



FAZAIA RUTH
PFAU MEDICAL
COLLEGE



CURRICULUM OF MBBS PROGRAM

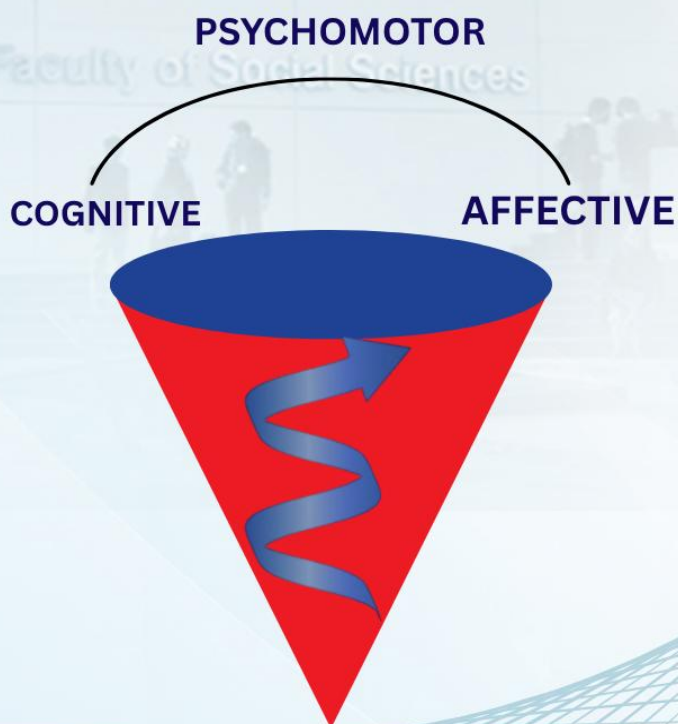




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Message from the Vice Chancellor



It is a privilege to lead an institution which has excelled in teaching, learning, and interdisciplinary research with a wide range of undergraduate, master, and Ph.D. programs in cutting-edge technologies. At Air University we are committed to fostering an environment of academic excellence, innovation, and leadership development.

Our Mission is to provide quality education in emerging disciplines, research opportunities, and holistic development of our students, preparing them to meet the challenges of the modern world and excel in their chosen fields. We strive to equip our graduates with the skills, competencies, and knowledge needed to make meaningful contributions to society. Through our dedicated faculty, state-of-the-art facilities, and collaborative partnerships, we aim to create a dynamic learning community where ideas thrive and innovation flourishes. I encourage all members of the Air University family to embrace curiosity, pursue excellence, and embrace the values of integrity, professionalism, and service to the nation.

As we embark on this journey together, let us uphold the proud traditions of Air University and work towards a future filled with promise and opportunity. Together we can soar to new heights and achieve excellence.

AIR MARSHAL (R) ABDUL MOEED KHAN, HI(M)

Message from the Principal



It gives me great pleasure and honour to assume the responsibilities of Principal Fazaia Medical College. The college is going through the initial stage of its journey, and its first batch of students is preparing for the final professional examination. I can see the foundation of proud Fazaia Medical College alumni being laid. I am sure that first batch will be the flag bearer and will set great traditions for the juniors. The founder Principal Maj Gen Salman Ali HI(M) and his team worked hard to start the academics, both in basic sciences and clinical teaching.

I take great pride and privilege to continue the same mission of preparing students to help shape the future of healthcare. All the faculty members and myself will try our best to equip our graduates with the professionalism, attitude, expertise, practical skills and requisite outlook needed to lead the health profession and bring the change nationally and globally.

We will always carry the core values of respect, responsibility, integrity, conscientiousness, honesty, cultural values, research and academic excellence. I look forward to get regular feedback from all staff, faculty members and students, especially for the evaluation and improvement of teaching and learning environment at Fazaia Medical College.

MAJ.GEN.MUHAMMAD TAHIR KHADIM HI (M) (R)
MBBS, MCPS, FCPS, FRCP, ADV.DIP HPE, PH.D



VISSION AND MISSION

Fazaia Medical College –Air University



VISION:

Air University aspires to be among the leading national universities, excelling in teaching, learning, research, innovation and public service.

AU MISSION:

“The mission of Air University is to achieve excellence in teaching and research for producing graduates with sound professional knowledge, integrity of character, a keen sense of social responsibility and a passion for lifelong learning. The University shall stand committed to creating an environment conducive for attracting the best students, faculty and supporting staff for contributing to the development of a prosperous, peaceful and enlightened society.

FMC MISSION STATEMENT:

“Our mission is to serve the health care needs of the community in general and PAF Personnel in particular by providing Healthcare practitioners of the Highest international standards giving due consideration to our cultural and ethical norms with penchant for Research”

FACULTY BOARD OF STUDIES	
1.	Maj. Gen. Muhammad Tahir Khadim HI (M) (R)
2.	Brig. Prof. Dr. M. Mazhar Hussain, SI (M), (R)
3.	Brig. Prof. Dr. Rizwan Hashim (R)
4.	Brig. Prof. Farooq Dar (R)
5.	Brig. Prof. Muhammad Azam Khan (R)
6.	Air. Cdr. Prof. Dr. Asif Niaz
7.	Prof. Dr. Tallat Najeeb
8.	Prof. Dr. Shamsa Rizwan
9.	Prof. Dr. Asma Shabbir
10.	Prof. Dr. Rukhsana khan
11.	Prof. Dr. Aaisha Qayyum
12.	Prof. Dr. Kiran Kamran
13.	Prof. Dr. Kiran Muneera
14.	Dr. Anwaar Ahmed

CURRICULUM DEVELOPMENT TEAM 2019	
1.	Maj. Gen. Salman HOD/Pediatrics / Principal FMC
2.	Brig. Prof. Dr. M. Mazhar Hussain, SI (M), (R)
3.	Brig. Prof. Dr. Rizwan Hashim (R)
4.	Brig. Prof. Dr. Muhammad Azam Khan (R)
5.	Prof. Dr. Javed Iqbal Khattak
6.	Prof. Dr. Tallat Najeeb
7.	Prof. Dr. Sajida Bano
8.	Prof. Dr. Kiran Kamran
9.	Prof. Dr. Aisha Qayyum
10.	Prof. Dr. Ashfaq Ahmed Javed
11.	Prof. Dr Rizwan Hameed
12.	Prof. Dr. Chaudhry Aqeel Safdar
13.	Prof. Dr. Ghazala Mahmood
14.	Prof. Dr Zaheer Ahmed
15.	Prof. Dr. Zeba Munzar
16.	Prof. Dr. Zubaida Zain
17.	Dr. Anwaar Ahmed

CURRICULUM REVIEW TEAM 2023

1.	Maj. Gen. Muhammad Tahir Khadim HI (M) (R)
2.	Brig. Prof. Dr. M. Mazhar Hussain, SI (M), (R)
3.	Brig. Prof. Dr. Rizwan Hashim (R)
4.	Brig. Prof. Dr. Farooq Dar (R)
5.	Brig. Prof. Dr. Muhammad Azam Khan (R)
6.	Air. Cdr. Prof. Dr. Asif Niaz
7.	Prof. Dr. Tallat Najeeb
8.	Prof. Dr. Shamsa Rizwan
9.	Air. Cdr. Dr. Muneeza Rizwan
10.	Prof. Dr. Muhammad Tahir
11.	Prof. Dr. Asma Shabbir
12.	Prof. Dr. Rukhsana khan
13.	Prof. Dr. Muhammad Nafees
14.	Prof. Dr. Muhammad Usman
15.	Prof. Dr. Aaisha Qayyum
16.	Prof. Dr. Kiran Kamran
17.	Prof. Dr. Kiran Muneera
18.	Prof. Dr. Zubaida Zain
19.	Dr. Anwaar Ahmed

MBBS YEAR/PHASE I CURRICULUM	
SUBJECT SPECIALISTS	
ANATOMY	
01	Prof. Dr. Kiran Kamran
02	Dr. Ruqia Bilal Minhas
03	Dr. Saima Sohail
04	Dr. Hina Zaid
BIOCHEMISTRY	
01	Prof. Dr. Kirn-e-Muneera
02	Dr. Maheen Tahir
03	Dr. Humera Usman
04	Dr. Bushra Ghulam
PHYSIOLOGY	
01	Prof. Dr. Muhammad Mazhar Hussain
02	Prof. Dr. Sadia Moazzam
03	Dr. Sobia Waqas
04	Dr. Shahida Awais
05	Dr. Nadia Latif
BEHAVIORAL SCIENCES	
01	Dr. Semra Salik
PSYCHIATRY	
01	Prof. Dr. Rashid Qayyum
COMMUNITY MEDICINE	
01	Prof. Dr. Rukhsana Khan
02	Dr. Arshia Bilal
03	Dr. Juwayria Omar
04	Dr. Saleha Afridi
06	Dr. Mahwash Akhtar Qureshi
OTORHINOLARYNGOLOGY (ENT)	
01	Prof. Dr. Tallat Najeeb
02	Dr. Amer Sabih Hydri
03	Dr. Muhammad Tahir Shah
FORENSIC MEDICINE AND TOXICOLOGY	
01	Prof. Dr. Zubaida Zain
02	Dr. Anwaar Ahmed
GENERAL SURGERY	
01	Prof. Dr. Muhammad Farooq Dar
02	Prof. Dr. Mannan Masud
03	Prof. Dr. Muhammad Nazim Khan
04	Dr. Fahad Mudassar Hameed
05	Dr. Irmaghana Basharat
06	Dr. Sidra Shabbir
07	Dr. Nauman Rana

08	Dr. Atia Khatoon
09	Dr. Aaishah Riaz
10	Dr. Shahzad Akhtar
MEDICINE	
01	Prof. Dr. Muhammad Tahir
02	Prof. Dr. Manzar Zakaria
03	Prof. Dr. Muzaffar Latif Gill
04	Prof. Dr. Asif Niaz
05	Dr. Uzma Batool
06	Dr. Ammarah Saeed
07	Dr. Hina Saghir
08	Dr. Muhammad Shoaib
09	Dr. Farrukh Zahra
10	Dr. Qaisar Iqbal
11	Dr. M. Tarique
CARDIOLOGY	
01	Dr. Mubarra Nasir
02	Dr. Hafiz Muhammad Shafique
NEUROSURGERY	
01	Dr. Muhammad Usman
OBSTETRICS & GYNAECOLOGY	
01	Prof. Dr. Shamsa Rizwan
02	Prof. Dr. Nargis Shabana
03	Dr. Amina Akbar
04	Dr. Rakhshanda Aslam
05	Dr. Shehnaz Sheeba
06	Dr. Umbreen Idrees
07	Dr. Samia Arif
09	Dr. Shakra Tabasam
10	Dr. Moizza Aziz
OPHTHALMOLOGY	
01	Prof. Dr. Muhammad Azam Khan
02	Prof. Dr. Ayisha Shakeel
03	Dr. Maria Saleem
04	Dr. Shaista Haider
05	Dr. Huma Zainab
PATHOLOGY	
01	Prof. Dr. Muhammad Tahir Khadim
02	Prof. Dr. Rizwan Hashim
03	Prof. Dr. Umme Farwa
04	Dr. Bushra Anwar
05	Dr. Shahzad Azam
06	Dr. Farida Khurram Lalani
07	Dr. Masooma Shaheen

08	Dr. Fariyal Safdar(microbiology)
09	Dr. Farah Ahsan(histopathology)
PEDIATRICS	
01	Prof. Dr Asma Shabbir
02	Dr. Imran Mahmood Khan
03	Dr. Alia Halim
04	Dr. Mariam Raza
06	Dr. Ali Raza
PHARMACOLOGY	
01	Prof. Dr. Aisha Qayyum
02	Dr. Imrana Maqsood Khan
03	Dr.Nimra Ijaz
UROLOGY	
01	Dr. Muhammad Jamal Khan
02	Dr.Tanveer Khan
03	Dr.Muhammad Imran Jamil
DERMATOLOGY	
01	Prof. Dr. Muneeza Rizwan
02	Dr. Kiren Shaheryar
ANESTHESIA	
01	Prof. Dr. Saleem Ahmed
02	Dr. Abdul Hameed Bhatti
03	Dr. Ayesha
GASTROENTEROLOGY	
01	Dr. Arslan Shahzad
02	Dr. Rabia Tariq
PEADIATRIC SURGERY	
01	Dr. Sulman Bajwa
NEPHROLOGY	
01	Prof. Dr.Muhammad Usman
02	Dr. Zahid Ahmed
03	Dr. Saima Bashir
CARDIAC SURGERY	
01	Dr. Ahmad
RHEUMATOLOGY	
01	Dr. Sajid Naseem
02	Dr. Naveed Aslam
ORTHOPEADICS	
01	Dr. Aamar Munir
02	Dr. Umar Zia Khan
03	Dr. Rana Shahbaz

DEPARTMENT OF MEDICAL EDUCATION

01	Maj. Gen. Muhammad Tahir Khadim HI (M) ®
02	Brig. Prof. Dr. Rizwan Hashim (R)
03	Dr. Tahira Ayub
04	Dr. Maryam Aziz
05	Dr. Marium Sohail
06	Dr. Saadia Hayee Shaikh
07	Dr. Anam Tahir

CREATIVE DESIGN

01	Mr. M Waseem Khan
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YEARLY CURRICULUM FRAMEWORK		
1.	ANATOMY	
	(Year-I)	
	<u>BLOCK-I</u> i. Foundation ii. Musculoskeletal -1 iii. Hematopoietic & Lymphoid <u>BLOCK-II</u> i. Musculoskeletal - 2 <u>BLOCK- III</u> i. Thorax / Respiratory Module	
2.	PHYSIOLOGY	
	(Year-I)	
	<u>BLOCK -I</u> i. Foundation ii. Neuromuscular iii. Blood Physiology <u>BLOCK -II</u> i. Cardiovascular <u>BLOCK -III</u> i. Respiratory and Unusual Environment	
3.	BIOCHEMISTRY	
	(Year-I)	
	<u>BLOCK-I</u> i. Foundation ii. Musculoskeletal – I iii. Haemopoietic and Lymphoid <u>BLOCK-II</u> i. Musculoskeletal – II ii. Cardiovascular System <u>BLOCK-III</u> i. Thorax / Respiratory ii. Nutrients and Nutrition	

1	ANATOMY	
	(Year-II)	
	<u>BLOCK-I</u> i. Gastrointestinal ii. Genitourinary iii. Hematopoietic & Lymphoid <u>BLOCK-II</u> i. Neurosciences <u>BLOCK-III</u> i. Head & Neck Special Senses ii. Reproduction	

2	PHYSIOLOGY	
	(Year-II)	
	<u>BLOCK-I</u>	
	i. Gastrointestinal & liver ii. Genitourinary	
3	<u>BLOCK-II</u>	
	i. Neurosciences	
	<u>BLOCK-III</u>	
	i. Special Senses, Endocrines and Reproduction	
4	BIOCHEMISTRY	
	(Year-II)	
	<u>BLOCK-I</u>	
	i. Gastrointestinal ii. Genitourinary	
5	<u>BLOCK-II</u>	
	i. Neurosciences	
	<u>BLOCK-III</u>	
	i. Head & Neck Special Senses ii. Endocrines and Reproduction	
4	ISLAMIYAT	
5	PAK STUDIES	

PHARMACOLOGY		
(Year-III)		
1.	<u>BLOCK-I</u>	
	i. General Pharmacology	
	ii. Drugs Acting on Autonomic Nervous System	
	iii. Drugs Acting on Blood	
	iv. Drugs Acting on Cardiovascular System	
	v. Skills / Practicals	
	<u>BLOCK-II</u>	
	i. Diuretics	
	ii. Chemotherapeutic Agents	
	iii. Endocrine Drugs	
2.	iv. Drugs Acting on Gastrointestinal Tract	
	v. Skills / Practicals	
	<u>BLOCK-III</u>	
	i. Drugs Acting on Central Nervous System	
	ii. Analgesics	
	iii. Drugs Acting on Respiratory System	
	iv. Miscellaneous Topics	
	v. Skills / Practicals	
	Forensic Medicine & Toxicology	
	(Year-III)	

	<u>BLOCK-I</u> i. Introduction to Forensic Medicine & toxicology ii. General Toxicology iii. Thanatology iv. Autopsy & Exhumation v. Personal identity vi. Mechanical Injuries vii. Qisas & Diyat Ordinance <u>BLOCK-II</u> i. Firearm injuries ii. Blast injuries iii. Regional injuries iv. Thermal injuries v. Electrical injuries vi. Transportation injuries vii. Death due to starvation viii. Special toxicology <u>BLOCK-III</u> i. Asphyxial Deaths ii. Pregnancy, Delivery, Abortion iii. Impotence, Virginity, Sterility iv. Sexual Offences v. Infanticide vi. Forensic Psychiatry vii. Blood Stain Analysis viii. Pakistan Medical & Dental Council Ordinance ix. Law & Legal Procedures x. Legal Aspects of Medical Practice xi. Special toxicology	
General Pathology & Microbiology		
	(Year-III)	
3.	<u>BLOCK-I</u> i. Cell Injury ii. Inflammation iii. General Bacteriology iv. Special Bacteriology <u>BLOCK-II</u> i. Hemostasis ii. Neoplasia iii. Immunity iv. Parasitology v. Mycobacteria <u>BLOCK-III</u> i. Overview of Virology ii. Overview of Mycology iii. Genetic Disorders iv. Nutritional Disorders	

SPECIAL PATHOLOGY		
	(Year-IV)	
1.	<u>BLOCK-I</u> i. Heart ii. Gastrointestinal tract iii. Lungs iv. Blood Vessels v. Hematology vi. Hepatobiliary tract <u>BLOCK-II</u> i. Male and Female Genital Tracts ii. Breast iii. Kidney iv. Chemical Pathology v. Leukemias and Lymphomas <u>BLOCK-III</u> i. Central nervous system ii. Coagulation disorders iii. Endocrine System iv. Skin	
COMMUNITY MEDICINE		
	(Year-I)	
	<u>BLOCK-I</u> i. Important definitions ii. Importance of community medicine iii. History and health care revolution iv. Primary health care, Health for all v. MDGs & SGDs <u>BLOCK-II</u> i. Concept of Health & Disease ii. Introduction to epidemiology	
2.	(Year-II) <u>BLOCK-I</u> i. Disinfection ii. Uses of epidemiology iii. Introduction to communicable diseases iv. Introduction to non-communicable diseases (Year-III) <u>BLOCK-I</u> i. Growth & Development parameters ii. Intro to health system & health system in Pakistan. iii. Nutrition profile of principal food. iv. Basic measurement in epidemiology. v. Non communicable diseases	

	vi. Household survey <u>BLOCK-II</u> i. Hospital waste management ii. Disaster management iii. School health services iv. An introduction to zoonoses v. Non communicable disease vi. International health vii. Household survey <u>BLOCK-III</u> i. Water & environment ii. Housing & health iii. Noise & radiation iv. Juvenile delinquency v. Occupational health (Year-IV) <u>BLOCK-I</u> i. Principles of epidemiology ii. Epidemiological methods iii. Basic medical statistics iv. Screening for disease v. Sampling vi. Demography and family planning vii. Research <u>BLOCK-II</u> i. Epidemiology of communicable diseases ii. Zoonosis iii. Surface infections iv. Emerging and reemerging infections v. Research vi. Epidemiology of non-communicable diseases <u>BLOCK-III</u> i. Preventive Medicine in Pediatrics ii. Preventive Medicine in Obstetrics iii. Preventive Medicine in geriatrics iv. Medical parasitology v. Medical entomology vi. HMIS & Hospital administration vii. School health services viii. Health planning and health education ix. Non communicable disease x. Snake bite xi. Environment xii. Research	
OPHTHALMOLOGY (EYE)		
	(Year-III)	
	<u>BLOCK-I</u> i. Introduction to Ophthalmology	

	ii. Anatomy and Physiology of the Eye iii. Symptoms of Eye Diseases iv. Signs of Eye Diseases v. Pharmacology in Ophthalmology (YEAR-IV)	
3.	<u>BLOCK-I</u> i. Introduction to the Eye and Ocular disease ii. Orbit: 3rd, 4th and 6th nerve iii. Lacrimal apparatus/ epiphora iv. Thyroid Eye Diseases v. Eyelids 1 (Blepharitis, chalazion, sty, basal cell CA) vi. Eye lids 2 (entropion, ectropion, ptosis) vii. Conjunctiva viii. Cornea 1 (Ulcer, viral keratitis) ix. Cornea 2 (Keratoconus, Keratoplasty) x. Minor operative procedures of the eye and surgical instruments <u>BLOCK-II</u> i. Uveitis ii. Ocular Trauma iii. Neurophthalmology iv. Optic Nerve Diseases v. Squint <u>BLOCK-III</u> i. Cataract ii. Glaucoma iii. Retinal Diseases iv. Refractive Errors	
ENT		
4.	(Year-III) <u>BLOCK-I</u> i. Anatomy of Oral Cavity ii. Common Disorders of Oral Cavity iii. Tumors of Oral Cavity iv. Anatomy of tonsils v. Acute and chronic tonsillitis vi. Tonsillectomy (Year-IV) <u>BLOCK-I</u> i. Anatomy & Physiology of Ear ii. Audiology and Acoustics iii. Assessment of Hearing	

- iv. Hearing loss
- v. Assessment of Vestibular Functions
- vi. Disorders of Vestibular System
- vii. Diseases of External Ear
- viii. Eustachian Tube and Its Disorders
- ix. Disorders of Middle Ear
- x. Cholesteatoma and Chronic Otitis Media
- xi. Complications of Suppurative Otitis Media
- xii. Otosclerosis (Syn. Otospongiosis)
- xiii. Facial Nerve and Its Disorders
- xiv. Meniere's Disease
- xv. Tumors of External Ear
- xvi. Tumors of Middle Ear and Mastoid
- xvii. Acoustic Neuroma
- xviii. Operative procedures of ear

BLOCK-II

- i. Anatomy & physiology of nose and paranasal sinuses
- ii. Diseases of external nose and nasal vestibule
- iii. Nasal Septum and Its Diseases
- iv. Acute and Chronic Rhinitis
- v. Granulomatous Diseases of Nose
- vi. Miscellaneous Disorders of Nasal Cavity
- vii. CSF rhinorrhea
- viii. Allergic Rhinitis
- ix. Vasomotor and Other Forms of Non-Allergic Rhinitis
- x. Nasal Polypi
- xi. Epistaxis
- xii. Trauma to the Face
- xiii. Acute Sinusitis and Chronic Sinusitis
- xiv. Complications of Sinusitis
- xv. Benign and malignant neoplasms of nose and paranasal sinuses
- xvi. Operative procedures of nose and paranasal sinuses
- xvii. Adenoids and Other Inflammations of Nasopharynx
- xviii. Tumors of Nasopharynx

BLOCK-III

- i. Anatomy and Physiology of Larynx
- ii. Laryngo-tracheal Trauma
- iii. Acute and Chronic Inflammations of Larynx
- iv. Congenital Lesions of Larynx and Stridor
- v. Laryngeal Paralysis
- vi. Benign Tumors of Larynx
- vii. Cancer Larynx

	viii. Voice and Speech Disorders ix. Tracheostomy and Other Procedures for Airway Management x. Foreign Bodies of Aero Digestive Passages xi. Anatomy and Physiology of hypopharynx, esophagus xii. Disorders of esophagus, Dysphagia, Tumors of the Hypopharynx and Pharyngeal Pouch xiii. Non-neoplastic Disorders of Salivary Glands, Neoplasms of Salivary Glands xiv. Neck Masses xv. Recent Advancement in ENT	
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MEDICINE & ALLIED		
	(Year-I)	
	i. General Medicine	
	(Year-II)	
	ii. General Medicine	
	(Year-III)	
	i. Cardiovascular System	
	ii. Pulmonology	
	iii. Dermatology	
	(Year-IV)	
	iv. Psychiatry	
	v. Rheumatology	
	vi. Gastroenterology	
	vii. Hematology	
	viii. Dermatology	
	(Year-V)	
	i. Central Nervous System	
	ii. Endocrinology	
	iii. Infectious Diseases	
	iv. Nephrology	
	v. Metabolic Disorders & Emergency Poisoning	
1.		

SURGERY & ALLIED

(Year-I)

- i. Applied Anatomy of Femoral Hernia
- ii. Applied Anatomy of injuries of Knee Joint
- iii. Applied Anatomy of Varicose Veins

(Year-II)

- i. Applied Anatomy of Benign Prostatic Hyperplasia & Prostatic Carcinoma
- ii. Applied Anatomy of Fractures of Skull
- iii. Applied Anatomy of Complication of Thyroidectomy

(Year-III)

I.

- i. Introduction to trauma and Orthopedics
- ii. Metabolic response to injury
- iii. Shock-I
- iv. Shock-II
- v. Principles of Fracture Treatment
- vi. Haemorrhagic Shock & Blood Transfusion
- vii. Wound Healing & Wound Care (acute and chronic)
- viii. Infections-I
- ix. Surgical Site Infections-II
- x. Primary Trauma Care

II.

- i. Fluid and Electrolyte Balance
- ii. Nutrition in Surgical Patient
- iii. Burns-I
- iv. Burns-II
- v. Malignant Skin Lesions
- vi. Infection of Bones and Joints
- vii. Head and Spine Injury
- viii. Neck Swellings
- ix. Oropharyngeal Ca

III.

- i. Disorders of Salivary Glands
- ii. Thyroid-I
- iii. Thyroid-II
- iv. Parathyroid Gland
- v. Adrenal Gland Disorders
- vi. Benign Breast Conditions
- vii. Malignant Breast Conditions
- viii. Arterial Disorders
- ix. Venous Disorders

2.

	(Year-IV) <u>I.</u> i. Thoracic Outlet Syndrome ii. Intracranial Infections iii. Head Injury-I iv. Head Injury-II v. Tumors of CNS & PNS <u>II.</u> i. Skin Module ii. Respiratory Module iii. Anesthesia & Pain Module iv. GIT Module <u>III.</u> v. Endocrine (Year-V) <u>I.</u> i. Kidney Urethra Bladder ii. Neuromuscular Disorder iii. Infective / inflammatory conditions of bone, joints iv. Bone & soft tissue tumors (benign and malignant) v. Musculoskeletal metabolic disorders vi. Soft tissue disorders vii. Trauma and sports injuries viii. Radiology	
OBSTETRICS AND GYNAECOLOGY		
	(Year-III) <u>Topic</u> i. Introduction to the module ii. Common definitions in Obstetrics and gynecology iii. Physiological changes in pregnancy (Physiology) iv. Antenatal care (ANC) v. Danger signs in pregnancy vi. Routine investigations for ANC vii. Prescribing in pregnancy viii. Public health aspect of antenatal care ix. Common Symptoms in Pregnancy x. Female pelvis and Anatomy of fetal skull xi. Physiology of normal labor xii. Mechanism of normal labor xiii. Management of labour and delivery	

- xiv. Postnatal care
- xv. Bleeding in early pregnancy
- xvi. Management of miscarriages
- xvii. Ectopic pregnancy

(Year-IV)

OBSTERTICS

- i. Pre-pregnancy care
- ii. Anemia in Pregnancy
- iii. Hypertensive disorders
- iv. Diabetes in pregnancy
- v. Heart disease in pregnancy
- vi. Liver disease in pregnancy
- vii. Respiratory, Renal and disease in pregnancy
- viii. Epilepsy and Thyroid disease in pregnancy
- ix. PPH
- x. Oligo/ poly hydramnios
- xi. Preterm labor/ Pre PROM
- xii. Post term-IOL

GYNAECOLOGY

- i. Menstrual disorders
- ii. Amenorrhea
- iii. Infertility
- iv. Contraception
- v. Management of miscarriages
- vi. Trophoblastic tumors
- vii. APH
- viii. Fetal surveillance and distress
- ix. IUGR
- x. Breech
- xi. Other malpresentation/ malposition
- xii. Multiple pregnancy
- xiii. Abnormal labour
- xiv. Complications of 3rd stage of labor
- xv. Puerperal problems
- xvi. Operative delivery
- xvii. Perinatal Mortality

(Year-V)

OBSTERTICS

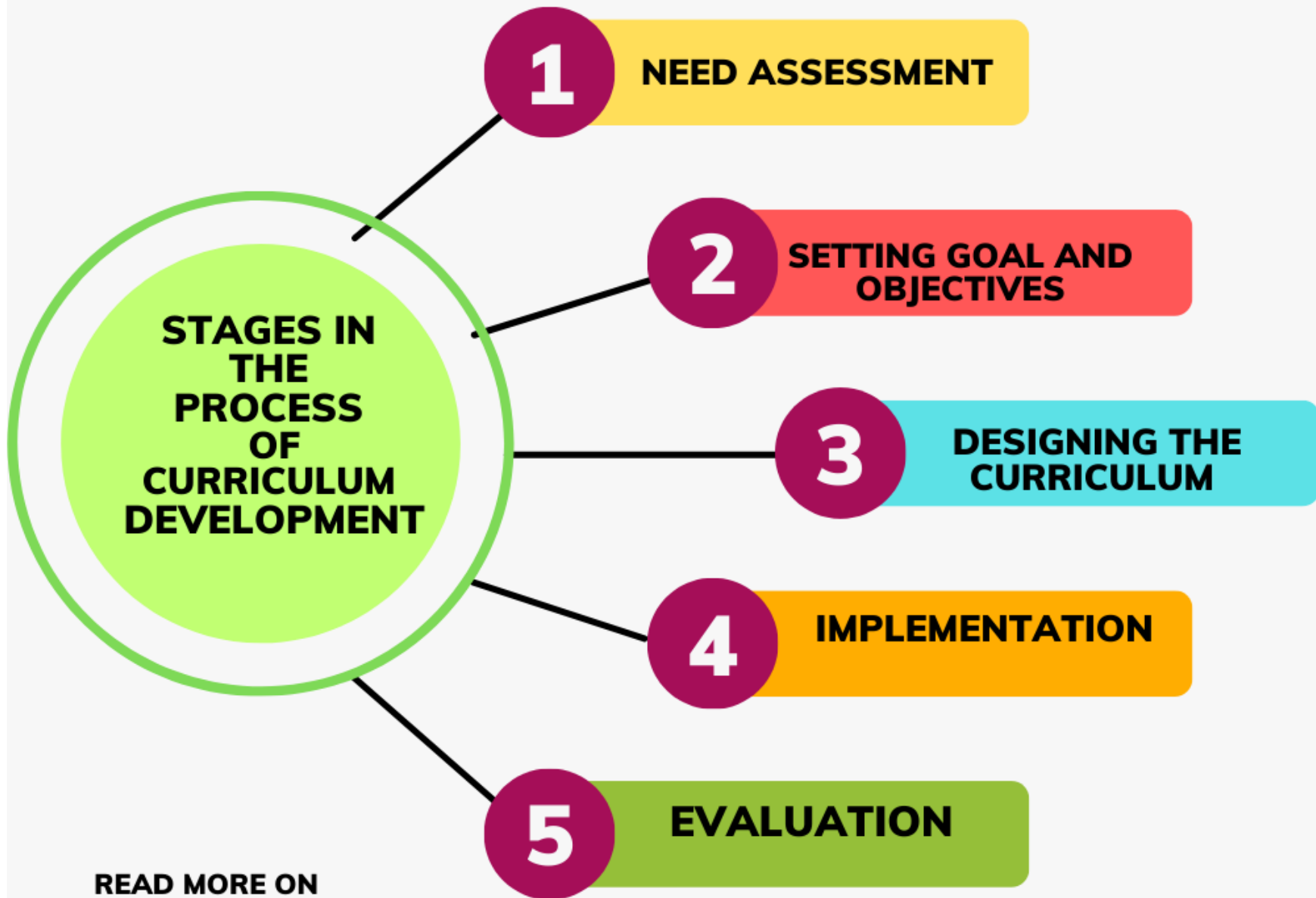
- i. Maternal mortality- Near miss safe motherhood
- ii. Obstetric Collapse
- iii. IUD
- iv. Prenatal Diagnosis-Possible Disorders
- v. Prenatal Diagnosis-Tests
- vi. Thromboembolism in pregnancy
- vii. Thrombocytopenia in Pregnancy

- viii. Imaging in Obstetrics
- ix. Recurrent Pregnancy losses
- x. Obstetric emergencies
- xi. Obstetric emergencies
- xii. Resuscitation of newborn
- xiii. Rh incompatibility
- xiv. Hydrops Fetalis
- xv. Neural Tube defects
- xvi. Perinatal infections
- xvii. Psychosocial issues in pregnancy and postpartum

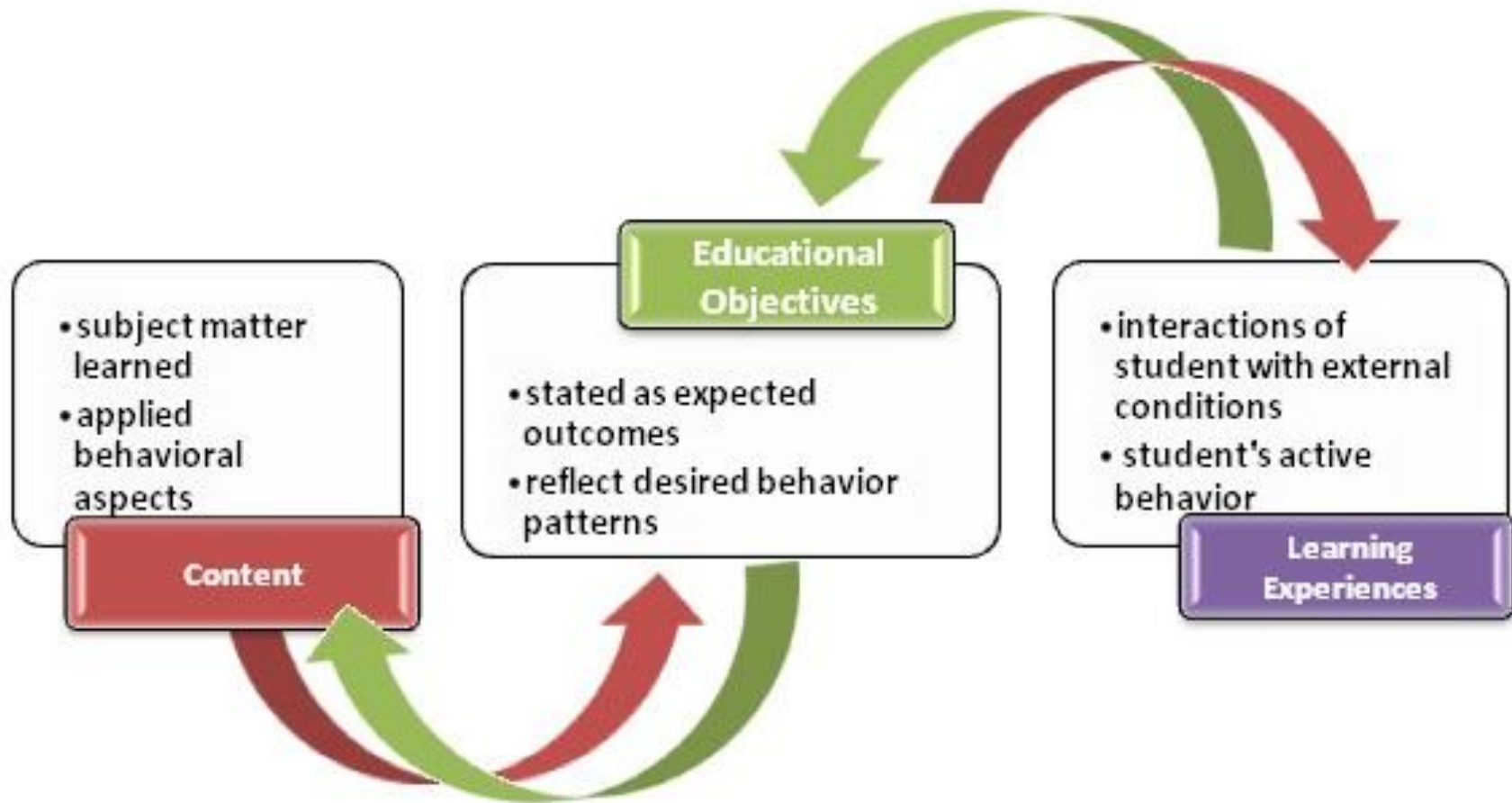
GYNAECOLOGY

- i. UV Prolapse
- ii. Urogynecology-
- iii. Urinary Incontinence
- iv. Puberty and adolescence
- v. Chronic pelvic Pain- PID
- vi. Chronic pelvic pain – endometriosis
- vii. Genital tract infections –STD and STI
- viii. Menopause
- ix. Osteoporosis
- x. Benign Ovarian Tumors
- xi. Fibroids
- xii. Endometrial Pathology – menstrual irregularities
- xiii. Common Gynecological Procedures-Open
- xiv. Common Gynecological procedures-
- xv. Endoscopic
- xvi. Cervical Cancer Prevention
- xvii. Cervical cancer screening in low resource settings
- xviii. Cervical Cancer diagnosis and management
- xix. Endometrial Ca
- xx. Ovarian Ca
- xxi. Epithelial Ovarian tumours
- xxii. Germ Cell Ovarian Tumors
- xxiii. Rare Ovarian Tumors and fallopian tubes,
- xxiv. Benign Vulval Disease
- xxv. Pre-invasive disease of Vulva
- xxvi. Vulval Cancer
- xxvii. Pre-operative preparation
- xxviii. Post op Care
- xxix. C section
- xxx. Imaging in Gynecology
- xxxi. Postnatal contraception
- xxxii. Oral Contraception

PAEDIATRICS		
4.	(Year-III)	
	<u>I.</u>	
	i.	Introduction to Pediatrics
	ii.	Growth and its physiology
	iii.	Normal development during infancy and childhood
	iv.	IMNCI
	v.	Immunization
	vi.	dehydration and circulatory shock
	vii.	Nutrition and Micronutrient deficiencies in children
	(Year-IV)	
	<u>II.</u>	
	i.	Respiratory system
	ii.	Gastrointestinal system
	iii.	Infectious diseases
	iv.	Behavioral disorders
	(Year-V)	
	<u>III.</u>	
	i.	Cardiovascular system
	ii.	Hematology/ oncology
	iii.	Nephrology
	iv.	Endocrinology
	v.	Neurology
	vi.	Neonatology
	vii.	Genetics and dysmorphology
	viii.	Inborn errors of metabolism
	ix.	Rheumatology



**READ MORE ON
PREPWITHHARSHITA**





1st Year

MBBS Curriculum

Department of Anatomy

Year - I

AIR UNIVERSITY ISLAMABAD

DEPARTMENT OF ANATOMY

Block - I: Foundation, Musculoskeletal, Hemopoietic & Lymphoid Module

Placement in curriculum: Year 01

Subject: Anatomy

Block Duration: 12 weeks

TABLE OF CONTENTS

Sr. No	Topics
1.	General Anatomy • Anatomical Nomenclature • Muscles • Overview of General Anatomy of Nervous System • Overview of Cardiovascular & Skeletal System • Skin and fasciae
2.	General Histology • Micro techniques and Microscopy • Cell • Epithelial Tissue • Muscle

3.	Embryology • Cell Division and Gametogenesis • Fertilization, cleavage, blastocyst formation and implantation • Development during second week • Development during third week • Embryonic period • Fetal period-Third month till Birth • Fetal membranes and placenta • Teratogenesis and Birth defects Special Embryology • Muscle
4.	Gross Anatomy of Upper Limb • The pectoral region and axilla • Superficial part of the back & scapular region • The arm muscles, vessels, nerves • The forearm, neurovascular supply and muscles • The hand, Muscles nerves, vessels • Surface anatomy • Radiological Anatomy • Cross-sectional Anatomy

Introduction / Rationale	It is important to explain the descriptive anatomical terms for understanding of gross anatomy in a meaningful way. The General Anatomy of basic structures of body is essential to comprehend for better understanding of Regional Anatomy. The gross anatomy of upper limb along with the clinical correlates is important for a medical professional to reach on an accurate diagnosis and initiate speedy treatment. The explanation of human development beginning from fertilization till the achievement of a unique individual is significant to appreciate the congenital abnormalities. It includes the study of cell and its extra cellular material which comprises the basic structural and functional unit of the body. Moreover it also incorporates the Histology of epithelial tissues, connective tissue and muscle which drives the movement of organ systems.
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Outcomes	At the ends of this block the student should be able to KNOWLEDGE: - Describe the anatomical nomenclature and general anatomy of skin and muscle - Explain the outlines of general anatomy of CVS, CNS and muscular skeletal system - Explain the various micro techniques and microscopy - Discussed the histology cell, epithelial tissue, muscle tissue, connective tissue and adipose tissue - Describe the gross anatomical structures of upper limb SKILL - Identification of different parts of a Microscope and illustration of its usage. - Preparation of a simple slide and its focusing at different magnifications. - Demonstration, identification and drawing of light microscopic appearance of simple, stratified epithelia, serous, mucous & mixed acini, loose connective tissue, adipose tissue, dense irregular and dense regular connective tissue - Demonstration, identification and drawing of light microscopic appearance of skeletal muscle, smooth and cardiac muscle. - Identify different anatomical structures of upper limb on a cadaver and cadaveric specimen of upper limb ATTITUDE - Demonstrate the effective attitude toward the cadaver. - Demonstrate professional attitude and good communication skills among fellow students and with faculty & staff
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OVERVIEW OF BLOCK - I

Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
Introduction to Anatomy	Anatomy	- Define the terms commonly used in Anatomy. - Define types of movements, planes and axis - Describe the structures met in dissection. - Outline the relevant clinical correlates	LGIS/SGIS	MCQ, SEQ, Viva & OSPE

Micro techniques	Anatomy	• Describe the steps involved in tissue processing. • Explain the functions of different parts of light microscope. • Define resolution. • Describe the principle and usage of Phase contrast microscope, polarizing microscope, confocal microscope, fluorescence microscope, transmission electron microscope, scanning electron microscope. • Describe briefly tissue culturing • Describe the process of histochemistry, cytochemistry immunocytochemistry • Enlist the problems encountered in the study of tissue sections	LGIS/SGIS/CBL	MCQ, SEQ, Viva & OSPE
Microscopy	Anatomy	• Identify the different parts of microscope and illustrate their usage. • Draw a labeled sketch of microscope. • Prepare a simple slide • Focus the prepared slide at different magnifications	SGIS (Practical)	SEQ, OSPE
Cell	Anatomy	• Define cell and describe the two main types of cells. • Describe the ultrastructure and functions of plasma membrane, mitochondria, ribosomes, endoplasmic reticulum, Golgi complex, lysosomes, proteasomes and peroxisomes of cell. • Explain the process of phagocytosis. • Explain the process of Signal Reception. • Describe the structure and types of cytoskeleton and cell inclusions. • Enumerate the various diseases related to altered cell components	LGIS/SGIS/CBL	MCQ, SEQ, Viva & OSPE

Nucleus	Anatomy	- Describe the ultrastructure of nuclear envelope, chromatin and nucleolus. - Illustrate cell cycle, and Apoptosis. - State the importance of stem cells and tissue renewal	LGIS/SGIS/CBL	MCQ, SEQ, Viva & OSPE
Epithelium	Anatomy	- Describe specialization of cell surfaces: Basal lamina, basement membrane, intercellular adhesions and junctions, microvilli, stereocilia and cilia. - Explain the types of epithelium with examples. - Describe Glandular epithelium. - Differentiate the structure of serous and mucus secreting cells. - Describe transport across epithelia and renewal of epithelial cells.	LGIS/SGIS/CBL	MCQ, SEQ, Viva & OSPE
Epithelium	Anatomy	- Identify different types of epithelia. - Draw a labeled diagram of different types of epithelia. - Identify Mucous and Serous acini. - Draw a labeled diagram of Mucous and Serous acini	SGIS (Practical)	SEQ, OSPE
General Embryology	Anatomy	- Describe the histological background of embryology. - Define and explain the terms commonly used in embryology. - Describe the process of Mitosis & Meiosis and its importance. - Describe the process of Gametogenesis. Spermatogenesis and maturation of sperms. - Describe the process of Oogenesis, Phases of fertilization. - Describe cleavage, formation of Blastocyst & Implantation. - Describe the formation of bilaminar germ disc with amniotic cavity and yolk sac. - Describe the development of Chorionic sac. - Explain the process of Gastrulation and the formation of germ layers.	LGIS/SGIS/CBL	MCQ, SEQ, Viva & OSPE

		• Describe the formation and fate of primitive streak. • Describe the formation of Notochordal process and Notochord. • Describe the formation of allantois. • Describe the process of Neurulation. • Describe the formation of Neural plate, neural tube and neural crest cells. • Enumerate the derivatives of neural crest cells. • Describe the development of Intraembryonic coelom. • Describe the early development of CVS. • Describe the formation of Primary, secondary and tertiary chorionic villi. • Describe the Folding of the embryo in the median plane. • Describe the Folding of the embryo in the horizontal plane. • Enumerate the derivatives of Germ layers. • Describe the highlights of 4th to 6th week of development. • Describe the highlights of 7th to 8th week of development. • Describe the various methods of estimating fetal age. • Describe the highlights of fetal period. • Calculate the expected date of delivery. • Describe the factors influencing fetal growth. • Describe the development of deciduas. • Describe the development of placenta. • Describe the functions of placenta. • Describe the development of umbilical cord. • Describe the composition, circulation and significance of amniotic fluid. • Describe the development of yolk sac and allantois. • Describe the types of multiple pregnancies. • Define congenital anomalies. • Classify and give examples of the types of birth defects and the tools of prenatal diagnosis.		
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		- Describe the common teratogenic agents. - Describe the principles of Teratology.		
General Anatomy of Muscle	Anatomy	- Classify muscles - Describe general features of muscles.	LGIS/SGIS/CBL	MCQ, SEQ, Viva & OSPE
Muscle Histology	Anatomy	- Describe the microscopic features of skeletal, smooth and cardiac muscle. - Outline the relevant clinical correlates	LGIS/SGIS/CBL	MCQ, SEQ, Viva & OSPE
Histology of Muscle	Anatomy	- Identify different types of muscles microscopically - Draw a labeled histological diagram of different types of muscles	SGIS (Practical)	SEQ, OSPE
Development of Muscular System	Anatomy	- Describe the development of muscular system - Outline the relevant clinical correlates	LGIS/SGIS/CBL	MCQ, SEQ, Viva & OSPE
Upper Limb	Anatomy	- Describe the salient features and attachments of clavicle - Describe the salient features and attachments of scapula - Describe the gross anatomic features of humerus. - Explain the gross features of pectoral region. - Describe the gross anatomical features of breast, its blood supply and lymphatic drainage - Illustrate the topographical anatomy of axilla. - Describe the formation and branches of brachial plexus. - Enumerate and describe muscles of scapular region & scapular movements. - Describe topographical anatomy of shoulder joint & movements - Describe the anterior compartment of arm. - Describe the posterior compartment of arm. - Explain the topographical anatomy of cubital fossa - Illustrate gross features of Radius with muscle attachment - Illustrate gross features of Ulna with muscle attachment	LGIS/SGIS/CBL	MCQ, SEQ, Viva & OSPE

		• Illustrate the gross anatomy of elbow joint and its movements. • Describe the gross anatomy of radioulnar joint and its movements • Describe the muscles, vessels, nerves of anterior compartment of forearm • Describe the muscles, vessels, and nerves of posterior and lateral compartment of forearm. • Describe the gross anatomy of palm of hand (including bones of hand). • Describe the muscles, vessels and nerves of hand • Explain the nerve injuries of upper limb. • Describe the gross anatomy of Flexor and extensor retinaculum. • Describe the radioulnar, wrist and first carpometacarpal joints and their movements. • Describe the cutaneous innervation, lymphatic and venous drainage of upper limb • Describe the surface, cross-sectional anatomy & radiographs of upper limb. • Identify all the above mentioned structures on cadaver and model		
Connective tissue	Anatomy	• Describe different types of cells in connective tissue • Describe different types of fibers in connective tissue • Describe various constituents of ground substance • Classify various types of connective tissue • Describe the histology of white and brown adipose tissue	LGIS/SGIS/CBL	MCQ, SEQ, Viva & OSPE
Connective tissue	Anatomy	• Identify the slides of Loose connective tissue & adipose tissue. • Draw a labeled microscopic structure of loose connective tissue & adipose tissue. • Identify the slide of dense regular connective tissue	SGIS (Practical)	SEQ, OSPE

		• Draw a labeled microscopic structure of dense regular connective tissue • Identify the slide of dense irregular connective tissue • Draw a labeled microscopic structure of dense irregular connective tissue		
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Learning Resources:

- General Anatomy by Laiq Hussain 4th edition
- Regional Anatomy Snell 9th edition
- Last Anatomy 12th edition
- Junqueira's Basic Histology 14th edition
- Histology by Laiq Hussain 5th edition
- Embryology by Langmans 13th edition
- The developing Human by Keith Moore 10th edition
- Gray's Anatomy 41th edition

AIR UNIVERSITY ISLAMABAD

DEPARTMENT OF ANATOMY

Block - II: Musculoskeletal

Placement in curriculum: Year 01

Subject: Anatomy

Block Duration: 11 weeks

TABLE OF CONTENTS

Sr. No	Topics
1.	<u>General Anatomy</u> Skeletal system-bones • Axial skeleton, Appendicular skeleton • Functions of bone • Classification on the basis of shape • Classification on the basis of development, region and structure • General concepts of development • Ossification of bones, Parts of young bone • Blood supply, Properties of bones and cartilages Joints • Structural classification • Characteristics and classification of Synovial joints • Movements of Synovial joints

2.	<u>General Histology</u> Immune system • Adaptive & Innate Immunity with its cells • Thymus, Lymph node, Tonsils • Spleen, Mucosa associated lymphoid tissue Skin • Epidermis ,Dermis • Hair ,Nail ,Glands of skin • Skin sensorial receptors Cartilage • Hyaline cartilage • Elastic cartilage • Fibrocartilage Bone • Bone cells, bone matrix • Types of bones • Bone growth and remodeling, joints
3.	Special Embryology Development of Limbs • Limb growth and development • Limb musculature Development of Integumentary System • Skin, hair • Sweat glands • Mammary glands
4.	Gross Anatomy Lower limb • Bones & joints of lower limb • Gluteal Region, skin, fascia, muscles and neuro-vasculature. • Thigh, anterior, posterior & medial compartments, musculature and neuro-vasculature. • Dorsum and the sole of foot • Surface anatomy • Radiological and cross sectional anatomy

Introduction / Rationale	This module comprises the study of the musculoskeletal system (lower limb, general anatomy of bone and joints), Histology of Immune system, skin, cartilage and bone and development of limbs and integumentary system with regards to the different components, microscopic and macroscopic structures, clinical pictures and management of the associated conditions. This module has been designed to define the scope of Knowledge/ Skills/ Attitudes of a first year medical student. The focus of the module is to build fundamental knowledge of structure and functional correlations. The knowledge of normal structure of the organs will enable the student to understand better the pathological conditions. The study of developmental process will enhance the understanding of students.
Outcomes	At the ends of this block the student should be able to KNOWLEDGE: • Describe the General Anatomy of skeletal system and joints • Describe the microscopic anatomy of immune system, skin, cartilage and bone • Discuss the developmental anatomy of limb and integumentary system • Explain the gross anatomy of lower limb SKILL • Demonstration, identification and drawing of light microscopic appearance of thymus, lymph node, spleen, palatine and pharyngeal tonsil. • Demonstration, identification and drawing of light microscopic appearance of compact and spongy bone. • Demonstration, identification and drawing of light microscopic appearance of hyaline, elastic and fibrocartilage. • Demonstration, identification and drawing of light microscopic appearance of thick and thin skin. ATTITUDE • Demonstrate the effective attitude toward the cadaver. • Demonstrate professional attitude and good communication skills among fellow students and with faculty & staff

OVERVIEW OF BLOCK - II

Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
General Anatomy of Bone	Anatomy	- Classify bones - Describe general features of bones and types of Ossification	LGIS/SGIS	MCQ, SEQ, Viva & OSPE
Histology of Cartilage	Anatomy	- Describe microscopic features of various types of cartilage - Outline relevant clinical correlates	LGIS/SGIS/CBL	MCQ, SEQ, Viva & OSPE
Histology of Cartilage	Anatomy	- Identify different types of cartilage microscopically - Draw a labeled diagram showing the histological structure of different types of cartilage	SGIS (Practical)	SEQ, OSPE
Histology of Bones	Anatomy	- Describe microscopic features of bones and types of Ossification - Outline relevant clinical correlates	LGIS/SGIS/CBL	MCQ, SEQ, Viva & OSPE
Histology of Bones	Anatomy	- Identify different types of bone microscopically - Draw a labeled diagram showing the histological structure of different types of bone	SGIS (Practical)	SEQ, OSPE
Skin Histology	Anatomy	- Describe layers & cells of epidermis & dermis - Describe blood vessels & nerves of skin - Explain histological features of skin appendage - Outline the relevant clinical correlates	LGIS/SGIS/CBL	MCQ, SEQ, Viva & OSPE
Skin Histology	Anatomy	- Identify different types of skins microscopically - Draw a labeled histological diagram of different types of skins.	SGIS (Practical)	SEQ, OSPE
Skin Embryology	Anatomy	- Describe the embryological origin of skin & its appendages - Outline the relevant clinical correlates	LGIS/SGIS/CBL	MCQ, SEQ, Viva & OSPE

General Anatomy of Joints	Anatomy	- Classify joints - Describe the structure, blood supply, lymphatics and movements around synovial joints	LGIS/SGIS/CBL	MCQ, SEQ, Viva & OSPE
Lymphoid Tissue Histology	Anatomy	- Describe the histology and distribution of the cells of the lymphoid system in the body. - Describe the role of Antigens and Antibodies - Describe the different classes of antibodies. - Describe the major histocompatibility complex and antigen presentation. - Describe the different types of Immune responses. - Explain the histology of tonsils, thymus, lymph node and spleen.	LGIS/SGIS/CBL	MCQ, SEQ, Viva & OSPE
Lymphoid Tissue Histology	Anatomy	- Identify palatine and pharyngeal Tonsils, thymus, lymphnode and spleen microscopically - Draw a labeled histological diagram of palatine and pharyngeal Tonsils, thymus, lymphnode and spleen.	SGIS (Practical)	SEQ, OSPE
Development of limbs	Anatomy	- Describe the musculo skeletal development of limbs - Outline the relevant clinical correlates	LGIS/SGIS/CBL	MCQ, SEQ, Viva & OSPE
Lower Limb	Anatomy	- Describe the salient features of hip bone along with muscle attachment. - Memorize the muscles that make up the anterior compartment of thigh and give their attachments, nerve supply and actions. - Trace the nerves and vessels of the anterior compartment&recognize the areas innervated/supplied by them. - Name the structures forming the boundaries of Femoral triangleand enumerate its contents. - Name the structures forming the boundaries Adductor canal and list its contents.	LGIS/SGIS/CBL	MCQ, SEQ, Viva & OSPE

		• Memorize the muscles that make up the Gluteal region and give their attachments, nerve supply and actions. • Describe nerves and vessels of the Gluteal region • Describe the structure, ligaments and movements of the Hip joint • Memorize the muscles that make up the medial compartment of thigh and give their attachments, nerve supply and actions. • Trace the nerves and vessels of the medial compartment of thigh & recognize the areas innervated/supplied by them. • Describe the muscles , nerves and vessels of the back of thigh • Name the structures forming the boundaries of popliteal fossa and enumerate its contents. • Illustrate the salient features of Tibia along with muscle attachment. • Illustrate the salient features of Fibula along with muscle attachment. • Describe the structure ,movements and relation and bursae of knee joint • Describe the process of locking and unlocking of knee joint • Describe the muscles,nerves and vessels of the anterior compartment of leg . • Describe the muscles , nerves and vessels of the lateral compartment of leg • Describe the muscle, nerves and vessels of dorsum of foot. • Describe the muscles, nerves and vessels of the posterior compartment of leg. • Describe the muscles , nerves and vessels of the sole of foot		
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		• Describe the salient features of bones of the foot and their attachments. • Describe the joints of foot. • Describe the anatomy of medial, lateral and transverse arches of foot. • Explain the supporting structures of these arches. • Describe the joints of foot: bony components, ligaments and movements • Describe the injuries of nerves of lower limb at different levels. • Describe the Cutaneous nerves & dermatomes of lower limb • Identify the different structures of lower limb on radiography. • Outline the Surface anatomy of lower limb. • Identify all the above mentioned structure on cadaver and models.		
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LEARNING RESOURCES:

- General Anatomy by Laiq Hussain 4th edition
- Regional Anatomy Snell 9th edition
- Last Anatomy 12th edition
- Junqueira's Basic Histology 14th edition
- Histology by Laiq Hussain 5th edition
- Embryology by Langmans 13th edition
- The developing Human by Keith Moore 10th edition
- Gray's Anatomy 41th edition

AIR UNIVERSITY ISLAMABAD

DEPARTMENT OF ANATOMY

Block - III : Thorax / Respiratory Module

Placement in curriculum: Year 01

Subject: Anatomy

Block Duration: 08 weeks

TABLE OF CONTENTS

Sr. No	Topics
1.	General Anatomy Cardiovascular system • Heart & Blood vessels • Types of circulation ,Anastomosis Lymphatic system • Introduction ,Lymph capillaries • Lymph Vessels ,Lymph nodes • Main channels

2.	General Histology Cardiovascular system • Elastic artery, muscular artery • Arterioles, large veins • Medium vein • Heart, lymphatic system Special Histology Respiratory System • Nasal cavity, Paranasal sinuses • Nasopharynx ,Larynx • Trachea,Bronchial tree • Lungs
3.	Special Embryology Development of CVS • Heart • Great vessels • Fetal circulation and changes at birth Development of Respiratory System • Formation of lung buds • Larynx, Trachea and bronchi • Maturation of lungs
4.	Gross Anatomy Thorax • Thoracic wall muscles,neurovascular bundle • Thoracic cavity its outlet & contents • Diaphragm and its openings • Lungs & pleura • The heart chambers ,borders,surfaces • Mediastinum borders & contents • Surface Anatomy • Radiological Anatomy

Introduction / Rationale	This module comprises the study of cardiovascular and Respiratory system. Both these systems are responsible for performing vital processes which occurs throughout life. A good knowledge of structure of respiratory and cardiovascular system will help medical students to grasp the pathologic basis of diseases in a much better way. The module will extensively cover the anatomy, both gross and microscopic, of respiratory tract and cardiovascular system along with the development and congenital anomalies related to these systems.
Outcomes	At the ends of this block the student should be able to KNOWLEDGE: • Describe the General Anatomy of cardiovascular and lymphatic system. • Describe the microscopic anatomy of cardiovascular and respiratory system. • Discuss the developmental anatomy of cardiovascular and respiratory system • Explain the gross anatomy of thorax with special emphasis on heart and lungs SKILL • Demonstration, identification and drawing of light microscopic appearance of epiglottis, trachea and lungs. • Demonstration, identification and drawing of light microscopic appearance of large and medium sized arteries. • Demonstration, identification and drawing of light microscopic appearance of large and medium sized veins. ATTITUDE • Demonstrate the effective attitude toward the cadaver. • Demonstrate professional attitude and good communication skills among fellow students and with faculty & staff

OVERVIEW OF BLOCK - III

Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
General Anatomy of circulatory system	Anatomy	• Outline general anatomy of vascular system. • Differentiate between different types of vessels.	LGIS/SGIS/CBL	MCQ, SEQ, Viva & OSPE
Circulatory System histology	Anatomy	• Describe the histology of different arteries, veins capillaries and lymph vessels • Outline the relevant clinical correlates	LGIS/SGIS/CBL	MCQ, SEQ, Viva & OSPE

Circulatory System histology	Anatomy	- Identify different types of arteries and veins - Draw a labeled histological diagram of different types of arteries and veins	SGIS (Practical)	SEQ, OSPE
Cardiovascular system embryology	Anatomy	- Describe the initial formation and position of heart tube - Describe the formation of cardiac septa with Clinical correlates - Describe the septum formation in the truncus arteriosus and conus cordis - Describe the septum formation in ventricles With Clinical correlates - Describe the development of arterial system - Explain arterial system defects - Describe the development of venous system - Outline venous system defects - Describe circulatory changes before and after birth - Describe development of lymph vessel	LGIS/SGIS/CBL	MCQ, SEQ, Viva & OSPE
Gross Anatomy of cardiovascular system	Anatomy	- Describe the four chambers of heart - Describe the blood supply of heart - Explain the conducting system of heart - Describe clinical correlates of heart - Describe lymphatic drainage and nerve supply of heart - Enumerate and describe the contents of posterior mediastinum - Illustrate the surface anatomy of cardiovascular system - Identify all the above mentioned structure on cadaver and models	LGIS/SGIS/CBL	MCQ, SEQ, Viva & OSPE
Respiratory System Histology	Anatomy	- Describe the histology of Nasal cavity + Paranasal sinuses. - Describe the histology of epiglottis, Larynx, Trachea.	LGIS/SGIS/CBL	MCQ, SEQ, Viva & OSPE

		- Describe the histology of bronchial tree up to the level of terminal bronchiole - Describe the histology of Alveoli. - Describe the histology of Blood air barrier. - Outline the relevant clinical correlates.		
Respiratory System Histology	Anatomy	- Identify and draw well labeled histological diagram of epiglottis and Trachea. - Differentiation of trachea from other components of the bronchial tree. - Identify various parts of the bronchial tree and the alveoli. - Draw a labeled histological diagram of the bronchial tree and the alveoli. - Identify the slide of Lung. - Draw a labeled histological diagram of Lung.	SGIS (Practical)	SEQ, OSPE
Respiratory System Embryology	Anatomy	- Trace the development of Nasal cavity & Paranasal sinuses. - Trace the development of Larynx. - Trace the development of Trachea and describe briefly the Common Congenital anomalies. - Describe the development and maturation of lungs along with common congenital anomalies.	LGIS/SGIS/CBL	MCQ, SEQ, Viva & OSPE
Gross Anatomy of Thorax and respiratory system	Anatomy	- Recognize the gross anatomy of thoracic cage. - Describe the anatomy of typical rib and atypical ribs along with muscle attachment. - Describe the gross anatomy of manubrium& sternum. - Describe the clinical correlates. - Enlist the types of vertebrae making up the vertebral column.	LGIS/SGIS/CBL	MCQ, SEQ, Viva & OSPE

		• Describe typical gross anatomical features of vertebrae. • Describe specific features of thoracic vertebrae along with muscle attachments. • Describe the diseases of vertebral column e.g kyphosis, scoliosis. • Summarize the salient features of various joints of thoracic cage and identify these joints on the skeleton. • Describe the muscles of thoracic wall along with their nerve supply and action. • Explain the intercostal spaces & its contents. • Describe the gross anatomy of Diaphragm with special emphasis on its opening & clinical correlates. • Demonstrate different diameters of thoracic cavity. • Describe changes in these diameters during different phases of respiration. • Describe the anatomy of pleura, surface marking and clinical problems regarding pleura. • Describe the thoracic cavity as a whole. • Enumerate the subdivisions of mediastinum with their contents. • Describe the course and relations of trachea in the superior mediastinum • Demonstrate the subdivisions of mediastinum. • Illustrate course and relation of trachea in the superior mediastinum with clinical correlates. • Describe the anatomy of the Bronchial tree. • Describe the surface markings of the lung. • Describe the anatomy of lungs. • Illustrate the pulmonary circulation.		
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		• Describe nerve supply and lymphatic drainage of lungs with clinical correlates. • Describe the lymphatic drainage of thorax as a whole. • Describe the contents of superior, middle and anterior mediastinum • Outline the relevant clinical correlates.		
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Learning Resources:

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- Last Anatomy 12th edition
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Department of Physiology

Year - I

Block -I (Foundation Module, Neuromuscular and Blood Physiology)

Placement in curriculum: Year 01,

Subject: Physiology

Block Duration: - 12 Weeks

TABLE OF CONTENTS: BLOCK – I

Modules	Title
1	Foundation Module
2	Nerve and Muscle Physiology Module
3	Blood Physiology Module

Introduction /Rationale	This block is expected to familiarize the students with basic medical sciences disciplines. It has been designed to impart basic knowledge about normal structure, organization, functions of the human body to the students. This knowledge will serve as the basic pathway for students to weave further knowledge about the etiology, pathology, pathogenesis of diseases related to different systems and the principles of their management.
Outcomes	At the end of the block the students should be able to KNOWLEDGE: • Acquire the basic science knowledge and terminology necessary to understand the normal structure and function of human body from cell to organ system level. • Describe the structure, functions and importance of different organelle of cell. • Describe the different modes of transmission across the cell membrane. • Differentiate between membrane potential and action potential. • Know the structure of nerve fiber and transmission of nerve impulse. • Differentiate the nerve impulse transmission in myelinated and unmyelinated nerve fibers. • Describe the nerve impulse transmission across neuromuscular junction. • Describe the contraction and relaxation of skeletal muscle and smooth muscle. • Know the different types of cells present in blood. • Know the genesis of red blood cells, white blood cells, platelets. • Know the formation, types and functions of hemoglobin along with its association with different kinds of anemia. • Know the types of immunity, mechanism of their development and characteristics of different immune mechanisms and significance of vaccination. • Describe the role and functions of white blood cells in providing protection to the body against injury. • Identify the various blood groups and hazards of matched and mismatched blood transfusion. • Know various processes involved in hemostasis. SKILL: • Recognize the instruments used in Physiology Lab. • Avoid accidents by safe handling of equipment.

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| | <ul style="list-style-type: none">• Demonstrate the effective skills in performing the practical work.• Take proper precautionary measures for each experiment.• Demonstrate the ability to use the variety of resources (faculty, library, text books and internet). |
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ATTITUDE:

- Demonstrate the effective attitude towards the colleagues, staff and their peers.
- Demonstrate the professional attitude, team dynamism and good communication in library and during practical.

OVERVIEW OF BLOCK-I

Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
<u>Foundation Module</u> Cell Physiology Cell Membrane Modes of transport across the cell membrane	Physiology Physiology	• Know the functional organization of human body. • Know the parameters needed for the control of the 'internal environment'. • Understand the principles of the mechanics of homeostasis • Able to differentiate between positive and negative feedback as the control systems of the body • Relate positive and negative feedback system with common examples • Differentiate between composition of intracellular and extra cellular fluid • Comprehend organization of the physical structure of the cell (cell Membrane, cytoplasmic organelles, nuclear membrane, nuclear organelles) • Understand the functional systems of the cells (ingestion, digestion, synthesis, extraction of energy from nutrients) • Overview movements of cells (amoeboid, ciliary etc.) • Know the genes in the cell nucleus • Explain the process of transcription and translation (synthesis) in the cells • Understand the gene functions performed in the cells • Comprehend the genetic control of cells functions and cells-reproduction • Classify various modes of transport of substances across the cell-membrane	Interactive Lecture Tutorial Problem Base Learning Session (PBL)	MCQ/ SEQ/ SAQ/ PBQ

Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
		- Compare and contrast amongst the processes of osmosis, diffusion, facilitated diffusion, primary active transport, secondary active transport - Relate the modes of transport with common examples in human body - Appreciate the physiological significance of the transport of substances through the cell membrane		
<u>Nerve and Muscle Physiology Module</u> Membrane potential Action potential Nerve Fiber Nerve Impulse Neuro muscular Junction	Physiology Physiology Physiology	- Explain different mechanisms of transportation for maintenance of cellular homeostasis - Understand the basis of development of membrane potential across excitable membrane. - Know Nernst potential and its importance in generation of membrane potential. - Comprehend different mechanisms responsible for the genesis of membrane potential (role of channels, carrier proteins). - Understand the mechanisms by which different factors (stimuli) produce changes in membrane potential. - Draw different phases of action potential and explain ionic changes occurring during each phase of action potential. - Comprehend the response to the application of two successive stimuli are given during different phases of action potential (refractory period, its types and importance). - Classify different types of nerve fibers. - Know generation of nerve impulse and its transmission in different types of nerve fibers (myelinated and non-myelinated nerve fibers) with their characteristics.	Interactive Lecture Tutorial PBL Session	MCQ/ SEQ/ SAQ/ PBQ

Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
Red Blood Cells Hemoglobin Anemias Immunity White Blood Cells Blood Grouping Hemostasis	Physiology	- Overview sites of hemopoiesis in the body during different stages of life along with composition and functions of bone marrow. - Understand different types of blood cells, their physiological characteristics with functional differences. - Know the formation, types and functions of hemoglobin along with its association with different kinds of anemia. - Classify anemia its types and causes. - Identify the factors regulating erythropoiesis and maturation of RBC. - Comprehend basis of immune system of the body and tissues related with immunity. - Know the types of immunity, mechanism of their development and characteristics of different immune mechanisms and significance of vaccination. - Describe the role and functions of white blood cells in providing protection to the body against injury. - Appreciate the physical and functional characteristics of different WBCs and physiological significance of leucopenia, leukocytosis and leukemia. - Comprehend the composition and functions of reticulo-endothelial system. - Know the principles of blood grouping and physiological significance. - Identify the various blood groups and hazards of matched and mismatched blood transfusion with especial reference to Erythroblastosis fetalis.	Interactive Lecture PBL Tutorial Interactive Lecture Tutorial	

Learning Resources:**1. Text Books:**

- a.** Medical Physiology by *Guyton's & Hall*
- b.** Human Physiology by *Sherwood*
- c.** *A Review of Medical Physiology by WF Ganong*

2. Class Room Teaching:

- a.** Lectures
- b.** Tutorials/ Interactive discussion in small groups

3. Learning Resource Center**4. Physiology Lab: Hands on work**

Block II (Cardiovascular Physiology)

Placement in curriculum: Year 01,

Subject: Physiology

Block Duration: -11 Weeks

TABLE OF CONTENTS: Block -II

Modules	Titles
1	Heart Physiology
2	Circulatory Physiology

Introduction / Rationale	The cardiovascular system is an organ system that permits blood to circulate and transport nutrients (such as amino acids and electrolytes), oxygen, carbon dioxide, hormones, and blood cells to and from the cells in the body to provide nourishment and help in fighting diseases, stabilize temperature and pH, and maintain homeostasis. The cardiovascular system may get damaged by disease processes or have developmental abnormalities. This block has been designed to educate the student's about structure, organization and functions of cardiovascular system. This will help students to learn physiologic basis of cardiovascular diseases for better prevention and management.
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Outcomes	At the end of the module the students should be able to KNOWLEDGE: • Describe the properties of cardiac muscle • Explain the action potential in atrial and ventricular muscle • Know the cardiac impulse origin and propagation • Describe the various events that occur in cardiac cycle • Correlate of cardiac events with ECG and heart sounds • Describe hemodynamics of blood flow/ Starling forces and equilibrium • Discuss the systemic circulation, basic principles, characteristics and control • Know the vasomotor center and autonomic control of CVS • Describe the regulation and measurement of cardiac output • Differentiate between arterial pulse/ Jugular Venous pulse • Describe the regulation of arterial blood pressure • Discuss the pathophysiology of shock and cardiac failure • Know the clinical significance of heart sounds/ murmurs SKILL: • Recognize the instruments required for cardiovascular examination • Perform complete cardiovascular examination • Demonstrate the effective skills of recording ECG • Interpretation of normal ECG • Follow proper lab protocol and precautionary measures • Demonstrate the ability to use a variety of resources (faculty, library, text books and internet) ATTITUDE: ▪ Demonstrate the supportive attitude towards colleagues, peers and their staff ▪ Demonstrate the professional attitude, team dynamism and good communication in the laboratory during practical.
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OVERVIEW OF BLOCK - II

Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
<u>Heart Physiology</u> Properties of cardiac muscle Action Potential in Atrial and ventricular muscle Cardiac Impulse ECG Interpretation of ECG Arrhythmias	Physiology Physiology	- Appreciate the physiological arrangement of right and left hearts along with the parallel arrangement of systemic circulation. - Know the physiologic anatomy of cardiac muscles, its functional syncytium and intercalated disc and difference between cardiac, skeletal and smooth muscles. - Know the phases of action potential in cardiac muscle and auto rhythmic cells/ conducting system of the heart along with comparison of action potential in different tissues of the heart. - Associate movement of ions across the cell membrane with different phases of action potential. - Comprehend importance and relationship between refractory period and mechanical periods. - Know the mechanism of generation and propagation of cardiac impulse in conductive system of heart. - Appreciate characteristics of spread of cardiac impulse through conductive system, atrial and ventricular myocardium and its association with the function of heart. - Comprehend genesis of ECG, the way it is recorded and its relationship with the electrical axis of heart. - Understand significance of waves, segments and intervals of ECG recording.	Interactive Lecture Tutorial Interactive lecture Problem based learning session (PBL) Tutorial	MCQ/ SAQ/ SAQ/ PBQ MCQ/ SAQ/ SAQ/ PBQ

Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
Cardiac cycle and ECG		- Learn the concept of a vector and principles of the measurement of ECG vector. - Appreciate relationship between vector and lead, type and locations of leads and principles for vector analysis. - Know general principles of analysis of ECG. - Understand the basis of common cardiac arrhythmias, process that produce them and their clinical significance. - Evolve the concept of sinus arrhythmia and its clinical significance. - Appreciate principal changes in ECG during myocardial ischemia and infarction. - Comprehend changes in ECG and cardiac function during common abnormalities in ionic composition of body fluids. - Understand the pathophysiology of ectopic focus and its clinical significance. - Know how and when to carry out cardiac massage and its significance. - Appreciate the events of cardiac cycle and prospective changes in ECG, heart sounds, pressures and volumes during different phases thereof. - Comprehend preload and afterload, its influence on stroke volume. The Frank-Starling's mechanism and role of autonomic regulation of heart rate and pumping action. - Know about the myocardial bioenergetics.	Problem based learning Interactive lecture	MCQ/ SAQ/ SAQ/ PBQ
<u>CIRCULATORY PHYSIOLOGY</u> Types of blood vessels		- Know the organization of circulatory systems i.e. Greater (Systemic) and Lesser (Pulmonary) circulations along with accessory circulatory system (Lymphatic). - The physiologic anatomy of different types of blood vessels and their importance.	Interactive Lecture Interactive lecture	MCQ/ SAQ/ SAQ/ PBQ

Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
Hemodynamics of blood flow	Physiology	- Understand the principles of capillary dynamics, structure of Interstitium, Starling's forces for fluid exchange across the capillary membrane and factors affecting thereof. - Have the concept of starling's equilibrium, and how of the interstitial space is kept dry? - Know the mechanism of formation of interstitial fluid, its composition and factors creating starling's disequilibrium leading to the development of edema. - Appreciate Types of edema, its pathophysiology and safety factors preventing edema formation. - Have the concept of blood flow, its types and significance of turbulent and laminar flow, the concept of pressure gradient, resistance to blood flow and its significance. - Understand the Physiology of vascular compliance? Changes in compliance of blood vessels with age and comparison between the compliance of arteries versus veins. - Appreciate the origin of arterial pressure pulse and its propagation to the peripheral arteries. - Know the factors damping the arterial pulse and abnormalities of arterial pulse. - Know about the jugular venous pulse, its significance and differentiation from arterial pulse. - Recognize the role of veins in blood flow, their functions and factors regulating venous return and significance of venous reservoirs. - Appreciate the equality of cardiac output and venous return.	Problem based learning	MCQ/ SAQ/ SAQ/ PBQ
Edema				
Vascular Compliance				
Systemic Circulation			Tutorial	
Jugular Venous Pressure				
Cardiac Output			Interactive lecture	
Arterial blood pressure			Problem based learning	

Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
Shock		- Understand the determinants of cardiac output and factors affecting cardiac output. - Appreciate the mechanics of low and high cardiac outputs along with their effects on heart. - Comprehend the factors affecting stroke volume, heart rate and total peripheral resistance. - Understand Fick's principle for the measurement of cardiac output. - Comprehend the determinants of arterial pressure, factors affecting and mechanisms regulating blood pressure on short and long-term basis. - Understand mean arterial pressure and its significance. - Comprehend the individual and integrative role of baroreceptors, chemoreceptor, volume receptors, arterial natriuretic factors and Renin-angiotensin – aldosterone system in regulation of arterial pressure.	Tutorial	MCQ/ SAQ/ SAQ/ PBQ
Cardiac failure		- Understand the characteristics of regional circulations (skeletal muscles, pulmonary, coronary & cerebral) and factors regulating thereof. - Define shock, its types, stages of development and differences between compensated and uncompensated shock. - Understand the pathophysiology of compensated and uncompensated shock. - Comprehend the short term and long-term compensatory mechanisms in circulatory shock. - Know the pathophysiology of irreversible shock.	Interactive lecture	
CVS changes during exercise			Tutorial	

Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
		• Comprehend the general principles for the treatment of shock. • Define cardiac failure, its pathophysiology and clinical manifestations. • Know the types and severity of exercise in different sports. • Have the concept of general adaptive changes in muscles in response to increased and decreased physical activity. • Know about the fuels available in body during rest and exercise. • Comprehend cardiovascular and pulmonary changes (including oxygen consumption) during different grades of exercise.		
<u>Practical Physiology</u>	Physiology	• How to perform Data Acquisition /Power Lab System and Evoked Electromyography & Nerve Conduction Study • Examination of Arterial (radial) Pulse • Examination of Apex Beat • Auscultation of Heart Sounds • Arterial Blood Pressure and Effect of Posture and Exercise • Jugular Venous Pulse (JVP)	Hands on performance in lab	OSPE

Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
Learning Resources: 1. Text Books: d. Medical Physiology by <i>Guyton's & Hall</i> e. Human Physiology by <i>Sherwood</i> f. <i>A Review of Medical Physiology by WF Ganong</i> 2. Class Room Teaching: c. Lectures d. Tutorials/ Interactive discussion in small groups e. Case Based Learning Sessions 3. Learning Resource Center 4. Physiology Lab: Hands on work				

Block-III (Respiratory and Unusual Environment Physiology)

Placement in curriculum: Year 01

Subject: Physiology

Block Duration: 7 Weeks

TABLE OF CONTENTS BLOCK-III

Modules	Titles
1	Respiratory Physiology
2	Unusual Environment Physiology

Introduction /Rationale	Breathing is necessary for life because Oxygen (O ₂) is mandatory to reach the tissues and carbon dioxide out of the body to carry out all functions of living individuals. This module is expected to build the student's basic knowledge about the normal structure, organization and functions of respiratory system. In this module students know about normal functioning of respiratory system which is often damaged by disease processes, occupational and environmental factors. This knowledge will aid students in prevention, diagnosis and management of respiratory illnesses in future.
Outcomes	At the end of the module the students should be able to

KNOWLEDGE:

- Describe the physiological anatomy and functions of Respiratory System.
- Describe the mechanics of breathing, surfactant and compliance.
- Know all lung volumes and capacities and spirogram
- Understand the physiological basis of ventilation perfusion ratio and its application.
- Describe the transport of O₂ and CO₂ in blood.
- Describe the regulation of respiration.
- Know about Obstructive and Respiratory lung diseases.

