clinical	Oral	Record
3 rd semester	X	15	10	5
4 th / 5 th semester	30	X	x	x
6 th / 7 th semester	30	15	10	5
8 th semester	30	15	10	5
Pre-PMB test Mid-9 th semester Dec' 3 rd week	30	15	10	5
Total marks	120	120		
Sending marks in Medicine(M)	Total marks /10 (out of 12)	Total marks / 10 (out of 12)		
Sending marks in Allied subjects(N)	A+B+C (out of 3)	A+B+C (out of 3)		
Overall Sending marks	M+N (out of 15)	M+N (out of 15)		

INTERNAL ASSESSMENT for Allied Subjects					
Subjects	Timings	Marks			
		Theory	Practical		
			Clinical	Oral	Record
Derma, VL	4 th /5 th semester	x	15	4	1
	8 th /9 th semester	20	15	4	1
	Total	20	30	8	2
	Sending marks (A)	Total marks /40 (out of 1)	Total marks / 40 (out of 1)		
TBCD	4 th /5 th semester	x	15	4	1
	8 th /9 th semester	20	15	4	1
	Total	20	30		
	Sending marks (B)	Total marks /40 (out of 1)	Total marks / 40 (out of 1)		
Psychiatry	4 th /5 th semester	x	15	4	1
	Total	20	15	4	1
	Sending marks (C)	Total marks /20 (out of 1)	Total marks / 20 (out of 1)		

Total	Sending marks in Allied subjects	A+B+C (out of 3)	A+B+C (out of 3)
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UNIVERSITY EXAMINATION**A. Theory**

i) There shall be 6 marks set from Psychiatry in section-B of Medicine

Paper – II .

[medicine-paper-II-section-B-distribution of chapters:

Emergency Medicine, Respiratory Diseases, Tuberculosis, Psychiatry, Skin –VD- Leprosy.

(5% marks (6 marks) from each allied segment in this section will be set totaling to 25% of Medicine Theory Paper marks]

ii. Pattern of Question Paper ::

Type of question	% marks	No of questions in each of part-A & B of paper-I and part-A of paper-II	No. of questions Subject wise in Part-B of Paper-II
Structured Essay Questions-	20%	1x6marks= 6 marks	1x6marks One question from Emergency Medicine
Very Short Answer Questions	20%	12x0.5marks=6 marks	0.5markx12 3 questions of 0.5 mark each one each from TB, RD, SVD, Psychiatry
Short Answer Questions	60%	6x3marks=18marks	3marksx6 2 from Emergency Medicine and 1 each from TB, RD, SVD, Psychiatry.
Each part total marks		30 Marks	

B. Clinical-Practical-Viva-during medicine examination.

Panel-II (Team of one external and one internal in Medicine) shall cover = Instruments, drugs

=(Paper II subjects, including Psychiatry, Skin & STD, TB & Resp Disease, Emergency.)

PRACTICAL RECORD

Few cases on psychiatry will be included in Medicine Case record.

BOOKS

1. Verghese. A and Abraham. A (1987) Introduction to Psychiatry; Chennai, Christian Literature Society.
2. Rao. A.V, Kuruvilla.K (1997) Psychiatry; New Delhi, B.I Churchill Livingstone.
3. Abuja .N (2002) Short text book of psychiatry, 5th Ed., New Delhi, Jaypee Medical Publishers.
4. Swash .M (2002) Hutchison's Clinical Methods, 21 st Ed. London, Saunders Publication.
5. Boon.N.A, Colledge.N.R, and Walker.B.R (Editors) Davidson's Principles of Medicine-20th Edn.Oxford, ELBS with Churchill Livingstone and Elsevier.
6. Namboodiri.V.M.D & John.C.J(1984) A Guide to Clinical Psychiatry; Kolenchery, M.M.M. Hospital.
7. Kumar .K.A (1992) Facets of Substance Abuse–An Update; Trivandrum, Trivandrum Medical College.
8. Nair.M.K.C (Author), Pejaver .R.K (Editor) ChildDevelopment 2000 and Beyond; Bangalore, Prism Books Pvt. Ltd.
9. Kakar.S (1997) Culture & Psyche–Selected Essays; Delhi, OxfordInstitute Press.

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Syllabus and Curriculum
IN
TUBERCULOSIS AND RESPIRATORY DISEASES
(PULMONARY MEDICINE)
for
MBBS Course
(III to IX Semesters)

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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.

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) 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-ray and respiratory function test;
- (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, incase 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 & social medicine.

TEACHING METHODS & HOURS

Theory /tutorial-demo

8 th semester	1hr	x	18wks	=18hrs
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9 th semester	1hr	x	9wks	=9hrs
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Integrated Teach.				=10hrs
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Total				=37hrs
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Clinical posting

4 th /5 th semester	2wks	x	3hr/day	=2wks
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8 th /9 th semester		x	3hr/day	=2wks
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Total =4wks

Mci norm =2wks

COURSE CONTENT

THEORY SYLLABUS: (Total—20hrs)

1. Approach to diagnosis of respiratory diseases.....2hrs
2. Pulmonary Tuberculosis..... 4hrs
3. Multidrug resistant tuberculosis.....1hr
4. Environmental lung diseases.....2hrs
5. Interstitial lung diseases.....1hr
6. Pulmonary eosinophilia.....1hr
7. Fungal diseases.....2hrs
8. Acute lung injury and A.R.D.S.....1hr
9. Tumors of the lungs.....2hrs
10. Sleep apnea syndrome.....1hr
11. Respiratory failure.....1hr
12. Bronchoscopy.....1hr
13. Pulmonary function tests.....1hr
14. Mechanical ventilation
15. Bronchial Asthma
16. Pneumonia-Community acquired ,Nosocomial,
Lobar and bronchopneumonia
17. Bronchiectasis.
18. Chronic obstructive airway diseases.-Chronic bronchitis ,Emphysema
19. Pulmonary thromboembolism
20. Acute cor pulmonale.
21. Pneumothorax.

22. Disorders of chest wall and pleura, Chest trauma

23. Dry pleurisy, pleural effusion, empyema, pneumothorax.

24. Imaging in pulmonary diseases/investigations

25. Critical care Medicine-Physiology of the critically ill patient,

Major manifestations of critical illness, General principles of critical care management, Scoring systems in critical care, Outcome and costs of intensive care

CLINICAL SKILL TRAINING:

Case discussion for diagnosis and management of common pulmonary diseases.

- Bronchial asthma
- Pleural effusion
- Pneumonia
- Hemoptysis
- Pulmonary tuberculosis
- Chronic obstructive airway disease
- Type-I and type-II respiratory failure
- Bronchogenic carcinoma

Understand the Symptomatology to reach the Differential Diagnosis:

- Breathlessness
- Wheezing
- Haemoptysis
- Orthopnoea
- Paroxysmal nocturnal dyspnoea (PND)
- Pain in calf on walking
- Undue coldness, redness or blueness of extremities

- Chest pain
 - cough,
 - expectoration,
 - haemoptysis.
 - Chest pain
 - Wheezing.

Skills To Be Learnt:

- History taking in respiratory system –
- Inspection, palpation, percussion, auscultation front of chest.
- Inspection, palpation, percussion, auscultation back of chest.
- Interpretation of related radiological and laboratory investigations.
- Interpretation of pulmonary function tests.
- General medication and prescription writing in pulmonology
- Any deficient program.

Procedures (Observe/ Assist):

- | | |
|--------------------------------------|----------------|
| 1. O ₂ therapy- | assist |
| 2. Learn pleural aspiration | assist |
| 3. Endotracheal suction, | assist |
| 4. Pleural biopsy, | observe |
| 5. FNA biopsy, | observe |
| 6. Under water seal aspiration, | observe/assist |
| 7. Management of respiratory failure | observe |
| 8. Bronchoscopy | observe |
| 9. Use of peak flow meter | learn |
| 10. Use of inhaler device | learn |
| 11. Use of pulse oximeter | learn |
| 12. Etc. | |

INTERNAL ASSESSMENT SCHEDULE:

TOTAL MARKS – 30

Medicine	
Timings	Marks

[236]

	Theory	Practical		
		Clinical	Oral	Record
3 rd semester	X	15	10	5
4 th /5 th semester	30	X	X	x
6 th /7 th semester	30	15	10	5
8 th semester	30	15	10	5
Pre-PMB test Mid-9 th semester Dec' 3 rd week	30	15	10	5
Total marks	120	120		
Sending marks in Medicine(M)	Total marks /10 (out of 12)	Total marks / 10 (out of 12)		
Sending marks in Allied subjects(N)	A+B+C (out of 3)	A+B+C (out of 3)		
Overall Sending marks	M+N (out of 15)	M+N (out of 15)		

INTERNAL ASSESSMENT for Allied Subjects

Subjects	Timings	Marks			
		Theory	Practical		
			Clinical	Oral	Record
Derma, VL	4 th /5 th semester	x	15	4	1
	8 th /9 th semester	20	15	4	1
	Total	20	30	8	2
	Sending marks (A)	Total marks /40 (out of 1)	Total marks / 40 (out of 1)		
TBCD	4 th /5 th semester	x	15	4	1
	8 th /9 th semester	20	15	4	1
	Total	20	30		
	Sending marks (B)	Total marks /40 (out of 1)	Total marks / 40 (out of 1)		
Psychiatry	4 th /5 th semester	x	15	4	1
	Total	20	15	4	1
	Sending marks (C)	Total marks /20 (out of 1)	Total marks / 20 (out of 1)		
Total	Sending marks in Allied subjects	A+B+C (out of 3)	A+B+C (out of 3)		

UNIVERSITY EXAMINATION**A.Theory**

i. There shall be 6 marks set from TBRD in section-B of Medicine

Paper – II .

[medicine-paper-ii-section-B-distribution of chapters:

Emergency Medicine, Respiratory Diseases, Tuberculosis, Psychiatry, Skin –VD- Leprosy. (5% marks (6marks) from each allied segment in this section will be set totaling to 25% of Medicine Theory Paper marks]

ii. Pattern of Question Paper ::

question		questions in each of part-A of paper-I and part-A of	questions Subject wise in f Paper-II
red Essay ns-		ks= 6 marks	ks question from Emergency e
Short Answer ns		marks=6 marks	xx12 tions of 0.5 mark each one m TB, RD, SVD, Psychiatry
answer Questions		ks=18marks	x6 Emergency Medicine and 1 m TB, RD, SVD, Psychiatry.
Each part total marks		30 Marks	

B. Clinical-Practical-Viva-during medicine examination.

Panel-II (Team of one external and one internal in Medicine) shall cover
= Instruments, drugs

=(Paper II subjects, including Psychiatry, Skin & STD, TB & Resp Disease, Emergency.)

PRACTICAL RECORD

Few cases on TBRD will be included in Medicine Case record.

TEXT- BOOKS RECOMMENDED

1. Davidsion's Principles and Practice of Medicine, ELBS-Livingstone publications
2. Harrison's Principles of Internal Medicine, McGraw Hill publications (Reference book)
3. Hutchison's Clinical Methods, ELBS publications
4. Macleod's Clinical Examination, ELBS publications
5. API textbook of Medicine.

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Syllabus and Curriculum
in
DERMATOLOGY, VENERIOLOGY & LEPROSY
for
MBBS Course
(III to IX Semesters)

GOAL:

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

OBJECTIVES:

a. KNOWLEDGE:

At the end of the course of Dermato-S.T.D. and Leprology, the student Shall be able to:

1. demonstrate sound knowledge of common diseases, their clinical manifestations, including emergent situations and of investigative procedures to confirm their diagnosis;
2. demonstrate comprehensive knowledge of various modes of 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 the medical and surgical procedures available for the treatment of various diseases and to offer a comprehensive plan of management for a given disorder;

b. SKILLS:

The student should 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 office 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;

TEACHING METHODS & HOURS

Theory /tutorial-demo

8 th semester	1hr	x	18wks	=18hrs
9 th semester	1hr	x	9wks	=9hrs
Integrated Teach.				=10hrs
Total				=37hrs

Clinical posting

4 th /5 th semester	2wks	x	3hr/day	=2wks
8 th /9 th semester		x	3hr/day	=2wks
Total	.....			=4wks
Mci norm	.....			=2wks

COURSE CONTENT

1. Anatomy,physiology of skin related to dermatology.
2. Infective dermatoses: Pyoderma, tuberculosis and leishmaniasis- Etiology, Clinical features,Diagnosis and Treatment

3. Infective dermatoses: Viral and fungal infections- Etiology, Clinical features, Diagnosis and Treatment.
4. Infestations: Scabies and pediculosis – Etiology, Clinical features, Diagnosis and Treatment.
5. Melanin synthesis: Disorders of pigmentation (Vitiligo, Chloasma / Melasma)- Etiology, Clinical features, Diagnosis and Treatment.
6. Allergic disorders: Atopic dermatitis and contact dermatitis – Etiology, Clinical features, Diagnosis and Treatment.
7. Drug eruptions, urticaria, erythema multiforme, Steven's johnson syndrome and toxic epidermal necrolysis – Etiology, Clinical features, Diagnosis and Treatment.
8. Vesiculo-bullous diseases: Pemphigus, Pemphigoid, Dermatitis herpetiformis – Etiology, Clinical features, Diagnosis and Treatment.
9. Epidermopoiesis, Psoriasis, Lichen planus and Pityriasis rosea – Etiology, Clinical features, Diagnosis and Treatment.
10. Pathogenesis, Classification and clinical features of leprosy, Reactions in leprosy.
11. Diagnosis, treatment and control of leprosy.
12. Syphilis – Etiology, Clinical features, Diagnosis and Treatment.
13. Gonococcal and Non-gonococcal infections – Etiology, Clinical features, Diagnosis and Treatment.
14. Chancroid, LGV, Donovanosis, Herpes progenitalis – Etiology, Clinical features, Diagnosis and treatment.
15. Syndromic approach to the diagnosis and management of sexually transmitted diseases.
16. HIV infection, Cutaneous manifestations of HIV infection and their management.
17. Hereditary disorders: Ichthyosis, Albimism, Epidermolysis bullosa, Melanocytic naevi, Freckles and other naevi – Etiology, Clinical features, Diagnosis and Treatment.
18. Dermatological Emergencies.

CLINICAL SKILL TRAINING

During the MBBS training period the students have about 4 weeks clinical postings in the OPD (Out Patient Department), speciality clinics and ward in their 4th / 5th and 8th / 9th semester training period. They have the clinical teaching and demonstrations of all the common skin diseases sexually transmitted diseases, leprosy and common skin emergencies during this period. They also have about a week's orientation to familiarize them with the history taking, clinical examination and cutaneous lesions.

The cases with diseases like acne vulgaris, scabies, pyoderma, pediculosis, fungal infection of skin, alopecias, sexually transmitted diseases, auto immune diseases, bullous disorders, papulosquamous disease etc. are demonstrated and discussed during the posting period.

Should recognize lesions of:

1. Leprosy
2. Syphilitic lesions (chancre, secondary syphilis, gumma)
3. Tinea (corporis, capitis, inguinale, ungues)
4. Candida (oral, skin)
5. Scabies
6. Lice
7. Mosquito bite
8. Acute & chronic eczema
9. Lesions of small pox, chicken pox, herpes simplex, herpes zoster
10. SLE.
11. Psoriasis
12. Lichen planus
13. Impetigo contagiosum
14. Moluscum contagiosum
15. Acne vulgaris
16. Seborrhoea
17. Exfoliative dermatitis
18. Skin neoplasm like squamous cell carcinoma, basal cell carcinoma and melanoma
19. Leukoderma
20. Pityriasis versicolor
21. Alopecia and hirsutism
22. Sexually transmitted diseases
23. Furunculosis, cellulitis
24. Drug eruption

Understand the Symptomatology to reach the Differential Diagnosis:

1. Alopecia
2. Eruption and rashes
3. Itching
4. Pigmentation and depigmentation

Skills To Be Learnt:

1. History taking in Dermatology
2. Clinical examination of various skin lesions
3. Interpretation of related radiological and laboratory investigations
4. General medication and prescription writing in Dermatology

Procedures (Observe/ Assist):

1. Scraping for fungus
2. Use of magnifying glass
3. Observe skin biopsy
4. Use of Wood's lamp

INTERNAL ASSESSMENT SCHEDULE:

TOTAL MARKS – 30

Medicine				
Timings	Marks			
	Theory	Practical		
		Clinical	Oral	Record
3 rd semester	X	15	10	5
4 th /5 th semester	30	X	x	x
6 th /7 th semester	30	15	10	5
8 th semester	30	15	10	5
Pre-PMB test Mid-9 th semester Dec' 3 rd week	30	15	10	5
Total marks	120	120		
Sending marks in Medicine(M)	Total marks /10 (out of 12)	Total marks / 10 (out of 12)		
Sending marks in Allied subjects(N)	A+B+C (out of 3)	A+B+C (out of 3)		
Overall Sending marks	M+N (out of 15)	M+N (out of 15)		

INTERNAL ASSESSMENT for Allied Subjects					
Subjects	Timings	Marks			
		Theory	Practical		
			Clinical	Oral	Record
Derma, VL	4 th /5 th semester	x	15	4	1
	8 th /9 th semester	20	15	4	1
	Total	20	30	8	2
	Sending marks (A)	Total marks /40 (out of 1)	Total marks / 40 (out of 1)		
TBCD	4 th /5 th semester	x	15	4	1
	8 th /9 th semester	20	15	4	1
	Total	20	30		
	Sending marks (B)	Total marks /40 (out of 1)	Total marks / 40 (out of 1)		
Psychiatry	4 th /5 th semester	x	15	4	1
	Total	20	15	4	1
	Sending marks (C)	Total marks /20 (out of 1)	Total marks / 20 (out of 1)		
Total	Sending marks in Allied subjects	A+B+C (out of 3)	A+B+C (out of 3)		

UNIVERSITY EXAMINATION

A.Theory

i. There shall be 6marks set from DVL in section-B of Medicine

Paper – II .

[medicine-paper-II-section-B-distribution of chapters:

Emergency Medicine, Respiratory Diseases, Tuberculosis, Psychiatry, Skin –VD-Leprosy.
 (5% marks (6marks) from each allied segment in this section will be set totaling to 25% of Medicine Theory Paper marks]

ii. Pattern of Question Paper ::

Type question	of % marks	No of questions in each of part-A & B of paper-I and part-A of paper-II	No. of questions Subject wise in Part-B of Paper-II
Structured Essay Questions-	20%	1x6marks= 6 marks	1x6marks One question from Emergency Medicine
Very Short Answer Questions	20%	12x0.5marks=6 marks	0.5markx12 3 questions of 0.5 mark each one each from TB, RD, SVD, Psychiatry
Short Answer Questions	60%	6x3marks=18marks	3marksx6 2 from Emergency Medicine and 1 each from TB, RD, SVD,

			Psychiatry.
Each part total marks		30 Marks	

B.Clinical-Practical-Viva-during medicine examination.

Panel-II (Team of one external and one internal in Medicine) shall cover

=Instruments, drugs

=(Paper II subjects, including Pschy, Skin & STD, TB & Resp Disease, Emergency.)

PRACTICAL RECORD

Few cases on SVL will be included in Medicine Case record.

TEXT BOOKS

1. Treatment of skin diseases – J.S. Pasricha
2. Illustrated Text Book of Dermatology - J.S. Pasricha
3. Text Book of Dermatology and Venereology – Neena Khanna
4. Atlas of Dermatology – L.K. Bhutani
5. Atlas of Sexually Transmitted Disease - L.K. Bhutani

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**Syllabus and Curriculum
in
SURGERY
for
MBBS Course
(III to IX Semesters)**

GOAL

The broad goal of the teaching of undergraduate students in Surgery is to produce graduates capable of delivering efficient first contact surgical care.

OBJECTIVES

a. KNOWLEDGE:

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

1. describe etiology, path physiology, 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 recommended 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 hemorrhagic, septicaemic and other types of shock.
4. be able to maintain patent air-way and resuscitate
 - i) a critically injured patient
 - ii) patient with cardio-respiratory failure
 - iii) a drowning case
5. monitor patients of head, chest, spinal and abdominal injuries, both in adults and children.
6. provide primary care for a patient of burns.
7. 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 pediatric surgical emergencies and provide sound primary care before referring the patient to secondary/tertiary centres.
10. identify congenital anomalies and refer them for appropriate management.