SKILL:

- Recognize the instruments used in respiratory system examination.
- Follow lab protocols and take proper precautionary measures.
- Draw and label spirogram, mentioning various lung volumes and capacities.
- Draw and label O₂ – Hb dissociation curve and understand the significance of the shape of the curve and factors shifting the curve to right or left.
- Demonstrate the ability to use variety of resources.

ATTITUDE:

- Demonstrate the kind attitude towards the subjects, colleagues and staff during the hands-on performance in laboratory.
- Demonstrate the professional attitude, team dynamism and good communication in library and during practical.

OVERVIEW OF BLOCK-III

Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
<u>Respiratory Physiology</u> Lung Volumes and Capacities Lung Compliance Ventilation Perfusion Ratio Transport of O ₂ and CO ₂ Regulation of Respiration Lung Diseases	Physiology Physiology	- Outline the organization and general functions of respiratory system. - Relate the mechanical events and associated pressure, volume changes during pulmonary ventilation. - Draw and label spirogram, mentioning various lung volumes and capacities. - Discuss the physical properties of lungs like, compliance, elasticity, resistance and their significance. - Draw and label a respiratory membrane and correlate various factors affecting diffusion of gases across the respiratory membrane. - Understand the physiological basis of ventilation perfusion ratio and its application. - Discuss the various modes of transport of oxygen and carbon dioxide from lungs/atmosphere to tissues and vice versa. - Draw and label O₂ – Hb dissociation curve and understand the significance of the shape of the curve and factors shifting the curve to right or left. - Explain the various neurological and chemical control mechanisms involved in regulation of respiration both - at rest and under stressful circumstances.	Interactive Lecture Tutorial PBL	MCQ SAQ SEQ PBQ

Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
		- Define hypoxia and classify its various types with the physiological basis of each type. - Understand the basis of various abnormal breathing patterns and relate with the associated clinical conditions. - Define cyanosis, its types, causes and the physiological basis. - Describe the effects of exercise on ventilation and relate it with the cause. - Relate lung function tests to differentiate between restrictive and obstructive lung disorders. - Define Asphyxia, Hypocapnia, Hypercapnia and the effects produced by each of these conditions		
<u>Unusual Environment Physiology</u>	Physiology	- Understand the basis of High Altitude and hazards of High Altitude - Relate the effects of hypoxia at High Altitude - Should know about Acute Mountain Sickness (AMS), HAPE and HACE - Describe the Oxygen therapy and its toxicity - Understand the physiology of Aviation, Space and Weightlessness - Understand the Deep-sea diving and Caisson's disease - Describe Oxygen debt and Respiratory changes during exercise	Interactive Lecture PBL	MCQ SAQ

Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
<u>Practical Physiology</u>	Physiology	• Examination of Respiratory System • Recording the Movements of Respiration (Stethography) • Determination of Breath Holding Time (BHT) • Perform Simple Spirometry • Perform Forced Expiratory spirometry • Measurement of Peak Expiratory Flow Rate (PEFR)	Hand on performance in Lab	OSPE OSPE

Learning Resources:

1. Text Books:

- g.** Medical Physiology by *Guyton's & Hall*
- h.** Human Physiology by *Sherwood*
- i.** *A Review of Medical Physiology by WF Ganong*

2. Class Room Teaching:

- f.** Lectures
- g.** Tutorials/ Interactive discussion in small groups
- h.** Case Based Learning Sessions

3. Learning Resource Center

4. Physiology Lab: Hands on work

Department of Biochemistry

Year - I

AIR UNIVERSITY ISLAMABAD
Department OF Biochemistry

Block - I

Placement in curriculum: Year 01

Subject: Biochemistry

Block Duration: -12 Weeks

TABLE OF CONTENTS

Sr. No	Module	Topic
1	Foundation Module	Cell, pH, Physicochemical aspects principle and Cell Membrane
2	Musculo- skeletal Module I	Carbohydrate and Protein Chemistry
3	Haemopoietic and Lymphoid Module	Hemoglobin

Introduction /Rationale	This module will familiarize the students with basic Medical disciplines. It has been selected to impart the student's basic knowledge about the normal structure, organization, functions and development of human body. This knowledge will serve as a fabric on which the student will weave further knowledge about the etiology, pathogenesis and prevention of diseases, the principles of their therapeutics and management; as well as the toxic effects of different substances.
Module Outcomes	Each students will be able to: KNOWLEDGE: • Acquire the basic science knowledge and terminology necessary to understand the normal structure and function of human body from biochemical to organ system level, as well as the concepts of diseases in the community, drug dynamics. • Describe the structure, biochemical function and importance of different organelle in body. • Describe the chemical composition of carbohydrates and their application in the body with regard to their composition. • Describe the classification of proteins. • Understand the relation between the chemical composition of protein and the performance of their specific functions. • Describe the chemical structure and function of hemoglobin. • Understand the different types of hemoglobin and know the changes which occur due to sequence changes in structure leading to different related disease. SKILL: • Familiarize themselves with the biochemistry lab. • Recognize the different instruments used in the biochemistry lab. • Understand the various methods of preparation and calculation of solution. • Draw and complete their practical copies. ATTITUDE: • Demonstrate the effective attitude towards the staff and their peers during the practical timing. • Demonstrate professional attitude, team dynamics and good communication

Foundation-I

Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
Cell	Biochemistry	- Describe the biochemical composition of the cell - Enlist the markers of different cell organelles - Describe the following scientific method to study the cell biochemistry: ➤ Salt fractionation ➤ Chromatography ➤ Electrophoresis ➤ Ultra-centrifugation	LGIS	MCQ SEQ VIVA
pH	Biochemistry	- Describe the concept of pH, pH scale (Acidity and Basicity), weak acids and their conjugate bases (Buffers). - Describe the importance of Henderson-Hasselbalch Equation in defining the relationship between pH and the concentrations of conjugate acid and base (No derivation) - Describe the role of buffers in controlling body pH.	LGIS	MCQ SEQ SAQ VIVA
Physicochemical aspects principle	Biochemistry	Describe the following: ➤ Surface tension ➤ Viscosity ➤ Osmosis - Describe the role of surface tension in lipid digestion. - Describe the role of viscosity in blood flow. - Describe the role of osmosis in edema.	LGIS SGD	MCQ SEQ VIVA
Membrane	Biochemistry	- List the receptors involved in signal transduction - Describe the role of following receptors in performing different actions of hormones and drugs: ➤ G-protein receptors ➤ cAMP receptors ➤ Calcium/calmodulin receptors ➤ Phosphatidylinositol receptors ➤ Tyrosine kinase receptors	LGIS SGD	MCQ SEQ SAQ VIVA

Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
		➤ Protein kinase receptors		
Musculo- skeletal Module Classification of carbohydrates	Biochemistry	- Define and Classify carbohydrates - List the functions of carbohydrates in cell membrane, energy provision, supply of nutrition to different body parts. - Describe the structure and functions of Monosaccharides, and their derivatives - Describe the Oligosaccharides their combination with other macromolecules. - Describe Disaccharide, their important examples. - Describe the Polysaccharide their important examples and biochemical role. - Enlist the biochemical importance of carbohydrates.	LGIS SGD PBL	MCQ SEQ SAQ PBQ VIVA
Chemistry of Protein	Biochemistry	- Definition, Biomedical importance and classification of proteins based on:- Physiochemical properties, function, Nutrition and structure. - Describe Amino acids their structure, properties and functions. - Classify and understand the nutritional significance of amino acids. - Explain Dissociation titration and importance of amino acids in pH maintenance. - Describe separation of protein e.g. salting out Electrophoresis, chromatography and centrifugation. - Define Immunoglobulin and describe their biochemical significance - Define plasma proteins and describe their clinical significances.	LIGS SGD PBL	MCQ SEQ SAQ PBQ VIVA
Haemopoietic and Lymphoid Module Hemoglobin	Biochemistry	- Describe chemistry and biosynthesis of porphyrin and disorder (porphyrias). - Describe structure, function and types of hemoglobin - Explain oxygen binding capacity of hemoglobin, factors effecting and regulating oxygen binding. - Explain degradation of heme, formation of bile pigments, its types, transport and excretion	LGIS SGD PBL	MCQ SEQ SAQ PBQ VIVA

Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
		Describe hyperbilirubinemia, their biochemical causes and differentiation, Jaundice and its types		
Practical Biochemistry Introduction to Laboratory Equipment Solution preparation		- Identify and enlist uses of the following: - Chemicals - Glass ware - Weight Balance - Water bath - Centrifuge - Describe the procedure for the preparation of solutions of different concentrations. - Prepare solutions with different molar and molal concentrations and normal saline.	Practical Demonstration and Skill Practical Demonstration and Skill	OSPE VIVA Performance OSPE VIVA Performance
Surface Tension		Explain surface tension.		
pH metry	Biochemistry	Perform pH metry to determine the pH of different solutions.	Practical Demonstration and Skill	OSPE VIVA Performance
Test of carbohydrates	Biochemistry	- Perform Benedicts Test for detection of carbohydrates - Perform Molisch's test for detection of carbohydrates - Perform Fehling's Test for detection of carbohydrates - Perform Iodine Test for detection of carbohydrates - Perform Seliwanoff's test for detection of carbohydrates - Perform Barfoeds test for detection of carbohydrates	Practical Demonstration and Skill	OSPE VIVA Performance

AIR UNIVERSITY ISLAMABAD
Department OF Biochemistry

Block-II

Placement in curriculum: Year 01

Subject: Biochemistry

Block Duration: -11 Weeks

TABLE OF CONTENTS

Sr. No	Module	Topic
1	Musculoskeletal module II	Vitamin
2	Cardiovascular System	Enzymes and Lipid chemistry

**Introduction/
Rationale**

This block comprises of two modules that is the musculoskeletal system and the cardiovascular system. This block is expected to build the student's knowledge about the normal structure and function of the musculoskeletal system and cardiovascular system. This will enhance their biochemical knowledge towards better understanding of related physiological and pathological conditions. It will also provide them a clear understanding of different related clinical pictures and their

	managements. This block has been designed to define the scope of knowledge, skill and attitude of a first year student. It focuses on how different biochemical components like vitamins and enzymes have a role in building up and proper functioning of the musculoskeletal and cardiovascular systems.
Module	At the end of the block students should be able to:-
Outcomes	KNOWLEDGE: • Classify and discuss the role of vitamins as a whole. • Describe the relation between vitamins and the development of the musculoskeletal system • Understand the role of Vitamin D and C in bone development. • Classify enzymes comprehensively on the basis of IUBMB(International Union of Biochemistry and Molecular Biology) • Understand the clinical significance of coenzymes, cofactors and isoenzymes in enhancing different chemical reactions. • Understand the role of marker enzymes in the diagnosis of different physiological and pathological conditions. • Describe and discuss the normal chemical structure of fatty acids and lipids. • Understand the function and clinical significance of lipids in different diseases like hyperlipidemia and atherosclerosis. SKILL: • Perform different tests regarding identification of amino acids and proteins. • Identify cholesterol crystals with the help of microscope. ATTITUDE: • Demonstrate professional attitude team work and group communication skills among peers faculty and staff.

Musculoskeletal-II

Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
Vitamins	Biochemistry	- Define and classify vitamins. - Discuss the biochemical functions, deficiency manifestations, daily allowances and sources of water soluble and fat- soluble vitamins. - Differentiate between clinical pictures of pellagra, beri-beri, scurvy, ariboflavinosis - Describe hypervitaminosis of A, D, B₆, E, K and folic acid	LGIS SGD PBL	MCQ SEQ SAQ PBQ VIVA
Cardiovascular System Module Chemistry of Lipid	Biochemistry	- Define and classify fatty acids. - Define and Classify lipids. - Describe the biomedical importance of lipids in energy provision, transportation, insulation - Describe the role of eicosanoids, their classification and function in health and disease. - Describe the structure of Phospholipids, Glycolipids and Sphingolipids and their biochemical significances. - Describe the importance of cholesterol in the formation of steroid hormones. - Define lipid peroxidation and discuss its role in inflammatory diseases, cancer, aging and atherosclerosis.	LGIS SGD PBL	MCQ SEQ SAQ PBQ VIVA
Enzymes	Biochemistry	- Define and classify Coenzymes, Co-factors and Isoenzymes. - Describe the relationship between vitamin and mineral deficiency on enzymatic reactions. - Correlate the importance of isozymes. - Describe the mechanism of action of enzymes. - Correlate the importance of varying pH on the action of enzymes in different processes.	LGIS SGD PBL	MCQ SEQ SAQ PBQ VIVA

Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
Protein qualitative analysis	Biochemistry	- Describe the Michaelis-Menten Equation and Lineweaverburk plot and discuss their application in enzyme kinetics (no derivation of equations). - Define and classify enzyme inhibitors. - Describe the biomedical importance of different inhibitors such as suicide inhibitors. - Describe the principles related to the tests on proteins qualitative analysis of the following: - Biuret test - Heat coagulation test - Millon Nasse test - Xanthoprptic test - Sulphur test - Ninhydrin test - Aldehyde test - Describe the principle related to the tests on qualitative analysis of fats. - Describe the role of saponification in producing rancidity. - Detect cholesterol by Salkowski's test - Examine and identify cholesterol crystals under microscope.	Performance Demonstration and Skill Performance Demonstration and Skill	OSPE Performance VIVA OSPE Performance VIVA
Lipid qualitative Test				

AIR UNIVERSITY ISLAMABAD

Department OF Biochemistry

Block – III

Placement in curriculum: Year 01

Subject : Biochemistry

Block Duration: -7 Weeks

TABLE OF CONTENTS

Sr. No	Module	Topic
1	Thorax and Respiratory Module	Nucleotide chemistry
2	Nutrients and Nutrition	Nutrition, Minerals

Introduction/ Rationale	This block comprises of Thorax & Respiratory Module and Nutrients & Nutrition module. This block will help the students to develop their understanding about the basic genetic structure in the form of nucleotide chemistry it will further ponder the importance of nutrients and minerals in growth and development.
Module Outcomes	At the end of the module the students should be able to: KNOWLEDGE: • Understand the clinical significance of nitrogenous bases, nucleic acids and nucleotides • Differentiate between nucleotides and nucleosides. • Understand the importance of unusual bases in drug composition. • Discuss the importance of balanced diet regarding growth and development in children and adults. • Understand the importance of macro and micro minerals regarding their application in physiological and pathological chemical reactions. SKILL: • Perform analysis of normal constituents of urine. • Perform analysis of abnormal constituents of urine. • Write a proper urine report ATTITUDE: • Demonstrate professional attitude team work and group communication skills among peers, faculty and staff

Thorax and Respiratory-I

Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
Nucleotide	Biochemistry	- Describe the chemistry, structure and the biochemical role of nucleosides and nucleotides. - Describe the role of nucleotides in energy provision, phosphorylation, DNA / RNA synthesis and protein synthesis. - Discuss the functions of different types of nucleic acids - Correlate the role of nucleic acids in the transfer of genetic information	LGIS SGD PBL	MCQ SEQ SAQ PBQ VIVA

Nutrients and nutrition-II

Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
Nutrition	Biochemistry	- Calculate Caloric requirements of the body. - Define and describe Balanced diet - Define and describe Protein Energy malnutrition (Marasmus and Kwashiorkor). - Calculate nutritional requirements in: Pregnancy, Lactation and New Born - Describe Nutritional Disorders	LGIS SGD PBL	MCQ SEQ SAQ PBQ VIVA
Minerals	Biochemistry	Define classify and minerals		MCQ

		- Discuss the biochemical role of macro and micro minerals. Describe the anti-oxidant role of selenium. - Describe the biochemical basis of Wilson's disease, Menke's disease, hypo and hyperthyroidism, florosis, iron deficiency anemia.	LGIS SGD PBL	SEQ SAQ PBQ VIVA
Urine analysis	Biochemistry	- Perform Physical Examination of urine, (pH, specific Gravity) - Detect normal Inorganic constituents of Urine - Detect normal Organic constituents of Urine - Perform test for Abnormal Constituents of Urine, Glucose and Proteins - Perform test for Abnormal Constituents of Urine Bilirubin, Bile Salt and Ketone bodies - Write Urine report.	Performance Demonstration and Skill	OSPE Performance VIVA



2nd Year

MBBS Curriculum

Department of Anatomy

Year - II

AIR UNIVERSITY ISLAMABAD

DEPARTMENT OF ANATOMY

Block-I Gastrointestinal and Genitourinary Module

Placement in curriculum: Year 02

Subject: Anatomy

Block Duration: 12 weeks

Module Team

TABLE OF CONTENTS

Sr. No	Topics
1.	Special Embryology Digestive system • Division of Gut tube • Derivatives of foregut • Physiological herniation • Development of mesenteries • Hind gut and anal canal Body cavities • Development of body cavities • Formation of diaphragm

2.	Special Histology Digestive System • Histology of Oral cavity and tongue • Layers of GIT • Histology of esophagus • Cells and glandular epithelium of stomach • Cells of small intestines and histological layers • Histology of large intestine (appendix, colon, anal canal) • Organs associated with GIT (salivary glands, pancreas, liver, gall bladder)
3.	Gross Anatomy Abdomen • Anterior and posterior abdominal wall • Musculature and neurovascular bundle • Abdominal cavity • Abdominal viscera • Gross anatomy of organs and their blood supply, nerve supply and lymphatic • Peritoneum its attachments and pouches Special Embryology The urinary system • Development of Kidney • Position of kidney • Urinary bladder, Urethra Special Histology Urinary System • Histological structure of kidney, renal corpuscles, tubules • Juxtaglomerular apparatus, collecting ducts • Microstructure of ureters, bladder and urethra Gross Anatomy Pelvis • Bony pelvis, inlet and outlet

	• Pelvic diaphragm • Pelvic cavity • Pelvic viscera (both male and female) • The perineum, male and female perineal pouches • The perineal viscera
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Introduction / Rationale	GIT and urinary system module consists of the study of digestive system and urinary system. It is an extensive and in-depth study of the anatomical, histological and embryological aspects of gastrointestinal tract and its viscera like stomach, liver, pancreas and gall bladder along with the viscera of urinary system which are kidney ureter and urinary bladder. Gastrointestinal tract and liver play a vital role in the life of human beings. Liver is the organ where major metabolic functions take place. It is important for undergraduate students of medicine to have basic knowledge about the functions & diseases of gastrointestinal tract and liver and their management and for that a sound understanding of the structure and development and their relationship to the disease processes is essential. Urinary system is responsible for excretion of waste and toxic substances. It is a cross-disciplinary field that engages in investigating how the renal system develops and its gross and microscopic details. This module combines the exposure to the structure and development of renal system, disease and their preventions, hands-on skills and practical. Similarly, this module of renal system will enable the students of second year to recognize the clinical presentations of common renal diseases and relate clinical manifestations to basic sciences.
Outcomes	At the ends of this block the student should be able to KNOWLEDGE: • Describe the microscopic anatomy of Gastrointestinal and Genitourinary system. • Discuss the developmental anatomy of Gastrointestinal and Genitourinary system • Explain the gross anatomy of abdomen, pelvis and perineum. SKILL • Demonstration, identification and drawing of light microscopic appearance of tongue, lip, esophagus, stomach, duodenum, jejunum, ileum, colon, anorectal junction and appendix. • Demonstration, identification and drawing of light microscopic appearance of liver, gall bladder, pancreas and salivary gland. • Demonstration, identification and drawing of light microscopic appearance of kidney, urinary bladder and ureter. ATTITUDE

- Demonstrate the effective attitude toward the cadaver.
- Demonstrate professional attitude and good communication skills among fellow students and with faculty & staff

OVERVIEW OF BLOCK - I

Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
Histology of Gastrointestinal Tract	Anatomy	• Describe the histology of lips, cheeks, oral cavity, palate and pharynx. • Illustrate the microscopic structure of tongue and types of papillae. • Describe the microscopic structure of taste buds. • Describe the microscopic structure of esophagus with clinical correlates. • Explain the microscopic layers of stomach • Differentiate histologically between different parts of the stomach • Describe the ultrastructure of different cells that makeup the glands of stomach with clinical correlates • Describe the microscopic layers of small intestine • Differentiate histologically between duodenum, jejunum, ileum • Describe the ultrastructure of different cells that makeup the glands of small intestine with clinical correlates • Describe the microscopic structure of large intestine • Differentiate between the histology of small and large intestine • Describe the histology of appendix, rectum and anal canal with clinical correlates • Describe the histology of different Salivary glands with clinical correlates • Explain the histology of Liver	LGIS/SGIS/CBL	MCQ, SEQ, Viva & OSPE

		• Differentiate between Classical lobule, Portal lobule and Hepatic acinus. • Describe the microscopic structure of liver with blood supply of liver. • Outline the zones of hepatic acini and their functions. • Describe the histology of Pancreas with clinical correlates. • Illustrate the microscopic structure of gall bladder with clinical correlates.		
Histology of Gastrointestinal Tract	Anatomy	• Identify the histological slides of tongue, Lip and esophagus • Draw a labeled histological pictures of tongue, lip and esophagus • Identify the microscopic slide of fundus and body region of stomach • Draw a labeled histological pictures of fundus and body region of stomach • Identify the microscopic slide of Duodenum • Draw a labeled microscopic picture of Duodenum • Identify the microscopic slides of Jejunum and Ileum • Draw a labeled diagram of Jejunum and Ileum • Identify the microscopic slides of colon and appendix. • Draw a labeled diagram of colon and appendix • Identify the microscopic slide of anorectal junction • Draw a labeled microscopic picture of anorectal junction • Identify the microscopic slides of Liver & gall bladder • Draw a labeled microscopic slides of Liver & gall bladder • Identify microscopic slides of Submandibular, parotid and sublingual gland. • Draw a labeled diagram of Submandibular, parotid and sublingual gland • Identify the microscopic slides of pancreas • Draw a labeled diagram of microscopic structure of pancreas	SGIS (Practical)	SEQ, OSPE
Developmental Anatomy of	Anatomy	• Describe the development of Intra and extraembryonic coelom • Describe the division of intraembryonic body cavity	LGIS/SGIS/CBL	MCQ, SEQ, Viva & OSPE

Body Cavities and GIT		• Explain the development of mesenteries • Describe the formation of Pleuropericardial membranes • Describe the formation of Pleuroperitoneal membrane • Illustrate the development of diaphragm. • Describe the positional changes and innervation of diaphragm with clinical correlates. • Describe the formation of foregut, midgut and hindgut. • Enumerate the derivatives of foregut. • Describe the development of Oesophagus with Clinical correlates. • Describe the development and rotation of stomach- • Describe the mesenteries of stomach- • Outline the formation of Omental bursa. • Describe the development of duodenum with clinical correlates. • Describe the development of Liver, gall bladder and biliary apparatus. • Describe the formation of derivatives of Ventral mesentery. • Describe the development of Pancreas and spleen with clinical correlates. • Enumerate the derivatives of midgut and describe its development. • Describe the rotation, herniation and fixation of midgut with clinical correlates. • Enumerate the derivatives of Hindgut. • Describe the development and partitioning of Cloaca. • Describe the development of anal canal with clinical correlates.		
Gross Anatomy of Abdomen	Anatomy	1. Differentiate the location and relations of abdominal part of oesophagus. 2. Name the constrictions of oesophagus. 3. Describe Blood supply, nerve supply and clinical correlates of oesophagus. 4. Describe the attachment, nerve supply and action of muscles that makeup the anterior abdominal wall 5. Describe the formation and contents of rectus sheath.	LGIS/SGIS/CBL	MCQ, SEQ, Viva & OSPE

		6. Describe the blood supply and nerve supply of the rectus sheath and anterior abdominal wall. 7. Give the boundaries and contents of the inguinal canal. 8. Describe its clinical correlates 9. Describe the general topography of abdominal cavity. 10. Describe the vertical and horizontal disposition of peritoneum in the abdomen with clinical application 11. Give the boundaries and extent of the lesser sac. 12. Describe clinical correlates 13. Describe the peritoneal recesses related to duodenum, caecum, and appendix with clinical correlates. 14. Describe the blood supply of foregut, midgut and hind gut 15. Outline the salient features, relations, blood supply and nerve supply of stomach 16. Describe the salient features, relations, blood supply and nerve supply of duodenum with clinical correlate 17. Describe the salient features, relations, blood supply and nerve supply of small and large intestine 18. Differentiate between small and large intestine 19. Differentiate and identify different parts of small intestine 20. Outline the lobes and segments of liver 21. Describe the visceral and peritoneal relations of liver 22. Describe the blood supply and nerve supply of liver 23. Describe the salient features, relations, blood supply and nerve supply of gall bladder 24. Explain the formation and relations of bile duct 25. Describe the formation, tributaries and relations of Portal vein 26. Describe the salient features, relations, blood supply and nerve supply of pancreas with the clinical correlates 27. Describe the salient features, relations, blood supply and nerve supply of spleen with the clinical correlates		
Histology of Renal System	Anatomy	Describe microscopic features of kidney, ureter, urinary bladder and urethra.	LGIS/SGIS/CBL	MCQ, SEQ, Viva & OSPE

Histology of Renal System	Anatomy	- Identify microscopic slide of kidney, ureter, urinary bladder - Draw a labeled diagram showing the histology of kidney, ureter, urinary bladder	SGIS (Practical)	SEQ, OSPE
Development of Urinary System	Anatomy	- Explain the embryological origin of kidney & ureter with clinical correlates - Describe the embryological origin of urinary bladder & urethra with clinical correlates	LGIS/SGIS/CBL	MCQ, SEQ, Viva & OSPE
Gross Anatomy of Urinary System	Anatomy	- Describe the gross anatomy of muscles of posterior abdominal wall. - Describe the gross anatomy of thoracolumbar fascia and abdominal aorta. - Outline the gross anatomy of inferior vena cava, sympathetic trunk and lymphatics of posterior abdominal wall - Describe the surface anatomy & radiology of posterior abdominal wall - Describe the gross anatomy of kidney & ureter along with their relations, blood supply and lymphatic drainage. - Describe the gross anatomy of adrenal gland - Outline the gross anatomy of urinary bladder along with its relations, blood supply and lymphatic drainage. - Describe the gross anatomy of urethra along with its relations, blood supply and lymphatic drainage - Describe the surface, cross sectional anatomy & radiology of urinary system. - Identify all the structures on cadaver and model	LGIS/SGIS/CBL	MCQ, SEQ, Viva & OSPE
Gross Anatomy of Pelvis And Perineum	Anatomy	- Describe the gross anatomy of sacrum and bony pelvis - Explain the gross anatomy of pelvic walls, pelvic floor & pelvic fascia - Describe the gross anatomy of prostate, ductus deferens and seminal vesicle - Describe the gross anatomy of uterus, ovary and uterine tubes - Describe the gross anatomy of vagina - Trace the course and branches of pelvic vessels and nerves	LGIS/SGIS/CBL	MCQ, SEQ, Viva & OSPE

		• Describe the gross anatomy of perineum • Describe the gross anatomy of anal canal • Give the boundaries and contents of ischiorectal fossae • Describe the boundaries and contents of superficial and deep perineal pouch • Describe the gross anatomy of pelvic joints and pelvic ligaments • Illustrate the surface anatomy & radiographs of pelvis & perineum Identify all the structures on cadaver and model		
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Learning Resources:

- Regional Anatomy Snell 9th edition
- Last Anatomy 12th edition
- Junqueira's Basic Histology 14th edition
- Histology by Laiq Hussain 5th edition
- Embryology by Langmans 13th edition
- The developing Human by Keith Moore 10th edition
- Gray's Anatomy 41th edition

AIR UNIVERSITY ISLAMABAD

DEPARTMENT OF ANATOMY

Block - II: Neurosciences

Placement in curriculum: Year 02

Subject: Anatomy

Block Duration: 08 weeks

Module Team

TABLE OF CONTENTS

Sr. No	Topics
1.	General Anatomy Nervous system • Organization of nervous system • Structure of neuron • Special supporting cells of nervous system • Receptors and effectors • Formation of spinal nerve • Parts of nervous system, central and peripheral Autonomic nervous system • Sympathetic and parasympathetic nervous system • Enteric nervous system

2.	Special Embryology Development of nervous system • Development of spinal Cord • Development of rhombencephalon • Development of mesencephalon • Development of prosencephalon • Cranial nerve development • Autonomic nervous system • Development of adrenal glands • Development of pituitary gland
3.	General Histology Nervous system • Peripheral nerve • Cerebrum, cerebellum and spinal cord - Autonomic and sensory ganglia
4.	Special Histology Endocrines • Pituitary gland and its hormones • Histology of adrenal cortex and medulla • Thyroid, parathyroid gland microstructure • Pancreatic islets • Histology of pineal gland
5.	Gross Anatomy Neuro-Anatomy • Spinal Cord, nuclei and tracts • Brain stem, pons, medulla & midbrain • Cerebellum, nuclei & tracts • Thalamus • Hypothalamus • Basal Ganglia • Cerebrum structure and functional localization

	• Reticular formation • Limbic system • Ventricular system and CSF • Meninges and dural venous sinuses • Cranial nerves and nuclei • Blood supply of brain and spinal cord
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Introduction / Rationale	This module includes the study of gross features, microscopic anatomy and development of nervous system along with microscopic anatomy of endocrine system. It is designed to help students to learn about different parts of brain, their gross features, neurovascular supply and clinical correlates. The module will explore the cellular composition of the nervous system, the process of neuronal communication, basic & gross neuroanatomy, the neural basis of sensation and perception and the relationship between the brain and human behavior. The endocrine system, along with the nervous system, functions in the regulation of body activities.
Outcomes	At the ends of this block the student should be able to KNOWLEDGE: • Describe the microscopic anatomy of Nervous and endocrine system. • Discuss the developmental anatomy of Nervous system • Explain the gross anatomy of Brain and Spinal cord. • SKILL • Demonstration, identification and drawing of light microscopic appearance of cerebrum, cerebellum, and spinal cord. • Demonstration, identification and drawing of light microscopic appearance of peripheral nerve, autonomic and sensory ganglia. • Demonstration, identification and drawing of light microscopic appearance of pituitary gland adrenal gland thyroid and parathyroid glands ATTITUDE • Demonstrate the effective attitude toward the cadaver. • Demonstrate professional attitude and good communication skills among fellow students and with faculty & staff

OVERVIEW OF BLOCK - II

Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
General Anatomy of Nervous System	Anatomy	- Describe general features of the Nervous system. - Classify the Nervous system. - Describe the characteristic features different subdivisions of the nervous system - Describe the formation of the Common spinal nerve.	LGIS/SGIS/CBL	MCQ, SEQ, Viva & OSPE
Histology of Nervous System	Anatomy	- Classify types of Neurons. - Outline the microscopic structure of a nerve cell body (Nucleus and Cytoplasm). - Describe the microscopic structure of a nerve cell processes. - Explain Membrane potential and the process of axon transport (Antegrade& Retrograde). - Describe types of Synapses and their histology. - Explain the histology of different types of Glial cells. - Describe the histology of Meninges. - Describe the histology of Choroid Plexus. - Describe the microscopic structure of myelinated and unmyelinated nerve fibers. - Describe the microscopic structure of Sensory and Autonomic ganglia. - Classify Receptor nerve endings. - Outline the microscopic structure of different Receptor nerve endings along with clinical correlates. - Classify effector nerve endings. - Describe briefly the microscopic features of neuromuscular junctions with its clinical application. - Illustrate the microscopic structure of Spinal cord, cerebral cortex and cerebellum.	LGIS/SGIS/CBL	MCQ, SEQ, Viva & OSPE

Histology of Nervous System	Anatomy	- Identify peripheral nerve, spinal cord, sensory ganglia, autonomic ganglia, cerebral cortex and cerebellum - Draw a labeled histological diagram of peripheral nerve, spinal cord, sensory ganglia, autonomic ganglia, cerebral cortex and cerebellum	SGIS (Practical)	SEQ, OSPE
Histology of Endocrine System	Anatomy	- Describe the histology of Pituitary gland with clinical correlates - Describe the histology and histophysiology of adrenal gland with clinical correlates - Explain the histology and histophysiology of thyroid & parathyroid gland with Clinical correlates - Describe the histology of islet of Langerhans & pineal gland - Give the salient features of diffuse neuroendocrine system	LGIS/SGIS/CBL	MCQ, SEQ, Viva & OSPE
Histology of Endocrine System	Anatomy	- Identify the microscopic slide of Pituitary gland - Draw a labeled diagram of microscopic picture of pituitary gland. - Identify microscopic structure of adrenal gland - Draw a labeled diagram showing the microscopic structure of adrenal gland - Identify microscopic picture of thyroid and parathyroid glands - Draw a labeled microscopic picture of thyroid and parathyroid glands	SGIS (Practical)	SEQ, OSPE
Development of Nervous System	Anatomy	- Describe the development of Spinal cord, its ganglia and meninges. - Describe the positional changes of the spinal cord. - Describe the process of myelination of nerve fibers with its clinical application - Describe the Development of Myelencephalon ,Metencephalon , Mesencephalon, Prosencephalon along with Clinical correlates. - Explain the briefly the development of cranial nerves. - Describe briefly the development of Autonomic nervous system With Clinical correlates. - Outline the Pathways of various cranial nerves,trace their nuclei, central connections and - Distribution and Describe their clinical correlates	LGIS/SGIS/CBL	MCQ, SEQ, Viva & OSPE

Neuroanatomy	Anatomy	• Describe the salient features and relations of interior of the skull. • Explain the attachments, reflections, nerve supply and blood supply of Dura mater, Arachnoid mater and Pia mater. • Describe the various sub arachnoid cisterns with the clinical correlates. • Describe the gross structure of spinal cord. With Describe clinical correlates. • Describe the anatomical organization of Pain, temperature, Touch and Pressure pathways. • Outline the anatomical organization of discriminative touch, vibratory and muscle joint sense of positioning With Clinical correlates. • Describe the anatomical organization of Joint sense pathways and visceral sensory tracts. • Outline the anatomical organization of Descending tracts of spinal cord With Clinical correlates. • Describe the superficial vessels on the base of the brain. • Explain the gross anatomy of medulla Oblongata. • Describe and draw the anatomical organization of structures present in sections at the different levels • Describe the gross anatomy of Pons. • Describe and draw the anatomical organization of structures present in transverse section at the different levels through Pons. • Describe and draw the anatomical organization of structures present in transverse section at the level through the cranial part of Pons. • Describe the gross appearance, lobes and peduncles of cerebellum • Explain the afferent cerebellar fibers and efferent cerebellar fibers. • Describe the gross anatomy of Midbrain and draw the anatomical organization of structures present in sections at the different with clinical correlates. • Outline the boundaries of 3rd, lateral and 4th Ventricle. • Describe the subdivisions of Cerebrum. • Describe the subdivisions and gross features of Diencephalon. • Explain the general appearance of cerebral hemisphere and main sulci.	LGIS/SGIS/ CBL	MCQ, SEQ, Viva & OSPE
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		• Describe the main sulci and gyri on superolateral surface, medial and inferior surfaces,. • Describe the Commissural fibers, Association fibers and Projection fibers, • Identify the various cortical areas and relate their functional significance. • Describe clinical correlates. • Outline the salient features, nuclei and functions of Thalamus. • Describe the salient features of Hypothalamus, their connections and the functions of Hypothalamus with the clinical correlates. • Outline the boundaries of Third Ventricle. • Describe the various components of the Basal ganglia, • Explain the general organization and functions of Reticular formation • Describe the salient features and functions of limbic system model • Describe the formation and drainage of CSF • Describe the CSF barriers • Describe the various blood vessels (superficial and deep) supplying the brain, their course and branches • Identify all the structures on the cadaver and model		
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Learning Resources:

- Regional Anatomy Snell 9th edition
- Last Anatomy 12th edition
- Junqueira's Basic Histology 14th edition
- Histology by Laiq Hussain 5th edition
- Embryology by Langmans 13th edition
- The developing Human by Keith Moore 10th edition
- Clinical Neuroanatomy by Snell's 7th edition
- Gray's Anatomy 41th edition

AIR UNIVERSITY ISLAMABAD

DEPARTMENT OF ANATOMY

Block – III : Head & Neck, Special Senses and Reproductive Module

Placement in curriculum: Year 02

Subject: Anatomy

Block Duration: 12 weeks

Module Team

TABLE OF CONTENTS

Sr. No	Topics
1.	Special Embryology Head & Neck • Pharyngeal apparatus • Pharyngeal arches, pharyngeal pouches • Development of tongue • Thyroid • Parathyroid, Thymus • Nose & paranasal sinuses • Face and palate Special senses Eye

	• Development of optic cup and lens vesicle • Retina, iris and ciliary body • Lens, choroid, sclera and cornea • Development of optic nerve Ear • Development of internal, middle and external ear Skeletal System • Development of axial skeleton • Skull • Vertebrae • Sternum & ribs
2.	Special Histology The photoreceptor system • Coats of eyeball, cornea sclera • Lens, choroid, iris, ciliary body and lens • The photoreceptor cells, retina and its layers • Conjunctiva, eyelid and lacrimal apparatus The audio receptor system • The histology of external, middle and inner ear • Histological structure of the membranous labyrinth
3.	Gross Anatomy Head and neck • Skull, scalp, eye ball, eye, ear, muscles of face, • Triangles of neck, vessels and nerves of head & neck • Mouth, tongue, pharynx, larynx, esophagus, trachea, nose • Temporomandibular joint and muscles of mastication • Temporal, infratemporal and pterygopalatine fossae. • Cranial nerves, surface anatomy • Radiological Anatomy
4.	Special Embryology The male reproductive system • Development of testis, genital ducts

	• External genitalia The female reproductive system • Development of ovaries ,oviducts • Uterus ,Vagina • External genitalia
5.	Special Histology The male reproductive system • The histological structure of seminiferous tubules • Intratesticular genital duct and excretory genital ducts • Accessory genital glands The female reproductive system • The histology of mammary glands and its phases • Histological structure of ovary and ovarian follicles • The microarchitecture of oviduct • The histological structure of uterus during different phases of menstrual cycle • The cervix and vagina

Introduction / Rationale	In this block students will be able to explain developmental, gross and microscopic anatomy of the head, neck, eyes, and ears along with reproductive system which will be helpful for application of knowledge in a meaningful clinical perspective. Knowledge of reproductive system is taught in relation to its gross features, histology and development focusing on all the male and female reproductive organs. Special sensory organs are of great importance in human life as well as in medical science, here emphasis is given on their gross and microstructure and development so that students can co-relate their basic knowledge with clinical aspects in years to come.
Outcomes	At the ends of this block the student should be able to KNOWLEDGE: • Describe the microscopic anatomy of photoreceptor and audio receptor system. • The special histology of male and female reproductive system • Discussed the developmental anatomy of Head & neck, special senses and skeletal system

	• Explain the gross anatomy of Head & Neck. SKILL • Demonstration, identification and drawing of light microscopic appearance of cornea, lens, retina and cochlea. • Demonstration, identification and drawing of light microscopic appearance of testis, epididymis, prostate & ductus deferens. • Demonstration, identification and drawing of light microscopic appearance of mammary gland, ovary and ovarian follicles, oviduct, uterus and vagina ATTITUDE • Demonstrate the effective attitude toward the cadaver. • Demonstrate professional attitude and good communication skills among fellow students and with faculty & staff
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OVERVIEW OF BLOCK - III

Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
Histology of Male and Female reproductive system	Anatomy	• Describe the histology of testis • Explain the histology of intratesticular and excretory genital ducts and accessory genital glands • Describe the histology of prostate and seminal vesicles • Describe the histology of bulbourethral glands & penis • Illustrate the histology of ovary • Describe the histology of uterus, cervix and placenta • Outline the histology of vagina and external genitalia • Describe the histology of breast with clinical correlates	LGIS/SGIS/CBL	MCQ, SEQ, Viva & OSPE
Histology of Male and Female reproductive system	Anatomy	• Identify microscopic structure of testis • Draw a labeled microscopic picture of testis • Identify microscopic structure of epididymis, vas deferens • Draw a labeled microscopic structure of epididymis, vas deferens & seminal vesicle and prostate • Identify the microscopic structure of ovary • Draw a labeled microscopic structure of ovary	SGIS (Practical)	SEQ, OSPE

		- Identify the slide of different phases of uterus - Draw a labeled diagram showing the different phases of uterus. - Identify microscopic structure of vagina - Draw a labeled microscopic structure of cervix & vagina - Identify the microscopic structure of breast - Draw a labeled the microscopic structure of breast		
Development of Male and Female reproductive system		- Describe the development of male and female gonads - Describe the development of genital ducts & vagina With Clinical correlates - Describe the development of external genitalia - Describe the Descent of ovaries and testis Along with Clinical correlates	LGIS/SGIS/CBL	MCQ, SEQ, Viva & OSPE
Histology of Special Senses	Anatomy	- Describe the histology of various layers of eye ball. - Illustrate the histology of lens, vitreous body & retina. - Describe the histology of conjunctiva, eyelids and lacrimal apparatus. - Describe the histology of external and middle ear and internal ear.	LGIS/SGIS/CBL	MCQ, SEQ, Viva & OSPE
Histology of Special Senses	Anatomy	- Identify microscopic slide of retina. - Draw a labeled microscopic structure of retina. - Identify microscopic slide of cornea. - Draw a labeled microscopic structure of cornea. - Identify microscopic slide of internal ear - Draw a labeled microscopic structure of internal ear	SGIS (Practical)	SEQ, OSPE
Development of Head & Neck	Anatomy	- Describe development of pharyngeal arches and their derivatives. - Explain the development of tongue. - Describe development of face. - Describe development of nasal cavities & paranasal sinuses.	LGIS/SGIS/CBL	MCQ, SEQ, Viva & OSPE

		• Illustrate the development of palate. • Describe development of nasal cavities. • Describe development of eye along with congenital anomalies of eye. • Explain the development of ear. • Describe development of Vertebral column. • Outline the development of cranium.		
Gross Anatomy of Head & Neck	Anatomy	• Describe the gross anatomy of skull & bony orbit. • Describe the gross anatomy of cervical vertebrae. • Describe the gross anatomy of scalp, temple and face • Describe the gross anatomy of mandible & hyoid bone. • Explain the gross anatomy of cervical fascia and introduction to triangles of neck. • Outline the gross anatomy of the deep dissection of neck. • Describe Gross anatomy of oesophagus, trachea, great vessels and nerves of neck. • Describe the lymphatic drainage of head & neck • Illustrate the gross anatomy of submandibular region. • Describe the gross anatomy of thyroid and parathyroid gland • Describe the gross anatomy of prevertebral region. • Describe the gross anatomy of larynx. • Describe the gross anatomy of parotid region. • Explain the gross anatomy of temporal region. • Describe the gross anatomy of infratemporal region. • Describe the gross anatomy of temporomandibular joint. • Describe the gross anatomy of nose, nasal cavity and paranasal sinuses. • Describe the gross anatomy of eyelids, and lacrimal apparatus. • Describe the muscles, nerves and vessels of orbit.	LGIS/SGIS/CBL	MCQ, SEQ, Viva & OSPE

		• Describe the gross anatomy of mouth, tongue, palate and pharynx. • Give the boundaries and contents of pterygopalatine fossa. • Describe Gross anatomy of hard & soft palate. • Describe the gross anatomy of external, middle and internal ear with clinical correlates. • Describe the gross anatomy of eye ball. • Describe the contents of vertebral canal • Outline the radiology & surface markings of Head & Neck. • Identify all the structures on cadaver and model		
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Learning Resources:

- Regional Anatomy Snell 9th edition
- Last Anatomy 12th edition
- Junqueira's Basic Histology 14th edition
- Histology by Laiq Hussain 5th edition
- Embryology by Langmans 13th edition
- The developing Human by Keith Moore 10th edition
- Gray's Anatomy 41th edition

AIR UNIVERSITY ISLAMABAD

DEPARTMENT OF ANATOMY

Block - I: Gastrointestinal and Genitourinary Module

Placement in curriculum: Year 02

Subject: Anatomy

Block Duration: 12 weeks

TABLE OF CONTENTS

Sr. No	Topics
1.	Special Embryology Digestive system • Division of Gut tube • Derivatives of foregut • Physiological herniation • Development of mesenteries • Hind gut and anal canal Body cavities • Development of body cavities • Formation of diaphragm

2.	Special Histology Digestive System • Histology of Oral cavity and tongue • Layers of GIT • Histology of esophagus • Cells and glandular epithelium of stomach • Cells of small intestines and histological layers • Histology of large intestine (appendix, colon, anal canal) • Organs associated with GIT (salivary glands, pancreas, liver, gall bladder)
3.	Gross Anatomy Abdomen • Anterior and posterior abdominal wall • Musculature and neurovascular bundle • Abdominal cavity • Abdominal viscera • Gross anatomy of organs and their blood supply, nerve supply and lymphatic • Peritoneum its attachments and pouches Special Embryology The urinary system • Development of Kidney • Position of kidney • Urinary bladder, Urethra Special Histology Urinary System • Histological structure of kidney, renal corpuscles, tubules • Juxtaglomerular apparatus, collecting ducts • Microstructure of ureters, bladder and urethra Gross Anatomy Pelvis • Bony pelvis, inlet and outlet

	• Pelvic diaphragm • Pelvic cavity • Pelvic viscera (both male and female) • The perineum, male and female perineal pouches • The perineal viscera
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Introduction / Rationale	GIT and urinary system module consists of the study of digestive system and urinary system. It is an extensive and in-depth study of the anatomical, histological and embryological aspects of gastrointestinal tract and its viscera like stomach, liver, pancreas and gall bladder along with the viscera of urinary system which are kidney ureter and urinary bladder. Gastrointestinal tract and liver play a vital role in the life of human beings. Liver is the organ where major metabolic functions take place. It is important for undergraduate students of medicine to have basic knowledge about the functions & diseases of gastrointestinal tract and liver and their management and for that a sound understanding of the structure and development and their relationship to the disease processes is essential. Urinary system is responsible for excretion of waste and toxic substances. It is a cross-disciplinary field that engages in investigating how the renal system develops and its gross and microscopic details. This module combines the exposure to the structure and development of renal system, disease and their preventions, hands-on skills and practical. Similarly, this module of renal system will enable the students of second year to recognize the clinical presentations of common renal diseases and relate clinical manifestations to basic sciences.
Outcomes	At the ends of this block the student should be able to KNOWLEDGE: • Describe the microscopic anatomy of Gastrointestinal and Genitourinary system. • Discuss the developmental anatomy of Gastrointestinal and Genitourinary system • Explain the gross anatomy of abdomen, pelvis and perineum. SKILL • Demonstration, identification and drawing of light microscopic appearance of tongue, lip, esophagus, stomach, duodenum, jejunum, ileum, colon, anorectic junction and appendix. • Demonstration, identification and drawing of light microscopic appearance of liver, gall bladder, pancreas and salivary gland. • Demonstration, identification and drawing of light microscopic appearance of kidney, urinary bladder and ureter.

ATTITUDE

- Demonstrate the effective attitude toward the cadaver.
- Demonstrate professional attitude and good communication skills among fellow students and with faculty & staff

OVERVIEW OF BLOCK - I

Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
Histology of Gastrointestinal Tract	Anatomy	• Describe the histology of lips, cheeks, oral cavity, palate and pharynx. • Illustrate the microscopic structure of tongue and types of papillae. • Describe the microscopic structure of taste buds. • Describe the microscopic structure of esophagus with clinical correlates. • Explain the microscopic layers of stomach • Differentiate histologically between different parts of the stomach • Describe the ultrastructure of different cells that makeup the glands of stomach with clinical correlates • Describe the microscopic layers of small intestine • Differentiate histologically between duodenum, jejunum, ileum • Describe the ultrastructure of different cells that makeup the glands of small intestine with clinical correlates • Describe the microscopic structure of large intestine • Differentiate between the histology of small and large intestine • Describe the histology of appendix, rectum and anal canal with clinical correlates	LGIS/SGIS/CBL	MCQ, SEQ, Viva & OSPE

		• Describe the histology of different Salivary glands with clinical correlates • Explain the histology of Liver • Differentiate between Classical lobule, Portal lobule and Hepatic acinus. • Describe the microscopic structure of liver with blood supply of liver. • Outline the zones of hepatic acini and their functions. • Describe the histology of Pancreas with clinical correlates. • Illustrate the microscopic structure of gall bladder with clinical correlates.		
Histology of Gastrointestinal Tract	Anatomy	• Identify the histological slides of tongue, Lip and esophagus • Draw a labeled histological pictures of tongue, lip and esophagus • Identify the microscopic slide of fundus and body region of stomach • Draw a labeled histological pictures of fundus and body region of stomach • Identify the microscopic slide of Duodenum • Draw a labeled microscopic picture of Duodenum • Identify the microscopic slides of Jejunum and Ileum • Draw a labeled diagram of Jejunum and Ileum • Identify the microscopic slides of colon and appendix. • Draw a labeled diagram of colon and appendix • Identify the microscopic slide of anorectal junction • Draw a labeled microscopic picture of anorectal junction • Identify the microscopic slides of Liver & gall bladder • Draw a labeled microscopic slides of Liver & gall bladder • Identify microscopic slides of Submandibular, parotid and sublingual gland. • Draw a labeled diagram of Submandibular, parotid and sublingual gland • Identify the microscopic slides of pancreas	SGIS (Practical)	SEQ, OSPE

		• Draw a labeled diagram of microscopic structure of pancreas		
Developmental Anatomy of Body Cavities and GIT	Anatomy	• Describe the development of Intra and extraembryonic coelom • Describe the division of intraembryonic body cavity • Explain the development of mesenteries • Describe the formation of Pleuropericardial membranes • Describe the formation of Pleuroperitoneal membrane • Illustrate the development of diaphragm. • Describe the positional changes and innervation of diaphragm with clinical correlates. • Describe the formation of foregut, midgut and hindgut. • Enumerate the derivatives of foregut. • Describe the development of Oesophagus with Clinical correlates. • Describe the development and rotation of stomach- • Describe the mesenteries of stomach- • Outline the formation of Omental bursa. • Describe the development of duodenum with clinical correlates. • Describe the development of Liver, gall bladder and biliary apparatus. • Describe the formation of derivatives of Ventral mesentery. • Describe the development of Pancreas and spleen with clinical correlates. • Enumerate the derivatives of midgut and describe its development. • Describe the rotation, herniation and fixation of midgut with clinical correlates. • Enumerate the derivatives of Hindgut. • Describe the development and partitioning of Cloaca. • Describe the development of anal canal with clinical correlates.	LGIS/SGIS/CBL	MCQ, SEQ, Viva & OSPE

Gross Anatomy of Abdomen	Anatomy	• Differentiate the location and relations of abdominal part of oesophagus. • Name the constrictions of oesophagus. • Describe Blood supply, nerve supply and clinical correlates of oesophagus. • Describe the attachment, nerve supply and action of muscles that makeup the anterior abdominal wall • Describe the formation and contents of rectus sheath. • Describe the blood supply and nerve supply of the rectus sheath and anterior abdominal wall. • Give the boundaries and contents of the inguinal canal. • Describe its clinical correlates • Describe the general topography of abdominal cavity. • Describe the vertical and horizontal disposition of peritoneum in the abdomen with clinical application • Give the boundaries and extent of the lesser sac. • Describe clinical correlates • Describe the peritoneal recesses related to duodenum, caecum, and appendix with clinical correlates. • Describe the blood supply of foregut, midgut and hind gut • Outline the salient features, relations, blood supply and nerve supply of stomach • Describe the salient features, relations, blood supply and nerve supply of duodenum with clinical correlate • Describe the salient features, relations, blood supply and nerve supply of small and large intestine • Differentiate between small and large intestine • Differentiate and identify different parts of small intestine • Outline the lobes and segments of liver • Describe the visceral and peritoneal relations of liver • Describe the blood supply and nerve supply of liver • Describe the salient features, relations, blood supply and nerve supply of gall bladder	LGIS/SGIS/CBL	MCQ, SEQ, Viva & OSPE
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		• Explain the formation and relations of bile duct • Describe the formation, tributaries and relations of Portal vein • Describe the salient features, relations, blood supply and nerve supply of pancreas with the clinical correlates • Describe the salient features, relations, blood supply and nerve supply of spleen with the clinical correlates		
Histology of Renal System	Anatomy	• Describe microscopic features of kidney, ureter, urinary bladder and urethra.	LGIS/SGIS/CBL	MCQ, SEQ, Viva & OSPE
Histology of Renal System	Anatomy	• Identify microscopic slide of kidney, ureter, urinary bladder • Draw a labeled diagram showing the histology of kidney, ureter, urinary bladder	SGIS (Practical)	SEQ, OSPE
Development of Urinary System	Anatomy	• Explain the embryological origin of kidney & ureter with clinical correlates • Describe the embryological origin of urinary bladder & urethra with clinical correlates	LGIS/SGIS/CBL	MCQ, SEQ, Viva & OSPE
Gross Anatomy of Urinary System	Anatomy	• Describe the gross anatomy of muscles of posterior abdominal wall. • Describe the gross anatomy of thoracolumbar fascia and abdominal aorta. • Outline the gross anatomy of inferior vena cava, sympathetic trunk and lymphatics of posterior abdominal wall • Describe the surface anatomy & radiology of posterior abdominal wall • Describe the gross anatomy of kidney & ureter along with their relations, blood supply and lymphatic drainage. • Describe the gross anatomy of adrenal gland • Outline the gross anatomy of urinary bladder along with its relations, blood supply and lymphatic drainage. • Describe the gross anatomy of urethra along with its relations, blood supply and lymphatic drainage • Describe the surface, cross sectional anatomy & radiology of urinary system.	LGIS/SGIS/CBL	MCQ, SEQ, Viva & OSPE

		Identify all the structures on cadaver and model		
Gross Anatomy of Pelvis And Perineum	Anatomy	- Describe the gross anatomy of sacrum and bony pelvis - Explain the gross anatomy of pelvic walls, pelvic floor & pelvic fascia - Describe the gross anatomy of prostate, ductus deferens and seminal vesicle - Describe the gross anatomy of uterus, ovary and uterine tubes - Describe the gross anatomy of vagina - Trace the course and branches of pelvic vessels and nerves - Describe the gross anatomy of perineum - Describe the gross anatomy of anal canal - Give the boundaries and contents of ischiorectal fossae - Describe the boundaries and contents of superficial and deep perineal pouch - Describe the gross anatomy of pelvic joints and pelvic ligaments - Illustrate the surface anatomy & radiographs of pelvis & perineum - Identify all the structures on cadaver and model	LGIS/SGIS/CBL	MCQ, SEQ, Viva & OSPE

Learning Resources:

- Regional Anatomy Snell 9th edition
- Last Anatomy 12th edition
- Junqueira's Basic Histology 14th edition
- Histology by Laiq Hussain 5th edition
- Embryology by Langmans 13th edition
- The developing Human by Keith Moore 10th edition
- Gray's Anatomy 41th edition

AIR UNIVERSITY ISLAMABAD

DEPARTMENT OF ANATOMY

Block - II: Neurosciences

Placement in curriculum: Year 02

Subject: Anatomy

Block Duration: 08 weeks

TABLE OF CONTENTS

Sr. No	Topics
1.	General Anatomy Nervous system • Organization of nervous system • Structure of neuron • Special supporting cells of nervous system • Receptors and effectors • Formation of spinal nerve • Parts of nervous system, central and peripheral Autonomic nervous system • Sympathetic and parasympathetic nervous system • Enteric nervous system

2.	Special Embryology Development of nervous system • Development of spinal Cord • Development of rhombencephalon • Development of mesencephalon • Development of prosencephalon • Cranial nerve development • Autonomic nervous system • Development of adrenal glands • Development of pituitary gland
3.	General Histology Nervous system • Peripheral nerve • Cerebrum, cerebellum and spinal cord - Autonomic and sensory ganglia
4.	Special Histology Endocrines • Pituitary gland and its hormones • Histology of adrenal cortex and medulla • Thyroid, parathyroid gland microstructure • Pancreatic islets • Histology of pineal gland
5.	Gross Anatomy Neuro-Anatomy • Spinal Cord, nuclei and tracts • Brain stem, pons, medulla & midbrain • Cerebellum, nuclei & tracts • Thalamus • Hypothalamus • Basal Ganglia • Cerebrum structure and functional localization

	• Reticular formation • Limbic system • Ventricular system and CSF • Meninges and dural venous sinuses • Cranial nerves and nuclei • Blood supply of brain and spinal cord
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Introduction / Rationale	This module includes the study of gross features, microscopic anatomy and development of nervous system along with microscopic anatomy of endocrine system. It is designed to help students to learn about different parts of brain, their gross features, neurovascular supply and clinical correlates. The module will explore the cellular composition of the nervous system, the process of neuronal communication, basic & gross neuroanatomy, the neural basis of sensation and perception and the relationship between the brain and human behavior. The endocrine system, along with the nervous system, functions in the regulation of body activities.
Outcomes	At the ends of this block the student should be able to KNOWLEDGE: • Describe the microscopic anatomy of Nervous and endocrine system. • Discuss the developmental anatomy of Nervous system • Explain the gross anatomy of Brain and Spinal cord. • SKILL • Demonstration, identification and drawing of light microscopic appearance of cerebrum, cerebellum, and spinal cord. • Demonstration, identification and drawing of light microscopic appearance of peripheral nerve, autonomic and sensory ganglia. • Demonstration, identification and drawing of light microscopic appearance of pituitary gland adrenal gland thyroid and parathyroid glands ATTITUDE • Demonstrate the effective attitude toward the cadaver. • Demonstrate professional attitude and good communication skills among fellow students and with faculty & staff

OVERVIEW OF BLOCK - II

Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
General Anatomy of Nervous System	Anatomy	- Describe general features of the Nervous system. - Classify the Nervous system. - Describe the characteristic features different subdivisions of the nervous system - Describe the formation of the Common spinal nerve.	LGIS/SGIS/CBL	MCQ, SEQ, Viva & OSPE
Histology of Nervous System	Anatomy	- Classify types of Neurons. - Outline the microscopic structure of a nerve cell body (Nucleus and Cytoplasm). - Describe the microscopic structure of a nerve cell processes. - Explain Membrane potential and the process of axon transport (Antegrade& Retrograde). - Describe types of Synapses and their histology. - Explain the histology of different types of Glial cells. - Describe the histology of Meninges. - Describe the histology of Choroid Plexus. - Describe the microscopic structure of myelinated and unmyelinated nerve fibers. - Describe the microscopic structure of Sensory and Autonomic ganglia. - Classify Receptor nerve endings. - Outline the microscopic structure of different Receptor nerve endings along with clinical correlates. - Classify effector nerve endings. - Describe briefly the microscopic features of neuromuscular junctions with its clinical application. - Illustrate the microscopic structure of Spinal cord, cerebral cortex and cerebellum.	LGIS/SGIS/CBL	MCQ, SEQ, Viva & OSPE

Histology of Nervous System	Anatomy	- Identify peripheral nerve, spinal cord, sensory ganglia, autonomic ganglia, cerebral cortex and cerebellum - Draw a labeled histological diagram of peripheral nerve, spinal cord, sensory ganglia, autonomic ganglia, cerebral cortex and cerebellum	SGIS (Practical)	SEQ, OSPE
Histology of Endocrine System	Anatomy	- Describe the histology of Pituitary gland with clinical correlates - Describe the histology and histophysiology of adrenal gland with clinical correlates - Explain the histology and histophysiology of thyroid & parathyroid gland with Clinical correlates - Describe the histology of islet of Langerhans & pineal gland - Give the salient features of diffuse neuroendocrine system	LGIS/SGIS/CBL	MCQ, SEQ, Viva & OSPE
Histology of Endocrine System	Anatomy	- Identify the microscopic slide of Pituitary gland - Draw a labeled diagram of microscopic picture of pituitary gland. - Identify microscopic structure of adrenal gland - Draw a labeled diagram showing the microscopic structure of adrenal gland - Identify microscopic picture of thyroid and parathyroid glands - Draw a labeled microscopic picture of thyroid and parathyroid glands	SGIS (Practical)	SEQ, OSPE
Development of Nervous System	Anatomy	- Describe the development of Spinal cord, its ganglia and meninges. - Describe the positional changes of the spinal cord. - Describe the process of myelination of nerve fibers with its clinical application - Describe the Development of Myelencephalon, Metencephalon, Mesencephalon, Prosencephalon along with Clinical correlates.	LGIS/SGIS/CBL	MCQ, SEQ, Viva & OSPE

		• Explain the briefly the development of cranial nerves. • Describe briefly the development of Autonomic nervous system With Clinical correlates. • Outline the Pathways of various cranial nerves,trace their nuclei, central connections and • Distribution and Describe their clinical correlates		
Neuroanatomy	Anatomy	• Describe the salient features and relations of interior of the skull. • Explain the attachments, reflections, nerve supply and blood supply of Dura mater, Arachnoid mater and Pia mater. • Describe the various sub arachnoid cisterns with the clinical correlates. • Describe the gross structure of spinal cord. With Describe clinical correlates. • Describe the anatomical organization of Pain, temperature, Touch and Pressure pathways. • Outline the anatomical organization of discriminative touch, vibratory and muscle joint sense of positioning With Clinical correlates. • Describe the anatomical organization of Joint sense pathways and visceral sensory tracts. • Outline the anatomical organization of Descending tracts of spinal cord With Clinical correlates. • Describe the superficial vessels on the base of the brain. • Explain the gross anatomy of medulla Oblongata. • Describe and draw the anatomical organization of structures present in sections at the different levels • Describe the gross anatomy of Pons. • Describe and draw the anatomical organization of structures present in transverse section at the different levels through Pons.	LGIS/SGIS/CBL	MCQ, SEQ, Viva & OSPE

		• Describe and draw the anatomical organization of structures present in transverse section at the level through the cranial part of Pons. • Describe the gross appearance, lobes and peduncles of cerebellum • Explain the afferent cerebellar fibers and efferent cerebellar fibers. • Describe the gross anatomy of Midbrain and draw the anatomical organization of structures present in sections at the different with clinical correlates. • Outline the boundaries of 3rd, lateral and 4th Ventricle. • Describe the subdivisions of Cerebrum. • Describe the subdivisions and gross features of Diencephalon. • Explain the general appearance of cerebral hemisphere and main sulci. • Describe the main sulci and gyri on superolateral surface, medial and inferior surfaces,. • Describe the Commissural fibers, Association fibers and Projection fibers, • Identify the various cortical areas and relate their functional significance. • Describe clinical correlates. • Outline the salient features, nuclei and functions of Thalamus. • Describe the salient features of Hypothalamus, their connections and the functions of Hypothalamus with the clinical correlates. • Outline the boundaries of Third Ventricle. • Describe the various components of the Basal ganglia, • Explain the general organization and functions of Reticular formation		
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		• Describe the salient features and functions of limbic system model • Describe the formation and drainage of CSF • Describe the CSF barriers • Describe the various blood vessels (superficial and deep) supplying the brain, their course and branches • Identify all the structures on the cadaver and model		
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Learning Resources:

- Regional Anatomy Snell 9th edition
- Last Anatomy 12th edition
- Junqueira's Basic Histology 14th edition
- Histology by Laiq Hussain 5th edition
- Embryology by Langmans 13th edition
- The developing Human by Keith Moore 10th edition
- Clinical Neuroanatomy by Snell's 7th edition
- Gray's Anatomy 41th edition.

AIR UNIVERSITY ISLAMABAD

DEPARTMENT OF ANATOMY

Block – III : Head & Neck, Special Senses and Reproductive Module

Placement in curriculum: Year 02

Subject: Anatomy

Block Duration: 12 weeks

TABLE OF CONTENTS

Sr. No	Topics
1.	Special Embryology Head & Neck • Pharyngeal apparatus • Pharyngeal arches, pharyngeal pouches • Development of tongue • Thyroid • Parathyroid, Thymus • Nose & paranasal sinuses • Face and palate Special senses Eye • Development of optic cup and lens vesicle • Retina, iris and ciliary body

	• Lens, choroid , sclera and cornea • Development of optic nerve Ear • Development of internal, middle and external ear Skeletal System • Development of axial skeleton • Skull • Vertebrae • Sternum & ribs
2.	Special Histology The photoreceptor system • Coats of eyeball, cornea sclera • Lens,choroid, iris, ciliary body and lens • The photoreceptor cells, retina and its layers • Conjunctiva, eyelid and lacrimal apparatus The audio receptor system • The histology of external, middle and inner ear • Histological structure of the membranous labyrinth
3.	Gross Anatomy Head and neck • Skull, scalp, eye ball, eye, ear, muscles of face, • Triangles of neck, vessels and nerves of head & neck • Mouth, tongue, pharynx, larynx, esophagus, trachea, nose • Temporomandibular joint and muscles of mastication • Temporal, infratemporal and pterygopalatine fossae. • Cranial nerves, surface anatomy • Radiological Anatomy
4.	Special Embryology The male reproductive system • Development of testis ,genital ducts • External genitalia

	The female reproductive system • Development of ovaries ,oviducts • Uterus ,Vagina • External genitalia
5.	Special Histology The male reproductive system • The histological structure of seminiferous tubules • Intratesticular genital duct and excretory genital ducts • Accessory genital glands The female reproductive system • The histology of mammary glands and its phases • Histological structure of ovary and ovarian follicles • The microarchitecture of oviduct • The histological structure of uterus during different phases of menstrual cycle • The cervix and vagina

Introduction / Rationale	In this block students will be able to explain developmental, gross and microscopic anatomy of the head, neck, eyes, and ears along with reproductive system which will be helpful for application of knowledge in a meaningful clinical perspective. Knowledge of reproductive system is taught in relation to its gross features, histology and development focusing on all the male and female reproductive organs. Special sensory organs are of great importance in human life as well as in medical science, here emphasis is given on their gross and microstructure and development so that students can co-relate their basic knowledge with clinical aspects in years to come.
Outcomes	At the ends of this block the student should be able to KNOWLEDGE: • Describe the microscopic anatomy of photoreceptor and audio receptor system. • The special histology of male and female reproductive system • Discussed the developmental anatomy of Head & neck, special senses and skeletal system • Explain the gross anatomy of Head & Neck.

	SKILL • Demonstration, identification and drawing of light microscopic appearance of cornea, lens, retina and cochlea. • Demonstration, identification and drawing of light microscopic appearance of testis, epididymis, prostate & ductus deferens. • Demonstration, identification and drawing of light microscopic appearance of mammary gland, ovary and ovarian follicles, oviduct, uterus and vagina ATTITUDE • Demonstrate the effective attitude toward the cadaver. • Demonstrate professional attitude and good communication skills among fellow students and with faculty & staff
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OVERVIEW OF BLOCK - III

Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
Histology of Male and Female reproductive system	Anatomy	• Describe the histology of testis • Explain the histology of intratesticular and excretory genital ducts and accessory genital glands • Describe the histology of prostate and seminal vesicles • Describe the histology of bulbourethral glands & penis • Illustrate the histology of ovary • Describe the histology of uterus, cervix and placenta • Outline the histology of vagina and external genitalia • Describe the histology of breast with clinical correlates	LGIS/SGIS/CBL	MCQ, SEQ, Viva & OSPE
Histology of Male and Female reproductive system	Anatomy	• Identify microscopic structure of testis • Draw a labeled microscopic picture of testis • Identify microscopic structure of epididymis, vas deferens • Draw a labeled microscopic structure of epididymis, vas deferens & seminal vesicle and prostate • Identify the microscopic structure of ovary • Draw a labeled microscopic structure of ovary • Identify the slide of different phases of uterus	SGIS (Practical)	SEQ, OSPE

		• Draw a labeled diagram showing the different phases of uterus. • Identify microscopic structure of vagina • Draw a labeled microscopic structure of cervix & vagina • Identify the microscopic structure of breast • Draw a labeled the microscopic structure of breast		
Development of Male and Female reproductive system		• Describe the development of male and female gonads • Describe the development of genital ducts & vagina With Clinical correlates • Describe the development of external genitalia • Describe the Descent of ovaries and testis Along with Clinical correlates	LGIS/SGIS/CBL	MCQ, SEQ, Viva & OSPE
Histology of Special Senses	Anatomy	• Describe the histology of various layers of eye ball. • Illustrate the histology of lens, vitreous body & retina. • Describe the histology of conjunctiva, eyelids and lacrimal apparatus. • Describe the histology of external and middle ear and internal ear.	LGIS/SGIS/CBL	MCQ, SEQ, Viva & OSPE
Histology of Special Senses	Anatomy	• Identify microscopic slide of retina. • Draw a labeled microscopic structure of retina. • Identify microscopic slide of cornea. • Draw a labeled microscopic structure of cornea. • Identify microscopic slide of internal ear • Draw a labeled microscopic structure of internal ear	SGIS (Practical)	SEQ, OSPE
Development of Head & Neck	Anatomy	• Describe development of pharyngeal arches and their derivatives. • Explain the development of tongue. • Describe development of face. • Describe development of nasal cavities & paranasal sinuses. • Illustrate the development of palate. • Describe development of nasal cavities.	LGIS/SGIS/CBL	MCQ, SEQ, Viva & OSPE

		• Describe development of eye along with congenital anomalies of eye. • Explain the development of ear. • Describe development of Vertebral column. • Outline the development of cranium.		
Gross Anatomy of Head & Neck	Anatomy	• Describe the gross anatomy of skull & bony orbit. • Describe the gross anatomy of cervical vertebrae. • Describe the gross anatomy of scalp, temple and face • Describe the gross anatomy of mandible & hyoid bone. • Explain the gross anatomy of cervical fascia and introduction to triangles of neck. • Outline the gross anatomy of the deep dissection of neck. • Describe Gross anatomy of oesophagus, trachea, great vessels and nerves of neck. • Describe the lymphatic drainage of head & neck • Illustrate the gross anatomy of submandibular region. • Describe the gross anatomy of thyroid and parathyroid gland • Describe the gross anatomy of prevertebral region. • Describe the gross anatomy of larynx. • Describe the gross anatomy of parotid region. • Explain the gross anatomy of temporal region. • Describe the gross anatomy of infratemporal region. • Describe the gross anatomy of temporomandibular joint. • Describe the gross anatomy of nose, nasal cavity and paranasal sinuses. • Describe the gross anatomy of eyelids, and lacrimal apparatus. • Describe the muscles, nerves and vessels of orbit. • Describe the gross anatomy of mouth, tongue, palate and pharynx. • Give the boundaries and contents of pterygopalatine fossa.	LGIS/SGIS/CBL	MCQ, SEQ, Viva & OSPE

		• Describe Gross anatomy of hard & soft palate. • Describe the gross anatomy of external, middle and internal ear with clinical correlates. • Describe the gross anatomy of eye ball. • Describe the contents of vertebral canal • Outline the radiology & surface markings of Head & Neck. • Identify all the structures on cadaver and model		
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Learning Resources:

- Regional Anatomy Snell 9th edition
- Last Anatomy 12th edition
- Junqueira's Basic Histology 14th edition
- Histology by Laiq Hussain 5th edition
- Embryology by Langmans 13th edition
- The developing Human by Keith Moore 10th edition
- Gray's Anatomy 41th edition

Department of Physiology

Year - II

BLOCK - I: Gastrointestinal & Genitourinary

Placement in curriculum: Year 02

Subject: Physiology

Block Duration: - 11 Weeks

TABLE OF CONTENTS: BLOCK – I

Modules	Titles
1	Gastrointestinal and Liver physiology
2	Genitourinary physiology

Introduction/ Rationale	This block is designed to build the student's knowledge about the basic principles of functions of entire alimentary tract and urinary system and to know the specific functions of their different segments. This knowledge will serve as the basic pathway for the student to weave further understanding about the etiology, pathogenesis of diseases related to these systems and the principles of their management.
Outcomes	On completion of these modules, students will be able to: KNOWLEDGE:

	• Know the structural organization of alimentary tract and the associated glands/organs. • Know the cross section of gut wall with general arrangement of different layers and their contents. • Describe the mechanisms of swallowing and mastication with its nervous control, and can correlate the causes of dysphagia. • Know the organization and functions of Enteric Nervous System. • Discuss the functions of stomach and the control mechanisms involved in stomach emptying. • Explain the physiological basis of Gastric/Peptic ulcer. • Knows the nervous control of vomiting and its causes. • Explain the Physiological basis of movements of small and large intestine and the associated abnormalities like diarrhea, constipation, megacolon. • Discuss the functions of colon and the control of defecation reflex. • Explain the functions of liver and gall bladder and correlate with various liver/gall bladder disorders e.g. Jaundice, cirrhosis, hepatic failure and stones in gall bladder etc. • Explain routine investigations like Liver Function Tests (LFTs) and stool examination with pathogenesis of different associated disorders. SKILL: • Should take proper precautionary measures for each experiment. • Should follow the lab work protocol. • Demonstrate the ability to locate and examine various organs of GIT. • Should be able to identify routine physical, chemical and microscopic parameters of urine. ATTITUDE: ▪ Demonstrate the effective attitude towards the colleagues, staff and their peers. ▪ Demonstrate the professional attitude, team dynamism and good communication in library and during practical.
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OVERVIEW OF BLOCK-I

Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
<u>Gastrointestinal and Liver Physiology.</u> GIT parts and their functions. Mastication, Swallowing and their control. Enteric Nervous system (Gut Brain) Functions and movements of stomach Functions and movements of small intestine. Functions and movements of Large intestine.	Physiology	- Understand the structural organization of alimentary tract and the associated glands/organs. - Draw and label the cross section of gut wall with general arrangement of different layers and their contents.	Lecture	MCQ
	Physiology	Explain the mechanisms of swallowing and mastication with its nervous control, and can correlate the causes of dysphagia	Tutorial	SEQ
		- Knows the organization and functions of Enteric Nervous System. - Discuss the functions of stomach and the control mechanisms involved in stomach emptying. - Explain the physiological basis of Gastric/Peptic ulcer. - Knows the nervous control of vomiting and its causes.	Lecture	SAQ
		- Explain the Physiological basis of movements of small and large intestine and the associated abnormalities like diarrhea, constipation, mega-colon. - Understands the functions of colon and the control of defecation reflex. - Explain the functions of liver and gall bladder and correlate with various liver/gall bladder disorders e.g. Jaundice, cirrhosis, hepatic failure and stones in gall bladder etc. - Understand and relate routine investigations like Liver Function Tests (LFTs) and stool examination with pathogenesis of different associated disorders.	Problem Base Learning Session (PBL)	PBQ

Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
Functions of Liver and Gall bladder.				
<u>Body fluids and Renal Physiology</u> Structure of kidney and Nephron GFR regulating factors Formation of conc. and dilute urine Plasma clearance	Physiology Physiology Physiology	- Understand the distribution of total body water, the principle of their measurement and the clinical significance of each fluid compartment. - Comprehend the physiological basis of extra cellular and intracellular edema. - Relate the concept of water balance with fluid intake and output. - Understand the structure and functions of various parts of nephron. - Comprehend the filtration function of glomerulus and its relationship with renal blood flow. - Explain the physiological basis of GFR, its measurement and various factors influencing glomerular filtration. - Draw and label glomerular capillary membrane, Juxtaglomerular apparatus and highlight various functional part of each. - Understand the formation of urine, and relate the reabsorption and secretory functions of nephron in it. - Explain the mechanism of formation of concentrated and dilute urine along with role of Counter Multiplier and Countercurrent Exchange System. - Use the clearance of plasma concept to quantify the Kidney functions (Inulin, PAH, Creatinine clearance).	Interactive Lecture Tutorial PBL Session Interactive Lecture Tutorial	MCQ SEQ PBQ MCQ SAQ MCQ PBQ

Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
Acid Base balance	Physiology	- Outline the role of Kidney in regulation of extra cellular fluid osmolarity and sodium concentration. - Understand the role and mechanism of ADH and relate the osmoreceptor ADH feedback system with Diabetes Insipidus.	PBL Session	SEQ
Micturition Reflex		Name the buffers of blood, interstitial fluid and kidneys and relate the renal mechanisms to compensate for change in plasma pH.		SAQ
Diuretics		- Define acidosis and alkalosis with their types and to identify associated biochemical changes in blood.		
<u>Practical Physiology</u>		- Explain the concept of Transport Maximum (T_{max}) with its clinical significance. - Integrate the renal mechanisms for control of blood volume, blood pressure and ECF volume - Comprehend the basis of polyuria in Diabetes Mellitus and Diabetes Insipidus. - Define the micturition reflex and outline the nervous control of micturition. - Draw a cystometrogram and explain the causes of various abnormalities of micturition. - Outline the physiological basis of renal failure and effects of renal failure and uremia. - Understand the principal basis of artificial kidney (Dialysis) and composition of dialyzing fluid.		

Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
		- List the types of diuretics used in clinical practice and to relate their site of action in nephron. - Know Lab work protocol & General Guidelines to Avoid accidents by safe handling of equipment - Examination of GIT - Urinalysis to judge renal functions - Measurement of Body Mass Index (BMI)	Practical Performance	OSPE

Learning Resources:

1. Text Books:

- a. Medical Physiology by *Guyton's & Hall*
- b. Human Physiology by *Sherwood*
- c. *A Review of Medical Physiology* by *WF Ganong*

2. Class Room Teaching:

- a. Lectures
- b. Tutorials/ Interactive discussion in small groups
- c. Case Based Learning Sessions

3. Learning Resource Center

4. Physiology Lab: Hands on work

BLOCK - II: NEUROSCIENCES

Placement in curriculum: Year 02

Subject: Physiology

Block Duration: - 8 Weeks

TABLE OF CONTENTS

Sr. No	Titles
1	Sensory Neurophysiology
2	Motor Neurophysiology
3	Higher Order Functions
4	Autonomic Nervous System

Introduction/ Rationale	The human nervous system is the most complex and versatile achievement of the process of evolution. The nervous system of animals functions to detect changes in the external and internal environment and to bring about appropriate responses in the muscles, organs and glands. The physiological foundation of some of these aspects of neural function are well understood, while others continue to occupy the professional lives of many thousands of researchers in both the basic and clinical sciences. This module is expected to build the student's basic knowledge about the normal structure, organization, functions and development of nervous system. This knowledge will serve as a fabric on which the student will weave further knowledge about the etiology, pathology and pathogenesis of diseases of nervous system and the principles of their management.
Outcomes	KNOWLEDGE: • Know the anatomical divisions of the nervous system and their components • Explain the gross anatomical features of Cerebrum, Midbrain, Pons, Medulla and Spinal cord • Know the sensory and motor parts of nervous system • Know the major levels of central nervous system along with their functions • Explain the integrative function of nervous system • Describe formation, flow and absorption of CSF • Describe the blood cerebrospinal fluid and blood brain barriers • Describe the structure of Nerve and explain the Myelination of nerve fiber • Explain the ascending and descending tracts of brain stem • Discuss analgesia system in brain & spinal cord • Explain the mechanism of consolidation of memory • Describe the functions of autonomic nervous system SKILL:

	• Should take proper precautionary measures for each experiment. • Should follow the lab protocol. • Should be able to examine the various parts of nervous system. ATTITUDE: ▪ Demonstrate affective attitude towards the colleagues, staff and their peers. ▪ Demonstrate the professional attitude, team dynamism and good communication in library and during practical.
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OVERVIEW OF NERVOUS SYSTEM

Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
<u>Sensory Neuro-physiology</u> Organization of Nervous system	Physiology	• Understand the General organization components of nervous system, comparison of brain with computer and major levels of CNS function • Know the outline of sensory component of nervous system, levels of sensory processing • Comprehend the functional unit of nervous system (the neuron), its types, functions and properties • Differentiate between afferent and efferent, myelinated and unmyelinated nerve fibers • Outline General and sensory classifications of nerve fibers, their functional significance and association with the effects of anesthetics	Interactive Lecture Tutorial	MCQ SEQ

Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
Classification of nerve fibers	Physiology	- Have an overview of physical and chemical protections provided to the brain by the skull, scalp, meninges, CSF and blood brain barrier - Describe the role of Glial cells in integrity, development and functioning of neuron - Understand the morphology and types of synapses, their role in processing of information by the nervous system - Conceive electrical events involved in excitation and inhibition of synapse including pre and postsynaptic inhibition - Comprehend the process of synaptic delay, fatigue and summation of inputs - Understand the concept of neuronal pool and how the processing of information is information is carried in the neuronal pool? - Discriminate between the phenomena of convergence and divergence of nerve impulse - Elucidate synaptic transmitters, their types and how do these act on postsynaptic nerve cells? - Differentiate between neurotransmitters and neuropeptides. - Understand the significance of neurotransmitters in nerve transmission	PBL Session	PBQ
Synapse, types,			Interactive Lecture	MCQ
Properties of Synaptic Transmission			Tutorial	SAQ
Neurotransmitters and neuropeptides Types and functions			PBL Session	MCQ
			Lecture	PBQ
				SEQ

Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
of sensory receptors	Physiology	- Comprehend the concept of sensory receptors, their types, distribution in the body and how do sensory receptors detect different modalities of stimuli or sensations? - Describe the mechanism of generation of receptor potential and transduction of sensory stimuli into nerve impulses - Evolve the concept of receptor adaptation, process of spatial and temporal summation - Understand as to how intensity, location and quality of stimuli are coded?	Tutorial	SAQ
Vestibular Apparatus		Has an overview of somatic senses their classification and how the sensations of touch, pain cold, tickle and itch are detected?	Tutorial	
Regulation of Posture & Equilibrium		- Outline the pathways/tracts that conduct somatic signals to CNS - Illustrate anatomic features of dorsal column-medial lemniscal system, its characteristics and sensations transmitted there in	PBL Session	
Cerebellum, connections and functions	Physiology	- Have an overview of the physiologic anatomy of sensory cortex and sensory association areas and processing of sensations in the sensory cortex - Outline the physiologic anatomy of anterolateral pathway and its role in conduction of crude tactile sensations	Lecture Tutorial	MCQ
Basal Ganglia, connections and functions	Physiology			

Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
<u>Higher mental Functions</u> Physiology of sleep/ EEG Reticular formation Physiology of memory / amnesia / dementia Functions of spinal cord, ascending tracts	Physiology Physiology Physiology Physiology	- Define pain, its types and significance in human physiology - Know different stimuli generating pain and receptors responsible to detect pain - Differentiate between fast and slow pain, the type of nerve fibers/tracts conducting pain and other sensations (warmth & cold) to CNS - Discriminate between superficial, deep and visceral pain sensations - Describe the physiology of referred pain - Understand as to how are vibratory sensations perceived and two points discriminated in CNS and concept of stereognosis? - Know as to do we tolerate pain, the concept of brain analgesia system, its components and mechanism of analgesia - Explain the applied aspects of pain including hyperalgesia, thalamic syndrome, pain of Herpes Zoster - Elucidate the mechanism of development of headache - Know the anatomical location, afferent & efferent connections, functions and effects of lesion of thalamus	PBL Session Lecture Tutorial PBL Session Lecture Tutorial PBL Session Lecture	PBQ SEQ SAQ

Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
Tactile, temperature and pain sensations <u>Motor</u> <u>Neurophysiology</u> Reflex action/ Reflexes Muscle spindle muscle tone Structure of cerebral cortex Sensory Cortex	Physiology Physiology Physiology Physiology	• Know the anatomical location, afferent and efferent connections, functions and effect of lesion of internal capsule • • Relate structures of the spinal cord with various functions. • Know the structure of muscle spindle, its innervation and functions. • Relate the structure and location of Golgi tendon organ and function • • Explain the parts of brain involved in maintenance of muscle-tone and the neuro-transmitters involved and to explain the mechanism or the control of muscle-tone. • • Relate structure of stretch reflex with its functions. • Differentiate between Upper and Lower Motor Neurons with features and examples of the lesions. • Differentiate sensory and motor cortices, between Primary Motor Cortex and Secondary Motor Cortex. • Relate the control center of Motor Cortex with their specific functions.	Lecture Tutorial PBL Session Lecture	MCQ PBQ SEQ SAQ

Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
Motor Cortex Physiology of speech Thalamus-Nuclei & Functions	Physiology	• Relate the structure of vestibular apparatus with the mechanism of maintenance of equilibrium. • Relate parts of brain to regulate posture of human body. • Overview various postural righting reflexes. • Comprehend the neural pathway from motor cortex to various parts of human body (pyramidal and extra pyramidal tracts). • Structure, nuclei and connections of cerebellum with the specific motor functions. • Explain the features exhibited by cerebellar damage / diseases. • Relate nuclei and pathways of basal ganglia with the specific functions. • Explain the features exhibited by diseases of basal ganglia. • Coordinate all the motor activities from their initiation in brain to execution in the muscles. • Explain the features with logic in complete transection and Hemi-section of the spinal cord. • Know the anatomical location, afferent & efferent connections, functions and effects of lesion of reticular formation.	Tutorial PBL Session Lecture Tutorial	MCQ PBQ SEQ SAQ

Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
		• Understand CSF formation, circulation and composition with its role. Causes of Raised CSF Pressure. • Explain blood brain barrier and its significance. • Explain functions of skins & sweat glands and role in body temperature regulation		
<u>Practical Physiology</u>	Physiology	• Know Lab work protocol & General Guidelines to Avoid accidents by safe handling of equipment • Examination of CNS • Examination of Sensory System • Examination of Motor System • Examination of Superficial Human Reflexes • Examination of Deep (Tendon) Reflexes • Examination of Cerebellar Functions • Examination of Cranial Nerves • To Demonstrate the Functions of Autonomic Nervous System • Recording the Body Temperature • Recording of Vital Signs	Practical Performance	OSPE

Learning Resources:

1. Text Books:

- a.** Medical Physiology by *Guyton's & Hall*
- b.** Human Physiology by *Sherwood*
- c.** *A Review of Medical Physiology by WF Ganong*

2. Class Room Teaching:

- a.** Lectures
- b.** Tutorials/ Interactive discussion in small groups
- c.** Case Based Learning Sessions

3. Learning Resource Center

4. Physiology Lab: Hands on work

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BLOCK - III: SPECIAL SENSES, ENDOCRINES AND REPRODUCTIVE PHYSIOLOGY

Placement in curriculum: Year 2

Subject: Physiology

Block Duration: - 12 Weeks

TABLE OF CONTENTS:

Modules	Titles
1	Special senses
2	Endocrinology
3	Reproduction

OVERVIEW OF BLOCK-1

Introduction/Rationale		The object of this module is to develop an understanding about the detection of these special senses and how they are encoded in neural signals transmitted to the brain. Moreover, the students will be able to understand that how the body's chemical messengers and hormones interact with one another to maintain homeostasis. It will lay down a strong foundation of relevant and necessary knowledge, skills and attitudes.		
Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
<u>Special Senses.</u>				
Physiology of taste and its pathway	Physiology	- Identify basic modalities of taste. - Explain location and distribution of gustatory papillae of tongue. - Explain the structure and functions of taste bud. - Explain the mechanism of stimulation of taste cells by various modalities of taste. - Comprehend the taste pathway. - Explain adaptation of taste sensation. - Understand the abnormalities of taste sensation.	Lecture Tutorial	MCQ SEQ
Physiology of Olfaction, smell receptors and pathway	Physiology	- Explain structure and functions of olfactory mucous membrane. - Explain mechanism of stimulation of olfactory receptor cell. - Explain nervous pathway for olfaction. - Understand functions of olfactory cortex. - Explain adaptation of smell sensation.	Lecture Problem Base Learning Session (PBL)	SAQ PBQ

Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
Physiologic Structure & functions of eye-ball Optical Principles, Accommodation of eye. Eye movement Errors of refraction / Astigmatism Dark and light adaptation Neural function of Retina Visual pathway, light reflex, Visual cortex Photochemistry of vision Color vision/night blindness Field of vision Intraocular fluids,	Physiology	• Understand abnormalities of sense of smell. • Explain olfactory threshold and discrimination between various smell sensations. • • Describe the structures of eye and functions of each part. • Describe how is image focused on retina? • Know defects in image focusing on retina and their correction. • Explain the role of intraocular muscle in controlling the entry of light. • Explain light and dark adaptation and its importance. • Explain how the retina is involved in processing the image. • Explain how is image passed to visual cortex and describe the defects in pathway in terms of loss of field of vision? • Understand the importance of binocular vision. • Understand how perception of color occurs and how defects can be identified? • Describe the different areas of the visual cortex and their role in the interpretation of different aspect of image.		

Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
Functions of external & middle Ear Physiological anatomy of cochlea Functions of inner ear, Organ of Corti Auditory pathway		• • Relate structure of external, middle and inner ear. • Know the components and functions of external ear. • Relate the structure and functions of middle ear. • Understand impedance matching and attenuation reflex. • Explain the function of Eustachian tube. • Correlate structure of inner ear and its components. • Explain the organ of corti and its functions. • Trace the auditory pathway. • Explain the process of localization of sound • Understand the basis of deafness.		
<u>Endocrinology</u> General principles (classification, Mechanism of action, feedback control) An over view of biosynthesis, transport, and metabolism, action	Physiology	• Differentiate between endocrine and exocrine glands • Compare chemical and nervous regulatory systems of the body and significance of regulatory function of hormones • Classify different types of hormones • Understand different mechanisms induced by hormones to manifest their physiological actions • Relate the anatomic connections (nervous & vascular) between hypothalamus and pituitary gland with the functional significance	Interactive Lecture Tutorial	MCQ SEQ

Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
of secretion of hormones. Hypothalamus – endocrine function	Physiology	• Know the processing and secretion of by the anterior and posterior pituitary glands with special reference to the releasing and inhibitory hormones • Describe the effects, receptors and regulation of secretion of Vasopressin and oxytocin • Understand the actions of hypophysio tropic hormones • Elucidate the actions of GH and role of somatomedins in bone growth • Comprehend the functions and feedback control • Differentiate between the physiologic actions of oxytocin and prolactin • Differentiate between Dwarfism, Acromegaly and Giantism • Elucidate the effects and endocrine changes after the section of pituitary stalk • Conceive the effects of bilateral lesions of paraventricular nuclei on adrenocortical response to stress	PBL Session	PBQ
Anterior Pituitary and Physiology of Growth			Interactive Lecture	MCQ
				SAQ
Posterior Pituitary	Physiology	• Differentiate between Dwarfism, Acromegaly and Giantism • Elucidate the effects and endocrine changes after the section of pituitary stalk • Conceive the effects of bilateral lesions of paraventricular nuclei on adrenocortical response to stress • Review the gross and microscopic structure of thyroid gland • Compare the inactive and active thyroid follicles • Understand different steps: Biosynthesis of thyroid hormones, the feedback thyroid hormones and iodide involvement in thyroid function with	Tutorial	MCQ
			PBL Session	PBQ
			Lecture	SEQ

Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
Thyroid gland	Physiology	introduction to the pharmacological agents altering thyroid hormone biosynthesis/thyroid function • Relate the production and plasma levels of thyroid hormones with emphasis on the importance of TBG in plasma • Describe main physiological actions of thyroid hormones • Relate manifestations of decreased or increased secretion of thyroid hormones during different age groups of human beings • Outline the pathophysiology of goiter • Differentiate between cretinism and Dwarfism, Hypo and Hyperthyroidism • Understand calcium balance and renal handling of calcium • Review Intestinal absorption and renal handling of calcium • Know the plasma fractions of calcium and their importance • Know hormones regulating plasma calcium level, with emphasis on PTH, calcitonin and calcitriol interaction in maintenance of plasma calcium • Comprehend the regulatory role of plasma calcium level	Tutorial	SAQ
Parathyroid,			Lecture	SEQ
			PBL Session	PBQ

Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
calcitonin, cholecalciferol, Bone remodeling Pancreas Adrenal Medulla	Physiology	• Know the types of cells found in bone and function of each cell in bone growth and bone resorption • Elucidate the effects of hyper and hypo-parathyroidism • Differentiate between osteomalacia, osteoporosis and osteopetrosis • Know endocrine (hormones of Pancreas, their interaction, role in regulation of blood glucose and association with Diabetes mellitus • Outline Insulin production and release and factors affecting • Reveal possible mechanism of action of insulin • Introduce Type – I & Type – II Diabetes • Outline the physiologic anatomy of adrenal gland • Know hormones secreted by different layers of adrenal gland • Have overview of biosynthesis of mineralocorticoids, glucocorticoids and adrenal enzyme deficiencies • Understand feedback control of steroid hormones produced by adrenal gland • Know biosynthesis and release of adrenal medullary hormones		

Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
changes in mother during pregnancy Placenta Parturition Lactation Fetal and Neonatal Physiology (changes at birth) Menopause	Physiology	• Understand the morphological changes in ovaries and endometrium during a menstrual cycle in females and their neuroendocrinal regulation. • Perceive the physiologically in a pregnant female. • Know physiological anatomy of placenta, its functions with special reference to different hormones. • Understand the mechanics and regulation of the process of parturition. • Explain the process of development of mammary gland and the process of lactation. • Outline the normal contents of human milk. • Understand the etiology and features of menopausal syndrome in a female. • Understands the physiology of contraception and rationale for their usage. • sequence of events in the process of fertilization and maternal changes which occur		
<u>Practical Physiology</u>	Physiology	• Know Lab work protocol & General Guidelines to Avoid accidents by safe handling of equipment • Determination of the Field of vision (Perimetry) • Examination of Fundus (Ophthalmoscopy) • Demonstration of Hearing Tests • Immunological Test for Pregnancy	Practical Performance	OSPE

Learning Resources:

1. Text Books:

- a.** Medical Physiology by *Guyton's & Hall*
- b.** Human Physiology by *Sherwood*
- c.** *A Review of Medical Physiology by WF Ganong*

2. Class Room Teaching:

- d.** Lectures
- e.** Tutorials/ Interactive discussion in small groups
- f.** Case Based Learning Sessions

3. Learning Resource Center

4. Physiology Lab: Hands on work

Department of Biochemistry

Year - II

AIR UNIVERSITY ISLAMABAD

Department OF Biochemistry

BLOCK-I

Placement in curriculum: Year 2

Subject : Biochemistry

Block Duration: 11Weeks

TABLE OF CONTENTS

Sr. No	Module	Topic
1	Gastrointestinal Module	Bioenergetics, GIT
2	Genitourinary Module	Carbohydrates Metabolism, water and Electrolytes

Introduction/ Rationale	This module comprises of Gastrointestinal module and Genitourinary module. This block is expected to build students' knowledge about the normal structure and functioning of gastrointestinal and genitourinary systems. This will enhance their knowledge towards better understanding of related pathological conditions. This module focuses on composition and functions of secretions of gastrointestinal system. This module will familiarize students with reactions involving bioenergetics.
Module Outcomes	At the end of module the students should be able to: KNOWLEDGE: • Describe endergonic and exergonic reactions and their coupling through ATP. • Describe components of electron transport chain • Define oxidative phosphorylation. • Describe the digestion and absorption of Carbohydrates, Proteins, Lipids and nucleic acids in gastrointestinal tract. • Understand biochemical abnormalities related to gastrointestinal tract. • Describe the regulation of water and electrolytes and acid base balance with their related abnormalities. • Describe different cycles and reactions involved in carbohydrate metabolism like glycolysis, citric acid cycle, and gluconeogenesis. • Describe reaction of Glycogenesis and glycogenolysis along with metabolism of fructose, galactose and lactose. SKILL: • Familiarize themselves to the functioning of spectrophotometer. • Estimate different liver enzymes like serum ALT, AST, ALP, Bilirubin with the help of spectrophotometer. • Estimate salivary amylase with the help of spectrophotometer ATTITUDE: • Demonstrate the effective attitude towards the staff and their peers during the practical timing. • Demonstrate professional attitude, team dynamics and good communication

Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
GIT	Biochemistry	- Describe the composition and function of different GIT secretions. - Describe digestion and absorption of carbohydrates, proteins, nucleic acid and lipids. - Describe biochemical disorder of gastrointestinal tract e.g., achlorhydria. Peptic ulcers lactose intolerance, cholelithiasis and related disorder.	LGIS SGD PBL	MCQ SEQ SAQ PBQ VIVA
Water and electrolytes	Biochemistry Discipline	- Describe regulation and abnormalities of acid base balance. - Describe regulation of body water and dehydration along with electrolyte balance and abnormalities (sodium, potassium, magnesium chloride and calcium)	LGIS SGD PBL	MCQ SEQ SAQ PBQ VIVA
Carbohydrates metabolism	Biochemistry	- Describe phases, rate limiting reactions and regulation of Glycolysis. - Describe the energetic and regulation of citric acid cycle and Gluconeogenesis. - Describe metabolism of glycogen, fructose, lactose and galactose. - Describe the reaction and importance of hexose mono phosphate shunt. - Describe the abnormalities of glycogen metabolism (glycogen storage diseases). - Describe the regulation and disorders related to blood glucose level. - Describe the biochemistry of diabetes mellitus, its lab findings and diagnosis.	LGIS SGD PBL	MCQ SEQ SAQ PBQ VIVA

Bioenergetics	Biochemistry	- Describe oxidation phosphorylation - Enlist components of electron transport chain	LGIS SGD PBL	MCQ SEQ SAQ PBQ VIVA
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Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
Practical of Biochemistry	Biochemistry	- Perform tests on spectrophotometer. - Estimate serum ALP, ALT, AST and bilirubin. - Estimate salivary amylase.	Performance Demonstration and Skill	OSPE Performance VIVA

AIR UNIVERSITY ISLAMABAD
Department OF Biochemistry

BLOCK-II

Placement in curriculum: Year 2

Subject: Biochemistry

Block Duration: 8 Weeks

TABLE OF CONTENTS

Sr. No	Module	Topic
1	Neuroscience module	Protein metabolism, nucleotide metabolism and molecular biology

Introduction/ Rationale	This block is based on neuroscience module. It is an 8-week module, which focuses on second year students to familiarize them with basis of molecular and nucleotide metabolism. This will provide them a clear understanding of different genetic disorder and the damage repair system provided by nature to man. This will be a stepping stone in understanding the detoxification processes in the body in the form of urea cycle. It will give the student an insight to better understanding of different disorders related to protein metabolism.
Module Outcomes	The student should be able to: KNOWLEDGE : • Understand amino acid oxidation and transport. • Describe the role of pyridoxal phosphate in transport of amino acids. • Define and describe nucleotide and molecular metabolism. • Describe and discuss the metabolism and disorder related to protein. SKILL : • Understand the working of flame photometer. • Understand the procedure and significance of gel electrophoresis. • Perform urea, uric acid, and Creatinine and cholesterol estimation in blood. • Understand the importance of electrolytes in blood. ATTITUDE: • Demonstrate the effective attitude towards the staff and their peers during the practical timing. • Demonstrate professional attitude, team dynamics and good communication.

Neurosciences module

Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
Protein Metabolism	Biochemistry	• Discuss amino acid oxidation and its metabolic fate. • Describe transport of amino group and role of pyridoxal phosphate. • Discuss the sources and metabolism of ammonia. • Discuss disorder related to ammonia (hyperammonemia). • Draw and describe urea cycle. • Discuss amino acid degradation.	LGIS SGD PBL	MCQ SEQ SAQ PBQ VIVA

		Describe the genetic defect related to individual amino acid.		
Nucleotides metabolism	Biochemistry	- Define and discuss de novo purine synthesis and synthesis of pyrimidine - Differentiate between de novo and salvage pathways. - Draw and discuss degradation of purine and pyrimidine. - Discuss the disorder of purine and pyrimidine metabolism. - Integrate metabolism of purine and pyrimidine with other body metabolism.	LGIS SGD PBL	MCQ SEQ SAQ PBQ VIVA

Biochemical Genetics	Biochemistry	- Understand the structural basics of cellular information - Discuss the steps of replication of DNA in eukaryotes and prokaryotes. - Understand the phenomena of super coiling. - Discuss DNA polymerase, its components and functions. - Discuss damage and repair mechanism in DNA. - Describe the steps of transcription. - Describe RNA polymerase, its components and functions. - Understand the concept of reverse transcription. - Discuss steps of translation. - Describe post translational modification. - Discuss different genetic disorders. - Understand different techniques of molecular biotechnology. - Discuss steps of PCR. - Discuss RFLP and blotting techniques.	LGIS SGD PBL	MCQ SEQ SAQ PBQ VIVA
		- Use flame photometer. - Understand gel electrophoresis. - Estimate and clinically relate uric acid in blood.	Performance	OSPE

Practical	Biochemistry	• Perform paper chromatography. • Estimate Creatinine in blood. • Estimate cholesterol in blood.' • Estimate blood uric. • Estimate and clinically relate electrolytes in blood	Demonstration and Skill	Performance VIVA
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AIR UNIVERSITY ISLAMABAD

Department of Biochemistry

BLOCK-III

Placement in Curriculum: Year 2

Subject: Biochemistry

Block Duration: 11Weeks

TABLE OF CONTENTS

Sr. No	Module	Topic
1	Head, Neck and special senses module	Lipid metabolism
2	Endocrines and Reproduction module	Endocrinology

Introduction/Rationale	This module comprises of lipid metabolism and endocrinology. This block is expected to build students' knowledge about lipid metabolism and endocrinology. This will enhance their knowledge about pathologic Conditions related to lipid metabolism and endocrinology
Module Outcomes	At the end of the module students should be able to KNOWLEDGE : • Describe mobilization and transport of fatty acids, triacylglycerol and sterols. • Describe oxidation and Biosynthesis of body acids. • Describe synthesis and regulation of triacylglycerol and cholesterol. • Describe transport, functions and clinical importance of plasma lipoproteins.(VLDL, LDL, HDL and chylomicrons). • Describe metabolism of phospholipids and Glycolipid along with their abnormalities. • Describe classification and mechanism of action of different hormones. • Describe the composition, secretion, biochemical actions and degradation of hormones. SKILL : • Estimate blood glucose level and its clinical interpretation. • Perform oral glucose tolerance test. • Estimate blood protein levels and its clinical interpretation. • Estimate uric acid in blood. • Estimate glucose by titration method. ATTITUDE: • Demonstrate the effective attitude towards the staff and their peers during the practical timing. • Demonstrate professional attitude, team dynamics and good communication.

Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
		.	LGIS	MCQ

Lipid metabolism	Biochemistry	- Describe oxidation and biosynthesis of fatty acids - Describe transport of fatty acids, triacylglycerol and sterols. - Describe Synthesis and regulation of triacylglycerol and cholesterol. - Describe functions and clinical importance of plasma lipoproteins (VLDL, LDL, HDL and chylomicrons) - Describe metabolism of glycolipids and phospholipids along with their abnormalities.	SGD PBL	SEQ SAQ PBQ VIVA
Endocrinology	Biochemistry	- Define and describe hormones with classification and their mechanism of action. - Describe the composition, secretion, biochemical action and degradation of hormones.	LGIS SGD PBL	MCQ SEQ SAQ PBQ VIVA

Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
Practical Biochemistry	Biochemistry	- Perform oral glucose tolerance test. - Estimate glucose by titration method. - Estimate uric acid in blood. - Estimate blood glucose level and its clinical interpretation. - Estimate blood protein levels and its clinical interpretation.	Performance Demonstration and Skill	OSPE Performance VIVA

Syllabus Second Professional MBBS Examination – Air University
(Islamic/Pakistan studies)

Islamic Studies (Compulsory)

Objectives:

This course is aimed at:

1. To provide Basic information about Islamic Studies
2. To enhance understanding of the students regarding Islamic civilization
3. To enhance the skill of the students for understanding of issues related to faith and religious life.

Sr. No.	Syllabus
1.	Kitab & Sunnah
2.	Holy Prophet (SAW)
3.	Chosen Ahadith
4.	Origin of Islam
5.	Taqwa and Character
6.	Modesty
7.	Do's and Don'ts
8.	Islam as a Din & a True Muslim
9.	Uswa-e-Hassana
10.	Hijra (Migration)
11.	Fatah Makka
12.	Islam and Society
13.	Basic Concepts of Quraan
14.	Verses of Surah Al-Baqra Related to Faith (Verse No-284-286)
15.	Verses of Surah Al-Hujrat Related to Adab Al-Nabi
16.	Verses of Surah al-Furqan Related to Social Ethics (Verse No.63-77)
17.	Verses of Surah Al-Ehzab Related to Adab al-Nabi (Verse No.6, 21, 40, 56, 57, 58.)
18.	Verses of Surah Al-Saf Related to Tafakkar, Tadbeer (Verse No-1, 14)

19.	Important Lessons derived from the life of Holy Prophet in Makkah
20.	Important Lessons derived from the life of Holy Prophet in Madina
21.	TIBB-E-NABWI
22.	Concepts of management of the sick at the time of prophet, Human development, Haqooq-ul-ibad
23.	Basic Concepts of Islam & Science / Quraan& Science
24.	Basic Concepts of Social System of Islam

Pakistan studies (Compulsory)

Objectives:

1. Develop vision of the historical perspective, government, politics, contemporary Pakistan and ideological background of Pakistan.
2. Study the process of governance, national development, issues arising in the modern age and posing challenges to Pakistan.

Sr. No.	Syllabus
1.	Advent of Islam and India
2.	Muslim Rule in India
3.	Sir Syed Ahmad Khan
4.	Ch Rehmat Ali
5.	Congress in India
6.	British Rule
7.	Muslim League
8.	Two Nation Theory
9.	Struggle for separate Home Land / Independence
10.	Ghandi, Nehru & Quaid-i-Azam
11.	Ideological rationale with special reference to Sir Syed Ahmed Khan, Allama Muhammad Iqbal and Quaid-e-Azam Muhammad Ali Jinnah.
12.	World War –I & II

13.	Partition of Bengal
14.	Round Table conference
15.	Pakistan Resolution
16.	Partition -14 August 1947
17.	Constitution of 1973
18.	Population
19.	Security environment
20.	Terrorism: global / local implications
21.	Location and geo-physical features.
22.	Economic institutions and issues
23.	Foreign policy of Pakistan and challenges
24.	Futuristic outlook of Pakistan



3rd Year

MBBS Curriculum

MBBS Curriculum

Department of Pharmacology

BLOCK-I

Placement in curriculum: Year 3

Subject: Pharmacology

Block Duration: - 11 Weeks

TABLE OF CONTENTS

Sr. No	Topics
1	General Pharmacology
2	Drugs Acting on Autonomic Nervous System
3	Drugs Acting on Blood
4	Drugs Acting on Cardiovascular System
5	Skills / Practicals

Introduction/ Rationale	Drugs are one of the most important tools of a doctor to restore normal physiological function in a person with disease. Pharmacology is the science of drugs. It encompasses all aspects of knowledge about drugs, but most importantly those that are relevant to effective and safe use for medicinal purposes.
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	The objective of course content of General Pharmacology is to provide the general principles of pharmacology to undergraduate students. Main topics included are pharmacokinetics and pharmacodynamics of drugs. In addition to knowledge of drug action, mechanisms and pharmacokinetics, several aspects like drug dosage, sources of variability in drug response, pharmacogenetics, influence of disease on drug action, etc. are important for optimum drug therapy. The course content will also emphasize newer drug techniques and drug development. This course is expected to build the student's basic knowledge about Pharmacology, its branches and processes. This knowledge will serve as a foundation on which the student will be able to design the treatment strategies in future. The autonomic nervous system (ANS) functions largely below the level of consciousness and controls visceral functions. This system is closely linked with the normal functions of cardiovascular system and enteric system. This regulates bodily functions such as the heart rate, digestion, respiratory rate, pupillary response, urination, and sexual arousal. Autonomic pharmacology is concerned with the effects of drugs that either stimulate or block the two main branches of autonomic nervous system that are sympathetic and parasympathetic. In this course students will be exposed to pharmacology of drugs acting on the autonomic nervous system (ANS) on the basis of their past knowledge of the physiology of ANS. An understanding of how drugs can interact with the autonomic nervous system allows students to appreciate the therapeutic uses of these drugs, and to predict their likely adverse effects. Skeletal muscle relaxants are drugs that act peripherally at neuromuscular junction/ muscle fibre itself or centrally in the cerebrospinal axis to reduce muscle tone and/or cause paralysis. This course will also help students to understand drugs used for glaucoma and use of skeletal muscle relaxants in surgical procedures. Haematinics are substances required in the formation of blood, and are used for treatment of anaemias. Haemostasis (arrest of blood loss) and blood coagulation involve complex interactions between the injured vessel wall, platelets and coagulation factors. Pharmacological agents that helps to restore haemostasis use physiological targets for their actions. Anti-hyperlipidaemic drugs lower the levels of lipids and lipoproteins in blood. The hypolipidemic drugs have attracted considerable attention because of their potential to prevent cardiovascular disease by retarding the accelerated atherosclerosis in hyperlipidaemic individuals. The contents of this course are designed to enable students to prescribe drugs for haematological disorders like anaemia, pancytopenia, hypercoagulable states and hyperlipidaemias. This course also includes drugs acting on cardiovascular system. This will build a foundation on student's previous knowledge of the normal development, structure and function of the various components of the cardiovascular system and impart them the basic knowledge and skills to understand, diagnose and manage the main pathological entities affecting the system. This course describes drugs that are used in the treatment of cardiovascular diseases like hypertension, angina, arrhythmias etc. The content emphasizes the biophysical, biochemical, and cellular basis for drug therapy for cardiovascular pathological states.
	At the end of the module the students should be able to attain:

Outcomes	KNOWLEDGE : - Identified in Learning Objectives of respective sections below. SKILL : - Identified in Learning Objectives of section Skills/ Practicals below. ATTITUDE: - Comprehend the importance of Pharmacology in management of pathological states - Agree the dynamic and ever evolving processes in the development of newer therapeutic approaches - Demonstrate the professional attitude of learning in lectures, active participation in tutorials and practicals and group interactive skills in CBL sessions. - Demonstrate a positive learning attitude towards the management of a disease and grasp the topic by consulting authentic pharmacology and medicine textbooks from the library. - Demonstrate the aptitude to look for the management of a case scenario when presented with one in form of Case Based Learning (CBL) session.
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GENERAL PHARMACOLOGY

Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
Introduction to Pharmacology	Pharmacology	Define Pharmacology and Drug Discuss history and development of Pharmacology	Lecture	MCQs / SAQs / SEQs
New Therapeutic Approaches	Pharmacology	Discuss drug discovery Discuss drug development and its stages Define biopharmaceuticals Discuss Monoclonal antibodies – concept and significance Recognize Gene therapy and genome editing Explain Antisense and Cell-based therapy	Lecture	MCQs / SAQs / SEQs
Branches and Divisions of Pharmacology	Pharmacology	Define Branches and Divisions of Pharmacology Discuss Pharmacokinetics and Pharmacodynamics Differentiate Pharmacology from Pharmacy	Lecture & SGD (Tutorial / CBL)	MCQs / SAQs / SEQs
	Pharmacology	Classify different sources of drugs Discuss Recombinant DNA technology – advantages and disadvantages	Lecture & SGD	MCQs / SAQs / SEQs

Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
Sources of Drugs		Categorize Active principles of drugs – Alkaloids, Glycosides and Oils	(Tutorial / CBL)	
Absorption of Drugs	Pharmacology	Discuss the Processes determining absorption (Active, Passive and Specialized transport) Identify the differences between simple diffusion, active transport and facilitated diffusion Discuss the factors affecting the absorption of drugs (related to drug and body) Explain absorption of acidic and basic drugs – significance of Henderson-Hasselbalch equation Describe Ion trapping phenomenon Identify the methods to delay or enhance drug absorption	Lecture & SGD (Tutorial / CBL)	MCQs / SAQs / SEQs
Distribution and Plasma Protein Binding of Drugs	Pharmacology	Explain Compartments of distribution Discuss Factors affecting distribution of drugs (related to drug and body) Identify Drug reservoirs Explain Plasma protein binding of drugs – its characteristics and significance Explain Concept of Volume of Distribution	Lecture & SGD (Tutorial / CBL)	MCQs / SAQs / SEQs
Biotransformation of Drugs	Pharmacology	Define Biotransformation and identify types of biotransformation Discuss Microsomal biotransformation – Cytochrome P450 system Differentiate between Phase I and Phase II reactions Discuss Factors affecting biotransformation of drugs Explain Enzyme induction and enzyme inhibition	Lecture & SGD (Tutorial / CBL)	MCQs / SAQs / SEQs
Bioavailability of Drugs	Pharmacology	Define & discuss bioavailability of drugs Discuss Factors affecting bioavailability Explain First Pass Metabolism – concept and significance Relate Clinical significance of bioavailability of drugs Define Bioequivalence, Chemical and Therapeutic Equivalence	Lecture & SGD (Tutorial / CBL)	MCQs / SAQs / SEQs

Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
Half-life of Drugs	Pharmacology	Define and determine half-life of drugs Discuss factors affecting half-life of drugs Differentiate between First order and Zero order kinetics Correlate half-life of drugs with its clinical significance Explain steady state concentration	Lecture & SGD (Tutorial / CBL)	MCQs / SAQs / SEQs
Excretion of Drugs	Pharmacology	Recall sites and processes involved in excretion of drugs Discuss Clearance of drugs Determine Factors affecting clearance and its significance	Lecture & SGD (Tutorial / CBL)	MCQs / SAQs / SEQs
Mechanisms of Drug Action	Pharmacology	Discuss Physical and Chemical mechanisms of drug action Explain Drug Channel Interactions, Drug-Enzyme Interactions & Drug-Receptor Interactions Identify Receptors and their signaling mechanisms Discuss the concept of Agonists, Inverse agonists and Antagonists	Lecture & SGD (Tutorial / CBL)	MCQs / SAQs / SEQs
Drug Dose and Response Relationship	Pharmacology	Explain Graded dose-response relationship and curve Discuss Quantal dose-response relationship and curve Define Potency and Efficacy Define Therapeutic Index and Therapeutic Window	Lecture & SGD (Tutorial / CBL)	MCQs / SAQs / SEQs
Factors Modifying Doses and Actions of Drugs	Pharmacology	Discuss Physiological factors Discuss Pathological factors modifying drug action Identify Genetic and Environmental factors Discuss Interaction with other drugs Explain the concept of Hypersensitivity, Tolerance and Cross tolerance Define synergism and antagonism of drugs	Lecture & SGD (Tutorial / CBL)	MCQs / SAQs / SEQs

DRUGS ACTING ON AUTONOMIC NERVOUS SYSTEM				
Introduction to autonomic nervous system	Pharmacology	Recall the Sympathetic and parasympathetic system Memorize Neurotransmitters and receptors	Lecture & SGD (Tutorial / CBL)	MCQs / SAQs / SEQs
Catecholamines and Non-catecholamine	Pharmacology	Define Catecholamine and Non-catecholamine and identify their differences Classify Catecholamines and Non-catecholamine Discuss Pharmacological action, therapeutic uses and adverse effects Differentiate between Direct acting and Indirect acting sympathomimetics	Lecture & SGD (Tutorial / CBL)	MCQs / SAQs / SEQs
Adrenergic Receptor Antagonists	Pharmacology	Classify adrenergic receptor antagonists Discuss the pharmacological actions and therapeutic uses of Alpha and Beta Adrenergic Receptor blockers Explain adverse effects and drug interactions of alpha and beta adrenergic receptor blockers Outline drug treatment of Pheochromocytoma	Lecture & SGD (Tutorial / CBL)	MCQs / SAQs / SEQs
Central Sympathoplegics and Adrenergic Neuron Blockers	Pharmacology	Classify Central sympathoplegics and adrenergic neuron blockers Discuss the Mechanism of action, therapeutic uses and adverse effects	Lecture & SGD (Tutorial / CBL)	MCQs / SAQs / SEQs
Ergot Alkaloids	Pharmacology	Classify Ergot alkaloids Explain pharmacological actions, therapeutic uses and adverse effects Introduction to Triptans Discuss drug treatment of Migraine	Lecture & SGD (Tutorial / CBL)	MCQs / SAQs / SEQs

Cholinomimetic Drugs	Pharmacology	Classify Cholinomimetic drugs Discuss Directly acting Parasympathomimetics Discuss Indirectly acting parasympathomimetic drugs (Anticholinesterases) Describe pharmacological actions, therapeutic uses and adverse effects Outline management of Myasthenia gravis Explain Organophosphate poisoning and its management	Lecture & SGD (Tutorial / CBL)	MCQs / SAQs / SEQs
Anticholinergic Agents	Pharmacology	Classify Anticholinergic agents Describe Pharmacological actions, therapeutic uses and adverse effects Discuss Atropine poisoning and its management Differentiate between atropine and hyoscine Discuss Ganglion blockers	Lecture & SGD (Tutorial / CBL)	MCQs / SAQs / SEQs
Skeletal Muscle Relaxants	Pharmacology	Classify Skeletal muscle relaxants Differentiate between Depolarizing and Non-depolarizing muscle relaxants Describe Pharmacological actions, therapeutic uses and adverse effects Discuss Central muscle relaxants or Spasmolytics	Lecture & SGD (Tutorial / CBL)	MCQs / SAQs / SEQs
Drug Treatment of Glaucoma	Pharmacology	Explain pathophysiology of Glaucoma Classify anti-glaucoma drugs Discuss Mechanism of action, use in glaucoma and adverse effects of anti-glaucoma drugs Outline Emergency Management of Angle Closure Glaucoma	Lecture & SGD (Tutorial / CBL)	MCQs / SAQs / SEQs
DRUGS ACTING ON BLOOD				

Haematinics	Pharmacology	Identify Iron preparations – pharmacokinetics, indications for use and adverse effects Recognize Vitamin B12 preparations – Pharmacokinetics, Indications for use and adverse effects Discuss Folic acid – pharmacokinetics, indications for use and adverse effects Describe Hematopoietic Growth Factors	Lecture & SGD (Tutorial / CBL)	MCQs / SAQs / SEQs
Anticoagulants	Pharmacology	Recall the concept of Hemostasis and Blood coagulation Classify Anticoagulants – parenteral and oral Discuss mechanism of action, administration and monitoring Describe clinical uses, adverse effects, drug interactions and contraindications	Lecture & SGD (Tutorial / CBL)	MCQs / SAQs / SEQs
Anti-platelet Drugs and Thrombolytic Agents	Pharmacology	Classify Anti-platelets Classify Thrombolytics or Fibrinolytics Discuss Mechanism of action, clinical uses, adverse effects and contraindications Explain Fibrinolytic Inhibitors – classification, uses and side effects	Lecture & SGD (Tutorial / CBL)	MCQs / SAQs / SEQs
Anti-hyperlipidemic Drugs	Pharmacology	Recognize types of Hyperlipidemias Classify anti-hyperlipidemic drugs Discuss the mechanism of Action, pharmacokinetics, uses, adverse effects and drug interactions	Lecture & SGD (Tutorial / CBL)	MCQs / SAQs / SEQs
DRUGS ACTING ON CARDIOVASCULAR SYSTEM				
Drugs Used in Heart Failure	Pharmacology	Recall the Physiology of the heart Explain pathophysiology of Congestive Cardiac Failure Classify drugs used in heart failure Discuss mechanism of action, uses and adverse effects Describe Cardiac glycosides- Mechanism of action, pharmacological actions, drug interactions and adverse effects	Lecture & SGD (Tutorial / CBL)	MCQs / SAQs / SEQs

		Discuss Digoxin toxicity and its management Outline management of congestive cardiac failure		
Anti-hypertensive Drugs	Pharmacology	Explain pathophysiology of Hypertension Outline management of hypertension and hypertensive emergencies Classify anti-hypertensive drugs Discuss mechanism of action, pharmacokinetics, pharmacological actions, uses and adverse effects	Lecture & SGD (Tutorial / CBL)	MCQs / SAQs / SEQs
Anti-anginal Drugs	Pharmacology	Identify Types and Pathophysiology of Ischemic Heart Disease or Angina Pectoris Classify anti-anginal drugs Discuss mechanism of action, pharmacological actions, uses and adverse effects Outline management of Ischemic Heart Disease or Angina Pectoris Outline management of Myocardial Infarction	Lecture & SGD (Tutorial / CBL)	MCQs / SAQs / SEQs
Anti-arrhythmic Drugs	Pharmacology	Recall cardiac conducting system Explain mechanisms of Arrhythmias – types and factors precipitating Classify – Class I – IV anti-arrhythmic drugs Discuss mechanism of action, clinical uses, adverse effects and drug interactions	Lecture & SGD (Tutorial / CBL)	MCQs / SAQs / SEQs
SKILLS / PRACTICALS				
Introduction to Pharmacology Practical	Pharmacology	Introduce the experimental aspects of Pharmacology Brief outline of laboratory functioning Explain basic requirements and rules / regulations while working in laboratory	Practical	OSPE
Working with Kymograph	Pharmacology	Introduce the different parts and working of Kymograph Introduce the different parts and working of Organ Bath Brief outline of use of these equipment in experiments	Practical	OSPE (Observed Station)

and Organ Bath				
Dosage Forms	Pharmacology	Identify the oral dosage forms-Liquid Preparations: Mixture, Emulsion, Suspension, Droplet, linctus, Elixir, Syrup, Spirit, Tincture Identify the oral dosage forms-Solid Preparations: Tablet, Capsule, Pill, Powder, Granule Identify the rectal dosage forms: Suppository, Enema Identify the parenteral dosage forms: Injection, Infusion Identify the Inhalational dosage forms: Gases, Vapours, Steam inhalation, Nasal Spray, Nebulizer Identify the topical dosage forms: Cream, Ointment, Lotion, Paste, Dusting Powder, Eye drop, Nasal Drop, Ear Drop, Gargle, Mouth Wash, Throat paint, Solution, Vaginal Douches, Pessaries, Skin patches Define different dosage forms Explain use, advantages and disadvantages of different dosage forms	Practical	OSPE (Non-Observed Station)
Routes of Administration	Pharmacology	Demonstrate the enteral routes of administration-Oral, Sublingual and Rectal Demonstrate the parenteral routes of administration-Intravenous, Intramuscular, Subcutaneous, Intra-theal. Intra-articular, Intradermal, Intra-arterial, Intra-cardiac, Intra-pleural, Intra-peritoneal, Intraosseous-into bone marrow Demonstrate the inhalational route of administration Demonstrate the topical route of administration-Epidermic route, Epidermic route, Insufflation, Instillation, Irrigation or Douching, Painting or Swabbing Introduce the experimental aspects of Pharmacology Define different Route of Administration	Practical	OSPE (Non-Observed Station)

		Explain use, advantages and disadvantages of different Route of Administration		
Weight and Measures	Pharmacology	Define different systems of weights and measures and their components Discuss different types Balances and Demonstrate their working	Practical	OSPE (Non-Observed Station)
Pharmacological Calculations	Pharmacology	Calculate the dose of a given drug in form of: Stock solution and its Dilutions Percentage solutions Fraction solutions Molar solutions Equivalent solutions Osmolar solutions Practice Exercises and Problem Solving Describe the preparation of these solutions	Practical	OSPE (Non-Observed Station)
Biostatistics	Pharmacology	Describe the introduction and applications of Biostatistics Explain the terms-Population and sample Describe the phases of Clinical Trials Describe the types and presentation of Data. Define the terms-Frequency and Percentage Define the term Measures – Central Tendencies and Spread of Dispersions Describe the Significance Tests Demonstrate the ability to solve Exercises and Problem Solving	Practical	OSPE (Non-Observed Station)

Learning Resources:

- Basic & Clinical Pharmacology (Betram G.Katzung, Anthony J .Trevor)
- Lippincott Illustrated Reviews Pharmacology (Karen Whalen)
- Goodman & Gilman's The Pharmaceutical Basis of Therapeutics (Laurence L. Brunton, Bruce A. Chabner, Björn C. Knollmann)
- Current Medical Diagnosis & Treatment (Maxine A Papadikis, Stephen J Mcphee)

BLOCK- II

Placement in curriculum: Year 3

Subject: Pharmacology

Block Duration: - 11 Weeks

TABLE OF CONTENTS

Sr. No	Topics
1	Diuretics
2	Chemotherapeutic Agents
3	Endocrine Drugs
4	Drugs Acting on Gastrointestinal Tract
5	Skills / Practicals

Introduction/ Rationale	Diuretics, chemotherapeutic agents, endocrinology and gastrointestinal system are main building blocks of this module. It will help to develop an understanding of the basic concepts of included systems. Diuretics are the agents that increase the rate of urine flow and Na⁺ excretion and are most commonly used for management of abnormal fluid retention (edema) or treatment of hypertension. This section of module briefly describes basic physiology of each nephron segment, also gives an overview of the features of different classes of diuretic agents and includes a discussion on their mechanism of action and clinical applications in different pathological states of body. The students who is armed with the knowledge of the mechanism of action of diuretic drugs and with appropriate recognition for their potential side effects can use these compounds with a high degree of efficacy and safety. Infection is a major category of human disease and skilled management of antimicrobial drugs is of the first importance. Chemotherapy is the drug treatment for the infective diseases caused by pathologic microorganisms (viruses, bacteria, protozoa, fungi), parasites and tumor cells without injuring the host cells. The objective of chemotherapy is to study and to apply the drugs that have highly selective toxicity to the pathogenic microorganisms and have no or less toxicity to the host. The neuroendocrine system, is controlled by the pituitary and hypothalamus, regulates the body functions by sending messages between individual cells and tissues. This system releases hormones into the systemic circulation, which carries chemical messengers to target organs and tissues throughout the body. The use of drugs in regulation and control of endocrine function is an important area of pharmacology. Exogenous chemicals or drugs which either mimic or attenuate the effects of specific hormones are used during endocrine dysfunction. The purpose of teaching endocrine drugs in this module is to review the basic aspects of endocrine function, including the primary hormones and their effects. The factors regulating hormonal release and the cellular mechanisms of hormone action are also briefly discussed. Finally, the basic ways in which drugs alter endocrine function and affect the synthesis and secretion of specific hormones are discussed comprehensively. The gastrointestinal (GI) tract consists of the esophagus, stomach, small intestine, and colon. It processes ingested food and expels waste material. Intervention by disease or pharmacological therapy may alter function of the GI tract. This module discusses drugs employed in the treatment of several GI disorders, disease pathophysiology and emphasizing drug mechanisms of action and adverse effects.
Outcomes	At the end of the module the students should be able to attain: KNOWLEDGE : - Identified in Learning Objectives of respective sections below. SKILL : - Identified in Learning Objectives of section Skills/ Practicals below. ATTITUDE: - Comprehend the importance of Pharmacology in management of pathological states

	• Demonstrate the professional attitude of learning in lectures, active participation in tutorials and practicals and group interactive skills in CBL sessions. • Demonstrate a positive learning attitude towards the management of a disease and grasp the topic by consulting authentic pharmacology and medicine textbooks from the library. • Demonstrate the aptitude to look for the management of a case scenario when presented with one in form of Case Based Learning (CBL) session. • Exhibit empathy towards animals during experiments • Develop research aptitude and capacity by performing laboratory experiments
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DIURETICS

Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
Diuretics	Pharmacology	• Recall normal renal physiology of different parts of nephron • Define diuretics • Classify the major classes of diuretic agents (including carbonic anhydrase inhibitors, loop diuretics, thiazides, potassium-sparing diuretics and osmotic diuretics) and describe their mechanisms of action • Describe therapeutic uses and adverse effects of individual classes of diuretics • Explain briefly the pharmacodynamics, clinical indications and toxicity of Antidiuretic hormone antagonists	Lecture & SGD (Tutorial / CBL)	MCQs / SAQs / SEQs
CHEMOTHERAPEUTIC AGENTS				
	Pharmacology	• Define the terms: antibiotics, selective toxicity, therapeutic index, bacteriostatic and bactericidal • Define bacterial resistance and list the mechanisms involved in acquiring bacterial resistance	Lecture	MCQs / SAQs / SEQs

Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
General Principles of Chemotherapy		- Describe the basic principles of combination therapy with antimicrobial drugs - Discuss the classification of antimicrobial drugs based upon the mechanism of action - Explain the modes of action of various antimicrobial drugs		
Penicillins	Pharmacology	- Explain the mechanism of action of beta lactam antibiotics - Describe the pharmacokinetic properties of penicillins and primary therapeutic indications for penicillin G - Explain the major adverse effects of penicillins - Enlist the penicillinase-resistant penicillins - Enlist the combinations of inhibitors of beta lactamase with penicillins - Describe the antimicrobial activity of monobactams and carbapenems	Lecture & SGD (Tutorial / CBL)	MCQs / SAQs / SEQs
Cephalosporins & Vancomycin	Pharmacology	- Know the structural differences between penicillins and cephalosporins with relevance to the pharmacological activity - Explain the mechanism of action of cephalosporins - Describe the four generations of cephalosporins with specific examples and the differences in their antimicrobial spectrum and pharmacokinetic properties - Describe the adverse effects of cephalosporins - Explain the terms superinfection and cross-hypersensitivity - Discuss the mechanism of action of vancomycin - Describe the main therapeutic indications and toxicities of vancomycin	Lecture & SGD (Tutorial / CBL)	MCQs / SAQs / SEQs

Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
Chloramphenicol / Tetracyclines / Fluoroquinolones	Pharmacology	- Explain the mechanism of action and the mode of bacterial resistance of each class of antibiotics - Discuss the pharmacokinetics and therapeutic indications for each class of antibiotics - Describe the various toxicities associated with each class of antibiotics - Explain the drug interaction of tetracyclines and antacid - Enlist the advantages of newer fluoroquinolones over older fluoroquinolones	Lecture & SGD (Tutorial / CBL)	MCQs / SAQs / SEQs
Sulfonamides	Pharmacology	- Classify sulfonamides giving examples for each group - Discuss the mechanism of action of sulfonamides and explain the synergistic inhibition due to sequential blockade with cotrimoxazole - Describe the pharmacokinetic properties of sulfonamides - Describe the major therapeutic indications of sulfonamides alone, and in combination with trimethoprim (cotrimoxazole) - Describe the major adverse effects associated with the use of sulfonamides	Lecture & SGD (Tutorial / CBL)	MCQs / SAQs / SEQs
Aminoglycosides	Pharmacology	- Discuss the mechanism of action of aminoglycosides - Describe the pharmacokinetic properties of aminoglycosides. Explain the importance of peak and trough levels of aminoglycosides - Explain the mechanism of acquired drug resistance due to aminoglycosides - Describe the therapeutic indications of aminoglycosides - Explain the rational basis for combination therapy with an aminoglycoside and a penicillin, cephalosporin, or vancomycin	Lecture & SGD (Tutorial / CBL)	MCQs / SAQs / SEQs

Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
		Discuss the main three toxicities of aminoglycosides and precautions taken to limit them		
Macrolides / Clindamycin and Streptogramins	Pharmacology	- Describe the mechanism of action and spectrum of activity of macrolides, clindamycin and streptogramins - Explain the properties of erythromycin and compare with clarithromycin and azithromycin - Describe the primary therapeutic indications for each class of antibiotics - Describe the major drug interactions of macrolides due to inhibition of cytochrome P450 enzymes - Discuss the major side effects of each class of antibiotics	Lecture & SGD (Tutorial / CBL)	MCQs / SAQs / SEQs
Anti-Tuberculosis Drugs	Pharmacology	- Describe and understand the tuberculosis and leprosy - List the drug classification to treat tuberculosis and leprosy - Discuss the general mechanism of action of drugs used to treat tuberculosis and leprosy - Describe the common adverse effects of anti-tuberculosis drugs - Define Directly Observed Therapy (DOT) - Explain methods for prevention and control of tuberculosis by different drug regimens - Discuss Multi Drug Resistant (MDR) tuberculosis and its treatment	Lecture & SGD (Tutorial / CBL)	MCQs / SAQs / SEQs
Anti-Fungal Drugs	Pharmacology	- Classify anti-fungal drugs - Describe pharmacokinetics and mechanism of action of different classes of antifungal drugs - Discuss clinical uses and adverse effects of different groups of antifungal drugs - Describe therapeutic indications of topical antifungal drugs	Lecture & SGD (Tutorial / CBL)	MCQs / SAQs / SEQs

Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
Anti-Viral Drugs	Pharmacology	- Classify anti-viral drugs - Describe the mechanism of action, pharmacokinetics and adverse effects of drugs used for treatment of Herpes simplex virus (HSV) & Varicella-zoster virus (VZV) infections - Describe mechanism of action, pharmacokinetics and adverse effects of Anti-influenza drugs - Describe mechanism of action, pharmacokinetics and adverse effects of anti-hepatitis drugs - Define Highly Active Anti-Retroviral Therapy (HAART) - Describe mechanism of action, pharmacokinetics and adverse effects of Highly Active Anti-Retroviral Therapy	Lecture & SGD (Tutorial / CBL)	MCQs / SAQs / SEQs
Anti-Malarial Drugs	Pharmacology	- Memorize life cycle of malarial parasite - Classify anti-malarial drugs - Explain mechanism of action, pharmacokinetics, uses and adverse effects of different anti-malarial drugs - Discuss chemoprophylaxis of malaria - Select the drugs used for treatment of chloroquine-resistant malaria	Lecture & SGD (Tutorial / CBL)	MCQs / SAQs / SEQs
Anti-Amoebic Drugs	Pharmacology	- Reproduce life cycle of Entamoeba histolytica - Classify anti-amoebic drugs - Describe mechanism of action, therapeutic uses, adverse effects and drug interactions of anti-amoebic drugs - Describe treatment of specific forms of Amoebiasis	Lecture & SGD (Tutorial / CBL)	MCQs / SAQs / SEQs
Anti-Helminthic Drugs	Pharmacology	- Enlist different classes of parasitic worms - Classify anti-helminthic drugs - Explain the mechanism of action, pharmacokinetics, clinical uses and adverse effects of most commonly used anti-helminthic drugs	Lecture & SGD (Tutorial / CBL)	MCQs / SAQs / SEQs

Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
Anti-Neoplastic Drugs	Pharmacology	- Discuss general principles of cancer chemotherapy - Discuss therapeutic approaches, drug combinations, drug resistance mechanisms and general adverse effects of anti-neoplastic drugs - Classify drugs used in cancer chemotherapy - Describe mechanism of action and resistance, therapeutic uses, adverse effects of different classes of anti-neoplastic drugs - Explain the treatment of specific forms of cancers	Lecture & SGD (Tutorial / CBL)	MCQs / SAQs / SEQs
ENDOCRINE DRUGS				
Anti-Diabetic Drugs	Pharmacology	- Explain types and pathophysiology of Diabetes Mellitus - Discuss chemical nature, mode of secretion, degradation and receptors of insulin - Classify parenteral and oral anti-diabetic drugs - Describe mechanism of action, pharmacokinetics, clinical uses and adverse effects of different classes of anti-diabetic drugs - Discuss the management of Diabetes Mellitus - Describe mechanism of action, pharmacological effects, uses and adverse effects of Glucagon	Lecture & SGD (Tutorial / CBL)	MCQs / SAQs / SEQs
Thyroid Hormones and Anti-Thyroid Drugs	Pharmacology	- Explain the synthesis and regulation of thyroid hormones - Distinguish between hyperthyroidism and hypothyroidism - Describe clinical uses, administration and monitoring and adverse effects of thyroid hormones - Classify anti-thyroid drugs - Describe the mechanism of action, pharmacokinetics, clinical uses and adverse effects of antithyroid drugs	Lecture & SGD (Tutorial / CBL)	MCQs / SAQs / SEQs

Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
Adrenal Hormones	Pharmacology	- Classify corticosteroids - Describe the pharmacokinetic, mechanism of action and regulation of glucocorticoid secretion - Describe the pharmacological effects, therapeutic uses, adverse effects and contraindications of glucocorticoids - Enlist the adrenocortical antagonists - Describe the therapeutic uses and adverse effects of adrenocortical antagonists	Lecture & SGD (Tutorial / CBL)	MCQs / SAQs / SEQs
Sex Hormones: Estrogens, Progestins, Androgens and Anabolic Steroids	Pharmacology	- Classify estrogens and progestins - Describe the mechanism of action, physiological actions, uses, adverse effects and contraindications of estrogen - Describe the mechanism of action, physiological actions, uses, adverse effects and contraindications of progestins - Define Selective Estrogen Receptor Modulators (SERMs) - Describe clinical uses and adverse effects of SERMs - Describe clinical uses and adverse effects of anti-progestins - Describe the mechanism of action, physiological and pharmacological actions, uses and adverse effects of Testosterone and Anabolic steroids	Lecture & SGD (Tutorial / CBL)	MCQs / SAQs / SEQs
Drugs Used in the Treatment of Infertility	Pharmacology	- Define infertility - Explain different causes of Infertility - Classify the drugs used for infertility in female and male - Describe the mechanism of action, uses, adverse effects and contraindications of drugs used for treatment of infertility	Lecture & SGD (Tutorial / CBL)	MCQs / SAQs / SEQs
Hormonal Contraceptives	Pharmacology	- Describe the different ways of hormonal contraception - Describe the various types of oral contraceptive drugs	Lecture & SGD (Tutorial / CBL)	MCQs / SAQs / SEQs

Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
		Explain the mechanism of action, pharmacological effects, clinical uses, adverse effects and contraindications of oral contraceptive pills		
Oxytocic Drugs and Uterine Relaxants	Pharmacology	- Classify Oxytocic drugs - Describe the mechanism of action, pharmacological effects, clinical uses and adverse effects of oxytocic drugs - Classify Tocolytics or Uterine Relaxants - Describe the mechanism of action, pharmacological effects, clinical uses and adverse effects of uterine relaxants	Lecture & SGD (Tutorial / CBL)	MCQs / SAQs / SEQs
Drug Treatment of Osteoporosis	Pharmacology	- Explain the physiology of bone and enlist the causes of osteoporosis - Classify the drugs used for osteoporosis - Describe the mechanism of action, pharmacokinetics, uses and adverse effects of drugs used for osteoporosis	Lecture & SGD (Tutorial / CBL)	MCQs / SAQs / SEQs
DRUGS ACTING ON GASTROINTESTINAL TRACT				
Anti-Emetic Drugs	Pharmacology	- Explain the pathophysiology of nausea and vomiting - Classify anti-emetic drugs - Describe the mechanism of action, pharmacokinetics, therapeutic uses and adverse effects of anti-emetic drugs	Lecture & SGD (Tutorial / CBL)	MCQs / SAQs / SEQs
Drugs Used in Acid Peptic Diseases	Pharmacology	- Explain the physiology of gastric acid secretion - Discuss pathophysiology of acid-peptic diseases - Classify the drugs used in acid peptic disease - Describe the mechanism of action, pharmacokinetics, therapeutic uses, adverse effects and drug interactions of the drugs used in acid peptic disease - Enlist the drugs used for treatment of Helicobacter pylori infection	Lecture & SGD (Tutorial / CBL)	MCQs / SAQs / SEQs

Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
Anti-Diarrheal Drugs	Pharmacology	- Classify anti-diarrheal drugs - Describe the mechanism of action, pharmacokinetics, therapeutic uses, adverse effects of anti-diarrheal drugs - Enlist the drugs used in the treatment of Inflammatory bowel disease - Describe the mechanism of action, pharmacokinetics, adverse effects of drugs used in the treatment of Inflammatory bowel disease	Lecture & SGD (Tutorial / CBL)	MCQs / SAQs / SEQs
Purgatives and Laxatives	Pharmacology	- Define purgative, laxative and cathartics - Classify laxatives - Describe the mechanism of action, clinical uses, adverse effects, contraindications of different classes of laxatives	Lecture & SGD (Tutorial / CBL)	MCQs / SAQs / SEQs
SKILLS / PRACTICALS				
Pharmacodynamic Experiments	Pharmacology	- Learn basic concepts of animal care and handling techniques - Learn proper animal handling techniques to avoid injury to animal as well as handler - Learn use of personal protective equipment such as lab coat, gloves etc - Demonstrate the actions of drugs on animals (Frogs and Rabbits) and isolated tissues (Heart, Blood Vessels and Ileum) - Demonstrate the effects of drugs on frog blood vessels - Demonstrate the effects of drugs on frog heart - Demonstrate the effect of drugs on rabbit eye - Demonstrate the effect of drugs on rabbit ileum - Prepare the dose-response curve of acetylcholine on intestinal smooth muscle of the rabbit	Practical	OSPE (Observed Station)
	Pharmacology	Explain the basic concepts of P-drug and Prescription Writing- An introduction	Practical	OSPE (Non-Observed Station)

Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
P-drug and Prescription Writing		- Describe the types and parts of Prescription - Recognize the abbreviations used in prescribing instructions - Write prescriptions for common ailments by exercises - Demonstrate the ability to select a P-drug - Discuss the steps to select a P-drug - Identify the P-drug of the common problems by careful balancing of the efficacy, safety, suitability and cost effectiveness of the different drug options available for the given problem - Choose P-drug for common ailments by exercises		

Learning Resources:

- Basic & Clinical Pharmacology (Betram G.Katzung, Anthony J .Trevor)
- Lippincott Illustrated Reviews Pharmacology (Karen Whalen)
- Goodman & Gilman's The Pharmaceutical Basis of Therapeutics (Laurence L. Brunton, Bruce A. Chabner, Björn C. Knollmann)
- Current Medical Diagnosis & Treatment (Maxine A Papadikis, Stephen J Mcphee)

BLOCK – III

Placement in curriculum: Year 3

Subject: Pharmacology

Block Duration: - 08 Weeks

TABLE OF CONTENTS

Sr. No	Topics
1	Drugs Acting on Central Nervous System
2	Analgesics
3	Drugs Acting on Respiratory System
4	Miscellaneous Topics
5	Skills / Practicals