In addition to these he should have observed/assisted/ performed the following:

1. Incision and drainage of abscess
2. Debridement and suturing open wound
3. Venesection
4. Excision of simple cyst and tumours
5. Biopsy of surface malignancy
6. Catheterisation and nasogastric intubation
7. Circumcision
8. Meatotomy
9. Vasectomy
10. Peritoneal and pleural aspirations
11. Diagnostic proctoscopy
12. Hydrocele operation
13. Endotracheal intubation
14. Tracheostomy and cricothyroidotomy
15. Chest tube insertion.

(c) INTEGRATION:

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

TEACHING METHODS & HOURS**Theory**

3 rd semester	18wksx	2hr	=36hrs
4 th semester	18wks x	2hr	=36hrs
5 th semester	9wks x	2hr	=18hrs
6 th semester	18wks x	2hr	=36hrs
7 th semester	9wks x	2hr	=18hrs
8 th semester	18wks x	3hr	=54hrs
9 th semester	9wks x	3hr	=27hrs
Total.....			=225hrs

Tutorial/demo

6 th semester	18wks x	1hr	=18hrs
7 th semester	9wks x	1hr	=9hrs
6 th semester	18wks x	2hr	=36hrs
7 th semester	9wks x	2hr	=18hrs
Total.....			=81hrs

Integrated teaching

7 th to 9 th semester	x	15hrs	=15hrs
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Sum total

Theory		=225hrs
Tutorial/Demo.....		=81hrs
Int.tchg.		=15hrs
Grand total		=328hrs
MCI norm	.....	=300hrs

Clinical posting

3 rd semester	x3hrs/day	=2+6=8wks
6 th /7 th semester	x3hrs/day	=6wks
8 th /9 th semester	x3hrs/day	=6wks
Total	.....	=20wks
MCI norm	.....	=20wks

CLASS ROUTINE

Semester	Type	Day/Time /Venue
III	Theory	Wednesday/8-9am/LT-4
		Saturday /8-9am/LT-4
IV/V	Theory	Thyrsday /8-9am/LT-3
		Monday/8-9am/LT-3
VI/VII	Theory	Monday/9-10am/LT-2
		Tuesday/8-9am/LT-2
	Tutorial/Demo	Friday/3-4pm/Group-C
		Friday/4-5pm/Group-D
		Saturday/3-4pm/Group-A
		Saturday/4-5pm/Group-B
VIII/X	Theory	Monday/9-10am/LT-1
		Tuesday/9-10am/LT-1
		Wednesday/9-10am/LT-1
		Saturday/2-3pm/LT-1
	Tutorial/Demo	Monday/3-5pm/Group-A
		Tuesday/3-5pm/Group-B
		Wednesday/3-5pm/Group-C

Thursday/3-5pm/Group-D

COURSE CONTENT

CHAPTERS FOR THEORY CLASSES

3RD SEMESTER (36HRS)

1. INTRODUCTION TO SURGERY , HISTORY AND DEVELOPMENT OF SURGERY.

2. WOUND HEALING

Must Know

Healing by first intention; healing by second intention; the biological process of healing, factors influencing wound healing; scars–Hypertrophic scars, keloid, incisions, types of wound and their closure.

3. RESUSCITATION AND SUPPORT

Must Know

Fluid electrolyte balance : Surface hemorrhage and control; shock; blood; transfusion pre and postoperative management.

Desirable to Know

Nutrition in injured patient; acute and chronic pain relief.

4. INFECTIONS

Must Know

Types of wound infection; prevention of infection; antibiotic prophylaxis; tetanus, gas gangrene ; mycobacterial diseases of surgical importance; AIDS-Surgical aspect.

5. TRAUMA

First Aid management of severely injured patient

Head injury & Glasgow coma scale

Tendon & Nerve injuries - Diagnosis & Management and techniques of repair.

Diagnosis and Management of Hand injuries with special reference to finger tip injury.

Desirable to Know

Missile injuries - Mechanism and Management, gunshot wounds, blast injuries
mechanism and management.

6. NUTRITIONAL SUPPORT, REHABILITATION.

7. PREOPERATIVE PREPARATION INCLUDING PAIN RELIEF

8. MISCELLANEOUS

Varieties of suture materials available and their clinical application

Desirable to Know

Microsurgery: Introduction and its role

Introduction to Aesthetic Surgery, Genetics in Surgery

Immunology & Organ transplantations

4th SEMESTER (18 hrs)

1. TUMOURS, CYSTS, ULCERS, SINUSES

General Principles of tumours, benign tumours, malignant tumours–carcinoma, sarcoma; cysts.

2. SKIN AND SOFT TISSUES

Skin infections, sebaceous cyst, skin tumours–BBC, SCC, Melanoma,

Dermatofibrosarcoma; premalignant conditions of skin,

Skin grafting–skin, grafts, types and techniques, skin flaps.

Pressure-Principles of Management and Surgical Alternatives.

3. BURNS

Pathophysiology; assessment of depth and surface area, resuscitation; skin cover, prevention of contractions.

Therapy of burns including treatment of complications.

Operation Theater Techniques & Theatre Personnnels

Asepsis, Disinfection, Sterilisation Procedure

The Surgical Patient

What Is New In Surgery

Development Of New Surgical Technique-Endoscopy Laparoscopy Etc.

Complications In Surgery In General

Medico Legal Aspect In Surgery.

5th SEMESTER (9 hrs)

4. ARTERIAL DISORDERS

Acute arterial obstruction-diagnosis and initial management; types of gangrene; diagnosis of chronic arterial insufficiency.

Desirable to Know

Investigation in case of arterial obstruction, Amputations

05. VENOUS DISORDERS

Varicose veins, diagnosis and management; deep venous thrombosis - diagnosis,

prevention, principles of therapy.

o6. LYMPHATICS AND LYMPHNODES

Lymphangitis; lymphedema–aetiology; surgical manifestations of filariasis; acute lymphadenitis; chronic lymphadenitis, lymphomas.

Desirable to Know

Lymphedema management

6th SEMESTER

(36 hrs)

1. NERVES

2. SCALP, SKULL AND BRAIN

Wounds of scalp and management–recognition, diagnosis and monitoring of patients with head injury including unconsciousness of acute cerebral compression.

3. HAND INJURIES

4. CONGENITAL ANOMALIES OF CNS

5. CNS INFECTIONS

6. BRAIN TUMORS

7. SPINE & SPINAL CORD LESIONS

8. DEVELOPMENTAL, ABNORMALITIES OF FACE, PALATE, LIPS

Cleft Lip & Palate Cancer Lip

Desirabe to Know

Embryology of facial defects and principles of management.

9. THE MOUTH, THE CHEEK, THE TONGUE

Salivary retention cyst, tumours of the oral cavity, cheek and tongue including prevention, staging, principles of therapy, ulcers of tongue.

10. TEETH AND GUMS, JAWS, NOSE, EAR

Desirable to Know

Epulis-cysts and tumours of the jaw. Facio-maxillary injuries

7th SEMESTER(18 hrs)

1. NECK

Must Know

Branchial cyst; cystic hygroma, cervical lymphadenitis; secondaries neck; tuberculosis of lymph nodes. Acute parotitis, neoplasms—diagnosis and principles of management. Submandibular gland.

Desirable to Know

Thoracic outlet syndrome—diagnosis.

2. THYROID GLAND

Must Know

Thyroid—surgical anatomy, physiology—types of goitre; diagnosis of goitre and principles of management; thyrotoxicosis—types, symptomatology; differential diagnosis, thyroglossal cyst; Neoplasm; Classification, diagnosis, principles of treatment.

Desirable to Know

Thyroiditis

3. PARATHYROID AND

Must Know

Diagnosis of hyperparathyroidism;

4 ADRENAL GLANDS.

diagnosis of adrenal hyperfunction/hypofunction.

5. BREAST

Must Know

Surgical anatomy, nipple discharge, acute infections, mammary dysplasia, fibroadenoma: cancer breast—diagnosis, staging, principles of management.

6. THORAX

Must Know

Recognition and treatment of pneumothorax, haemothorax, pulmonary embolism prevention/
recognition and treatment.

Desirable to Know

Flail chest: stove in chest: principles of management of pyothorax; cancer lung, postoperative pulmonary complications, Scope of cardiac surgery

8th SEMESTER (54hrs)

1. OESOPHAGUS

Must Know

Causes of dysphagia–investigations and approach to acute/chronic abdominal pain.

2. STOMACH AND DUODENUM

Must Know

Anatomy, Physiology, congenital hypertrophic pyloric stenosis and management; peptic ulcer, actiopathology, clinical features, diagnosis management, cancer stomach, diagnosis and principles of treatment; upper gastrointestinal hemorrhage.

Desirable to Know

UGI endoscopy.

3.LIVER

Must Know

Amebic liver abscess–diagnosis and management; hydatid cyst diagnosis; diagnosis of portal hypertension; principles of emergency management of portal hypertension; obstructive jaundice.

Desirable to Know

Surgical anatomy and physiology: Management of hydatid cyst; neoplasms of liver. Liver Transplant–Introduction.

4. GALL BLADDER AND BILE DUCTS

Cholelithiasis–Clinical features, diagnosis; cholecystitis–clinical features, diagnosis, Anatomy, Physiology, Investigations.

Desirable to Know

Management of Cholelithiasis and cholecystitis, Neoplasm of biliary tract
Laparoscopic cholecystectomy

5. PANCREAS

Acute and chronic pancreatitis–diagnosis and complications.

Desirable to Know

Acute and chronic pancreatitis–management and investigations: Pancreatic
Neoplasms, Surgical aspects of Diabetes mellitus

6. SPLEEN

Surgical causes of splenomegaly: investigations for splenomegaly; splenic injury.

Desirable to Know

Principles of splenectomy for haematological causes.

7. PERITONEUM, OMENTUM, MESENTERY AND RETROPERITONEAL SPACE

Peritonitis - Recognition and principles of management.

Desirable to Know

Surgery for peritonitis
Diagnostic Laparoscopy.

8. SMALL AND LARGE INTESTINES

Intestinal amoebiasis, tuberculosis of intestine, carcinoma colon - diagnosis and principles of treatment; lower gastrointestinal hemorrhage.

Ulcerative Colitis, Crohn's diseases.

9. INTESTINAL OBSTRUCTION

Diagnosis, classification, features and principles of management, paralytic ileus and mechanical intestinal obstruction; T.B. intestine and peritoneum.

9th SEMESTER (27hrs)

APPENDIX

Diagnosis, management of acute appendicitis including appendicular lump.

2. RECTUM

Carcinoma of rectum, diagnosis and clinical features.

Desirable to Know

Surgical anatomy; management of carcinoma rectum; prolapse of rectum. Procto Sigmoidoscopy.

3. ANAL CANAL

Examination of anal canal; fissure; fistula in ano, abscess and haemorrhoid

Clinical features and management; surgical anatomy.

Desirable to Know

Congenital anomaly - imperforate anus.

4. HERNIAS

Inguinal hernia - diagnosis, complications, principles of management;

Umbilical hernia - diagnosis; Femoral hernia - diagnosis, management.

Desirable to Know

Umbilical Hernia - management, epigastric hernia; omphalitis; fistulae - burst

abdomen and ventral hernia.

5. UMBILICUS & ABDOMINAL WALL

6. KIDNEY AND URETER

Recognition of renal mass.

Desirable to Know

Investigations of the urinary tract ,Renal calculus; ureteric calculus; hydronephrosis, pyonephrosis and perinephric abscess; renal tuberculosis; diagnosis and management of renal tumours.

Renal Transplant - Introduction.

7. URINARY BLADDER

Acute retention of urine–diagnosis and principles of management; causes of haematuria.

Desirable to Know

Investigation and management of haematuria

Diagnostic cystoscopy

8. PROSTATE AND SEMINAL VESICLES

BPH Diagnosis

Desirable to Know

BPH management including Transurethral resection of prostate.

9. URETHRA AND PENIS

Phimosis, paraphimosis; carcinoma penis - diagnosis; stricture urethra.

Desirable to Know

Hypospadias

10. TESTES AND SCROTUM

Embryology of testicular descent; diagnosis and principle of treatment of testicular maldescent; torsion testis; epididymo orchitis; diagnosis of testicular lump; hydrocele.

Desirable to Know

Varicocete; Neoplasms of testis

Course Content for Clinical skill

3rd Semester-6weeks

2weeks of clinical methodology class for whole class

4weeks of clinical posting in Surgery in groups.

This is the first introductory posting in surgery to provide orientation, towards the general functioning of the Department and the nature of clinical work performed in the Department of surgery. The students will be posted in the surgical Out-patients department. The learning objectives for this session are to learn :

- the art and science of history taking;
- general evaluation of overall health;
- basic principles of examination of a lump;
- examination of hernia, hydrocoele and abdomen;
- examination of breast;
- examination of head and neck;
- evaluation of wounds, ulcers and sinuses.

The students will be required to attend the surgical Out-patient clinic from 10.15 am to 1pm. Be punctual as any person coming to clinic after 10.30am will be marked absent. Attendance register will be sent to the Dean. You are required to be properly dressed, wear a white coat, with a name plate (no jeans and no sneaker shoes please!). You are required to bring a pen torch with metal tip, measuring tape, Vernier callipers, stethoscope, patella hammer; Please read "Norman Browse- An Introduction to the symptoms and signs surgical diseases" or "Hamilton Bailey- Physical signs", in order to acquire theoretical background of clinical examination. A book by "S.Das" has many mistakes, and therefore, not recommended.

6th/7th Semester

The learning objectives for this session are honing the skills of physical examination. You are again posted in the Out-patient surgical department. The timings are 10am to 1pm. Attendance is compulsory. For this semester utilize your time in examining as many patients as possible. Visit the consultation rooms of all the consultants and senior registrars. Remember there is no substitute for seeing the patients. You cannot acquire the practical skills by sitting in the Library. A famous physician of USA, Sir William Osler said "To study the phenomena of disease without books is to sail an uncharted sea whilst to study books without patients is not to go to sea at all". Besides seeing patients you should also acquire the following basic surgical skills- wound dressing, debridement, abscess aspiration and drainage, excision biopsy of skin lesions, lipoma and epidermal cysts, skin suturing and knot tying, proctoscopy, rubber banding of piles. Please attend minor surgical operation theatre situated at the end of the surgical OPD corridor to acquire the above skills. Please maintain a record of cases seen and surgical skills learnt in a diary/logbook. You will be assessed on this.

The learning objectives include the skills of surgical diagnostic evaluation. You are advised to follow a problem based approach (PBL).

Greet the patient cheerfully with a smile and introduce yourself. Seek patient's permission for interrogation and examination (e.g. " I am_____, a 6th semester student of MBBS. Can I ask a few questions about your illness and can I examine you. This will help me in learning the diagnosis and in becoming a good doctor so that I may serve the society well). Be extremely polite in your approach. If patient refuses simply thank him and go to a next one. Ask presenting symptoms along with duration. Formulate a diagnostic hypothesis (e) based on the patient's age, gender, place of living and initial symptoms. This is essentially a list of differential diagnoses. Think about pros and cons of each possibility.

Now ask details of the present and past history focused on the initial diagnostic hypothesis. For example-in a patient with bleeding P/R at age 40. If you have considered piles and cancer rectum as your diagnostic hypothesis, your interrogation should revolve around these two conditions with the objective of proving one and refuting the other. After interrogation revise your diagnostic hypothesis(e) on the basis of historical facts. Perform a quick general exam and make a note of overall health status. The next step is to carry out a detailed physical exam of the lump, swelling or ulcer. Remember no exam of a swelling or ulcer is complete without checking the draining lymph nodes. Make a diagrammatic representation of your findings with colour felt pens on your diary/log book.

Go through the following checklist while seeing any lump: number, site, size, shape, margin, surface, skin over it, structures superficial and deep to it, temperature over it, tenderness, consistency, transillumination, thrill or bruit and the regional nodes.

Once again revise your diagnostic hypothesis. Generate a diagnostic workup plan (Diagnostic decisions).

8th Semester Posting:

This is again 6 weeks long posting on surgical wards. The learning objectives of this final session is to develop the competency in making a diagnosis, generating a diagnostic decision plan and outlining the therapeutic decision. During this period you have to accompany the patient to the operation theatre, assist in the operation, write postoperative orders and follow the postoperative

recovery of the case. Write down the daily progress in your case records till the patient is discharged.

Perform dressings, I.V. line insertion, catheter and nasogastric tube insertion on your cases.

OBJECTIVES OF CLINICAL TRAINING

At the end of clinical posting in surgery, a student should be able to:

- Elicit a detailed & relevant history
- Carry out a physical examination
- Identify patients' problems
- Reach a differential diagnosis
- Formulate appropriate investigations
- Interpret the results of investigations
- Plan appropriate management
- Undertake some aspects of management
- Demonstrate adequate communication skills

Skills Topics

Obtain a proper relevant history, and perform

	Perform independently
1	a humane and thorough clinical examination including internal examinations (per-rectal and per vaginal) and examinations of all organs/systems in adults and children
2	Arrive at a logical working diagnosis after clinical examination
3	Order appropriate investigations keeping in mind their relevance (need based) and cost effectiveness.
4	Write a complete case record with all necessary details
5	Write a proper discharge summary with all relevant information
6	Obtain informed consent for any examination/procedure
7	At the end of the learners should be able to perform:
8	Start IV lines and monitor infusions
9	Start and monitor blood transfusion.
10	Venous cut-down
11	Manage a C.V.P. line
12	Conduct CPR (Cardiopulmonary resuscitation)
13	Basic life support /ITLS
14	Endotracheal intubation
15	Pass nasogastric tube
16	Perform digital rectal examination and Proctoscopy
17	Urethral catheterization
18	Dressing of the wounds
19	Suturing of the simple wounds
	Perform under Supervision
20	Remove small subcutaneous swellings
21	Various types of biopsies
22	Relieve pneumothorax
23	Infiltration, surface and digital Nerve blocks
24	Incise and drain superficial abscesses
25	Manage Lacerated wounds
26	Control external hemorrhage
	Assist the expert
27	Vasectomy
28	Circumcision
29	Surgery for hydrocele
30	Surgery for hernia

31	Injection/banding of piles
32	Management of shock
33	1. Assessment and management of burns
	OBSERVE
34	All the operations performed by surgeons during surgical posting during general surgical postings

Skill based objectives

A.Perform independently

- 1.Obtain a proper relevant history, and perform a humane and thorough clinical examination including internal examinations (per-rectaland per vaginal) and examinations of all organs/systems in adults and children
- 2.Arrive at a logical working diagnosis after clinical examination
- 3.Order appropriate investigations keeping in mind their relevance (need based) and cost effectiveness.
4. Write a complete case record with all necessary details.
5. Write a proper discharge summary with all relevant information
- 6.Obtain informed consent for any examination/procedure
- 7.At the end of the learners should be able to perform:
- 8.Start IV lines and monitor infusions
- 9.Start and monitor blood transfusion.
- 10.Venous cut-down
- 11.Manage a C.V.P. line
- 12.Conduct CPR (Cardiopulmonary resuscitation)
- 13.Basic life support /ITLS
- 14.Endotracheal intubation
- 15.Pass nasogastric tube
- 16.Perform digital rectal examination and proctoscopy
- 17.Urethral catheterisation
- 18.Dressing of the wounds

19.Suturing of the simple wounds

B.perform under supervision

- 1.Remove small subcutaneous swellings
- 2.Various types of biopsies
- 3.Relieve pneumothorax
- 4.Infiltration, surface and digital Nerve blocks
- 5.Incise and drain superficial abscesses
- 6.Manage Lacerated wounds
- 7.Control external hemorrhage

C.Assist the expert

- 1.Vasectomy
- 2.Circumcision
- 3.Surgery for hydrocele
- 4.Surgery for hernia
5. Injection/banding of piles
6. Management of shock
7. Assessment and management of burns

D.Observe

All the operations performed by surgeons during surgical posting during general surgical postings

SCHEME OF EVALUATION

Subject	Total marks	Univ. examination marks			Int. Ass. marks			
		Theory	Oral	Practical	Theory	Practical		
Surgery Paper. I & II	300	120 (30 each in Part-A and B of Paper-I&II having 30marks each)		20	100	30	30	
		Surgery	Paper-II-Part-A: (30 marks) General Surgery		15	75	22.5	22.5
			Paper-II-Part-B: (30marks) Special Surgery,Dentistry, Anaesthesiology,R adiology					
			Paper-I-Part-A : (30 marks) General Surgery					
		Orthopedics	Paper-I-Part-B: (30marks) Orhopedics		5	25	7.5	7.5
Pass Marks		40% in Theory (including Int. Ass.)		60/150				

	40% in Viva	8/20
	50% in Theory (including Int. Ass.) including Viva	85/170
	50% in Practical(including Int. Ass.)	65/130
	35% in Internal Assessment (theory)	10.5/30
	35% in Internal Assessment (practical)	10.5/30
	50% of total aggregate	100/200

INTERNAL ASSESSMENT SCHEDULE:**Total Marks= Theory (30) + Practical (30) = 60 marks**

Internal Assessment Schedule In Surgery Allied Subjects						
Subjects	Timings		Marks			
			Theory	Practical		
				Clinical	Oral	Record
Surgery	IAT-1	3 rd semester	X	15	10	5
	IAT-2	4 th /5 th semester	30	X	X	x
	IAT-3	6 th /7 th semester	30	15	10	5
	IAT-4	8 th semester	30	15	10	5
	IAT-5	Pre-PMB test In 9 th semester	30	15	10	5
	Total Marks		120	120		
	Sending marks in Surgery(M)		Total marks /6 (out of 20)	Total marks / 6 (out of 20)		
Orthopaedics	IAT-1	3 rd /4 th semester	15	10	3	2
	IAT-1	6 th /7 th semester	15	10	3	2
	IAT-3	8 th /9 th semester	15	10	3	2
	IAT-4	Pre-PMB Test	30	20	6	4
	Total		75	75		
	Sending marks (A)		Total marks /10 (out of 7.5)	Total marks / 10 (out of 7.5)		
Anesthesiology	IAT	8 th /9 th semester	20	12	6	2
	Total		20	20		
	Sending marks (B)		Total marks /20 (out of 1)	Total marks / 20 (out of 1)		
Radiodiag	IAT	-4 th /5 th	20	12	6	2

nosis		semester (ward) -8 th /9 th semester (theory)				
	Total		20	20		
	Sending marks (C)		Total marks /20 (out of 1)	Total marks /20 (out of 1)		
Dentistry	IAT	8 th /9 th semester	10	6	3	1
	Total		10	10		
	Sending marks (D)		Total marks /20 (out of 0.5)	Total marks /20 (out of 0.5)		
Total	Sending marks in Allied subjects(N)		A+B+C+D (out of 10)	A+B+C+D (out of 10)		
Grand Total	Overall Sending marks in Surgery		M+N (out of 30)	A+B+C+D (out of 30)		

UNIVERSITY EXAMINATION**A.Theory :**

i.Two Papers of 3 hours during carrying 60 marks with two part A&B carrying 30 marks each. The following Chapters will be included in Surgery Paper –I and II respectively for theory Examination purpose.

Surgery Paper – I (60 marks)**Part-A-General surgery-30marks**

General Principles Of Surgery, Oncology, Head, Face, Neck,
Breast, Endocrine Surgery

Part-B-Orthopedics -30marks**Surgery Paper – II (60 marks)****Part-A-General surgery-30marks**

Gastrointestinal Tract including colon rectum and anal canal
Liver, pancreas and biliary tract, Spleen. Paediatric Surgery

Part-B-Special surgery and allied-30marks

- Special surgery-15 marks
(Trauma, Urology, Neurosurgery, Cardio thoracic surgery, Plastic surgery & Pediatrics surgery)
- Anesthesiology-5 marks
- Radiodiagnosis-5 marks
- Dentistry -5 marks

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ii. Pattern of Question Paper:

Type of question	% marks	No of questions in each of part-A & B of paper-I and part-A of paper-II	No. of questions Subject wise in Part-B of Paper-II
Structured Essay Questions-	20%	1x6marks=6 marks	1 from Special Surgery
Very short answer questions	20%	6x1marks=6 marks	3 from Special Surgery and 1 from each of 3 allied subjects of Anaesthesiology, Dentistry and Radiology.
Short answer questions	60%	6x3 marks=18marks	3marksx2=6marks from Special Surgery and 4marksx1 each from each of 3 Allied Subjects of Dentistry, Radiology and Anaesthesiology.
Each part total marks		30 Marks	

iii. MODEL THEORY QUESTION**SURGERY****PAPER- I****FULL MARKS- 60****TIME- 3 HOURS**

[Use separate Answer books for Part- A & Part- B. Each part consists of 20 Marks. Marks are as displayed at the right margin.]

SECTION-A(GENERAL SURGERY)

1. A 60 year old woman is brought to casualty with near total burns sustained in a closed room. [2+4=6marks]

- How will you evaluate this patient to assess extent and depth of burns?
- Outline the management of the case. Discuss how you will evaluate and

2. Write short notes on:

[3marksx6=18marks]

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- a) Blood stained discharge from the nipple
- b) Triage
- c) Glasgow coma scale
- d) Prophylactic antibiotics in surgery
- e) Universal precautions against HIV
- f).....

3. Answer very shortly in a few words' [1 mark x 6 = 6 marks]

a..... b..... c..... d..... e..... f.....

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SECTION-B(ORTHOPEDICS SURGERY)

REFER TO ORTHOPEDICS SYLLABUS AND CURRICULUM.

SURGERY

PAPER- II

FULL MARKS- 60

TIME- 3 HOURS

[Use separate Answer books for Part- A & Part- B. Each part consists of 20 Marks. Marks are as displayed at the right margin.]

SECTION-A(GENERAL SURGERY)

1. A young man comes to the hospital with sudden onset abdominal pain and vomiting of 2 days duration. On examination he has diffuse tenderness and abdominal guarding.

[2+2+2=6 marks]

- a) Discuss briefly the differential diagnosis
- b) What investigations would help in diagnosis?
- c) Outline the principles of management.

2. Write short notes on:

[3 marks x 6 = 18 marks]

- a) Oschner-Sherren regime for appendicitis
- b) Courvoiser's law
- c) Staging of Hodgkin's disease
- d) Indications for splenectomy
- e) Pancreatic pseudo-cyst
- f).....

3. Answer very shortly in a few words' [1markx6=6marks]

a.....b.....c.....d.....e.....f.....

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SECTION-B(SPECIAL SURGERY ,ANESTHESIOLOGY,RADIODIAGNOSIS AND DENTISTRY)

1. [ONE QUESTION FROM SPECIAL SURGERY]

A 60 year old man presents with passage of blood stained urine of recent onset.

- a) Enumerate the possible causes [2+2+2=6marks]
- b) What investigations would be required in this patient to determine the cause?
- c) Outline the principles of management.

2. Write short notes on: [3marksx2=6marks]

[2 QUESTIONS FROM SPECIAL SURGERY]

- a)
- b)
- c) Outline the principles of management.

3. Write short notes on: [4marksx3=12marks]

[1QUESTIONS FROM ANAESTHESIOLOGY, ONE QUESTION FROM DENTISTRY, ONE QUESTION FROM RADIOLOGY]

a.....

b.....

c.....

4. Answer very shortly in a few words. [1x6=6 marks]

Special surgery-3 questions

a.

b.

c.

Anesthesiology-1 questions

a.

Dentistry-1 questions

a.

Radiology-1 questions

a.

-0-0-0-

B. ORAL-PRACTICAL-CLINICAL EXAMINATION (total 120 marks)

1. SURGERY (90 marks)

a. CLINICAL (60 marks)

1 long case..... 1 hour = 40 marks

2 short cases..... 15 minutes each = 10x2=20 marks

C. VIVA (15 marks)

Panel-I (Team of one external and one internal) = 7.5 marks
Instruments + Operations

Panel-II (Team of one external and one internal) = 7.5 marks

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**Surgical Pathology, Charts, Images, Clips, X-Rays,
Lab Reports.**

**[Anesthesiology, Radio diagnosis and Dentistry shall be evaluated during every
stage of oral-practical-clinical evaluation under surgery]**

2. ORTHOPEDICS (30marks)

1 short case-... ..15 min... ..=20marks

Spots... ..5x1... ..=5marks

Viva-(charts,instruments,x-ray,appliances,etc.)=5marks

RECORDS

Case record for surgery covering allied depts.

BOOKS :

Short Practice of Surgery : Vailey & Love

Text Book of Surgery : Sabiston I & II

Mastery of Surgery : Lyoid M I & II

Oxford Text Book of Surgery : Nyhus I & II

Principles of Surgery : Schwartz I & II

Clinical Surgery : A.Cushieri

Laparoscopic Surgery : A.Cushieri

Clinical method in surgery : S. Das

Clinical method in surgery : Hamilton Baieley

Clinical method in surgery : Norman Browsen

Operative surgery

Surgery on call, Far Quhrson

Manual of Surgical Therapeutics

Washington Surgical Manual

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**Syllabus and Curriculum
in
ORTHOPEDICS
for
MBBS Course
(III to IX Semesters)**

GOAL:

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

Describe the aetiology, pathophysiology, principles of diagnosis and management of common orthopaedic problems including emergencies.

OBJECTIVES:

a. KNOWLEDGE:

The student should 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, diagnosis of neoplasm affecting bones.

b. SKILLS

At the end of the course, the student should 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, phallanges etc.
2. Techniques of splinting, plaster, immobilization etc.
3. Management of common bone infections, learn indications for sequestration, amputations and corrective measures for bone deformities.
4. Aspects of rehabilitation for Polio, Cerebral Palsy and Amputation.

c. APPLICATION:

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

d. INTEGRATION:

Integration with Anatomy, Surgery, Pathology, Radiology and Forensic Medicine be done.

TEACHING METHODS & HOURS**Theory**

6 th semester	18wks	x	2hr	=36hrs
7 th semester	9wks	x	2hr	=18hrs
8 th semester	18wks	x	2hr	=36hrs
9 th semester	9wks	x	2hr	=18hrs
Total.....				=107hrs

Tutorial/demo

6 th semester	18wks	x	1hr	=18hrs
7 th semester	9wks	x	1hr	=9hrs
6 th semester	18wks	x	1hr	=18hrs
7 th semester	9wks	x	1hr	=9hrs

Total..... =54hrs

Integrated teaching

7th to 9th semester x 5hrs =5hrs

Sum total

Theory =107hrs

Tutorial/Demo..... =54hrs

Int. tchng. =5hrs

Grand total =169hrs

MCI norm =100hrs

Clinical posting

4th/5th semester x3hrs/day =4wks

6th/7th semester x3hrs/day =2wks

8th/9th semester x3hrs/day =4wks

Total =10wks

MCI norm =10wks

CLASS ROUTINE

Semester	Type	Day/Time /Venue
VI/VII	Theory	Monday/2-3pm/LT-2
		Wednesday/9-10am/LT-2
	Tutorial/Demo	Monday/3-4pm/Group-B
		Tuesday/3-4pm/Group-C
		Wednesday/3-4pm/Group-D
VIII/X	Theory	Thursday/ 3-4pm/Group-A
		Monday/9-10am/LT-1

Tuesday/9-10am/LT-1

Wednesday/9-10am/LT-1

Thursday/2-3pm/LT-1

Tutorial/Demo

Monday/4-5pm/Group-C

Tuesday/4-5pm/Group-D

Wednesday/4-5pm/Group-A

Thursday/4-5pm/Group-B

COURSE CONTENT

A.CHAPTERS FOR THEORY CLASSES(104hrs)

Chapter-1.

NECESSARY APPLIED BASIC SCIENCES RELATED TO ORTHOPAEDICS:

1. Pathophysiology of trauma and shock.
2. Mechanical properties of bone & soft tissue.
3. Biomechanics of fracture.
4. Healing & repair of bone & soft tissues.
5. Healing principles of fracture.
6. Principles of physiotherapy
7. Orthotics – orthopaedic appliances to support and correct deformities
8. Prosthesis – artificial substitute for missing body parts.

Chapter.2.

CONGENITAL & DEVELOPMENT DISEASES;

Congenital talipes equino varus (CTEV) and talipes valgus; congenital dislocation of hip (CDH); flat foot; Perth's disease; Slipped Capital Femoral Epiphysis.

Chapter-3

TRAUMA

MUST KNOW

- 1) General principles in diagnosis, first aid and treatment methods of closed fractures and open fractures, open reduction including principles of internal fixation and external fixation, their complications. Preservation of amputated parts before transfer.

DESIRABLE TO KNOW :

- 2) General principles of diagnosis and management of non-unions and delayed unions.

Chapter-4.

DIAGNOSIS, FIRST-AID AND REFERRAL:

MUST KNOW :

- 1) Fracture clavicle.
- 2) Anterior dislocation of shoulder.
- 3) Fracture femur neck, trochanter and shaft.
- 4) Haemarthrosis, traumatic synovitis.
- 5) General principles of management of hand injuries.
- 6) Polytrauma.
- 7) Complications of fracture : Fat embolism, Ischaemic contracture, myositis ossificans, osteodystrophy.

DESIRABLE TO KNOW :

- 1) Fracture proximal end, shaft, supracondylar, and internal condylar humerus.
- 2) Posterior dislocation of elbow.
- 3) Fracture shaft of radius and ulna.
- 4) Fracture of distal radius.
- 5) Traumatic dislocation of hip.
- 6) Fracture patella.
- 7) Fracture shaft tibia and fibula.
- 8) Injury to muscles and ligaments (shoulder arc syndrome, tennis elbow, ankle sprain).
- 9) Peripheral nerve injuries.
- 10) Spinal injuries.
- 11) Fracture of olecranon.

12) Monteggia fracture dislocation.

Chapter-5.

INFECTIONS OF BONES AND JOINTS

MUST KNOW :

Diagnosis and Principles of Management :-

- 1) Osteomyelitis : Pyogenic, tubercular, fungal (Madurafoot), syphilitic and parasitic infection of bone.
- 2) Arthritis : Septic and tubercular.
- 3) Tuberculosis of the spine.

DESIRABLE TO KNOW :

Leprosy – Principles of corrective surgery.

Chapter-6.

ARTHRITIS AND MUSCULOSKELETAL PAINFUL DISORDERS

1. Rheumatoid arthritis, ankylosing spondylitis, osteoarthritis.
2. Gout; frozen shoulder; tennis elbow, plantar fasciitis, trigger finger, de Quervains disease.

Chapter-7.

NECK PAIN, LOW BACK PAIN AND SCIATICA

Chapter-8.

TUMOURS

Diagnosis and Principles of Management :-

MUST KNOW :

- 1) Benign lesions : Multiple exostosis, Enchondroma, Osteoid osteoma, Simple bone cyst, Osteochondroma.
- 2) Malignant lesions : Osteosarcoma, Ewing's sarcoma, Giant cell tumour, Chondrosarcoma and Secondary deposits.

Chapter-9.

DEGENERATIVE DISEASES

Diagnosis and Principles of Management :-

DESIRABLE TO KNOW :

- 1) Osteoarthritis.
- 2) Spondylosis.
- 3) Degenerative disc diseases.

Chapter-10.

BONE DYSPLASIA

Diagnosis and Principles of Management :-

NICE TO KNOW :

- 1) Osteogenesis imperfecta.
- 2) Achondroplasia.

Chapter-11.

NEURO-MUSCULAR DISORDERS

Diagnosis and Principles of Management :-

MUST KNOW :

- 1) Post-polio residual Paralysis.
- 2) Cerebral palsy.
- 3) Muscular dystrophy
- 4) spina bifida

Chapter-12.

METABOLIC BONE DISEASES

Rickets; osteomalacia; osteoporosis; hyperparathyroidism;

Diabetes.

Chapter-13.

DEFORMITIES

MUST KNOW :

- 1) Scoliosis – diagnosis and referral.
- 2) Genu Varum and Valgum – diagnosis.

Chapter-14.

PREVENTIVE ORTHOPAEDICS

Chapter-15.**BASIC PRINCIPLES OF PHYSIOTHERAPY, OCCUPATIONAL THERAPY AND ORTHOTICS / PROSTHETICS****NICE TO KNOW :**

- 1) Physiatric evaluation of common neurological diseases.
- 2) Physiatric evaluation of common orthopaedic conditions.
- 3) Principles of Cardiopulmonary Rehabilitation.

DESIRABLE TO KNOW :

- 1) Principles of Exercise therapy, Electrotherapy and Occupational therapy.
- 2) Principles of Orthotics and Prosthetics.

B.CLINICAL/TUTORIAL SKILLS (10wks clinical postings+ 54 hrs tutorials)

1. Obtain a proper relevant history, and perform a humane and thorough clinical examination in adults and children including neonates.
2. Arrive at a logical working diagnosis after examination.
3. Plan and institute a line of treatment which is need based, cost effective and appropriate for common ailments.
4. Recognise situations which call for urgent or early treatment at secondary and tertiary centres and make a prompt referral of such patients after giving first aid or emergency treatment.
5. Be able to do surface marking of common superficial arteries, veins, nerves and viscera.
6. Interpret skiagrams of common fractures and dislocations.
7. Apply skin traction.
8. Apply figure of 8 bandage for fracture clavicle.
9. Apply POP slabs / casts and splints.
10. Transport safely victims of accidents including those with spinal injury.
11. Reduce Colle's fracture.
12. Reduce shoulder dislocation.
13. Reduce temporo-mandibular joint dislocation.

14. Perform nerve blocks like infiltration, digital, pudendal, paracervical and field block.

O-O-O-O

- Clinical examination of patients with arthritis (differentiate on x-ray)
- Management; prescription writing for arthritis and painful muscle disorders
- Interpretation of related investigations; x-rays and laboratory.
- Identification and preliminary management of Soft Tissue Injuries - Sprains/ruptures of muscles, ligaments, tendons; nerve injuries. Arterial injuries clean/contaminated wounds.
- Basic and advanced trauma life support
- Triage of injured patients in emergency room,
- Principles of fracture classification
- Principles of fracture treatment in children.
- Principles of fracture fixation
- Management of common orthopaedic emergencies.
- Mal-united fractures; non-unions.
- Catheterize male and female patients.
- Shifting of patient from bed to trolley
- Serving patients with bed pan and urine bottle.
- Prepare patients for surgeries and post operative care.
- Dressing of surgical wounds post operatively.
- Pass nasogastric tube.
- Injections I/V and I/M.
- Management; provide first aid to a person with bone injury like common sprains, fractures and dislocations (immobilization of body part, resuscitation of injured patient.
- Apply dressings, splints, plasters and other immobilization techniques in fracture patients in emergency;
- maintain clear airway of patient;
- reductions and observation of surgical fixations; internal and external fixation of fractures (plates, nails others);
- manipulation and application of plaster of paris cast/back slab; observe the manipulation/application of POP cast for CTEV, pelvic harness, Von Rosen splint, hip spica
- use of external fixators in treatment of open fractures; application of traction skin/skeletal.

- Observe or assist in joint aspiration, curettage and sequestrectomy, drainage of abscess etc
- Management suggesting and explaining of orthosis, walking aids (walking stick, crutches, walkers), wheel chairs.
- Observe biopsy – needle and open.
- Observe amputation/limb salvage surgery –
- Application of cervical collar, cervical traction, lumbosacral corset.
- Observe internal fixation of spinal fracture
- Log rolling, prevention of bed sores, bladder care/catheter care and rehabilitation.