Introduction/ Rationale	The Central Nervous System (CNS) drives a number of our physiological processes which makes the drugs acting on the CNS invaluable and wide-ranging. They were among the first to be discovered by primitive humans and are still the most widely used group of pharmacologic agents. In recent years there have been major advances in this area of therapeutics. Drugs that affect the CNS can selectively relieve pain, reduce fever, suppress disordered movement, induce sleep or arousal, reduce appetite, and allay the tendency to vomit, treat anxiety, depression, mania, or schizophrenia. The field of modern surgery became possible with the discovery of general anesthetic drugs and even everyday trauma cases require the frequent use of local anesthetic drugs. This block intends to build up in students a comprehensive knowledge of the pharmacology of drugs acting on the CNS. It aims to prepare the budding doctors for the basic pharmacology of the drugs that are in use clinically for the treatment of CNS diseases. Pain alerts us to ongoing or potential tissue damage and the ability to sense pain is vital to our survival. The physiological process by which pain is perceived is known as nociception. This course focuses on the use of drugs for pain relief and illustrates the use of many analgesics that may be encountered in clinical practice ranging from the frequently used analgesics such as aspirin and paracetamol (NSAIDs) to the ones used for the relief of chronic pain like opioids. This block is expected to prepare the students about a detailed knowledge of the pharmacology of drugs used for pain relief. These are amongst the most commonly prescribed group of drugs and their sound understanding is essential to the coursework of medicine. Rheumatoid arthritis is an autoimmune disease that affects about 1% of the population. The pharmacological management of rheumatoid arthritis includes the use of NSAIDs & Disease-modifying anti-rheumatic drugs (DMARDs). Gout results from the precipitation of urate crystals in the tissues and the subsequent inflammatory response. The treatment focuses on drugs that relieve inflammation and pain, drugs that prevent inflammatory responses to crystals, and drugs that act by inhibition of urate formation or to augment urate excretion. Histamine is the main mediator behind allergies and therefore the role of antihistamines in everyday clinical practice is significant. The basic differentiating features between 1st and 2nd generation antihistamines is vital to the basic knowledge of a medical student. Much of pulmonary pharmacology is concerned with the effects of drugs on the airways and the therapy of airway obstruction, particularly asthma and COPD, which are among the most common chronic diseases in the world. The pharmacological stepwise management of the asthma is taught in detail in this course. Despite the fact that cough is a common symptom of airway disease, its mechanisms are poorly understood, and current treatment is unsatisfactory. Whenever possible, the underlying cause of the cough is addressed. The idiopathic cough that does require the use of antitussives are taught to the undergraduate students with a brief pharmacology of drugs used for the suppression of cough. This block also focuses on broadening the student's horizon towards the management of chronic diseases which requires a more holistic approach with special emphasis on the drug treatment of asthma. The clinical indications requiring the use of antitussives
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	are explained and lastly the use of antihistamines. Common everyday use of antihistamines necessitates an in-depth knowledge of the students regarding the drugs. Acute or chronic exposure to heavy metals can harm the body. Effective agents form stable, biologically inert complexes that pass into the urine. Treatment is with chelating agents which incorporate the metal ions into an inner ring structure in the molecule by means of structural groups called ligands. The students will be dealing with the heavy metal poisoning cases in their career on regular basis. Locally acting drugs will be revised based on their local use only along with their brief features. An essential knowledge of drugs that act locally is significant. Vitamins are substances that are essential for normal metabolism but are supplied chiefly in the diet. Humans cannot synthesize vitamins in the body except some vitamin D in the skin and nicotinamide from tryptophan. Lack of a particular vitamin may lead to a specific deficiency syndrome. In addition to maintaining adequate nutritional levels, a number of vitamins can be used at pharmacological doses for therapy. Use of Vitamins as a supplement as well as its use in therapeutics is emphasized. One of the factors that can alter the response to drugs is the concurrent administration of other drugs. There are several mechanisms by which drugs may interact, but most can be categorized as pharmacokinetic and pharmacodynamic interactions. And lastly an overview of the common types of drug interactions encountered in clinical practice is given. With a further study of the subjects like Medicine & Allied and Surgery & Allied, the students will be able to apply their knowledge of pharmacology in the management of diseases.
Outcomes	At the end of the module the students should be able to attain: KNOWLEDGE : - Identified in Learning Objectives of respective sections below. SKILL : - Identified in Learning Objectives of section Skills/ Practicals below. ATTITUDE: - Comprehend the importance of Pharmacology in management of pathological states - Demonstrate the professional attitude of learning in lectures, active participation in tutorials and practicals and group interactive skills in CBL sessions. - Demonstrate a positive learning attitude towards the management of a disease and grasp the topic by consulting authentic pharmacology and medicine textbooks from the library. - Demonstrate the aptitude to look for the management of a case scenario when presented with one in form of Case Based Learning (CBL) session. - Exhibit empathy towards animals during experiments - Develop research aptitude and capacity by performing laboratory experiments

DRUGS ACTING ON CENTRAL NERVOUS SYSTEM

Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
Central Neurotransmission	Pharmacology	- Identify the synaptic transmission sites in the CNS. - Recall the excitatory and inhibitory neurotransmitters and neuromodulators in the pre and post synaptic membrane. - Recall the interaction of neurotransmitters with their receptors	Lecture & SGD (Tutorial / CBL)	MCQs / SAQs / SEQs
General Anaesthetics	Pharmacology	- Describe the characteristics and stages of general anesthesia - Classify the pre-anesthetic medication- its purpose along with the main characteristics of drugs used in pre-anesthesia. - Classify the drugs used in general anesthesia-Inhalational and Intravenous - Describe the properties, mode of delivery, mechanism of action, pharmacological effects, pharmacokinetic parameters, clinical uses and adverse effects of General anesthetic drugs	Lecture & SGD (Tutorial / CBL)	MCQs / SAQs / SEQs
Local Anaesthetics	Pharmacology	- Classify the local anesthetic drugs– Esters and Amides - Describe the chemistry, mode of delivery, mechanism of action, pharmacological effects, pharmacokinetic parameter, clinical uses and adverse effects of local anesthetics. - Enlist the clinical applications of local anesthetics	Lecture & SGD (Tutorial / CBL)	MCQs / SAQs / SEQs
Sedatives and Hypnotics	Pharmacology	- Recall the types and stages of sleep cycle. - Differentiate between Sedation and Hypnosis - Classify Sedatives and Hypnotics - Describe the chemistry, mechanism of action, pharmacological effects, pharmacokinetics, clinical uses and adverse effects of benzodiazepines and barbiturates.	Lecture & SGD (Tutorial / CBL)	MCQs / SAQs / SEQs

Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
		- Describe the pharmacology of the Benzodiazepine receptor antagonist and its clinical utility in poisoning cases. - Discuss the role of newer anxiolytics and hypnotics in therapeutics		
Anti-epileptic Drugs	Pharmacology	- Describe the different types of Epilepsy - Classify the anti-epileptic drugs chemically and therapeutically - Describe the chemistry, mechanism of action, pharmacological effects, pharmacokinetics, clinical uses, adverse effects and drug interactions of antiepileptic drugs. - Describe the drug treatment of different types of epilepsy - Discuss the management of Status Epilepticus	Lecture & SGD (Tutorial / CBL)	MCQs / SAQs / SEQs
Anti-psychotic Drugs	Pharmacology	- Recall the pathophysiology of Psychosis and Schizophrenia – different hypotheses of neurotransmitters involved - Classify and differentiate between the typical and atypical antipsychotic drugs - Describe the chemistry, mechanism of action, pharmacological effects, pharmacokinetics, clinical uses, adverse effects and drug interactions of antipsychotic drugs. - Explain the role of Mood Stabilizing Agents for Bipolar Disorders - Describe in detail the pharmacology of Lithium – Mechanism of action, pharmacokinetics, clinical uses, adverse effects and treatment monitoring	Lecture & SGD (Tutorial / CBL)	MCQs / SAQs / SEQs
Anti-depressants	Pharmacology	- Recall the Pathophysiology of Depression – different hypotheses of neurotransmitters involved - Classify the drugs used for depression - Describe the chemistry, mechanism of action, pharmacological effects, pharmacokinetics, clinical uses, adverse effects and drug interactions of antidepressants.	Lecture & SGD (Tutorial / CBL)	MCQs / SAQs / SEQs

Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
		Describe the clinical pharmacology of antidepressants along with their uses other than depression		
Drugs Used in Parkinsonism	Pharmacology	- Recall the Pathogenesis of Parkinsonism - Classify the anti-parkinsonian drugs - Describe the chemistry, mechanism of action, pharmacological effects, pharmacokinetics, clinical uses, adverse effects and drug interactions of drugs used in Parkinsonism. - Describe the management of patients with parkinsonism and other movement disorders	Lecture & SGD (Tutorial / CBL)	MCQs / SAQs / SEQs
Alcohols	Pharmacology	- Review the main features of Alcohol abuse – alcoholism and alcohol intoxication - Classify alcohols. - Describe the mechanism of action, pharmacological effects, metabolic pathways, pharmacokinetics, clinical uses, adverse effects and drug interactions of alcohols - Discuss the pharmacological management basis of Alcohol aversion therapy	Lecture & SGD (Tutorial / CBL)	MCQs / SAQs / SEQs
ANALGESICS				
Opioids and Opioid Antagonists	Pharmacology	- Review the pain pathway, location of opioid receptors and their ligands - Classify Opioid agonists - Describe the chemistry, mechanism of action, pharmacological effects, pharmacokinetics, clinical uses, adverse effects and drug interactions of opioid agonists. - Explain Tolerance, Dependence and Addiction effects of opioids. - Describe the pharmacology of Opioid antagonists	Lecture & SGD (Tutorial / CBL)	MCQs / SAQs / SEQs
Drug Dependence	Pharmacology	- Define drug Dependence, Tolerance and Addiction - Enlist the Commonly abused drugs	Lecture & SGD (Tutorial / CBL)	MCQs / SAQs / SEQs

Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
		Describe the Treatment of drug dependence		
Non-steroidal Anti-inflammatory Drugs (NSAIDs)	Pharmacology	- Classify NSAIDs. - Describe the chemistry, mechanism of action, pharmacological effects, pharmacokinetics, clinical uses, adverse effects and drug interactions of aspirin and other NSAIDs. - Discuss the salient features and management of aspirin and paracetamol poisoning	Lecture & SGD (Tutorial / CBL)	MCQs / SAQs / SEQs
Anti-rheumatoid Drugs	Pharmacology	- Recall the pathogenesis of rheumatoid arthritis - Classify anti-rheumatoid drugs – 1st line and 2nd line - Describe the pharmacology of 2nd line therapy – Disease Modifying Anti Rheumatic Drugs (DMARDs)	Lecture & SGD (Tutorial / CBL)	MCQs / SAQs / SEQs
Drugs Used for Treatment of Gout	Pharmacology	- Review the pathogenesis of Gout - Classify the drugs used for the treatment of gout - Describe the chemistry, mechanism of action, pharmacological effects, pharmacokinetics, clinical uses, adverse effects and drug interactions - Describe the Drug treatment of Acute and Chronic Gout	Lecture & SGD (Tutorial / CBL)	MCQs / SAQs / SEQs
DRUGS ACTING ON RESPIRATORY SYSTEM				
Antihistamines	Pharmacology	- Recall the role of histamine in body and types of histamine receptor - Classify the antihistamines-1st and 2nd generation - Describe the chemistry, mechanism of action, pharmacological effects, pharmacokinetics, clinical uses, adverse effects and drug interactions of antihistamines. - Discuss the differences between 1st generation and 2nd generation antihistamines	Lecture & SGD (Tutorial / CBL)	MCQs / SAQs / SEQs

Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
Expectorants and Antitussives	Pharmacology	- Define and Classify Antitussives and Expectorants - Describe the chemistry, mechanism of action, pharmacological effects, pharmacokinetics, clinical uses, adverse effects and drug interactions - Describe the different treatment approaches to cough	Lecture & SGD (Tutorial / CBL)	MCQs / SAQs / SEQs
Anti-asthmatic drugs	Pharmacology	- Recall the pathogenesis of Asthma - Classify the anti-asthmatic drugs - Describe the chemistry, mechanism of action, pharmacological effects, pharmacokinetics, clinical uses, adverse effects and drug interactions of drugs used for asthma. - Describe the management of Acute and Chronic Asthma - Discuss the Management of Status Asthmaticus	Lecture & SGD (Tutorial / CBL)	MCQs / SAQs / SEQs
MISCELLANEOUS TOPICS				
Heavy Metal Poisoning and Antidotes (Chelating Agents)	Pharmacology	- Describe the Major forms of heavy metal intoxication and poisoning - Classify the Antidotes – Chelating agents - Describe the mechanism of action, uses and adverse effects of chelating agents	Lecture & SGD (Tutorial / CBL)	MCQs / SAQs / SEQs
Locally acting drugs	Pharmacology	- Enlist the different types of locally acting drugs - Describe the mechanism of action and uses of commonly used locally acting drugs	Lecture & SGD (Tutorial / CBL)	MCQs / SAQs / SEQs
Vitamins, Dietary Supplements and Herbal Medication	Pharmacology	- Enumerate the Vitamins – Vitamin A, B, C and E and their role. - Describe a brief role of Ginseng, Coenzyme Q10, Glucosamine, Probiotics and Zinc in therapeutics	Lecture & SGD (Tutorial / CBL)	MCQs / SAQs / SEQs
	Pharmacology	- Define the Adverse Drug Reactions and Drug Interactions - Describe the different types of adverse drug reactions	Lecture & SGD (Tutorial / CBL)	MCQs / SAQs / SEQs

Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
Adverse Drug Reactions and Drug Interactions		- Describe the factors affecting adverse drug reactions and prevention of adverse drug reactions - Describe the types of drug interactions – In vivo and In vitro, Pharmacokinetic and Pharmacodynamics drug interactions		
SKILLS / PRACTICALS				
Pharmacodynamic Experiments	Pharmacology	- Learn basic concepts of animal care and handling techniques - Learn proper animal handling techniques to avoid injury to animal as well as handler - Learn use of personal protective equipment such as lab coat, gloves etc - Demonstrate the effects of CNS depressant drugs in frog - Demonstrate the effects of CNS stimulant drugs in frog - Demonstrate the effect of drugs on reflex time in frog	Practical	OSPE (Observed Station)
P-drug and Prescription Writing	Pharmacology	- Write prescriptions for common ailments by exercises - Choose P-drug for common ailments by exercises	Practical	OSPE (Non-Observed Station)

Learning Resources:

- Basic & Clinical Pharmacology (Betram G.Katzung, Anthony J .Trevor)
- Lippincott Illustrated Reviews Pharmacology (Karen Whalen)
- Goodman & Gilman's The Pharmaceutical Basis of Therapeutics (Laurence L. Brunton, Bruce A. Chabner, Björn C. Knollmann)
- Current Medical Diagnosis & Treatment (Maxine A Papadikis, Stephen J Mcphee)

INTRODUCTION TO FORENSIC MEDICINE AND TOXICOLOGY

The subject comprises two parts. One is Forensic Medicine and the second one is Toxicology

The forensic medicine is the subject which is the application of medical knowledge for the purpose of law. The **medicolegal system** of our country demands that the upcoming medical graduates must show a responsible and a skilled behavior with relevant knowledge of the subject including the legal requirements. The medical graduates must have the core knowledge of the subject which covers the legal aspects of their medical practice.

The subject of forensic medicine covers the knowledge relevant to a number of important topics e.g **legal and ethical issues** in medical practice, establishment of personal identity, inquiry into all types of suspicious medicolegal cases including the living as well as dead bodies, certifications like birth, death, age, injury, and any other as per requirement of the law.

Our society is prone to all types of **violence and crimes** may it be physical, mental, psychosocial or sexual, making it essential to cover these aspects of the medical knowledge. The topics like mechanical injuries including firearm and explosive injuries, the violent asphyxial cases and accidental injuries are so included in the subject,

Forensic medicine is an ever growing science like other medical subjects having a number of **sub-specialties** e.g. forensic pathology, clinical forensic medicine, forensic psychiatry, forensic sexology, forensic criminalistics, cyber forensics etc.

Students are imparted special **medicolegal training** for routine clinical forensic medicine cases and autopsy cases at DHQ Hospital Rawalpindi.

The subject also includes the basic knowledge of **Toxicology** including General and Special Toxicology. It covers the routine cases of domestic poisoning as well as important cases of homicidal and accidental poisoning. The basic information of sources, routes of administration, signs and symptoms, diagnosis and management of routine and special cases of poisoning is provided to the students. The upcoming medical graduates are also apprised of their **medical and legal duties** regarding the poisoning cases.

MBBS Curriculum

Department of Forensic Medicine and Toxicology

Year - III

BLOCK-I

Placement in curriculum: Year 3

Subject: **FORENSIC MEDICINE**

Block Duration: 11 weeks

TABLE OF CONTENTS

Sr. No	Topics
1	Introduction to Forensic Medicine & toxicology
2	General Toxicology
3	Thanatology
4	Autopsy & Exhumation
5	Personal identity
6	Mechanical Injuries
7	Qisas & Diyat Ordinance

GENERAL TOXICOLOGY

Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
Introduction	Toxicology	KNOWLEDGE - Define toxicology , forensic toxicology , poisons, clinical toxicology , toxin ology - Describe the terms of acute poisoning, chronic poisoning, sub-Acute poisoning & fulminant poisoning	Interactive Lecture	MCQ + SEQ/SAQ
Classification of poisons		KNOWLEDGE - Classify poisons according to the mode of action - Describe and enlist corrosives - Describe and enlist irritants - Describe and enlist neurotics - Describe and enlist cardiac poisons - Describe and enlist asphyxiants - Describe and enlist agrochemicals - Describe and enlist drugs of dependence, analgesics & antipyretics - Enumerate petroleum products	Interactive Lecture	MCQ + SEQ/SAQ
Factors modifying action of poisons		KNOWLEDGE - Define the terms quantity/ dose , form of poison - Describe the mode of administration of poison - Identify condition of the patient - Routes of elimination - Action of poisons	Interactive Lecture	MCQ + SEQ/SAQ

Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
THANATOLOGY				
Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
Introduction to thanatology	Fonensic Medicine	KNOWLEDGE • Enlist the criteria of Death/tripod of life • Differentiate between somatic and molecular death • Enlist sudden natural and unnatural causes of death • Differentiate between mode, manner, mechanism and cause of death	Interactive Lecture	MCQ + SEQ/SAQ
Time since death		KNOWLEDGE • Determine time since death /postmortem interval • Describe physical changes useful for the determination of time since death • Describe the factors affecting in the determination of post mortem interval i.e., changes in the eye, algor mortis, post mortem staining, rigor mortis putrefaction, forensic entomology • Describe the Biochemical changes • Describe the relevance of Circumstantial evidence	Interactive Lecture	MCQ + SEQ/SAQ
Changes after death		KNOWLEDGE • Describe the immediate changes after death • Describe irreversible cessation of function of brain , circulation, respiration • Enlist early changes after death • Describe the changes in skin and facial pallor • Describe the mechanism of relaxation of muscles • Describe the physiology of contact flattening and pallor • Identify the changes in the eyes • Briefly describe the mechanism of algor mortis • Describe the pathophysiology of rigor mortis	Interactive Lecture	MCQ + SEQ/SAQ

Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
		- Describe the Biochemical changes seen in rigor mortis - Enlist the late changes after death - Differentiate between modifications seen in the process of putrefaction including adipocere formation and mummification Skills: - Complete/ fill death certificate on the basis of standards laid down by WHO Attitude - Recognize the ethical issues regarding death - Develop sensitivity towards death, the dying patients and the bereaved family		

AUTOPSY & EXHUMATION				
Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
AUTOPSY	Fonensic Medicine	KNOWLEDGE - Define and classify types of autopsy - Enlist the objectives of medicolegal autopsy - Enumerate the pre-requisites of medicolegal autopsy - Describe various autopsy incision - Describe the complete external examination of a dead body - Describe the complete internal examination of a dead body SKILL	Interactive Lecture	MCQ + SEQ/SAQ

AUTOPSY & EXHUMATION				
Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
		- Describe how to collect, preserve, and dispatch the viscerae for histopathological and toxicological examination to Forensic Science Lab - Describe the autopsy protocol and write down an autopsy report.		
EXHUMATION	Fonensic Medicine	KNOWLEDGE - Define exhumation - Enlist the pre-requisites of Exhumation - Describe the procedure of exhumation SKILL - Describe how to collect, preserve, and dispatch the viscerae for histopathological and toxicological examination to Forensic Science Lab	Interactive Lecture	MCQ + SEQ/SAQ

PERSONAL IDENTIFICATION				
Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
PERSONAL IDENTIFICATION	Fonensic Medicine	KNOWLEDGE - Define personal identity - Describe various methods of personal identification - Describe parameters of personal identification - Describe methods to determine race	Interactive Lecture	MCQ + SEQ/SAQ

PERSONAL IDENTIFICATION				
Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
		- Describe medicolegal importance of sex and methods for determination of sex - Describe determination of age from examination of teeth - Describe determination of age from bones - Describe determination of stature - Describe medicolegal importance of age - Describe various types of fingerprints and their medicolegal importance - Describe medicolegal importance of tattoo marks - Describe medicolegal importance of teeth and bones - Describe sex differences of skull, mandible and pelvis - Describe DNA & its application in identification		

MECHANICAL INJURIES				
Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
Mechanical Injuries	Fonensic Medicine	- Define injury in accordance with medical and legal perspective - Classify and describe various types of injuries - Describe the mechanism of wound production - Enlist various weapons of injury	Interactive Lecture	MCQ + SEQ/SAQ

MECHANICAL INJURIES				
Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
<u>QISAS & DIYAT ORDINANCE</u>				
Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
Qisas & Diyat	Fonensic Medicine	KNOWLEDGE • Define hurt • Enlist types of hurt • Define Shajjah • Classify sub types of Shajjah • Define Jurh • Classify sub types of Jurh. • Define Qatl • Classify sub types of Qatl • Describe Isqat-e –haml & Isqat-e –janin	Interactive Lecture	MCQ + SEQ/SAQ

BLOCK-III

Placement in curriculum: Year 3

Subject: **FORENSIC MEDICINE**

Block Duration: 11 weeks

Table of Contents

Sr. No	Topics
1	Firearm injuries
2	Blast injuries
3	Regional injuries
4	Thermal injuries
5	Electrical injuries
6	Transportation injuries
7	Death due to starvation
8	Special toxicology

FIREARM INJURIES				
Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
Firearm Injuries	Fonensic Medicine	KNOWLEDGE • Define firearm • Define and describe types of ballistics • Describe various types of firearms • Describe the cartridges and contents of different firearms • Describe the effects of products of fire on human body • Describe the entry and exit wounds by different firearms • Describe the distance and direction of fire • Describe the post mortem findings in different firearm deaths	Interactive Lecture	MCQ + SEQ/SAQ

BLAST INJURIES				
Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
Blast injuries	Fonensic Medicine	KNOWLEDGE • Define and classify various balst injuries • Describe the mechanism of blast wave injury • Describe the primary,secondary,tertiary and quaternary injuries • Describe the medicolegal aspects of blast injuries	Interactive Lecture	MCQ + SEQ/SAQ

REGIONAL INJURIES				
Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
Regional injuries	Fonensic Medicine	KNOWLEDGE - Describe the mechanism of production of head injuries - Enlist and describe various skull fractures - Describe coup and contre coup injuries - Describe the medicolegal aspects of head injury - Describe various types of intracranial hemorrhages. - Describe the injuries to heart - Describe injuries to lungs - Describe injuries to abdominal contents - Describe injuries to genitalia	Interactive Lecture	MCQ + SEQ/SAQ
THERMAL INJURIES				
Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
THERMAL INJURIES	Fonensic Medicine	KNOWLEDGE - Define the following terms ➤ Heat stroke ➤ Heat exhaustion ➤ Hyperpyrexia ➤ Frost bite ➤ Trench foot - Describe the postmortem findings in deaths due to heat - Describe the postmortem findings in deaths due to cold	Interactive Lecture	MCQ + SEQ/SAQ

Electrical injuries				
Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
THERMAL INJURIES	Fonensic Medicine	KNOWLEDGE - Define the following terms ➤ Heat stroke ➤ Heat exhaustion ➤ Hyperpyrexia ➤ Frost bite ➤ Trench foot - Describe the postmortem findings in deaths due to heat - Describe the postmortem findings in deaths due to cold	Interactive Lecture	MCQ + SEQ/SAQ

TRANSPORTATION INJURIES				
Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
TRANSPORTATION INJURIES	Fonensic Medicine	KNOWLEDGE - Define and classify various transportation injuries - Describe the injuries to a pedestrian - Describe the injuries to the driver - Describe the injuries to front seat occupant - Describe the injuries to back seat occupants - Describe the various factors responsible for a road traffic accident. - Describe role of seat belt and air bags - Describe motor cycle injuries - Describe railway injuries	Interactive Lecture	MCQ + SEQ/SAQ

DEATH DUE TO STARVATION

Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
DEATH DUE TO STARVATION	Fonensic Medicine	KNOWLEDGE - Define starvation - Describe the types and S/S of starvation - Describe the post mortem findings in starvation	Interactive Lecture	MCQ + SEQ/SAQ

SPECIAL TOXICOLOGY

Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
Classification	Fonensic Medicine	KNOWLEDGE - Classify poisons according to their mode of action: - Corrosives - Irritants - Neurotics - Cardiac - Asphyxiants - Miscellaneous	Interactive Lecture	MCQ + SEQ/SAQ
Corrosives	Forensic Medicine	KNOWLEDGE - Classify corrosives - Sources of corrosives - Describe their mechanism of action - Signs and symptoms of corrosive poisoning - Management of corrosive poisoning - Post-mortem findings	Interactive Lecture	MCQ +

SPECIAL TOXICOLOGY

Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
		• Medicological aspect of corrosive poisoning • Describe and explain vitrolage		SEQ/SAQ
Irritants	Forensic Medicine	KNOWLEDGE • Classify irritants • Sources of irritants • Describe their mechanism of action • Signs and symptoms of acute and chronic irritant poisoning • Management of irritant poisoning • Post-mortem findings • Medicological aspect of corrosive poisoning • Describe the specific disease caused by an irritant poison		
Neurotics	Forensic Medicine	KNOWLEDGE • Classify neurotics • Sources of neurotics • Describe their mechanism of action • Signs and symptoms of neurotic poisoning • Describe any sign or symptoms specific to a poison • Management of neurotic poisoning • Post mortem findings • Medicolegal aspects of neurotic poisoning • Describe and explain Run Amok • Describe and explain Cocainism • Describe and explain Barbiturate automatism • Comparison of strychnine with tetanus • Describe the different postures in strychnine poisoning	Interactive lecture	MCQ+SEQ

SPECIAL TOXICOLOGY

Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
		• Enlist the lab investigations in alcohol poisoning		

BLOCK – III

Placement in curriculum: Year 3

Subject: **FORENSIC MEDICINE**

Block Duration: 09 weeks

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Sr. No	Topics
1	Asphyxial Deaths
2	Pregnancy, Delivery, Abortion
3	Impotence, Virginity, Sterility
4	Sexual Offences
5	Infanticide
6	Forensic Psychiatry
7	Blood Stain Analysis
8.	Pakistan Medical & Dental Council Ordinance
9.	Law & Legal Procedures
10.	Legal Aspects of Medical Practice
11.	Special toxicology

ASPHYXIAL DEATHS				
Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
ASPHYXIA-GENERAL ASPECTS	Fonensic Medicine	KNOWLEDGE - Define and classify the types of asphyxia - Describe the non specific signs of asphyxia - Describe the pathophysiology of asphyxia - Describe the post mortem findings in asphyxial deaths. - Dsecrbe the biochemical changes in asphyxia	Interactive Lecture	MCQ + SEQ/SAQ
HANGING	Fonensic Medicine	KNOWLEDGE - Define hanging - Describe the types of hanging. - Describe the post mortem findings in hanging - Describe the medicolegal aspects of hanging	Interactive Lecture	MCQ + SEQ/SAQ
STRANGULATION	Fonensic Medicine	KNOWLEDGE - Define strangulation - Describe the types of Strangulation. - Describe the post mortem findings in Strangulation - Describe the medicolegal aspects of Strangulation	Interactive Lecture	MCQ + SEQ/SAQ
SUFFOCATION	Fonensic Medicine	KNOWLEDGE - Define strangulation - Describe the types of Strangulation. - Describe the post mortem findings in Strangulation - Describe the medicolegal aspects of Strangulation	Lecture	
DROWNING	Fonensic Medicine	KNOWLEDGE - Define drowning - Describe the types of drowning - Describe the post mortem findings in drowning - Describe the medicolegal aspects of drowning	Interactive Lecture	MCQ + SEQ/SAQ

ASPHYXIAL DEATHS				
Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
PREGNANCY, DELIVERY, ABORTION				
Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
PREGNANCY		KNOWLEDGE - Describe the signs of pregnancy - Describe the important medicolegal aspects of pregnancy	Interactive Lecture	MCQ + SEQ/SAQ
DELIVERY	Fonensic Medicine	KNOWLEDGE - Describe the signs and symptoms of recent and remote delivery in the living - Describe the signs of recent and remote delivery in the dead bodies - Describe the important medicolegal aspects of delivery	Interactive Lecture	MCQ + SEQ/SAQ
ABORTION	Fonensic Medicine	KNOWLEDGE - Define and classify abortion - Describe common methods used for criminal abortion. - Describe various drugs used to procure abortion. - Describe the method of examination of the living and dead in cases of abortion. - Describe the laws related to abortion.	Interactive Lecture	MCQ + SEQ/SAQ
IMPOTENCE, VIRGINITY,STERILITY				
Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
IMPOTENCE AND STERILITY		KNOWLEDGE - Describe the definitions and causes of impotence and sterility. - Describe the medicolegal aspects of impotence and sterility - Describe how to issue an impotency certificate.	Interactive Lecture	MCQ + SEQ/SAQ
VIRGINITY		KNOWLEDGE - Define the true virgin - Describe the differences b/w true and a false virgin	Interactive Lecture	MCQ +

ASPHYXIAL DEATHS				
Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
		- Enlist the causes of rupture of hymen - Describe the medicolegal issues related with virginity.		SEQ/SAQ
SEXUAL OFFENCES				
Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
Sexual offences		KNOWLEDGE - Describe normal and abnormal sexual behavior - Define and classify natural and unnatural sexual offences. - Describe the examination of a rape victim. - Describe the examination of a victim of sodomy. - Describe various tests for semen detection.	Interactive Lecture	MCQ + SEQ/SAQ
INFANTICIDE				
Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
INFANTICIDE		KNOWLEDGE - Define infanticide, still born, dead born and age of viability. - Describe various medicolegal issues related with infanticide - Describe detailed postmortem findings in infant deaths. - Describe the relevant features of fetus for determination of its intrauterine age. - Describe the differences b/w live born and a dead born child	Interactive Lecture	MCQ + SEQ/SAQ
FORENSIC PSYCHIATRY				
Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
FORENSIC PSYCHIATRY		KNOWLEDGE - Define and classify psychiatric disorders - Describe the salient features of Mental Health Ordinance 2012. - Differentiate b/w true and false insanity	Interactive Lecture	MCQ + SEQ/SAQ
BLOOD STAIN & ANALYSIS				

ASPHYXIAL DEATHS				
Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
BLOOD STAIN ANALYSIS		KNOWLEDGE - Differentiate b/w human and animal blood stains. - Describe and perform various tests to detect a blood stain from scene of crime.	Practical training	MCQ+SEQ+Practical+OSPE
PAKISTAN MEDICAL AND DENTAL COUNCIL				
Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
PAKISTAN MEDICAL AND DENTAL COUNCIL		KNOWLEDGE - Describe the dynamics of doctor-patient relationship - Recognize the attitudes that can lead to professional misconduct - Explain the importance of privileged communication - Reflect on drawbacks of unethical medical practices and abstinence from such practices - Avoid the abuse of professional knowledge - Display professional secrecy with regards to patient care - Discuss the importance of penal erasure and professional death sentence - Recognize the responsibilities of a registered medical practitioner Skills - Maintain a medical record register - Prepare medical documents in medico legal cases - Write a medical certificate, medical report and medical notification	Interactive Lecture	MCQ + SEQ/SAQ
LAW AND LEGAL PROCEDURE				

ASPHYXIAL DEATHS				
Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
LAW AND LEGAL PROCEDURE		KNOWLEDGE - Describe law and list its different types - Describe the legal procedure and working of different courts in Pakistan - Enumerate the steps of evidence recording during classroom activity. - Recognize different situations where evidence is not admissible in the court of law - Differentiate between dying deposition and dying declaration - Identify and interpret all criminal offences according to Qisas and Diyat ordinance based on the injunctions of Islam Attitude - Recognize their legal responsibilities towards professional society - Demonstrate awareness of the legal issues that a doctor can face in pursuit of its duties - Identify the issues that can pull a doctor into a witness box	Interactive Lecture	MCQ + SEQ/SAQ
LEGAL ASPECTS OF MEDICAL PRACTICE				
Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
LEGAL ASPECTS OF MEDICAL PRACTICE		KNOWLEDGE - Describe Medical negligence and classify its various components - Determine how the doctor responds facing malpractice suit - Identify criteria to certify the extent of damage in civil and criminal cases of medical negligence ATTITUDES - Show awareness of legal responsibilities in professional practice	SGD	MCQ + SEQ/SAQ

ASPHYXIAL DEATHS				
Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
		Demonstrate sensitivity and empathy towards a patient who has suffered from medical negligence		
SPECIAL TOXICOLOGY				
Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
Cardiac posions	Forensic Medicine	KNOWLEDGE - Classify cardiac poisons - Sources of cardiac poisons - Describe their mechanism of action - Signs and symptoms of poisoning by cardiac poisons - Management of such poisoning - Post mortem findings - Medicolegal aspects of poisoning by cardiac poisons - Highlight aconite as the ideal suicidal poison	Interactive lecture	MCQ + SEQ/SAQ
Asphyxiants	Forensic Medicine	KNOWLEDGE - Classify asphyxiants - Sources of asphyxiants - Describe their mechanism of action - Signs and symptoms of poisoning by asphyxiants - Management of asphyxiant poisoning - Post mortem findings - Medicolegal aspects of asphyxiant poisoning	Interactive lecture	MCQ + SEQ/SAQ
Miscellaneous	Forensic Medicine	KNOWLEDGE - Classify and explain sources, signs and symptoms, types and medicolegal aspects of war gases and biological weapons - Describe mechanism of action, signs and symptoms, , management, postmortem findings and medicolegal aspects of Aluminium phosphide poisoning	Interactive lecture	MCQ + SEQ/SAQ

ASPHYXIAL DEATHS				
Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
		- Describe mechanism of action, signs and symptoms, , management, postmortem findings and medicolegal aspects of Agricultural poisons(Organophosphorous poisoning) - Describe mechanism of action, signs and symptoms, , management, postmortem findings and medicolegal aspects of Medicinal poisons - Describe mechanism of action, signs and symptoms, , management, postmortem findings and medicolegal aspects of Kerosene oil poisoning, drugs of dependence, date rape drug, food poisoning		

Learning Resources:

- End Block-III Exam (19-28 August, 19) (May be revised subject to public holidays announced by the Government)
- Prep Leave Pre Annual Exam (29 August to 9 September, 2019)
- Pre Annual Exam (10-20 September, 2019)
- Prep Leave Annual Exam (21 September to 07 October, 2019)
- Annual Exam (08 October to 18 October, 2019)
- Post Exam Leave (19-22 October, 2019)

Department of Pathology

Year - III

Block - I

Overview of General Pathology & General and Special Bacteriology

Placement in curriculum: Year 3

Subject: Pathology

Block Duration: - 11 Weeks

TABLE OF CONTENTS

Sr. No	Topics
1	Cell Injury
2	Inflammation
3	General Bacteriology
4	Special Bacteriology

Introduction	This block is expected to build the student's basic knowledge about the abnormal structure, etiology, pathogenesis, pathophysiology and disease process of various microbial diseases. This knowledge will serve as a fabric on which the student will weave further knowledge about the etiology, pathology and pathogenesis and will touch gross and microscopic features of the relevant pathology. It will provide skills to perform various tests in the laboratory.
Outcomes	KNOWLEDGE : • Describe different types of inflammations, Chemical Mediators and their gross and microscopic features • Describe cell injury and different mechanisms of cell injury • Describe Necrosis and Apoptosis • Describe Intracellular accumulations and pathologic calcifications • Describe normal structure of bacteria, its growth pattern, genetics and comparison with other micro organisms • Describe normal flora • Describe Gram Positive and Gram Negative Cocci and Rods • Describe Bacterial Vaccines, sterilization and disinfections • Describe anti-microbials SKILL : • Demonstrate how to form and fix a smear • Demonstrate Gram staining procedure • Demonstrate different biochemical procedures • Demonstrate catalyze and oxidase test ATTITUDE: ▪ Demonstrate the effective attitude towards performing practicals ▪ Demonstrate the professional attitude, group dynamicism and good communication in pathology teaching lab and tutorial room and during practical.

OVERVIEW OF GENERAL PATHOLOGY & GENERAL AND SPECIAL BACTERIOLOGY

Topic	Discipline	Learning Objectives	Domain K/S/A	Learning Strategy	Assessment Tool
Cell Injury	General Pathology	- To define cell injury. - To define reversible and irreversible cell injury. - To enlist different causes of cell injury. - To describe pathogenesis of different causes of cell injury.	Knowledge	Interactive Lecture	MCQ/SEQ
Cellular Adaptations	General Pathology	- To define cellular adaptations. - To enlist different types of cellular adaptations. - To describe etiology, pathogenesis and morphological features of cellular adaptations.	Knowledge	Interactive Lecture	MCQ/SEQ
Cellular Adaptations	General Pathology	To observe and identify morphological features of different types of Cellular adaptations	Skill /Attitude	Pathology Teaching Lab	OSPE
Necrosis	General Pathology	- To define necrosis - To describe general morphological changes (cytoplasmic, nuclear) in necrosis. - To enlist different types of necrosis - To describe etiology, pathogenesis and specific morphological features of different types of necrosis	Knowledge	Interactive Lecture	MCQ/SEQ
Necrosis	General Pathology	To observe and identify morphological features of different types of necrosis	Skill /Attitude	Pathology Teaching Lab	OSPE
Apoptosis	General Pathology	- To define apoptosis. - To tabulate causes (physiological & pathological) of apoptosis.	Knowledge	Interactive Lecture	MCQ/SEQ

Topic	Discipline	Learning Objectives	Domain K/S/A	Learning Strategy	Assessment Tool
		- To describe the two different pathways involved in the pathogenesis of apoptosis. - To differentiate between necrosis and apoptosis.			
Cellular Adaptations	General Pathology	- To define cellular adaptations. - To enlist different types of cellular adaptations. - To describe etiology, pathogenesis and morphological features of cellular adaptations.	Knowledge	Interactive Lecture	MCQ/SEQ
Necrosis	General Pathology	To observe and identify morphological features of different types of necrosis	Skill	Pathology Teaching Lab	OSPE/Viva
Cell Injury	General Pathology	- To define cell injury. - To define reversible and irreversible cell injury. - To enlist different causes of cell injury. - To describe pathogenesis of different causes of cell injury.	Skill	SGD	OSPE/Viva
Intercellular Accumulations and Pathologic Calcification	General Pathology	- To enlist different types of intracellular accumulations. - To describe etiology, pathogenesis of different types of intracellular accumulations.	Knowledge	Interactive Lecture	MCQ/SEQ
Bacterial Cell Structure and Classifications	Microbiology	- To classify bacteria - To enlist differences between cell structure of Gram +ve and Gram –ve bacteria	Knowledge	Interactive Lecture	MCQ/SEQ
Bacterial Growth	Microbiology	- To define bacterial growth cycle - To enumerate different types of bacterial growth cycle	Knowledge	Interactive Lecture	MCQ/SAQ

Topic	Discipline	Learning Objectives	Domain K/S/A	Learning Strategy	Assessment Tool
Genetics	Microbiology	- Define mutation - Classify different types of mutations - Enumerate the reasons involved - Explain the mechanism involved - Enlist the mechanisms of transfer of bacterial DNA - Discuss the mechanisms of transfer of bacterial DNA	Knowledge	Interactive Lecture	MCQ/SEQ
Normal Flora	Microbiology	- To define normal flora/human microbiome - To enlist areas which are sterile - To define a carrier state - To differentiate between colonization and colonization resistance - To discuss the importance of colonization resistance - To discuss the functions of normal flora - To enlist the effects on body functions - To enlist the reasons when microbiome becomes harmful	Knowledge	Interactive Lecture	MCQ
Overview of Bacterial Pathogens and anaerobes	Microbiology	- To classify the important pathogens broadly - To enlist three organisms which take Gram stain - To discuss the principle of Gram stain - To enlist three organisms which do not take Gram stain - To tabulate important diseases produced by different organisms	Knowledge	Interactive Lecture	SEQ

Topic	Discipline	Learning Objectives	Domain K/S/A	Learning Strategy	Assessment Tool
Host Defense	Microbiology	- To enlist different types of defenses - To enumerate the predisposing factors involved - To enlist the naturally occurring barriers - To describe the response generated to acute pyogenic and chronic infections - To describe the mechanism of phagocytosis - To enlist the conditions that predispose to bacterial infections	Knowledge	Interactive Lecture	MCQ
Microscope	Microbiology	- To identify different parts of microscope - To learn the functions of different parts of microscope	Skill	Pathology Teaching Lab	OSPE/Viva
Inflammation (Acute Inflammation)	General Pathology	- To define Inflammation - To contrast between types of Inflammation - To list cardinal signs of inflammation & its causes - To define Acute Inflammation - To enlist and describe morphological patterns of acute inflammation - To list the events involved in pathogenesis of Acute inflammation - To differentiate between Transudate and exudate	Knowledge	Interactive Lecture	MCQ
Inflammation (Chemical Mediators)	General Pathology	- To tabulate different types of chemical mediators - To describe the principle actions & sources of important chemical mediators	Knowledge	Interactive Lecture	MCQ
Acute Appendicitis/	General Pathology	To observe and identify morphological features in acute appendicitis	Skill/Attitude	Pathology Teaching Lab	OSPE/Viva

Topic	Discipline	Learning Objectives	Domain K/S/A	Learning Strategy	Assessment Tool
Chronic Cholecystitis		To observe and identify morphological features in chronic cholecystitis			
Inflammation and Repair	General Pathology	- To list the Cellular events of Acute inflammation - To define & describe processes of Margination, Rolling, Adhesion, Transmigration, Chemotaxis & Phagocytosis - To list outcomes of acute inflammation	Knowledge	Interactive Lecture	MCQ
Pathogenesis of Bacteria	Microbiology	- To classify the important pathogens broadly - To enlist three organisms which take Gram stain - To discuss the principle of Gram stain - To enlist three organisms which do not take Gram stain - To tabulate important diseases produced by different organisms	Knowledge	Interactive Lectures	SAQ
Chronic Granulomatous Inflammation	General Pathology	To observe and identify various morphological features in chronic granulomatous inflammation	Skill	Pathology Teaching Lab	OSPE/Viva
Inflammation	General Pathology	- To define chronic inflammation and chronic granulomatous inflammation. - To list different types of cells involved in chronic inflammation. - To describe morphology and etiology of a granuloma/ granulomatous inflammation	Attitude	SGD	SEQ/MCQ/Viva
Bacteria Vaccines	Microbiology	- To define immunity - To classify the different types of immunity - To discuss how immunity is acquired against pathogens		Interactive Lecture	MCQ

Topic	Discipline	Learning Objectives	Domain K/S/A	Learning Strategy	Assessment Tool
		- To define a vaccine - To enumerate different preparations available - To tabulate recommended vaccines for children (EPI)			
Sterilization and Disinfection	Microbiology	- To define sterilization /disinfection/ antiseptics. - To understand various methods of Sterilization. - To classify chemical agents used for Disinfection. - To describe the mechanism of Disinfection. - To have thorough knowledge about the methods to sterilize various items used in the operation theatres and the hospitals.	Knowledge	Interactive Lecture	MCQ/SEQ
Anti Microbials	Microbiology	To introduce various antimicrobial drugs and their mechanism of action	Knowledge	Interactive Lecture	MCQ/SEQ
Smear Formation and Fixation		- To learn how to make a smear of the given specimen - To learn how to fix a smear for staining	Skill	Pathology Practical Lab	OSPE/Viva
Gram Positive Cocci	Microbiology	- To classify Gram positive cocci - To enlist their properties - To enlist the diseases they produce - To discuss the role of different virulence factors possessed by them - To discuss the pathogenesis of the diseases produced - To enlist the clinical features - To tabulate the tests that differentiate different species of Staphylococci	Knowledge	Interactive Lecture	MCQ/SEQ

Topic	Discipline	Learning Objectives	Domain K/S/A	Learning Strategy	Assessment Tool
		- To describe MRSA - To enlist five prevention measures against MRSA			
Gram Staining	Microbiology	- To perform the procedure of gram staining - To interpret results of gram staining	Skill	Pathology Practical Lab	OSPE/Viva
Gram Positive Cocci	Microbiology	To learn the ability to use the procedure of Gram staining	Skill	Pathology Practical Lab	OSPE/Viva
Gram Negative Cocci	Microbiology	- To classify the Gram negative rods based on lactose fermentation - To enlist five members of Family Enterobacteriaceae - To enlist the characteristics of Family Enterobacteriaceae - To enlist the important properties of Salmonella typhi - To write down its mode of transmission with infectious dose - To enumerate the names of its various antigens - To enlist the diseases produced - To discuss the pathogenesis of the diseases - To enumerate the tests to diagnose a case of typhoid - To enlist preventive measures to prevent infections	Knowledge	Interactive Lecture	SEQ MCQ
Gram Positive Rods	Microbiology	To discuss the classification, characteristics, pathogenesis, transmission, clinical features and diagnosis of medically important gram positive rods	Knowledge	Interactive Lecture	MCQ

Topic	Discipline	Learning Objectives	Domain K/S/A	Learning Strategy	Assessment Tool
Gram Negative Rods	Microbiology	- To classify the Gram negative rods based on lactose fermentation - To enlist five members of Family Enterobacteriaceae - To enlist the characteristics of Family Enterobacteriaceae - To enlist the important properties of Salmonella typhi - To write down its mode of transmission with infectious dose - To enumerate its antigens - To enlist the diseases produced - To discuss the pathogenesis of the diseases - To enumerate the tests to diagnose a case of typhoid - To enlist preventive measures	Knowledge	Interactive Lecture	MCQ/SEQ
Biochemical Reactions	Microbiology	- To be able to perform various biochemical reactions related to microorganisms - To interpret the various biochemical reactions of these microorganisms	Skill	Pathology Teaching Lab	OSPE/Viva
Gram Negative Rods	Microbiology	To use the various biochemical reactions and their interpretations for identification of gram negative rods	Skill	Pathology Teaching Lab	OSPE/Viva
Spirochetes	Microbiology	- To classify Spirochetes - To enlist their important properties - To determine their mode of transmission - To enlist the diseases produced by spirochetes	Knowledge	Interactive Lecture	SEQ

Topic	Discipline	Learning Objectives	Domain K/S/A	Learning Strategy	Assessment Tool
		- To enumerate the clinical features - To discuss the pathogenesis of the diseases - To discuss in detail the laboratory diagnosis of a case of syphilis - To plan how to treat a case of syphilis - To enlist preventive measures regarding spirochetes infections			
Catalyze and Oxidase Test	Microbiology	- To perform various catalyze and oxidase test - To interpret various catalyze and oxidase test	Skill	Pathology Teaching Lab	OSPE
Chlamydia	Microbiology	To discuss pathogenesis, modes of transmission and life cycle of Chlamydia	Knowledge	Interactive Lecture	MCQ /SEQ/SAQ
Rickettsia	Microbiology	- To classify important Rickettsiae - To enlist their important properties - To enlist the diseases produced - To enlist the vectors involved in mode of transmission - To discuss the pathogenesis - To enumerate the clinical features - To enlist different tests that will help in laboratory diagnosis - To enumerate the preventive measures	Knowledge	Interactive Lecture	MCQ/SEQ/SAQ
Actinomycetes and Mycoplasma	Microbiology	To discuss the types, characteristics, transmission, pathogenesis, clinical features, lab Diagnosis, treatment, vaccination of Actinomycetes and Mycoplasma	Knowledge	Interactive Lecture	MCQ/SAQ/SEQ

Learning Resources:

- **Pathologic Basis Of Disease by Robbins and Cotran**
- **Review of Medical Microbiology and Immunology by Warren Levinson**

BLOCK- I

OVERVIEW OF HEMOSTATSIS, IMMUNITY, PARASITOLOGY AND MYCOBACTERIA

Placement in curriculum: Year 3

Subject: Pathology

Block Duration: -11Weeks

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Sr. No	Topics
1	Hemostasis
2	Neoplasia
3	Immunity
4	Parasitology
5	Mycobacteria

Introduction	This block is expected to build the student's basic knowledge about the etiology, abnormal structure, pathogenesis, pathophysiology and disease process of various parasitic diseases and Immunity. This knowledge will serve as a fabric on which the student will weave further knowledge about the etiology, pathology and pathogenesis and will touch gross ad microscopic features of the relevant pathology. It will provide skills to perform various tests in the laboratory.
Outcomes	KNOWLEDGE: Describe edema

	• Describe Hemostasis • Describe neoplasia, its different types, lab diagnosis and management • Describe Immunity, host defenses, cellular basis of immunity and complement • Describe immune tolerance and auto immunity • Describe transplant and graft rejection • Describe hyper sensitivity • Describe Protozoa (Malaria, Leishmania, Toxoplasma and Trypanosomes) • Describe Cystodes, Nematodes and Trematodes SKILL : • Demonstrate life cycle of Malaria • Demonstrate ZN staining procedure • Demonstrate and recognize different culture media • Draw and differentiate gross and microscopic features of Pulmonary edema and Neoplasia ATTITUDE: ▪ Demonstrate the effective attitude towards performing practicals ▪ Demonstrate the professional attitude, group dynamicism and good communication in pathology teaching lab and tutorial room during practical.
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OVERVIEW OF HEMOSTASIS, IMMUNITY, PARASITOLOGY AND MYCOBACTERIA

Topic	Discipline	Learning Objectives	Domain K/S/A	Learning Strategy	Assessment Tool
Hemodynamics	General Pathology	• To enlist the various factors that are involved in deranged hemodynamic state	Knowledge	Interactive lecture	MCQ/SEQ
Homeostasis	General Pathology	• To understand sequence of events following injury and three basic components of hemostasis	Knowledge	Interactive Lecture	MCQ/SEQ

Topic	Discipline	Learning Objectives	Domain K/S/A	Learning Strategy	Assessment Tool
		To differentiate between thrombotic and antithrombotic factors			
Pulmonary Edema	General Pathology	To observe and identify the morphological changes in edema	Skill	Pathology Teaching Lab	OSPE/Viva
Thrombus	General Pathology	To identify and observe the morphological features of thrombus	Skill/Attitude	Pathology Teaching Lab	OSPE/Viva
Infarction	General Pathology	- To define infarction - To classify infarction - To narrate the various mechanisms of pathogenesis of infarction - To describe causes and morphological features of infarction involving various organs	Knowledge	Interactive Lecture	OSPE/Viva
Shock	General Pathology	- To define shock - To classify shock - To describe pathogenesis of shock - To describe clinical stages of shock	Knowledge	Interactive Lecture	MCQ/SEQ
Nomenclature of Neoplasia	General Pathology	- To define neoplasm. - To give a contrast of neoplastic growth with hyperplasia, metaplasia and dysplasia. - To know the basic principles of the nomenclature and biologic behavior of benign and malignant processes. - To classify Neoplasm. - To define and use the terminologies: Adenoma, Papilloma, Polyp, Cyst adenoma, Carcinoma, Adenocarcinoma, Sarcoma, Teratoma.	Knowledge	Interactive Lecture	MCQ/SEQ

Topic	Discipline	Learning Objectives	Domain K/S/A	Learning Strategy	Assessment Tool
Molecular Basis of Cancer	General Pathology	- To narrate the internal and external factors for the regulation of cell division and tumour progression. - To discuss the multihit hypothesis of Carcinogenesis - To narrate the genetic and Epigenetic alterations involved in carcinogenesis - To discuss the biology of tumour growth - To discuss the cellular and Molecular hallmarks of cancer	Knowledge	Interactive Lecture	MCQ/SEQ
Characteristics of benign and malignant tumors	General Pathology	To enlist the characteristics of neoplasms compared to normal tissues, rate of growth, size, cellular differentiation, anaplasia and local invasion, microscopic features, metastases and pathways of spread	Knowledge	Interactive Lecture	MCQ/SEQ
Clinical aspects of Neoplasia	General Pathology	- To describe Local and Hormonal effects of Neoplasia. - To define cancer cachexia. - To describe Paraneoplastic synchoma. - To discuss how to grade and stage Malignant Neoplasm. - To know the significance of 5 year Survival Rate. - To discuss the overview of treatment modalities of cancer.	Knowledge	Interactive Lecture	MCQ/SEQ
Benign Tumors	General Pathology	To identify and observe various morphological features of benign tumors	Skill	Pathology Teaching Lab	OSPE/Viva

Topic	Discipline	Learning Objectives	Domain K/S/A	Learning Strategy	Assessment Tool
Neoplasia	General Pathology	- To define oncogenic Agent/ Carcinogen/ Mutagen. - To know various types of Carcinogens, their mechanism of action and cancers caused by them. - To learn the classification of carcinogens. - To define Initiators / Promoters and Direct/ Indirect acting agent. - To describe occupation carcinogens.	Attitude	SGD	MCQ
Carcinogenic agents and their cellular interactions	General Pathology	- To define oncogenic agent/carcinogen/ mutagen - To enlist various types of carcinogens ,mechanism of action and cancers caused by them - To know the role of Initiators/ Promoters, direct/ Indirect acting agents - To define the relationships of chronic inflammatory states to various forms of cancer	Knowledge	Interactive Lecture	SEQ
Clinical aspects of neoplasia	General Pathology	- To describe the local and Hormonal Effects of cancer - To enlist the features of Cancer Cachexia - To discuss the clinical features of paraneoplastic syndrome - To define the grading and Staging of Cancer - To plan the Laboratory Diagnosis for cancer patient - To discuss the brief overview of treatment of Cancer.	Knowledge	Interactive Lecture	MCQ/SEQ

Topic	Discipline	Learning Objectives	Domain K/S/A	Learning Strategy	Assessment Tool
Lab diagnosis of Cancer	General Pathology	- To discuss various modalities used in diagnosis of tumour - To define the molecular Profiling of tumours.	Knowledge	Interactive Lecture	MCQ/SEQ
Malignant Tumors	General Pathology	To observe and identify various morphological features of malignant tumors using H & E staining	Skill	Pathology Teaching Lab	OSPE
Mycobacterium	Microbiology	- To know about the salient features of Mycobacterium tuberculosis - To enlist pathogenesis and transmission, clinical presentation and lab diagnosis of tuberculosis - To know the characteristics of Atypical Mycobacterium and Mycobacterium leprae	Knowledge	Interactive lecture	MCQ
Overview of Immunity	Microbiology	- To define immunity - To understand the relation of age with immunity - To define the functions of immune system - To describe the characteristics B and T lymphocytes	Knowledge	Interactive Lecture	MCQ
Host Defense	Microbiology	- To enlist different types of defenses in human body - To enumerate the predisposing factors involved - To enlist the naturally occurring barriers - To describe the response generated to acute pyogenic and chronic infections - To describe the mechanism of phagocytosis - To enlist the conditions that predispose to bacterial infections	Knowledge	Interactive Lecture	MCQ

Topic	Discipline	Learning Objectives	Domain K/S/A	Learning Strategy	Assessment Tool
ZN Staining	Microbiology	- To perform the procedure of ZN staining - To observe acid-fast bacilli under the microscope	Skill	Pathology Teaching Lab	OSPE
Pathogenesis	Microbiology	- To determine the principal and stages of Pathogenesis, mode of transmission - To enlist differences between exotoxins & endotoxins	Knowledge	Interactive Lectures	MCQ/SEQ / SAQ
Cellular basis of Immune Response	Microbiology	- To know the origin of T cells, B cells, NK cells and macrophages - To describe the role of Thymus in lymphocyte differentiation - To enlist the functions of T cells - To describe the mechanism of activation/deactivation of T cells - To define superantigens - To discuss the effects of superantigens on T cells	Knowledge	Interactive Lecture	MCQ
Complement	Microbiology	- To describe the constitution of Complement system - To enlist the functions of Complement - To enumerate the pathways by which complement system can be activated - To describe in detail the biological events of Complement system - To enumerate its clinical applications	Knowledge	Interactive Lecture	MCQ/SEQ / SAQ
Immune tolerance and autoimmunity	Microbiology	- To define immune tolerance & immunity - To explain the mechanism of immune to learn and autoimmunity. - To enlist autoimmune disease	Knowledge	Interactive Lecture	MCQ

Topic	Discipline	Learning Objectives	Domain K/S/A	Learning Strategy	Assessment Tool
		To explain the correlation bacterial infections with autoimmune disease.			
Culture Media	Microbiology	- To identify and observe the different types of culture media - To know the applications of various types of culture media.	Skill	Pathology Practical Lab	OSPE/Viva
Humoral and Cell mediated Immunity	Microbiology	- To define Humoral and cell mediated immunity - To compare Humoral and cell mediated immunity - To enumerate types of responses generated on exposure to an antigen - To tabulate the differences between the two responses - To describe Active immunity - To describe Passive immunity - To discuss the mechanism of Cell mediated immunity	Knowledge	Interactive Lecture	MCQ/SEQ / SAQ
Antibodies	Microbiology	- To define antibodies - To classify various types of antibodies - To draw the structure of antibody - Enlist the functions of antibodies	Knowledge	Interactive Lecture	MCQ/SEQ / SAQ
Transplant and graft Rejection	Microbiology	- To define graft rejection - To explain pathogenesis of graft rejection - To type of grafts.	Knowledge	Interactive Lecture	MCQ
Hypersensitivity	Microbiology	- To define Hypersensitivity - To enlist the names of different types of Hypersensitivity	Knowledge	Interactive Lecture	MCQ/SEQ / SAQ

Topic	Discipline	Learning Objectives	Domain K/S/A	Learning Strategy	Assessment Tool
		- To describe in detail the mechanism of all types - To enlist the clinical features of all types - To describe the associated clinical conditions - To enlist the preventive measures			
Anti-microbial sensitivity plate	Microbiology	To observe and learn how to read anti-microbial drug sensitivity plate	Skill	Pathology Teaching Lab	OSPE
STD	Microbiology	- To give an overview of introduction, classification of STD Agents and its etiology - To discuss various types of genital discharges and ulcers	Knowledge	Interactive Lecture	MCQ/SEQ / SAQ
Introduction to Parasitology	Microbiology	To give the classification of parasites in different groups with examples and disease produced by them.	Knowledge	Interactive Lecture	MCQ/SEQ
Protozoa	Microbiology	- Characteristics - Classification - Intestinal Protozoa	Attitude	SGD	MCQ/SEQ / SAQ
Pathogenic protozoa and ova in stool	Microbiology	To observe and recognize different form of pathogenic parasites in stool	Skill	Pathology Teaching Lab	OSPE/Viva
Malaria	Microbiology	- To enumerate the species of plasmodium - To illustrate with the help of a well labelled diagram the life cycle of plasmodium - To enlist the clinical features of the disease - To enlist the complications - To discuss the pathogenesis - To discuss the diagnosis in the laboratory - To discuss different treatment options	Knowledge	Interactive Lecture	MCQ/SEQ / SAQ

Topic	Discipline	Learning Objectives	Domain K/S/A	Learning Strategy	Assessment Tool
		To enlist the preventive measures			
Leishmania	Microbiology	- To classify blood and tissue protozoa - To enumerate four main species involved in the development of the disease - To name the vector involved - To illustrate with the help of a well labelled diagram its life cycle - To describe the pathogenesis in the progression - To enlist the clinical features - To enlist the tests that can help in diagnosis - To know the various treatment options - To enlist the preventive measures	Knowledge	Interactive Lecture	MCQ/SEQ / SAQ
Toxoplasma	Microbiology	To explain the features of Life Cycle, pathogenesis, clinical Features, lab Diagnosis, treatment and Prevention of Toxoplasma	Knowledge	Interactive Lecture	MCQ/SEQ / SAQ
Trypanosomes	Microbiology	To give the classification, Life Cycle, clinical findings and lab diagnosis trypomastigotes in blood film and give their treatment and prevention	Knowledge	Interactive Lecture	MCQ/SEQ / SAQ
Malarial Parasite and Ova	Microbiology	To observe and be able to recognize the different stages and life cycle of Malarial parasite	Skill	Pathology Teaching Lab	OSPE/Viva
Cestodes	Microbiology	- To classify Metazoa - To enumerate important parasites in the group - To recall the mode of transmission - To draw a well labelled life cycle of the parasite - To enlist the complications - To describe the pathogenesis involved	Knowledge	Interactive Lecture	MCQ/SEQ / SAQ

Topic	Discipline	Learning Objectives	Domain K/S/A	Learning Strategy	Assessment Tool
		- To enlist the tests involved in laboratory diagnosis - To know the treatment - To enlist preventive measures.			
Nematodes	Microbiology	To give introduction to Nematodes and explain pathogenesis, clinical features, life cycle and lab diagnosis of <i>Enterobius vermicularis</i>, <i>Trichuris</i>, <i>Ancylostoma</i> and <i>Necator</i>	Knowledge	Interactive Lecture	MCQ/SEQ / SAQ
Trematodes	Microbiology	To give introduction to Trematodes and explain the pathogenesis, clinical features, life cycle and lab diagnosis of Characteristics of <i>Clonorchiasis</i>, <i>Paragonimus Westermani</i> and <i>Fasciola Hepatica</i>	Knowledge	Interactive Lecture	MCQ/SEQ / SAQ
Parasitology	Microbiology	To give introduction parasitology, main classification of parasitology and definitions of important Terms	Attitude	SGD	MCQ/SEQ / SAQ

Resources:

- **Pathologic Basis Of Disease by Robbins and Cotran**
- **Review of Medical Microbiology and Immunology by Warren Levinson**

BLOCK - III

Overview Of Virology and Mycology

Placement in curriculum: Year 3

Subject: Pathology

Block Duration: -09 Weeks

TABLE OF CONTENTS

Sr. No	Topics
1	Overview of Virology
2	Overview of Mycology
3	Genetic Disorders
4	Nutritional Disorders

Introduction	This block is expected to build the student's basic knowledge about the abnormal structure, etiology, pathogenesis, pathophysiology and disease process of various Viruses and Fungi. This knowledge will serve as a fabric on which the student will weave further knowledge about the etiology, pathology and pathogenesis and will touch classifications, structure, lab diagnosis and management of the relevant pathology. It will provide skills to perform various tests in the laboratory.
Outcomes	KNOWLEDGE : • Classify Viruses • Describe the viral vaccines • Describe Hepatitis Virus and HIV Virus • Describe Dengue Virus and Yellow Fever

	• Describe Chicken Pox virus and Human Pappiloma Virus • Describe Rota, NORO, Rabies, CMV and EBV • Describe Human Tumor Viruses • Classification and Lab diagnosis of Fungal Infections • Cutaneous and Subcutaneous Mycosis • Describe systemic and opportunistic Mycosis • Describe diseases of childhood • Describe genetic and nutritional disorders SKILL : • Demonstrate life cycle of various viruses • Recognize the structures of different viruses • Perform germ tube test ATTITUDE: ▪ Demonstrate the effective attitude towards performing practicals ▪ Demonstrate the professional attitude, group dynamicism and good communication in pathology teaching lab and tutorial room and during practical.
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OVERVIEW OF VIROLOGY AND MYCOLOGY

Topic	Discipline	Learning Objectives	Domain K/S/A	Learning Strategy	Assessment Tool
Overview and classification of Viruses	Microbiology	• To narrate the definition, characteristics and classification with example of various viruses	Knowledge	Interactive Lecture	MCQ
Replication of Viruses	Microbiology	• To differentiate between Growth curve and Replication cycle	Knowledge	Interactive Lecture	MCQ/SEQ

Topic	Discipline	Learning Objectives	Domain K/S/A	Learning Strategy	Assessment Tool
		- To differentiate between eclipse period and latent period - To describe cytopathic effect(CPE)and its significance - To describe the steps of replication cycle - To discuss in detail the mechanism of lysogenic conversion - To enumerate four examples of bacteria which have undergone lysogenic conversion			
Pathogenesis of Viruses	Microbiology	- To enumerate the effects of infection at cellular and in an individual - To discuss in detail inclusion bodies with two examples - To enumerate the steps of pathogenesis in an infected patient - To enumerate the stages of a typical viral infection - To enumerate important viral pathogens with their main portal of entry - To enumerate the viruses that cause perinatal infections according to their type of transmission - To enumerate the medical important viruses which have an animal reservoirs - To differentiate between pathogenesis and immunopathogenesis - To enumerate persistent viral infections and their types	Knowledge	Interactive Lecture	MCQ/SAQ

Topic	Discipline	Learning Objectives	Domain K/S/A	Learning Strategy	Assessment Tool
Urine RE	Microbiology	To observe and be able to identify different abnormal finding in Urine Routine Examination	Skill	Pathology Teaching Lab	OSPE/Viva
MMR	Microbiology	To discuss the role of MMR vaccine in prevention of acquired infection	Knowledge	Interactive Lecture	MCQ/SEQ
Influenza Virus	Microbiology	- To narrate the transmission, pathogenesis, clinical findings, lab diagnosis, prevention of: a) Avian influenza virus b) H7N9 influenza virus c) Swine flu viruses	Knowledge	Interactive Lecture	MCQ/SEQ
Viral Vaccines	Microbiology	- To define vaccine - To enumerate the different types of immunity of various vaccines provided - To enumerate the mechanism of acquiring immunity against diseases - To discuss features of active immunity - To discuss features of passive active immunity - To discuss features of Herd immunity - To compare the characteristics of live and killed vaccines	Knowledge	Interactive Lecture	MCQ
Herpes Virus	Microbiology	- To enumerate various Herpes viruses - To classify them on the basis of latency - To enumerate their important properties - To enlist the modes of transmission - To discuss the pathogenesis of the disease - To discuss latency and reactivation - To describe in detail the clinical findings	Knowledge	Interactive Lecture	MCQ/SEQ

Topic	Discipline	Learning Objectives	Domain K/S/A	Learning Strategy	Assessment Tool
		To discuss laboratory diagnosis			
Hepatitis Virus	Microbiology	- To enlist the causative agents and their important properties of Hepatitis viruses - To enumerate the viruses that cause/do not cause Chronic liver disease (CLD) - To enlist the modes of transmission of the viruses - To discuss the pathogenesis of the disease - To enlist the clinical features - To discuss the diagnosis of the disease - To enumerate the preventive measures in detail	Knowledge	Interactive Lecture	MCQ/SEQ
HIV	Microbiology	- To enlist the important properties of HIV - To enumerate the important genes and antigens of the virus - To enlist the modes of transmission - To describe the pathogenesis of the disease - To discuss in detail the laboratory diagnosis of the disease - To enlist the preventive measures - To enlist the drugs used for the prevention of opportunistic infections in an AIDS patient	Knowledge	Interactive Lecture	MCQ/SEQ
Dengue Virus & Yellow Fever	Microbiology	To discuss the dengue virus and yellow fever with respect to the characteristics, types, pathogenesis, clinical features and diagnosis	Knowledge	Interactive Lecture	MCQ/SEQ
Chicken Pox Virus	Microbiology	To discuss the chicken pox virus with respect to transmission, epidemiology, pathogenesis, clinical findings & diagnosis	Knowledge	Interactive Lecture	MCQ/SEQ

Topic	Discipline	Learning Objectives	Domain K/S/A	Learning Strategy	Assessment Tool
Human Papilloma Virus	Microbiology	To discuss the Human Papilloma virus with respect to transmission, epidemiology, pathogenesis, clinical findings & diagnosis	Knowledge	Interactive Lecture	MCQ/SEQ
Rota and Noro Virus	Microbiology	To discuss the Rota and Noro virus with respect to transmission, epidemiology, pathogenesis, clinical findings & diagnosis	Knowledge	Interactive Lecture	MCQ/SEQ
Rabies	Microbiology	To discuss the Rabies virus with respect to transmission, epidemiology, pathogenesis, clinical findings & diagnosis	Knowledge	Interactive Lecture	MCQ/SEQ
CMV and Epstein Virus	Microbiology	To discuss the CMV and Epstein virus with respect to transmission, epidemiology, pathogenesis, clinical findings & diagnosis	Knowledge	Interactive Lecture	MCQ/SEQ
Human Tumor Viruses	Microbiology	To discuss the Human Tumour virus with respect to transmission, epidemiology, pathogenesis, clinical findings & diagnosis	Knowledge	Interactive Lecture	MCQ/SEQ
Overview and classification of Fungi	Microbiology	To give an overview of Fungi and give their classification	Knowledge	Interactive Lecture	MCQ/SEQ
Cutaneous mycosis	Microbiology	To discuss the cutaneous mycosis with respect to transmission, epidemiology, pathogenesis, clinical findings & diagnosis	Knowledge	Interactive lecture	MCQ/SEQ
Subcutaneous Mycosis	Microbiology	To discuss the subcutaneous mycosis with respect to transmission, epidemiology, pathogenesis, clinical findings & diagnosis	Knowledge	Interactive Lecture	MCQ/SEQ
Lab diagnosis of fungal infections	Microbiology	To discuss the various methods of diagnosis used for fungal infection	Knowledge	Interactive Lecture	MCQ/SEQ

Topic	Discipline	Learning Objectives	Domain K/S/A	Learning Strategy	Assessment Tool
Systemic mycosis	Microbiology	- To define mycoses - To enumerate the fungi which cause Systemic mycoses - To enumerate the important properties of Coccidioides and Histoplasma - To enlist the modes of transmission - To discuss the pathogenesis of the disease - To enumerate the clinical findings - To enumerate the tests that help in diagnosis - To enlist important preventive measures - To enumerate the important properties of Blastomyces and paracoccidioides - To enlist their modes of transmission - To discuss the pathogenesis of the disease - To enumerate the clinical findings - To enumerate the tests that help in diagnosis - To enlist important preventive measures	Knowledge	Interactive Lecture	MCQ/SEQ
Opportunistic mycosis	Microbiology	- To define mycoses - To enumerate the fungi which cause opportunistic mycoses - To enumerate the important properties of Candida and Cryptococcus - To enlist the modes of transmission - To discuss the pathogenesis of the disease - To enumerate the clinical findings - To enumerate the tests that help in diagnosis	Knowledge	Interactive Lecture	MCQ/SEQ

Topic	Discipline	Learning Objectives	Domain K/S/A	Learning Strategy	Assessment Tool
		- To enlist important preventive measures - To enumerate the important properties of Aspergillus and Mucor & Rhizopus - To enlist the modes of transmission - To discuss the pathogenesis of the disease - To enumerate the clinical findings - To enumerate the tests that help in diagnosis - To enlist important preventive measures			
Genetic Disorders	General Pathology	- To classify various chromosomal disorder. - To give their mode of inheritance of monogenic disorders. - To describe the features of Mendelian disorders. - To describe features of Polygenic and multifactorial disorders.	Knowledge	Interactive Lectures	MCQ/SEQ
Diseases of childhood and infancy	General Pathology	- To discuss the prenatal and neonatal laboratory testing and their rationale. - To identify underlying defects, producing genetic disease and inborn errors of metabolism.	Knowledge	Interactive Lecture	MCQ/SEQ
Nutritional Disorders	General Pathology	- To define malnutrition. - To discuss clinical features of malnutrition. - To classify various types of vitamins. - To enlist the clinical features of morbidity associated with obesity.	Knowledge	Interactive Lecture	MCQ/SEQ
Vitamins	General Pathology	To narrate the correlation of vitamin (lipid and water soluble vitamins) deficiencies with their respective clinical manifestation.	Knowledge	Interactive Lecture	MCQ/SEQ

LEARNING RESOURCES:

- **Pathologic Basis of Disease by Robbins and Cotran**
- **Review of Medical Microbiology and Immunology by Warren Levinson**
- **Javetz Melnick and Adelberg's Medical Microbiolog**



4th Year

MBBS Curriculum

MBBS Curriculum

Department of Pathology

BLOCK -I

PATHOLOGY DEPARTMENT

(HEART, BLOOD VESSELS, GIT, HEMATOLOGY, LUNGS, HEPATOBILIARY SYSTEM)

PLACEMENT IN CURRICULUM: YEAR-4

Subject: Pathology

Block Duration:12 Weeks

Block Team

TABLE OF CONTENTS

Sr. No	Topics
1	Heart
2	Gastro intestinal tract
3	Lungs
4	Blood Vessels
5	Hematology
6	Hepatobiliary tract

Introduction/Rationale	This block is expected to build the students basic knowledge about the, etiology, pathogenesis, pathophysiology and disease process. This knowledge will serve as a fabric on which the students will weave further knowledge and will learn about the gross and microscopic features of relevant pathology. It will provide skills to perform and interpret various tests in the laboratory.
Outcomes	At the end of the module the students should be able to KNOWLEDGE : ▪ To understand and learn about the congenital and ischemic heart diseases, valvular heart diseases, cardiomyopathies, pericarditis, myocarditis and tumors of the heart. ▪ To understand and learn about iron deficiency anemia, megaloblastic (B12 and folate deficiency) anemia, polycythemia and anemia of chronic diseases. ▪ To understand and learn about blood vessels, vasculitis, hypertensive vascular disease and vascular tumors ▪ To understand and learn about the diseases of pancreas, oral cavity, esophagitis, esophageal tumors, gastritis, gastric polyps and tumors of upper gastrointestinal tract. ▪ To understand and learn about atelectasis, COPD, ARDS, asthma, bronchiectasis, chronic bronchitis, lung tumors and pleural diseases ▪ To understand and learn about the diarrheal diseases, inflammatory intestinal diseases, colonic polyps / neoplastic diseases, acute appendicitis and tumors of appendix ▪ To learn and understand about the infectious disorders of the liver, liver failure, portal hypertension, autoimmune hepatitis, cholestasis, cholangiopathies, tumors of liver and diseases of gallbladder. SKILL : To identify and recognize ▪ The morphological features in myocardial infarction ▪ Anti-coagulants used for blood collection in sample tubes/syringe ▪ Changes in RBC morphology in health and diseases ▪ The morphological features in Hemangiomas ▪ The morphological features in Atherosclerosis

	▪ The morphological features in Peptic ulcer and gastric malignancies ▪ The morphological features in Pneumonia and lung carcinoma ▪ The morphological features in Polyps and tumors of large intestine ▪ The morphological features in liver cirrhosis ATTITUDE: ▪ Demonstrate the effective approach towards performing practicals. ▪ Demonstrate the professional attitude, group dynamism and good communication in pathology teaching lab and tutorial rooms during practical.
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OVERVIEW OF HEART, BLOOD VESSELS, GIT, HEMATOLOGY, LUNGS, HEPATOBILIARY SYSTEM)

Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool	Domain K/S/A
Heart - Congenital and Ischemic heart diseases	Special Pathology	• To define and classify Congenital heart diseases. • To define Ischemic heart disease (IHD) & Angina pectoris • To enlist the causes of IHD • To describe the spectrum of IHD (manifestations/ presentations) • To classify Angina pectoris and describe its pathogenesis	Interactive Lecture	MCQ, SAQs and SEQs	Knowledge
Valvular Heart Diseases	Special Pathology	• To enlist and describe different types of valvular heart diseases • To define Rheumatic heart disease • To describe pathogenesis and morphology of acute and chronic rheumatic heart disease • To classify infective endocarditis • To describe pathogenesis and morphology of Infective endocarditis	Interactive Lecture	MCQ,SAQS, SEQs	Knowledge

		To differentiate between different types of valvular vegetations.			
Cardiomyopathies, Pericarditis, Myocarditis, Tumors	Special Pathology	- To define myocarditis & cardiomyopathy - To enlist causes of myocarditis - To classify cardiomyopathy and enlist etiologies accordingly - To describe the morphology of myocarditis & cardiomyopathy - To classify pericarditis according to etiology - To classify cardiac tumors	Interactive Lecture	MCQS,SAQS,SEQS	
Anticoagulants in blood collection	Hematology	To identify and recognize the anticoagulants in blood collection in tubes/syringes.	Pathology teaching lab	OSPE	Skill
Classification Of Anemias	Hematology	- To classify anemias. - To classify leukemias.	Interactive Lecture	MCQ,SEQS,SAQS	Knowledge
Iron Deficiency Anemia	Hematology	- To describe iron absorption, transport & storage - To describe morphological features of iron deficiency anemia (IDA) - To identify the causes & consequences of IDA - To learn how to diagnose IDA	Interactive Lecture	MCQ,SEQS,SAQS	Knowledge
Megaloblastic anemia (B12 & Folate deficiency)	Hematology	- To describe Vitamin B12 & Folic acid absorption, transport & storage - To describe its morphological features - To Identify the causes & clinical features of Vitamin B12 & folate deficiency - To know how to develop a plan to diagnose Megaloblastic anemia.	Interactive Lecture	MCQ,SEQS,SAQS	Knowledge
Hemolytic Anemia	Hematology	To understand the pathogenesis of hemolytic anemias	Interactive Lecture	MCQ,SEQS,	Knowledge

		- To classify hemolytic anemias - To differentiate between intravascular and extravascular hemolysis - To describe pathogenesis, morphological features and lab diagnosis of hereditary spherocytosis & G6PD, deficiency.		SAQS	
RBC Morphology	Hematology	To identify and recognize the morphological features of RBCs using Leishman stained slides under the microscope.	SGD	OSPE	Skill, Attitude
Anemia of Chronic Disease and Polycythemia	Hematology	- To correlate the etiological factors causing Aplastic anemia - To describe pathogenesis and lab diagnosis of Aplastic anemias - To describe the causes of Polycythemia - To classify polycythemia - To enlist clinical features of Polycythemia.	Interactive Lecture	MCQs, SAQs, SEQs	Knowledge
Atherosclerosis and Aneurysm	Special Pathology	- To review the vascular structure, function and correlate it to congenital vascular anomalies - To define arteriosclerosis and its patterns - To identify the genetic and acquired risk factors of atherosclerosis - To describe the response-to-injury hypothesis of pathogenesis of atherosclerosis - Differentiate between stable and vulnerable plaques and its related complications - To classify and describe the pathogenesis of Aneurysms and Aortic Dissection.	Interactive Lecture	MCQs. SEQs	Knowledge
Vasculitis	Special pathology	- To review basic facts and definition of Vasculitis - To enumerate the various etiological factors and pathogenetic mechanisms involved in various types of vasculitis. - To enlist the factors involved in the local and systemic immune response in Vasculitis	Interactive Lecture	MCQs, SEQs	Knowledge

		To enlist the various clinical presentations, morphology and diagnosis of major types of Vasculitis.			
Hypertension, vascular diseases, and Tumors	Special Pathology	- To define blood pressure - To define factors responsible for blood pressure variations - To review the normal regulatory mechanisms - To classify hypertension and to enlist the causes of Hypertension - To review the mechanism of pathogenesis for Hypertension - To review the morphological changes in the organs affected by Hypertension - To enlist the complications Hypertension. - To enlist and give the morphological features of benign, borderline and malignant tumors of the blood vessels.	Interactive Lecture	MCQs, SEQs, SAQs	Knowledge
Hemangiomas	Special pathology	- To identify, recognize, and describe the morphological features of hemangiomas - To view the H&E stained slides.	SGD	OSPE	Skill, Attitude
Atherosclerosis and Aneurysms	Special Pathology	- To review the microscopic features in the histopathology H&E stained slides of Atherosclerosis and Aneurysm - To complete the drawing in the practical notebooks.	SGD	OSPE, Interactive case Scenario	Skill, Attitude
Disease of Oral Cavity	Special Pathology	- To describe the etiology, pathogenesis, gross and microscopic features of - Oral cavity infectious lesions. - Oral cavity pre-cancerous lesions. - Squamous cell carcinoma of oral cavity. - Infectious diseases of salivary glands. - To classify salivary gland tumors.	Interactive Lecture	MCQs, SEQs, SAQs	Knowledge

		f) To describe the etiology, pathogenesis, gross and microscopic features of salivary gland tumors.			
Esophagitis, Esophageal tumors	Special Pathology	- To describe the etiology, pathogenesis, gross and microscopic features of: - Esophagitis. - Barrett esophagus. - Esophageal carcinomas.	Interactive Lecture	MCQs, SEQs, SAQs	Knowledge
Atherosclerosis	Special Pathology	- To identify and recognize the morphological features of Atherosclerosis - To observe H&E stained slides of Atherosclerosis	SGD	OSPE	Skill, Attitude
Gastritis and associated Complications	Special Pathology	- To enlist different types of Gastritis. - To describe the etiology, pathogenesis, gross and microscopic features of different types of Gastritis. - To describe morphology of H.pylori associated gastritis & Autoimmune gastritis. - To describe the etiology, pathogenesis, gross and microscopic features of Peptic ulcer disease.	Interactive Lecture	MCQs, SAQS, SEQs.	Knowledge
Gastric Polyps and Tumors	Special Pathology	- To classify Gastric tumors. - To describe the etiology, pathogenesis, gross and microscopic features of common types of Gastric tumors (carcinoma, lymphoma, carcinoid, GIST).	Interactive Lecture	MCQs,SEQs, SAQS	Knowledge
Peptic Ulcer and Pleomorphic Adenomas	Special Pathology	To identify and recognize the morphological features of Peptic ulcer and Pleomorphic adenomas	SGD	OSPE	Skill, Attitude
Atelectasis, ARDS and COPD.	Special Pathology	- To define Atelectasis and describe its types. - To define Acute lung injury (ALI) and Acute respiratory distress syndrome (ARDS)	Interactive Lectures	MCQs, SEQs, SAQs	Knowledge

		• To describe etio-pathogenesis and morphology of ALI /ARDS • To enlist Obstructive lung diseases • To define Emphysema, classify it and describe its morphology & etio-pathogenesis			
Asthma, Bronchiectasis , Chronic Bronchitis	Special Pathology	• To define Chronic. Bronchitis, Asthma, Status-asthmaticus & Bronchiectasis • To describe the etio-pathogenesis and morphology of Chronic. Bronchitis, Asthma & Bronchiectasis • To differentiate between Chronic bronchitis and emphysema • To enlist the complications of Chronic. Bronchitis and Bronchiectasis	Interactive Lecture	MCQs, SAQs, SEQs.	Knowledge
Restrictive lung diseases	Special Pathology	• To describe the pathogenesis and morphology of important restrictive lung diseases. • To describe the spectrum and morphology of Pneumonconiosis • To describe salient features of pulmonary HTN and embolism	Interactive lecture	MCQs, SAQs, SEQs.	Knowledge
Pulmonary Infections	Special pathology	• To enlist and describe different types of lung infections.	Interactive Lecture	MCQs, SEQs, SAQs	Knowledge
Pneumonia and	Special Pathology	• To identify and recognize the morphological features of Pneumonia and Carcinoma lung	SGD	OSPE	Skill, Attitude

Carcinoma lung					
Lung tumor and pleural diseases	Special Pathology	- To classify lung tumors - To highlight the salient morphological features of lung tumors - To explain the salient morphological and pathogenic features of Mesothelioma	Interactive lecture	MCQs, SEQs, SAQs	Knowledge
Introduction to intestinal diseases	Special Pathology	To classify and enlist different types of intestinal diseases.	Interactive lecture	MCQs, SEQs, SAQs	Knowledge
Diarrheal diseases	Special Pathology	- To classify diarrheal diseases of intestine. - To describe the etiology, pathogenesis, gross and microscopic features of diarrheal diseases (Celiac disease, infectious diseases).	Interactive lecture	MCQs, SAQs, SEQs,	Knowledge
Inflammatory intestinal diseases	Special Pathology	- To describe the etiology, pathogenesis, gross and microscopic features of Inflammatory bowel diseases. - To differentiate between Crohn's disease & Ulcerative colitis.	Interactive lecture	MCQs, SEQs, SAQs	Knowledge
Colonic polyps and neoplastic diseases	Special Pathology	- To classify different types of colonic polyps. - To describe the etiology, pathogenesis, gross and microscopic features of colonic polyps. - To describe the etiology, pathogenesis, gross and microscopic features of colorectal carcinoma.	Interactive lecture	MCQs, SEQs, SAQs	Knowledge
Pulmonary tuberculosis	Special Pathology	- To identify and recognize the morphological features of pulmonary tuberculosis - To stain the slides with ZN stain for AFB.	SGD	OSPE	Skill, Attitude

GIT	Special pathology	To review the microscopy of H&E stained slides of colonic tumors, inflammatory bowel diseases and diarrheal diseases.	SGD	OSPE	Skill, Attitude
Acute appendicitis , Tumors of appendix	Special pathology	- To describe the etiology, pathogenesis, gross and microscopic features of - Acute appendicitis. - Appendiceal tumors.	Interactive lecture	MCQs, SEQs	Knowledge
Liver failure & Portal hypertension	Special pathology	- To review the normal organization of Hepatobiliary system - To describe the functional unit of liver parenchyma/portal tract - To enlist the signs and symptoms of liver disease - To enumerate the functions of the liver - To describe the morphological patterns of liver injury and Liver failure - To describe the pathology and Complications of: ➤ Hepatic-Portal circulation ➤ Portal hypertension - To learn the definition, clinical presentation and complications of Acute on Chronic liver failure	Interactive lecture	MCQs, SEQs	Knowledge
Infectious disorder of liver	Special pathology	- To enlist types of viral hepatitis. - To describe the morphology of various types of hepatitis.	Interactive lecture	MCQs, SEQs	Knowledge
Autoimmune hepatitis, Toxic and Metabolic liver diseases	Special pathology	To describe the pathogenesis, morphology and complications.	Interactive lecture	MCQs, SEQs	Knowledge

Polyps and tumor of large intestine	Special pathology	To identify and recognize the morphological features of polyps and tumor of large intestine	SGD	OSPE	Skill, Attitude
Cholestasis	Special pathology	- Discuss the mechanism of bile production and bilirubin excretion - Describe the causes, types, manifestations and pathophysiology of Jaundice - Discuss various aspects of Cholestasis - Salient features of large bile duct obstruction, Cholestasis of Sepsis and Hepatolithiasis	Interactive lecture	MCQs SAQs SEQs	Knowledge
Autoimmune Cholangiopathies, Circulatory disorders	Special pathology	- To discuss the predisposition, association and clinicopathological features of Autoimmune cholangiopathies and circulatory disorders. - To give the morphological features and pathogenesis of Alcoholic liver disease - To describe the various clinicopathologic entities, the gross and microscopic features of Metabolic Liver Diseases: a) Nonalcoholic fatty liver disease b) Hemochromatosis c) Wilson disease and AAT Deficiency	Interactive lecture	MCQs SEQs SAQs	Knowledge
Nodules and Tumors of Liver	Special pathology	To discuss the pathogenesis and morphology of Nodules, Benign and Malignant tumors of the liver	Interactive lecture	MCQs SEQs SAQs	Knowledge
Diseases of Gall bladder	Special pathology	- To discuss the various Congenital anomalies of the Gall bladder - To discuss the prevalence, risk factors, pathogenesis and morphology of Gall stones - To classify the types of Cholecystitis	Interactive lecture	MCQs SEQs SAQs	Knowledge

		To discuss the epidemiology, pathogenesis and morphology of Carcinoma of Gall bladder			
Liver Cirrhosis	Special pathology	To identify and recognize the morphological features of liver cirrhosis	SGD	OSPE	Skill, Attitude
Hepatobiliary system	Special pathology	To see and draw the histopathology slides related to hepatobiliary system	SGD	OSPE	Skill, Attitude

Learning Resources:

- **Pathologic Basic of Disease by Robbins and cotran. 8th**

BLOCK - II

(FEMALE GENITAL TRACT, MALE GENITAL TRACT, KIDNEY, CHEMICAL PATHOLOGY, LEUKEMIAS, LYMPHOMAS AND BREAST)

Placement in Curriculum:

Year 4

Subject: Pathology

Block Duration: 11 Weeks

TABLE OF CONTENTS

Sr. No	Topics
1	MALE AND FEMALE GENITAL TRACTS
2	BREAST
3	KIDNEY
4	CHEMICAL PATHOLOGY
5	LEUKEMIAS AND LYMPHOMAS

Introduction/ Rationale	This block is expected to build the students basic knowledge about the, etiology, pathogenesis, pathophysiology and disease process. This knowledge will serve as a fabric on which the students will weave further knowledge about the gross and microscopic features of relevant pathology. It will provide skills to perform various tests in the laboratory.
Outcomes	At the end of the module the students should be able to KNOWLEDGE : • To understand and learn about the diseases of cervix, disorders of uterus, tumors of ovary and diseases of pregnancy. • To understand and learn the pathogenesis of glomerular diseases , nephritic syndrome, nephrotic syndrome, renal tumors, pyelonephritis, nephrolithiasis, hydronephrosis, acute tubular necrosis, nephrosclerosis and cystic diseases • To interpret and learn biochemical markers of ischemic heart disease, lab diagnosis of acid base disorders and diabetes mellitus, renal function tests, liver function tests, thyroid function tests, adrenal function tests and pituitary function tests. • To learn and understand the non-neoplastic disorders of WBC'S, acute leukemias, chronic leukemias, lymphomas, MPD's and multiple myelomas. • To understand and learn about the pathogenesis and morphology of the disease of male genital system and urinary bladder. • To understand and learn about the inflammatory diseases of breast, benign and malignant tumors of breast. SKILL: <u>To identify and recognize</u> • The morphological features of squamous cell carcinoma of cervix. • The morphological features of leiomyoma and teratoma. • The morphological features of chronic pyelonephritis. • The morphological features of renal cell carcinoma. • The morphological features of testicular tumors and benign prostatic hyperplasia • The morphological features of Hodgkin/ Non- Hodgkin lymphomas

	- The morphological features of fibroadenoma and invasive ductal carcinoma of breast <u>To review and interpret</u> - Serum lipid test report ATTITUDE: - Demonstrate the effective attitude towards performing practicals. - Demonstrate the professional attitude, group dynamism and good communication in pathology teaching lab and tutorial rooms during practical.
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OVERVIEW OF FEMALE GENITAL TRACT, MALE GENITAL TRACT, KIDNEY, CHEMICAL PATHOLOGY, LEUKEMIAS, LYMPHOMAS AND BREAST

Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool	Domain K/S/A
Female genital tract – Diseases of Vulva, Vagina	Special pathology	- To describe the etiology, pathogenesis, gross and microscopic features of infectious diseases of vulva. - To describe the etiology, pathogenesis, gross and microscopic features of tumors of vulva. - To describe the etiology, pathogenesis, gross and microscopic features of vaginal tumors.	Interactive lecture	MCQs, SAQs, SEQs	Knowledge
Diseases of Cervix	Special pathology	- To describe the etiology, pathogenesis, gross and microscopic features cervicitis. - To describe the etiology, pathogenesis, gross and microscopic features of carcinoma cervix.	Interactive lecture	MCQs, SAQs, SEQs	Knowledge
Disorders of Uterus	Special pathology	- To define: Endometritis, Adenomyosis, Endometriosis - To enlist different causes that:	Interactive lecture	MCQs, SAQs, SEQs	Knowledge

		lead to Abnormal uterine bleeding - To describe the etiology, pathogenesis, gross and microscopic features of the causes that had proliferative lesions of Endometrium - To describe the etiology, pathogenesis, gross and microscopic features of the causes that had Proliferative lesions of Myometrium			
Tumors of ovary	Special pathology	- To classify cystic diseases of ovary. - To describe the etiology, pathogenesis, gross and microscopic features of cystic diseases of ovary - To classify ovarian tumors. - To describe the etiology, pathogenesis, gross and microscopic features of ovarian tumors.	Interactive lecture	MCQs, SAQs, SEQs	
Squamous cell Carcinoma	Special pathology	To identify and recognize the morphological features of squamous cell carcinoma of cervix	SGD	OSPE	Skill, Attitude
Female genital system	Special pathology	To identify, classify and describe the features of vaginitis, cervicitis, uterine disorders and ovarian tumors	DSL	OSPE, MCQs, SAQs	Attitude
Diseases of pregnancy	Special pathology	- To describe pathogenesis, morphological features & clinical features of ectopic pregnancy - To classify gestational trophoblastic diseases	Interactive lecture	MCQs, SAQs, SEQs	knowledge

		- To describe pathogenesis, morphological features & clinical features of gestational trophoblastic diseases - To describe pathogenesis, morphological features & clinical features of toxemia of pregnancy			
Pathogenesis of glomerular disease and intro to nephrotic syndrome	Special pathology	- To define the basic features of renal histology. - To understand the different clinical terminologies involved in renal diseases. - To understand the different mechanisms involved in Glomerular injury.	Interactive lecture	MCQs, SAQs, SEQs	Knowledge
Nephritic syndrome	Special pathology	- To define and describe the spectrum of diseases included in Nephritic syndrome - To describe important Hereditary nephritides - To describe systemic diseases associated with renal pathology with special discussion of Diabetic Nephropathy	Interactive lecture	MCQs, SAQs, SEQs	Knowledge
Nephrotic syndrome	Special pathology	- To define Nephrotic syndrome - To enlist causes of Nephrotic syndrome - To discuss different entities involved in the clinical spectrum of Nephrotic syndrome	Interactive lecture	MCQs, SAQs, SEQs	Knowledge
Leiomyoma and teratoma	Special pathology	To identify and recognize the morphological features of leiomyoma and teratoma	SGD	OSPE	Skill, Attitude

Renal tumors	Special pathology	- To classify Renal tumors - To describe the morphological changes in different renal tumors - To identify different genetic syndromes associated with renal tumors	Interactive lectures	MCQs, SAQs, SEQs	Knowledge
Pyelonephritis, hydronephrosis, nephrolithiasis	Special pathology	- To describe the etiology, pathogenesis, gross and microscopic features of acute & chronic pyelonephritis - To describe the etiology, pathogenesis, gross and microscopic features of acute tubular necrosis. - To describe the etiology, pathogenesis, gross and microscopic features of Benign and malignant Nephrosclerosis	Interactive lectures	MCQs, SAQs, SEQs	Knowledge
Glomerular diseases	Special pathology	- To understand the different clinical terminologies involved in Renal diseases. - To understand the different mechanisms involved in Glomerular injury.	Interactive lectures	MCQs, SAQs, SEQs	Knowledge
ATN, nephrosclerosis and cystic diseases	Special pathology	- To classify cystic diseases of kidney. - To describe the etiology, pathogenesis, gross and microscopic features of cystic diseases of kidney. - To enlist different types of renal stones.	Interactive lectures	MCQs, SAQs, SEQs	Knowledge

		• To describe the etiology, pathogenesis, of renal stones. • To enlist different causes of hydronephrosis. • To describe the etiology, pathogenesis, gross and microscopic features of hydronephrosis.			
Chronic pyelonephritis	Special pathology	• To identify and recognize the morphological features of chronic pyelonephritis in the given gross specimen and histopathology H&E stained slides	SGD	OSPE	Skill, Attitude
Female genital tract	Special pathology	• To learn different types of pathologies in female genital tract.	SGD	MCQs, SAQs, SEQs	Skill, Attitude
Biochemical markers of IHD and their interpretations	Special pathology	• To define IHD • To explain the biochemical markers of IHD. • To interpret the biochemical markers of IHD.	Interactive lecture	MCQs, SAQs, SEQs	Knowledge
Renal function tests	Special pathology	• To enumerate the functions of the kidney and its applied physiology. • To classify Renal function tests: routine; others • To enlist the parameters of Urine routine examination • To correlate the significance of estimations of plasma: urea; creatinine;	Interactive lecture	MCQs, SAQs, SEQs	Knowledge

		electrolytes (Na;K;Cl;Ca) in health and disease.			
Lab diagnosis of acid base disorders	Special pathology	- To discuss the mechanisms that maintains the acid base balance in the body. - To correlating the acid base disturbances with clinical conditions and the compensatory mechanisms involved.	Interactive lecture	MCQs, SAQs, SEQs	Knowledge
Renal cell Carcinoma	Special pathology	To identify and recognize the morphological features of renal cell carcinoma in the given gross specimen H&E stained slides	SGD	MCQs, SAQs, SEQs	Skill, Attitude
Lab diagnosis of diabetes mellitus	Special pathology	- To learn the significance and impact of Global and national prevalence of diabetes - To narrate the relation of Insulin and glucagon on metabolism - To define diabetes mellitus, and to classify the various types of diabetes - To learn the steps involved in the pathogenesis of diabetes type 1& 2 - To learn the criterias for lab diagnosis of diabetes - To enlist the lab investigations for a patient with diabetes	Interactive lecture	MCQs, SAQs, SEQs	Knowledge
Liver function tests	Special pathology	To enumerate various parameters that constitute the routine liver functions tests and special tests for liver functions.	Interactive lecture	MCQs, SAQs, SEQs	Knowledge

		- To enlist and give the reasons for significance of various parameters of LFT's in health and disease. - To correlate the changing levels of various parameters of LFT's with various hepatic and non-hepatic disease conditions.			
Liver function tests	Special pathology	To review and interpret liver function tests in health and disease in various clinical scenarios	SGD	OSPE	Skill, Attitude
Acute leukemias	Special pathology	- To enlist the clinical and morphological features of acute leukemias - To classify leukemias - To differentiate acute lymphoblastic leukemia and acute myeloid leukemia.	Interactive lecture	MCQs, SAQs, SEQs	Knowledge
Kidney	Special pathology	To enlist the mechanisms and describe the pathogenesis of different renal diseases.	SGD	OSPE, MCQs, SAQs, SEQs	Skill, Attitude
Chronic leukemias	Special pathology	To enlist the salient hematological features of Chronic lymphocytic leukemia	Interactive lecture	MCQs, SAQs, SEQs	Knowledge
Lymphomas	Special pathology	- To define and enlist Hodgkin disease and its clinical features - To classify Hodgkin Lymphoma - To describe morphology of Reed Sternberg cell and its variants	Interactive lecture	MCQs, SAQs, SEQs	Knowledge
MPDs, Multiple Myelomas	Special pathology	To define and describe the clinical features of Multiple Myeloma along with the lab diagnosis	Interactive lecture	MCQs, SAQs, SEQs	Knowledge

Testicular tumors and Benign prostatic hyperplasia	Special pathology	- To classify the germ cell tumors and non-germ cell tumors Germ cell tumors: - Seminoma - Spermatocytic seminoma - Anaplastic seminoma - Embryonal carcinoma - Yolk sac tumor	Interactive lecture	MCQs, SAQs, SEQs	Knowledge
Male Genital system and Urinary Bladder	Special pathology	- To enlist the common congenital penile anomalies and inflammations involving the penis - To discuss the epidemiology and Morphological features of: - Benign tumors - Premalignant lesions - Malignant penile tumors - To describe the features of - Cryptorchidism - Testicular atrophy - Inflammatory lesions of the Epididymis and Testes - Vascular disorders of Testis - Common Paratesticular tumors - Congenital anomalies of penis	Interactive lecture	MCQs, SAQs, SEQs	Knowledge
Hodgkins and Non hodgkin lymphoma	Special pathology	To identify and recognize the gross morphological and microscopic features of Hodgkin and Non Hodgkin lymphoma	SGD	OSPE	Skill, Attitude
Breast - Tumors	Special pathology	To classify breast tumors	Interactive lecture	MCQs, SAQs, SEQs	Knowledge

		• To highlight the salient morphological features of benign epithelial and fibroepithelial tumors of breast • To enlist important breast carcinomas • To enlist and describe important risk factors for developing breast carcinoma			
Breast Carcinoma	Special pathology	• To classify breast Carcinomas • To describe the morphology of different pre-invasive and invasive breast cancers • To classify breast cancers according to expression of hormone receptors and gene expression profiling • To correlate different pathological factors with prognosis of breast cancer	Interactive lecture	MCQs, SAQs, SEQs	Knowledge
Testicular tumors and BPH	Special pathology	• To identify and recognize the morphological features of testicular tumors and BPH	SGD	OSPE	Skill, Attitude
Thyroid function tests	Special pathology	• To narrate the various steps involved in the synthesis of thyroid hormone in healthy individuals. • To discuss the control of thyroid hormone synthesis. • To name the thyroid function test available in the pathology lab. • To correlate the various thyroid function tests with thyroid disorders. • To discuss the basis of using serum TSH levels for screening and diagnosis of thyroid disorders.	Interactive lecture	MCQs, SAQs, SEQs	Knowledge

		To correlate the role of thyroid hormones and their effects on body systems in state of hyper and hypo functioning of thyroid gland.			
Adrenal Function tests	Special pathology	- To tabulate the mechanism of action of pituitary hormones (anterior and posterior). - To discuss the mechanism of action of growth hormone in healthy children and adults. - To correlate the hypo and hyper secretion of growth hormone in children and adults with the associated clinical features. - To investigate a patient with growth hormone deficiency by using screening and confirmatory dynamic function tests. - To correlate the causes of short stature and endocrine hormone deficiencies.	Interactive lecture	MCQs, SAQs, SEQs	Knowledge
Pituitary function tests	Special pathology	- To tabulate the mechanism of action of pituitary hormones (anterior and posterior). - To discuss the mechanism of action of growth hormone in healthy children and adults. - To correlate the hypo and hyper secretion of growth hormone in children and adults with the associated clinical features.	Interactive lecture	MCQs, SAQs, SEQs	Knowledge

		- To investigate a patient with growth hormone deficiency by using screening and confirmatory dynamic function tests. - To correlate the causes of short stature and endocrine hormone deficiencies.			
Breast Pathology	Special pathology	- To discuss the clinical importance of breast developmental anomalies - To list the important causes of breast lump - To describe the important inflammatory breast lesions - To discuss the morphology of proliferative and non-proliferative breast disorders with correlation of clinical significance	SGD	MCQs, SAQs, SEQs	Knowledge
Serum lipid profile	Special pathology	To review and interpret serum lipid profile	SGD	OSPE	Skill, Attitude

Learning Resources:

- Pathologic Basic of Disease by Robbins and Cotran. 8th Edition

BLOCK - III

(Central Nervous system, coagulation disorders, Endocrine system, Skin)

Placement in Curriculum:

Year 4

Subject: Pathology

Block Duration: 12 Weeks

TABLE OF CONTENTS

Sr. No	Topics
1	Central nervous system
2	Coagulation disorders
3	Endocrine System
4	Skin

Introduction/ Rationale	This block is expected to build the students basic knowledge about the etiology, pathogenesis, and pathophysiology and disease process of various. This knowledge will serve as a fabric on which the students will weave further knowledge the gross and microscopic features of relevant pathology. It will provide skills to perform various tests in the laboratory.
Outcomes	At the end of the module the students should be able to KNOWLEDGE : • To understand and learn about the diseases of peripheral nervous system • To understand and learn the complications of diabetes, hypo and hyperparathyroidism, thyroiditis and neoplasms of thyroid. • To understand and learn about skin inflammatory disorders and tumors. • To understand and learn about cerebrovascular diseases, CNS trauma, meningitis, Neurodegenerative disorders and CNS tumors. • To understand and learn about bleeding disorders and thrombocytopenia SKILL : To identify and recognize the morphological features of multinodular goiter, papillary carcinoma thyroid and meningioma ATTITUDE: ▪ Demonstrate the effective attitude towards performing practicals. ▪ Demonstrate the professional attitude, group dynamism and good communication in pathology reaching lab and tutorial rooms during practical.

Central Nervous system, Coagulation disorders, Endocrine system, Skin

TOPIC	DISCIPLINE	Learning objectives	LEARNING STRATEGY	Assessment tool	Domain K/S/A
Diseases of Peripheral nerve	Special pathology	• To discuss the various components of Peripheral Nervous System	Interactive lecture	MCQs, SAQs and SEQs	Knowledge

		• To describe the General types of Peripheral Nerve Injury • To describe the various anatomic Patterns, Pathogenesis, Clinical presentation and Morphology of Peripheral Neuropathies • To describe the peripheral nerve sheath tumors			
Diabetes complication	Special pathology	• To define Diabetes. • To enumerate the complication of diabetes. • To discuss the management of complications	Interactive lecture	MCQs, SAQs and SEQs	Knowledge
Hypo and hyper parathyroidism	Special pathology	• To define Hypo and Hyper parathyroidism. • To enlist the clinical features and causes of Hypo and Hyper parathyroidism. • To develop a plan for the laboratory investigation of parathyroid disorders	Interactive lecture	MCQs, SAQs and SEQs	Knowledge
Neuro Endocrine Disorders	Special pathology	• To define neuroendocrine disorder. • To classify neuroendocrine disorders. • To enlist the clinical features and their laboratory workup.	Interactive lecture	MCQs, SAQs and SEQs	Knowledge
Thyroiditis, MNG	Special pathology	• To briefly review the anatomy, histology and functions of the thyroid gland • To define, give the clinical course and plan the diagnosis of Hyperthyroidism • To enlist the etiology of Hypothyroidism, cretinism and myxedema	Interactive lecture	MCQs, SAQs and SEQs	Knowledge

		- To give an overview of Inflammations related to thyroid gland - To discuss in detail Hashimoto Thyroiditis			
Skin- Inflammatory disorders	Special pathology	-To classify inflammatory dermatosis -To describe morphological features of important Inflammatory skin disorders	Interactive lecture	MCQs, SAQs and SEQs	Knowledge
Skin Tumors	Special pathology	- To enlist various types of malignant skin tumors - To give the pathological basis and morphological spectrum of basal cell carcinoma, squamous cell carcinoma and melanoma	Interactive lecture	MCQs, SAQs and SEQs	Knowledge
Neoplasm of thyroid	Special pathology	- To describe the clinical significance of Solitary Thyroid Nodule - To enlist the various types of Benign and Malignant Neoplasms of Thyroid. - To give the basis for the Pathogenesis, Types, Morphology and Variants of Follicular Adenoma of thyroid - To discuss the various aspects of prevalence, pathogenesis, morphology and variants of Papillary Carcinoma, Follicular Carcinoma, Medullary Carcinoma and Anaplastic Carcinoma.	Interactive lecture	MCQs, SAQs and SEQs	Knowledge
Cerebrovascular diseases and CNS trauma	Special pathology	To describe the etiology, pathogenesis, gross and microscopic feature of traumatic parenchymal/vascular injuries.	Interactive lecture	MCQs, SAQs and SEQs	Knowledge
Neurodegenerative disorders	Special pathology	To describe the etiology, pathogenesis, gross and microscopic features of Multiple sclerosis.	Interactive lecture	MCQs, SAQs and SEQs	Knowledge

		To describe the etiology, pathogenesis, gross and microscopic features of Alzheimer disease			
CNS tumors	Special pathology	- To classify CNS tumors - To highlight salient morphological features of brain tumors with special emphasis on Gliomas - To describe pathological and morphological basis of Medulloblastoma - To give salient morphological features of Meningiomas	Interactive lecture	MCQs, SAQs and SEQs	Knowledge
Meningitis	Special pathology	- To describe meningitis and discuss its pathogenesis regarding the Organisms causing meningitis - To give the lab diagnosis of meningitis	Interactive lecture	MCQs, SAQs and SEQs	Knowledge
Bleeding disorders	Special pathology	- To describe bleeding disorders. - To describe pathogenesis and clinical features of bleeding disorders - To give the lab diagnosis of Hemophilia and Von Willebrand disease.	Interactive lecture	MCQs, SAQs and SEQs	Knowledge
Thrombocytopenia	Special pathology	- To define Thrombocytopenia - To describe causes, pathogenesis and clinical features of Thrombocytopenia - To give the lab diagnosis of thrombocytopenia.	Interactive lecture	MCQs, SAQs and SEQs	Knowledge
Coagulation disorders	Special pathology	- To enlist different types of coagulation disorders - To describe the pathogenesis and clinical features, lab diagnosis for a patient having coagulative disorder	Interactive lecture	MCQs, SAQs and SEQs	Knowledge

Transfusion reactions	Special pathology	- To enlist the various blood grouping techniques - To enlist different types of transfusion reactions. - To enumerate clinical features of Transfusion Reactions	Interactive lecture	MCQs, SAQs and SEQs	Knowledge
Multinodular goiter	Special pathology	To identify and recognize the morphological features of multinodular goiter in the given H&E stained slide	SGD	OSPE	Skill, Attitude
Papillary CA thyroid	Special pathology	To identify and recognize the morphological features of Papillary Carcinoma thyroid using the gross specimen and microscopic features as seen in the H&E stained slides	SGD	OSPE	Skill, Attitude
Meningioma	Special pathology	To identify and recognize the morphological features of meningioma in the gross specimen and H&E stained slides	SGD	OSPE	Skill, Attitude

Learning Resources:

- Pathologic Basic of Disease by Robbins and Cotran. 8th Edition

MBBS CURRICULUM
DEPARTMENT OF COMMUNITY MEDICINE

BLOCK - I: CONCEPT OF HEALTH & DISEASE, PUBLIC HEALTH

PLACEMENT IN CURRICULUM: YEAR 01

SUBJECT: COMMUNITY MEDICINE

BLOCK DURATION: - 11 WEEKS

TABLE OF CONTENTS

Sr. No	Topics
1	Important definitions
2	Importance of community medicine
3	History and health care revolution
4	Primary health care , Health for all
5	MDGs & SGDs

Introduction/ Rationale	History of medicine contributes a review of accomplishments and errors, false theories and misinformation and mistaken interpretation. Medicine is thus build on the best of the past. The emergence of family and community medicine represents a count e force to the direction which medical science has taken during the past 20 years. Community medicine is neither an organ system nor a disease syndrome but rather in both instances a designation of social categories namely family and community.it is successor of what was previously known a public health, community heath, preventive and social medicine. Health for all means that health is to be brought within the reach of every one in given community. It is a holistic concept calling for efforts in agriculture, industry, education, housing and communications just as much as in medicine in public health. MDGS & SDGS place health at the heart of development and represent commitments by governments throughout the world to do more in health education inequality and environment.
Outcomes	At the end of the module the students should be able to KNOWLEDGE: • Explain phenomena of shifting of antique medicine to modern medicine by focusing the history of medicine • Describe the evaluation of scientific medicine • Describe MDGs and SGDs • Describe concept of health for all & primary health care • Describe population medicine (hygiene, public health, preventive medicine, community health, community medicine and social medicine SKILL: ➤ Recognize levels of primary health care and its use in improving the health of the community ATTITUDE: ➤ Demonstrate effective attitude towards the implementation of primary health care ➤ Demonstrate effective attitude towards incorporation of SDGs in our health system

Overview of Concept of Health & Disease, public health

Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
Importance of community Medicine	Community Medicine	➤ Define and understand community medicine ➤ Explain history of public health ➤ Important definitions in community medicine	Interactive Lecture	MCQs, SEQS, SAQs
MDGs & SDGs	Community Medicine	➤ Identify the importance of MDGs & SDGs	Interactive Lecture	MCQs, SEQS, SAQs
Primary health care	Community Medicine	➤ Explain phenomenon of shifting of antique medicine to modern medicine by focusing the history of medicine ➤ Describe the evolution of scientific medicine encompassing the rise of public health ➤ State the role of MDGs, SDGs and PHC in health care revolution	Interactive Lecture	MCQs, SEQS

BLOCK - II: Concept of Health & Disease

Placement in curriculum: Year 01

Subject: Community Medicine

Block Duration: - 11 Weeks

TABLE OF CONTENTS

Sr. No	Topics
1	Concept of Health & Disease
2	Introduction to epidemiology

Introduction/ Rationale	An understanding of health is basis of all health care. Health is not perceived the same way by all members of a community including various professional groups (biomedical scientists, social science speculates health administrators, ecologist etc) giving rise to confusion about the concept of health. New concepts are bound to emerge based on new patterns of thoughts. Health has evolved over the centuries as a concept from an individual concern to a worldwide social goal and encompasses the whole quality of life. This module is expected to build the student basic knowledge about the changing concepts of health and disease. This knowledge will serve as a fabric on which the students will weave further knowledge about health and disease.
	At the end of the module the students should be able to KNOWLEDGE: • Describe the changing concepts of health

Outcomes	• Describe dimensions of health • Describe quality of life, physical quality of life index (PQLI) • Describe human development index (HDI) • Describe spectrum of health • Describe determinants of health • Describe indicators of health • Describe concept of disease & Spectrum of disease • Describe concept of causation & iceberg phenomena • Describe concept of control (disease control, elimination, eradication, monitoring, surveillance and evaluation of control) • Describe concept of prevention • Describe mode of intervention • Explain important definitions of epidemiology • Explain epidemiological tirade SKILL: • Recognize the dimensions and determinants of health in community • Recognize indicators of health • Demonstrate the effective skills of different levels of prevention • Recognize epidemiological triad, multifactorial causation, web of causation and natural history of disease • Recognize different modes of interventions • Demonstrate the ability to use and recognize different levels of prevention and health care ATTITUDE: ▪ Demonstrate the effective attitude towards promoting health ▪ Demonstrate effective and professional attitude in control and prevention of disease
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OVERVIEW OF CONCEPT OF HEALTH AND DISEASE

Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
History of public health Concept of health Concept of disease	Community Medicine	- Describe history of public health & community medicine and briefly describe how they are involved in human lives - Define and describe dimensions of health, determinants of health, responsibility for health and health indicators - Describe health service philosophies (health care, levels of health care, health for all, primary health care and health promotion) - Describe concept of disease - Describe concept of causation all theories including ecological tirade (agent host and environmental factors)	Interactive Lecture Field visits International day celebrations (TB DAY) Role play (TB Day) Poster competition (TB Day)	MCQS & SEQS
Introduction to epidemiology	Community Medicine	- Define important concept of epidemiology - Describe epidemiological tirade	Interactive Lecture	MCQS & SEQS

BLOCK - I

Placement in curriculum: Year 02

Subject: Community Medicine

Block Duration: Weeks

TABLE
OF

CONTENTS

Sr. No	Topics
1	Disinfection
2	Uses of epidemiology
3	Introduction to communicable diseases
4	Introduction to non-communicable diseases

Introduction/ Rationale	Epidemiology is the basic of preventive and social medicine. Modern epidemiology has provided new opportunities for prevention treatment, planning and improving the effectiveness and efficiency of health services Communicable disease is illness caused by viruses or bacteria that people spread to one another through contact with surface, bodily fluids, blood products, insect bites or through the air. The importance of antiseptics and disinfectant has not diminished in this “golden age of antibiotics”. Their uses range from control of communicable diseases to sterilization of instruments and treatment of fungal and bacterial infections. Epidemiological methods are used for disease surveillance to identify which hazards are the most important. It helps to complete the clinical picture and natural history of disease. It is an impairment of bodily structure or function that necessitates a modification of the patient’s normal life, and has persisted over an extended period of time. Non-communicable diseases include cardiovascular, nervous, respiratory diseases, accidents, cancer, diabetes, obesity and various metabolic and degenerative diseases.
Outcomes	At the end of the module the students should be able to KNOWLEDGE: ➤ Enlist the communicable diseases ➤ Describe the distribution and magnitude of health and disease problem in human population. ➤ Enlist different types of disinfections ➤ Describe the different types of disinfection in detail ➤ Understand problem statement and burden of NCD’ ➤ Explain WHO Global Action Plan for the prevention and control of NCD’s ➤ Describe 2030 agenda for sustainable goals SKILL: ➤ Recognize the etiological factors in the pathogenesis of disease ➤ Recognize the different methods of disinfection and factors affecting the efficacy of sterilization ➤ Recognize the signs and symptoms of anaemia, thalassemia in community. ➤ Recognize the preventive of anaemia and thalassemia measures ATTITUDE: ➤ Demonstrate the effective attitude towards the prevention and control of communicable disease ➤ Demonstrate the effective attitude towards uses of epidemiology ➤ Demonstrate the effective attitude towards the risk factors and preventive measures of NCD’s

	➤ Demonstrate the professional attitude, team dynamism and good communication in community, library and during practical.
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Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
Infectious disease epidemiology	Community Medicine	➤ Define basic terminologies used in infectious epidemiology ➤ Explain various components of chain of infection ➤ Compute secondary attack rate	Interactive Lectures	MCQs SEQs
Introduction to communicable diseases	Community Medicine	➤ Compare between communicable and non-communicable diseases ➤ State the common definitions related to disease origin, spread, epidemiology of disease, agent, host, and reservoir of infection, mode of transmission, carrier, types of carriers, cases and types of prevention.	LGIS (Large group interactive session) lectures, field visit, poster presentation, role play, video presentation, public health conference	MCQs and SEQs
Introduction to Non communicable diseases	Community Medicine	➤ Compare between communicable & non communicable diseases ➤ Describe different aspect of non-communicable diseases ➤ Describe anemia and its types ➤ Describe effects of anemia on human health ➤ Describe preventive measures which can be taken to avoid different types of anemia ➤ Describe thalassemia and its types ➤ Explain factors responsible for thalassemia ➤ Describe preventive measures which can be taken to avoid thalassemia	Interactive lectures	MCQs and SEQs

BLOCK – I : Growth & Development, Nutrition, Intro To Health System, House Hold Survey

Placement in curriculum: Year 3

Subject: Community Medicine

Block Duration: - 11 Weeks

TABLE OF CONTENTS

Sr. No	Topics
1	Growth & Development parameters
2	Intro to health system & health system in Pakistan.
3	Nutrition profile of principal food.
4	Basic measurement in epidemiology.
5	Non communicable diseases
6	Household survey

Introduction/ Rationale	A phenomenon peculiar to the pediatric age group is growth and development. Growth and development are considered together because the child grows and develops as a whole. Healthcare system in Pakistan is practically vertical and in part, horizontal. Healthcare system of Pakistan consists of private and public sector. Nutrition may be defined as the science of food and its relationship to health. Good nutrition means maintaining a nutritional status that enables us to grow well and enjoy good health. Epidemiology focuses on measurement of mortality and morbidity in human populations. Standardized methods of observation and recording are therefore essential before commencing any epidemiological study.
Outcomes	At the end of the module the students should be able to KNOWLEDGE: ➤ Explain the different growth & development parameters. ➤ Describe the determinants of growth and development. ➤ Describe the concept of normality. ➤ Explain the health system of Pakistan ➤ Explain the level of health care ➤ Explain the concept of health for all ➤ Explain health promotion. ➤ Explain the changing concepts in nutrition. ➤ Describe iodine deficiency and related disorders like goiter. ➤ Describe the basic measurement in epidemiology. ➤ Describe communicable diseases like tuberculosis, brucellosis & plague. ➤ Mark the main causes of accidents and injuries. ➤ Describe different types of elements ➤ Describe cardiovascular diseases and their prevention SKILL: ➤ Understand the basic concepts of growth and development. ➤ Understand the health system and its proper functioning.

	➤ Understand the basic concepts of nutrition, classification of foods& its Requirements ➤ Understand the basic measurements in epidemiology. ➤ Mark the communicable diseases their modes of spread and prevention. ➤ Demonstrate the ability to use the variety of resources (faculty, library, text Books and internet) ➤ Demonstrate effective skills of data collection in field ➤ Demonstrate effective skill of data analysis ➤ Apply effective skills of data analysis in report writing ➤ Discuss in detail questionnaire development ➤ Discuss data analysis ➤ Discuss report writing ➤ Recognize the risk factors of CVD's ➤ Recognize the importance of preventive measures in control of chronic diseases ➤ Recognize the modifiable risk factors of hypertension ATTITUDE: ➤ Demonstrate the professional attitude, team dynamism and good Communication during tutorials and practical's ➤ Demonstrate effective attitude towards research ➤ Demonstrate effective attitude towards prevention of CVD
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Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
Intro to health system	Community Medicine	➤ Discuss health system ➤ Describe health system of Pakistan	Interactive Lecture /LGIS	MCQS/SE Qs/SAQs
Introduction to tools of epidemiologic	Community Medicine	➤ Explain infectious disease epidemiology ➤ Describe dynamics of disease transmission	Interactive Lectures/LGIS,	MCQs/

Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
al measurement Growth monitoring & Promotion		➤ Discuss Epidemiology of Zoonotic disease of bacteria origin: Brucellosis, Plague, Tuberculosis ➤ Compute basic epidemiological Measurement ➤ Discuss Growth monitoring promotion ➤ Evaluate growth chart ➤ Compute and evaluate ➤ Growth & Development parameter (height for age, weight for age)	tutorial, CBL, field visit	SEQs/SAQs
Nutrition and Health	Community Medicine	➤ Discuss in detail the classification of food and nutrients ➤ Plan the topics that may be discussed regarding assessment of proteins fats and carbohydrates ➤ Discuss vitamins in detail. Enlist their sources, requirements and deficiencies. ➤ Enlist the sources of minerals, their functions, their requirements and deficiencies ➤ Compare nutritional profiles of principal foods ➤ Discuss the basic concepts of nutritional requirements ➤ Discuss methods to measure energy, assessment of protein, fats and carbohydrates ➤ Discuss balanced diet with the help of food pyramids ➤ Assess the nutritional problems in Public Health ➤ Apply different methods of nutritional assessment ➤ Enlist the social aspects of nutrition ➤ Discuss role of food surveillance in the community ➤ Discuss importance of School hygiene and role of public sector ➤ Discuss food borne diseases ➤ Discuss community nutrition programs in detail	Interactive Lectures Tutorials, CBL, household survey, field visit, public health conference	MCQs SEQ/SAQ
Non communicable diseases	Community Medicine	➤ Identify the problems related to the non-communicable diseases and discuss their risk factors ➤ Enlist the WHO Global action plan for the prevention and control of NCDs (2013-2020)	Interactive lecture	MCQs, SEQs

Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
		➤ Categorize common causes of cardiovascular diseases and hypertension ➤ Discuss in detail the preventive measures of Coronary Heart Disease and Hypertension ➤ Enlist the epidemiologic factors influencing Rheumatic Heart Disease ➤ Describe the preventive measures against Rheumatic Heart diseases		
Household survey	Community Medicine	➤ Explain importance of household survey ➤ Explain questionnaire development ➤ Discuss variables of questionnaire ➤ Demonstrate skills of data collection ➤ Demonstrate skills of data entry in SPSS ➤ Demonstrate skills of data analysis in SPSS ➤ Demonstrate skills of report writing	Interactive lecture SGD, LGD, hands on practice, field visit, field survey, lab work	Report writing

BLOCK - II: Hospital Waste Management, Disaster Management, School Health Services, Communicable Diseases, Household Survey

Placement in curriculum: Year 3

Subject: Community Medicine

Block Duration: - 11 Weeks

TABLE OF CONTENTS

Sr. No	Topics
1	Hospital waste management
2	Disaster management
3	School health services
4	An introduction to zoonoses
5	Non communicable disease
6	International health
7	Household survey

Introduction/ Rationale	The waste produced in the course of health-care activities carries a higher potential for infection and injury than any other type of waste. Therefore, it is essential to have safe and reliable method for its handling. Disaster is any occurrence that causes damage, ecological disruption, loss of human life or deterioration of health and health services. School health services are provided through the school system to improve the health and well-being of children. Zoonoses are those diseases and infections which are naturally transmitted between vertebrate animals and man.
Outcomes	At the end of the module the students should be able to KNOWLEDGE: ➤ Explain the importance of proper disposal of waste from the hospital. ➤ Explain the sources of health-care waste. ➤ Explain the hazards of health-care waste. ➤ Describe the types of incinerators. ➤ Explain the three fundamental aspects of disaster ➤ Explain the disaster impact and response ➤ Describe personal protection in different types of emergencies. ➤ Describe the importance of school health services and their role in community. ➤ Explain the importance of zoonoses in public health. ➤ Explain the clinical picture of rabies in man, its diagnosis and treatment. ➤ Describe the epidemiological determinants of yellow fever. ➤ Describe the epidemiological determinants of leprosy. ➤ Describe epidemiology and preventive measure of cancers ➤ Discuss in detail questionnaire development ➤ Discuss data analysis ➤ Discuss report writing SKILL: ➤ Recognize proper techniques of hospital waste management. ➤ Understand the methods of proper disaster management in field ➤ Demonstrate proper school health services in community. ➤ Recognize the common zoonotic diseases in community and demonstrate proper preventive measures.

	➤ Demonstrate effective skills of data collection in field ➤ Demonstrate effective skill of data analysis ➤ Apply effective skills of data analysis in report writing ATTITUDE: ➤ Demonstrate the effective attitude towards disasters ➤ Demonstrate the professional attitude, team dynamism and good communication in community. ➤ Demonstrate effective attitude towards research
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Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
Disaster Management	Community Medicine	➤ Define disaster ➤ Enlist types of disasters ➤ Categorize disasters according to their severity ➤ Define and discuss Steps of disaster management ➤ Define triage and its color coding in detail ➤ Discuss Rehabilitation ➤ Discuss different steps required for different types of disasters for individuals	LGIS	MCQ
Epidemiology of non-communicable diseases	Community Medicine	➤ Discuss the prevalence and factors influencing the incidence of cancer ➤ Discuss role of cancer screening in community ➤ Plan the topics that may be discussed in Diabetes Mellitus, counselling of apparently healthy women and appraise the screening tests that may be performed on them ➤ Define obesity, identify its epidemiologic determinants ➤ Categorize obesity according to BMI. ➤ Plan and interpret ways to prevent and control obesity.	Interactive Lectures	MCQs SEQ/SAQs

Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
		➤ Discuss the types of accidents and their effect on society. ➤ Plan and interpret the preventive measures ➤ Discuss role of community medicine in promotion of safety measures		
Hospital waste management	Community Medicine	➤ Define “Bio-Medical waste” ➤ Classify and enlist sources of “Health care waste” ➤ Discuss in detail the treatment and disposal technologies for health care waste ➤ Discuss main advantages and disadvantages of treatment and disposal options of bio-medical waste ➤ Enumerate and analyze the categories of Bio medical waste in Pakistan ➤ Identify the color coding and type of container for disposal of Bio-medical waste	Interactive Lectures Field visits	MCQs SAQs/SEQs
International Health	Community Medicine	➤ Define “World Health Organization” (WHO) ➤ Discuss objectives of WHO ➤ Describe work of WHO ➤ Identify and enlist other United Nations agencies	Interactive Lecture	MCQs
Zoonosis	Community Medicine	➤ Differentiate between Zoonosis, Epizootic, Epornithic and enzootic ➤ Categorize division of source of origin of zoonotic diseases in terms of bacterial, viral, parasitic and rickettsial origin. ➤ Discuss their agent, host, etiology, mode of transmission, carrier state, incubation periods, period of communicability, risk factors, clinical features, complications, prevention and control measures	LGIS CBL	SEQs, MCQs

Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
		➤ Discuss rabies, yellow fever, brucellosis, leishmaniasis , hydatid disease and plague in detail		
Household survey	Community Medicine	➤ Explain importance of household survey ➤ Explain questionnaire development ➤ Discuss variables of questionnaire ➤ Demonstrate skills of data collection ➤ Demonstrate skills of data entry in SPSS ➤ Demonstrate skills of data analysis in SPSS ➤ Demonstrate skills of report writing	Interactive lecture SGD, LGD, hands on practice, field visit, field survey, lab work	Report writing

Block Name: Environment, Occupational Health. Juvenile Delinquency

Placement in curriculum: Year 3, Block 03

Subject: Community Medicine

Block Duration: - 11 Weeks

TABLE OF CONTENTS

Sr. No	Topics
1	Water & environment
2	Housing & health
3	Noise & radiation
4	Juvenile delinquency
5	Occupational health

Introduction/ Rationale	The term environment includes not only internal and external environment but social and economic conditions under which we live. The purpose of environmental health is to create and maintain ecological conditions that will promote health and thus prevent disease
Outcomes	At the end of the module the students should be able to KNOWLEDGE: ➤ Describe different sources of water supply ➤ Explain steps of water purification ➤ Enumerate and explain the steps of disinfection of well. ➤ Identify guidelines of drinking water quality by WHO. ➤ Describe standard housing ➤ Describe effects of noise and radiation on human health ➤ Describe hazards of different occupations ➤ Explain juvenile delinquency in detail SKILL: ➤ Demonstrate effective skills of recognizing health housing ➤ Recognize the factors related to radiations and noise in the environment ➤ Demonstrate effective skill in helping the quality of water. ➤ Identify occupational hazards in different occupations ATTITUDE: ➤ Demonstrate effective attitude towards promotion of healthy housing, water purification ➤ Demonstrate effective attitude towards environment of noise and radiation from the environment for quality life. ➤ Demonstrate effective attitude in dealing with occupational hazards ➤ Demonstrate effective attitude in dealing with juvenile delinquency

Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
Environmental Health	Community Medicine	➤ Enlist sources of water supply ➤ Differentiate between shallow and deep well ➤ Define sanitary well and enlist the steps in its construction ➤ Discuss water related diseases ➤ Explain purification of water on a large scale ➤ Describe the steps involved in purification of water by Rapid sand or Mechanical filters ➤ Explain methods of Chlorination ➤ Enumerate and explain the steps in well disinfection ➤ Identify the guidelines for drinking water quality recommended by WHO ➤ Enlist the steps required for surveillance of drinking water quality ➤ Define hard water and explain its disadvantages. ➤ Discuss the steps to remove the hardness of water ➤ Describe Horrock's Apparatus	Lectures Field visits Lab work	MCQs SEQ/SAQ
Occupational Health	Community medicine	➤ Define Ergonomics and enlist occupational hazards ➤ Identify and explain the group of diseases under "Pneumoconiosis" ➤ Discuss the preventive measures for pneumoconiosis ➤ Enlist the sources, mode of absorption, clinical features and preventive measures for Lead poisoning ➤ Enumerate health problems due to industrialization ➤ Discuss measures for health protection of workers	Lectures Field visits	MCQs SAQ/SEQ
Juvenile delinquency		➤ Discuss juvenile delinquency in detail ➤ Discuss the preventive and social measures. ➤ Enlist common child health problems.	Interactive Lecture	MCQS, SEQS

BLOCK - I: Principles Of Epidemiology And Epidemiological Methods, Research

Placement in curriculum: Year 4

Subject: Community Medicine

Block Duration: - 11 Weeks

TABLE OF CONTENTS

Sr. No	Topics
1	Principles of epidemiology
2	Epidemiological methods
3	Basic medical statistics
4	Screening for disease
5	Sampling
6	Demography and family planning
7	Research

Introduction/ Rationale	Epidemiology is the basic science of preventive and social medicine. By identifying risk factors of chronic diseases evaluating treatment modalities and fully services has provided new opportunities for prevention, treatment, planning and improving the effectiveness and efficiency of health services. Health information is an integral part of national health system. It is the basic tool of management and a key input for the progress of any society. The data collected should be transformed into information by reducing them, summarizing them and adjusting them for variations in age and sex composition of the population for comparison over time and place. This module is expected to build the students basic knowledge of epidemiology and epidemiological studies/methodologies along with basic medical statistics. This knowledge will serve as bases on which students will build their research work and will develop research culture. As research is integral part of the curriculum of community medicine. It will begin in 3rd year in the form of HHS. It will continue in 4th year. In 4th year students will be divided in small groups of 56 students. They will
Outcomes	At the end of the module the students should be able to KNOWLEDGE: ➤ Describe each component of epidemiology ➤ Enlist fundamentals of epidemiological approach ➤ Differentiate and explain different measurement of morbidity and mortality ➤ Describe descriptive epidemiology in detail ➤ Describe experimental and analytical epidemiology in detail ➤ Describe descriptive statistics in detail ➤ Describe inferential statistics in detail ➤ Describe hypothesis testing and tests of significance ➤ Describe stages of demographic cycle ➤ Describe demographic indications ➤ Explain measures of fertility and mortality in detail ➤ Discuss various methods of literature review ➤ Discuss questionnaire development SKILL: ➤ Recognize various epidemiological methods ➤ Compute and interpret measures of strength of association ➤ Plan investigation of epidemic ➤ Apply appropriate methods of data presentations in research ➤ Compute statistical averages and measures of dispersion ➤ Recognize different types of screening methods and sampling techniques ➤ Compute growth rate, population doubling time, sex ratio and dependency ratio

	➤ Categorize family planning methods and their application ➤ Demonstrate effective attitude towards use of epidemiological measures and methods along with biostatistics research work ➤ Demonstrate effective attitude in understanding of population dynamics, relationships between number of people, the space they occupy and status. ➤ Demonstrate skills of data collection ➤ Demonstrate skill of data entry ➤ Demonstrate skill of data analysis ➤ Demonstrate skill of synopsis/thesis writing ATTITUDE: ➤ Demonstrate effective attitude and professionalism towards the investigation of briefing issues in society using knowledge of epidemiology ➤ Demonstrate effective attitude toward research
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OVERVIEW OF PRINCIPLES OF EPIDEMIOLOGY AND EPIDEMIOLOGICAL METHODS

Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
Principles of Epidemiology & Epidemiological Methods	Community Medicine	➤ Define epidemiology ➤ Describe each components of epidemiology ➤ Enlist foundations of epidemiological approach ➤ Illustrate tools of measurement used in epidemiology ➤ Differentiate various measure of mortalities ➤ Explain measures of morbidity ➤ Recognize various epidemiological methods ➤ Describe descriptive epidemiology & its uses ➤ Explain analytical epidemiology ➤ Compute and interpret measure of strength of association ➤ Enlist and understand the biases in epidemiological methods ➤ discuss experimental epidemiology	Interactive lecture CBL, tutorial, hands on practice, SGD	MCQs SEQs/PBQ OSPHE

		➤ Explain concepts of association & causation ➤ Describe Hill's criteria of causation ➤ Plan investigation of an epidemic		
Basic medical Statistics	Community Medicine	➤ Define data ➤ Apply appropriate methods of data presentation ➤ Compute statistical averages and measures of dispersion ➤ Explain standard normal curve ➤ Define sampling and ➤ Explain tests of significance ➤ Describe sampling in detail ➤ Explain hypothesis testing in detail	Interactive lecture CBL, tutorial, hands on practice, SGD	MCQs SEQs/PBQ OSPHE
Demography & Family Planning	Community Medicine	➤ Explain different stages of demographic cycle ➤ Compute growth rate, population doubling time, sex ratio and dependency ratio. ➤ Explain population pyramids ➤ Describe factors affecting growth rate ➤ Define fertility and important indicators describing fertility ➤ Define family planning and its objectives ➤ Categorize family planning methods and their application	Interactive lecture CBL, tutorial, hands on practice, SGD	MCQs SEQs/PBQ OSPHE
Screening for Disease	Community Medicine	➤ Explain the concept of screening ➤ Describe aims, objectives & uses of screening ➤ State types of screening ➤ Describe criteria for screening ➤ Compute and interpret measures of evaluation of screening test ➤ Evaluate screening programs	Interactive lecture CBL, tutorial, hands on practice, SGD	MCQs SEQs/PBQ OSPHE
Sampling	Community Medicine	➤ Enlist different types of sampling techniques ➤ Describe different types sampling techniques in detail	Interactive lecture CBL, tutorial, hands on practice, SGD	MCQs SEQs/PBQ OSPHE
Research	Community medicine	➤ Describe various methods of literature search and review ➤ Explain use of different tools of literature search ➤ Demonstrate steps of synopsis writing ➤ Demonstrate steps of thesis writing	Interactive lecture CBL, tutorial, hands on practice, SGD	Defense of synopsis in front of IRB, defense of

		➤ Demonstrate use of Endnote ➤ Demonstrate use of Pubmed ➤ Explain questionnaire development ➤ Demonstrate use of SPSS		thesis by external examiner
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BLOCK – II: Surface Infection, Emerging & Reemerging Disease, Communicable Diseases, Zoonosis, Research

Placement in curriculum: Year 4

Subject: Community Medicine

Block Duration: - 11 Weeks

TABLE OF CONTENTS

Sr. No	Topics
1	Epidemiology of communicable diseases
2	Zoonosis
3	Surface infections
4	Emerging and reemerging infections
5	Research
6	Epidemiology of non-communicable diseases

Introduction/ Rationale	Communicable diseases are illnesses caused by viruses or bacteria that people spread to one another through contact with contaminated surfaces, bodily fluids, blood products, insect bites, or through the air. There are many examples of communicable diseases, some of which require reporting to appropriate health departments or government agencies in the locality of the outbreak. Most common forms of spread include fecal-oral, food, sexual intercourse, insect bites, contact with contaminated fomites, droplets, or skin contact. The purpose of this module is to provide information and build knowledge of students about the epidemiology of communicable diseases and control activities taken against these diseases in countries.
Outcomes	At the end of the module the students should be able to KNOWLEDGE: ➤ Describe the common definitions related to disease origin, spread, epidemiology of disease, agent, host, and reservoir of infection, mode of transmission, carrier, types of carriers, cases and types of prevention. ➤ Differentiate between Zoonosis, Epizootic, Epornithic and enzootic diseases. ➤ Discuss their epidemiological agents, clinical features, and preventive measures. ➤ Discuss rabies, yellow fever, brucellosis, leishmaniosis, hydatid disease and plague in ➤ Describe sexually transmitted diseases, tetanus, leprosy and AIDs in detail ➤ Discuss their national prevention and control programs detail. ➤ Division of Emerging and reemerging infections according to their source of infection and their routes of spread and recipients. ➤ Discuss in detail hospital acquired infections ➤ Discuss various methods of literature review ➤ Discuss questionnaire development ➤ Describe epidemiological factors of diabetes ➤ Describe obesity and factors responsible SKILL: ➤ Compare between communicable and non-communicable diseases ➤ Enlist the surface infections ➤ Demonstrate the difference between Zoonosis, Epizootic, Epornithic and enzootic ➤ Recognize and categorize division of source of origin of zoonotic diseases in terms of bacterial, viral, parasitic and rickettsial origin ➤ Recognize and categorize the emerging and reemerging infections on basis of their source.

	➤ Demonstrate skills of data collection ➤ Demonstrate skill of data entry ➤ Demonstrate skill of data analysis ➤ Demonstrate skill of synopsis/thesis writing ATTITUDE: ➤ Demonstrate effective attitude towards recognition and prevention of communicable diseases in the community
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OVER VIEW OF SURFACE INFECTION, EMERGING & REEMERGING DISEASE, COMMUNICABLE DISEASES, RESEARCH, ZOONOSIS, RESEARCH				
Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
Introduction to communicable diseases and basic definitions	Community Medicine	➤ Compare between communicable and non-communicable diseases ➤ State the common definitions related to disease origin, spread, epidemiology of disease, agent, host, and reservoir of infection, mode of transmission, carrier, types of carriers, cases and types of prevention.	LGIS (Large group interactive session) Interactive Lecture CBL. Tutorial, hands on practice, small group discussion	MCQs and SEQs, OSHPE
Zoonosis	Community Medicine	➤ Differentiate between Zoonosis, Epizootic, Epornithic and enzootic ➤ Categorize division of source of origin of zoonotic diseases in terms of bacterial, viral, parasitic and rickettsial origin. ➤ Discuss their agent, host, etiology, mode of transmission, carrier state, incubation periods, period of communicability, risk factors, clinical features, complications, prevention and control measures ➤ Discuss rabies, yellow fever, brucellosis, leishmaniasis, hydatid disease and plague in detail	LGIS PBL Interactive Lecture CBL. Tutorial, hands on practice, small group discussion	SEQs, MCQs PBQ, OSHPE
Surface infections	Community Medicine	➤ Enlist the surface infections	LGIS Interactive Lecture	MCQ

		➤ Discuss their agent, host, etiology, mode of transmission, carrier state, incubation periods, period of communicability, risk factors, clinical features, complications, prevention and control measures ➤ Describe sexually transmitted diseases, tetanus, leprosy and AIDs in detail ➤ Discuss their national prevention and control programs	CBL. Tutorial, hands on practice, small group discussion	SEQs, OSHPE
Emerging and reemerging infections	Community Medicine	➤ Define and categorize the Emerging and reemerging infections ➤ Division of Emerging and reemerging infections according to their source of infection ➤ Discussing their routes of spread and recipients ➤ Discuss in detail hospital acquired infections	LGIS Interactive Lecture CBL. Tutorial, hands on practice, small group discussion	MCQ SEQ, OSHPE
Epidemiology of non-communicable diseases	Community Medicine	➤ Discuss role of cancer screening in community ➤ Plan the topics that may be discussed in Diabetes Mellitus, counselling of apparently healthy women and appraise the screening tests that may be performed on them ➤ Define obesity, identify its epidemiologic determinants ➤ Categorize obesity according to BMI. ➤ Plan and interpret ways to prevent and control obesity. ➤ Discuss the types of accidents and their effect on society. ➤ Plan and interpret the preventive measures ➤ Discuss role of community medicine in promotion of safety measures	LGIS Interactive Lecture CBL. Tutorial, hands on practice, small group discussion	MCQs SEQ/SAQs, OSPHE
Research	Community Medicine	➤ Describe various methods of literature search and review ➤ Explain use of different tools of literature search ➤ Demonstrate steps of synopsis writing ➤ Demonstrate steps of thesis writing ➤ Demonstrate use of Endnote ➤ Demonstrate use of Pubmed ➤ Explain questionnaire development ➤ Demonstrate use of SPSS	Interactive lecture CBL, tutorial, hands on practice in computer lab	Defense of synopsis in front of IRB, defense of thesis by external examiner

BLOCK – III : Preventive Medicine In Pediatrics And Geriatrics Med Entomology, Med Parasitology, HMIS, Environment health planning & health education, Research

Placement in curriculum: Year 4

Subject: Community Medicine

Block Duration: - 11 Weeks

TABLE OF CONTENTS

Sr. No	Topics
1	Preventive Medicine in Pediatrics
2	Preventive Medicine in Obstetrics
3	Preventive Medicine in geriatrics
4	Medical parasitology
5	Medical entomology
6	HMIS & Hospital administration
7	School health services
8	Health planning and health education
9	Non communicable disease
10	Snake bite
11	Environment
12	Research

Introduction/ Rationale	In any community mothers and children constitute priority group, they are not only large group but also wonder able group, problems affecting the health of mother and child are multifactorial. Current trends in many countries is to provide integrated services. Old age is evieitable, we protect it and promote it and extend it. There is the basic principle of preventive in geriatrics. Health information is integral part of national health system. It is basic tool of management primary objective is to provide reliable relevant, up to date, adequate, timely and compete information. Arthropods comprise the most numerous and varied of the living things, some of them are of no use to man or most dangerous for human. Preventive medicine related to arthropod is of extreme importance. Health planning and education is extremely important for better knowledge of health system. This module is expected to build basic knowledge of health information system, planning and education. In addition, preventive medicine is pediatrics obstetrics and geriatrics will be taught. As research is integral part of 4th year it will continue throughout the module.
Outcomes	At the end of the module the students should be able to KNOWLEDGE: ➤ Describe and explain concept of social obstetrics ➤ Enlist MCH problems ➤ Discuss aims and objectives of antenatal postnatal care and interval care ➤ Introduce the concept of preventive medicine in pediatrics ➤ Discuss in detail IMNCI ➤ Explain objectives of school health services ➤ Discuss ageing and problems related to it with its precautions ➤ Discuss medical entomology ➤ Discuss medical parasitology ➤ Discuss various methods of literature review ➤ Discuss questionnaire development SKILL: ➤ Recognize the preventive measures related to pediatrics, obstetrics and geriatrics ➤ Demonstrate effective skills in prevention of medical entomology ➤ Demonstrate effective skill in prevention of medical parasitology ➤ Demonstrate the ability in effective planning promotion and uses of HMIS

	➤ Demonstrate skills of data collection ➤ Demonstrate skill of data entry ➤ Demonstrate skill of data analysis ➤ Demonstrate skill of synopsis/thesis writing ATTITUDE: ➤ Demonstrate the effective attitude towards prevention of health problems in mother child and old age. ➤ Demonstrate effective attitude towards the planning and management of health system in the country. ➤ Demonstrate effective attitude toward research
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OVERVIEW OF PREVENTIVE MEDICINE IN OBSTETRICS, PEDIATRICS AND GERIATRICS MED ENTOMOLOGY, MED PARASITOLOGY, HMIS

Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
Epidemiology of parasitic infections	Community Medicine	➤ Illustrate epidemiology of parasitic/arthropod born infection.	Interactive Lecture CBL. Tutorial, hands on practice, small group discussion, LGIS	MCQs/SEQs/SA Qs
Medical entomology	Community Medicine	➤ Describe role of medical entomology in disease prevention	Interactive Lecture CBL. Tutorial, hands on practice, small group discussion, LGIS	MCQs/SEQs/SA Qs
Demography & family planning	Community Medicine	➤ Explain different stages of demographic cycle ➤ Compute growth rate, population doubling time, sex ratio and dependency ratio. ➤ Explain population pyramids ➤ Describe factors affecting growth rate ➤ Define fertility and important indicators describing fertility ➤ Define family planning and its objectives	Interactive Lecture CBL. Tutorial, hands on practice, small group discussion	MCQs SEQs/PBQ OSPHE

		➤ Categorize family planning methods and their application		
Health Planning	Community Medicine	➤ Construct the planning cycle ➤ Explain the steps of health planning cycle	Interactive Lecture CBL. Tutorial, hands on practice, small group discussion	MCQ/SEQ
Health Management	Community Medicine	➤ Define management ➤ Categorize the methods of management based on behavioral sciences ➤ Define various quantitative methods used in management ➤ Describe the steps of evaluation of health services	Interactive Lecture CBL. Tutorial, hands on practice, small group discussion	MCQ/SEQ
Preventive Medicine in Obstetrics	Community Medicine	➤ Explain the concept of social obstetric and community obstetric with concept of primary health care ➤ Enlist MCH problems of main concern along with its assessment indicators. ➤ Discuss the aims and objectives of antenatal care with its central purpose. ➤ Describe the program of health care services provided to mothers during pregnancy. ➤ Discuss the intra-natal and postnatal care and their objectives.	Interactive Lecture CBL. Tutorial, hands on practice, small group discussion	MCQ SEQ/SAQ
Preventive Medicine in Pediatrics, School health services	Community Medicine	➤ Introduce the concept of preventive pediatrics, its aims and aspects. ➤ Discuss the neonatal health services and its role in decreasing child deaths and infant mortality rate. ➤ Enumerate different factors affecting infant mortality and discuss the preventive and social measures. ➤ Discuss the determinants of growth and development in children. ➤ Explain Growth chart and its uses. ➤ Enlist common child health problems.	Interactive Lectures and Tutorial Field visit for EPI program CBL, Tutorial, hands on practice, small group discussion	MCQ SEQ/SAQ

		➤ Explain Malnutrition prevention at family, community and state level. ➤ Explain integrated management of childhood illness and its elements. ➤ Explain objectives and aspects of School health Service.		
Preventive Medicine and Geriatrics	Community Medicine	➤ Define aging and process of aging. ➤ Enlist health problems of aged. ➤ Discuss how preventive intervention can limit disease and disability. ➤ Identify and state various levels of prevention and health care in geriatric	Interactive Lecture CBL. Tutorial, hands on practice, small group discussion	MCQ
Epidemiology of non-communicable diseases	Community Medicine	➤ Discuss the types of accidents and their effect on society. ➤ Plan and interpret the preventive measures ➤ Discuss role of community medicine in promotion of safety measures	Lectures	MCQs SEQ/SAQs
Environmental Health	Community Medicine	➤ Enlist sources of water supply ➤ Differentiate between shallow and deep well ➤ Define sanitary well and enlist the steps in its construction ➤ Discuss water related diseases ➤ Explain purification of water on a large scale ➤ Describe the steps involved in purification of water by Rapid sand or Mechanical filters ➤ Explain methods of Chlorination ➤ Enumerate and explain the steps in well disinfection ➤ Identify the guidelines for drinking water quality recommended by WHO ➤ Enlist the steps required for surveillance of drinking water quality ➤ Define hard water and explain its disadvantages. ➤ Discuss the steps to remove the hardness of water ➤ Describe Horrock's Apparatus	Lectures Field visits Lab work ,SGD, CBL, Tutorial, hands on practice	MCQs SEQ/SAQ, OSPHE

Research	Community Medicine	➤ Describe various methods of literature search and review ➤ Explain use of different tools of literature search ➤ Demonstrate steps of synopsis writing ➤ Demonstrate steps of thesis writing ➤ Demonstrate use of Endnote ➤ Demonstrate use of Pubmed ➤ Explain questionnaire development ➤ Demonstrate use of SPSS ➤ Demonstrate data collection ➤ Demonstrate data analysis ➤ Demonstrate report writing	Interactive lecture CBL, tutorial, hands on practice in computer lab, group discussion with supervisors	Defense of synopsis in front of IRB, defense of thesis by external examiner
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RESEARCH DOCUMENTS

Research Policy Principles

Overview

Fazaia Medical College will encourage and guide a strong research culture that will:

- demonstrate integrity and professionalism fairness and equity, and intellectual honesty
- effectively and transparently manage conflicts of interest or potential conflicts of interest
- ensure the safety and well-being of those associated with the research; and
- record and publish their methods and results in ways that are open to scrutiny and debate.

Fazaia Medical College will involve the most valuable stake holders, our students and faculty in research actively right from the beginning. This will be done under the supervision of qualified advisory committee taking into account all the ethical considerations. Advisory committee will include multidisciplinary faculty to increase the horizon and cover all aspects of research details.

Students /faculty will be actively engaged in research and awareness campaigns/programs through different mediums involving the common public health issues of Pakistan.

Students of 3rd year will be engaged in house hold survey, they will collect data on one of the burning issues from a local community. Students will be engaged in questionnaire making, data collection, data analysis and report writing. This will be done in the presence and supervision of trained supervisors.