SCHEME OF EVALUATION

Subject	Total marks	Univ. examination marks			Int. Ass. marks			
		Theory	Oral	Practical	Theory	Practical		
Surgery Paper. I & II	300	120 (30 each in Part-A and B of Paper-I&II having 30marks each)		20	100	30	30	
		Surgery	Paper-II-Part-A: (30 marks) General Surgery		15	75	22.5	22.5
			Paper-II-Part-B: (30marks) Special Surgery,Dentistry, Anaesthesiology,R adiology					
			Paper-I-Part-A : (30 marks) General Surgery					
		Orthopedics	Paper-I-Part-B: (30marks) Orhopedics		5	25	7.5	7.5
Pass Marks		40% in Theory (including Int. Ass.)		60/150				
		40% in Viva		8/20				
		50% in Theory (including Int. Ass.) including Viva		85/170				
		50% in Practical (including Int. Ass.)		65/130				
		35% in Internal Assessment (theory)		10.5/30				

	35% in Internal Assessment (practical)	10.5/30
	50% of total aggregate	100/200

INTERNAL ASSESSMENT SCHEDULE:**Total Marks= Theory (30) + Practical (30) = 60 marks**

Internal Assessment Schedule In Surgery Allied Subjects						
Subjects	Timings		Marks			
			Theory	Practical		
				Clinical	Oral	Record
Surgery	IAT-1	3 rd semester	X	15	10	5
	IAT-2	4 th /5 th semester	30	X	X	x
	IAT-3	6 th /7 th semester	30	15	10	5
	IAT-4	8 th semester	30	15	10	5
	IAT-5	Pre-PMB test In 9 th semester	30	15	10	5
	Total Marks		120	120		
	Sending marks in Surgery(M)		Total marks /6 (out of 20)	Total marks / 6 (out of 20)		
Orthopaedics	IAT-1	3 rd /4 th semester	15	10	3	2
	IAT-1	6 th /7 th semester	15	10	3	2
	IAT-3	8 th /9 th semester	15	10	3	2
	IAT-4	Pre-PMB Test	30	20	6	4
	Total		75	75		
	Sending marks (A)		Total marks /10 (out of 7.5)	Total marks / 10 (out of 7.5)		
Anesthesiology	IAT	8 th /9 th semester	20	12	6	2
	Total		20	20		
	Sending marks (B)		Total marks /20 (out of 1)	Total marks / 20 (out of 1)		
Radiodiagnosis	IAT	4 th /5 th semester (ward) 8 th /9 th semester (theory)	20	12	6	2
	Total		20	20		
	Sending marks (C)		Total marks /20 (out of 1)	Total marks /20 (out of 1)		
Dentistry	IAT	8 th /9 th semester	10	6	3	1
	Total		10	10		
	Sending marks (D)		Total marks /20 (out of 0.5)	Total marks /20 (out of 0.5)		
Total	Sending marks in Allied subjects(N)		A+B+C+D (out of 10)	A+B+C+D (out of 10)		
Grand	Overall Sending marks in		M+N	A+B+C+D		

Total	Surgery	(out of 30)	(out of 30)
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UNIVERSITY EXAMINATION**A.THEORY :**

- i) Two Papers of 3 hours during carrying 60 marks with two part A&B carrying 30 marks each.
- ii) The following Chapters will be included in Surgery Paper –I and II respectively for theory Examination purpose.

Surgery Paper – I (60 marks)

Part-A-General surgery-30marks

Part-B-Orthopedics -30marks

Surgery Paper – II (60 marks)

Part-A-General surgery-30marks

Part-B-Special surgery and allied-30marks

iii) Pattern of Question Paper:

Type of question	% marks	No of questions in Part-B of paper-I (ortho)
Structured Essay Questions-	20%	1x6marks=6 marks
Very short answer questions	20%	6x1marks=6 marks
Short answer questions	60%	6x3 marks=18marks
Each part total marks		30 Marks

iv) MODEL THEORY QUESTION**SURGERY****PAPER- I****FULL MARKS- 60****TIME- 3 HOURS**

[Use separate Answer books for Part- A & Part- B. Each part consists of 20 Marks. Marks are as displayed at the right margin.]

SECTION-B(ORTHOPEDICS SURGERY)

1. A young man comes to the hospital with sudden onset abdominal pain and vomiting of 2 days duration. On examination he has diffuse tenderness and abdominal guarding.
[2+2+2=6marks]

a) Discuss briefly the differential diagnosis

b) What investigations would help in diagnosis?

c) Outline the principles of management.

2. Write short notes on:

[3marksx6=18marks]

a) Oschner-Sherren regime for appendicitis

b) Courvoiser's law

c) Staging of Hodgkin's disease

d) Indications for splenectomy

e) Pancreatic pseudo-cyst

f).....

3. Answer very shortly in a few words'[1markx6=6marks]

a.....b.....c.....d.....e.....f.....

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B.ORAL-PRACTICAL-CLINICAL EXAMINATION (total 120 marks)

1.SURGERY (90marks)

a. CLINICAL(60marks)

1 long case 1 hour =40 marks

2 short cases 15 minutes each =10x2=20marks

C.VIVA (15marks)

Panel=I(Team of one external and one internal)= 7.5marks

Instruments + Operations

Panel-II(Team of one external and one internal) =7.5 marks

Surgical Pathology, Charts, Images, Clips, X-Rays,

Lab Reports.

[Anesthesiology, Radio diagnosis and Dentistry shall be evaluated during every stage of oral-practical-clinical evaluation under surgery]

2.ORTHOPEDICS (30marks)

a.CLINICAL-

2 short case-.... 15x2=30mts min.....=20marks

5Spots..... 5x1.....=5marks

b.VIVA-(charts,instruments,x-ray,appliances,etc.).....=5marks

BOOKS:

- 1.Short Practice Of Surgery By Bailey And Love's
- 2.Text Book Of Surgery By Ijaz Ahsan
- 3.General Surgery (Lecture Notes Series) by Harold Ellis, Roy Calne,Chris Watson
- 4.An Introduction to the Symptoms and Signs of Surgical Disease by Norman Browse
- 5.Current Surgical Practice: by Norman L. Browse, Alan G. Johnson, and Tom. Vol.
- 6.Schwartz's Principles of Surgery by F. Charles Brunicaudi, Dana K. Andersen, Timothy R. Billiar, and David L. Dunn 8th edition. 2004
- 7.Online Journals and Reading Materials through Digital Library Facility.

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**Syllabus and Curriculum
in
RADIODIAGNOSIS
for
MBBS Course
(III to IX)**

GOAL:

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

OBJECTIVES

a. KNOWLEDGE:

The student should be able to:

1. understand basics of X-ray production, its uses and hazards.
2. appreciate and diagnose changes in bones - like fractures, infections, tumours and metabolic bone diseases.
3. identify and diagnose various radiological changes in disease conditions of chest and mediastinum, skeletal system, G.I. Tract, Hepatobiliary system and G.U. system.
4. learn about various imaging techniques, including isotopes C.T., Ultrasound, M.R.I. and D.S.A.

b. SKILL

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

1. use basic protective techniques during various imaging procedures.
2. Interpret common X-ray, radio-diagnostic techniques in various community situations.

3. advise appropriate diagnostic procedures in specialized circumstances to appropriate specialists.

TEACHING METHODS AND HOURS

Theory /tutorial-demo

8 th semester	1hr alt. wk.	x	18wks	=9hrs
9 th semester	1hr alt. wk.	x	9wks	=4.5hrs
Integrated Teach.				=6hrs
Total				=20hrs

Clinical posting

4 th /5 th semester	2wks	x	3hr/day	=2wks
Total	.....			=2wks
Mci norm	.....			=2wks

COURSE CONTENT

a.THEORY

SEGMENT-I. BONES & JOINTS :

1. Congenital Conditions :

Congenital dislocation of hip, congenital syphilis, Achonodroplasis, Osteogenesis Imperfecta.

2. Infection :

Osteomyelitis, Tuberculosis of Bone & Spine.

3. Lesions Of Joints :

Septic / Tuberculous Arthritis, Rheumatoid, Arthritis, Ankylosing Spondylitis, Osteo-Arthritis, Gout.

4. Bone Tumours:

Ewing's, Osteogenic Sarcoma, Giant Cell Tumour Neurofibroma.

5.Lymphoreticular system & Haemopoietic Disorders :

Thalassaemia, Sickle Cell disease, Lymphomas, Multiple myeloma, plasmacytoma, Haemophilia.

6.Metabolic & Endocrine Disorders of Bone:

Rickets & Osteomalacia, Scurvy, Osteoporosis, Acromegaly, and Hyperparathyroidism.

7.Skeletal trauma:

General Principles.

SEGMENT-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.

SEGMENT-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-arctation of Aorta.

SEGMENT-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.

SEGMENT-V : HEPATO-BILARY SYSTEM, PANCREAS :

Liver : Abscess, Hepatoma, Cirrhosis, Portal Hypertension, and Spenoportography.

Gall-Bladder : Calculus Disease, Malignancy, PTC, ERCP.

Pancreas : Pancreatitis, Malignancy.

SEGMENT-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.

SEGMENT-VII : OBSTETRICS & GYNAECOLOGY :

Hysterosalpingography (HSG), Intra-Uterine Foetal Death, Fibroid, Ovarian

Tumours, Ultrasonography & Transvaginal US.

SEGMENT-VIII: CENTRAL NERVOUS SYSTEM :

Raised Intracranial Tension, Intracranial Calcification, Head Injury,
Cerebrovascular Accident, Ring Enhancing Lesions in Brain, Spinal Neoplasms,
Myelography.

SEGMENT-IX: MISCELLANEOUS:

Radiation Hazards, Radiation Protection.

SEGMENT-X.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.

B.TUTORIAL/CLINICAL/DEMONSTRATION-

- Plain Radiography -Chest
 - a. Normal anatomy and projections
 - b. Pneumothorax
 - c. Pneumonia
 - d. Effusion
 - e. Cardiomegaly
 - f. Pulmonary oedema
 - g. Fractures
 - h. Surgical emphysema
 - i. Neoplastic Diseases
 - j. Chronic inflammatory disease
- Plain radiography-Skull
 - a. Normal anatomy and projections
 - b. Fracture
 - c. Lytic and sclerotic lesion
 - d. Calcifications
 - e. Pituitary fossa
 - f. Paranasal sinuses
- Plain radiography-Abdomen
 - a. Normal anatomy and projections
 - b. Renal & urinary tract stones, gall stones and other calcifications
 - c. Free gas under diaphragm, (perforation)
 - d. Enlarged liver and spleen
- Plain radiography-Spine
 - a. Normal anatomy and projections.
 - b. Disc space reduction
 - c. Vertebral collapse
- Barium Meal and with double contrast (where applicable)
 - a. Normal anatomy and various projections
 - b. Gastric outlet obstruction
 - c. Stomach mass/filling defect

- d. Oesophageal outline/varices/strictures
- e. Intussusception
- f. Colonic defects
- g. Malabsorption pattern
- h. Stricture
- i. Any filling defect
- j. Ulcerative colitis
- k. Intravenous Urogram
- l. Hydronephrosis and renal masses
- m. Micturating Cystourethrogram
- n. Reflux
- o. Cholecystogram
- p. Gall bladder diseases and stones
- q. Echocardiogram
- r. Be able to interpret the report -CT Scanning
- s. Be able to interpret the report -MRI
- t. Basic principle

SCHEME OF EVALUATION

Subject	Total marks	Univ. examination marks			Int. Ass. marks	
		Theory	Oral	Practical	Theory	Practical
Surgery Paper. I & II	300	120	20	100	30	30
		(30 each in Part-A and B of Paper-I&II having 30marks each)				
		Paper-II-Part-A: (30 marks)	15	75	22.5	22.5
		General Surgery				
		Paper-II-Part-B: (30marks)				
		Special Surgery,Dentistry, Anaesthesiology,R adiology				
		Paper-I-Part-A : (30 marks)				
		General Surgery				

		Orthopedic	Paper-I-Part-B: (30marks) Orhopedics	5	25	7.5	7.5
Pass Marks	40% in Theory (including Int. Ass.)			60/150			
	40% in Viva			8/20			
	50% in Theory (including Int. Ass.) including Viva			85/170			
	50% in Practical(including Int. Ass.)			65/130			
	35% in Internal Assessment (theory)			10.5/30			
	35% in Internal Assessment (practical)			10.5/30			
	50% of total aggregate			100/200			

INTERNAL ASSESSMENT SCHEDULE:**Total Marks= Theory (30) + Practical (30) = 60 marks****Internal Assessment Schedule In Surgery Allied Subjects**

Subjects	Timings		Marks			
			Theory	Practical		
				Clinical	Oral	Record
Surgery	IAT-1	3 rd semester	X	15	10	5
	IAT-2	4 th /5 th semester	30	X	X	x
	IAT-3	6 th /7 th semester	30	15	10	5
	IAT-4	8 th semester	30	15	10	5
	IAT-5	Pre-PMB test In 9 th semester	30	15	10	5
	Total Marks		120	120		
	Sending marks in Surgery(M)		Total marks /6 (out of 20)	Total marks / 6 (out of 20)		
Orthopaedics	IAT-1	3 rd /4 th semester	15	10	3	2
	IAT-1	6 th /7 th semester	15	10	3	2
	IAT-3	8 th /9 th	15	10	3	2

		semester				
	IAT-4	Pre-PMB Test	30	20	6	4
	Total		75	75		
	Sending marks (A)		Total marks /10 (out of 7.5)	Total marks / 10 (out of 7.5)		
Anesthesiology	IAT	8 th /9 th semester	20	12	6	2
	Total		20	20		
	Sending marks (B)		Total marks /20 (out of 1)	Total marks / 20 (out of 1)		
Radiodiagnosis	IAT	-4 th /5 th semester (ward) -8 th /9 th semester (theory)	20	12	6	2
	Total		20	20		
	Sending marks (C)		Total marks /20 (out of 1)	Total marks /20 (out of 1)		
Dentistry	IAT	8 th /9 th semester	10	6	3	1
	Total		10	10		
	Sending marks (D)		Total marks /20 (out of 0.5)	Total marks /20 (out of 0.5)		
Total	Sending marks in Allied subjects(N)		A+B+C+D (out of 10)	A+B+C+D (out of 10)		
Grand Total	Overall Sending marks in Surgery		M+N (out of 30)	A+B+C+D (out of 30)		

UNIVERSITY EXAMINATION**A.Theory :**

i) Allied subject of radiodiagnosis shall be covered in section-B of Paper –II of Surgery.

ii) chapters covered in the Section

Surgery-Paper-II-Part-B-Special surgery and allied-30marks

- Special surgery-15 marks
(Trauma, Urology, Neurosurgery, Cardio thoracic surgery, Plastic surgery & Pediatrics surgery) -
- Anesthesiology-5 marks
- Radiodiagnosis-5 marks
- Dentistry -5 marks

iii) Pattern of Question Paper:

Type of question	% marks	No. of questions Subject wise in Part-B of Paper-II
Structured Essay Questions-	20%	1 from Special Surgery
Very short answer questions	20%	3 from Special Surgery & 1 from each of 3 allied subjects of Anaesthesiology, Dentistry and Radiology.
Short answer questions	60%	3marksx2=6marks from Special Surgery & 4marksx1 each from each of 3 Allied Subjects of Dentistry, Radiology and Anaesthesiology.
Total Section-B Marks		30 Marks

iv) MODEL THEORY QUESTION

SURGERY**PAPER-II****SECTION-B(SPECIAL SURGERY ,ANESTHESIOLOGY,RADIODIAGNOSIS AND DENTISTRY)**

1. [One Question From Special Surgery] [6marks]

2. Write short notes on: [3marksx2=6marks]

[Two Questions From Special Surgery]

a)

b)

c)

3. Write short notes on: [4marksx3=12marks]

[One Questions From Anaesthesiology, One Question From Dentistry, One Question From Radiology]

a.....

b.....

c.....

4. Answer very shortly in a few words. [1x6=6marks]

Special surgery- 3 questions

a.

b.

c.

Anesthesiology-1 question

a.

Dentistry-1 question

a.

Radiology-1 question

a.

-0-0-0-

B. ORAL-PRACTICAL-CLINICAL EXAMINATION (total 120 marks)

1. SURGERY (90 marks)

a. CLINICAL (60 marks)

1 long case..... 1 hour = 40 marks

2 short cases..... 15 minutes each = 10x2=20 marks

b. VIVA (15 marks)

Panel-I (Team of one external and one internal) = 7.5 marks

Instruments + Operations

Panel-II (Team of one external and one internal) = 7.5 marks

Surgical Pathology, Charts, Images, Clips, X-Rays, Lab Reports .

[Anesthesiology, Radio diagnosis and Dentistry shall be evaluated during every stage of oral-practical-clinical evaluation under surgery]

2. ORTHOPEDICS (30 marks)

1 short case-.....15 min.....=20 marks

Spots.....5x1.....=5 marks

C.Viva-(charts,instruments,x-ray,appliances,etc.)=5marks

RECORDS

Case record for Surgery covering allied depts.

BOOKS

1. Aids to Radiological Differential Diagnosis by Chapman S. and Nakielny R. 4th ed. Elsevier Science Limited; 2003.
2. Online Journals and Reading Materials at Digital Library Facility.

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Syllabus and Curriculum

In

ANESTHESIOLOGY

for

MBBS course

(III to IX Semesters)

2012

[303]

GOALS:

1. The purpose of anesthesia training for medical students is not to make anesthesiologists out of all medical students, but to give students knowledge of basic concepts used in anesthesia and to teach them skills of airway management and vascular access that may be useful to them in other areas of medical practice.
2. The physician should have a good knowledge of what the anaesthetic will do to the patient, even though the physician does not administer it him or herself.
3. The student, therefore, should observe and study the physiological changes which take place in the anesthetized patient. When these changes are of sufficient magnitude, they become complications or toxic effects. The student should learn what these are, how they are caused, and how they may present and be treated. Emphasis should be laid on good preoperative preparation.
4. Students should learn basic techniques of maintaining a clear airway and giving assisted or artificial ventilation. They should also learn how to position the patient's head, how to hold the chin and how to insert an airway.
5. Medical students should learn enough about an anesthetic machine.
6. In addition to these technical accomplishments, the student may have the opportunity to administer either general or spinal anesthesia under the direct and constant supervision of a member of the staff.

OBJECTIVES:**i) Knowledge**

The students, at the end of their posting should be able to:

1. Introduce principles of acute medicine as it is practiced in managing the anesthetized patient in the operating room and in managing the patient in the recovery unit.
2. Discuss and demonstrate principles of applied physiology and applied pharmacology. Simulation on Human patient Simulator (HPS) is ideal to teach many aspects of applied physiology and pharmacology.

3. Review principles of and teach skills in resuscitation (cardiopulmonary, cerebral, fluid and others).
4. Teach care of the unconscious patient, including airway and ventilation management.
5. Teach management of blood ,fluid, electrolyte balance , and metabolic disturbances in the surgical patient, with specific emphasis on those derangements which are encountered in the anesthetized patient.
6. Review management of acute and chronic pain problems.
7. Introduce concepts of drug interactions, especially as they apply to patients receiving anesthesia.
8. Demonstrate the evaluation of patients relative to surgical and anesthetic risk. Teach appropriate preoperative preparation of patients subjected to surgery and anesthesia.
9. Introduce the various techniques of anesthesiology.
10. Pharmacology of muscle relaxant, application and monitoring
11. Pharmacology : Basic / Applied of local anaesthetics : Various types of blocks advantages / Problems with each. Descriptive for same main blocks. Local infiltration , Brachial Plexus, Caudal etc.
12. Understand the principles of Emergency medicine as it is practiced in managing the anesthetized patient in the recovery unit, trauma victims in ITU and sick patients in ICU.
13. Basic knowledge regarding transport (surface) of critically ill patients and trauma victims.
14. Learn how to interact with patients, relatives, other colleagues in OT .
15. Learn about consent for anesthesia, Documentation.

ii) Skills

1. Understand basics of pulse-oxymetry and how to operate.
2. Learn how to use Airways in both adult and pediatric age group, Endotracheal Intubation of unconscious patients and bag & mask ventilation management.
3. Maintenance of Clear airway
4. Bag Mask Ventilation

- 5.Starting A Venous Access
- 6.CPR — Basic and advanced
- 7.Giving a simple infiltration block, Some nerve block
- 8.Performing A lumbar puncture
- 9.Use of Pulse-oxymeter, Bed side ECG, ET Intubation
- 10.Use of Airways, Basic Ventilator setup, various methods of Oxygenation
- 11.Defibrillation.
- 12.Pain management and postoperative care.