In 4th year students will be engaged in research. Students will be divided in groups. These groups will be supervised by trained and competent faculty. Students will be encouraged to come up with a study question, after the approval of IRB they will develop questionnaire themselves.

They will be continuously supervised on every step. After this they will be engaged in literature search and synopsis writing. This synopsis will be approved by IRB. Faculty and peer review will be done at the time of defense of synopsis. After the defense and approval of synopsis, data collection will be done keeping in view all the ethical considerations. In the end students will present their study for defense and results will be shared through paper writing.

Awareness programs will include:

1. Field visits
2. Conducting International days
3. House hold surveys
4. Research days
5. Conferences
6. Seminars
7. Workshops
8. Medical Camps
9. Small group discussions
10. Interdisciplinary activities
11. Preparation for electives
12. Lectures /talks of experts
13. House hold survey

EYE

MBBS Curriculum

BLOCK - I:OCULAR ADNEXA, ORBIT, LACRIMAL SYSTEM, CORNEA AND CONJUNCTIVA

Placement in curriculum: Year 4

Subject: OPHTHALMOLOGY (EYE)

Block Duration: 10 Weeks

TABLE OF CONTENTS

Sr. No	Topics
1.	Introduction to the Eye and ocular diseases
2.	Orbit : 3 rd , 4 th and 6 th nerve
3.	Lacrima apparatus / epiphora
4.	Thyroid Eye Disease
5.	Eyelids 1 (Blepharitis, chalazion, stye, basal cell CA)
6.	Eye lids 2 (entropion, ectropion, ptosis)
7.	Conjunctiva
8.	Cornea 1 (Ulcer, viral keratitis)
9.	Cornea 2 (Keratoconus, Keratoplasty)
10.	Minor operative procedures of the eye and surgical instruments

Introduction/ Rationale	The human eye has complex anatomy and physiology. The visual apparatus in eye detects sound and plays a vital part in communication process. This module is expected to build the student's basic knowledge about anatomy, physiology, diseases & disorders of the ocular adnexa, orbit, cornea, conjunctiva and lacrimal apparatus.
Outcomes	At the end of the module the students should be able to KNOWLEDGE : Describe the anatomy and physiology of the orbit. Describe the anatomy and physiology of the lids. Describe pathogenesis, diagnostic work up and management plan of important disorders of the orbit. Describe pathogenesis, diagnostic work up and management plan of important disorders of lids. Describe pathogenesis, diagnostic work up and management plan of diseases of the lacrimal apparatus. Describe pathogenesis, diagnostic work up and management plan of disorders of the conjunctiva. Describe pathogenesis, diagnostic work up and management plan of cornea. SKILL : Recognize the instruments used in eye surgery Demonstrate the effective skills of eye examination. To diagnose, treat and prevent certain common eye conditions e.g. Blepharitis Stye and chalazion Dacryocystitis Conjunctivitis Ocular trauma / foreign body Chemical injuries ATTITUDE: Demonstrate the effective attitude towards the patients. Demonstrate the professional attitude, team dynamism and good communication in lecture hall, library and during clinical class.

OVERVIEW OF DISEASES OF EYE COVERED IN BLOCK - I

Topic	Learning Objectives	Learning Strategy	Assessment Tool
ORBIT	Thorough description of below mentioned points of Focus - Anatomy of orbit - Pathways and lesions of the 3rd, 4th and 6th cranial nerves - Thyroid eye disease	Interactive Lectures and clinical interactive session in ward	MCQs and OSPE
Eye Lids	A detailed description of: - Anatomy of the eyelids - Physiology of the eye lids - Benign and malignant lesions of the eyelids - Disorders of function of the eyelids - Disorders of shape of the eyelids - Disorders of the eyelashes	Interactive Lectures and clinical interactive sessions in ward	MCQs and OSPE
Conjunctiva	Thorough description of below mentioned points of Focus - Anatomy of the conjunctiva - Physiology of the conjunctiva - Disorders of the conjunctiva - The red eye	Interactive lecture and Clinical interactive session in ward & OPD	MCQs and OSPE

Topic	Learning Objectives	Learning Strategy	Assessment Tool
Cornea	Thorough description of below mentioned points of Focus - Anatomy of the cornea - Physiology of the cornea - Disorders of the cornea excluding refractive errors - Corneal infections	Interactive Lecture	MCQs

BLOCK - II: UVEA, TRAUMA, NEUROPTHALMOLOGY AND SQUINT

Placement in curriculum: Year 4

Subject : OPHTHALMOLOGY (EYE)

Block Duration: 7 Weeks

TABLE OF CONTENTS

Sr. No	Topics
1.	UVEITIS
2.	OCULAR TRAUMA
3.	NEUROPTHALMOLOGY
4.	OPTIC NERVE DISEASES
5.	SQUINT

Introduction/ Rationale	The uveal tissue is quite complex. It has very important function in the human eye. Ocular traumas are also quite a frequent presentation in hospital emergency departments. Besides neurological disorder quite frequently involve ocular manifestations. Lastly squinting eyes are also not an uncommon presentation in the opds. This module is expected to build the student's basic knowledge about disorders of the uvea, optic nerve, extra ocular movements, ocular alignment and ocular injuries.
Outcomes	At the end of the module the students should be able to KNOWLEDGE : Describe the anatomy and physiology of the uvea. Describe the anatomy and physiology of the visual pathway. Describe pathogenesis, diagnostic work up and management plan of important diseases of the uvea. Describe pathogenesis, diagnostic work up and management plan of important disorders of the optic nerve. Describe pathogenesis, diagnostic work up and management plan of important types of ocular misalignment. Describe pathogenesis, diagnostic work up and management plan of common ocular trauma. SKILL: Recognize the instruments used in common eye injury management. Demonstrate the effective skills of extra ocular movements examination. Demonstrate the effective skills of optic nerve examination. Demonstrate the ability to use the a variety of resources (faculty, library, text books and internet) ATTITUDE: Demonstrate the effective attitude towards the patients. Demonstrate the professional attitude, team dynamism and good communication in lecture hall, library and during clinical class.

OVERVIEW OF UVEA, TRAUMA, NEUROPTHALMOLOGY AND SQUINT

Topic	Learning Objectives	Learning Strategy	Assessment Tool
Uvea	Thorough description of below mentioned points of Focus • Anatomy of uvea • Physiology of the uvea • Different disorders involving uvea (uveitis)	Interactive Lecture	MCQs
Ocular Trauma	Thorough description of below mentioned points of Focus ○ Common causes of eye injury ○ Common manifestations of eye injury ○ Identification of the patients that need to be referred to an eye specialist for management	Interactive Lecture and session in ward / OPD	MCQs and OSPE
Neurophthalmology	Thorough description of below mentioned points of Focus • Anatomy of the visual pathway • Different lesions of the visual pathway • Diseases of the optic nerve • Manifestations of the optic nerve diseases	Interactive Lecture and sessions in clinical ward rounds	MCQs and OSPE
Squint	Thorough description of below mentioned points of Focus • Identification of different types of squint • Examination of extra ocular movements • Cover uncover test	Interactive Lecture and sessions in clinical ward rounds	MCQ & OSPE

BLOCK- III : CATARACT, GLAUCOMA, RETINA, REFRACTIVE ERRORS

Placement in curriculum: Year 4

Subject : OPHTHALMOLOGY (EYE)

Block Duration: 12 Weeks

TABLE OF CONTENTS

Sr. No	Topics
1.	CATARACT
2.	GLAUCOMA
3.	RETINAL DISEASES
4.	REFRACTIVE ERRORS

Introduction/ Rationale	The human eye has complex anatomy and physiology. The commonest causes of visual impairment in humans include cataract, glaucoma and refractive errors. Also retinal diseases acquire a big chunk of the ocular diseases. This module is expected to build the student's basic knowledge about anatomy, physiology, diseases & disorders of the lens, angle of the anterior chamber and retina.
Outcomes	At the end of the module the students should be able to KNOWLEDGE :

	➤ Describe the anatomy and physiology of lens. ➤ Describe the causes of cataract and its management. ➤ Describe pathogenesis, diagnostic work up and management plan of cataract. ➤ Describe pathophysiology, diagnostic work up and management of glaucoma. ➤ Describe pathogenesis, diagnostic work up and management plan of refractive errors. ➤ Describe pathogenesis, diagnostic work up and management plan of diabetic eye disease. SKILL : ➤ Recognize the instruments used in eye opd. ➤ Distant direct ophthalmoscopy ➤ Digital check up of intraocular pressure. ➤ Demonstrate the ability to use the a variety of resources (faculty, library, text books and internet) ATTITUDE: ➤ Demonstrate the effective attitude towards the patients. ➤ Demonstrate the professional attitude, team dynamism and good communication in lecture hall, library and during clinical class.
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OVERVIEW OF CATARACT, GLAUCOMA, RETINA, REFRACTIVE ERRORS

Topic	Learning Objectives	Learning Strategy	Assessment Tool
Cataract	Thorough description of below mentioned points of Focus • Anatomy of the lens • Physiology of the lens • Distant direct ophthalmoscopy • Types and classification of cataract • Management options of cataract	Interactive Lectures and clinical sessions in ward and opd	MCQs and OSPE
Glaucoma	Thorough description of below mentioned points of Focus • Anatomy of the angle • Aqueous production and circulation	Interactive Lectures and clinical ward and opd sessions	MCQs and OSPE

	• Types of glaucoma • Management options of glaucoma • Digital IOP check up		
Retina	Thorough description of below mentioned points of Focus • Anatomy of the retina • Function of important layers of the retina • Diabetic retinopathy • Retinal detachment	Interactive Lectures	MCQs
Refractive errors	Thorough description of below mentioned points of Focus • The refractive system of the eye • Types of refractive errors • Different options of management of refractive errors • Refractive surgeries • Visual acuity testing	Interactive Lectures and opd sessions	MCQs & OSPE

YEAR - III

BLOCK - I : DISEASES OF THE EYE

Placement in curriculum: Year 3

Subject: OPHTHALMOLOGY [EYE]

Block Duration: Block 1= 11 Weeks, Block 2 = 11 Weeks

TABLE OF CONTENTS

Sr. No	Topics
1.	Introduction To Ophthalmology
2.	Anatomy And Physiology Of The Eye
3.	Symptoms Of Eye Diseases
4.	Signs Of Eye Diseases
5.	Pharmacology In Ophthalmology

Introduction/ Rationale	The human eye has a complex anatomy and physiology. This module is expected to build the student's basic knowledge about anatomy, physiology, diseases & disorders of the human eye.
Outcomes	At the end of the module the students should be able to KNOWLEDGE : ➤ Describe the anatomy and physiology of the human eye. ➤ Have a basic idea about the signs and symptoms of eye disease ➤ Have a basic idea about the common medicines used in eye conditions SKILL : ➤ Demonstrate the effective skills of eye examination. ➤ Demonstrate the ability to use the a variety of resources (faculty, library, text books and internet) ATTITUDE: ➤ Demonstrate the effective attitude towards the patients. ➤ Demonstrate the professional attitude, team dynamism and good communication in lecture hall, library and during clinical class.

INTRODUCTORY LECTURES OF THE HUMAN EYE

Topic	Learning Objectives	Learning Strategy	Assessment Tool
INTRODUCTION	Basic description of below mentioned points of Focus • Gross eye anatomy • Gross eye physiology • The visual pathway	Interactive Lecture	MCQs
Anatomy and physiology of the human eye	Thorough description of below mentioned points of Focus • Anatomy of the human eye • Physiology of the human eye • The visual pathway	Interactive Lecture	MCQs

Symptoms of eye diseases	Thorough description of below mentioned points of Focus The common symptoms with which eye patients present in opd	Interactive Lecture and clinical interaction in opd	MCQs
Signs of eye diseases	Thorough description of below mentioned points of Focus The commonest signs of eye diseases	Interactive Lecture and OPD	MCQs and OSPE
Ocular pharmacology	Thorough description of below mentioned points of Focus Pharmacokinetics and pharmacodynamics of the commonest eye medicines	Interactive Lecture	MCQs

ENT

MBBS Curriculum

BLOCK - I: DISEASES OF EAR

Placement in curriculum: Year 4

Subject: OTORHINOLARYNGOLOGY [ENT]

Block Duration: 11 Weeks

TABLE OF CONTENTS

Sr. No	Topics
5.	Anatomy & physiology of Ear
6.	Audiology and Acoustics
7.	Assessment of Hearing
8.	Hearing loss
9.	Assessment of Vestibular Functions
10.	Disorders of Vestibular System
11.	Diseases of External Ear
12.	Eustachian Tube and Its Disorders
13.	Disorders of Middle Ear
14.	Cholesteatoma and Chronic Otitis Media
15.	Complications of Suppurative Otitis Media
16.	Otosclerosis (Syn. Otospongiosis)
17.	Facial Nerve and Its Disorders
18.	Meniere's Disease
19.	Tumors of External Ear
20.	Tumors of Middle Ear and Mastoid
21.	Acoustic Neuroma
22.	Operative procedures of ear

Introduction/ Rationale	The human ear has complex anatomy and physiology. The auditory apparatus in ear detect sound and plays a vital part in communication process. The vestibular apparatus detect linear & rotational movement of head, therefore plays an important role in balance mechanisms of body. This module is expected to build the student's basic knowledge about anatomy, physiology, diseases & disorders of auditory and vestibular system.
Outcomes	At the end of the module the students should be able to KNOWLEDGE: • Describe the anatomy and physiology of auditory system. • Describe the anatomy and physiology of vestibular system. • Describe pathogenesis, diagnostic work up and management plan of important disorders of external ear. • Describe pathogenesis, diagnostic work up and management plan of important disorders of middle ear. • Describe pathogenesis, diagnostic work up and management plan of important disorders of vestibular system. • Describe pathogenesis, diagnostic work up and management plan of otosclerosis. • Describe pathogenesis, diagnostic work up and management plan of Meniere disease. • Describe pathogenesis, diagnostic work up and management plan of Chronic suppurative otitis media and its complications • Describe pathogenesis, diagnostic work up and management plan of tumors of external and middle ear. • Describe pathogenesis, diagnostic work up and management plan of acoustic neuroma. • Describe pathogenesis, diagnostic work up and management plan of important disorders of facial nerve. • Describe pathogenesis, diagnostic work up and management plan of different types of hearing loss. SKILL: • Recognize the instruments used in ear surgery • Diagnose the common ear problem by examination.

	• Demonstrate the effective skills of ear examination • Perform ear suction and removal of foreign from ear.. • Draw a labeled diagram of the tympanic membrane. • Demonstrate the ability to use the a variety of resources (faculty, library, text books and internet) ATTITUDE: • Demonstrate the effective attitude towards the patients. • Demonstrate preoperative, post operative counseling of patients and declaration of life threatening conditions. • Demonstrate the professional attitude, team dynamism and good communication in lecture hall, library and during clinical class.
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OVERVIEW OF DISEASES OF EAR

Topic	Learning Objectives	Learning Strategy	Assessment Tool
Anatomy & physiology of Ear	Thorough description of below mentioned points of Focus • Anatomy of external ear • middle ear anatomy • anatomy of inner ear • Inner ear fluids: Perilymph and Endolymph • Blood Supply of Labyrinth • Development of ear • central connections (neural pathways) • physiology of hearing • Semicircular Canals functions • Utricle and Saccule functions	-Self Study -Internet help - Lecture (Interactive)	MCQ SAQ VIVA OSCE

	• Maintenance of Body Equilibrium		
Audiology and Acoustics	Define following terms • Sound • Frequency and Pitch • Pure Tone and Complex Sound • Overtones and Timbre • Intensity and Loudness • Decibel (dB): Audiometric Zero, Hearing Level (HL), • Sound Level Meter, dB A Scale, • Sensation Level (SL) • Loudness Discomfort Level • Dynamic Range • Noise: White Noise, Narrow Band Noise, Speech Noise	- Self Study - Internet help - Lecture (Interactive)	MCQ SAQ VIVA OSCE
Assessment of Hearing	Thorough description of below mentioned points of Focus • Types of hearing loss • Methods of hearing evaluation • Tuning fork tests • Pure tone audiometry (PTA) • Speech audiometry • Impedance audiometry • Electrocochleography • Brainstem evoked response audiometry (BERA) • Otoacoustic emissions • Auditory steady state response (ASSR)	Demonstration of procedure. Video. Clinical interactive session in ward & OPD	MCQ OSPE

Topic	Learning Objectives	Learning Strategy	Assessment Tool
Hearing loss	Thorough description of below mentioned points of Focus	- Self Study	MCQ

	• Classification of hearing loss • Conductive hearing loss and its management • Sensorineural hearing loss and its management • Ototoxicity • nonorganic hearing loss • Presbycusis • Degree of hearing loss (WHO classification)	-Internet help - Lecture (Interactive)	& OSPE
Assessment of Vestibular Functions	Clinical tests of vestibular function • Spontaneous nystagmus • Fistula test • Romberg test • Gait • Past-pointing and falling • Hall-pike maneuver (positional test) • Test of cerebellar dysfunction • Caloric test	Clinical interactive session in ward & OPD (Small group)	OSPE & Clinical Exam
Disorders of Vestibular System	Thorough description of below mentioned points of Focus • Peripheral vestibular disorders • Central vestibular disorders	- Self Study -Internet help - Lecture (Interactive)	MCQ
Diseases of External Ear	Thorough description of below mentioned points of Focus • Diseases of the pinna • Diseases of external auditory canal • Diseases of tympanic membrane	- Self Study -Internet help - Lecture (Interactive)	MCQ SEQ SAQ
Eustachian Tube and Its Disorders	Thorough description of below mentioned points of Focus • Anatomy and physiology of eustachian tube	- Self Study -Internet help	MCQ SEQ

	- Disorders of eustachian tube - Eustachian tube function tests - Retraction pockets and eustachian tube - Patulous eustachian tube - Examination of eustachian tube	- Lecture (Interactive)	
Disorders of Middle Ear	Thorough description of below mentioned points of Focus - Acute suppurative otitis media - Acute necrotizing otitis media - Otitis media with effusion - Aero-otitis media (otitic Barotrauma)	Interactive Lecture	MCQ

Topic	Learning Objectives	Learning Strategy	Assessment Tool
Cholesteatoma and Chronic Otitis Media	Thorough description of below mentioned points of Focus - Cholesteatoma - Origin of cholesteatoma - Classification of cholesteatoma - Expansion of cholesteatoma and Destruction of bone - Chronic suppurative otitis media - Epidemiology - Types of csom - Clinical features - Investigations - Treatment - Tubercular otitis media	- Self Study - Internet help - Lecture (Interactive) - CBD	MCQ SEQ SAQ Short case Long case

	• Syphilitic otitis media		
Complications of Suppurative Otitis Media	Thorough description of below mentioned points of Focus • Factors influencing development of complications • Pathways of spread of infection • Classification • Sequelae of otitis media • Intratemporal complications of otitis media • Intracranial complications of otitis media	- Self Study -Internet help - Lecture (Interactive)	MCQ SEQ
Otosclerosis	Thorough description of below mentioned points of Focus • Etiology • Types of otosclerosis • Pathology • Symptoms • Signs • Treatment	- Self Study -Internet help - Lecture (Interactive) -CBD	MCQ SEQ SAQ
Facial Nerve and Its Disorders	Thorough description of below mentioned points of Focus • Anatomy and functions of facial nerve • Severity of nerve injury • Electrodiagnostic tests • Causes of facial paralysis • Bell palsy • Herpes zoster oticus (ramsay–hunt syndrome) • Fractures of temporal bone • Topodiagnostic tests for lesions in Intratemporal part	- Self Study -Internet help - Lecture (Interactive) -Ward OPD Discussion. -CBD	MCQ SEQ SAQ Short case Long case
Meniere's Disease	Thorough description of below mentioned points of Focus • Pathophysiology • Clinical features • Investigations • Variants of Meniere's disease • Diagnosis of Meniere's disease • Staging of Meniere's disease • Treatment	- Self Study -Internet help - Lecture (Interactive)	MCQ SEQ SAQ Long case

Topic	Learning Objectives	Learning Strategy	Assessment Tool
Tumors of External Ear	Thorough description of below mentioned points of Focus • Tumors of external auditory canal • Tumors of auricle	- Self Study -Internet help - Lecture (Interactive)	MCQ SEQ SAQ
Tumors of Middle Ear and Mastoid	Thorough description of below mentioned points of Focus • Glomus tumor • Carcinoma of middle ear and mastoid	- Self Study -Internet help - Lecture (Interactive)	MCQ SEQ Short case Long case
Acoustic Neuroma	Thorough description of below mentioned points of Focus • Incidence • Pathology • Origin and growth of tumor • Classification • Clinical features • Investigations and diagnosis • Differential diagnosis • Treatment	- Self Study -Internet help - Lecture (Interactive)	MCQ SEQ
Operative procedures of ear	Thorough description of below mentioned points of Focus • Myringotomy • Cortical Mastoidectomy • Radical Mastoidectomy • Modified Radical Mastoidectomy • Myringoplasty	Clinical interactive session in operation theater. Video Clips	OSPE & Clinical Exam

BLOCK - II: DISEASES OF NOSE, PARANASAL SINUSES AND NASOPHARYNX

Placement in curriculum: Year 4

Subject: OTORHINOLARYNGOLOGY [ENT]

Block Duration: 11 Weeks

TABLE OF CONTENTS

Sr. No	Topics
1.	Anatomy & physiology of nose and paranasal sinuses
2.	Diseases of external nose and nasal vestibule
3.	Nasal Septum and Its Diseases
4.	Acute and Chronic Rhinitis
5.	Granulomatous Diseases of Nose
6.	Miscellaneous Disorders of Nasal Cavity
7.	CSF rhinorrhea
8.	Allergic Rhinitis
9.	Vasomotor and Other Forms of Non-allergic Rhinitis
10.	Nasal Polypi
11.	Epistaxis
12.	Trauma to the Face
13.	Acute Sinusitis and Chronic Sinusitis
14.	Complications of Sinusitis
15.	Benign and malignant neoplasms of nose and paranasal sinuses
16.	Operative procedures of nose and paranasal sinuses
17.	Adenoids and Other Inflammations of Nasopharynx
18.	Tumors of Nasopharynx

Introduction/ Rationale	The human nose and paranasal sinuses and nasopharynx have complex anatomy and physiology. Breathing and olfaction are two important functions of these structures. This module is expected to build the student's basic knowledge about anatomy, physiology, diseases & disorders of nose and paranasal sinuses and nasopharynx..
Outcomes	At the end of the module the students should be able to KNOWLEDGE : Describe the anatomy and physiology of nose and nasopharynx. Describe the anatomy and physiology of paranasal sinuses. Describe pathogenesis, diagnostic work up and management plan of tumors of nasopharynx. Describe pathophysiology, diagnostic work up and management of adenoidal hypertrophy. Describe indications, procedure, complications of adenoidectomy. Describe pathogenesis, diagnostic work up and management plan of important diseases of external nose and nasal vestibule. Describe pathogenesis, diagnostic work up and management plan of important disorders of nasal septum. Describe pathogenesis, diagnostic work up and management plan of important types of rhinitis. Describe pathogenesis, diagnostic work up and management plan of granulomatous diseases of nose. Describe pathogenesis, diagnostic work up and management plan of nasal polypi. Describe pathogenesis, diagnostic work up and management plan of epistaxis. Describe classification, diagnostic work up and management plan of facial trauma. Describe pathogenesis, diagnostic work up and management plan of acute and chronic sinusitis. Describe pathogenesis, diagnostic work up and management plan of complications of sinusitis. Describe pathogenesis, diagnostic work up and management plan of tumors of nose and paranasal sinuses. SKILL : Recognize the instruments used in nasal surgery Demonstrate the effective skills of nasal examination. Demonstration of anterior nasal packing, and removal of foreign body nose. Draw a labeled diagram of the septum & lateral nasal wall and Nasopharynx. Demonstrate the ability to use a variety of resources (faculty, library, text books and internet) ATTITUDE: Demonstrate the effective attitude towards the patients. Demonstrate preoperative, post operative counseling of patients and declaration of life threatening conditions Demonstrate the professional attitude, team dynamism and good communication in lecture hall, library and during clinical class.

OVERVIEW OF DISEASES OF NOSE AND PARANASAL SINUSES

Topic	Learning Objectives	Learning Strategy	Assessment Tool
Anatomy & physiology of nose and paranasal sinuses	Thorough description of below mentioned points of Focus • Anatomy of external nose • Anatomy of vestibule of nose • Anatomy of lateral nasal wall • Anatomy of nasal septum • Anatomy of paranasal sinuses • Nerve supply, blood supply & lymphatic drainage of nose and paranasal sinuses • Physiology of Nose & olfaction • Physiology of paranasal sinuses	- Self Study -Internet help - Lecture (Interactive)	MCQ
Diseases of External Nose and Nasal Vestibule	Thorough description of below mentioned points of Focus • External nasal deformities • Congenital and acquired tumors of external nose • Diseases of nasal vestibule ○ Furuncle or boil ○ Vestibulitis ○ Stenosis and atresia of the nares	- Self Study -Internet help - Lecture (Interactive)	MCQ
Nasal Septum and Its Diseases	Thorough description of below mentioned points of Focus • Fractures of nasal septum • Deviated nasal septum (DNS) • Septal hematoma • Septal abscess • Perforation of nasal septum	- Self Study -Internet help - Lecture (Interactive) -CBD	MCQ SEQ OSPE Short case Long Case
Acute and Chronic Rhinitis	Thorough description of below mentioned points of Focus • Acute rhinitis	- Self Study -Internet	MCQ SEQ

	• Chronic simple rhinitis • Hypertrophic rhinitis • Atrophic rhinitis • Rhinitis sicca • Rhinitis caseosa	help - Lecture (Interactive) -CBD	OSPE
Granulomatous Diseases of Nose	Thorough description of below mentioned points of Focus • Rhinoscleroma • Syphilis • Tuberculosis • Lupus vulgaris • Leprosy • Rhinosporidiosis • Wegener's granulomatosis	- Self Study -Internet help - Lecture (Interactive) -CBD	MCQ SEQ

Topic	Learning Objectives	Learning Strategy	Assessment Tool
Miscellaneous Disorders of Nasal Cavity	Thorough description of below mentioned points of Focus • Foreign bodies • Rhinolith • Nasal myiasis (maggots in nose) • Nasal synechie • Choanal atresia	- Self Study -Internet help - Lecture (Interactive) -CBD	MCQ SEQ Short case
CSF rhinorrhea	Thorough description of below mentioned points of Focus • Definition • Etiology • Sites of leakage • Diagnosis • Laboratory tests	- Self Study -Internet help - Lecture (Interactive) -CBD	MCQ SEQ

	• Localization of site • Treatment		
Allergic Rhinitis	Thorough description of below mentioned points of Focus • Pathophysiology • Clinical features • Work up • Treatment	- Self Study -Internet help - Lecture (Interactive) -CBD	MCQ SEQ Long case
Vasomotor and Other Forms of Non-allergic Rhinitis	Thorough description of below mentioned points of Focus • Vasomotor rhinitis (VMR) • Other forms of non-allergic rhinitis	- Self Study -Internet help - Lecture (Interactive) -CBD	MCQ SEQ Long case
Nasal Polypi	Thorough description of below mentioned points of Focus • Bilateral ethmoidal polypi • Antrochoanal polyp	- Self Study -Internet help - Lecture (Interactive) -CBD	MCQ SEQ Short case Long case
Epistaxis	Thorough description of below mentioned points of Focus • Causes of epistaxis • Sites of epistaxis • Classification of epistaxis • Management	- Self Study -Internet help - Lecture (Interactive) -CBD	MCQ SEQ Long case
Trauma to the Face	Thorough description of below mentioned points of Focus • General management • Soft tissue injuries and their management • Fractures of upper third of face • Fractures of middle third of face • Fractures of lower third • Oro-antral fistula	- Self Study -Internet help - Lecture (Interactive) -CBD	MCQ SEQ Short case Long case

Acute Sinusitis and Chronic Sinusitis	Thorough description of below mentioned points of Focus • Pathophysiology, clinical features, diagnostic work up and management plan of acute and chronic sinusitis	- Self Study -Internet help - Lecture (Interactive) -CBD	MCQ SEQ Long case
Topic	Learning Objectives	Learning Strategy	Assessment Tool
Complications of Sinusitis	Thorough description of below mentioned points of Focus • Mucocele of paranasal sinuses and Mucous retention cysts • Osteomyelitis • Orbital complications • Intracranial complications	- Self Study -Internet help - Lecture (Interactive) -CBD	MCQ SEQ Long case
Benign and malignant neoplasms of nose and paranasal sinuses	Thorough description of below mentioned points of Focus • BENIGN NEOPLASMS • Squamous papilloma • Inverted papilloma • Haemangioma • Intranasal meningoencephalocele • Gliomas. • Nasal dermoid • Fibrous dysplasia. • osteoma • MALIGNANT NEOPLASMS • Squamous cell carcinoma	- Self Study -Internet help - Lecture (Interactive) -CBD	MCQ SEQ Long case Short case

	• adenocarcinoma • Malignant melanoma. • olfactory neuroblastoma • Haemangiopericytoma		
Operative procedures of nose and paranasal sinuses	Thorough description of below mentioned points of Focus • Septoplasty • Rhinoplasty • Endoscopic sinus surgery • Proof puncture • Caldwell-luc procedure • External ethmoidectomy • Frontal sinus trephination • Maxillectomy	Interactive session in operation theater. Video clips	Clinical Exam, Ospe
Adenoids	Thorough description of below mentioned points of Focus • pathophysiology • Clinical features • Diagnostic evaluation • Treatment Complications	Interactive Lecture	MCQ & OSPE
Masses and Tumors of Nasopharynx	Thorough description of below mentioned points of Focus • Nasopharyngeal angiofibroma • Nasopharyngeal cancer • Adenoids	Interactive Lecture	MCQ

BLOCK – III: DISEASES OF LARYNX, HYPOPHARYNX, ESOPHAGUS, SALIVARY GLAND, NECK MASSES AND RECENT ADVANCEMENT

Placement in curriculum: Year 4

Subject: OTORHINOLARYNGOLOGY [ENT]

Block Duration: 8 Weeks

TABLE OF CONTENTS

Sr. No	Topics
19.	Anatomy and Physiology of Larynx
20.	Laryngo-tracheal Trauma
21.	Acute and Chronic Inflammations of Larynx
22.	Congenital Lesions of Larynx and Stridor
23.	Laryngeal Paralysis
24.	Benign Tumors of Larynx
25.	Cancer Larynx
26.	Voice and Speech Disorders
27.	Tracheostomy and Other Procedures for Airway Management
28.	Foreign Bodies of Aero digestive Passages
29.	Anatomy and Physiology of hypopharynx, esophagus
30.	Disorders of esophagus, Dysphagia, Tumors of the Hypopharynx and Pharyngeal Pouch
31.	Non-neoplastic Disorders of Salivary Glands, Neoplasms of Salivary Glands
32.	Neck Masses
33.	Recent Advancement in ENT

Introduction/ Rationale	The human larynx has complex anatomy and physiology. Breathing and phonation are two important functions of this structure. This module is expected to build the student's basic knowledge about anatomy, physiology, diseases & disorders of larynx. The human pharynx and esophagus have complex anatomy and physiology. Breathing and swallowing are two important functions of these structures. This module is expected to build the student's basic knowledge about anatomy, physiology, diseases & disorders of hypopharynx and esophagus. This module is expected to build the student's basic knowledge about anatomy of neck and neck masses and to introduce latest advancement in ENT
Outcomes	At the end of the module the students should be able to KNOWLEDGE : Describe the anatomy and physiology of larynx. Describe the causes of Laryngo-tracheal trauma and its management. Describe pathogenesis, diagnostic work up and management plan of acute and chronic infections of larynx. Describe pathophysiology, diagnostic work up and management of congenital lesions of larynx. Describe pathogenesis, diagnostic work up and management plan of laryngeal paralysis. Describe pathogenesis, diagnostic work up and management plan of benign and malignant tumors of larynx. Describe pathogenesis, diagnostic work up and management plan of voice disorders. Describe indications, procedure, complications of tracheostomy. Describe pathogenesis, diagnostic work up and management plan of foreign body airway. Describe pathogenesis, diagnostic work up and management plan of neoplasms of salivary Glands. Describe the anatomy and physiology of hypopharynx and esophagus. Describe pathogenesis, diagnostic work up and management plan of acute and chronic infections of hypopharynx and esophagus. Describe pathogenesis, diagnostic work up and management plan of tumors of hypopharynx and esophagus Describe pathogenesis, diagnostic work up and management plan of deep neck space infections. Describe pathogenesis, diagnostic work up and management plan of esophageal disorders. Describe indications, procedure, complications of esophagoscopy Describe pathogenesis, diagnostic work up and management plan of neck masses. Describe the Recent advancement in ENT.

	SKILL : Recognize the instruments used in laryngeal surgery Demonstrate the effective skills of laryngeal examination. Draw a labeled diagram of the glottis and hypopharynx. Demonstrate the ability to use the a variety of resources (faculty, library, text books and internet) Recognize the instruments used in pharyngeal surgery Demonstrate the effective skills of pharyngeal examination. Recognize the X-Rays and findings of pharyngeal pathologies. Demonstrate the ability to use the a variety of resources (faculty, library, text books and internet) ATTITUDE: Demonstrate the effective attitude towards the patients. Demonstrate preoperative, post operative counseling of patients and declaration of life threatening conditions. Demonstrate the professional attitude, team dynamism and good communication in lecture hall, library and during clinical class.
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OVERVIEW OF DISEASES OF LARYNX, HYPOPHARYNX, ESOPHAGUS, SALIVARY GLAND, NECK MASSES AND RECENT ADVANCEMENT

Topic	Learning Objectives	Learning Strategy	Assessment Tool
Anatomy & physiology of larynx	Thorough description of below mentioned points of Focus • Laryngeal cartilages • Laryngeal joints • Laryngeal membranes • Muscles of larynx • Cavity of the larynx • Mucous membrane of the larynx • Lymphatic drainage	- Self Study -Internet help - Lecture (Interactive) -Skill Lab discussion	MCQ VIVA

	• Nerve supply • Pediatric larynx		
Laryngo-tracheal Trauma	Thorough description of below mentioned points of Focus • Etiology • Pathology • Clinical features • Diagnostic evaluation • Treatment • Complications	- Self Study -Internet help - Lecture (Interactive) -CBD	MCQ SEQ VIVA Long Case Short case
Acute and Chronic Inflammations of Larynx	Thorough description of below mentioned points of Focus • Acute laryngitis • Acute epiglottitis • Acute laryngo-tracheo-bronchitis • Laryngeal diphtheria • Chronic laryngitis • Reinke's edema • Pachydermia laryngis • Atrophic laryngitis • Tuberculosis of larynx	- Self Study -Internet help - Lecture (Interactive) -CBD	MCQ SEQ Long case
Congenital Lesions of Larynx and Stridor	Thorough description of below mentioned points of Focus • Laryngomalacia (congenital laryngeal stridor) • Congenital vocal cord paralysis • Congenital subglottic stenosis • Laryngeal web • Subglottic Haemangioma • Laryngo-esophageal cleft • Laryngocele • Laryngeal cyst	- Self Study -Internet help - Lecture (Interactive) -CBD	MCQ & OSPE Viva

Topic	Learning Objectives	Learning Strategy	Assessment Tool
Laryngeal Paralysis	Thorough description of below mentioned points of Focus • Nerve supply of larynx • Classification of laryngeal paralysis • Recurrent laryngeal nerve paralysis • Paralysis of superior laryngeal nerve • Combined (complete) paralysis (recurrent and superior laryngeal nerve paralysis) • Phonosurgery	- Self Study -Internet help - Lecture (Interactive) -CBD	MCQ SEQ Long case Short case
Benign Tumors of Larynx & CA Larynx	Thorough description of below mentioned points of Focus • Non-neoplastic lesions • Vocal nodules • Vocal polyp • Reinke's oedema • Intubation granuloma • Cystic lesions • Squamous papillomas • Cancer larynx • Epidemiology • Etiology • TNM classification and staging • Histopathology • Clinical features • Diagnostic work up • Management	- Self Study -Internet help - Lecture (Interactive) -CBD	MCQ SEQ Long case Short case

Voice and Speech Disorders	Thorough description of below mentioned points of Focus • Hoarseness • Dysphonia • Functional aphonia • Puberphonia • Phonasthenia	- Self Study -Internet help - Lecture (Interactive) -CBD I	MCQ SEQ Long case Short case
Tracheostomy and Other Procedures for Airway Management	Thorough description of below mentioned points of Focus • Functions of tracheostomy • Indications of tracheostomy • Types of tracheostomy • Surgical procedure • Postoperative care • Tracheostomy in infants and children • Complications • Procedures for immediate airway • Management	Interactive session in operation theater. Video clips, skill lab	OSPE MCQ SEQ
Foreign Bodies of Air Passages	Thorough description of below mentioned points of Focus • Nature of foreign bodies • Clinical features • Diagnosis • Management	Interactive session in operation theater, video clips	MCQ & OSPE
Anatomy & physiology of hypopharynx and esophagus	Thorough description of below mentioned points of Focus • Divisions of pharynx • Anatomy of all divisions • Blood supply, nerve supply, lymph drainage • Physiology	- Self Study -Internet help - Lecture (Interactive)	MCQ
Tumors of hypopharynx and esophagus	• Thorough description of pathophysiology, Clinical features, Diagnostic evaluation, Treatment & Complications of following:	- Self Study -Internet help	MCQ SEQ Long case

	• CA esophagus • CA hypopharynx	- Lecture (Interactive) -CBD	Short case
Disorders of Esophagus	Thorough description of pathophysiology, Clinical features, Diagnostic evaluation, Treatment & Complications of following: • Perforation of esophagus • Corrosive burns of esophagus • Benign strictures of esophagus • Plummer–vinson syndrome	- Self Study -Internet help - Lecture (Interactive) -CBD I	MCQ
Non-neoplastic Disorders of Salivary Glands	Thorough description of below mentioned points of Focus • Mumps (viral parotitis) • Acute suppurative parotitis • Chronic recurrent sialadenitis • Sialectasis • Granulomatous diseases • Sjogren's syndrome (sicca syndrome)	- Self Study -Internet help - Lecture (Interactive) -CBD	MCQ SEQ Short case
Neoplasms of Salivary Glands	Thorough description of below mentioned points of Focus • Benign tumors • Malignant tumors	- Self Study -Internet help - Lecture (Interactive) -CBD	MCQ Short case
Neck Masses and recent advancement	Brief description of neck masses and recent advancement in ENT with focus on • Thyroid masses, .Branchial cyst and lymph nodes • LASER, Cryo, FESS, Cochlear implant	- Self Study -Internet help - Lecture (Interactive) -CBD	MCQ Short case

BLOCK – I

DISEASES OF ORAL CAVITY, OROPHARYNX AND DISEASES OF TONSIL

Placement in curriculum: Year 3

Subject: OTORHINOLARYNGOLOGY [ENT]

Block Duration: 5 Weeks

TABLE OF CONTENTS

Sr. No	Topics
1.	Anatomy of Oral Cavity
2.	Common Disorders of Oral Cavity
3.	Tumors of Oral Cavity
4.	Anatomy of tonsils
5.	Acute and chronic tonsillitis
6.	Tonsillectomy

Introduction/ Rationale	The human oral cavity, tonsils and oropharynx have complex anatomy and physiology. This module is expected to build the student's basic knowledge about anatomy, physiology, diseases & disorders of oral cavity , tonsils and oropharynx.
Outcomes	At the end of the module the students should be able to KNOWLEDGE : ➤ Describe the anatomy and physiology of oral cavity, tonsils and oropharynx. ➤ Describe pathogenesis, diagnostic work up and management plan of ulcers of oral cavity. ➤ Describe pathophysiology, diagnostic work up and management of tumors of oral cavity, tonsils and oropharynx,. SKILL : ➤ Demonstrate the effective skills of oral examination. ➤ Draw a labeled diagram of the oral cavity and oropharynx. ➤ Demonstrate the ability to use the a variety of resources (faculty, library, text books and internet) ATTITUDE: ➤ Demonstrate the effective attitude towards the patients. ➤ Demonstrate preoperative, post operative counseling of patients and declaration of life threatening conditions ➤ Demonstrate the professional attitude, team dynamism and good communication in lecture hall, library and during clinical class.

OVERVIEW OF DISEASES OF ORAL CAVITY, OROPHARYNX AND TONSIL

Topic	Learning Objectives	Learning Strategy	Assessment Tool
Anatomy of Oral Cavity	Thorough description of below mentioned points of Focus • Applied anatomy	- Self Study -Internet help - Lecture (Interactive)	MCQ

	• Lymphatic drainage of oral cavity	-CBD I	
Common Disorders of Oral Cavity	Thorough description of below mentioned points of Focus • Ulcers of oral cavity • Miscellaneous lesions of tongue and oral cavity	- Self Study -Internet help - Lecture (Interactive)-CBD	MCQ
Tumors of Oral Cavity	Thorough description of below mentioned points of Focus • Benign tumors • Premalignant lesions • Carcinoma oral cavity	- Self Study -Internet help - Lecture (Interactive)-CBD	MCQ
Anatomy of tonsil	Thorough description of below mentioned points of Focus • Surgical anatomy • Blood supply • Lymph drainage	- Self Study -Internet help - Lecture (Interactive)	MCQ
Acute and chronic tonsillitis	Thorough description of below mentioned points of Focus • Etiology • Pathophysiology • Diagnostic work up • Treatment	- Self Study -Internet help - Lecture (Interactive)-CBD	MCQ SEQ Long case
Tonsillectomy	• Indications • Contraindications • Procedure • Complications	Interactive session in operation theater Video clips	MCQ SEQ



Final Year MBBS Curriculum

Medicine

MBBS Curriculum

Learning Objectives, A fresh medical graduate should have following professional and human qualities. Instead of starting with the traditional systemic approach a **symptomatic approach** in Medicine is the theme. The students are given definitions, basic anatomy, physiology and patho-physiology, list of causes, description of symptoms and signs, discussion of differential diagnosis/diagnosis, approach to a patient and steps of management.

OUTCOME

a. KNOWLEDGE & CLINICAL SKILLS

1. Describe the clinical anatomy/clinical physiology, of the skin, heart, and respiratory, gastrointestinal, genitourinary, hepatobiliary, nervous, endocrine, musculoskeletal and haematological systems.
2. Mention and justify the steps to follow in patients presenting with common symptoms and signs.
3. Given any patient with complaints take full medical history, with appropriate sequence and comprehensiveness, and write it clearly.
4. Asked to examine a patient prepare the appropriate setup for physical examination carry out the examination in the appropriate manner, sequence and comprehensiveness attending all systems relevant to the medical problems.
5. Presented with real, verbal and written clinical scenario of common diseases the candidate use his basic and clinical science knowledge and skills to correlate the clinical presentation, suggest appropriate investigations, reach a provisional diagnosis/ diagnosis and advise appropriate management.
6. Presented with real, verbal and written clinical scenario of common medical emergencies (e.g. a comatose patient) the candidate use his basic and clinical science knowledge and skills to diagnose, and take appropriate and prompt steps of management.
7. To diagnose and manage common medical emergencies like myocardial infarction, pneumothorax, pulmonary embolism, hypovolemia, shock, poisoning gastrointestinal bleeding.
8. To suggest various investigations case wise to identify and interpret various laboratory investigations reasonably. To identify gross abnormalities in the films to list indications and advantages of modern techniques to recognize major abdominal viscera and their imaging characters.
9. To describe manifestation of infectious and non-infectious diseases and their preventive measures.
10. To acquire the skills to perform minor procedures under supervision or independently.

11.To acquire a desired theoretical and practical level of competence according to the goals set up by the medical college.

b. ATTITUDE

1. Communicate effectively with patients suffering from chronic and malignant diseases, taking into account the burden on the family.
2. Reflect, though knowledge, clinical skills and empathetic behaviour to the patient's problems.
3. Counsel educate patients and family regarding chronic infectious diseases and their transmission e.g. chronic hepatitis C and B.
4. Break bad news taking into account the burden on family and community e.g HIV positivity status, diagnosis of a malignant condition ,terminal illness and weaning off from ventilator.
5. To develop excellent communication skills with colleagues, nurses, paramedical staff and public.
7. Comply with the hospital/college policy regarding attendance, team work and ethical responsibilities.

3rd YEAR MBBS
MEDICINE & ALLIED SYLLABUS

1.CARDIOVASCULAR SYSTEM

Placement in curriculum: Year 03

Duration: Weeks

Topic	Teaching Methodology	Assessment Methodology
Palpitation, Breathlessness, Chest Pain	BST Session	OSCE, Mini CEX
Orthopnoea, Paroxysmal nocturnal dyspnoea (PND)	BST Session	OSCE, SEQ's, Mini CEX
Pain in calf on walking	BST Session	OSCE, Mini CEX
Undue coldness, redness or blueness of extremities	LGD, BST Session	OSCE, Mini CEX
Rheumatic fever and infective endocarditis.	LGD, BST Session	OSCE, SAQ's, MCQ, Mini CEX
Valvular heart diseases. • Mitral valve • Aortic valve	LGD, BST Session	OSCE, SAQ's, Mini CEX
Cyanotic/ Acyanotic heart diseases. • Fallot's tetralogy • Name of other diseases	LGD, BST Session	OSCE, Mini CEX
Ischaemic heart disease. • Angina	LGD, BST Session	OSCE, SAQ's, Mini CEX

• Myocardial infarction		
Heart failure. • Left Ventricular Failure. • Congestive Cardiac Failure. • Cor pulmonale.	LGD, BST Session	OSCE, SAQ's, Mini CEX
Congenital heart diseases (brief). • Atrial Septal Defect • Ventricular Septal Defect, Patent Ductus Arteriosus	LGD, BST Session	MCQ's, Mini CEX
Cardiomyopathies (brief).	LGD, BST Session	OSCE, SAQ's, Mini CEX
Pericardial diseases (brief). • Constrictive pericarditis • Pericardial effusion	LGD, BST Session	MCQ's, Mini CEX
Atherosclerosis/Arteriosclerosis	LGD, BST Session	MCQ's, Mini CEX
Hypertension	LGD, BST Session	MCQ's, Mini CEX
Peripheral vascular disease (brief).	Lecture, BST Session	MCQ's, Mini CEX
Symptoms and signs	Lecture, BST Session	MCQ's, Mini CEX
Investigations • Electrocardiography, X-Ray chest, Echocardiography, Thallium scan, Stress testing, Holter and Angiography etc.	Lecture, BST Session, Tutorials	OSCE, Mini CEX

2.PULMONOLOGY

Placement in curriculum: Year 03
Duration: Weeks

Topic	Teaching Methodology	Assessment Methodology
Chest pain	LGD, BST Session	OSCE, MCQ's, Morning report, Mini CEX
Cough/Expectoration/Sputum, Haemoptysis	LGD, BST Session	OSCE, Morning report, Mini CEX
Cough, Breathlessness Wheezing	LGD, BST Session	OSCE, Morning report, Mini CEX
Pulmonary function tests	LGD, BST	OSCE, Morning report, Mini CEX
Imaging in pulmonary diseases/investigations	LGD,BST	OSCE, Morning report, Mini CEX
Asthma	LGD,BST	MCQ's, Morning report, Mini CEX
• Environmental lung diseases/Occupational (brief introduction). • Asbestosis • Silicosis • Bagasosis • Pneumoconiosis • Byssinosis • Farmer's lung	LGD, BST	OSCE, MCQ's, SAQ's, Morning report, Mini CEX
Pneumonia • Community acquired • Nosocomial • Lobar/Broncho	LGD, BST Session	OSCE, MCQ's, SAQ's, Morning report, Mini CEX
Adult respiratory distress syndrome/Acute respiratory failure/ Mechanical ventilation.	LGD, BST Session	MCQ's, Morning report, Mini CEX
Bronchiectasis	LGD, BST Session	OSCE, MCQ's, SAQ's, Morning report, Mini CEX
Chronic obstructive airway diseases	LGD, BST	OSCE, MCQ's, SAQ's, Morning report, Mini CEX
Chronic obstructive airway diseases. • Chronic bronchitis • Emphysema	LGD, BST Session	OSCE, MCQ's, SAQ's, Morning report, Mini CEX
Interstitial lung diseases	LGD,	OSCE, MCQ's,

	BST Session	Morning report, Mini CEX
Pulmonary thromboembolism/Acute cor pulmonale.	LGD, BST Session	OSCE, MCQ's, Morning report, Mini CEX
Pleural effusion	LGD, BST Session	OSCE, MCQ's, SAQ's, Morning report, Mini CEX
Pneumothorax	LGD, BST Session	OSCE, MCQ's, SAQ's, Morning report, Mini CEX
Carcinoma lung	LGD, BST Session	OSCE, MCQ's, SAQ's, Morning report, Mini CEX
Tuberculosis	LGD, BST Session	OSCE, MCQ's, SAQ's, Morning report, Mini CEX

3.DERMATOLOGY

Placement in curriculum: Year 03
Duration: Weeks

Topic	Teaching Methodology	Assessment Methodology
Alopecia	LGD	OSCE, MCQ's, SAQ's,
Eruption and rashes	LGD, BST Session	OSCE, MCQ's,
Itching, Pigmentation and dyspigmentation	LGD, BST Session	OSCE, MCQ's, Morning report, Mini CEX
Anatomy, Physiology, of Skin related to Clinical Dermatology	LGD, BST Session	MCQ's,
Infestations: Scabies, Pediculosis	LGD, BST Session	OSCE, MCQ's,
Bacterial and Mycobacterial infections	LGD, BST Session	OSCE, MCQ's,
Fungal and Viral diseases	LGD, BST Session	OSCE, MCQ's,
Acne vulgaris	LGD, BST Session	OSCE, MCQ's,

Eczemas	LGD, BST Session	OSCE, MCQ's,
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4th YEAR MBBS
MEDICINE & ALLIED SYLLABUS

1. PSYCHIATRY
Placement in curriculum: Year 04
Duration: Weeks

Topic	Teaching Methodology	Assessment Methodology
Mood disorders. i. Major depressive episodes ii. Unipolar iii. Bipolar iv. Dysthymic v. Atypical vi. Manic episodes	LGD, BST	OSCE
Anxiety disorders. vii. Acute anxiety states viii. Panic disorders ix. Generalized anxiety disorders x. Psychic Traumatic disorders xi. Obsessive-compulsive disorders	LGD, BST	MCQ's
Phobic disorders	LGD,BST Session	MCQ's

Schizophrenia	LGD,BST Session	MCQ's
Alcoholism	LGD,BST Session	MCQ's,
Addiction	LGD,BST Session	MCQ's,
Psychosexual disorders in Men and Women	LGD,BST Session	MCQ's,

2. RHEUMATOLOGY

Placement in curriculum: Year 04
Duration: Weeks

Topic	Teaching Methodology	Assessment Methodology
Joint Pain and Joint Swelling	LGD	OSCE, MCQ's Morning report, Mini CEX
Muscle Cramps / Weakness	LGD, BST Session	OSCE, MCQ's, Morning report, Mini CEX
Approach to a patient with muscle wasting	LGD, BST Session	OSCE, MCQ's, Morning report, Mini CEX
Osteoporosis	LGD, BST Session	MCQs, Morning report, Mini CEX
Rheumatoid Arthritis and related Arthropathies	LGD, BST Session	MCQs, OSCE, SAQ's, Morning report, Mini CEX
Paget's disease of the bone	LGD,	MCQs,

	BST Session	Morning report, Mini CEX
Osteopetrosis (Marble bone disease)	LGD, BST Session	MCQs, Morning report, Mini CEX
• Systemic lupus erythematosus (SLE) • Serum sickness • Rheumatoid arthritis	LGD, BST Session	MCQs, OSCE, SAQ's, Morning report, Mini CEX
Systemic sclerosis (scleroderma).	LGD, BST Session	MCQs, OSCE, Morning report, Mini CEX
Mixed connective tissue diseases (brief)	LGD, BST Session	MCQs, Morning report, Mini CEX
Sjogren's syndrome (brief).	LGD, BST Session	MCQs, Morning report, Mini CEX
Ankylosing spondylitis	LGD, BST Session	MCQs, Morning report, Mini CEX
Bechet's syndrome (brief).	LGD, BST Session	MCQs, Morning report, Mini CEX
Vasculitis syndromes (brief). • Anaphylactoid Purpura • Polyarteritis nodosa • Hypersensitivity vasculitis • Wegner's granulomatosis • Temporal arteritis • Takayasu's arteritis • Thromboangiitis obliterans (Burger's disease)	LGD, BST Session	MCQs, Morning report, Mini CEX
Sarcoidosis (brief).	LGD, BST Session	MCQs, Morning report, Mini CEX

3.GASTROENTEROLOGY

Placement in curriculum: Year 04
Duration:Weeks

Topic	Teaching Methodology	Assessment Methodology
Melena Hematemesis bleeding per rectum	LGD, BST Session	OSCE, MCQ's, Morning report, Mini CEX
Jaundice	LGD, BST Session	OSCE, MCQ's, Morning report, Mini CEX
Abdominal Distension / Ascites	LGD, BST Session	OSCE, MCQ's, SEQ's, Morning report, Mini CEX
Acute Diarrhoea / Oral Ulceration	LGD, BST Session	OSCE, MCQ's, SEQ's, Morning report, Mini CEX
Dysphagia	LGD, BST Session	OSCE, MCQ's, SEQ's, Morning report, Mini CEX
Nausea Vomiting Dyspepsia and Constipation	LGD, BST Session	OSCE, MCQ's, SEQ's, Morning report, Mini CEX
1. Esophagus Dysphagia with special reference to a) CA Oesophagus b) Gerd c) Achalasia d) Candidiasis of Oral Cavity and Oesophagus	LGD, BST Session	MCQs, SAQ's, Morning report, Mini CEX
2. Peptic ulcer and Gastritis.	LGD, BST Session	MCQs, OSCE, SAQ's, Morning report, Mini CEX

3. Malabsorption Syndromes • Sprue Tropical • Coeliac Disease	LGD, BST Session	MCQs, SAQ's, Morning report, Mini CEX
4. Inflammatory bowel diseases • Ulcerative colitis • Crohn's disease	LGD, BST Session	MCQs, OSCE, SAQ's, Morning report, Mini CEX
5. Irritable bowel syndrome (IBS). • Ascites • Jaundice • Congenital Hyperbilirubinemia • Gilbert Syndrome • Dubin Johnson Syndrome • Rotor Syndromes • Haemolytic • Obstructive • Hepatitis • Viral, Acute and chronic, Toxic, Drugs	LGD, BST Session	MCQs, SAQ's, Morning report, Mini CEX
6. Auto Immune Hepatitis	LGD, BST Session	MCQs, SAQ's, Morning report, Mini CEX
7. Cirrhosis of Liver	LGD, BST Session	MCQs, OSCE, SAQ's, Morning report, Mini CEX
8. Hepatic Encephalopathy	LGD, BST Session	MCQs, OSCE, SAQ's, Morning report, Mini CEX
9. Carcinoma Liver and Transplant	LGD, BST Session	MCQs, OSCE, SAQ's, Morning report, Mini CEX
10. Acute and Chronic Pancreatitis	LGD, BST Session	MCQs, SAQ's, Morning report, Mini CEX
11. Upper GI Bleeding, Lower GI Bleeding	LGD, BST Session	MCQs, OSCE, Morning report, Mini CEX
12. Drugs Contraindicated in Liver Diseases	LGD, BST Session	MCQ's Morning report, Mini CEX

4.HEMATOLOGY

Placement in curriculum: Year 04
Duration: Weeks

Topic	Teaching Methodology	Assessment Methodology
Lassitude / Dyspnoea	LGD	OSCE, MCQ's, SAQ's, Morning report, Mini CEX
Infections	LGD, BST Session	OSCE, MCQ's, Morning report, Mini CEX
Gum hypertrophy bleeding tendency, bruising purpura lymph Node, enlargement	LGD, BST Session	OSCE, MCQ's, SAQ's, Morning report, Mini CEX
Anaemias • Classification • Iron deficiency • Megaloblastic B-12 deficiency Folic acid deficiency • Anaemia of chronic disorder • Haemolytic anaemia - Hereditary Acquired Intra-Corpuscular Extra – Corpuscular • Aplastic anaemia	LGD, BST Session	MCQs, OSCE, Morning report, Mini CEX
Haemoglobinopathies. • Sickle cell syndromes • Thalassaemia	LGD, BST Session	MCQs, OSCE, Morning report, Mini CEX

Myeloproliferative diseases. - Chronic myeloid leukaemia (CML) - Polycythaemia vera - Myelofibrosis - Essential thrombocytosis	LGD, BST Session	MCQs, OSCE, Morning report, Mini CEX
Leukaemias. - Acute - Chronic	LGD, BST Session	MCQs, Morning report, Mini CEX
Lymphomas - Non-Hodgkin's - Hodgkin's	LGD, BST Session	MCQs, OSCE, SAQ's, Morning report, Mini CEX
Blood groups and blood transfusion	LGD, BST Session	MCQs, Morning report, Mini CEX
Bone marrow transplantation	LGD, BST Session	MCQs, Morning report, Mini CEX
Clotting disorders. - Thrombocytopenia Decreased production. - Increased destruction	LGD, BST Session	MCQs, Morning report, Mini CEX
- Von Willebrand's disease. - Vessel wall disorders. - Disorders of coagulation. Haemophilia Vitamin K deficiency. Disseminated Intravascular coagulation (DIC).	LGD, BST Session	MCQs, Morning report, Mini CEX
Anticoagulants Therapy - Heparin - Oral (warfarin etc.) - Antiplatelet drugs	LGD, BST Session	MCQs, Morning report, Mini CEX

5. DERMATOLOGY

Placement in curriculum: Year 4 (Part of Module 03)
Duration: Weeks

Psoriasis and Lichen planus	LGD, BST Session	OSCE, MCQ's,
Bullous disorders	LGD, BST Session	OSCE, MCQ's,
Pigmentary disorders	LGD, BST Session	OSCE,
Disorders of nails	LGD, BST Session	OSCE,
Disorders of hairs	LGD, BST Session	MCQ's,
Sexually transmitted diseases	LGD, BST Session	MCQ's,

FINAL YEAR MBBS
MEDICINE & ALLIED SYLLABUS

1.CENTRAL NERVOUS SYSTEM

Placement in Year 05
Duration: Weeks

Topic	Teaching Methodology	Assessment Methodology
Headache	LGD	OSCE, MCQ's Morning report, Mini CEX
Coma / Confusional State, Paralysis	LGD, BST Session	OSCE, MCQ's, SAQ's, Morning report, Mini CEX
Gait and Speech abnormalities	BST Session	OSCE, Morning report, Mini CEX
Tremor, Fasciculation's, Athetosis, Chorea	LGD, BST Session	OSCE, MCQ's, Morning report, Mini CEX
Syncope/ Dizziness, Vertigo, Deafness, Blindness, Nystagmus Examination	BST Session	OSCE, MCQ's, Morning report, Mini CEX
Numbness, Tingling, Sensory loss, Rigidity Examination	BST Session	OSCE, Morning report, Mini CEX
Behaviour, Memory, Confusional States Dementia	LGD, BST Session	OSCE, MCQ's, Morning report, Mini CEX
Convulsion / Fits	LGD, BST Session	OSCE, MCQ's, SAQ's, Morning report, Mini CEX
Investigations	LGD, BST Session	MCQs, Morning report, Mini CEX

Epilepsy	LGD, BST Session	MCQs, OSCE, SAQ's, Morning report, Mini CEX
Cerebrovascular diseases (stroke) - Ischemic – Embolism/Infarction. - Haemorrhage – Intra-Cerebral / Subarachnoid	LGD, BST Session	MCQs, OSCE, SAQ's, Morning report, Mini CEX
Dementia and Alzheimer's disease.	LGD, BST Session	MCQs, Morning report, Mini CEX
Parkinson's disease and other movement disorders	LGD, BST Session	MCQs, OSCE, SAQ's, Morning report, Mini CEX
Motor neuron disease	LGD, BST Session	MCQs, Morning report, Mini CEX
Multiple sclerosis	LGD, BST Session	MCQs, OSCE, SAQ's, Morning report, Mini CEX
Meningitis. - Bacterial. - Tuberculosis - Brain abscess - Viral meningitis and encephalitis	LGD, BST Session	MCQs, OSCE, SAQ's, Morning report, Mini CEX
Cranial nerve disorders - Transient mono-ocular blindness (Amaurosis fugax). - Trigeminal neuralgia. - Facial palsy (Bell's). - Vertigo, nystagmus	LGD, BST Session	MCQs, OSCE, SAQ's, Morning report, Mini CEX
Spinal cord disorders. - Spinal cord compression, paraplegia, quadriplegia - Myelitis. - Spondylosis. Syringomyelia and Syringobulbia	LGD, BST Session	MCQs, OSCE, SAQ's, Morning report, Mini CEX
Peripheral nerve disorders. Peripheral polyneuropathy	LGD, BST Session	MCQs, OSCE, SAQ's, Morning report, Mini CEX

• G.B.Syndrome Mononeuritis multiplex.		
Space Occupying Lesions of brain and spinal cord	LGD, BST Session	MCQs, OSCE, SAQ's, Morning report, Mini CEX
Myopathies, Myasthenia Gravis	LGD, BST Session	MCQs, OSCE, SAQ's, Morning report, Mini CEX

2.ENDOCRINOLOGY

Placement in Year 05
Duration: Weeks

Topic	Teaching Methodology	Assessment Methodology
Anterior pituitary. - Growth hormone disorders - Acromegaly - Gigantism. - Short stature - Infertility	LGD, BST Session	MCQs, OSCE, SAQ's, Morning report, Mini CEX
Diseases of hypothalamus and pituitary. - Empty sella syndrome - Diabetes insipidus Syndrome of inappropriate ADH secretion (SIADH).	LGD, BST Session	MCQs, Morning report, Mini CEX
Thyroid gland. - Hyperthyroidism (thyrotoxicosis) - Hypothyroidism (myxedema, cretinism) - Interpretation of thyroid functions tests	LGD, BST Session	MCQs, OSCE, SAQ's, Morning report, Mini CEX

Adrenal Gland. • Cushing Syndrome • Aldosteronism Primary/Secondary. • Hirsutism. • Addison's disease, Acute Addisonian crisis • Pheochromocytoma	LGD, BST Session	MCQs, OSCE, SAQ's, Morning report, Mini CEX
Diabetes mellitus (detail) and Hypoglycaemic states	LGD, BST Session	MCQs, OSCE, SAQ's, Morning report, Mini CEX
Testes (brief) • Sexual precocity • Heterosexual precocity	LGD, BST Session	MCQs, Morning report, Mini CEX
Gynaecomastia	LGD, BST Session	MCQs, Morning report, Mini CEX
Multiple endocrine neoplasia (brief). • Type I • Type II	LGD, BST Session	MCQs, SAQ's, Morning report, Mini CEX

3. INFECTIOUS DISEASES

Placement in Year 05
Duration: Weeks

Topic	Teaching Methodology	Assessment Methodology
A. Clinical Syndromes 1. Sepsis and Septic shock, Meningococcemia 2. Acute infectious diarrhoeal diseases and Bacterial food poisoning. 3. Hospital acquired infections.	LGD, BST Session	MCQs, Morning report, Mini CEX
B. Common disease syndromes caused by the following bacteria and their drug therapy. 1. Pneumococci (Streptococcus Pneumoniae). 2. Staphylococci. 3. Streptococci. 4. Hemophilisinfluenzae. 5. Shigella. 6. Gonococci. 7. Pseudomonas.	LGD, BST Session	MCQs, SAQ's, Morning report, Mini CEX
C. Following diseases in detail. 1. Tetanus. 2. Enteric fever/Salmonellosis. 3. Cholera. 4. Tuberculosis. 5. Leprosy.	LGD, BST Session	MCQs, OSCE, SAQ's, Morning report, Mini CEX

6. Amoebiasis/Giardiasis/Trichomoniasis. 7. Malaria. 8. AIDS. 9. Rabies. 10. Infectious mononucleosis.		
D. Helminthic infestations • Ascariasis • Hookworm • Whipworm (Trichuriasis) • Threadworm (Enterobiasis) • Taenia (tapeworm)	LGD, BST Session	MCQs, Morning report, Mini CEX
Pyrexia of unknown origin (PUO)	LGD, BST session	OSCE, MCQ's Morning report, Mini CEX

4.NEPHROLOGY

Placement in Year 05
Duration: Weeks

Topic	Teaching Methodology	Assessment Methodology
Lumbar pain, Anuria, Oliguria, Haematuria, Nocturia	LGD, BST Session	OSCE, MCQ's, SEQ's, Morning report, Mini CEX
Urinary incontinence Dysuria, Frequency of Micturition, Urgency, Pyuria, Urinary retention	LGD, BST Session	OSCE, MCQ's Morning report, Mini CEX
Pelvic pain, Menorrhagia, Oligomenorrhea,	LGD, BST Session	OSCE, MCQ's, Morning report, Mini CEX
Genital ulceration, Impotence, Infertility	LGD, BST Session	OSCE, MCQ's, SEQ's, Morning report, Mini CEX
Acute Kidney Injury. (Introduction)	LGD, BST Session	MCQs, OSCE, SAQ's, Morning report, Mini CEX
Chronic renal failure to dialysis	LGD, BST Session	MCQs, OSCE, SAQ's, Morning report, Mini CEX
Nephrotic syndrome. (Renal Transplant)	LGD, BST Session	MCQs, OSCE, SAQ's, Morning report, Mini CEX
Nephritic syndrome	LGD, BST Session	MCQs, OSCE, SAQ's, Morning report, Mini CEX

Urinary tract infections	LGD, BST Session	Morning report, Mini CEX
Dialysis (detail).	LGD, BST Session	MCQs, Morning report, Mini CEX
Drugs and kidney (brief) a) Causing Renal disease. - Analgesic nephropathy. - Lead, Uric acid, Hypercalcemia, Radiation & Hypersensitivity nephropathy. b) Drugs contra indicated in Renal insufficiency and Drugs to be used with caution in Renal Disease.	LGD, BST Session	MCQs, Morning report, Mini CEX
Polycystic kidneys (brief).	LGD, BST Session	MCQs, Morning report, Mini CEX
Renal artery stenosis (brief).	LGD, BST Session	MCQs, Morning report, Mini CEX
Renal vein thrombosis (brief).	LGD, BST Session	MCQs, Morning report, Mini CEX
Hemolytic uremic syndrome (brief).	LGD, BST Session	MCQs, Morning report, Mini CEX

5.METABOLIC DISORDERS & EMERGENCY POISONING

Placement in Year 05
Duration: Weeks

Topic	Teaching Methodology	Assessment Methodology
Weight gain/Obesity	LGD	Morning report, MCQ's
Weight loss/anorexia	LGD, BST session	OSCE, MCQ's Morning report, Mini CEX
Definition, causes and some basic information		
Hyperlipidaemia (brief)	LGD, BST Session	MCQs, Morning report, Mini CEX
Hemochromatosis (brief).	LGD, BST Session	MCQs, Morning report, Mini CEX
Porphyria's (brief).	LGD, BST Session	MCQs, Morning report, Mini CEX
Wilson's disease (brief).	LGD, BST Session	MCQs, Morning report, Mini CEX
Gout and Hypercalcemia	LGD, BST Session	MCQs, OSCE, SAQ's, Morning report, Mini CEX
Storage diseases. • Lipid. Leukodystrophies Nia Pick disease. Gaucher's disease. • Glycogen.	LGD, BST Session	MCQs, Morning report, Mini CEX

Fabry's disease		
Hereditary Connective tissue disorders (Brief) • Osteogenesis imperfecta. • Ehler's Danlos syndrome. • Chondrodysplasias. • Marfan syndrome. • Alport syndrome.	LGD, BST Session	MCQs, Morning report, Mini CEX
Disorders of amino acid metabolism and storage (Brief) • Homocystinuria. • Alkaptonuria. • Hartnup disease. Renal glycosuria	LGD, BST Session	MCQs, Morning report, Mini CEX
Poisoning • General Measures. • Specific Management.	LGD	MCQs, SEQ
Snake Bite	LGD	MCQs, SEQ

3rd YEAR MBBS
CLINICAL ROTATION SCHEDULE

During bed side teaching sessions the students will have case based discussion. They will be given approach to the history, examination and diagnosis of the common cases presented in inpatients and outpatients departments. They will be taught clinical methods for examination of all systems followed by hands on revision by the students themselves.

BST SESSIONS			
WEEK	HISTORY TAKING (12:00 – 13:00)	CLINICAL METHODS (13:00 - 1500)	OSCE
01	Gastroenterology		OSCE
02	Respiratory System		OSCE
03	Cardiovascular System		OSCE
04	Central Nervous System		OSCE
05	Rheumatology & thyroid		OSCE
06	General Physical Examination		OSCE
07	Hands on Revision		OSCE
08	End Block Exams		OSCE

4th YEAR MBBS
CLINICAL ROTATION SCHEDULE

Students of year 4 will be rotate in each specialty for 2 weeks. In the last week of the clinical session internal assessment will be done by End Block OSCE. Dermatology & Psychiatry Department will provide internal assessment of the students by themselves. Daily routine that will be followed by students is given in the following table.

1200 – 1300	1300 – 1500
CASE BASED DISCUSSION	CLINICAL SKILL SESSION

CASE BASED DISCUSS TOPICS

1. CENTRAL NERVOUS SYSTEM

Topic	Teaching Methodology	Assessment Methodology
Cerebrovascular accident	CBD	MCQ's
Paraplegia	CBD	MCQ's
Polyneuropathy	CBD	MCQ's
Muscular dystrophies or Motor neurone disease	CBD	MCQ's
Parkinsonism	CBD	MCQ's
Meningitis	CBD	MCQ's
Tetanus	CBD	MCQ's

Hemiplegia	CBD	MCQ's
Facial Palsy	CBD	MCQ's

2. GASTROENTEROLOGY

Topic	Teaching Methodology	Assessment Methodology
Acid peptic disease	CBD	MCQs, OSCE
Tender Hepatomegaly, Hepatosplenomegaly, Jaundice	CBD	MCQs, OSCE
Chronic liver disease	CBD	MCQs, OSCE
Acute and Chronic diarrhea	CBD	MCQs, OSCE
Variceal bleeding and peptic ulcer bleeding	CBD	MCQs, OSCE
Abdominal Koch's infection	CBD	MCQs, OSCE

3. CARDIOVASCULAR SYSTEM

Topic	Teaching Methodology	Assessment Methodology
Systemic hypertension	CBD	MCQs, OSCE
Ischaemic Heart diseases	CBD	MCQs, OSCE

Congestive cardiac failure	CBD	MCQs, OSCE
Valvular diseases and Infective Endocarditis	CBD	MCQs, OSCE

4. PULMONOLOGY

Topic	Teaching Methodology	Assessment Methodology
Bronchial asthma	CBD	MCQs, OSCE
Pleural effusion	CBD	MCQs, OSCE
Pneumonia	CBD	MCQs, OSCE
Haemoptysis	CBD	MCQs, OSCE

5. HAEMATOLOGY

Topic	Teaching Methodology	Assessment Methodology
Anaemia	CBD	MCQs, OSCE
Bleeding disorders	CBD	MCQs, OSCE
Myeloproliferative or lymphoproliferative diseases	CBD	MCQs, OSCE

6. NEPHROLOGY

Topic	Teaching Methodology	Assessment Methodology
Nephrotic syndrome, Nephritic Syndrome	CBD	MCQs, OSCE

Acute Kidney Injury / failure	CBD	MCQs, OSCE
Chronic renal failure	CBD	MCQs, OSCE

7. DERMATOLOGY

Topic	Teaching Methodology	Assessment Methodology
Dermatological manifestation of systematic ailment.	CBD	MCQs, OSCE
Psoriasis.	CBD	MCQs, OSCE

8. PSYCHIATRY

Topic	Teaching Methodology	Assessment Methodology
Depression	CBD	MCQs, OSCE
Anxiety Disorder	CBD	MCQs, OSCE
Schizophrenia.	CBD	MCQs, OSCE

5th YEAR MBBS
CLINICAL ROTATION SCHEDULE

The total rotation will comprise of 12 weeks. The weekly schedule and daily routine in table 1 & 2.

TABLE- I DAILY ROTATION OF YEAR 05 STUDENTS IN MORNING

1100 – 1100hrs	1100 – 1200hrs	1200 – 1300hrs	1300hrs – 1330hrs	1330 – 1500hrs
Morning report	OPD & case discussion with preceptors.	Case Base Discussion	Break	Clinical Skills Session.

TABLE- II WEEK WISE SCHEDULE FOR CLINICAL SKILLS SCENERIO

WEEK	TOPICS
01	General Physical Examination
02	Pulmonology
03	Cardiovascular System
04 & 05	Central Nervous System
06	Rheumatology
07	Thyroid / Endocrinology
08	Nephrology
09	Investigation
10	Data interpretation

11	Revision.
12	End Block written exams & OSCE

CASE BASED DISCUSSION TOPICS

1. RHEUMATOLOGY

Topic	Teaching Methodology	Assessment Methodology
Rheumatoid arthritis, Osteoarthritis	CBD	MCQs, OSCE
Systemic Lupus Erythematosus	CBD	MCQs, OSCE

2. ENDOCRINOLOGY

Topic	Teaching Methodology	Assessment Methodology
Diabetes mellitus	CBD	MCQs, OSCE
Thyroid diseases	CBD	MCQs, OSCE
Cushing's disease	CBD	MCQs, OSCE

3. INFECTIOUS DISEASES

Topic	Teaching Methodology	Assessment Methodology
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Malaria, Typhoid	CBD	MCQs, OSCE
Infective endocarditis, Rheumatic Fever	CBD	MCQs, OSCE

4. HAEMATOLOGY

Topic	Teaching Methodology	Assessment Methodology
Anaemia	CBD	MCQs, OSCE
Bleeding disorders	CBD	MCQs, OSCE
Myeloproliferative or lymphoproliferative diseases	CBD	MCQs, OSCE

5. PULMONOLOGY

Topic	Teaching Methodology	Assessment Methodology
Pulmonary tuberculosis	CBD	MCQs, OSCE
Chronic obstructive airway disease	CBD	MCQs, OSCE
Bronchogenic Carcinoma	CBD	MCQs, OSCE

6. METABOLIC DISORDER

Topic	Teaching Methodology	Assessment Methodology
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Hemachromatosis	CBD	MCQs, OSCE
Wilson's disease	CBD	MCQs, OSCE
Porphyria	CBD	MCQs, OSCE

SCHEDULE OF TEACHING IN EVENING

Each student will have to observe at least 10 evening duties in wards followed by morning report next day. Each student will have to visit at least 05 days in emergency room in evening.

ABBREVIATIONS

LGD	Large Group Discussion
BST	Bed Side Teaching
Mini CEX	Mini Clinical Evaluation Exercise
MCQ	Multiple Choice Questions
SEQ / SAQ	Short Essay Questions / Short Answer Questions
OSCE	Objective Structured Clinical Evaluation

General Surgery & Allied MBBS Curriculum

General Surgery & Allied
Placement in curriculum: Year 3- 5
Subject : General Surgery

Sr. No	Topics	Page No.
1	Introduction/Rationale	04
2	1 st Year Lectures	06
3	2nd Year Lectures	07
4	3 rd Year Lectures	08
5	4th Year Lectures	28
6	5th Year Lectures	64
7	Clinical Teaching 3rd year	117
8	Clinical Teaching 4th year	121

Introduction/ Rationale	Surgery is a specialty that deals with management of diseases generally through operative means. It includes both manual and instrumental techniques. .One special aspect is perioperative care, that starts from decision to operate, fitness of patient to get operated, consent taking , Preop preparation through operation to postoperative care. Students of surgery need to learn knowledge of diseases, their presentation, diagnosis, investigation and management and get well versed with all perioperative care.
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	Dealing with critical situations, and managing emergencies is always required of a graduate in surgery
Outcomes	At the end of the module the students should be able to • Describe common surgical pathologies of the abdominal wall and retroperitoneum • Identify and recognize the symptoms and signs common surgical conditions • Describe and select appropriate diagnostic testing • Identify appropriate treatment options, and their indications and contraindications • Diagnose and manage common surgical diseases • Identify and manage surgical emergencies • select appropriate investigative tools • adapt their skill in the context of different basic surgical disease related examinations • identify and manage risk • recognize the need to refer patients to other professionals • communicate information to patients (and their family) about procedures, outcomes, and risks associated with surgery in ways that encourage their participation in informed decision making (consent)

OVERVIEW OF GENERAL SURGERY CURRICULUM

1st Year				
Topic	Discipline	Learning Objective	Learning Strategy	Assessment Tool
Applied Anatomy of Femoral Hernia	Surgery	Review the anatomy of Femoral Canal Describe the applied anatomy of Femoral Hernia	Interactive lecture	MCQs
Applied Anatomy of Injuries of Knee Joint	Orthopedics	Describe the applied anatomy of knee joint with special reference to soft tissue injuries symptoms and signs	Interactive lecture	MCQs
Applied Anatomy of Varicose Veins	Surgery	Define Vribose Veins Describe the applied anatomy of Varicose Veins	Interactive lecture	MCQs
2nd Year				
Topic	Discipline	Learning Objective	Learning Strategy	Assessment Tool
Applied Anatomy of Benign Prostatic Hyperplasia & Prostatic Carcinoma	Urology	Describe the applied anatomy of Prostate gland with reference to the clinical features of BPH and Prostatic Ca	Interactive lecture	MCQs
Applied Anatomy of Fractures of Skull	Surgery	Describe the applied anatomy of fractures of skull.	Interactive lecture	MCQs
Applied Anatomy of Complication of Thyroidectomy	Surgery	Describe the anatomy of thyroid gland highlighting the aspects relevant to structures at risk during thyroidectomy.	Interactive lecture	MCQs

3rd Year
Duration: Weeks

Topic	Discipline	Learning Objective	Learning Strategy	Assessment Tool
1. Introduction to trauma and Orthopedics	Orthopedics	• Define Trauma • Describe Scope of orthopedics in trauma	Interactive Lecture	MCQs
2. Metabolic Response to Injury	Surgery	• Describe the classical concepts of homeostasis • Enlist Mediators of the metabolic response to injury • Describe Physiochemical and biochemical changes that occur during injury and recovery • Describe Changes in body composition that accompany surgical injury • Enumerate avoidable factors that compound the metabolic response to injury • Describe Concepts behind optimal perioperative care	Interactive Lecture	MCQs

3. Shock I	Surgery	- Describe the pathophysiology of shock and ischaemia–reperfusion injury - Identify different patterns of shock - Describe The use of blood and blood products and the benefits and risks of blood transfusion	Interactive Lecture	MCQs
4. Shock II	Surgery	- Describe the principles and priorities of resuscitation - Describe the appropriate monitoring and endpoints of resuscitation	Interactive Lecture	MCQs
5.Principles of fracture Treatment	Orthopedics	- Define fracture and dislocation - Describe different Mechanism of Injury leading to fractures - Describe clinical presentation of fractures - Enumerate Investigations in a case of fracture - Outline Treatment of fractures	Interactive Lecture	MCQs
6. Haemorrhagic Shock & Blood Transfusion	Surgery	- Describe the use of blood and blood products - Enlist the indications of blood and blood products transfusion - What are the complications of blood and blood components transfusion. - Describe the management of Acute Hemolytic transfusion Reaction.	Interactive Lecture	MCQs
7. Wound Healing & Wound Care- acute and chronic:	Surgery	- Describe Normal healing of wounds - Enlist the local and general causes of impaired wound healing. - Describe the management of wounds of different types, of different structures and at different sites - Describe the the variety of scars and their treatment	Interactive Lecture	MCQs

8. infections I	Surgery	• Enlist The factors that determine whether a wound will become infected • Describe the classification of sources of infection and their severity • Enlist the indications for and choice of prophylactic antibiotics • Describe the characteristics of the common surgical pathogens and their sensitivities • Describe the spectrum of commonly used antibiotics in surgery and the principles of therapy • Outline the misuse of antibiotic therapy with the risk of resistance [such as methicillin-resistant <i>Staphylococcus aureus</i> (MRSA)] and emergence (such as <i>Clostridium difficile</i> enteritis) • Define Koch's postulates	Interactive Lecture	MCQs
9. Surgical Site infections II	Surgery	• Outline the management of abscesses • Summarise the importance of aseptic and antiseptic techniques and delayed primary or secondary closure in contaminated wounds • Outline the causes of reduced resistance to infection (host response) • Define different surgical site infections • Describe the basic precautions to take to avoid surgically relevant health care-associated infections • Describe Synergistic Spreading Gangrene(Necrotising fasciitis)	Interactive Lecture	MCQs

10. Primary Trauma Care	Orthopedics	- Identify the sequence of priorities in the early assessment of the injured patient - Describe the principle of triage in immediate management of the injured patient - Describe the concepts of injury recognition prediction based on the mechanism and energy of injury - Apply the principles of primary and secondary surveys in the assessment and management of trauma for a given scenario.	Interactive Lecture	MCQs
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3rd Year Duration: Weeks				
Topic	Discipline	Learning Objective	Learning Strategy	Assessment Tool
11. Fluid and Electrolyte Balance	Surgery	- Describe the different types of I/V fluids in surgical Practice - Describe the fluids and electrolytes requirements in the pre and postoperative patient	Interactive Lectures	MCQS
12. Nutrition in a Surgical Patient	Surgery	- Define malnutrition - Describe the causes of malnutrition in the surgical patient - Describe the consequences of malnutrition in the surgical patient - Describe the nutrition requirements of the surgical patient and the nutritional consequences of the intestinal resection - Describe different methods of providing nutritional support and their complications	Interactive Lectures	MCQS

13. BURNS I	Surgery	• Define burns • Enlist types of burns • Assess severity of burns on images using rule of nine • Calculate the fluid requirement of burns using Parkland formula • Enlist criteria of monitoring a patient with burns.	Interactive Lectures	MCQS
14. BURNS II	Surgery	• Describe initial management of a patient with burns. • Describe measures to provide nutritional support for a patient with burns. • Enlist early complications of burns. • Enlist late complications of burns (hypertrophic scar, keloid scar). • Employ management of a burn patient in given scenario.	Interactive Lectures	MCQS
15. Malignant Skin Lesions	Surgery	• Define malignant melanoma (MM). • Enlist common locations for MM • Enlists features in naevus suggestive of malignant melanoma change • Describe clinical features of MM • Describe investigations for MM • Describe staging of MM • Describe treatment of MM • Describe Breslow thickness for prognosis. • Define Squamous cell Carcinoma (SCC) • Describe the Clinical features of SCC. • Describe investigations in SCC • Outline the treatment options of SCC. • Define Basal cell Carcinoma (BCC) • Describe the Clinical features of BCC. • Describe investigations in BCC • Outline the treatment options of BCC.	Interactive Lectures	MCQS

16. Infections of Bones and Joints	Orthopedics	• Define osteomyelitis and Septic Arthritis • Describe the etiology of infections in bones and joints • Describe the features in the history and examination of infection of bone and joint • Outline the investigations in cases of osteomyelitis and Septic Arthritis • Describe treatment of infection of bone and joint	Interactive Lectures	MCQS
17. Head and Spine Injury	Orthopedics	• Describe the physiology of cerebral blood flow of raised intracranial pressure • Describe the management of head injury and prevention of secondary brain injury • Describe the diagnosis and management of spontaneous intracranial bleeding including subarachnoid haemorrhage • Outline the assessment of spinal trauma • Describe the pathophysiology and types of spinal cord Injury • Describe the basic management of spinal trauma and the major pitfalls • Describe the prognosis of spinal cord injury & factors affecting functional outcome.	Interactive Lectures	MCQS
18. Neck Swellings	Surgery	• Describe the diagnosis and emergency treatment of airway obstruction • Describe the clinical features and management of various neck swellings •	Interactive Lectures	MCQS
19. Oropharyngeal Carcinoma	Surgery	• Describe the clinical features of oropharyngeal cancer • Describe the investigation and treatment of patients with oropharyngeal cancer	Interactive Lectures	MCQS

3rd Year
Duration: Weeks

Topic	Discipline	Learning Objective	Learning Strategy	Assessment Tool
20. Disorders of Salivary Glands	Surgery	- Review surgical anatomy of the salivary glands - Describe the presentation, pathology and investigation of salivary gland disease - Outline the medical and surgical treatment of stones, infections and tumours that affect salivary glands	Interactive Lecture	MCQs
21. Thyroid I	Surgery	- Review the physiology and investigation of thyroid and parathyroid function - Select appropriate investigations for in different cases of thyroid swellings - Describe the clinical features of Hyper and hypothyroidism - Describe the management of thyrotoxicosis and thyroid failure	Interactive Lecture	MCQs
22. Thyroid II	Surgery	- Enumerate the indications of thyroidectomy. - Describe thyroid lobectomy - Describe the complications of thyroid surgery - Describe the management of thyroid cancer	Interactive Lecture	MCQs

23. Parathyroid Gland	Surgery	• Describe the presentation, investigation and management of hyperparathyroidism • Describe the risks and complications of parathyroid surgery	Interactive Lecture	MCQs
24. Adrenal Gland Disorders	Surgery	• Summarize the anatomy and function of the adrenal glands • Outline the diagnosis and management of adrenal endocrine disorders • Describe the role of surgery in the management of adrenal endocrine disorders	Interactive Lecture	MCQs
25. Benign Breast Conditions	Surgery	• Enumerate common problems afflicting Nipple Areola complex. • Enumerate causes of nipple retraction • Describe treatment of simple nipple inversion. • Enumerate causes of cracked nipple. • Describe treatment of cracked nipple. • Classify nipple discharge. • Enlist causes of nipple discharge. • Describe surgical treatment for nipple discharge. • Enlist clinical features differentiating between benign and malignant involvement of nipple. • Define Paget's disease. • Enlist investigations helpful in diagnosis of Paget's disease • Classify benign breast diseases. • Describe congenital abnormalities of breast. • Describe injuries of the breast. • Describe clinical importance of injuries and congenital anomalies of the breast. • Enumerate treatment of congenital anomalies and injuries of the breast	Interactive Lecture	MCQs

		• Define duct ectasia • Describe pathogenesis of duct ectasia. • Describe clinical features of duct ectasia. • Describe treatment options for duct ectasia.		
26. Malignant Breast Disease	Surgery	• Enumerate clinical features of ca breast • Correlate clinical features of ca breast with anatomy and pathogenesis • Describe components of tripple assessment • Enlist features differentiating benign from malignant lumps in breast. • Describe various methods of biopsy for confirmation of diagnosis in ca breast. • Correlate spread of ca breast with pathology and clinical presentation. • Describe TNM classification of ca breast. • Describe the Stage of ca breast on the basis of provided clinical data • Enumerate indications of breast conserving surgery in ca breast. • Enlist important points in post-op care of modified radical mastectomy patient • Describe complications after MRM • Define adjuvant and neo- adjuvant treatment for ca breast • Enumerate drugs used for chemotherapy of ca breast • Explain role of radiotherapy in ca breast • Enlist strategies for breast reconstruction	Interactive Lecture	MCQs

27. Arterial Disorders	Surgery	• Describe the nature and associated features of occlusive arterial disease • Outline the investigations and treatment options for occlusive arterial disease • Describe the principles of management of the severely ischaemic limb • Describe the nature and presentation of aneurysmal disease, particularly of the abdominal aorta • Outline the investigation and treatment options for aneurysmal disease • Describe the arteritides and vasospastic disorders.	Interactive Lecture	MCQs
28. Venous Disorders	Surgery	• Summarize the Venous anatomy and the physiology of venous return • Outline the pathophysiology of venous disease • Describe the clinical features of varicose veins • Describe the management of varicose veins • Define Deep venous thrombosis (DVT) • Describe the clinical features and investigations of DVT • Describe the pathophysiology of venous ulceration • Describe the management of venous ulceration	Interactive Lecture	MCQs

4th Year**Duration: Weeks**

Topic	Discipline	Learning Objective	Learning Strategy	Assessment Tool
1.1 THORACIC OUTLET SYNDROME	Surgery	Define thoracic outlet syndrome Enumerate causes of TOS Outline clinical features of TOS Enlist investigations for TOS Describes management options for TOS	Interactive Lecture	MCQ
Intracranial Infections (cerebral abscess, subdural empyema)	Surgery	Define Cerebral abscess Describe the pathogenesis of cerebral abscess Enlist clinical features of cerebral abscess Outline the plan of management of cerebral abscess Define Subdural Empyema Enlist clinical features of Subdural empyema. Describe pathogenesis of subdural empyema Outline treatment plan for Subdural empyema	Interactive Lecture	MCQ
Head Injury-1	Surgery	Describe brain edema Describe the regulation of cerebral blood flow Describe the blood cerebrospinal fluid and blood brain barriers Define primary brain injury	Interactive Lecture	MCQ

		Define secondary brain injury Enlist causes of secondary brain injury Enlist clinical features of head injury		
Head Injury-2	Surgery	Describe Glasgow coma score Classify head injury based on GCS Describe clinical examination in a patient of head injury Enlist indications of CT in head injury according to NICE guidelines Describe appearances of CT in intracranial hematomas Outline management plan in head injury	Interactive Lecture	MCQ
Tumors of CNS and peripheral nervous system glioma meningioma astrocytoma	Surgery	Describe the clinical features of these tumours Enumerate the diagnostic investigations of these tumours Enlist the treatment options of these tumours	Interactive Lecture	MCQ

SKIN				
Topic	Discipline	Learning Objective	Learning Strategy	Assessment Tool
Cold injury	Surgery	Define cold injuries and its types. Describe mechanisms of cold injury. Enumerate the etiological factors for cold injury. Outline the plan of management in case of frostbite. Enlist complications of hypothermic injuries	Interactive Lecture	MCQ
Grafts & flaps	Surgery	Describe anatomy of skin in relation to the types of skin coverage used in plastic and reconstructive surgery. Enumerate the principles of plastic surgery. Define grafts Classify grafts Describes the advantages and disadvantages of each type of graft Enlist synergistic injuries Define flaps	Interactive Lecture	MCQ

		Classify flaps Describes the advantages and disadvantages of each type of flap Enumerates skin substitutes Explains the concept of tissue expansion with advantages and disadvantages. Explains the concept of vacuum-assisted closure. Enumerates the implants and prosthetics used in plastic surgery.		
Infections	Surgery	Define cellulitis. Enlist characteristics of cellulitis. Enumerate the causative organism. Outline management plan. Define necrotizing fasciitis. Enlist the predisposing conditions. Enumerate the causative organisms. Describe the clinical symptoms and signs. Describe the management of necrotizing fasciitis.	Interactive Lecture	MCQ
Surgical site infections	Surgery	Define surgical site infections. Enlist predisposing factors for increased risk of surgical site infections. Enlist causes of reduced host resistance to infection. Classify sources of infection. Describe clinical features of major and minor surgical site infections. Describe sequelae of uncontrolled surgical infections (SIRS, MODS, MSOF). Describe treatment of surgical infections. Describe prophylaxis for surgical site infections. Classify surgical wounds according to the potential for infection. Enlist principles of anti- microbial treatment in SSI. Outline management plan of surgical site infections.	Interactive Lecture	MCQ
Gas Gangrene	Surgery	Define gas gangrene Enumerate causative organism. Enlist the predisposing factors. Describe the pathogenesis. Enlist the clinical features. Enlist the investigations required in a patient of gas gangrene. Outline management plan.	Interactive Lecture	MCQ
Cysts & others	Surgery	Define a cyst Enumerate types of cysts and its clinical features.	Interactive Lecture	MCQ

		Enlist the relevant facts in history of a patient with a cyst. Describe the principles of clinical examination of a patient with a cyst Enumerate relevant investigations of a patient with a cyst. Enlist different treatment options in a patient with a cyst.		
Ingrowing toe nail	Surgery	Describe etiological factors clinical features and management of a Case of ingrowing toenail Describe surgical options in a case of IGTN.	Interactive Lecture	MCQ

RESPIRATORY				
Topic	Discipline	Learning Objective	Learning Strategy	Assessment Tool
Tension Pneumothorax	Surgery	Define Pneumothorax Describe mechanism of tension pneumothorax (T.P.) Enlist the causes of T.P. Describe the clinical of features of tension pneumothorax (signs & symptoms) Outline the steps of treatment of T.P.	Interactive Lecture	MCQ
Thoracic Trauma	Surgery	Enlist the significance of thoracic trauma in RTA mortality. Enlist the causative factors for breathing difficulty in chest trauma patients. Summarize the different thoracic injuries. Enumerate the sources of probable bleeding in a chest trauma. Describe the initial management of a patient with chest trauma. Outline the management of thoracic injuries	Interactive Lecture	MCQ
Thoracic Trauma 2	Surgery	Define flail chest. Describe mechanism of respiratory sequel of flail chest. Describe the clinical features of flail chest. Describe treatment options in flail chest Define surgical emphysema. Enumerate the etiology of surgical emphysema. Describe clinical features of Surgical emphysema Describe the steps of management of Surgical emphysema Enumerate complications.	Interactive Lecture	MCQ

Post OP Respiratory Complications	Surgery	Describe the clinical features of following respiratory complications : Atelactasis, pneumonia, Cyanosis Interpret the X ray findings of post operative pneumonia Outline the treatment option of complications.	Interactive Lecture	MCQ
Diaphragmatic injuries and Pulmonary contusions	Surgery	Enlist the causes of diaphragmatic rupture Enumerate the clinical features Describe the x-ray finding Describe the steps of management Define the pulmonary contusions Enumerate the clinical features Describe the steps of management Describe complications of pulmonary contusion.	Interactive Lecture	MCQ

ANESTHESIA & PAIN				
Topic	Discipline	Learning Objective	Learning Strategy	Assessment Tool
Preoperative Risk Factors & their Significance	Surgery	Enlists surgical risks in following patients with: malnutrition obesity jaundice diabetes coagulation disorders locomotor disorders remote site infection Defines competence for obtaining consent Describes process of consent from those not considered competent to give consent. Describes stages of consent process	Interactive Lecture	

Complications of Anaesthesia-II	Anaesthesia	Prescribe the postoperative analgesia according to the type of surgery performed on a patient Prescribe the antibiotics according to the type of surgery Assess the fluid and electrolyte requirements of the postoperative patient Describe the importance of prevention of infection postoperatively Interpret patient charts (observation and pain assessment chart) Enlist causes of post operative fever Outline the investigations required to diagnose the etiology of post op fever Outline the management plan of post operative fever	SGD	
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4th Year
Duration: Weeks

GIT- II

Topic	Discipline	Learning Objective	Learning Strategy	Assessment Tool
ACHALASIA CARDIA	Surgery	- Define Achalasia. - Describe the pathophysiology of Achalasia Cardia - Enlist Clinical features of Achalasia Cardia - Enlist investigation for diagnosis of Achalasia Cardia - Interpret barium swallow findings on x-ray. - Enlist treatment options of Achalasia Cardia	Interactive Lecture	MCQ
CARCINOMA OF THE ESOPHAGUS	Surgery	- Describe the clinical features of esophageal carcinoma (Ca esophagus). - Outline investigation for Ca esophagus. - Describe staging of carcinoma esophagus - Describe management options for Ca esophagus according to site	Interactive Lecture	MCQ
Complications of Peptic Ulcer Disease	Surgery	- Outline the surgical complications of PUD. - Describe the clinical features of surgical complications of PUD. - Enlist investigations to diagnose peptic ulcer perforation, bleeding and pyloric stenosis, GERD - Describe steps of management of perforated duodenal ulcer, bleeding and pyloric stenosis, GERD. - Enumerate the complications of surgery for PUD., GERD	Interactive Lecture	MCQ

Gastric Tumors	Surgery	- Describe Clinical features of Ca stomach. - Enlist the various methods of investigation in ca stomach. - Enlist the stages of Ca stomach. - Describe complications of gastrectomy. - Describe different surgical treatment options for CA.stomach. - Describe management plan of CA stomach	Interactive Lecture	MCQ
Infantile hypertrophic pyloric stenosis	Surgery	- Define infantile Hypertrophic Pyloric Stenosis. - Enlist Clinical features. - Enlist preparatory steps for Surgery in such a patient. - Describe treatment options.	Interactive Lecture	MCQ
Intestinal Obstruction I	Surgery	- Describe various types of intestinal obstruction. - Enlist causes of intestinal obstruction in adults and children. - Enumerate Clinical features at various sites of intestinal obstruction. - Interpret investigations of intestinal obstruction. - Describe management plan of intestinal obstruction. - Define pseudo obstruction. - Enlist causes pseudo obstruction. - Enlist Clinical features. - Describe treatment options. - Enlist causes of volvulus of intestine. - Enlist complications of volvulus of intestine	Interactive Lecture	MCQ
Intestinal Obstruction II	Surgery	- Enlist causes of acute intestinal obstructions in a new born in order of frequency. - Enlist Clinical features of acute intestinal obstruction of the new born. - Enlist various treatment options. - Define duodenal atresia. - Enlist associated anomalies.	Interactive Lecture	MCQ

		- Describe the Xray findings - Enlist treatment options.		
Intestinal Obstruction III	Surgery	In different clinical scenarios : - Correlate the clinical features of intestinal obstruction - Justify the investigations of intestinal obstruction - Discuss treatment options of acute intestinal obstruction.	SGD	MCQ
INTUSSUSCEPTION	Surgery	- Define intussusceptions - Enlist causes of intussusception - Enlist various types of intussusception - Describe causes of intussusception - Outline investigation findings - Discuss management options in intussusception.	Interactive Lecture	MCQ
Small Intestinal Diverticulae	Surgery	- Describe the types of diverticulae in small intestine. - Describe the effects of small intestinal diverticulae at various sites. (Duodenal diverticulum, Jejunal diverticulum, Meckel's diverticulum) - Enlist complications of small intestinal diverticulae. - Outline management plan for small intestinal diverticulae.	Interactive Lecture	MCQ
G I tuberculosis	Surgery	- Define various types of intestinal tuberculosis. - Correlate complications of intestinal tuberculosis to clinical features - Describe indications of surgery in intestinal tuberculosis.	SGD	MCQ
G I Fistulae	Surgery	- Define a fistula. - Enlist causes of Enterocutaneous (EC) fistula. - Enlist types of EC fistula. - Justify investigations to diagnose EC fistulae. - Outline management options.	Interactive Lecture	MCQ
Acute	Surgery	Discuss the differential diagnosis of acute abdomen with special	SGD	MCQ

Appendicitis		reference of acute appendicitis Describe the management plan of a patient with acute appendicitis		
Complications of Inflammatory Bowel Disease	Surgery	- Define the Inflammatory bowel disease, - Summarize the Clinical Differences in Crohns disease and Ulcerative Colitis - Describe the indications of surgery in UC. - Enlist surgical options in UC. - Enlist complications of long standing CD. - Describe indications of surgery in CD.	Interactive Lecture	MCQ
Colonic Diverticulosis	Surgery	- Enumerate the etiological factors for colonic diverticulae. - Define diverticulosis and diverticular disease. - Enlist investigations for colonic diverticular disease - Describe radiological findings of colonic diverticular disease. - Enlist complication of diverticular disease - Describe principles of surgical management of diverticular disease.	Interactive Lecture	MCQ
Mesenteric ischemia	Surgery	- Define Mesenteric ischemia. - Enlist various causes of Mesenteric ischemia. - Enlist various types of Mesenteric ischemia. - Enlist Clinical features of Mesenteric ischemia - Outline Management Plan - Enlist Complications of Mesenteric ischemia.	Interactive lecture	MCQ
Tumors of Intestine	Surgery	- Enlist benign tumours of small gut. - Describe Peutz-Jeghers syndrome. - Enlist benign tumors of colon. - Classify various types of colonic polyps. - Define familial adenomatous polyposis. - Define hereditary non- polyposis colorectal cancer.	Interactive Lecture	MCQ
Colorectal Ca.	Surgery	Enlist etiological factors of Colorectal Ca.	Interactive Lecture	MCQ

		• Enlist frequency of occurrence of carcinoma at various sites from cecum to rectum and anus. • Enumerate investigations plan for Colorectal Ca. • Describe TNM staging for Colorectal Ca. • Describe principles of management of Colorectal Ca. • Describe the role of chemo and radiotherapy in Colorectal Ca.		
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4TH YEAR
DURATION: WEEKS

Topic	Discipline	Learnong Objectives	Learning Strategy	Assessment Tool
Congenital Anal anomalies and hirschsprung's disease	Surgery	- Define Hirschsprung's disease. - Enlist the pathological causes of Hirschsprung's disease. - Describe Clinical features of Hirschsprung's disease. - Enlist complications of Hirschsprung's disease. - Describe treatment options of Hirschsprung's disease. - Enlist preparatory steps in such a patients. - Classify congenital anal abnormalities. - Enlist Clinical features of each.	Interactive Lecture	MCQ
Imperforate anus	Surgery	- Define imperforate anus. - Describe radiological findings of imperforate anus. - Enlist treatment options of imperforate anus.	Interactive Lecture	MCQ
Rectal Prolapse	Surgery	- Define rectal prolapse and its degrees. - Enlist causes of rectal prolapse. - Describe the clinical presentation. - Describe treatment options of rectal prolapse. - Enlist complications if not treated	Interactive Lecture	MCQ
Haemorrhoids and anal fissure I	Surgery	- Define anal fissure. - Classify anal fissure. - Enlist differences between acute and chronic anal fissure - Enlist causes of anal fissure. - Describe treatment options. - Define hemorrhoids	Interactive Lecture	MCQ

		• Classify haemorrhoids • Outline investigation plan		
Haemorrhoids and anal fissure II	Surgery	• Discuss the differential diagnosis of a patient with bleeding PR • Discuss treatment options according to the degree of haemorrhoids • Describe the complications of anal surgery	SGD	MCQ
Anorectal abscess & perianal fistula	Surgery	• Define fistula in ano • Define Clinical types. • Outline investigation plan. • Outline treatment options according to the type. • Classify Anorectal abscess • Enumerate causes. • Outline investigation plan. • Outline different treatment options. • Enlist Complications.	Interactive lecture	MCQ
Pilonidal Sinus	Surgery	• Define Pilonidal sinus. • Enlist various sites of Pilonidal sinus • Enlist causes. • Describe the clinical features. • Outline treatment options.	Interactive lecture	MCQ
Gall Bladder & biliary tract	Surgery	• Enlist surgical importance of Congenital anomalies of gall bladder. • Enlist various gall bladder anomalies. • Describe clinical features of acute cholecystitis • Enlist complications of cholecystitis in order of frequency • Describe clinical features of stones in common bile duct • Outline the management plan of acute cholecystitis	Interactive lecture	MCQ
Ca gall Bladder	Surgery	• Enlist the clinical features of carcinoma gall bladder • Describe investigations to diagnose carcinoma gall bladder • Describe staging of carcinoma gall bladder	Interactive lecture	MCQ

		• Outline management plan of Carcinoma gall Bladder		
Splenic Rupture and trauma	Surgery	• Describe Surgical anatomy of Spleen • Enlist causes of Rupture of spleen. • Describe Clinical presentation of splenic Rupture • Enumerate Steps of management in Splenic trauma patient • Describe treatment options depending on grade of injury • Enlist indications of elective splenectomy.	Interactive lecture	MCQ
	Surgery	• Describe preoperative preparation for splenectomy. • Outline steps of post- operative care after splenectomy. • Describe differences in elective and emergency splenectomy. • Enlist complications after splenectomy • Define OPSS (over whelming post splenectomy sepsis) • Enlist Clinical Features of OPSI. • Enlist steps of prevention of splenectomy complications.	Interactive lecture	MCQ
Benign Conditions of Pancreas	Surgery	• Define Acute Pancreatitis. • Enlist Etiology of Acute Pancreatitis. • Describe clinical features of acute pancreatitis • Enlist investigations for acute pancreatitis • Describe prognostic indicators in acute pancreatitis • Enumerate important complications of acute pancreatitis. • Outline the management plan of acute pancreatitis. • Enlist indications of surgery in acute pancreatitis	Interactive lecture	MCQ
Pancreatic Tumours	Surgery	• Classify exocrine tumours of the pancreas. • Enlist the clinical presentation of ca pancreas. • Describe investigations for diagnosis of carcinoma pancreas. • Outline management plan of carcinoma pancreas	Interactive Lecture	MCQ
Obstructive Jaundice	Surgery	• Correlate the clinical features to the cause of Obstructive Jaundice • Discuss the preparation of a patient of obstructive jaundice before surgery	Interactive Lecture	MCQ

		• Discuss Management options of obstructive jaundice		
Peritonitis I	Surgery	• Define peritonitis. • Describe various types • Describe various causes of peritonitis. • Enlist Clinical features of acute peritonitis. • Outline plan for investigation. • Describe treatment options.	Interactive lecture	MCQ
Peritonitis II	Surgery	• Enlist complications of peritonitis. • Enlist the sites of intra peritoneal abscesses in order of occurrence. • Enumerate Clinical features of intra-abdominal abscess. • Enlist treatment options for intra-abdominal abscess.	Interactive lecture	MCQ
Mesenteric cysts	Surgery	• Define mesenteric Cyst. • Describe various types of mesenteric Cyst. • Outline the management plan	Interactive lecture	MCQ
Umblicus	Surgery	• Enlist different pathologies of umbilicus • Enumerate etiological factors of umbilical cord infection. • Define Umbilical granuloma • Enumerate treatment option of umbilical granuloma • Define patent urachus • Describe the embryological background of urachus. • Describe treatment options. • Classify Umbilical tumors. • Importance of secondary deposits in the Umbilicus.	Interactive Lecture	MCQ
Hernia I	Surgery	• Enlist the factors causing hernias. • Enumerate types of hernia. • Enlist ventral hernias. • Describe steps of management of umbilical hernias • Describe surgical anatomy of femoral hernia. • Enlist differential diagnosis of femoral hernia.	Interactive lecture	MCQ

		- Enumerate different surgical approaches of femoral hernia repair. - Enlist the recognized risk factors		
Hernia II	Surgery	- Enlist basic operative steps of hernia. - Describe indications of Non- operative management of hernia. - enumerate factors for incisional hernia - Enlist techniques of Surgical repair of incisional hernia - Enlist complications of mesh repair. - Define port site wound hernia - Enumerate risk factors of port site wound hernias.	Interactive lecture	MCQ

Topic		Learning Objective	Learning Strategy	Assessment Tool
Congenital Abnormalities Of kidney (polycystic kidney disease)	Urology	- Describe clinical presentations of polycystic kidney disease (PCKD) - Describe management for PCKD - Classify cysts of kidney	Interactive Lecture	MCQs
Acute And Chronic Pyelonephritis	Urology	- Describe clinical features of acute/chronic pyelonephritis - Describe differential diagnosis of upper urinary tract infection - interpret investigations of upper UTI - Describe plan of management in acute chronic pyelonephritis	Interactive Lecture	MCQs

ENDOCRINE

Topic	Discipline	Learning Objective	Learning Strategy	Assessment Tool
Endocrine Module Pancreatic Exocrine tumours (PET)	Surgery	• Describe the epidemiology of PETs • Classifies PET • Describe the Clinical Features of Insulinoma • Enumerates the investigations of Insulinoma • Describe the differential diagnosis of Insulinoma • Enumerate surgical treatment of Insulinoma • Defines Gastrinoma • Describes prognosis Gastrinoma • Describe the Clinical features of Gastrinoma • Enumerates the investigations of Gastrinoma • Outline the indications of operation for Gastrinoma	Interactive Lecture	

Obesity	Surgery	• Describe pathophysiology of Obesity • Describe the grades of Obesity • Describe surgical Options for treating Obesity	Interactive Lecture	
Thyroid	Surgery	• Review the surgical anatomy of thyroid gland • Briefly outline the physiology of thyroid gland • Describe the congenital anomalies of thyroid gland • Enlist the clinical features of hypo and hyperthyroidism	Interactive Lecture	
Approach To A Patient With Goitre	Surgery	• Defines goiter • Classifies goiter according to the clinical presentations • Justifies investigations for a given case of goiter • Interprets investigations for a given case of goiter • Outlines treatment plan for a given case of goiter • Describes the anatomical structures at risk during thyroid surgery • Enumerates complications of thyroidectomy	SGD	MCQS
Toxic Goiter	Surgery	• Enumerates clinical types of toxic goiter • Correlates pathophysiology with different types of toxic goiter • Justifies investigations for diagnosis toxic goiter • Enlist principles of treatment of thyrotoxicosis • Describes role of surgery in treatment of toxic goiter • Describes pre-operative preparation of a patient with toxic goiter	Interactive Lecture	MCQS
Discrete Thyroid Swellings	Surgery	• Defines clinically discrete swellings of thyroid • Describe association of clinically discrete thyroid swellings with malignancy. • Enumerates investigations to diagnose clinically discrete swellings of thyroid • Outline treatment plan for thyroid nodules.	Interactive Lecture	MCQS

Surgery and Allied Block Block Duration: 12 Weeks 10 Lectures per week				
Topic	Discipline	Learning Objective	Learning Strategy	Assessment Tool
Pyonephrosis, Renal And Peri-Renal Abscesses	Urology	- Enlist etiology of Pyonephrosis, renal and peri- renal abscesses - Describe management of Pyonephrosis, renal and peri- renal abscesses	Interactive Lecture	MCQs
Surgical interventions in CRF	Urology	- Enlist surgical interventions required in acute/chronic renal failure - Enlist potential sites for insertion of double lumen vascular catheters for hemodialysis - Describe care of double lumen vascular access catheters - Describe care of AV Fistulae	Interactive Lecture	MCQ

Surgery and Allied Block Block Duration: 12 Weeks 10 Lectures per week				
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Topic	Discipline	Learning Objective	Learning Strategy	Assessment Tool
Pyonephrosis, Renal And Peri-Renal Abscesses	Urology	- Enlist etiology of Pyonephrosis, renal and peri- renal abscesses - Describe management of Pyonephrosis, renal and peri- renal abscesses	Interactive Lecture	MCQs
Surgical interventions in CRF	Urology	- Enlist surgical interventions required in acute/chronic renal failure - Enlist potential sites for insertion of double lumen vascular catheters for hemodialysis	Interactive Lecture	MCQ

		- Describe care of double lumen vascular access catheters - Describe care of AV Fistulae		
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Surgery and Allied Block Block Duration: 12 Weeks 10 Lectures per week				
Topic	Discipline	Learning Objective	Learning Strategy	Assessment Tool
Pyonephrosis, Renal And Peri-Renal Abscesses	Urology	- Enlist etiology of Pyonephrosis, renal and peri- renal abscesses - Describe management of Pyonephrosis, renal and peri- renal abscesses	Interactive Lecture	MCQs
Surgical interventions in CRF	Urology	- Enlist surgical interventions required in acute/chronic renal failure - Enlist potential sites for insertion of double lumen vascular catheters for hemodialysis - Describe care of double lumen vascular access catheters - Describe care of AV Fistulae	Interactive Lecture	MCQ
Renal calculi:	Urology	- Describe the type of renal calculi - Enumerate clinical features of renal stones - Describe diagnostic investigations for flank pain - Enlist complications of renal stones - describe general emergency treatment measures for renal pain - Describe treatments options for renal calculi - Describe investigations in case of recurrent renal stones to identify cause of stone formation (metabolic profile) - Describe preventive measures for renal stone formation	Interactive Lecture	MCQ
Renal Tumors	Urology	- Classify renal tumors - Describe predisposing risk factors for renal tumors - Describe pathogenesis of renal tumors.	Interactive Lecture	MCQ

		• Describe morphological features of renal tumors. • Describe clinical features of renal tumors • Describe investigations for diagnosis and staging of renal tumors • Outline treatment plan for renal tumours		
Urinary tract Trauma	Urology	• Describe types of renal trauma • Enlist clinical features of renal trauma • Enlist investigations in trauma • Outline management of renal trauma • Enumerate common ureteric injuries • Describe clinical features of ureteric injuries • Discuss investigations for ureteric injuries • Describe plan of management for ureteric injuries • Outline types of bladder trauma • Describe clinical features of bladder rupture • Enlist diagnostic investigations in bladder trauma • Describe management plan in bladder trauma	Interactive Lecture	MCQ
Ureteric , Vesical and urethral Calculi	Urology	• Enumerate clinical features of ureter stones • Differentiate between causes of loin to groin flank pain on basis of features • Interpret investigations for flank pain • Enumerates general emergency measures for ureteric pain • describe emergency surgical intervention in ureteric stones • Enlist complications of ureteric stones • Describe the definitive treatment options for ureteric calculi • Enumerate types of vesical calculi • Enlist etiological factors for vesical stone formation • Describe clinical features of vesical stone • Interpret diagnostic investigation for vesical calculi • Describe treatment plan for vesical calculi • Describe clinical features of urethral calculi	Interactive lecture	MCQs

		Describe emergency treatment for urethral calculi		
Lower Urinary Tract Infection (UTI) (cystitis, prostatitis)	Urology	- Describe etiology of different types of UTI - Describe uro-sepsis (gram negative endotoxemia) - Discuss clinical features of cystitis - Interpret investigations in UTI - Describe treatment plan in cystitis - Describe clinical features of acute and chronic prostatic infections	Interactive Lecture	MCQ
Urinary Incontinence (neurogenic bladder)	Urology	- Define following terms - incontinence - Detrusor instability - Enlist causes of incontinence - Describe types of neurogenic bladder - Interpret investigations in incontinence due to neurogenic bladder - Outline management of incontinence due to neurogenic bladder - Enlist complications of neuropathic bladder - Compare and contrast the patterns of incontinence due to different - Describe investigations in incontinence due to different causes - Outline management of incontinence due to causes discussed above - Define nocturnal enuresis - Enlist causes of enuresis - Enlist treatment options in enuresis	Interactive lecture	Urinary Incontinence (neurogenic bladder)
BPH	Urology	- Define terms - Lower Urinary Tract Symptoms (LUTS) - acute Retention of urine chronic retention of urine Bladder Outflow Obstruction (BOO). - Enlist clinical features of BPH, - enlist complications of BPH - interpret investigations in BPH - enlist differential diagnosis of BPH - describe emergency management of acute retention of urine	Interactive lecture	BPH

		• Enlist definitive treatment options in BPH • Enlist indications of surgery in BPH • enlist methods of performing prostatectomy • Enlist complications of prostatectomy		
Ca Prostate	Urology	• Describe clinical features of Carcinoma prostate. • Interpret investigations for diagnosis • Outline treatment plan of Ca prostate according to TNM staging	Interactive Lecture	Ca Prostate
Congenital Anomalies Of Urethra & Urethral Strictures	Urology	• Describe clinical features of Posterior Urethral Valves (PUV) Hypo • Epispadias, Meatal stenosis • Enlist complications of above mentioned anomalies • describe diagnostic investigations for PUV • describe treatment plan for above mentioned anomalies • Enlist etiology of urethral strictures • describe clinical features of stricture urethra • Enlist diagnostic investigations for stricture • Outline management plan for stricture	Interactive Lecture	Congenital Anomalies Of Urethra & Urethral Strictures
Urethritis, and peri-urethral abscess	Urology	• Enlist clinical features of urethritis • Outline treatment plan in urethritis • describe clinical features of peri-urethral abscess • describe treatment plan for peri-urethral abscess	Interactive Lecture	Urethritis, and peri-urethral abscess
Miscellaneous Conditions Of Penis, Urethra and scrotum	Urology	• Identify following abnormalities on image • Phimosis • Para-phimosis • Balanoposthitis • female Urethral Prolapse • Caruncle • papillomata accuminata • Fournier's gangrene	Interactive Lecture	Miscellaneous Conditions Of Penis, Urethra and scrotum

		• Enlist pre-operative preparation for circumcision • Enlist complications of circumcision		
Cryptorchidism mal-descent of testis	Urology	• Classify the mal-descent of testis • Enlist clinical features of mal- descent • Enumerate complications of mal-descent • Outline investigation plan for diagnosis of mal-descent • Outline management of mal- descent of testis	Interactive Lecture	Cryptorchidism mal-descent of testis
Acute scrotum (Testicular Torsion)	Urology	• Enlist causes of acute painful swellings of testes • Describe clinical presentation of torsion of testis • enlist complications of torsion • Enlist investigations to diagnose the condition • Outline treatment plan for torsion testis	Interactive Lecture	Acute scrotum (Testicular Torsion)

Learning Resources:

Bailey & Love's Short Practice of Surgery. 27th Ed

Topic	Discipline	LEARNING STRETEGY	Assessment tool
Hip Joint Problems Developmental Dysplasia of Hip: (DDH) Perthes disease. Congenital Talipes Equino Varus: (CTEV)	Orthopedics	- Define cdh, ddh describe Presentation. Clinical feature of various congenital skeletal problems. - Enlist Investigations required for diagnosis and treatment. - Various Treatment options. - Define perthes - Discuss Clinical features and presentation. - Enlist diagnostic modalities. - Discuss treatment Congenital Talipes Equino Varus: (CTEV) - Define Etiology. - Describe Presentation, - Pathology. - Discuss conservative and surgical	MCQ
SPINE DEFORMITIES (Scoliosis, Khyphosis) SPINA BIFIDA.	Orthopedics	- Define Types. - Causes - Describe Clinical presentation - Enumerate X-ray findings. - Discuss Treatment - Describe Etiology. - Enlist Associated anomalies, - Describe musculoskeletal presentation. - Discuss Treatment	MCQ

NEUROMUSCULAR DISORDERS

TOPIC	Discipline	LEARNING STRATEGY.	Assessment tool
CARPAL TUNNEL SYNDROME & Poliomyelitis. Cerebral palsy	Orthopedics	• Define carpal tunnel syndrome • Describe pathophysiology of carpal tunnel syndrome • Enumerate causes of carpal tunnel syndrome • Enlist clinical features of CTS • Describe management of CT Poliomyelitis. Cerebral palsy • Definition. • Causes. • Clinical presentation. • Treatment modalities.	MCQ
LOW BACK PAIN	Orthopedics	• Define Sciatica • Define Spondylolisthesis • Define disc prolapse. • Define Spondylosis • Describe Paravertebral muscle spasm • Differentiate them clinically • Describe relevant Investigations. • Role of CT scan and MRI in diagnosis, • Describe the treatment options.	MCQ

INFECTIVE / INFLAMMATORY CONDITIONS OF BONE, JOINTS

TOPIC	Discipline	LEARNING STRATEGY	ASSESSMENT TOOL
SEPTIC ARTHRITIS / infections of bones and joints	Orthopedics	• Define .septic arthritis • Describe Signs symptoms. • Enlist Common causative organisms. • Discuss Presentation. • Discuss Diagnostic workup and Treatment • Define chronic osteomyelitis • Discuss Signs symptoms. • Define Common causative organisms. • Enumerate clinical Presentation. • Discuss Diagnostic workup and Treatment.	MCQ
SPINAL TUBERCULOSIS	Orthopedics	• Define Primary secondary and tertiary tuberculosis. • Describe clinical Presentation. • Discuss diagnostic work up. • Discuss Treatment.	MCQ
OSTEOARTHRITIS	Orthopedics	• Definition Osteo arthritis. • Define Predisposing factors. Describe Clinical features. Enumerate diagnostic modalities. • Discuss Conservative and surgical treatment.	MCQ

BONE & SOFT TISSUE TUMORS (BENIGN AND MALIGNANT)

TOPIC	Discipline	LEARNING STRATEGY	ASSESSMENT TOOL
SOFT TISSUE TUMORS	Orthopedics	• Define Nomenclature. • Describe Presentation, • Discuss Classification. • Enlist Principles of biopsy. • Discuss Investigation workup and • Principles of treatment.	MCQ.
BONE TUMORS : BENIGN & MALIGNANT	Orthopedics	• Define Nomenclature Benign bone tumours • Discuss Presentation. • Describe Classification. • Discuss Investigation. • Discuss Principles of treatment. • Enumerate Common Malignant bone tumors, • discuss presentation • Describe Signs and symptoms. • Describe pathology. • Enlist diagnostic tools • Discuss treatment option available. • Enlist Common metastatic tumors. • Describe presentation, • Describe Signs and symptoms, • Enumerate diagnosis tools. • Discuss treatment.	MCQ .

MUSCULOSKELETAL METABOLIC DISORDERS

TOPIC	Discipline	LERARNING STRATEGY	ASSESMENT TOOL
OSTEOPOROSIS , OSTEOMALACIA/ RICKETS	Orthopedics	• OSTEOPOROSIS DEFINITION. • Define Osteomalacia • Presentation. • Enumerate the relevant investigations • Outline the treatment plan • Describe the preventive measures. • Define Rickets • Enumerate types of Rickets. • CAUSES • Describe clinical features of nutritional rickets. • Explain lab diagnosis and X- ray findings/ features. • Describe treatment and preventive measures for nutritional Rickets.	MCQ

SOFT TISSUE DISORDERS

TOPIC	Discipline	Learning STRATEGY	Assessment tool
Frozen Shoulder, Rotator Cuff Syndrome & tenosynovitis	Orthopedics	• Define Frozen Shoulder • Define Rotator Cuff Syndrome • Describe the clinical features of these conditions • Enlist treatment modalities • Define Tennis Elbow • Define Golfer Elbow • Describe the clinical features of these conditions • Enlist treatment modalities • Define Trigger Finger. Define Dequervein"s Tenosynovitis. • Describe the clinical features of these conditions • Enlist treatment modalities	MCQ

TRAUMA and sports injuries

TOPIC	DISCIPLINE	LEARNING STRATEGY	ASSESSMENT TOOL
SOFT TISSUES INJURIES (Knee : ACL, PCL, MCL, Meniscal injuries,(Ankle: Sprain, Strain (Hip:, Post traumatic Trochanteric Bursitis, Piriformis syndrome)	Orthopedics	• What is the Common injury pattern in sports? • Define Causes, clinical features of sports trauma. • DEFINE COMMON ligament injuries of knee and ankle. • Enlist Investigations, • Discuss Treatment modalities	MCQ
Orthopedic implants, orthopedic operations Common complications of fractures. Compartment synd	Orthopedics	• • What are different Types of implant. • Enlist Common complications of fractures. • Common operations. • Describe Clinical features, discuss causes of compartment syndrome • Describe treatment options,	MCQ
SPINAL TRAUMA Spinal Injury - I Neurological Damage (Partial, Complete) Paraplegia, spinal shock.	Orthopedics	• What are the Common fracture and dislocations. • Describe Presentations. • Discuss Role of x-ray, CT and mri • Discuss Treatment modalities	MCQ
CLAVICLE #, HUMERUS SHAFT & SUPRACONDYLAR # RADIAL HEAD #,	Orthopedics	• Enlist Causes. • Describe Presentations • Define X-ray appearance. • Mention associated injuries. • Discuss Complications. • Discuss treatments.	MCQ
MONTEGGIA #, GALEAZZI #, COLLES #, SCAPHOID #	Orthopedics	• Enumerate Causes. • Define CLINICAL Presentations	.MCQ

		• Discuss X-rays. • Enlist Associated injuries • Discuss Diagnosis, and various treatment Options	
Fractures of hip	Orthopedics	• What are the Causes? • Describe Presentations • Discuss prognosis. • Discuss X-ray and other diagnostic modalities. Enumerate Associated injuries • Discuss Diagnosis and treatment.	MCQ
Fractures of femur. Fractures of tibia and fibula.	Orthopedics	• Define Causes. • Mechanism of injury • Describe Presentations • Describe investigations. • Enlist Associated injuries • Discuss Diagnosis and • Treatment	MCQ
Fractures around ankle	Orthopedics	• Define Causes. • Define common mechanism of fracture • CLINICAL Presentations • Discuss xrays. • Describe treatment	MCQ
PELVIC FRACTURES & ACETABULAR FRACTURES	Orthopedics	• Mention Causes. • DEFINE mechanism of injury • Describe common Presentations. • Enumerate various diagnostic modalities. • Discuss Associated injuries • Discuss Diagnosis and • Treatment	MCQ

DISLOCATIONS	Orthopedics	• Define dislocation and subluxation. • Describe Presentations • Common diagnostic modalities. • Describe Diagnosis. • Discuss treatment •	MCQ
PERIPHERAL NERVE INJURIES	Orthopedics	• • Define General principles . • Enumerate Patterns of injury. • Enlist Classification • Discuss Presentation, • Diagnostic work up. • Describe Treatment	MCQ.

Radiology

Topic	Discipline	Learning Objective	Learning Strategy	Assessment Tool
Chest X ray	Radiology	• Describe a normal Chest Xray	Interactive Lecture	MCQs
Pathological findings on Chest X ray	Radiology	• Describe radiological findings of various diseases on Chest Xray	Interactive Lecture	MCQs
Ultrasound/ Doppler	Radiology	• Describe what is Ultrasound. • Describe the principles of ultrasound with reference to its use as a diagnostic tool.	Interactive Lecture	MCQs

		- Describe color Doppler . Describe the mechanism of Color Doppler - Describe uses of Color Doppler		
CT scan/MRI	Radiology	- Describe the principle of CT Scan and MRI. - Describe diagnosis of common diseases on CT scan and MRI. - Describe the hazards involved in CT Scan and MRI.	Interactive Lecture	MCQs
Interventional Radiology	Radiology	- Define Interventional Radiology. - Describe the principles of Interventional Radiology - Describe common uses of Interventional Radiology.	Interactive Lecture	MCQs

Topic	Discipline	Learning Objective	Learning Strategy	Assessment Tool
Risk Factors & their Significance	Anaesthesia	- Enlists surgical risks in following patients with: - malnutrition - obesity - jaundice - diabetes - coagulation disorders - locomotor disorders	Interactive Lecture	MCQs

		• remote site infection • Defines competence for obtaining consent • Describes process of consent from those not considered competent to give consent. • Describes stages of consent process		
Perioperative care	Anaesthesia	• Describe the postoperative analgesia according to the type of surgery performed on a patient • Describe the antibiotics according to the type of surgery • Assess the fluid and electrolyte requirements of the postoperative patient • Describe the importance of prevention of infection postoperatively • Interpret patient charts (observation and pain assessment chart) • Enlist causes of post operative fever • Outline the investigations required to diagnose the etiology of post op fever • Outline the management plan of post operative fever	Interactive Lecture	MCQs
Complications of Anaesthesia-II		• Describe the clinical features of following respiratory complications • Atelectasis, pneumonia, Cyanosis	Interactive Lecture	MCQs

		• Interpret the Xray findings of post operative pneumonia • Outline the treatment option of a/m complications. •		
Local and Regional Anaesthesia		• Define Local and Regional Anaesthesia • Describe local anaesthetic agents in use • Describe common Regional and field blocks • Describe Biers Block •		

Final Year Lectures

Topic	Discipline	Learning Objective	Learning Strategy	Assessment Tool
Neck Swellings	Surgery	• Describe the different triangles of neck • Classify different congenital and acquired neck swellings according to their anatomical location • Compare the Clinical features of different congenital and acquired neck swellings • Describe swellings in front of neck which move with deglutition	Interactive Lecture	MCQs
Hypo/Hperthyroidism	Surgery	• Compare clinical features of hypothyroidism and hyperthyroidism • Develop a management plan for a patient with goitre	Interactive Lecture	MCQs

Cervical lymphadenopathy	Surgery	• Differentiate among the diseases causing cervical lymphadenopathy on the basis of clinical features • Describe investigation plan for cases of cervical lymphadenopathy	Interactive Lecture	MCQs
Parotid gland	Surgery	• Classify swellings of parotid gland • compare clinical features of inflammatory and neoplastic conditions of parotid gland	Interactive Lecture	MCQs
Parotid gland	Surgery	• Describe the clinical features and treatment strategy in a patient with obstruction of major salivary gland • Outline a management plan for a patient with parotid swelling • Describe the complications of parotidectomy • Outline the management options for parotidectomy complications	Interactive Lecture	MCQs
Cleft lip and palate	Surgery	• Describe cleft lip and palate • compare clinical features of cleft lip and palate • outline treatment plan in patients with cleft lip and palate	Interactive Lecture	MCQs
Oral Ulcers	Surgery	• Classify Oral Ulcers • Differentiate among oral ulcers on the basis of clinical features • outline a management plan for a patient with oral ulcers	Interactive Lecture	MCQs
Breast Lumps	Surgery	• Classify breast lumps • Differentiate among disease which present with breast lump • outline management plan for benign breast lumps	Interactive Lecture	MCQs
Mastalgia	Surgery	• Describe Mastalgia . • Compare the clinical features and management plan for patients with cyclical and non cyclical mastalgia • Outline management plan for a patient with mastalgia	Interactive Lecture	MCQs

nipple discharge	Surgery	• Differentiate among the diseases which present with nipple discharge on the basis of clinical features • outline management plan for a patient with nipple discharge	Interactive Lecture	MCQs
AXILLARY SWELLINGS	Surgery	• Classify Axillary Swellings • Differentiate benign from malignant Axillary swellings on the basis of clinical features • Justify investigations in a patient with Axillary swelling • Develop management plan for Axillary swellings	Interactive Lecture	MCQs
DYSPHAGIA		• Describe Dysphagia • Classify Dysphagia • Describe grades of Dysphagia • Compare clinical features of different diseases causing dysphagia • Outline management plan for a patient with dysphagia •		
MANAGEMENT OF WOUNDS STINGS AND BITES	Surgery	Describe management of • Common wounds • Common stings • Common bites	Interactive Lecture	MCQs
CHEST PAIN WITH DYSPNEA(PLEURAL DISEASES)	Surgery	• Describe clinical emergencies involving the pleura • Enlist the indications of chest intubation. • Describe the complications associated with chest tube insertion.	Interactive Lecture	MCQs
HEMATEMESIS	Surgery	• Describe the common conditions of upper GI bleed. • Outline the management plan of patient with upper GI bleed.	Interactive Lecture	MCQs
UPPER ABDOMINAL PAIN	Surgery	Describe the causes of upper abdominal pain	Interactive Lecture	MCQs

		Outline management plan for patients with epigastric pain. (Oesophagitis, Gastritis, Duodenitis, Peptic Ulcer, Perforated Peptic Ulcer, Pancreatitis)		
Ca Stomach	Surgery	- Classify Stomach tumours - Describe possible symptoms and physical findings in a patient with carcinoma stomach. - Outline management plan of patient with Gastric Outlet Obstruction sec to Ca Stomach	Interactive Lecture	MCQs
Mass Right Hypochondrium	Surgery	- Classify causes of mass Right Hypochondrium - Differentiate clinical features of conditions presenting with Mass Right Hypochondrium - Justify investigations in such cases - Outline management plan of a patient with obstructive jaundice and Mass Right Hypochondrium	Interactive Lecture	MCQs
CENTRAL ABDOMINAL PAIN	Surgery	- Describe the etiology, pathophysiology and clinical presentation of acute, chronic and acute-on-chronic Intestinal Obstruction. - Formulate a management plan of patient with intestinal obstruction secondary to abdominal Kochs	Interactive Lecture	MCQs
CENTRAL ABDOMINAL PAIN	Surgery	- Outline the clinical features of Enteric Fever - Describe the clinical features in enteric perforation - Describe the management plan of a patient presenting with enteric perforation	Interactive Lecture	MCQs
Inflammatory Bowel Disease: the surgical aspect	Surgery	- Define IBD - Outline the pathophysiology of UC and CD - Compare the clinical features and treatment strategies Ulcerative Colitis with Crohns Disease. - Describe the clinical features of patients presenting with complicated IBD on a surgical floor	Interactive Lecture	MCQs
Pain RIF	Surgery	Classify conditions causing Pain RIF	Interactive Lecture	MCQs

		• Compare the clinical features of conditions causing acute Pain RIF • Describe the management plan of of different cases presenting withpain RIF		
LOWER ABDOMINAL PAIN	Surgery	• Describe the pathogenesis, clinical features and management outline of Diverticulitis and diverticular disease • Describe the common causes and management of pelvic abscess. • •	Interactive Lecture	MCQs
bleeding per rectum	Surgery	• Classify diseases causing bleeding per rectum • Differentiate the clinical features of different diseases causing bleeding per rectum • Outline Treatment options for Haemorrhoids • Name the complications of haemorrhoidectomy and outline their management • •	Interactive Lecture	MCQs
Large Bowel Obstruction (LBO)	Surgery	• Define Chronic intestinal Obstruction • Outline the causes of LBO • Describe the management outline of patient of carcinoma colon in emergency and elective situation •	Interactive Lecture	MCQs
ANAL SWELLINGS &PAIN	Surgery	• Categorize the painful swellings in and around the anal canal • Compare the clinical features and management of painful swellings in and around the anal canal. • Compare the clinical features and management of mass coming out of rectum	Interactive Lecture	MCQs
Perianal Discharge	Surgery	• Define Fistula	Interactive Lecture	MCQs

		• Describe the pathogenesis of Perianal Fistula • Describe the types of Perianal Fistula • Describe the management of different types Perianal Fistula • Describe the etiology of recurrent Perianal Fistula •		
		•		
Swellings around groin	Surgery	• Classify swellings around groin • Differentiate between clinical features of swellings around groin • Outline the management of swellings around groin •	Interactive Lecture	MCQs
SUBCUTANEOUS SWELLINGS	Surgery	• Define, clinical differentiation and management of • Lipoma • Sebaceous cyst • Dermoid cyst • Ganglion • Callosities/Cons • Papilloma • Haemangioma • A/V fistula • •	Interactive Lecture	MCQs
SUBCUTANEOUS SWELLINGS II	Surgery	• Define and differentiate and describe their management • Implantation Dermoid • Subcutaneous Bursa • Boil • Carbuncle • Abscess • Pyogenic granuloma	Interactive Lecture	MCQs

		• Hiradnitis Suppurativa • • •		
Hypertrophic and keloid scar	Surgery	• Define Hypertrophic and keloid scar • Describe the clinical features of Hypertrophic and keloid scar • Describe their management of Hypertrophic and keloid scar		
Malignant Skin Ulcers	Surgery	• Differentiate between clinical features of basal cell carcinoma and squamous cell carcinoma • Describe marjolin's ulcer • Describe the management of Malignant Skin Ulcers	Interactive Lecture	MCQs
Leg pain	Surgery	• Categorize different causes of acute painful leg • Discuss management of acute and chronic DVT	Interactive Lecture	MCQs
Leg Swellings	Surgery	• Classify Generalized Leg swellings (incl. Lymphedema) • Describe management of Lymphedema •	Interactive Lecture	MCQs
Varicose Veins	Surgery	• Classify Varicose Veins • Discuss management plan of a patient with varicose veins	Interactive Lecture	MCQs
Peripheral Arterial Insufficiency	Surgery	• Define and describe intermittent claudication • Outline investigations in a case of Peripheral Arterial Insufficiency • Describe the management of Peripheral Arterial Insufficiency	Interactive Lecture	MCQs
Acute limb Ischemia	Surgery	• Define Acute limb Ischemia • Describe types and causes of Acute limb Ischemia • Describe management of different types of Acute limb Ischemia	Interactive Lecture	MCQs
FOOT ULCER	Surgery	• Classify Foot Ulcer	Interactive Lecture	MCQs

		• Differentiate among Venous/Arterial /Traumatic and Diabetic Ulcer		
NEUROSURGICAL PATIENTS	Surgery	• Classify Brain Tumours • Define Brain Abscess • Outline clinical features of brain abscess • Outline the treatment options of brain abscess • Define head injury • Classify head injury • Compare the clinical features h	Interactive Lecture	MCQs
APPROACH TO POLYTRAUMA PATIENT	Surgery	• Define polytrauma • Describe triage • Describe damage control surgery	Interactive Lecture	MCQs

CLINICAL TEACHING

Introduction to Surgical Ward Work:

(3rd year rotation first 03 days)

- Ward Orientation
- Working on a Surgical Floor
- Introduction to the soft skills required of a Clinician
- Bed Side Manners
- History Taking and Examination from a patient with surgical problem.

Skill - 3 rd year			
LEARNING OBJECTIVE	DISCIPLINE	LEARNING STRATEGY	ASSESSMENT TOOL
Inguinoscrotal Swellings	Surgery	Bed side History taking & Examination	Case presentation
• Abdominal Pain	Surgery	Bed side History taking & Examination	Case presentation
• Rectal Problems	Surgery	Bed side History taking & Examination	Case presentation
• Thyroid	Surgery	Bed side History taking & Examination	Case presentation
• Neck swelling (other than thyroid)	Surgery	Bed side History taking & Examination	Case presentation
• Salivary gland swelling	Surgery	Bed side History taking & Examination	Case presentation
• Breast Diseases	Surgery	Bed side History taking & Examination	Case presentation

• Varicose Veins /Venous Ulcer	Surgery	Bed side History taking & Examination	Case presentation
• Peripheral Vascular Disease	Surgery	Bed side History taking & Examination	Case presentation
• Upper Limb Nerve Injuries	Orthopedics	Bed side History taking & Examination	Case presentation
• Lower Limb Nerve Injuries	Orthopedics	Bed side History taking & Examination	Case presentation
• fractures and bone Lesions	Orthopedics	Bed side History taking & Examination	Case presentation
• Knee Joint pain	Orthopedics	Bed side History taking & Examination	Case presentation
• Wrist joint pain	Orthopedics	Bed side History taking & Examination	Case presentation
• Insertion of nasogastric tube in dummy	Surgery	Ward/Skills Lab	OSPE
• digital rectal examination	Surgery	Ward/Skills Lab	OSPE
• Intermuscular Injection	Surgery	Ward/Skills Lab	OSPE
• Intravenous Injection	Surgery	Ward/Skills Lab	OSPE
• Subcutaneous Injection	Surgery	Ward/Skills Lab	OSPE
• Dressing of Wounds	Surgery	Ward/Skills Lab	OSPE

Attitudes -3 th year			
LEARNING OBJECTIVE	DISCIPLINE	LEARNING STRATEGY	ASSESSMENT TOOL
• Bedside manners	Surgery	Bed side Teaching	Long Case

Skills - 4 th year			
LEARNING OBJECTIVE	DISCIPLINE	LEARNING STRATEGY	ASSESSMENT TOOL
• Common Skin and Subcutaneous Swellings	Surgery	Bed side History taking & Examination	Case presentation
• Goitre	Surgery	Bed side History taking & Examination	Case presentation
• neck swelling	Surgery	Bed side History taking & Examination	Case presentation
• abdominal pain	Surgery	Bed side History taking & Examination	Case presentation
• bleeding P/R	Surgery	Bed side History taking & Examination	Case presentation
• Groin/scrotal Swelling	Surgery	Bed side History taking & Examination	Case presentation
• Varicose Veins	Surgery	Bed side History taking & Examination	Case presentation
• Dysphagia	Surgery	Bed side History taking & Examination	Case presentation
Cervical Lymphadenopathy	Surgery	Bed side History taking & Examination	Case presentation
• Parotid Tumour	Surgery	Bed side History taking & Examination	Case presentation
• Submandibular gland swelling	Surgery	Bed side History taking & Examination	Case presentation
• Breast Lump/Discharge	Surgery	Bed side History taking & Examination	Case presentation
• Peripheral arterial Disease	Surgery	Bed side History taking & Examination	Case presentation

• Diabetic Foot	Surgery	Bed side History taking & Examination	Case presentation
• flank pain	Urology	Bed side History taking & Examination	Case presentation
• Bladder OutFlow obstruction	Urology	Bed side History taking & Examination	Case presentation
• Hematuria	Urology	Bed side History taking & Examination	Case presentation
• Acute Retention of Urine	Urology	Bed side History taking & Examination	Case presentation
• Foleys Catheterization in a dummy	Urology	Ward/Skills Lab	OSPE
• Examination of Male Genitalia	Urology	Ward/Skills Lab	OSPE
• Surgical Instruments Identification	Surgery	Operation Theatre	OSPE
• Basic Surgical Skills(Instrument Handling, Suturing and Knot Tying)	Surgery	Ward/Skills Lab	OSPE
• Perform primary and secondary survey on a dummy	Surgery	Ward/Skills Lab	OSPE

Attitudes - 4 th year			
LEARNING OBJECTIVE	DISCIPLINE	LEARNING STRATEGY	ASSESSMENT TOOL
Obtaining informed Consent for Appendicectomy	Surgery	Role Play	OSPE

Obtaining informed consent for radical nephrectomy	Urology	Role Play	OSPE
Counseling a patient with retention for catheterization	Urology	Role Play	OSPE

Skill - 5 th year			
LEARNING OBJECTIVE	DISCIPLINE	LEARNING STRATEGY	ASSESSMENT TOOL
<i>Revisiting of all the skills as identified for 3rd year and 4th year plus the following:</i>			
• Cervical Spine Pain	Ortho	Bed side History taking & Examination	Case presentation
• pain in heels	Ortho	Bed side History taking & Examination	Case presentation
• Thoracic Spine	Ortho	Bed side History taking & Examination	Case presentation
• Lumbar Spine	Ortho	Bed side History taking & Examination	Case presentation
• Painful Hip Joint	Ortho	Bed side History taking & Examination	Case presentation
• Elbow joint	Ortho	Bed side History taking & Examination	Case presentation
• Perform primary and secondary survey on a dummy	Surgery	Ward/Skills Lab	OSPE
• Basic Life Support	Anaesthesia	Skills Lab	OSPE
• Endotracheal intubation	Anaesthesia	Skills Lab	OSPE
Attitudes - 5 th year			
LEARNING OBJECTIVE	DISCIPLINE	LEARNING STRATEGY	ASSESSMENT TOOL
• Obtaining informed Consent from a patient undergoing stoma formation	Surgery	Role Play	OSPE

Obtaining informed Consent from a patient undergoing leg amputation	Surgery	Role Play	OSPE
Demonstrate breaking bad news of carcinoma breast	Surgery	Role Play	OSPE
Counsel the patient about OA of knee joint	Orthopedics	Role Play	OSPE
Educate about postural corrective measure of spine	Orthopedics	Role Play	OSPE

Obstetrics and Gynaecology

MBBS Curriculum

ESSENTIALS OF OBSTETRICS AND GYNAECOLOGY

Placement in curriculum: Year 03

Subject: OBS& GYNAE

DEPARTMENT OF OBSTETRICS AND GYNECOLOGY MBBS 3rd Year

TABLE OF CONTENTS

Sr. No	Topics	Sr. No	Topics
1.	Introduction to the module	10.	Female pelvis and Anatomy of fetal skull
2.	Common definitions in Obstetrics and gynecology	11.	Physiology of normal labor
3.	Physiological changes in pregnancy (Physiology)	12.	Mechanism of normal labor
4.	Antenatal care(ANC)	13.	Management of labour and delivery
5.	Danger signs in pregnancy	14.	Postnatal care

6.	Routine investigations for ANC	15.	Bleeding in early pregnancy
7.	Prescribing in pregnancy	16.	Management of miscarriages
8.	Public health aspect of antenatal care	17.	Ectopic pregnancy
9.	Common Symptoms in Pregnancy		

Introduction	Gynaecology and Obstetrics is a surgical specialty dealing with reproductive health care. The intent of teaching of this essential subject to medical undergraduate is to inculcate the fundamentals of reproductive health care. Syllabus of third year Obstetrics and Gynaecology focuses mainly on basic knowledge and skills.
Outcomes	Knowledge To equip students with evidence based knowledge, practices and guidelines to enable them to • Understand Physiological changes in pregnancy • Interpret the blood tests during normal pregnancy • List the components of antenatal care • Diagnose and manage minor pregnancy complication in antenatal clinic • Recognize the danger signs in pregnancy and their possible causes • Recognize the high-risk cases in pregnancy • Define the drug safety categories in pregnancy • Recognize the public health importance of pregnancy care • Recognize common problems during pregnancy like backache, syncope, vomiting, constipation, and breathless and co relate them with physiological changes in pregnancy

	• Outline the physiological changes in labor and delivery • Define the different stages of labor • Enlist the different options of analgesia during labor • Outline the steps of physical and psychological care of a patient after delivery. • Compare and contrast benefits of breast feeding and bottle feeding • Advising contraception to an postnatal woman for birth spacing • Define the different types of miscarriages • Describe the medical and surgical treatments available for different types of miscarriages and their complications • Recognize the symptoms and signs of a patient with ectopic pregnancy • Describe the medical and surgical methods of treatment of ectopic pregnancy Skills To equip students with skills to • Take obstetric & gynaecological history • Perform general physical and abdominal examination of obstetric and gynaecological patients • Perform vaginal exam on a manikin including a per speculum examinations and bimanual pelvic exam • Demonstrate the steps of emergency care in case of danger signs in a pregnant patient • Demonstrate the seven discrete movements made by the fetus during passage through the birth canal on a manikin • Prepare and interpret partograms of normal laboring woman. Attitude • Demonstrate professionalism and mannerism especially bed side manners • Communicate effectively with the patient regarding Obstetrics and Gynaecology diseases and its related issues • Understands medical ethics and its application pertaining to Obstetrics and Gynaecology • Maintain the confidentiality of the patient
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	• Adherence to the principles of Nonmaleficence where one ought not to inflict evil or harm • Adherence to the principles of Beneficence , which implies that doctor should act in the best interest of the patient • Adherence to the principles of Autonomy , where the patient has the right to refuse or choose a medical treatment • Understands importance of informed high risk consent
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OVERVIEW – ESSENTIALS OF OBSTETRICS AND GYNECOLOGY

Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
Introduction to the module	OBSTETRICS AND GYNECOLOGY	- Recognize all the members of the faculty - Understand the training plan of third year - Know the contents of the third-year module	LGIS (Large group interactive session)	
Common definitions in Obstetrics and gynecology	OBSTETRICS AND GYNECOLOGY	Define the common terms used in the subject of Obstetrics and Gynecology	LGIS	MCQs
Physiological changes in pregnancy (Physiology)	OBSTETRICS	- Understand the adaptations a woman, s body undergoes during pregnancy to accommodate the growing embryo or fetus and to prepare her for labor. - Compare the normal physiological changes in the cardiovascular, respiratory, renal, and gastrointestinal systems in a pregnant and non-pregnant patient. - Compare and contrast the important effects in a pregnant woman of estrogen and progesterone and correlate their functions. - Interpret the blood tests during normal pregnancy.	LGIS	MCQs
Antenatal care(ANC)	OBSTETRICS	- List the components of antenatal care - Plan a schedule of antenatal visits for a normal pregnant woman	LGIS SGD	SEQs, MCQs

		- Plan hematological investigations preformed at the booking visit - Select the infections screened for at the booking visit, and summarize the possible adverse sequelae associated with these infections. - Diagnose and manage minor pregnancy complications in antenatal clinic.		
Danger signs in pregnancy	OBSTETRICS	- Recognize the danger signs in pregnancy and their possible causes - Outline the steps of emergency care in case of danger signs in a pregnant patient - Recognize the high-risk cases in pregnancy - Identify the screening tests used to detect these high-risk cases.	LGIS	SEQs, MCQs
Routine investigations for ANC	OBSTETRICS	- List the investigations advised to a pregnant patient and to be able to justify them. - Interpret the results of investigations - Differentiate between normal and abnormal values	LGIS	MCQ OSCE
Prescribing in pregnancy	OBSTETRICS	- Define the drug safety categories in pregnancy - List the drugs having adverse effects during pregnancy - Know the use of commonly used drugs in pregnancy like Hematinics, antacids, analgesics, antibiotics, and antiemetics. - Enlist the factors which appear to determine the extent of placental transfer of drugs given to the mother.	LGIS	MCQ OSCE