TEACHING METHODS & HOURS**Theory /tutorial-demo**

8 th semester	1hr alt. wk.	x	18wks	=9hrs
9 th semester	1hr alt. wk.	x	9wks	=4.5hrs
Integrated Teach.				=6hrs
Total				=20hrs

Clinical posting

8 th /9 th semester	2wks	x	3hr/day	=2wks
Total	.....			=2wks
Mci norm	.....			=2wks

TEACHING LEARNING METHODOLOGY

Teaching and learning in anesthesiology should be guided through a series of posting in which the emphasis is laid on practical hands-on experience. Human patient simulator (HPS) be procured for better skill development and to reduce the danger to the patients during the learning curve of student and to allow repeat practice according to ability of the student to reach the level of competence needed.

COURSE CONTENTS**Theory/Tutorials-demo :**

(1 hr every alternate weeks during 8th and 9th semester =14hrs)

Topics : The course outline is as follows :

1. Pre-operative assessment of patients and pre-medication
2. Local anaesthesia-Local anaesthetic agents (pharmacology)
3. Local Anaesthesia-Regional anaesthesia (spinal and epidural)
4. Intravenous anaesthetic agents
5. Muscle relaxants
6. Inhalational anaesthetic agents
7. Anaesthesia and associated diseases.
8. Complications of anaesthesia.
9. Perioperative management.
10. Cardiopulmonary Resuscitation-CPR.
11. Recovery from anaesthesia.

B.TUTORIAL-DEMO

The following Procedures shall be demonstrated and discussed.

1. Pre-operative assessment of the patient.
2. I/V cannulation and Intra-operative fluid management.
3. Demonstration of induction of general anaesthesia and tracheal intubation.
4. Demonstration of spinal block.
5. Demonstration of epidural block.
6. Demonstration of local blocks in Eye, ENT and General Surgery.
7. Demonstration of CPR.
8. Post-operative care/pain management.
9. Introduction to the ICU.
10. Demonstration of anaesthesia machine and other instruments
11. Demonstration of sterilization procedures in O.T and ICU.
12. Demonstration of vital sign monitors and their application

C.CLINICAL POSTING(TWO WEEKS IN 8TH-9TH SEMESTER)

2days : **Pre-anesthetic Clinic :**

Preoperative evaluation & optimization.

3days : **Operating theatre** :

Anaesthetic Machine /Monitoring, Anaesthetic

Techniques

2days : **Recovery Room** :

Recovery criteria : Management of complications.

3days : **Intensive Care Unit :**

Management of respiratory failure;

Various types of ventilatory assistance Devices,

Monitoring devices and application;

Management of patient in Coma.

2days : **Pain Clinic :**

Evaluation of patient / non invasive and invasive management.

INTERNSHIP

The Intern will be posted to same areas as above and will be asked to follow a case from preoperative preparation to full recovery to get an idea of comprehensive Care. A log book will need to be completed by the student under the supervision of the faculty member. The intern is expected to learn the following skills.

Skills	numbers
• I/V Cannulation-	50
• Oropharyngeal/Nasopharyngeal Airway insertion	20
• Bag Mask Ventilation first on Manikin	10
• Mask Ventilation in unconscious patient	10
• Attaching pulse oximeter, BP cuff and ECG electrodes	
• and setting up a monitor	50
• Lumbar puncture	10
• Infiltration block	20
• Intubation demo	10
• Demonstration of epidural/nerve block	02
• LMA insertion demo	05
• CPR on manikin-	10
• Perform CPR-	20
• Assist transport of patients-	05

SCHEME OF EVALUATION

Subject	Total marks	Univ. examination marks			Int. Ass. marks	
		Theory	Oral	Practical	Theory	Practical
Surgery	300	120 (30 each in Part-A and B of Paper-	20	100	30	30

Paper	Marks	I&II having 30marks each in Theory (including Int. Ass.)	60/150			
I & II		Paper-II-Part-A: (30 marks) including Viva	8/20	75	22.5	22.5
		50% in Theory (including Int. General Surgery Ass.) including Viva	85/170			
		Paper-II-Part-B: (30 marks) 50% in Practical (including Int. Ass.)	65/130			
		Special Surgery, Dentistry, Anaesthesiology, Radiology	10.5/30			
		35% in Internal Assessment (theory)	10.5/30			
		Paper-I-Part-A : (30 marks) (practical)				
		50% of total aggregate General Surgery	100/200			
		Orthopedic				
		Paper-I-Part-B: (30marks) Orthopedics	5	25	7.5	7.5

INTERNAL ASSESSMENT SCHEDULE:**Total Marks= Theory (30) + Practical (30) = 60 marks**

Internal Assessment Schedule In Surgery Allied Subjects						
Subjects	Timings		Marks			
			Theory	Practical		
				Clinical	Oral	Record
Surgery	IAT-1	3 rd semester	X	15	10	5
	IAT-2	4 th /5 th semester	30	X	X	x
	IAT-3	6 th /7 th semester	30	15	10	5
	IAT-4	8 th semester	30	15	10	5
	IAT-5	Pre-PMB test In 9 th semester	30	15	10	5
	Total Marks		120	120		
	Sending marks in Surgery(M)		Total marks /6 (out of 20)	Total marks / 6 (out of 20)		
Ortho paed CS	IAT-1	3 rd /4 th semester	15	10	3	2

	IAT-1	6 th /7 th semester	15	10	3	2
	IAT-3	8 th /9 th semester	15	10	3	2
	IAT-4	Pre-PMB Test	30	20	6	4
	Total		75	75		
	Sending marks (A)		Total marks /10 (out of 7.5)	Total marks / 10 (out of 7.5)		
Anesthesiology	IAT	8 th /9 th semester	20	12	6	2
	Total		20	20		
	Sending marks (B)		Total marks /20 (out of 1)	Total marks / 20 (out of 1)		
Radiodiagnosis	IAT	-4 th /5 th semester (ward) -8 th /9 th semester (theory)	20	12	6	2
	Total		20	20		
	Sending marks (C)		Total marks /20 (out of 1)	Total marks /20 (out of 1)		
Dentistry	IAT	8 th /9 th semester	10	6	3	1
	Total		10	10		
	Sending marks (D)		Total marks /20 (out of 0.5)	Total marks /20 (out of 0.5)		
Total	Sending marks in Allied subjects(N)		A+B+C+ D (out of	A+B+C+D (out of 10)		

		10)	
Grand Total	Overall Sending marks in Surgery	M+N (out of 30)	A+B+C+D (out of 30)

UNIVERSITY EXAMINATION**A.Theory :**

i) Allied subject of Anaesthesiology shall be covered in section-B of Paper –II of Surgery.

ii) chapters covered in the Section-B-paper-II:

Surgery-Paper-II-Part-B-Special surgery and allied-30marks

- Special surgery-15 marks
(Trauma, Urology, Neurosurgery, Cardio thoracic surgery, Plastic surgery & Pediatrics surgery) -
- Anesthesiology-5 marks
- Radiodiagnosis-5 marks
- Dentistry -5 marks

iii) Pattern of Question Paper:

Type of question	% marks	No. of questions Subject wise in Part-B of Paper-II
Structured Essay Questions	20%	1 from Special Surgery
Very short answer questions	20%	3 from Special Surgery and 1 from each of 3 allied subjects of Anaesthesiology, Dentistry and Radiology.
Short answer questions	60%	3marksx2=6marks from Special Surgery and 4marksx1 each from each of 3 Allied Subjects of Dentistry, Radiology and Anaesthesiology.
Total Section-B Marks		30 Marks

iv) MODEL THEORY QUESTION

SURGERY**PAPER-II****SECTION-B(SPECIAL SURGERY ,ANESTHESIOLOGY,RADIODIAGNOSIS AND DENTISTRY)**

1. [One Question From Special Surgery] [6marks]

2. Write short notes on: [3marksx2=6marks]

[Two Questions From Special Surgery]

a)

b)

c)

3. Write short notes on: [4marksx3=12marks]

[One Questions From Anaesthesiology, One Question From Dentistry,One Question From Radiology]

a.....

b.....

c.....

4. Answer very shortly in a few words.

[1x6=6marks]

Special surgery- 3 questions

a.

b.

c.

Anesthesiology-1 question

a.

Dentistry-1 question

a.

Radiology-1 question

a.

-0-0-0-

B. ORAL-PRACTICAL-CLINICAL EXAMINATION (total 120 marks)

1. SURGERY (90 marks)

a. CLINICAL (60 marks)

1 long case..... 1 hour = 40 marks

2 short cases..... 15 minutes each = 10x2=20 marks

b. VIVA (15 marks)

Panel-I (Team of one external and one internal) = 7.5 marks

Instruments + Operations

Panel-II (Team of one external and one internal) = 7.5 marks

Surgical Pathology, Charts, Images, Clips, X-Rays,

Lab Reports .

[Anesthesiology, Radio diagnosis and Dentistry shall be evaluated during every stage of oral-practical-clinical evaluation under surgery]

2. ORTHOPEDICS (30 marks)

1 short case-.....15 min.....=20 marks

Spots..... 5x1.....=5marks

Viva-(charts,instruments,x-ray,appliances,etc.)=5marks

RECORDS

Case record for surgery covering allied depts.

TEXT BOOKS

1. “The book of Anaesthesia” edited by Alan R. Aitkenhead, David J. Rowbotham, Graham Smith published by Churchill Livingstone.
2. “Fundamentals of Anaesthesia” edited by Colin Pinnock, Ted Lin, Tim Smith Published by Greenwich Medical Media Ltd.

REFERENCE BOOKS

1. Fundamental Principles and practice of Anaesthesia, Ed. PetterHurtton, Cooper Butterworth,Published by Martin Dunitz, 2002.
2. Principles and Practice of Anaesthesiology Edited David E. Longnecker Published by Mosby St.Louis.
3. Lee’s Synopsis of Anesthesia.
- 4.Textbook of Anaesthesia by G. Smith and A.R. Aitkenhead
5. Short Practice of Anaesthesia by M. Morgan, G. Hall. Latest edition
6. A Synopsis of Anaesthesia by J.Alfred Lee
7. Online Journals and Reading Materials through HEC Digital Library Facility.

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Syllabus and Curriculum

in

DENTISTRY

for

MBBS Course

(III to IX Semesters)

Dentistry for MBBS students under Surgery

[315]

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.

C. INTEGRATION

Integration with anatomy, surgery, pathology radiology and Forensic Medicine be done.

TEACHING METHODS & HOURS

Total teaching hours: 10

Theory lectures: 10 in 6th/7th, 8th/9th Semester

Tutorials: 10hrs during 6th/7th, 8th/9th semesters

Clinical Postings; 2weeks 8th/9th semester

COURSE CONTENT

6TH/7TH and 8TH/9TH semesters= 10 Hours.

A.THEORY/TUTORIAL-DEMO

Chapter-1. Scope of Dentistry

Introduction of various branches of Dentistry.

Basic Understanding of Dental Epidemiology

Effects of deleterious Habits on Dentition and Orofacial structures.

Chapter-2.Development and Growth of Jaws & Orofacial structures.

Development & Eruption of teeth, Deciduous & Permanent.

Occlusion.

Preventive Care in Paediatric patients.

Chapter-3.Dental Caries

Gingival & Periodontal Diseases.

Developmental Anomalies.

Cysts & Tumours of Oral cavity.

Neoplasms of Oral cavity.

Oral Microbiology.

Chapter-4. Orofacial Pain & its Management

Chapter-5. Maxillofacial Trauma and Management of patient.

Chapter-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.

Chapter-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.

Chapter-8. Rehabilitation of lost Oral structures, Implantology.

Chapter-9. Dentofacial Deformities and Surgical corrections.

Chapter-10. Biomaterials used in Dentistry,

Emerging technologies in Contemporary Dentistry,

Molecular Dentistry.

B.CLINICAL POSTING in DENTISTRY (2 weeks during 8th /9th semester)

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

SCHEME OF EVALUATION

Subject	Total marks	Univ. examination marks			Int. Ass. marks			
		Theory	Oral	Practical	Theory	Practical		
Surgery Paper. I & II	300	120 (30 each in Part-A and B of Paper-I&II having 30marks each)		20	100	30	30	
		Surgery	Paper-II-Part-A: (30 marks) General Surgery		15	75	22.5	22.5
			Paper-II-Part-B: (30marks) Special Surgery,Dentistry, Anaesthesiology,R adiology					
			Paper-I-Part-A : (30 marks) General Surgery					
		Orthopedics	Paper-I-Part-B: (30marks) Orhopedics		5	25	7.5	7.5
Pass Marks		40% in Theory (including Int. Ass.)		60/150				
		40% in Viva		8/20				
		50% in Theory (including Int. Ass.) including Viva		85/170				
		50% in Practical(including Int. Ass.)		65/130				
		35% in Internal Assessment (theory)		10.5/30				
		35% in Internal Assessment (practical)		10.5/30				
		50% of total aggregate		100/200				

INTERNAL ASSESSMENT SCHEDULE:

Total Marks= Theory (30) + Practical (30) = 60 marks

Internal Assessment Schedule In Surgery Allied Subjects						
Subjects	Timings		Marks			
			Theory	Practical		
				Clinical	Oral	Record
Surgery	IAT-1	3 rd semester	X	15	10	5
	IAT-2	4 th /5 th semester	30	X	X	x
	IAT-3	6 th /7 th semester	30	15	10	5
	IAT-4	8 th semester	30	15	10	5
	IAT-5	Pre-PMB test In 9 th semester	30	15	10	5
	Total Marks		120	120		
	Sending marks in Surgery(M)		Total marks /6 (out of 20)	Total marks / 6 (out of 20)		
Orthopaedics	IAT-1	3 rd /4 th semester	15	10	3	2
	IAT-1	6 th /7 th semester	15	10	3	2
	IAT-3	8 th /9 th semester	15	10	3	2
	IAT-4	Pre-PMB Test	30	20	6	4
	Total		75	75		
	Sending marks (A)		Total marks /10 (out of 7.5)	Total marks / 10 (out of 7.5)		
Anesthesiology	IAT	8 th /9 th semester	20	12	6	2
	Total		20	20		
	Sending marks (B)		Total marks /20 (out of 1)	Total marks / 20 (out of 1)		

Radiodiagnosis	IAT	-4 th /5 th semester (ward) -8 th /9 th semester (theory)	20	12	6	2
	Total		20	20		
	Sending marks (C)		Total marks /20 (out of 1)	Total marks /20 (out of 1)		
Dentistry	IAT	8 th /9 th semester	10	6	3	1
	Total		10	10		
	Sending marks (D)		Total marks /20 (out of 0.5)	Total marks /20 (out of 0.5)		
Total	Sending marks in Allied subjects(N)		A+B+C+D (out of 10)	A+B+C+D (out of 10)		
Grand Total	Overall Sending marks in Surgery		M+N (out of 30)	A+B+C+D (out of 30)		

UNIVERSITY EXAMINATION**A.Theory :**

i)Allied subject of Dentistry shall be covered in section-B of Paper –II of Surgery.

ii)chapters covered in the Section

Surgery-Paper-II-Part-B-Special surgery and allied-30marks

- Special surgery-15 marks

(Trauma, Urology, Neurosurgery, Cardio thoracic surgery, Plastic surgery & Pediatrics surgery) -

- Anesthesiology-5 marks
- Radiodiagnosis-5 marks
- Dentistry -5 marks

iii)Pattern of Question Paper:

Type of question	% marks	No. of questions Subject wise in Part-B of Paper-II
Structured Essay Questions-	20%	1 from Special Surgery

Very short answer questions	20%	3 from Special Surgery and 1 from each of 3 allied subjects of Anaesthesiology, Dentistry and Radiology.
Short answer questions	60%	3marksx2=6marks from Special Surgery and 4marksx1 each from each of 3 Allied Subjects of Dentistry, Radiology and Anaesthesiology.
Total Section-B Marks		30 Marks

iv) **MODEL THEORY QUESTION**

SURGERY

PAPER-II

SECTION-B(SPECIAL SURGERY ,ANESTHESIOLOGY,RADIOLOGICAL DIAGNOSIS AND DENTISTRY)

1. [ONE QUESTION FROM SPECIAL SURGERY]

A 60 year old man presents with passage of blood stained urine of recent onset.

- a) Enumerate the possible causes **[2+2+2=6marks]**
- b) What investigations would be required in this patient to determine the cause?
- c) Outline the principles of management.

2. Write short notes on: **[3marksx2=6marks]**

[2 QUESTIONS FROM SPECIAL SURGERY]

- a)
- b)
- c) Outline the principles of management.

3. Write short notes on: **[4marksx3=12marks]**

[1QUESTIONS FROM ANAESTHESIOLOGY, ONE QUESTION FROM DENTISTRY,ONE QUESTION FROM RADIOLOGY]

a.....

b.....

c.....

4. Answer very shortly in a few words.[1x6=6marks]

Special surgery-3questions

- a.
- b.
- c.

Anesthesiology-1questions

d.

Dentistry-1questions

e.

Radiology-1questions

f.

-0-0-0-

B.ORAL-PRACTICAL-CLINICAL EXAMINATION

(total 120 marks)

1.SURGERY

(90marks)

a.CLINICAL

(60marks)

- 1 long case..... 1 hour =40 marks
2 short cases..... 15 minutes each =10x2=20marks

b.VIVA

(15marks)

Panel-I(Team of one external and one internal)= 7.5marks

Instruments + Operations

Panel-II(Team of one external and one internal) =7.5 marks

Surgical Pathology, Charts, Images, Clips, X-Rays,Lab Reports.

[Anesthesiology, Radio diagnosis and Dentistry shall be evaluated during every stage of oral-practical-clinical evaluation under surgery]

2.ORTHOPEDICS

(30marks)

1 short case-.....15 min.....=20marks

5 Spots.....5x1.....=5marks

C.Viva-(charts,instruments,x-ray,appliances,etc.)=5marks

[Anesthesiology, Radio diagnosis and Dentistry shall be evaluated during every stage of oral-practical-clinical evaluation under surgery]

RECORDS

Case record for surgery covering allied depts.

BOOKS

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Syllabus and Curriculum

in

RADIOTHERAPY

for

MBBS Course

(III to IX Semesters)

GOAL:

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

OBJECTIVES

a. KNOWLEDGE:

The students should be able to:

1. identify symptoms and signs of various cancers and their steps of investigations and management.
2. Exhibit awareness of the principles of radiotherapy, the radio-responsiveness of various tumours and management of common cancers like cervical, breast and oral cancers.
3. Refer for further consultation at appropriate time without delay.
4. State general complications of irradiation and their management.
5. List common chemotherapeutic drugs for cancer and their toxicity.
6. Implement health education programmes regarding prevention and early diagnosis of tobacco related cancers, cervical cancers and breast

cancers.

7. know about radio-active isotopes and their physical properties

8. be aware of the advances made in radiotherapy in cancer management and knowledge of various radio therapeutic equipment while treating a patient.

b. SKILL:

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

1. take a detailed clinical history of the case suspected of having a malignant disease.
2. assist various specialists in administration of anticancer drugs and in application and use of various radiotherapeutic equipment, while treating a patient.

TEACHING METHODS AND HOURS

Theory-tutorial-demo class- - 10hrs

Clinical posting in 4th/5th semesters - 2wks

COURSE CONTENT

- 1) Physical principles of radiotherapy.
- 2) Principles of cancer chemotherapy.
- 3) Prevention of cancer.
- 4) Early diagnosis of cancer.
- 5) Principles of nuclear medicine.
- 6) Radio-responsiveness of various tumours.
- 7) Common radiation reactions and management.
- 8) Radio-isotopes in diagnosis and therapy.

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SYLLABUS and Curriculum
In
OBSTETRICS AND GYNECOLOGY
for
M.B.B.S. Course
(III to IX Semesters)

GOALS

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

OBJECTIVES

a. KNOWLEDGE

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

1. Outline the anatomy, physiology and pathophysiology of the reproductive system and the common conditions affecting it.
2. detect normal pregnancy, labour puerperium and manage the problems he/she is likely to encounter therein.
3. list the leading causes of maternal and perinatal morbidity and mortality.
4. understand the principles of contraception and various techniques employed, methods of medical termination of pregnancy, sterilisation and their complications.
5. identify the use, abuse and side effects of drugs in pregnancy, pre-menopausal and post-menopausal periods.
6. describe the national programme of maternal and child health and family welfare and their implementation at various levels.