Public health aspect of antenatal care	OBSTETRICS	- Recognize the public health importance of pregnancy care - Understand antenatal care at community level - Outline the role of general practitioners, midwives, lady health workers in primary care.	LGIS	SEQ MCQ
Common Symptoms in Pregnancy	OBSTETRICS	- Recognize common problems during pregnancy like backache, syncope, vomiting, constipation and breathlessness and co relate them with physiological changes in pregnancy. - Recognize the symptoms during pregnancy like pain, headache, fever, convulsions, bleeding, vaginal discharge which may indicate a disease. - Outline the management of these symptoms	LGIS	MCQ SEQ OSCE
Female pelvis and Anatomy of fetal skull	OBSTETRICS	- Describe the female pelvis and identify the important features of pelvis for obstetric care - Enlist the boundaries and components of perineum and understand the clinical relevance of pelvic anatomy (pelvic examination, episiotomy) - Describe the main features of fetal skull including landmarks and diameters in various presentations and their importance for labor and delivery.	Small group in skills lab	OSCE
Physiology of normal labor	OBSTETRICS	Recognize the factors that are implicated in the onset of labor	LGIS	SEQs MCQs

		• Outline the physiological changes in labor and delivery • Define the different stages of labor		
Mechanism of normal labor	OBSTETRICS	• Diagnose the first and second stage of labor • Enlist and describe the seven discrete movements made by the fetus during its passage through the birth canal • Demonstrate these movements on a manikin.	Small groups in skill lab	OSCE SEQs MCQ
Management of labour and delivery	OBSTETRICS	• Outline the management of first, second and third stage of labor • Prepare and interpret partograms of a normal laboring woman • Define the components of a normal CTG and predict fetal distress • Enlist the different options of analgesia during labor • Describe the active and physiological management of third stage of labor	Small group in skills lab and labor ward	OSCE SEQs MCQ
Postnatal care	OBSTETRICS	• Outline the steps of physical and psychological care of a patient after delivery. • Compare and contrast benefits of breast feeding and bottle feeding • Recognize the danger signs which indicate prompt intervention as hemorrhage, fever, offensive vaginal discharge, calf tenderness and breast tenderness.	LGIS Small gp in postnatal ward HDU	SEQs MCQs OSCE

		Advise contraception to a postnatal woman for birth spacing		
Bleeding in early pregnancy	OBSTETRICS	- List the possible causes of bleeding in early pregnancy - Differentiate between spontaneous miscarriage and induced abortion - Define the different types of miscarriages - Diagnose the different types of miscarriages	LGIS	SEQs MCQs
Management of miscarriages	GYNAECOLOGY	- Outline the treatment available for different types of abortions. - Describe the medical and surgical treatments available for different type of miscarriages and their complications	LGIS	SEQs MCQs
Ectopic pregnancy	GYNAECOLOGY	- Recognize the symptoms and signs of a patient with ectopic pregnancy - Critically appraise the role of investigations in the diagnosis of ectopic pregnancy - Compare and contrast the signs and symptoms of ectopic pregnancy and first trimester miscarriage. - Know the medical and surgical methods of treatment of ectopic pregnancy.	LGIS	SEQs MCQs

ESSENTIALS OF OBSTETRICS AND GYNAECOLOGY

Placement in curriculum: Year 4th

Subject : OBS& GYNAE

DEPARTMENT OF OBSTERTICS and GYNAECOLOGY

MBBS 4th Year

TABLE OF CONTENTS

OBSTERTICS			
Sr. No	Topics	Sr. No	Topics
10.	Pre-pregnancy care	13.	APH
11.	Anemia in Pregnancy	14.	Fetal surveillance and distress
12.	Hypertensive disorders	15.	IUGR
13.	Diabetes in pregnancy	16.	Breech
14.	Heart disease in pregnancy	17.	Other malpresentation/ malposition
15.	Liver disease in pregnancy	18.	Multiple pregnancy
16.	Respiratory, Renal and disease in pregnancy	19.	Abnormal labour
17.	Epilepsy and Thyroid disease in pregnancy	20.	Complications of 3 rd stage of labor
18.	PPH	21.	Puerperal problems
19.	Oligo/ poly hydramnios	22.	Operative delivery
20.	Preterm labor/ Pre PROM	23.	Perinatal Mortality
21.	Post term-IOL		
GYNAECOLOGY			
Sr. No	Topics		
1.	Menstrual disorders		
2.	Amenorrhea		
3.	Infertility		
4.	Contraception		
5.	Management of miscarriages		
6.	Trophoblastic tumors		

Introduction	Gynaecology and Obstetrics is a surgical specialty dealing with reproductive health care. The Intent of teaching of this essential subject to medical undergraduate is to inculcate the fundamental of reproductive health care. Syllabus of fourth year Obsterics and Gynaecology focuses mainly on basic and advance knowledge and skills
Outcomes	Knowledge To equip students with evidence based knowledge, practices and guidelines to enable them to • Identify the maternal conditions that require pre-pregnancy care and discuss the principles of management. • Plan investigations and interpret them to diagnose different types of anemia • Describe the pathophysiology and principle of management and complications of pre-eclampsia • Evaluate the screening tests for diabetes in pregnancy • Summarize the principles of management of diabetes in pregnancy • Outline management of women with cardiac disease and pregnancy during antenatal period, labor and delivery • Plan a workup for patient with abnormal liver tests • Enumerate the causes of seizures in pregnancy • Plan the management of patient who is epileptic and pregnant and monitor the drugs accordingly • Plan management of hypo or hyperthyroidism in pregnancy • Summarize the cardiac and management of primary and secondary PPH • Outline the management of polyhydramnios and oilgohydramnios • Enlist the principles of diagnosis and management of threatened preterm labour, preterm pre-labour rupture of membrane and preterm labour • Outline the management of post-term pregnancy • Outline the steps of management and possible complications in case of APH • Interpret reassuring and non-reassuring CTG to detect fetal distress • Distinguish between symmetrical and asymmetrical IUGR and compare and contrast their etiological factors, pathogenesis, principles of management and prognosis. • Enlist the different maneuvers used in breech delivery along with complications

	• Define the indications of external cephalic version with contraindications • Summarize the principles of diagnosis and management of Brow, Face and Shoulder presentation. • Summarize the maternal and fetal complications of twins in pregnancy and labor. • Diagnose and manage abnormal labor during first and second stage • Summarize the causes and management of primary & secondary PPH. • Identify causes of postpartum pyrexia and its management including puerperal sepsis, breast abscess, and wound infection. • Compare and contrast the indications, procedure, contraindications and complications of forceps and vacuum delivery • Know the indications, procedure, complications of caesarean sections • Critically compare high PNMR of Pakistan with developed countries. • Formulate the management of heavy menstrual bleeding. • Describe a classification of causes of amenorrhea, based on the primary site of problem. • Appraise the general principles of treatment of infertile couple. • Categorize methods of contraception and have a general knowledge of pros and cons of each with their failure rates and complications. • Critically appraise the treatment available for different types of abortions including threatened miscarriage, incomplete miscarriage, missed miscarriage, inevitable miscarriage and complete miscarriage. • Outline the principles of management of benign and malignant Trophoblastic disease. Skills To equip students with skills to • Demonstrate different skull diameters and landmarks • Read CTG and interpret in labour ward • Demonstrate on a manikin the mechanism of labor • Demonstrate how to take BP , tendon reflexes and clonus • Demonstrate Rush catheter insertion on dummy • Demonstrate I/V cannula insertion and catheterization • Demonstrate ECV and Breech maneuvers on dummy • Demonstrate different mal-positions on dummy
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	• Recognize different forceps and apply vacuum /forceps • Perform pap smear and pipelle endometrial biopsy on dummy • Identify common gynecological instruments and endoscopes • Recognize various sutures. Attitude • Demonstrate professionalism and mannerism especially bed side manners • Communicate effectively with the patient regarding Obstetrics and Gynaecology diseases and its related issues • Understands medical ethics and its application pertaining to Obstetrics and Gynaecology • Maintain the confidentiality of the patient • Adherence to the principles of Nonmaleficence where one ought not to inflict evil or harm • Adherence to the principles of Beneficence , which implies that doctor should act in the best interest of the patient • Adherence to the principles of Autonomy , where the patient has the right to refuse or choose a medical treatment • Understands importance of informed high risk consent
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OVERVIEW – ESSENTIALS OF OBSTETRICS AND GYNECOLOGY

Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
Pre-pregnancy care	OBSTERTICS	• Plan the topics that may be discussed in pre-pregnancy counseling of apparently healthy women and appraise the screening tests that may be performed in them. • Identify the maternal conditions that require pre-pregnancy care and discuss the principles of management.	LGIS Small group	MCQ OSCE

Anemia in Pregnancy	OBSTERTICS	• Define anemia in pregnancy • Arrange in approximate order of prevalence the common causes of anemia in Pakistan • Plan investigations and interpret them to diagnose different types of anemia • Outline the management of anemic women during pregnancy	Lecture Small group	SEQ MCQ
Hypertensive disorders	OBSTERTICS	• Describe the pathophysiology of pre-eclampsia • Categorize a hypertensive patient in pregnancy according to standard classification • Compare the principles of management of pre-eclampsia with chronic essential hypertension. • Plan and interpret investigations in a pregnant patient with hypertension • List the drugs used in the management of pre-eclampsia • Identify the maternal and fetal complications of pre-eclampsia and eclampsia.	LGIS Small group	SEQ MCQ OSCE
Diabetes in pregnancy	OBSTERTICS	• Evaluate the screening tests for diabetes in pregnancy • Compare and contrast effects on fetus and mother of pre-existing diabetes and gestational diabetes • Recognize the risk factors for gestational diabetes • Summarize the principles of management of diabetes in pregnancy • Describe the steps of pre-conceptual care of a patient with diabetes.	LGIS SGD	SEQ MCQ

Heart disease in pregnancy	OBSTERTICS	• Counsel a woman with cardiac disease prior to pregnancy • Differentiate between “normal” symptoms of pregnancy and impending cardiac failure • Enumerate the stages of heart failure according to NYHA • Outline management of women with cardiac disease and pregnancy during antenatal period, labor and delivery.	LGIS	SEQ MCQ
Liver disease in pregnancy	OBSTERTICS	• Understand the physiological changes in liver tests during pregnancy • Enumerate the causes of liver disease during pregnancy • Plan a workup for patients with abnormal liver tests • Diagnose the different liver disorders during pregnancy as cholestasis of pregnancy, hepatitis, acute fatty liver of pregnancy • Outline the management of liver disorders during pregnancy	LGIS	SEQ MCQ
Respiratory, Renal and disease in pregnancy	OBSTERTICS	• Counsel a patient before pregnancy with chronic renal disease • Outline the management of patient with pregnancy and renal disease • Recognize the common respiratory diseases during pregnancy as infections and asthma • Outline the management of respiratory infection and asthma during antenatal period	LGIS	SEQ MCQ

Epilepsy and Thyroid disease in pregnancy	OBSTERTICS	- Enumerate the causes of seizures in pregnancy - Counsel a patient with epilepsy prior to pregnancy - Plan the management of a patient who is epileptic and pregnant and monitor the drugs accordingly - Understand the risk of antileptic drugs on the developing fetus. - Interpret the results of thyroid function tests during pregnancy - List the effects of thyroid disease on the fetus and mother - Plan management of hypo or hyperthyroidism in pregnancy	LGIS	SEQ MCQ
PPH	OBSTERTICS	Summarize the causes and management of primary & secondary PPH.	LGIS Small group	MCQs OSCE SEQ
Oligo/ poly hydramnios	OBSTERTICS	- Appraise the diagnosis and the maternal and fetal conditions which can cause polyhydramnios and associated complications. - Outline the management of polyhydramnios - Categorize the causes of oligohydramnios and appraise the diagnostic modalities and how the etiological factors would modify the management.	LGIS	MCQ OSCE
Preterm labor/ Pre PROM	OBSTERTICS	- Differentiate between threatened preterm labor, Pre-term pre-labor rupture of membranes and preterm labor. - Enlist the principles of diagnosis and management of Threatened preterm labor, Preterm pre-labor rupture of membranes and Preterm labor.	LGIS	MCQ SEQ
Post term-IOL	OBSTERTICS	- Differentiate between post-dates and post term pregnancy and appraise the policy of Induction of labor in each instance. - List the complications of post term pregnancy - Outline the management of post-term pregnancy	LGIS	MCQ SEQ

APH	OBSTERTICS	• Illustrate a diagram showing position of placenta in major and minor placenta previa • Compare and contrast symptoms and signs found in women with vaginal bleeding secondary to placental abruption and placenta previa to reach a proper diagnosis • Evaluate the investigations required for a patient with ante-partum hemorrhage • Outline the steps of management and possible complications in case of APH	LGIS SGD	MCQ OSCE SEQ
Fetal surveillance and distress	OBSTERTICS	• Understand the role of kick count chart, ultrasound, cardiotocography, biophysical profile, doppler studies for fetal surveillance. • Interpret reassuring and non-reassuring CTG to detect fetal distress	LGIS SGD	MCQ OSCE SEQ
IUGR	OBSTERTICS	• Differentiate between the terms small for gestational age and Intra-uterine growth restriction. • Critically analyze how he/ she will reach a diagnosis of Intrauterine growth restriction through relevant history, clinical examination and ultrasound examination • Distinguish between symmetrical and asymmetrical IUGR and compare and contrast their etiological factors, pathogenesis, principles of management and prognosis.		MCQ SEQ
Breech	OBSTERTICS	• Appraise breech presentation, its incidence, predisposing factors, diagnosis and principles of management in the antenatal period and in labor. • Enlist the different maneuvers used in breech delivery along with complications • Define the indications of external cephalic version with contraindications	Small group LIGS	MCQ OSCE SEQ

		Compare maternal and fetal outcomes in vaginal breech delivery with delivery by Elective Lower Segment Caesarean section.		
Other malpresentation/ malposition	OBSTERTICS	- Summarize the principles of diagnosis and management of Brow, Face and Shoulder presentation. - Summarize the principles of diagnosis and management of Mal-positions mainly occipito-posterior position	LGIS Small groups	MCQ OSCE SEQ
Multiple pregnancy	OBSTERTICS	- Analyze the reasons for increasing incidence of multiple pregnancy. - Differentiate between monozygotic and dizygotic twins in terms of mechanism, diagnosis and complications in antenatal period and labor. - Appraise the role of clinical examination and ultrasound examination in the diagnosis of multiple pregnancy. - Summarize the maternal and fetal complications of twins in pregnancy and labor. - Appraise the principles of management in pregnancy and labor	LGIS	MCQ SEQ
Abnormal labour	OBSTERTICS	- Recognize the different patterns of abnormal labor - Diagnose and manage abnormal labor during first and second stage - Recognize and manage fetal compromise during labor	LGIS Small group	MCQ OSCE SEQ
Complications of 3 rd stage of labor	OBSTERTICS	- Summarize the causes and management of primary & secondary PPH. - List the risk factors and warning signs of uterine inversion and uterine rupture - Appraise with management of uterine inversion and rupture.	LGIS Small group	MCQ OSCE SEQ

Puerperal problems	OBSTERTICS	- Identify causes of postpartum pyrexia and its management including puerperal sepsis, breast abscess, and wound infection. - Identify the causes of secondary PPH	LGIS Postnatal ward	MCQ OSCE SEQ
Operative delivery	OBSTERTICS	- List the different grades of perineal tears - Understand the management of episiotomy - Compare and contrast the indications, procedure, contraindications and complications of forceps and vacuum delivery - Know the indications, procedure, complications of caesarean sections	LGIS Skill lab OT	MCQ OSCE
Perinatal Mortality	OBSTERTICS	- Differentiate between Perinatal Mortality rates (PNMR) and perinatal mortality ratio. - Critically compare high PNMR of Pakistan with developed countries. - Critically appraise the factors leading to high PNMR and ways and means to reduce it.	LGIS SGD with paedsdept	MCQ OSCE
Menstrual disorders	Gynaecology	- Describe the hormonal changes in a menstrual cycle. - Enumerate the causes of heavy menstrual bleeding - Formulate the management of heavy menstrual bleeding. - Differentiate between heavy menstrual bleeding and abnormal uterine bleeding.	LGIS	MCQ OSCE SEQ
Amenorrhea	Gynaecology	- Draw the hypothalamo – pituitaryovarian - end organ axis. - Define primary and secondary amenorrhea. - Describe a classification of causes of amenorrhea, based on the primary site of problem. - Devise a scheme of relevant and appropriate investigations to reach a diagnosis. - Appraise the principles of management available for: hypothalamic dysfunction	LGIS	MCQ OSCE SEQ

		• pituitary dysfunction, ovarian dysfunction, outflow tract abnormalities		
Infertility	Gynaecology	• Differentiate between primary and secondary subfertility and devise a classification for the causes of subfertility. • Draw a graph of the changes in serum levels of estrogen, progesterone, LH and FSH during the menstrual cycle. • Identify the main causes of male infertility and interpret a report of semen analysis • Appraise the general principles of treatment of infertile couple.	LGIS	MCQ OSCE SEQ
Contraception	Gynaecology	• Categorize methods of contraception and have a general knowledge of pros and cons of each with their failure rates and complications. • Distinguish between different modes / mechanism of action of different methods. • Compare and contrast male and female sterilization. • Know the outlines of emergency contraception	LGIS/ SGD/ Skills lab	MCQ OSCE SEQ
Management of miscarriages	Gynaecology	• Critically appraise the treatment available for different types of abortions including threatened miscarriage, incomplete miscarriage, missed miscarriage, inevitable miscarriage and complete miscarriage.	LGIS Skills lab	MCQ OSCE SEQ
Trophoblastic tumors	Gynaecology	• Outline the principles of management of benign and malignant Trophoblastic disease. C3	LGIS	MCQ SEQ

ESSENTIALS OF OBSTETRICS AND GYNAECOLOGY

Placement in curriculum: Final Year

Subject: OBS& GYNAE

DEPARTMENT OF OBSTERTICS and GYNAECOLOGY MBBS Final Year

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OBSTERTICS			
Sr. No	Topics	Sr. No	Topics
22.	Maternal mortality- Near miss safe motherhood	10.	Obstetric emergencies
23.	Obstetric Collapse	11.	Obstetric emergencies
24.	IUD	12.	Resuscitation of newborn
25.	Prenatal diagnosis-Possible Disorders	13.	Rh incompatibility
26.	Prenatal diagnosis-Tests	14.	Hydrops Fetalis
27.	Thromboembolism in pregnancy	15.	Neural Tube defects
28.	Thrombocytopenia in Pregnancy	16.	Perinatal infections
29.	Imaging in Obstetrics	17.	Psychosocial issues in pregnancy and postpartum
30.	Recurrent Pregnancy losses		

GYNAECOLOGY			
1.	UV Prolapse	16.	Cervical Cancer diagnosis and management
2.	Urogynecology- Urinary Incontinence	17.	Endometrial Ca
3.	Puberty and adolescence	18.	Ovarian Ca
4.	Chronic pelvic Pain- PID	19.	Epithelial Ovarian tumours
5.	Chronic pelvic pain – endometriosis	20.	Germ Cell Ovarian Tumors
6.	Genital tract infections –STD and STI	21.	Rare Ovarian Tumors and fallopian tubes,
7.	Menopause	22.	Benign Vulval Disease
8.	Osteoporosis	23.	Pre-invasive disease of Vulva
9.	Benign Ovarian Tumors	24.	Vulval Cancer
10.	Fibroids	25.	Pre-operative preparation
11.	Endometrial Pathology – menstrual irregularities	26.	Post op Care
12.	Common Gynecological Procedures-Open	27.	C section
13.	Common Gynecological procedures- Endoscopic	28.	Imaging in Gynecology
14.	Cervical Cancer Prevention	29.	Postnatal contraception
15.	Cervical cancer screening in low resource settings	30.	Oral Contraception

Introduction	Gynaecology and Obstetrics is a surgical specialty dealing with reproductive health care. The intent of teaching of this essential subject to medical undergraduate is to inculcate the fundamental of reproductive health care Syllabus of final year Obstetrics and Gynaecology focuses mainly on basic and advance knowledge and skills
Outcomes	Knowledge To equip students with evidence based knowledge, practices and guidelines to enable them to • Critically appraise the factors leading to high MMR in Pakistan and ways and means of reducing it. • Categorize the obstetric and non-obstetric causes of maternal collapse and explain the general principles of management of obstetric shock including ABC • Plan the tests that are necessary for prenatal diagnosis. • Define the causes and investigations used to detect thromboembolism in a patient • Enumerate the causes of thrombocytopenia during pregnancy and outline the management of these patients • Critically appraise the risk factors of recurrent miscarriages and give a treatment plan for such patients • Explain the prevention, risk factors, and warning signs of uterine inversion, uterine rupture, amniotic fluid embolism • Draw a diagram showing the mechanism of Rhesus immunization. • Distinguish between immune and non-immune causes of hydrops fetalis. • Understand the common viral and bacterial infections seen in pregnancy that have implications on the mother, fetus and infant. • Understand the psychological changes that occur in the normal puerperium • Appraise the methods of treatment of uterovaginal prolapse and select factors that are important in the choice of best treatment. • Classify urinary incontinence and differentiate between detrusor instability and urodynamic stress incontinence. • Critically appraise the role of urodynamic investigations for the diagnosis of cause of urinary incontinence.

	• Appraise the changes and their sequence of appearance at puberty and describe disorders of puberty like premature and delayed puberty. • Categorize the gynecological and non-gynecological causes of chronic pelvic pain. • Evaluate the policy of laparoscopy for all women with chronic pelvic pain. • Describe the physiology, pathology and clinical picture of various types of vaginal discharge. • Appraise menopause and its causes. • Compare the risks and benefits of hormonal replacement therapy. • Classify common benign tumors of ovary along with their clinical presentation and principles of management. • Outline the different methods of treatment of fibroids and their symptoms • Classify the reasons of abnormal uterine bleeding according to PALM- COEIN classification • Describe the different treatment modalities for menorrhagia. • Describe the procedure, pre –op preparation, indications and complications of abdominal and vaginal hysterectomy, hysteroscopy, laparoscopy, colposcopy & ERPC • Evaluate the role of cervical smears and colposcopy in detecting and treating the pre-cancerous lesions of cervix. • Describe the types, screening, diagnosis and management of ovarian, cervical, endometrial, and vulval cancer. • Enlist the indications, techniques, complications, post op care of patients undergoing caesarean section • Describe the mode of actions, contraindications, complications, benefits and side effects of different methods of contraception. Skills To equip students with skills to • Counsel a patient concerning the maternal and fetal complications associated with eclampsia • Demonstrates IUCD insertion on dummy • Counsel/explain the methods of use of contraception according to scenario • Demonstrate MVA application on dummy • Demonstrate all maneuvers for shoulder dystocia on dummy • Demonstrate resuscitation steps on dummy
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	• Counsel parents of a still born baby or intrauterine death of a baby • Counsel for recurrent pregnancy loss • Counsel a case of thalassemia • Counsel a couple with newly diagnosed downs syndrome • Counsel on a women for breast feeding • Counselling of a patient with menopause Attitude • Demonstrate professionalism and mannerism especially bedside manners • Communicate effectively with the patient regarding Obstetrics and Gynaecology diseases and its related issues • Understands medical ethics and its application pertaining to Obstetrics and Gynaecology • Maintain the confidentiality of the patient • Adherence to the principles of Nonmaleficence where one ought not to inflict evil or harm • Adherence to the principles of Beneficence, which implies that doctor should act in the best interest of the patient • Adherence to the principles of Autonomy, where the patient has the right to refuse or choose a medical treatment • Understands importance of informed high risk consent
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OVERVIEW – ESSENTIALS OF OBSTETRICS AND GYNECOLOGY

Topic	Discipline	Learning Objectives	Learning Strategy	Assessment Tool
Maternal mortality- Near miss safe motherhood	OBSTETRICS	• Differentiate between maternal mortality rate and maternal mortality ratio. • Compare maternal mortality rate (MMR) in Pakistan with MMR of developed countries. • Critically appraise the factors leading to high MMR in Pakistan and ways and means of reducing it. • Outline the interventions for safe motherhood	LGIS	MCQ OSCE
Obstetric Collapse	OBSTETRICS	• Categorize the obstetric and non-obstetric causes of maternal collapse and explain the general principles of management of obstetric shock including ABC • Apprise the principles of specific management of the following obstetric emergencies: ✓ Obstetric hemorrhage ✓ Eclampsia ✓ Cord Prolapse ✓ Obstructed labor	LGIS Skills lab	SEQ MCQ
IUD	OBSTETRICS	• Differentiate between Perinatal Mortality rates (PNMR) and perinatal mortality ratio. • Critically compare high PNMR of Pakistan with developed countries. • Critically appraise the factors leading to high PNMR and ways and means to reduce it.	LGIS	SEQ MCQ
Prenatal diagnosis- Possible Disorders	OBSTETRICS	• Identify pregnant women who need prenatal diagnosis. • Plan the tests that are necessary for prenatal diagnosis.	LGIS	SEQ MCQ
Prenatal diagnosis- Tests	OBSTETRICS	• Appraise the anomaly scan in detail with its purpose and systems examined.	LGIS Small gp	SEQ MCQ

		• Interpret the following investigations: • The result of Down's syndromes screening tests • The reports from an anomaly scan.		
Thromboembolism in pregnancy	OBSTETRICS	• Define the causes of thromboembolism in pregnancy • Plan prevention of women who are prone to thromboembolism • Define the investigations used to detect thromboembolism in a patient • Outline the treatment	LGIS	SEQ MCQ
Thrombocytopenia in Pregnancy	OBSTETRICS	• Enumerate the causes of thrombocytopenia during pregnancy • Diagnose various causes of thrombocytopenia during pregnancy • Outline the management of these patients	Lecture	SEQ MCQ
Imaging in Obstetrics	OBSTETRICS	• Understand the use of X ray, CT scan in obstetrics • Describe the different roles of ultrasound in obstetrics • Appraise the first and second trimester scans in detail with its purpose	LGIS	SEQ MCQ
Recurrent Pregnancy losses	OBSTETRICS	• Critically appraise the risk factors of recurrent miscarriages • Devise an investigation plan for a patient with recurrent miscarriages. • Give a treatment plan for patients for such patients	LGIS	SEQ MCQ
Obstetric emergencies	OBSTETRICS	• Understand the prevention, risk factors and warning signs of shoulder dystocia • Devise a management algorithm for shoulder dystocia • Enlist the prevention, risk factors, warning signs and management of cord prolapse	LGIS	SEQ MCQ
Obstetric emergencies	OBSTETRICS	• Explain the prevention, risk factors, and warning signs of uterine inversion, uterine rupture, amniotic fluid embolism • Devise the management plan of such cases.	LGIS	SEQ MCQ

Resuscitation of newborn	OBSTETRICS	Understand and to be able to prescribe the unique features of newborn babies and transition to extra-uterine life	Lecture	SEQ MCQ
Rh incompatibility	OBSTETRICS	- Draw a diagram showing the mechanism of Rhesus immunization. - Appraise how Rhesus immunization can be prevented. - Outline the management of Rh sensitized patient	LGIS	SEQ MCQ
Hydrops Fetalis	OBSTETRICS	- Distinguish between immune and non-immune causes of hydrops fetalis. - Describe the key features from an obstetrics point of view, urgent action in delivery room or soon after wards - Describe the key-points in postnatal management of newborns	LGIS	SEQ MCQ
Neural Tube defects	OBSTETRICS	- Hydrocephalus - Anencephalies - Spina bifida - Management	LGIS	SEQ MCQ
Perinatal infections	OBSTETRICS	- Understand the common viral and bacterial infections seen in pregnancy that have implications on the mother, fetus and infant. - Learn which infections are included in routine pregnancy screening and the principles of the management. - Learn the consequences of perinatal infections on developing fetus.	LGIS	SEQ MCQ
Psychosocial issues in pregnancy and postpartum	OBSTETRICS	- Understand the psychological changes that occur in the normal puerperium - Recognize and manage common postpartum psychiatric disorders	LGIS	SEQ MCQ

UV Prolapse	GYNAECOLOGY	• Draw a sagittal section through the pelvis, identifying the vaginal wall, cervix and surrounding structures. • Differentiate between: • Cystocele and urethrocele • Rectocele and • Vaginal vault prolapses and • Uterine prolapse • Classify the uterine prolapse according to severity including POPq classification. • Appraise the methods of treatment of uterovaginal prolapse and select factors that are important in the choice of best treatment.	LGIS	SEQ MCQ
Urogynecology- Urinary Incontinence	GYNAECOLOGY	• Classify urinary incontinence and differentiate between detrusor instability and urodynamic stress incontinence. • Categorize the symptoms that are associated with: • Urodynamic stress incontinence • Detrusor instability • Voiding difficulty • True incontinence. • Critically appraise the role of urodynamic investigations for the diagnosis of cause of urinary incontinence. • Appraise the principles of management of: • Urodynamic stress incontinence • Detrusor instability • Voiding difficulty.	LGIS	SEQ MCQ
Puberty and adolescence	GYNAECOLOGY	• Appraise the changes and their sequence of appearance at puberty and describe disorders of puberty like premature and delayed puberty. • Appraise the malformation of uterus and vagina their examination and treatment.	LGIS	SEQ MCQ

		Describe the relationship of genital tract abnormalities with urinary tract abnormalities		
Chronic pelvic Pain- PID	GYNAECOLOGY	Appraise the symptoms of presentation, criteria of diagnosis, relevant investigations and principles of treatment as well as prevention of PID.	LGIS	SEQ MCQ
Chronic pelvic pain – endometriosis	GYNAECOLOGY	- Categorize the gynecological and non-gynecological causes of chronic pelvic pain. - Differentiate between primary and secondary dysmenorrhea and describe the differences in symptomatology of each. - Appraise the treatment available for primary dysmenorrheal - Point out the investigations that may be undertaken for chronic pelvic pain and explain the reasons for each. - Explain what is meant by endometriosis along with theories of its etiology and possible associated signs and symptoms. Appraise the medical and surgical treatment available for endometriosis. - Evaluate the policy of laparoscopy for all women with chronic pelvic pain.	LGIS	MCQ SEQ

Genital tract infections –STD and STI	GYNAECOLOGY	• Classify the causes of vaginal discharge. • Describe the physiology, pathology and clinical picture of various types of vaginal discharge. • Summarize methods of diagnosis of various types of vaginal discharge including bacteriology and other tests • Elicit a sexual history from a patient giving consideration to the ethical and communication skills aspect. • Outline the management of various types of lower genital infections maintaining confidentiality • Appraise the symptoms of presentation, criteria of diagnosis, relevant investigations and principles of treatment as well as prevention of PID.	LGIS	SEQ MCQ
Menopause	GYNAECOLOGY	• Appraise menopause and its causes. • Appraise the hormonal and physical changes that occur during climacteric. • Classify the symptoms of climacteric in to short term and medium term. • Critically appraise the different regimens of hormonal therapy and explain the reasons of why progesterone is used in post-menopausal women who have a uterus. • Compare the risks and benefits of hormonal replacement therapy.	LGIS	SEQ MCQ
Osteoporosis	GYNAECOLOGY	• Evaluate the important risk factors for osteoporosis • Evaluate the measures used for prevention of osteoporosis • Critically appraise the different investigations used for diagnosis and treatment regimens for osteoporosis	LGIS	SEQ MCQ
Benign Ovarian Tumors	GYNAECOLOGY	• Classify common benign tumors of ovary along with their clinical presentation and principles of management.	LGIS	SEQ MCQ

Fibroids	GYNAECOLOGY	- Appraise the epidemiology, etiology, clinical presentation and principles of management of fibroid uterus. - Classify the different types of fibroids - Plan the investigations required to diagnose and manage fibroids - Outline the different methods of treatment of fibroids and their symptoms	LGIS	SEQ MCQ
Endometrial Pathology – menstrual irregularities	GYNAECOLOGY	- Understand normal endometrial physiology, and various disorders that commonly present - Classify the reasons of abnormal uterine bleeding according to PALM- COEIN classification - Describe the role of TVS, hysteroscopy and endometrial biopsy in diagnosing a patient with abnormal uterine bleeding. - Describe the different treatment modalities for menorrhagia.	LGIS	
Common Gynecological Procedures-Open	GYNAECOLOGY	- Describe the procedure, pre –op preparation, indications and complications of abdominal and vaginal hysterectomy - Describe the procedure indications and complications of manual vacuum aspiration - Describe the procedure, risks and complications of ERPC	LGIS	SEQ MCQ
Common Gynecological procedures-Endoscopic	GYNAECOLOGY	- Enlist the procedure, indications, and contraindications of hysteroscopy - Enlist the procedure, indications, and contraindications of laparoscopy - Enlist the procedure, indications, and contraindications of colposcopy	LGIS	SEQ MCQ

Cervical Cancer Prevention	GYNAECOLOGY	- Understand the pathophysiology of pre- cancerous lesions of cervix - Enumerate the different etiological factors in cervical cancer. - Evaluate the role of cervical smears and colposcopy in detecting and treating the pre-cancerous lesions of cervix. - Plan prevention of cervical cancer - HPV vaccine	LGIS	SEQ MCQ
Cervical cancer screening in low resource settings	GYNAECOLOGY	- Outline the procedure of carrying out VIA in places where cytology is not available - Justify the 'see and treat 'VIA positive cases with cryotherapy in low resource settings	LGIS SGD	SEQ MCQ
Cervical Cancer diagnosis and management	GYNAECOLOGY	- Understand the patho-physiology of invasive disease of cervix - Identify the clinical features which can lead to a diagnosis of cancer cervix - Describe the staging system of cervical cancer along with a management plan	LGIS	SEQ MCQ
Endometrial Ca	GYNAECOLOGY	- Explain the genetic factors involved in the epidemiology of ovarian cancers Symptoms ✓ Staging ✓ Diagnosis ✓ Treatment	Lecture	SEQ MCQ
Ovarian Ca	GYNAECOLOGY	Describe a histological classification of ovarian tumors	Lecture	SEQ MCQ
Epithelial Ovarian tumours	GYNAECOLOGY	- Appraise the management of surface epithelial tumors of ovary along with their basic clinical pathology including principles of tumors staging. - Enlist the methods of screening of ovarian cancers along with criteria of surgery and chemotherapy.	Lecture	SEQ MCQ

		Calculate the relative malignancy index for ovarian malignancy		
Germ Cell Ovarian Tumors	GYNAECOLOGY	Describe the types, screening, diagnosis and management of Germ cell tumors	LGIS	SEQ MCQ
Rare Ovarian Tumors and fallopian tubes,	GYNAECOLOGY	Describe the screening, diagnosis and management of rare ovarian tumors and cancer of fallopian tube	LGIS	SEQ MCQ
Benign Vulval Disease	GYNAECOLOGY	- Devise a classification system of vulvar disorders - Describe the pathology, symptoms, diagnosis, and management common vulval disorders as Lichen sclerosis and vulval ulcers.	LGIS	SEQ MCQ
Pre-invasive disease of Vulva	GYNAECOLOGY	- Critically appraise diagnosis and assessment of VIN - Outline the management plan of VIN	LGIS	SEQ MCQ
Vulval Cancer	GYNAECOLOGY	Describe the natural history, staging, diagnosis, assessment and treatment of vulval cancer	LGIS	SEQ MCQ
Pre-operative preparation	GYNAECOLOGY	List the diagnostic tests, evaluation, preparation-anesthesia, management of gynecological patients.	Lecture	SEQ MCQ
Post op Care	GYNAECOLOGY	- Understand the steps of immediate care, care after 24 hours and later of a patient undergoing gynecological surgery - Enlist the early and late complications of gynecological surgery	Lecture	SEQ MCQ
Caesarean section	GYNAECOLOGY	Enlist the indications, techniques, complications, post op care of patients undergoing caesarean section	Lecture	SEQ MCQ
Imaging in Gynecology	GYNAECOLOGY	Understand the role of CT, MRI, and ultrasound in the diagnosis of gynecological problems.	Lecture	SEQ MCQ

Postnatal contraception	GYNAECOLOGY	• Hormonal • IUCD • Norplant	Lecture	SEQ MCQ
Oral Contraception	GYNAECOLOGY	• Describe the mode of action, contraindications, complications, benefits and side effects of oral contraceptive pills	Lecture	SEQ MCQ

Curriculum of Pediatric Medicine

Paediatric Medicine

MBBS Curriculum

SUBJECT: PAEDIATRICS THEORETICAL MODULE

PLACEMENT IN CURRICULUM: 3RD YEAR

Introduction	Paediatrics is concerned with health of newborns, infants, children and adolescents, their growth and development and their opportunities to achieve full potential as adults. This module shall introduce the students to the science of pediatrics and the horizons covered by it pertaining to the physical, mental developmental and social wellbeing of the paediatric population. Students shall be sensitized to the basic terminology used in paediatrics and key concepts of preventive paediatrics including immunization and its importance and WHO recommended programmes for prevention and treatment of sick children. This module comprises of seven lectures which shall be distributed over the 3rd year teaching sessions divided into 3 blocks.
Outcomes (Knowledge / Attitude)	By the end of paediatric module , medical students shall be able to: KNOWLEDGE 1. Understand the horizons of the subject of Paediatrics. 2. Comprehend the terminologies used in paediatrics. 3. Understand the epidemiology of morbidities and mortalities in paediatric age group. 4. Describe the normal growth and developmental physiology in children.

	- Describe the vaccinations used in Extended Programme of Immunization implemented in Pakistan as well as other vaccines with their consistency, doses and schedules. - Describe the common childhood diseases and their management according to the “ Integrated Management of Neonatal and Childhood Illnesses” according to WHO Programme. - Describe the pathophysiology, clinical signs , complications and management of hypovolemic shock. - Describe the basics of Nutritional requirements in children and morbidity caused by macro and micro nutrient deficiencies. ATTITUDE - Demonstrate self learning attitude and problem solving skills.
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AT THE END OF THIS MODULE STUDENT SHOULD BE ABLE TO:

	Topic	Learning objectives	Teaching methodology	Evaluation method
1	Introduction to Pediatrics	- Define paediatric specialty. - Define neonate , infant , child and adolescent. - Describe the health requirements of pediatric age group. - Describe indicators of child health.	LGIS	SAQ/ MCQ
2	Growth and its physiology	- Explain parameters of growth i.e. appropriate FOC, height and weight at birth and at different ages up to adolescent age. - Enumerate physical changes occurring at puberty (Tanner staging)	LGIS	SAQ/ MCQ

3	Normal development during infancy and childhood	1. Enlist the developmental domains. 2. Describe the gross motor development from birth to 2 yrs. 3. Describe the fine motor and visual development from birth to 2 yrs. 4. Describe the social development from birth to 2 yrs. 5. Describe the speech and communication development from birth to 2 yrs.	LGIS	SAQ/ MCQ
4	IMNCI	1. Enumerate the components of integrated management of neonatal and childhood diseases. 2. Explain integrated management of childhood diseases at primary and secondary levels of delivery.	LGIS/ SGD in clinics	MCQs
5	Immunization	1. Describe EPI schedule implemented in Pakistan. 2. Describe doses, routes of administration and ages of administration for various vaccinations. 3. Describe contraindications of vaccination.	LGIS	SAQ/ MCQ
6	dehydration and circulatory shock	1. Classify dehydration according to WHO classification. 2. Enumerate clinical features of circulatory shock. 3. Explain WHO protocol for management of dehydration	LGIS	SAQ/ MCQ

7	Nutrition and Micronutrient deficiencies in children	1. Define Nutrition and malnutrition. 2. Describe caloric requirement in pediatric age groups. 3. Enumerate clinical manifestations of deficiencies of Vitamins A,B,C,D,K,B12, folic acid, iron and zinc	LGIS	SAQ/ MCQ
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SUBJECT: PAEDIATRICS CLINICAL MODULE

PLACEMENT IN CURRICULUM: 3RD YEAR

DURATION: 3 WEEKS

Introduction	This paediatric module shall concentrate on imparting clinical skills hand on training on bed side with the patients. Medical students shall learn to take a paediatric case history and acquire skills to examine a paediatric patient including neonate, infant, younger child and older children and adolescents. Students shall in small batches for a duration of 3 weeks each and small group interactive session shall be conducted. At the end of module students shall be evaluated for their knowledge and skills.
Outcomes (Knowledge, Skills And Attitude)	At the end of this module, students shall be able to: KNOWLEDGE 1. Take a comprehensive paediatric history. 2. Correlate the clinical symptoms to reach a provisional diagnosis. SKILLS 1. Take a comprehensive paediatric history and evaluate all components thoroughly. 2. Perform a detailed general physical examination of a child. 3. Perform gastrointestinal examination of a child 4. Perform cardiovascular examination of a child

	5. Perform respiratory system examination of a child. 6. Perform Central nervous system examination of a child. ATTITUDE 1. Demonstrate self learning attitude and problem solving. 2. Demonstrate effective communication skills while interacting with the patient and attendants. 3. Demonstrate teamwork and positive interaction with colleges.
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Content:

Hands on teaching and practicing skills of

- Pediatric history taking
- General physical examination
- Respiratory system examination
- Cardiovascular system examination
- Gastrointestinal system examination
- Nervous system examination.

PAEDIATRIC MODULE
4TH YEAR MBBS
THEORETICAL AND CLINICAL

SUBJECT: PAEDIATRICS THEORETICAL MODULE

PLACEMENT IN CURRICULUM: 4th YEAR

TABLE OF CONTENTS:

Sr No	Topic
1.	Respiratory system
2.	Gastrointestinal system
3.	Infectious diseases
4.	Behavioral disorders

Introduction	Paediatrics is concerned with health of newborns, infants, children and adolescents, their growth and development and their opportunities to achieve full potential as adults. This module shall impart knowledge about the pediatric diseases of respiratory and gastrointestinal system and paediatric infectious diseases. At the end of module students shall be well versed with etiology, pathogenesis, clinical features, investigations, management and prognosis of these diseases. This module has a total of 31 lectures that shall be distributed throughout the 4th year teaching session over the academic year.
Outcomes (Knowledge / Attitude)	By the end of paediatric module , medical students shall be able to: KNOWLEDGE 1. Understand the pathophysiology and clinical presentation of childhood diseases of respiratory and gastrointestinal systems. 2. Understand pathophysiology, etiology and clinical features of common childhood infections. 3. Enlist and interpret appropriate investigations to diagnose these diseases. 4. Enlist appropriate management plans for these diseases. 5. Diagnose and refer specific diseases to concerned specialists. ATTITUDE • Demonstrate self learning attitude and problem solving skills.

AT THE END OF MODULE, THE STUDENT WILL BE ABLE TO

	Topics	Learning objectives	Teaching methodology	Assessment
1	ARI (Acute Respiratory Infections WHO Protocol)	1. Describe the WHO classification of Acute Respiratory Infections. 2. Describe clinical features and treatment according to WHO protocol for ARI	LGIS	MCQs SEQs

2	Community Acquired Pneumonias	1. Define Pneumonia and community acquired pneumonias and bronchiolitis 2. Describe classification of pneumonias and bronchiolitis 3. Enumerate organisms causing pneumonias at various ages 4. Describe clinical features of pneumonias / bronchiolitis 5. Describe investigation for lower respiratory tract infections. 6. Describe treatment for lower respiratory tract infections. 7. Describe complications of pneumonias	LGIS	MCQS SEQs
3	Pleural effusion / pneumothorax	1. Describe clinical features of pleural effusion and pneumothorax. 2. Enumerate causes of pleural effusion and pneumothorax. 3. Describe investigations for pleural effusion and pneumothorax. 4. describe treatment for pleural effusion.	LGIS/ SGD in clinics	MCQs
4	Croup	1. Define croup. 2. Enumerate differential diagnosis of croup 3. Describe clinical features of croup and epiglottitis 4. Enumerate investigations for croup and describe findings 5. Plan management of croup 6. Describe preventive measures for croup/ epiglottitis.	LGIS/ SGD in clinics	MCQs
5	Tuberculosis	1. Define tuberculosis and enumerate its etiology. 2. Describe pathophysiology of tuberculosis. 3. Enumerate and describe clinical features of various forms of tuberculosis according to organ involvement with clinical features.	LGIS/ SGD in clinics	MCQS SEQS
6	Tuberculosis 2	1. Describe investigative methods used to diagnose tuberculosis. 2. Describe treatment plan for tuberculosis. 3. Explain DOTS program for management of tuberculosis. 4. Describe preventive measures.	LGIS/ SGD in clinics	MCQS SEQS
7	Asthma 1	1. Define bronchial asthma.	LGIS	MCQs

		- Describe pathophysiology of bronchial asthma. - Describe the triggering factors for acute asthma. - Describe clinical features of acute bronchial asthma. - Describe investigations required to diagnose and assess severity of acute asthma. - Describe steps for management of acute asthma and use of relief drugs.		SEQS
8	Asthma 2	- Explain chronic symptoms of asthma and classify according to GINA guidelines. - Describe controller drugs used for treating asthma. - Describe the step up- step down therapy. - Describe preventive measures for controlling asthma.	LGIS/ SGD in clinics	MCQs
9	Chronic cough (Cystic fibrosis)	- Enumerate causes of chronic cough in children. - Describe pathophysiology of cystic fibrosis. - Describe clinical features of cystic fibrosis. - Enumerate investigation for diagnosis of CF. - Describe management plan for CF.	LGIS/ SGD in clinics	MCQs

GASTROINTESTINAL SYSTEM

10	Acute diarrhea and Dehydration	- Define acute diarrhea. - Enumerate organisms causing acute diarrhea. - Describe environmental factors causing diarrhea. - Describe clinical features and classify dehydration according to WHO protocol. - Describe investigations required in acute diarrhea. - Explain treatment of diarrhea according to organisms - and dehydration according to WHO protocol. - Enumerate complication caused by acute diarrhea. - Describe preventive measures.	LGIS	MCQs SEQs
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11	Classification of malnutrition	1. Define malnutrition. 2. Describe various common classifications used for malnutrition. 3. Describe clinical features of marasmus and kwashiorkor. 4. Describe WHO recommendation for management of a severely malnourished child	LGIS	MCQs SEQs
12	Malabsorption	1. Define malabsorption. 2. Enumerate causes of malabsorption in pediatric population according to age, 3. Describe pathophysiology of celiac disease. 4. Describe clinical features of celiac disease. 5. Enumerate investigations to diagnose celiac disease. 6. Make a management plan for a patient suffering from celiac disease.	LGIS	MCQs SEQs
13	Inflammatory bowel disease	1. Describe clinical features and differentiating features of crohn's disease and ulcerative colitis. 2. Describe investigations for inflammatory bowel diseases 3. Outline management plan for inflammatory bowel disease.	LGIS SGDs	MCQs SEQs
14	Jaundice (Acute Hepatitis)/ Acute fulminant hepatitis	1. Define acute hepatitis. 2. Enumerate causes of acute hepatitis. 3. Describe risk factors for developing acute hepatitis. 4. Describe clinical features of acute hepatitis. 5. Describe investigations for acute hepatitis. 6. Give plan of management for acute hepatitis. 7. Give preventive measures for acute hepatitis. 8. Define acute fulminant hepatitis. 9. Describe clinical features of acute fulminant hepatitis. 10. Describe investigations and steps of management for acute fulminant hepatitis.	LGIS SGDs	MCQs SEQs

15	Jaundice (Chronic Hepatitis B and C)	1. Define chronic hepatitis. 2. Enumerate causative organisms of chronic hepatitis. 3. Describe clinical features of chronic hepatitis and its complications. 4. Describe diagnostic criteria for chronic hepatitis 5. Give management steps for chronic hepatitis 6. Enumerate preventive measures for acquiring chronic hepatitis.	LGIS	MCQs SEQs
16	Wilson disease/ autoimmune hepatitis	1. Define Wilson disease. 2. Enumerate etiology and genetics of Wilson disease. 3. Describe autoimmune hepatitis and its etiology. 4. Describe clinical features of wilson disease and autoimmune hepatitis. 5. Enumerate investigations for Wilson disease and autoimmune hepatitis. 6. Outline management of Wilson disease and autoimmune hepatitis.	LGIS	MCQs SEQs
17	Cholestasis	1. Define cholestasis. 2. Enumerate causes of cholestasis in infants and children. 3. Describe clinical features of cholestasis. 4. Enumerate investigations for cholestasis. 5. Outline management of cholestasis.	LGIS	MCQs SEQs
18	Ascites/ portal hypertension	1. Define ascites. 2. Enumerate causes of ascites. 3. Enumerate investigations for ascites with interpretation. 4. Describe management of ascites. 5. Define portal hypertension. 6. Enumerate causes of portal hypertension 7. Enumerate clinical features of portal hypertension	LGIS	MCQs SEQs

		8. Enumerate investigation to diagnose portal hypertension. 9. Outline plan of management for acute hemorrhage and permanent measures for relief of portal hypertension.		
19	Liver abscess	1. Define liver abscess. 2. Enumerate causes of liver abscess 3. Describe clinical features of liver abscess. 4. Enumerate investigations to diagnose liver abscess. 5. Outline management for liver abscess.	LGIS	MCQs SEQs

INFECTIONS

20	Fever Without focus(Malaria / Enteric Fever)	1. Define FUO. 2. Enumerate causes of fever without focus in pediatric population. 3. Describe differentiating clinical features of malaria and typhoid fever. 4. Describe investigations for typhoid fever and malaria. 5. Describe management of typhoid fever and malaria. 6. Enumerate complications of both illnesses. 7. Enumerate preventive measures for typhoid fever and malaria.	LGIS SGD	MCQS
21	Fever without focus (UTI)	1. Enumerate causative agents of UTI in children. 2. Enumerate risk factors for UTI in children. 3. Describe clinical features of UTI. 4. Enumerate and describe investigations for UTI. 5. Describe management and complications of UTI. 6. Enumerate risk factors for recurrent UTIs in children. 7. Describe Vesicoureteric reflux and describe its grades.	LGIS/ SGD	MCQS

		8. Describe management and followup for vesicoureteric reflux.		
22	Rash with Fever (measles/ rubella)	1. Describe the different types of rashes. 2. Enumerate differential diagnoses of maculopapular rash. 3. Describe differentiating clinical features of measles and rubella. 4. Describe the investigations for measles and rubella. 5. Describe management of measles and rubella. 6. Give preventive measures for measles and rubella.	LGIS/ SGD	MCQs
23	Rash with fever (chicken pox/ petechial rash)	1. Enumerate differential diagnoses of vesicular and petechial rash. 2. Describe clinical features of varicella infection. 3. Describe investigations for varicella infection. 4. Give management for varicella infection. 5. Describe complications and prevention of varicella infection.	LGS/ SGD	MCQs/ SAQs
24	Rash with fever (petechial rash/ meningococemia)	1. Define petechial rash. 2. Enumerate causes of petechial rash. 3. Describe etiology and clinical features of meningococemia. 4. Enumerate investigations for meningococemia. 5. Outline management plan for meningococemia.	LGS/ SGD	MCQs/ SAQs

		6. Describe primary and secondary prophylaxis for meningococemia.		
25	Rash with fever (petechial rash/ dengue fever)	1. Describe clinical features of dengue fever. 2. Give investigations for diagnosing dengue fever. 3. Describe management of dengue fever.	LGS/ SGD	MCQs/ SAQs
26	Tetanus	1. Describe etiology and clinical features of tetanus in a neonate and child. 2. Enumerate investigations for tetanus. 3. Outline plan of management for tetanus. 4. Describe primary and secondary prophylaxis for tetanus.	LGS/ SGD	MCQs/ SAQs
27	Pertussis	1. Describe etiology and clinical features of pertussis. 2. Enumerate investigations for pertussis. 3. Outline plan of management for pertussis. 4. Enumerate complications of pertussis. 5. Describe prevention of pertussis.	LGS/ SGD	MCQs/ SAQs
28	Diphtheria	1. Describe etiology and clinical features of diphtheria. 2. Enumerate investigations for diphtheria. 3. Outline plan of management for diphtheria. 4. Enumerate complications of diphtheria. 5. Describe prevention of pertussis.	LGS/ SGD	MCQs/ SAQs

29	Acute Flaccid Paralysis / Poliomyelitis	1. Define acute flaccid paralysis. 2. Enumerate differential diagnoses of AFP. 3. Describe etiology and clinical features of polio 4. Enumerate investigations for polio. 5. Outline plan of management for polio. 6. Describe prevention of polio. 7. Describe polio surveillance program.	LGS/ SGD	MCQs/ SAQs
30	TORCH infections	1. Enumerate diseases of TORCH infections and their causative organisms. 2. Describe clinical features of TORCH infections. 3. Enumerate investigations for TORCH infections. 4. Outline management plan for an infant with TORCH infections. 5. Enumerate complications of TORCH infections.	LGS/ SGD	MCQs/ SAQs
31.	Behavioral disorders. (Autism/ Attention Deficit Hyperactivity Disorder)	7. Define autism spectrum disorders. 8. Describe pertinent clinical features of autism and Attention Deficit Hyperactivity Disorder. 9. Enumerate management plan for Autism and ADHD	LGIS	MCQS

SUBJECT: PAEDIATRICS CLINICAL MODULE

PLACEMENT IN CURRICULUM: 4th YEAR
DURATION: 4 WEEKS

Introduction	This paediatric module shall concentrate on imparting clinical skills hand on training on bed side with the patients. Medical students shall learn to take a paediatric case history and acquire skills to examine a paediatric patient including neonate, infant, younger child and older children and adolescents. They will refine their skills by discussing pertinent common cases with the facilitators. Students shall in small batches for a duration of 4 weeks each and small group interactive session shall be conducted in 3 -4 hours sessions. At the end of module students shall be evaluated for their knowledge and skills.
Outcomes (Knowledge, Skills And Attitude)	At the end of this module, students shall be able to: KNOWLEDGE 3. Take a comprehensive paediatric history. 4. Correlate the clinical symptoms to reach a provisional diagnosis. SKILLS 7. Take a comprehensive paediatric history and evaluate all components thoroughly. 8. Perform a detailed general physical examination of a child. 9. Perform gastrointestinal examination of a child 10. Perform cardiovascular examination of a child 11. Perform respiratory system examination of a child. 12. Perform Central nervous system examination of a child. 13. Perform case discussions in a small class interactive session with facilitators. 14. Correlate the symptoms and signs and justify differential diagnoses. ATTITUDE 4. Demonstrate self learning attitude and problem solving. 5. Demonstrate effective communication skills while interacting with the patient and attendants. 6. Demonstrate teamwork and positive interaction with colleges.

Content :

Reinforcement of Hands on teaching and practicing skills of

- Pediatric history taking
- General physical examination
- Respiratory system examination
- Cardiovascular system examination
- Gastrointestinal system examination
- Nervous system examination.
- Case based histories
- Outpatient department supervised case discussions
- Short cases

PAEDIATRIC MODULE
FINAL YEAR MBBS
THEORETICAL AND CLINICAL

SUBJECT: PAEDIATRICS THEORETICAL MODULE

PLACEMENT IN CURRICULUM: FINAL YEAR

TABLE OF CONTENTS:

Sr No	Topic
1.	Cardiovascular system
2.	Hematology/ oncology
3.	Nephrology
4.	Endocrinology
5.	Neurology
6.	Neonatology
7.	Genetics and dysmorphology
8.	Inborn errors of metabolism
9.	Rheumatology

Introduction	Paediatrics is concerned with health of newborns, infants, children and adolescents, their growth and development and their opportunities to achieve full potential as adults. This module shall impart knowledge about the pediatric diseases of cardiovascular system, hematology, oncology, neurology, nephrology, endocrinology, rheumatology. They shall be introduced to general pathophysiology of inborn errors of metabolism and basic concepts in genetics and dysmorphology. At the end of module students shall be well versed with etiology, pathogenesis, clinical features, investigations, management and prognosis of these diseases.
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	This module has a total of 46 lectures that shall be distributed throughout the final teaching session over the academic year.
Outcomes (Knowledge / Attitude)	By the end of paediatric module , medical students shall be able to: KNOWLEDGE - Understand the pathophysiology and clinical presentation of childhood diseases of cardiovascular system, hematology, oncology, neurology, nephrology, endocrinology, rheumatology. - Understand basic principles of inborn errors of metabolism and genetics and dysmorphology. - Understand pathophysiology, etiology and clinical features of common inborn errors of metabolism and common syndromes. - Enlist and interpret appropriate investigations to diagnose these diseases. - Enlist appropriate management plans for these diseases. - Diagnose and refer specific diseases to concerned specialists. ATTITUDE - Demonstrate self learning attitude and problem solving skills.

AT THE END OF MODULE, THE STUDENT WILL BE ABLE TO

	Topics	Learning Objectives	Teaching strategy	Assessment plan
1	Acyanotic Congenital Heart Diseases/ VSD	- Enumerate common acyanotic heart diseases in children. - Describe clinical features of Ventricular Septal Defect (VSD) and Patent Ductus Arteriosus (PDA). - Enumerate and explain investigations to diagnose VSD and PDA. - Describe management of VSD and PDA.	LGIS/ SGD	MCQs

2	PDA/ ASD	1. Describe clinical features of Atrial Septal Defect (ASD) and Patent Ductus Arteriosus (PDA). 2. Enumerate and explain investigations to diagnose ASD and PDA. Describe management of ASD and PDA.		
3	Cyanotic Congenital Heart Diseases/ TOF, TGA	1. Enumerate cyanotic heart diseases in children. 2. Describe clinical features of Tetralogy of Fallot (TOF). 3. Describe investigations for diagnosis of TOF. 4. Give management of TOF. 5. Enumerate complications of TOF	LGIS/ SGD	MCQS
4	Rheumatic Fever	1. Define rheumatic fever. 2. Give causative organism and pathophysiology of rheumatic fever. 3. Enumerate risk factors of rheumatic fever. 4. Describe Duckett Jones criteria for diagnosing rheumatic fever. 5. Describe clinical features of rheumatic fever. 6. Describe treatment of rheumatic arthritis, carditis and chorea. 7. Explain primary and secondary prophylaxis. 8. Describe complications of rheumatic fever.	LGIS/ SGD	MCQS
5	Cardiac failure in children	1. Describe clinical features of cardiac failure in infants and children. 2. Enumerate causes of cardiac failure in infants and children. 3. Enumerate investigations for cardiac failure with interpretation. 4. Enumerate management of cardiac failure.		
6	Myocarditis (SVT)/ Arrhythmias	1. Define myocarditis.		

		- Enumerate etiology of myocarditis in infants and children. - Describe clinical features of myocarditis in infants and children. - Enumerate investigations for myocarditis. - Give plan of management for myocarditis in infants and children. - Define supraventricular tachycardia. - Enumerate etiology of supraventricular tachycardia in infants and children. - Describe clinical features of supraventricular tachycardia in infants and children. - Enumerate investigations for supraventricular tachycardia. - Give plan of management for supraventricular tachycardia in infants and children.		
7	Infective endocarditis	- Define infective endocarditis. - Enumerate etiology of infective endocarditis. - Describe clinical features of infective endocarditis. - Enumerate investigations for IE. - Describe management of IE. - Describe prophylaxis for prevention of IE.		
8	Anemia (Nutritional Anemias/ iron deficiency and megaloblastic anemia)	- Define anemia. - Enumerate differential diagnoses of anemia. - Describe clinical features of nutritional anemias. - Describe investigations for diagnosis of nutritional anemias. - Give management plan for nutritional anemias.	LGIS	MCQs
9	Hemolytic anemias/ Thalassemia	- Define thalassemia. - Describe pathophysiology of thalassemia Major. - Describe clinical features of β Thalassemia Major. - Describe investigations for diagnosis.	LGIS/ SGD	MCQs

		- Describe complications of β Thalassemia Major. - Describe management plan for β Thalassemia Major. - Explain antenatal diagnosis for β Thalassemia Major.		
10	Hemolytic anemias/ sickle cell anemia	- Describe etiology and pathophysiology of sickle cell anemia. - Describe clinical features of sickle cell anemia. - Enumerate and interpret investigations for sickle cell anemia. - Describe complications of sickle cell anemia. - Describe management of sickle cell anemia and its complications. - Describe prenatal diagnosis for sickle cell anemia.		
11	Hemolytic anemias/ G6PD deficiency	- Describe pathophysiology of G6PD deficiency. - Describe clinical features of G6P deficiency. - Enumerate and interpret investigations for G6PD deficiency. - Enumerate management plan for acute hemolysis in G6PD deficiency. - Enumerate drugs that can cause hemolysis in G6PD deficiency.		
12	Aplastic anemias (constitutional & acquired)	- Define aplastic anemia. - Enumerate constitutional aplastic anemias. - Enumerate causes of acquired aplastic anemias. - Describe clinical features of Fanconi anemia and acquired aplastic anemias. - Enumerate and interpret investigations for aplastic anemias. - Outline management of aplastic anemias.		

13	Bleeding Disorders / Idiopathic Thrombocytopenic Purpura/ platelet function defects	1. Enumerate the various congenital and acquired bleeding disorders. 2. Define idiopathic thrombocytopenic purpura. 3. Describe pathophysiology of ITP. 4. Describe clinical features of ITP. 5. Describe the diagnostic investigations for ITP. 6. Give the management plan for ITP.	LGIS	MCQs
14	Clotting disorders/ Hemophilia	1. Define hemophilia. 2. Describe pathophysiology of Hemophilia A and B. 3. Describe clinical features of Hemophilia. 4. Describe diagnostic investigations for Hemophilia. 5. Describe management of hemophilia. 6. Enumerate complications of hemophilia.	LGIS/ SGD	MCQs
15	Von Willebrand factor deficiency/ disseminated intravascular coagulation (DIC)	1. Describe etiology and pathophysiology of vonWillebrand deficiency disease. 2. Describe clinical manifestations of vonWillebrand deficiency disease. 3. Enumerate investigations for vonWillebrand deficiency disease. 4. Enumerate treatment of vonWillebrand deficiency disease. 5. Define DIC. 6. Enumerate etiology and pathophysiology of DIC. 7. Enumerate diagnostic investigations for DIC. 8. Enumerate management plan for a patient with DIC.	LGIS	MCQs
16	Acute Lymphoblastic Leukemia	1. Enumerate different types of leukemias. 2. Describe clinical features of acute lymphoblastic leukemia. 3. Describe diagnostic criteria for ALL. 4. Describe good and bad prognostic factors. 5. Describe management plan for ALL.	LGIS	MCQS SEQS

17	Brain tumours in children	1. Enumerate various types of brain tumours in pediatric population 2. Describe clinical presentation of supratentorial and infratentorial brain tumours. 3. Describe investigations required to diagnose brain tumours. 4. Outline management strategies for brain tumours.	LGIS	MCQs
18	Oedema/ Nephrotic syndrome	1. Enumerate causes of oedema. 2. Define nephrotic syndrome. 3. Describe pathophysiology of nephrotic syndrome. 4. Describe clinical features of nephrotic syndrome. 5. Describe diagnostic criteria for nephrotic syndrome. 6. Describe management plan for nephrotic syndrome. 7. Enumerate complications of nephrotic syndrome.	LGIS/ SGD	MCQs SEQS
19	Hematuria/ Acute Poststreptococcal Glomerulonephritis	1. Enumerate causes of hematuria. 2. Define acute post streptococcal glomerulonephritis. 3. Describe pathophysiology of APGN. 4. Describe clinical features of APGN. 5. Describe diagnostic criteria for APGN. 6. Describe management of APGN. 7. Enumerate complications of APGN.	LGIS SGD in clinical skill labs	MCQs
20	Chronic Renal Failure in children	1. Define chronic renal failure. 2. Enumerate causes of CRF in children and infants. 3. Describe clinical features of CRF in children 4. Describe investigation for confirmation of the disease. 5. Outline management plan for a child with CRF.	LGIS	MCQS
21	Hypothyroidism	1. Define congenital and acquired hypothyroidism.	LGIS	MCQS

		- Describe causes of congenital and acquired hypothyroidism. - Describe clinical features of congenital and acquired hypothyroidism. - Describe investigations for acquired and congenital hypothyroidism. - Describe treatment.		
21	Diabetes Mellitus	- Define diabetes mellitus. - Enumerate different types of diabetes mellitus. - Give clinical features of type 1 diabetes mellitus. - Describe investigations for diagnosing diabetes mellitus in children. Discuss management of diabetes mellitus in children. - Define diabetic ketoacidosis. - Describe clinical features and complications of DKA.	LGIS	MCQS
22	Disorders of growth / short stature	- Define short stature. - Describe briefly causes of short stature. - Describe cardinal features of growth hormone deficiency and Turner syndrome.	LGIS	SAQ/ MCQ
23	Disorders of growth / Tall stature	- Define tall stature - Enumerate causes of Tall stature. - Describe important features of Klinefelter syndrome and Marfan syndrome.	LGIS	SAQ/ MCQ

24	Disorders of Puberty (precocious and delayed)	1. Define puberty. 2. Describe important features of puberty in boys and girls. 3. Define delayed puberty in boys and girls. 4. Enumerate 2 causes of delayed puberty. 5. Define precocious puberty in boys and girls. 6. Enumerate 2 causes of precocious puberty.	LGIS	SAQ/ MCQ
25	Congenital adrenal hyperplasia (CAH)	1. Describe etiology and pathophysiology of CAH. 2. Describe clinical features of CAH. 3. Describe investigations for CAH. 4. Enumerate management of CAH.	LGIS	MCQs
26	Meningitis	1. Define meningitis. 2. Describe causative agents and pathophysiology of meningitis. 3. Describe clinical features of meningitis and meningococemia. 4. Give investigations for diagnosis of meningitis. 5. Give management plan for meningitis. 6. Describe early and late complications of meningitis.	LGIS SGD in clinical skill labs	MCQS
27	Cerebral malaria	1. Describe etiology of cerebral malaria. 2. Describe clinical features of cerebral malaria. 3. Enumerate complications of cerebral malaria. 4. Enumerate and describe investigations for cerebral malaria. 5. Outline management of a patient with cerebral malaria.	LGIS	MCQs
28	Hydrocephalus/ raised Intracranial Pressure	1. Define raised intracranial pressure (ICP). 2. Enumerate causes of raised ICP. 3. Enumerate the clinical features of raised ICP. 4. Outline management of raised ICP.	LGIS	MCQs

		- Describe etiology and pathophysiology of hydrocephalus. - Describe investigations for diagnosing hydrocephalus. - Enumerate treatment of hydrocephalus.		
29	Seizures (febrile seizures/ epilepsy)	- Define seizures. - Enumerate causes of seizures in children. - Describe different types of seizures. - Define febrile seizures and its characteristics. - Describe management of febrile seizures. - Define epilepsy. - Describe types of epilepsies. - Describe investigations for epilepsy - Describe treatment of epilepsy.	LGIS	MCQs SEQs
30	Seizures (Neonatal Seizures/ status epilepticus)	- Define subtle seizures. - Describe causes of neonatal seizures. - Define status epilepticus. - Describe management steps of neonatal seizures and status epilepticus.	LGIS	MCQs
31	Cerebral Palsy/ Mental Retardation	- Define mental retardation. - Enumerate causes of mental retardation. - Define cerebral palsy. - Enumerate causes and types of cerebral palsy. - Describe clinical features of cerebral palsy. - Describe investigations for cerebral palsy. - Describe treatment plan for cerebral palsy.	LGIS/ SGD	MCQs
32	Acute flaccid paralysis (GBS)	- Define acute flaccid paralysis. - Enumerate differential diagnoses of AFP. - Describe pathophysiology of polio and GB syndrome.	LGIS/ SGD	MCQS

		4. Differentiate clinical features of polio and GB syndrome. 5. Give relevant investigations for diagnosing polio and GB syndrome. 6. Describe treatment and prevention of both diseases.		
33	Duchenne Muscular Dystrophy	1. Define duchenne muscular dystrophy. 2. Describe its pathophysiology. 3. Describe the clinical course of DMD. 4. Enumerate investigations for diagnosis of DMD, 5. Give treatment plan.	LGIS	MCQs
34	Normal Newborn and its care	1. Define neonate, infant and child 2. Describe steps of care of newborn at delivery 3. Describe steps of care of newborn during first 6 hours. 4. Describe components of care of a baby till 6 weeks of age.	LGIS	SAQ/ MCQ
35	Nutrition in neonate	1. Describe principles of feeding 2. Describe composition of breast milk 3. Describe advantages of breast feeding to the baby and mother 4. Describe reflexes concerned with breast feeding 5. Describe steps of good feeding practices 6. Describe contraindications of breast feeding. 7. Describe types of artificial feeding 8. Describe disadvantages of artificial feeding 9. Define weaning	LGIS	SAQ/ MCQ

		10. Describe principles of weaning. 11. Enumerate a few weaning foods		
36	Birth Asphyxia	1. Define birth asphyxia. 2. Enumerate causes of birth asphyxia in a neonate. 3. Describe clinical features and complications of birth asphyxia. 4. Describe steps in neonatal resuscitation. 5. Enumerate the management in a patient having birth asphyxia.	LGIS	MCQS
37	Prematurity	1. Define prematurity. 2. Describe the New Ballard Scoring for assessment of Prematurity. 3. Describe risk factors for premature delivery. 4. Discuss management plan for care of a premature neonate.	LGIS / SGD	MCQs SEQS
38	Neonatal Jaundice	5. Describe neonatal jaundice and its pathophysiology. 6. Enumerate causes of NNJ. 7. Describe clinical features and complications of NNJ. 8. Describe the various treatment modalities for NNJ.	LGIS / SGD	MCQs
39	Infant of Diabetic mother	1. Describe the clinical presentation of infant of diabetic mother. 2. Enumerate the congenital anomalies in IDM. 3. Describe management of IDM	LGIS	MCQs
40	Neonatal sepsis (NNS)	1. Enumerate etiology of NNS. 2. Describe clinical features of NNS. 3. Enumerate investigations for NNS. 4. Enumerate plan of management for NNS.	LGIS	MCQS
41	Introduction to clinical genetics	1. Describe various patterns of inheritance. 2. Describe features of Trisomies 21, 18 and 13.	LGIS	SAQ/ MCQ

	and genetic disorders	3. Enumerate methods of prenatal diagnosis for inherited diseases		
42	Basis of congenital anomalies --- Introduction to dysmorphology	1. Define dysmorphology. 2. Define different types of birth defects. 3. Describe features of neural tube defects. 4. Identify dysmorphologies of gastrointestinal system (Cleft lip/ palate, pyloric stenosis, omphalocele, gastroschisis, anal atresia.)	LGIS	SAQ/ MCQ
43	Inborn errors of metabolism -- Introduction	1. Describe the categories of inborn errors of metabolism. 2. Describe clinical features of Phenylketonuria. 3. Describe investigations and management of phenylketonuria.	LGIS / SGD	MCQs SEQS
44	Inborn Errors of Metabolism	1. Describe clinical features of Glycogen storage diseases. 2. Enumerate the diagnostic investigations and management outline. 3. Describe pathophysiology and clinical features of mucopolysaccharidosis. 4. Describe investigations and management outline of mucopolysaccharidosis.	LGIS / SGD	MCQs SEQS
45	Juvenile rheumatoid arthritis (JRA)	1. Describe etiology and pathophysiology of JRA. 2. Enumerate and describe clinical features of various types of JRA. 3. Describe investigations for JRA. 4. Discuss management for JRA.	LGIS	MCQs
46	Henoch schonlein purpura (HSP)	1. Define HSP. 2. Describe etiology and pathophysiology of HSP. 3. Describe clinical features of HSP. 4. Enumerate diagnostic approach for HSP. 5. Describe management of HSP.	LGIS	MCQs

SUBJECT: PAEDIATRICS CLINICAL MODULE

PLACEMENT IN CURRICULUM: FINAL YEAR

DURATION: 6 WEEKS

Introduction	This paediatric module shall concentrate on imparting clinical skills hand on training on bed side with the patients. Medical students shall learn to take a paediatric case history and acquire skills to examine a paediatric patient including neonate, infant, younger child and older children and adolescents. Case discussions shall be conducted with discussion on differential diagnoses, planning of investigations and management on individual patients. Students shall be familiarized with instruments , vaccines and drugs commonly used in paediatric clinical setting. Students shall in small batches for a duration of 6 weeks each and small group interactive session shall be conducted in 5 hours sessions. At the end of module students shall be evaluated for their knowledge and skills.
Outcomes (Knowledge, Skills And Attitude)	At the end of this module, students shall be able to: KNOWLEDGE 1. Take a comprehensive paediatric history pertaining to common paediatric problems 2. Correlate the clinical symptoms and signs to reach a provisional diagnosis. SKILLS 1. Take a comprehensive paediatric history and evaluate all components thoroughly in patients with pertinent problems. 2. Perform case discussions in a small class interactive session with facilitators. 3. Correlate the symptoms and signs and justify differential diagnoses. 4. Enlist appropriate investigations of patients during discussion. 5. Plan management of the patient under discussion. 6. Identify instruments and their use in a paediatric clinical setting. 7. Identify pathology in X rays of common paediatric diseases. 8. Identify medicines and vaccines and their use and side effects. ATTITUDE

	1. Demonstrate self learning attitude and problem solving. 2. Demonstrate effective communication skills while interacting with the patient and attendants. 3. Demonstrate teamwork and positive interaction with colleges.
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CONTENT:

Final year clinical teaching shall be focused on

1. Acquisition of professional knowledge, skills and attitude required for focused history taking, performing appropriate clinical examination, developing differential diagnoses, planning appropriate investigations and making a management plan for common paediatric and neonatal diseases and emergencies.
2. Interpretation of roentgenograms of common paediatric disease and
3. Identifying instruments and devices commonly used in paediatric clinical practice.

Following clinical problems shall be taught as case based discussions.

- Fever without a focus
- Fever with rash
- Croup
- Cough (lower Respiratory tract infections/ Asthma)
- Acute diarrhoea and dehydration
- Chronic diarrhoea/ malabsorption

- Oedema / hematuria
- Seizures / meningitis/ febrile seizures
- Cerebral palsy/ mental retardation
- Cyanotic and acyanotic congenital heart disease/ heart failure
- Bleeding/ bruising in a child (bleeding disorders)
- Pancytopenias (leukemia/ aplastic anemia)
- Nutritional anemias
- Acute and chronic hepatitis
- Thalassemias
- Neonatal sepsis
- Neonatal jaundice
- Prematurity
- Infant of diabetic mother
- Neonatal resuscitation
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- Genetics (Down's syndrome)