7. identify common gynaecological diseases and describe principles of their management.

8. state the indications, techniques and complications of surgeries like Caesarian section, laparotomy, abdominal and vaginal hysterectomy, Fothergill's operation and vacuum aspiration for M.T.P.

b. SKILLS

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

1. examine a pregnant woman; recognise high risk pregnancies and make appropriate referrals.
2. conduct a normal delivery, recognise complications and provide postnatal care.
3. resuscitate the newborn and recognise congenital anomalies.
4. advise a couple on the use of various available contraceptive devices and assist in insertion in 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 should be able to integrate clinical skills with other disciplines and bring about coordinations of family welfare programmes for the national goal of population control.

TEACHING METHODS & HOURS:

Theory

3rd semester 18wks x 2hr =36hrs

4th semester 18wks x 1hr =18hrs

5th semester 9wks x 1hr =9hrs

[333]

6 th semester	18wks	x	2hr	=36hrs
7 th semester	9wks	x	2hr	=18hrs
8 th semester	18wks	x	4hr	=72hrs
9 th semester	9wks	x	4hr	=36hrs
Total.....				=225hrs

Tutorial/demo

6 th semester	18wks	x	1hr	=18hrs
7 th semester	9wks	x	1hr	=9hrs
6 th semester	18wks	x	2hr	=36hrs
7 th semester	9wks	x	2hr	=18hrs
Total.....				=81hrs

Integrated teaching

7 th to 9 th semester	x	20hrs	=20hrs
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Sum total

Theory		=225hrs
Tutorial/Demo		=81hrs
Int.tchg.		=20hrs
Grand total		=326hrs
MCI norm	.....	=300hrs

Clinical posting

3 rd semester	x3hrs/day	=4wks
4 th /5 th semester	x3hrs/day	=6wks
6 th /7 th semester	x3hrs/day	=4wks
8 th /9 th semester	x3hrs/day	=6wks
Total	.....	=20wks
MCI norm	.....	=20wks

CLASS ROUTINE

Semester	Type	Day/Time /Venue
III	Theory	Monday/8-9am/LT-4
		Thursday /8-9am/LT-4
IV/V	Theory	Wednesday /8-9am/LT-3
VI/VII	Theory	Wednesdayy/8-9am/LT-2
		Friday/8-9am/LT-2
		Tutorial/Demo
		Friday/3-4pm/Group-D
		Friday/4-5pm/Group-A
		Saturday/3-4pm/Group-B
VIII/X	Theory	Saturday/4-5pm/Group-C
		Monday/8-9am/LT-1
		Tuesday/8-9am/LT-1
		Thursday/9-10am/LT-1
		Saturday/9-10am/LT-1
		Tutorial/Demo
		Monday/3-5pm/Group-B
		Tuesday/3-5pm/Group-C
		Wednesday/3-5pm/Group-D
		Thursday/3-5pm/Group-A

COURSE CONTENT

A.THEORY**Third Semester(12hrs)****OBSTETRICS:**

1. Anatomy of female reproductive tract
 - Anatomy of internal and external reproductive organs including their relationship to other pelvic organs.
 - Applied anatomy as related to Obstetrics and Gynaecology.
2. Physiology of conception:
 - Gametogenesis, Ovulation, menstruation, fertilisation and implantation,
 - Spermatogenesis. Normal semen parameters
3. Development of fetus and Placenta
 - Basic embryology. Development and structure and functions of placenta.
 - Fetal development and growth at various gestational ages.
 - Teratogenic agents and drugs to be avoided / contraindicated in early pregnancy
4. Diagnosis of Pregnancy
 - Clinical symptoms and signs of early pregnancy
 - Dating in early pregnancy including USG dating
 - Various tests to diagnose pregnancy

Desirable to know:

- Congenital anomalies that can be diagnosed in early pregnancy

5. Maternal Changes during Pregnancy

The physiological changes in Blood, Cardiovascular, Respiratory, urinary tract and gastrointestinal tract

6. Antenatal care

- Objectives of antenatal care, clinical diagnosis of pregnancy and differential diagnosis, Monitoring of fetal growth by Gravidogram, Relevant and basic investigations like Hb for screening anaemia and blood group and Rh typing
- Nutritional requirements, Drug prescription, Immunisation during pregnancy.
- Diagnosis of malpresentation, antenatal fetal -surveillance. Pelvic assessment

Desirable to know:

- Diagnosis and management of fetal congenital anomalies

-PNDT Act**7. Complications of Early pregnancy**

- Various types of abortions, definitions, causes, investigations and their management.
- Diagnosis of Ectopic pregnancy and management

Desirable to know

- Modern management of ectopic pregnancy

8. Hyperemesis Gravidarum

- Aetiopathogenesis, investigations and management

Desirable to know:

- Unusual complications of hyperemesis and management

9. Antepartum haemorrhage

- Classification, clinical features, differential diagnosis, investigation including USG features, management and complications

Desirable to know:

- Management of Complications like DIC

10. Malpresentations and malpositions and CPD

- Causes, clinical findings, definitive diagnosis of malpresentations and malpositions and mechanism of labour in such cases
- Causes of contracted pelvis and diagnosis and management
- Diagnosis of CPD and Trial of labour
- Definition of Obstructed labour and rupture uterus, causes, clinical features and management.
- Prevention of rupture uterus

Desirable to know

- Various types of Pelvis

11. Multiple pregnancy

- Causes, diagnosis, differential diagnosis, complications in pregnancy and labour and management

Desirable to know:

- Mechanism of twin to twin transfusion and management
- Management of single fetal demise

12. Hydramnios and oligohydramnios

- Causes, diagnosis, investigations and management

Desirable to know:

- Recent trends in management

13. Hypertensive disorders of Pregnancy

- Classification, diagnosis, investigations and management of Gestational hypertension, preeclampsia, and Eclampsia and complications
- Predictive tests & Prevention of pre-eclampsia and Eclampsia
Desirable to know:
- Management of complications of Hypertensive disorders and chronic hypertension and renal disease
- Differential diagnosis of convulsions in a pregnant woman

14. Anaemia during pregnancy

- Causes, classification of various types of anaemias and their diagnosis,
- Nutritional anaemias and their management. Prevention of anaemia
Desirable to know
- Management of Non-nutritional anaemias in pregnancy

15. Diabetes mellitus and pregnancy

- Classification, Diagnosis, Screening for GDM and management of Diabetes during pregnancy and labour
- Management of neonate of diabetic mother
Desirable to know
- Complications of diabetes and their management

16. Heart disease and pregnancy

- Classification, evaluation, complications during pregnancy and labour
- Contraception

Desirable to know

- Surgical management during pregnancy

17. Intrauterine- Growth restriction and Intra uterine death

- Causes, diagnosis and management
Desirable to know
- Recent advances in management

18. Infections during pregnancy

- UTI, Malaria, Syphilis, Tuberculosis, Hepatitis, HIV and TORCH infections during pregnancy and their management

19. Preterm labour and Post-dated pregnancy

- Causes, diagnosis and principles of management of preterm labour and delivery
- Evaluation and management of Post-dated pregnancy
- Neonatal problems of Preterm and post-term babies
- Prevention of Preterm labour, Various Tocolytics

20. Rh Negative Pregnancy

- Diagnosis, evaluation and management
- Prevention of Rh Isoimmunisation
- Management of Haemolytic disease of New born

Desirable to know

- In-utero management of Rh iso-immunised fetus

21. Normal labour

- Physiology, mechanism and conduct of normal labour
- Monitoring in various stages and abnormal labour or dysfunctional labour
- Diagnosis and management of fetal distress
- Pain relief during labour

- Active management of third stage of labour and complications of IIIrd stage
- 22. Postpartum haemorrhage
 - Definition,types,Diagnosis and management of PPH.
 - Retained placenta,Manual removal of placenta
 - Desirable to know
 - Management of Inversion of uterus
- 23. Induction/Augmentation of labour
 - Pre-requisites for induction
 - Various methods of cervical ripening
 - Successful induction and failed induction
 - Complications and contra-indications for induction
 - Various methods /drugs for augmentation of labour
- 24. Operative Obstetrics
 - Indications, technique & complications of episiotomy
 - Indications, technique and complications of Caesarean section,
 - Forceps and vacuum deliveries
 - Assisted breech delivery and Breech extraction
 - Methods of Tubectomy complications and failure rates
 - Cervical cerclage
 - Desirable to know
 - Destructive operations in Obstetrics
- 25. Post-caesarean pregnancy
 - Evaluation of a case of post-caesarean pregnancy and management
 - Monitoring of a case of post-caesarean in labour and complications of VBAC
 - Indications for repeat Caesarean section and complications of Caesarean at repeat CS
- 26. Puerperium
 - Course of Normal Puerperium and complications of Puerperium like Puerperal sepsis and its diagnosis and management and prevention
 - Breastfeeding and common problems like lactational failure
 - Care of neonate and infant,Immunisation schedule
- 27.Contraception
 - Cafeteria approach, various methods of contraception, advantages and side-effects, and failure rates, Selection of patients and counselling
 - IUCD Insertion and removal. Emergency contraception
 - Desirable to know
 - Implants
- 28. Medical termination of Pregnancy
 - MTP Act, Indications, Contraindications, Various methods of First trimester and Second trimester termination and their complications
 - Concurrent contraception
 - Desirable to know
 - Management of complications of various methods of MTP
- 29. Perinatal and Maternal mortality in INDIA
 - Definition of PNMR & MMR. causes and prevention of Perinatal and maternal mortality
 - Desirable to know
 - PNMR & MMR in our Institute

GYNAECOLOGY

1. Vaginal discharge

- Physiological and pathological causes of vaginal discharge
- Clinical characteristics, Investigations for diagnosis, predisposing conditions and management

2 .Amenorrhoea

- Classification of Primary and Secondary amenorrhoea , investigations and principles of management
Desirable to know
- Details of management.

3. Abnormal uterine bleeding

- Normal menstrual pattern and physiology of menstrual cycle
- Various bleeding patterns like menorrhagia, metrorrhagia and polymenorrhoea
- Causes, investigations, diagnosis of AUB
- Definition, Etiology and classification of DUB and its management

Desirable to know

- Transvaginal sonography and sonosalpingography

4. Infertility

- Definition of Infertility and sterility
- Causes and investigation of a couple with infertility; semen analysis
- Causes of anovulation and induction of ovulation, Tests for ovulation & tubal patency, Management of tubal factors of infertility including re-canalisation,
- Counseling for Artificial Reproductive Technology

Desirable to know

- ART and their success

5. Pelvic organ prolapse

- Classification. Causes, diagnosis. Investigations and management in relation to age and parity.
- Preventive aspects of pelvic organ prolapse

Desirable to know

- Nulliparous prolapse

6. Urinary Incontinence

- Classification and differential diagnosis
- Investigations and management of Stress urinary incontinence
Desirable to know
- Surgical therapy of Stress urinary incontinence

7. Benign tumours of Internal reproductive organs

- Causes. Investigations, complications and management of fibroid uterus, Ovarian cysts,
- Endometriosis

Desirable to know

- Conservative surgery and recent advances in management

8. Uterine anomalies

- Classification and diagnosis and reproductive outcome and indications for surgical management

Desirable to know

- Surgical procedures for specific anomalies

9. Pelvic Inflammatory disease

- Definition, causes, sequelae and management of PID
- Sexually transmitted infections and their prevention
- Genital tuberculosis diagnosis and management (in detail)

-Prevention of PID**10. Genital tract injuries and Genital fistulae**

- Post-coital injuries, and operative injuries especially to urinary tract
- Causes, clinical features and diagnosis of genital fistulae and their management

Desirable to know

Operative techniques and complications

11. Pre-malignant lesions and Malignancies of genital tract

- Etiology and Pathology, Classification, diagnosis of pre-malignant and malignant lesions of vulva,vagina. Cervix, uterus and ovary
- Screening for carcinoma cervix
- Clinical and Surgicopathological Staging and principles of management of cervical,endometrialcancer and ovarian cancer

Desirable to know

- Screening for Breast and endometrial and ovarian malignancies
- Chemotherapy and Radiotherapy of Carcinoma cervix including adverse effects
- Chemotherapy of Ovarian cancer

11. Problems of Adolescence and menopause

- Menopausal symptoms and management of menopause, HRT
- Causes and investigations of post-menopausal bleeding

Desirable to know

- Precocious puberty causes and investigation
- Management of Precocious puberty

12. Operative Gynaecology

- Indications, technique and complications of Dilatation and Curettage and Fractional curettage,Vaginal hysterectomy, Ward Mayo's operation, Manchester repair, Abdominal Hysterectomy,Ovariectomy. Tubal recanalisation and diagnostic laparoscopy
- Staging laparotomy for endometrial and ovarian malignancy
- Diagnosis and principles of management of post-operative complications
- Desirable to know
- Indications and techniques of Colposcopy, Hysteroscopy and operative laparoscopy
- Detailed management of various post-operative complications

HOURS DISTRIBUTION for SEMESTERS AND CHAPTERS:

SUBJECT	DURATION
3rd Semester	
1.Anatomy of female reproductive system	3 hrs
2.Physiology of female reproductive system	4 hrs
A.Physiology of menstruation	
B.Physiology of Adolescence & Puberty	
C.Physiology of Menopause	
3. PathoPhysiology of abnormal Menstruation	3hrs
A.Monorrhagia	
B.Dysmenorrhoea	
C.Amenorrhoea	

D.Ploymenorrhoea

E.Cryptomenorrhoea

4.History taking of Gynaecological and Obstetric cases

1day

5.Examination of Gynaecological and Obst. Cases

1day

4th Semester

1.Sign's & symptoms and diagnosis of pregnancy

1 day

2.Normal Labour

2days

3.Normal Puerperium

1 day

4.Abnormal Labour

13days

A.Occipito-Posterior position

B.Oblique & Transverse lie

C.Breech, Face & Brow Twin, Obstructed-Labour,

D.Prematurity, Post maturity.

5.Abnormal pregnancy

11 days

A.Preeclampsia

B.Eclampsia

C.Heart Disease.

D.Ectopic Pregnancy

E.Molar Pregnancy

5th SEMESTER:

1.Anaemia in pregnancy. Sickle cell disease with pregnancy.

3 days

2.Rh Isoimmunisation

2 days

3.APH & PPH

6 days

4.Detection of Foetal congenital Abnormality

1 day

5.Resuscitation of New born baby

1 day

6.Principle of contraception

2 days

7.Different types of contraception and advice to couple.

6 days

8.Methods of I U C D Insertion

2 days

9.Methods of sterilization

1 day

10.M.T.P.

3 days

11.Miscellaneous

1 day

7th SEMESTER

1.Pelvic Examination

1 day

2.Diagnosis and Management of common Gynaecological problems –

12 days

Infection of Vagina, Cervix, Uterus

Pelvic cellular tissue and HIV Infection

3.Trauma to the perineum,vulva, Vagina, Uterus and cervix

5 days

4.Tumors – Benign tumor of the female genital organ-

7 days

5.Identify, use, abuse and side effects of drugs in Pregnancy.

3 days

8th SEMESTER

- | | |
|--|---------|
| 1. Describe the national programmes of maternal child health & family welfare and their Implementation in various levels. | 12 days |
| 2. Make Vaginal cytological smear
Post coital test
Wet Vaginal smear examination for T.V. & Moniliasis
Gram stain for moniliasis
Instruments
Specimen | 16 days |

9th SEMESTER

- | | |
|---|---|
| 1. Identify common Gynaecological disease and describe the principles of management
D U B
Fibroid
Prolapse
Endometriosis
All Malignancies
(Vulva, Vagina, Cervix, Uterus & Ovary) | 3 days
2 days
3 days
2 days
12 days |
| 2. Indication, technique's, complications of surgery like caesarean section, laparotomy and vaginal Hysterectomy, Fothergill's operation
Ventouse application, D & C, Evacuation and Suction, Obstetric forceps. | 10 days |
| 3. Interpretation of data of investigations like biochemical, Histopathological, Radiological
Ultrasonography, Colposcopy & Laparoscopy. | 10 days |

CLINICAL POSTING SKILL CONTENTS**1. Communication skills**

History taking skills- Present and past Obstetric history
History of Medical and Surgical disorders if any
Family history and treatment history
Counseling for contraception, Breast feeding

2. Clinical skills**A. General Physical examination and Systemic Examination****B. Obstetric examination**

- *Speculum and vaginal examination
- *Diagnosis of early pregnancy
- *Measurement of symphysio fundal height
- * Plotting Gravidoqram to monitor fetal growth
- * Obstetric palpation to know the lie, Presentation and position of fetus
- * Pelvic assessment to know grossly contracted pelvis

C. Diagnosis and Monitoring Labour

- * Appreciate Normal Uterine contractions by palpation
- *Fetal heart normality
- *Cervical dilatation
- *Station of presenting part
- *Plotting a Partogram and recognition of deviations from normal
- Catheterization of bladder during labour
- Technique of ARM
- Conduct of normal labour including active management of III stage
- Technique of Episiotomy and its suturing
- Recognition of Perineal tears and suturing
- Exploration of Genital tract for injuries after delivery
- Care of Normal New-born and resuscitation of asphyxiated New-born

Desirable to acquire

- Techniques of Assisted breech delivery and breech extraction
- Vacuum application and extraction
- Out-let forceps application
- Repair of cervical tears
- Vaginal packing

D. Gynaecological examination

- Inspection and recognition of various parts of external genitalia
- Recognition of perineal body and anus
- Per speculum examination and recognition of Unhealthy cervix and growth on cervix
- Technique of Pap smear collection
- Bimanual pelvic examination to know the size and position of uterus and presence and absence of adnexal mass
- Identification of cystocele, rectocele and enterocele and descent of cervix
- Technique of rectal examination
- Technique of cervix biopsy
- Technique of Schiller's test and acetic acid test
- Technique of IUCD insertion and removal

Desirable to acquire:

1. Culdocentesis
 2. Instrumental evacuation for incomplete abortion
 3. Blood transfusion
 4. Adult resuscitation
 3. Managerial skills
- Transport of patient with convulsions, and Shock
 - How to co-ordinate with team members

Desirable to know

- Organization of antenatal clinics and arrangement for cervical cancer screening at camps

SUBJECT IN TAUGHT IN OPD**MUST KNOW**

- History Taking
- General Physical Examination
- Speculum & Vaginal Examination
- Diagnosis of early pregnancy/ Diagnosis high risk pregnancy
- Measurement of Symphysio fundal height
- Obstratic palapation to know lie, presentation, position
- Antenatal Care : Objective of the antenatal Care, routine antenatal checkup, assessment of gestation, detect abnormality, clinical monitoring of maternal and fetal well being period

ANTENATAL CLINIC**MUST KNOW**

- o History Taking
- o General Examination and Obstrical Examination
- o To establish the period of the gestation
- o To order routine investigation
- o To give routine advice and medication
- o To detect high risk factor
- o To foresee the complication and to prevent them
- o To teach the mother element of child care, nutrition, personal hygiene and environmental sanitation
- o Problems of multiparty included abortion and MTP
- o To assist the mother and family in future family planning
- Common problem in pregnancy , Oedema pruirities, heart burn, piles, varicose veins, clothing and foot ware, exercise, nutrition, rest, sex, drug usage, hygiene
- Drugs Immunisation, drug prescription
- Connectivity skill to order for relevant blood examination, urine examination and interpretation of the results indications for ultrasound examination, fetal surveillance
- Inspection and recognition of perineal body and anus
- Per speculum examination and recognition of unhealthy cervix and growth on cervix
- Technique of PAP smear collection
- Bimanual pelvic examination to know the size and position of uterus and presence and absence of adnexal mass
- Technique of rectal examination
- Technique of Schillers test and acitic acid test
- Technique of IUCD insertion and removal

SUBJECTS TO BE TAUGHT IN WORD

- History taking and examination
- How to take history and examination of female pelvic organ
- They will be allocated beds and will be responsible for working up their patients
- Catheterization and management of indwelling catheter

SUBJECT TO BE TAUGHT IN LABOUR ROOM

MUST KNOW

Appreciate Normal Uterine contractions by palpation
Fetal heart normality
Cervical dilatation
Station of presenting part
Plotting a Partogram and recognition of deviations from normal
Catherisation of bladder during labour
Technique of ARM
Conduct of normal labour including active management of III stage
Technique of Episiotomy and its suturing
Recognition of Perineal tears and suturing
Exploration of Genital tract for injuries after delivery
Recognition of post partum complications. Counselling and supervising of breast-feeding
Care of Normal New-born and resuscitation of asphyxiated New-born

DESIRABLE TO ACQUIRE

Techniques of Assisted breech delivery and breech extraction
Vacuum application and extraction
Outlet forceps application
Repair of cervical tears
Vaginal packing
Blood Transfusion
Adult resuscitation

SUBJECTS TO BE TAUGHT IN OT

Witness/assist major surgical procedures
Abdominal/vaginal Hysterectomy
Witness caesarean section
Minilap tubal ligation/ tubectomy
Cervical biopsy
Suction & evacuation(MTP)/Dilatation & curettage

- a. Identification and uses of different instruments/sutures
- b. Sterilization procedures and minilap tubal ligation and vasectomy. They will assist 1st and 2nd trimester
- c. MTP procedure and urinary laparoscopic tubal sterilization.

SUBJECTS TO BE TAUGHT IN FAMILY PLANNING

Students will learn medical and surgical methods of contraception and sterilization procedure. They will learn to perform IUCD insertion and removal

INTEGRATED TEACHING (20hrs)

1. Development of genital tract, malformations and their clinical significance - Anatomy
2. Fetal physiology - fetal circulation- Physiology
3. Fetal malformations - genesis- Embryology
4. Cervical Intraepithelial Neoplasia- Pathology
5. Acute Renal Failure- Physiology, Medicine
6. Coagulation failure- Pathology, Medicine
7. Diabetes, heart disease and Pregnancy- Medicine
8. USG- Radiology
9. Infections in pregnancy -Microbiology
10. Medico-legal aspects- Forensic Medicine
11. Nutrition in pregnancy and lactation-CM
12. Evidence based obstetrics- CM
13. Drugs in pregnancy,lactation -Pharmacology ,pediatrics.
 - 14.care of the baby in labour room-pediatrics
 15. care of baby in post-natal ward
16. Anemia in pregnancy-CM,Medicine,Pathology
17. Jaundice in pregnancy-Pathology,Medicine
18. Acute abdomen-Surgery

19. HIV infection and AIDS-CM, Microbiology, Pediatrics, Medicine.

20. Analgesia-Anaesthesiology, Pharmacology.

SCHEME OF EVALUATION

Papers	Total marks	Univ. examination marks			Int. Ass. marks	
		Theory	Oral	Practical	Theory	Practical
O&G Paper. I & II	200	80 (20 each in part A & B of each of paper I & II having 40 marks each)	30	50	20	20
Pass Marks		40% in Theory(including Int. Ass.)	40/100			
		40% in Viva	12/30			
		50% in Theory (including Int. Ass.) including Viva	65 /130			
		50% in Practical(including Int. Ass.)	35/70			
		35% in Internal Assessment (theory)	7/20			
		35% in Internal Assessment(practical)	7/20			
		50% of total aggregate	100/200			

SCHEME FOR INTERNAL ASSESSMENT**INTERNAL ASSESSMENT SCHEDULE:****Total Marks= Theory (20) + Practical (20) = 40 marks**

Internal Assessment Tests	Timings	Marks			
		Theory	Practical		
			Clinical	Instruments, Charts, X-Rays, Dummy, etc.)	Record
1	3 rd semester	xx	25	10	5
2	4 th /5 th semester	50	25	10	5
3	6 th /7 th semester	50	25	10	5
4	8 th /9 th semester	50	25	10	5
5	Pre-PMB test Mid-9 th semester Dec' 3 rd week	50	25	10	5
Total marks		200	200		
Sending marks		Total marks / 10 (out of 20)	Total marks /10 (out of 20)		

UNIVERSITY EXAMINATION**A. THEORY****i) PAPER WISE AND SECTION WISE DISTRIBUTION OF CHAPTERS**

Paper – I (Obstetrics including Social Obstetrics)

SECTION-A-20marks

1. Physiology of normal pregnancy, diagnosis of pregnancy, routine antenatal care, management of common symptoms

- in pregnancy, investigations to be carried out in pregnancy;
- 2. Drugs prescription during pregnancy and lactation
- 3. Hypertensive disorders in pregnancy
- 4. Anaemia in Pregnancy
- 5. Heart disease in pregnancy
- 6. Pregnancy in Rhesus Negative mothers
- 7. Disorders of liver, kidneys in pregnancy
- 8. Multiple pregnancies

SECTION-B-20marks

- 1. Intrauterine Growth Restriction (IUGR)
- 2. Antenatal Fetal Surveillance
- 3. Puerperium, and its complications
- 4. Perinatal and maternal mortality in India
- 5. Social Obstetrics

ii) Paper –II(Gynecology, Family planning and demography)

SECTION-A-20mrks

1.Gynaecology

SECTION-B-20marks

- 1.Contraception,
2. Neonatology
- 3.Family Planning
- 4.Demography

iii)Pattern of Question Paper:

Structured Essay Questions-(20% ≈4)	4x1= 4 Marks
Very short answer questions(20% ≈4)	0.5x8=4 Marks
Short answer questions (60% ≈12)	3x4=12Marks
Total marks in each part	20 Marks
Total marks in each of the paper	40 Marks
Total Marks in theory in 2 papers	80Marks

iv) MODEL THEORY QUESTION

OBSTETRICS AND GYNAECOLOGY

PAPER I

Obstetrics Including Social Obstetrics

Time: 3 hours Max. Marks: 80

Answer all questions. Each section to be answered in separate Answer Book.

Figures at right margin indicate marks.Illustrate your answer with suitable diagrams

SECTION A

1. Define anemia in pregnancy. How do you manage a case of severe anemia at 28 weeks of Pregnancy ?
(1 + 3= 4marks)
2. Write short notes on: (any four) (3x4 =12 marks)
 - a) Diagnosis of Ectopic Pregnancy.
 - b) Partogram
 - c) Management of cervical incompetence.
 - d) Prevention of postpartum haemorrhage
 - e) Screening for gestational Diabetes mellitus

3. Very Short Answer

(0.5X8 =4marks)

a.....

b.....

c.....

d.....

e.....

f.....

g.....

h.....

SECTION B

1. Define obstructed labour. Describe the clinical features and management of a case of obstructed labour. (0.5+1.5+2=4 marks)

2. Write short notes on: (any four) (3x4= 12 marks)

a) Episiotomy

b) Follow up of vesicular mole

c) Uses of Ultrasound in II trimester

d) Prevention of puerperal sepsis

e) Outlet forceps

3. Very Short Answer

(0.5X8 =4marks)

a.....

b.....

c.....

d.....

e.....

f.....

g.....

h.....

OBSTETRICS AND GYNAECOLOGY

PAPER II

Gynaecology Including Family Welfare & Demography

Time: 3 hours Max. Marks: 80

Answer all questions. Each section to be answered in separate Answer Book.

Figures at right margin indicate marks. Illustrate your answer with suitable diagrams

SECTION A

1. A woman aged 30 years complains of mass descending per vagina for two years.

a) What is the differential diagnosis? (1+3 = 4 marks)

b) How do you manage if she had uterovaginal prolapse ?

2. Write short notes on:(any four) (3 x 4 = 12 marks)

a) Medical Management of endometriosis

b) Haematocolpos.

c) Fractional Curettage.

d) Pap smear

e) Turner's syndrome

3. Very Short Answer (0.5X8 =4marks)

a.....

b.....

c.....

d.....

e.....

f.....

g.....

h.....

SECTION B

1. A 35 years old lady complains of mass abdomen of four months duration

a) Discuss the differential diagnosis?

b) How will you manage a case of carcinoma ovary? (2 + 2 =4 marks)

2. Write short notes on: :(any four) (3x4 = 12 marks)

a) Male condom

b) Tests for ovulation

c) Methods of II trimester medical termination of pregnancy

d) Contra indications for use of hormonal contraceptions

e) Complications of IUCD3.

3. Very Short Answer (0.5X8 =4marks)

a.....

b.....

c.....

d.....

e.....

f.....

g.....

h.....

0-0-0

CLINICAL EXAMINATION

1.One Obstetrics Long case- 25marks

2.One Gynecology Long case- 25marks

ORAL

To be conducted by two panels of examiners comprising of one internal and one external.

Table-I:Obstetrics Viva 15marks

Table-II:Gynaecology Viva 15marks

CASE RECORDS

a..Og Case record

b.Interns' logbook(book-365)

BOOKS

Obstetrics:

1. Manual of Obstetrics, Edited by Daftary SN, and Daftary GS Published by Elsevier, New Delhi, India.
2. Text book of Obstetrics D.C.Dutta, Edited by Hiralal Konar, Published by New Central Book Agency, Kolkata.

Gynaecology:

1. Howkins & Bourne Shaw's Text book of Gynaecology edited by Padubidri VG and Daftary SN Published by Elsevier
2. Text book of Gynaecology - D.C.Dutta. Edited by Hiralal Konar, published by New central Book Agency, Kolkata
3. Mudaliar and Menon's Clinical Obstetrics Edited by Gopalan Sarala and Jain Vanita Published by Orient Longman, Chennai, INDIA.

Clinical Books:

1. Gynaecology Illustrated, Edited by Hart DM and Norman J, Illustrated by Callander R and Ramsden, Published by Churchill LivingStone.
2. Clinical methods in Obstetrics and Gynaecology – A Problem based approach. Edited by Oumachigui A, .Raghavan S and Habeebullah S published by Orient Longman, 2nd Edition
3. Shaw's Text book of Operative Gynaecology Revised by Hudson CN and Setchell ME Published by Reed Elsevier India Pvt., Ltd.
4. Practical Gynaecology and Obstetrics edited by Parulekar SV. Published by Vora medical Publications.

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Syllabus and Curriculum

in

PEDIATRICS

for

MBBS Course

(III to IX Semesters)

2012

GOALS

The broad goals of the teaching of undergraduate students in Pediatrics are to acquire knowledge and appropriate skills for optimally dealing with major health problems of children and to ensure their optimal growth and development.

OBJECTIVE

a.KNOWLEDGE

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

- (a) Describe the normal growth and development during fetal life, neonatal period, childhood and adolescence and outline deviations thereof;
- (b) Describe the common pediatrics disorder and emergencies in terms of epidemiology, etiopathogenesis, clinical manifestations, diagnosis, rational therapy and rehabilitation;
- (c) State age related requirements of calories, nutrients, fluids, drugs etc. in health and disease;
- (d) Describe preventive strategies for common infectious disorders, malnutrition, genetic and metabolic disorders, poisonings, accidents and child abuse;
- (e) Outline national programmes relating to child health including immunization programmes;

b.SKILLS

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

- (a) Take a detailed pediatrics history, conduct an appropriate physical examination of children including neonates, make clinical diagnosis, conduct common bedside

investigative procedures, interpret common laboratory investigations and plan and institute therapy;

- (b) Take anthropometric measurements, resuscitate newborn infants with bag and mask at birth, prepare oral rehydration solution, perform tuberculin test, administer vaccines available under current national programmes, start an intravenous line and provide naso-gastric feeding, observe venesection and intra-osseous infusion if possible.
- (c) Conduct diagnostic procedures such as lumbar puncture, bone marrow aspiration, pleural tap and ascitic tap; observe liver and kidney biopsy.
- (d) Distinguish between normal newborn babies and those requiring special care and institute early care to all new born babies including care of pre-term and low birth weight babies, provide correct guidance and counselling in breastfeeding.
- (e) Provide ambulatory care to all sick children, identify indications for specialized/inpatient care and ensure timely referral of those who require hospitalization.
- (e) Identify pediatric and neonatal illnesses and problems that require secondary and tertiary care and refer them appropriately.
- (f) Counsel and guide patient's parents and relatives regarding the illness, the appropriate care, the possible complications and the prognosis.
- (g) Provide emergency cardiopulmonary resuscitation to new borns and older children.
- (h) Participate in the National programmes effectively.
- (i) Discharge medico – legal and ethical responsibilities.
- (j) Motivate parents to consent for a diagnostic autopsy as well as for Invasive procedures.

c. INTEGRATION

The training in pediatrics should be done in an integrated manner with other disciplines, such as Anatomy, Physiology, Forensic Medicine, Community Medicine, Obstetrics and Physical Medicine, curative and rehabilitative services for care of children both in the community and at hospital as part of a team.

TEACHING METHODS & HOURS

Theory

6 th semester	18wks	x	1hr	=18hrs
7 th semester	9wks	x	1hr	=9hrs
8 th semester	18wks	x	3hr	=54hrs
9 th semester	9wks	x	3hr	=27hrs
Total.....				=108hrs

Tutorial/demo

6 th semester	18wks	x	1hr	=18hrs
7 th semester	9wks	x	1hr	=9hrs
6 th semester	18wks	x	1hr	=18hrs
7 th semester	9wks	x	1hr	=9hrs
Total.....				=54hrs

Integrated teaching

7 th to 9 th semester	x	15hrs	=15hrs
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Sum total

Theory		=108hrs
Tutorial/Demo.....		=54hrs
Int.tchg.		=15hrs
Grand total		=177hrs
MCI norm	.....	=100hrs

Clinical posting

4 th /5 th semester	x3hrs/day	=4wks
6 th /7 th semester	x3hrs/day	=2wks
8 th /9 th semester	x3hrs/day	=4wks

Total =14wks

MCI norm =10wks

CLASS ROUTINE

Semester	Type	Day/Time /Venue
VI/VII	Theory	Wednesday/2-3 PM/LT-2
	Tutorial demo	Monday/4-5 PM/LT-2/Group-A
		Tuesday/4-5 PM/LT-2/Group-B
		Wednesday/4-5 PM/LT-2/Group-C
		Thursday/4-5 PM/LT-2/Group-D
VIII/IX	Theory	Tuesday/2-3 PM/LT-1
		Thursday/2-3 PM/LT-1
		Friday/2-3 PM/LT-1
	Tutorial/Demo	Monday/3-4 PM/LT-1/Group-A
		Tuesday/3-4 PM/LT-1/Group-B
		Wednesday/3-4 PM/LT-1/Group-C
		Thursday/3-4 PM/LT-1/Group-D

COURSE CONTENT**A.CHAPTERS FOR THEORY****6th semester (18hrs)****Chapter-1.****INFECTIOUS DISEASES: (11hrs)***Must know*

1. Rational management of fever
2. Epidemiology, basic pathology, natural history, symptoms, signs, complications, investigations, differential diagnosis, management and prevention of common bacterial, viral and parasitic infections in the region, with special reference to vaccine-preventable diseases:

Malaria, Poliomyelitis, Diphtheria, Whooping Cough,
Tetanus Including Neonatal Tetanus, Measles, Mumps,
Typhoid, Viral Hepatitis, Cholera, Chickenpox,
Giardiasis, Amebiasis, Intestinal Helminthiasis,
Dengue, AIDS.

3. PUO

Desirable to know

1. Rubella, Leptospirosis, Chickengunya , Kala-azar, Leprosy, Chlamydia infection

Chapter-2.

IMMUNISATION(2hrs)

Must know

1. Principles of Immunization. Vaccine preservation and cold-chain
2. National Immunization Programme
3. National Polio Surveillance Programme; AFP surveillance.

Desirable to know

4. Adverse reactions to vaccines
5. Vaccines in special situations

Chapter-3.

GROWTH & DEVELOPMENT: (5 hrs)

Must know

1. Normal growth from conception to maturity
Growth patterns of different organ systems

such as lymphoid, brain and sex organs.

Principles of normal development.
2. Normal pattern of teeth eruption
3. Anthropometry: measurement and interpretation
of weight, length/height, head circumference,

mid-arm circumference.
4. Abnormal growth patterns-failure to thrive,
5. Short stature
6. Important milestones in infancy and early
childhood in the areas of gross motor, fine

motor, language and personal-social development.

3-4 milestones in each of the developmental

fields, age of normal appearance and the

upper age of normal.
7. Puberty & Adolescence.

Desirable to know

8. Age-independent anthropometric measurement-
principles and application.
9. Measurement and interpretation of sitting height,
US: LS ratio and arm span
10. Preventable causes and assessment of
developmental retardation
11. Developmental delay. (Approach to a child with developmental disabilities)
12. Sexual Maturity Rating.
Childhood Obesity
13. Delayed & precocious puberty

7th semester (9hrs)

Chapter-4.

RESPIRATORY DISEASES: (9hrs)

Must know

1. Clinical approach to a child with :
Cyanosis, Respiratory Distress, Stridor, Wheezing.

Significance Of Recession, Retraction.
2. Etiopathogenesis, clinical features, complications, investigations, differential diagnosis and management of :

acute upper respiratory infections,

pneumonia, bronchiolitis,

bronchitis.

Acute and chronic otitis media
3. Etiopathogenesis, clinical features, diagnosis, classification and management of Bronchial Asthma.

Treatment of Acute Severe Asthma.
4. Pulmonary tuberculosis- infection versus disease, difference between primary and post-primary tuberculosis. Etiopathogenesis, diagnostic criteria in children versus adults. Diagnostic aids – technique and interpretation of Mantoux test and BCG test.

Radiological patterns, chemo-prophylaxis and treatment including the DOTS schedule
2. Diagnosis and management of foreign body aspiration
3. Pathogenesis, clinical features and management of pneumothorax, pleural effusion and empyema.
4. ARI Control Programme

Desirable to know

5. Multidrug resistant tuberculosis, bronchiectasis, pulmonary cysts

8th semester (54hrs)

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Chapter-5.**GASTRO-INTESTINAL DISEASES: (10hrs)*****Must know***

1. Clinical approach to a child with hepatosplenomegaly, jaundice, vomiting, abdominal pain, g-i -bleeding
2. Acute diarrheal disease - Etiopathogenesis, clinical differentiation of watery and invasive diarrhea, complications of diarrheal illness. Assessment of dehydration, treatment at home and in hospital. Fluid and electrolyte management. Oral rehydration, composition of ORS
3. Clinical features and management of Acute Viral Hepatitis,
4. Causes and diagnosis of Chronic Liver Disease; Neonatal Cholestasis

Features and management of Liver Failure

5. Abdominal Tuberculosis
6. Portal Hypertension
7. Congenital Hypertrophic Pyloric Stenosis
8. Recurrent Pain Abdomen
9. Congenital Megacolon
10. Common causes of Constipation.

Desirable to know

11. Gastroesophageal reflux.
12. Reye's syndrome,
13. Celiac disease.
14. Drug induced hepatitis

Chapter-6.**NUTRITION: (10hrs)*****Must know***

1. Normal requirements of protein, carbohydrates, fat, minerals and vitamins for newborn, children, adolescents and pregnant and lactating mother.

2. Common food sources.
3. Complementary feeding.
National Guidelines on Infant and Child Feeding (IYCF).
4. Assessment of nutritional status of a child based on history and physical examination
5. Protein energy malnutrition - Definition, classification according to WHO/IAP/Wellcome Trust, acute versus chronic malnutrition. Clinical features of marasmus and kwashiorkor. Causes and management of PEM including that of complications. Planning a diet for PEM.
6. Vitamins-Recognition of vitamin deficiencies (A, D, K, C, B-Complex). Etiopathogenesis, clinical features, biochemical and radiological findings, differential diagnosis and management of nutritional rickets and scurvy.

Desirable to know

- Characteristics of transitional and mature milk (foremilk and hind milk).
7. Prevention and management of Lactation Failure and feeding problems.
 8. Hypervitaminosis A and D
 9. Definition, causes and management of Obesity

Chapter-7.

CARDIO-VASCULAR DISEASES: (12hrs)

Must know

- Dyspnoea - clinical approach
1. Cyanosis - clinical approach
 2. Recognition and management of congestive Heart failure
 3. Clinical features, diagnosis, investigation, treatment and prevention of Acute Rheumatic Fever.
- Common forms of rheumatic heart disease (MI, AI, AS) in childhood.

4. Approach to arthritis in children-rheumatic, Juvenile chronic arthritis, septic arthritis, tubercular arthritis, sickle arthropathy, collagen vascular diseases.
5. Acute Recognition of Congenital Acyanotic And Cyanotic Heart Disease.Hemodynamics, clinical features and management of VSD, PDA, ASD and Fallot's Tetralogy

Desirable to know

Infective Endocarditis
Hypertension in children and hypertensive emergencies

Chapter-8.

CENTRAL NERVOUS SYSTEM DISEASES: (10hrs)

Must know

1. Clinical approach to a child with coma
2. Seizure disorders - Causes and types of convulsions at different ages. Diagnosis, categorization and management of epilepsy (broad outline).
3. Managing a convulsing child; status epilepticus.
4. Febrile convulsions - definition, types, management
5. Causes, diagnosis and management of Cerebral Palsy
6. Hydrocephalus in children
7. Clinical diagnosis, investigations and treatment of Acute Pyogenic Meningitis, Meningo-Encephalitis and Tubercular Meningitis
8. Gullain-Barre syndrome

Desirable to know

9. Microcephaly
Mental retardation
Brain abscess
Neurocysticercosis

Chapter-9.

HEMATOLOGICAL DISEASES: (12hrs)

Must know

1. Anemia in childhood. Classification based on etiology and morphology.
2. Epidemiology, recognition, diagnosis, management and prevention of nutritional anemia:
iron deficiency & megaloblastic .
3. Epidemiology, clinical features, investigations and management of Thalassemia
- Sickle cell Disorder
4. Clinical approach to a child with anemia
5. Approach to a Bleeding Child
6. Diagnosis of acute lymphoblastic leukemia and principles of treatment.
7. Clinical features and management of ITP
- Desirable to know**
8. Hemophilia
9. Aplastic anemia
10. Lymphomas
11. Blood components therapy

9th semester (27hrs)

Chapter-10.

GENITO-URINARY DISEASES: (7 hrs)

Must know

1. Approach to a child with Oedema, Proteinuria, Hematuria
2. Acute Post Streptococcal Glomerulonephritis
3. Nephrotic syndrome
4. Urinary Tract Infection
5. Acute Renal Failure
6. Chronic Renal failure
7. Principles of fluid and electrolyte therapy in children
8. Shock & Anaphylaxis

Desirable to know

9. Pathophysiology of acid-base imbalance and principle of management
10. Hemolytic Uremic Syndrome
11. Causes and diagnosis of Obstructive Uropathy in children.
12. Renal and bladder stones

Chapter-11.

NEONATOLOGY: (12hrs)***Must know***

1. Definition - live birth, neonatal period, classification according to weight and gestation, mortality rates
2. Etiology, clinical features, principles of management and prevention of birth asphyxia
3. Care of the normal newborn in the first week of life. Normal variations and clinical signs in the neonate
4. Breastfeeding--physiology of lactation, composition of breast milk, colostrums, initiation and technique of feeding. Exclusive breastfeeding - Definition and benefits. Characteristics and advantages of breast milk. Hazards and demerits of prelacteal feed, top milk and bottle feeding. Feeding of LBW babies. Problems in breastfeeding, BFHI, IMS Act .
5. Neonatal infections - etiology, diagnosis, principles of management. Superficial infections, sepsis (Neonatal septicemia & meningitis)
6. Neonatal jaundice: causes, diagnosis and principles of management(Phototherapy)
7. Low birth weight babies - causes of prematurity and small-for-date baby, clinical features and differentiation. Principles of feeding and temperature regulation. Problems of low birth weight babies (Preterm & LBW baby --gestational assessment & care)
8. Identification of congenital anomalies at birth with special reference to anorectal anomalies, tracheo-esophageal fistula, diaphragmatic hernia, neural tube defects
9. Identification of high risk/sick newborn (*i.e.*, detection of danger signs - cyanosis, jaundice, respiratory

distress, bleeding, seizures, refusal to feed, abdominal

distension, failure to pass meconium and urine

10. Neonatal Seizure -- diagnosis & approach

Transportation of a sick neonate

Desirable to know

1. Antenatal , Intranasal , Postnatal Risk Factors
2. Birth injuries - causes and their recognition (caput succedentum , cephalhematoma, brachial plexus injuries)

Recognition and management of specific neonatal

Problems: hypoglycemia, hypocalcaemia,

anemia, necrotizing enterocolitis, hemorrhage

Chapter-12.

COMMUNITY PEDIATRICS (3 hrs)

Must know

1. Definition and overview of Pediatrics with special reference to Population structure and Age-Related Disorders.
2. Pattern of Morbidity And Mortality In Children.
Maternal, Perinatal, Neonatal, Infant and Preschool Mortality rates.
3. Current National programs such as ICDS, RCH, Vitamin-A prophylaxis, UIP, Pulse polio, ARI, Diarrhea Control Program, Midday Meal Programme, Iodine deficiency disorders, IMNCI etc.
4. Baby Friendly Hospital Initiative

Desirable To Know

5. Definition, present status and measures for attainment of goals
6. Rights of Children

Chapter-13.

MISCELLANEOUS :(5hrs)

Must know

Common poisonings- Snakebite ,Kerosene poisoning ,Organophosphorous and Organochlorine poisoning
Congenital hypothyroidism
IDDM in children

1. Types of Genetic & Chromosomal disorders- Down's syndrome
2. Duchenne Muscular Dystrophy

3. Child Abuse and Neglect
4. Behavior disorders:
 - Juvenile Delinquency, Breath Holding Spell, Nocturnal Enuresis,
 - Temper Tantrums, Pica

Desirable To Know

1. Genetic Counseling
2. Management Of DKA
3. Goiter in children
4. Adoption

B.TOPICS FOR TUTORIALS(54hrs)**Semester VI & VII****27hours**

1. NIS Vaccines: BCG/OPV/IPV
2. NIS Vaccines :DPT/Measles/Hepatitis-B
3. Other vaccines :Typhoid/Hib/MMR/Varicella
4. Mother Child Protection Card
5. Infantometer/Stadiometer/ Weighing Machine: uses and demo
6. Percentile Tables on Growth : case exercises
7. WHO Growth Charts and use : case exercises
8. PEM classification- WHO,IAP: case exercises
9. 24 Hr Diet Chart- Recall Method
10. F-75 Diet
11. F-100 Diet
12. Weaning food
13. Balanced Diet for 1 year old child
14. Assisted Feeding in New Born – EBM/KSF/Gavage
15. Feeding bottles
16. Preparation of ORS
17. Interpretation of Investigation Reports: Stool - Viral Diarrhoea/Bacterial Diarrhea/Dysentery/ Worms
18. Plan-C Management of Severe Dehydration: Case Exercises
19. Lumbar Puncture and CSF Analysis
20. Bone Marrow Aspiration and Analysis
21. Drugs: Dextrose 10% / Normal Saline/Ringer Lactate
22. Drugs: Paracetamol / Artesunate / Quinine / Chloroquine / Primaquin/Sulphadoxin-Pyremethamine
23. Drugs: Cotrimoxazole/ Amoxicillin/ Gentamicin / Chloramphenicol
24. Drugs: Iron-folic acid / vitamin -A/K/D
25. Hand Washing

Semester VIII & IX (27hours)

1. Warm Chain: Wrapping a Baby, Kangaroo Care, etc.
2. Intrauterine Growth Chart : Case Exercises

3. Routine Care :Discussion And Demo
4. Neonatal Resuscitation Protocol: Initials Steps
5. Neonatal Resuscitation Protocol: Bag Mask Ventilation
6. Neonatal Resuscitation Protocol: Chest Compression
7. Neonatal Resuscitation Protocol: Demo on Mannequin
8. Common X-Ray-Films :Chest(Pneumonia/Pleural Effusion/Emphysema/Pneumothorax/Diaphragmatic Hernia/Hydropneumothorax/Hilar Adenopathy/Mediatinal Mass/Military Tuberculosis/Foreign Body/Bronchiolitis/Asthma,etc)
9. Common X-Ray Films: CVS(Cardiomegaly/Pericardial Effusion/ TOF /TGA/VSD/RHD/TAPVC,etc.)
10. Common X-Ray Films : Others(Intestinal Obstruction/Infantogram/Duodenal Atresia/Jejunal Atresia/Ileal Atresia/CHPS/Pneumo-Peritoneum/Foreign Body/Rickets/Hair-On-End,etc.)
11. Common X-Ray-Films : Others(CT-Ring Enhancing Lesion/Brain Abscess/Hydrocephalus/etc.)
12. Phototherapy : Demo
13. Radiant Warmer:Demo
14. Oxygen Cylinder And Delivery:Demo
15. Pulse Oximeter:Demo
16. Glucometer: Demo
17. Nebulizer: Demo
18. Intra-Osseous Infusion: Video Demo
19. Umbilical Vein Catheterization: Video Demo
20. Drugs: Adrenalin/Dopamine/Diazepam/Phenobarbital/Phenytoin
21. Interpretation of Investigation Reports: Urine(AGN/NS/UTI/Culture,etc.)
22. Interpretation of Investigation Reports: CSF(Pyogenic Meningitis/Tubercular Meningitis/Aseptic Meningitis/GB Syndrome/etc.)
23. Interpretation of Investigation Reports: Blood(Sepsis screen/ Nephrotic Syndrome/Acute Renal Failure/Viral Hepatitis/Obstructive Jaundice/Typhoid Fever/Malaria,etc.)
24. Interpretation of Investigation Reports: Blood(Hemolytic Anaemia/ ITP/Acute Leukaemia/Iron Deficiency Anemia/Thalassemia/Peripheral Blood Smear/CBC, etc.)
25. Interpretation of Investigation Reports: Others(HPLC/Hb- Electrophoresis/ Karyotyping/ Dentition/ Pedigree, etc)

C.TOPICS FOR CLINICAL SKILL

a)4th/5th semester- 4weeks

History taking:-(20 days=60hrs=6hrs / topic)

Biodata

Chief Complaints

History Of Present Illness
 Past History
 Perinatal History
 Nutrition History
 Developemental History
 Immunisation History
 Family And Socioeconomic history
 Treatment history.

b) 6th / 7th semester-2weeks –[IMNCI (with CM)-2wks+pediatrics- 2weeks=4wks]

(i) IMNCI(2weeks =12days=1.5hrs/day=18hrs)

The whole class will be divided into groups of 15-20 students each-one group will be posted at a time for IMNCI training by rotation.

Each day for the allotted group, there shall be a 'THEORETICAL BRIEFING' for 1hour at CM department. Practical (IMNCI) hall from 9.30am-10.30am followed by 'CLINICAL PRACTICE CLASS' at Pediatrics dept for 1 hour from 11am-12noon. The group will be preferably sub-grouped into batches of 5-8 and each batch to be given hand on skill training by one faculty.

The students will be supplied 'STUDENT'S HAND BOOK' on the first day of the training by the concerned department..

They will come prepared with a full reading of the scheduled chapter for the next day from the book.

Charts for case analysis and work up will be supplied at the practice class each day.

There shall be an EVALUATION on the last day at CM dept. on one 'case simulation exercise' test and at Pediatrics dept. on one 'case exercise' test. This shall count towards internal assessment in the concerned departments.

During the III-Professional MBBS–Part-I-Examination in CM there shall be one 'IMNCI case simulation exercise' in Practical examination for few marks.

During the III-Professional MBBS–Part-II-Examination in Pediatrics there shall be one 'IMNCI case exercise' in Practical examination for few marks.

(ii) PEDIATRICS:(2weeks= 10days=3hrs/day=30hrs)

General and Systemic Examination

Vitals

Anthropometry

Head-to-Toe Examination:

Oedema, jaundice, pallor, lymphadenopathy, cyanosis, clubbing, dyspnoea

Respiratory system examination

CVS examination

GI system examination

CNS examination
Locomotor system examination

c) 8th/9th semester-4 weeks: (6 weeks=40 days=3hrs/day=120hrs)

Diagnostic approach to common cases

Pneumonia
Pleural effusion/empyema/pneumothorax
Sickle cell anaemia
Thalassemia
PEM
Acute rheumatic Carditis
Arthritis
Hemiparesis/paraparesis
Meningitis
Ascites
Nephrotic syndrome
AGN
VSD
TOF
Jaundice
Hepatosplenomegaly
Lymphadenopathy
Chorea
Diarrhoea with dehydration
Newborn –normal, preterm, IUGR, Jaundice.
Ricket
Hepatosplenomegaly
Lymphadenopathy
Nutritional Anaemia
ITP
Malaria
Bronchiolitis
Typhoid fever
Other common diseases.

D. INTEGRATED SEMINARS

Topics	Participating Departments
1.Vaccines	Cm, Microbiology
2.Vitamin-A	Cm, Pharmacology, Physiology
3.Malnutrition	Cm
4.Sickle Cell Anaemia	Pathology, Medicine
5.HIV	Cm, Microbiology, Medicine
6.DOTS	Tbrd, Cm, Microbiology
7.DKA	Medicine, Pharmacology

8.Polio Eradication	Cm
9.Iron Deficiency Anemia	Pathology,Cm,Og
10.Neonatal And Childhood Mortality And Morbidity Indicators	Cm
11.Fever ,Antipyretics	Pharmacology
12.Bronchial Asthma	Tbrd,Medicine,Pharmacology
13.ICDS	Cm
14.MCP Card	Cm
15.Blood Transfusion	Medicine,Pathology,Microbiology

SCHEME OF EVALUATION

Subject	Total marks	Univ. examination marks			Int. Ass. Marks	
		Theory	Oral	Practical/ clinical	Theory	Practical
Pediatrics Paper. I	100	40 (20 each in part A & B)	10	30	10	10
Pass mark		40% in Theory(including Int. Ass.)	20/50			
		40% in Viva	4/10			
		50% in Theory (including Int. Ass.) including Viva	30/60			
		50% in Practical(including Int. Ass.)	20/40			
		35% in Internal Assessment (theory)	3.5/10			
		35% in Internal Assessment(practical)	3.5/10			
		50% of total aggregate	50/100			

INTERNAL ASSESSMENT SCHEDULE

Timing	Theory	Practical
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		Case	Viva	OSCE/ Spots	Record	Total
4 th /5 th semester	XX	15	--	---	5	20
6 th /7 th semester	40	10	5	---	5	20
	XX	10 (One IMNCI case: biodata-1, assess-2, classify-2, identify treatment-2 , treat-2, referral/follow up and counseling-1)	5	---	5	20
8 th /9 th semester	40	10	5	---	5	20
Pre-PMB test Mid-9 th semester	40	20 (long case-10; short case-5; IMNCI (new born-5))	10	5	5	40
Total	120	Total				120
Sending	Secured mark/12 (out of 10)	Secured mark/12 (out of 10)				

UNIVERSITY EXAMINATION:**I.Theory**

There shall be one theory paper for 40 marks to be answered in 2 hours time. There shall be two sections A and B each with 20 marks to be answered in separate answer sheets during the same paper.

ii)Section-wise chapters**SECTION-A**

Growth & Development, Immunisation, Infectious Diseases & Poisonings,
Respiratory Diseases, Gastro Intestinal Diseases, Genito-Urinary Diseases, Nutrition.

SECTION-B

Cardio-Vascular Diseases, Hematological Diseases, Central Nervous System Diseases, Genetic, Endocrinal, Metabolic & Miscellaneous Disorders, Neonatology, Social Pediatrics & Psychological, Behavioral Problems, Common Pediatric Surgical Problems.

iii) Distribution of marks in question paper:

Type of question	Weightage	No of questions	Marks in Section-A	Marks in Section-B
Very Short Answer Type (VSQ)	20%	0.5 mark each X8	04	04
Structured Essay Answer Type (SEQ)	20%	4 marks X1	04	04
Short Answer Type (SQ)	60%	2 marks each X6	12	12
Total in Section			20	20
			40 marks	

iv) Model questions

III-PMB-Part-II-EXAMINATION

PEDIATRICS

PAPER 1

Full Mark-40

TIME-2 hours

[Answer all questions. Use separate answer books for section-A and section-B. Draw diagrams wherever indicated. Marks are indicated vide figures at the right margin.]

Section-A

Q.1. Answer the following in a few words. [1/2 mark × 8 = 4 marks]

- a. At which age a child learns to wave bye bye?
- b. If the father and mother are short, the child is also expected to be of short height; what type of short stature is it?

- c. Folate supplementation is useful in Sickle cell anaemia. Justify?
- d. Say whether Sugary fruit juice is useful as a rehydrating fluid for diarrhoea and tell why?
- e. Name a cause of atypical pneumonia in children ?
- f . BCG can be given upto 5 years (True/False).
- g. What is the meaning of the word ‘ kwashiorkor’ ?
- h. Name a vaccine not recommended below 2yrs of age-

Q.2 .Outline the Management of Severe Childhood Undernutrition? [2+2=4marks]

Q.3.Shortly answer the following. [2marks×6=12 marks]

- a. Breath holding spell
- b. Chelation in thalassemia
- c. Low osmolar ORS
- d. Artemisinin Combination Therapy
- e. Stages of Pertusis.
- f. Dosage schedule of rotavirus vaccine and its complications

Section-B

Q.1.Answer the following in a very few words? [1/2mark× 8 =4 marks]

- a. At which age VSD classically manifests ?
- b. Name the drug of choice for rheumatic arthritis?
- c. Lumbar puncture is seldom indicated in typical febrile seizure. Reason.
- d. A Mongol child must be screened with a 2D-Echo test. Reason.
- e. Name two complications of Pica ?
- f. Name two danger signs in a newborn ?
- g. Now resuscitation may be done in room air (True/False)
- h. Name an oral drug for PDA closure ?

2 .Enumerate the causes and clinical features for CHF in a 5 yr old ?

[2+2=4marks]

3. Shortly answer the following. [2marks×6=12 marks]

- a.Stages of TBM and its management.

b.Features of Congenital hypothyroidism.

c.Complications of TOF .

d.Define AFP and enumerate its D/D.

e. CSF finding in Pyogenic meningitis

f.Management of simple Febrile Seizure .

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II.ORAL-CLINICAL-PRACTICAL EXAMINATION-

A.PRACTICAL EXAMINATION: (30marks)[detailed in table below]

i)Clinical-(20marks)

There shall be one long and 2 short cases for clinical examination of the students.

ii)OSCE/Spots-(10 Marks)

Ten marks will be there for 10 spots or OSCE stations with one mark each.

B.VIVA EXAMINATION; (10 Marks)

Two panels of examiners comprising of one external and one internal in each shall be evaluating for 5marks each.

Viva assessment will evaluate the overall knowledge & skill of the

candidate based on instruments , X-rays , charts,drugs,clips,images,common investigation data ,etc. covering case management.

Segments	Work Up Time	Structured Marking	Marks
One Long Case	40 mts	Presentation-2, Clinical Skills-2, Approach & analysis-2, Differential diagnosis-2, Management-2	10

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One Neonate As IMNCI Case	20 mts	Bio-data-0.5 Assess-1.5 Classify-0.5 Identify treatment and treat-2 Referral note/Follow up/Counsel-1	05
One Non-Neonate Short Case	20 mts	Presentation-2 Clinical skill-2 Analysis-1	05
Ten OSCE/Spots	10 stations	Observation station-5 Question station-5	10
Viva –Panel-1 (one external and one internal)	Charts, Images, Clips , X-Rays, Lab Reports	--	05
Viva –Panel-2 (on external and one internal)	Nutrients, Vaccines, Instruments, Drugs	--	05
Total			40

INTERNSHIP:

There shall be a period of compulsory internship for one month in the discipline of Pediatrics after the final examination in MBBS.

RECORDS

- 1)IMNCI record
- 2)Pediatrics Case record

TEXT BOOKS SUGGESTED

- 1) Essential Pediatrics by O.P.GHAL.
- 2) Pediatrics Clinical Method by MEHERBAN SINGH.
- 3) IAP Text Book of Pediatrics.

4) Pediatrics Drugs & Doses by MEHERBAN SINGH.

REFERENCE BOOKS SUGESTED

- 1) Nelson Text Book of Pediatrics
- 2) New born Care by MEHERBAN SINGH
- 3) Hutchinson Clinical Methods

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