LIAQUAT UNIVERSITY
OF MEDICAL & HEALTH SCIENCES,
JAMSHORO, SINDH

STUDY GUIDE

FOURTH PROFESSIONAL
MBBS

BATCH 2021-22

ACADEMIC SESSION 2024-25

ACADEMIC CALENDAR

Academic Session 2024-2025

Activity	Class Year	Dates
Classes starts	All Batches of MBBS	January 27, 2025
Eid-ul-Fitr	Holiday	March 31 to April 06, 2025
Classes Resumes	All Batches of MBBS	April 07, 2025
Summer Vacation/ Internship/Elective	1st to 4th Year MBBS	June 07 to July 06, 2025
Summer Vacation/ Tour	Final Year MBBS	June 07 to July 06, 2025
Classes Resumes	All Batches of MBBS	July 07, 2025
Classes Ends	1st to 4th Year MBBS	November 07, 2025
	Final Year MBBS	December 05, 2025
Exam Preparation	1st to 4th Year MBBS	November 08 to November 30, 2025
	Final Year MBBS	December 06 to January 04, 2026
Annual Examination	1st to 4th Year MBBS	December 01 to December 31, 2025
	Final Year MBBS	January 05 to January 31, 2026
Winter Vacation	1st to 4th Year MBBS	January 01, 2026 to January 04, 2026

WEEKLY TIME TABLE

FOURTH PROFESSIONAL MBBS (BATCH 2021-22)

FROM MONDAY 27TH JANUARY 2025

VENUE OF LECTURES: GROUP-A+B: PATHOLOGY LEC HALL

TIME		MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
08.15 AM TO 09.00 AM	A	**Pathology** Lecture	**Community Med** Lecture	**Pathology** Lecture	**Pharmacology** Lecture	**08.15 AM TO 01.00 PM**
	B	**Pathology** Lecture	**Community Med** Lecture	**Pathology** Lecture	**Pharmacology** Lecture	
09.00 AM TO 03.00 PM		**HOSPITAL POSTING**	**HOSPITAL POSTING**	**HOSPITAL POSTING**	**HOSPITAL POSTING**	**HOSPITAL POSTING**

HOSPITAL POSTING

FOURTH PROFESSIONAL MBBS BATCH 2021-22

DATE	INTEGUMENTARY		PAEDS		CARDIO LOGY	RENAL & EXCRETORY			ENT
						UROLOGY		NEPH RO LOGY	
	DERMATO LOGY	PLASTIC SURGERY	I	II		I	II		
27 JAN TO 07 FEB 2025	A1	A2	A3a	A3b	A4	A5a	A5b	A6	A7+8
10 FEB TO 21 FEB 2025	A2	A1	A4a	A4b	A3	A6a	A6b	A5	
24 FEB TO 07 MAR 2025	A3	A4	A5a	A5b	A6	A7a	A7b	A8	A1+2
10 MAR TO 21 MAR 2025	A4	A3	A6a	A6b	A5	A8a	A8b	A7	
24 MAR TO 11 APR 2025	A5	A6	A7a	A7b	A8	A1a	A1b	A2	A3+4
14 APR TO 25 APR 2025	A6	A5	A8a	A8b	A7	A2a	A2b	A1	
28 APR TO 09 MAY 2025	A7	A8	A1a	A1b	A2	A3a	A3b	A4	A5+6
12 MAY TO 23 MAY 2025	A8	A7	A2a	A2b	A1	A4a	A4b	A3	
26 MAY TO 06 JUNE 2025	ALL GROUPS IN RESEARCH AT COMMUNITY MEDCINE DEPARTMENT								

DATE	ORTHOPAEDICS AND TRAUMATOLOGY		NEURO SCIENCE		RADIO LOGY	EYE
	ORTHO PAEDICS	NEURO SURGERY	NEURO LOGY	PYSCHI ATRY		
27 JAN TO 31 JAN 2025	B1	B2	B3	B4		B5+6
03 FEB TO 07 FEB 2025						
10 FEB TO 14 FEB 2025						
17 FEB TO 21 FEB 2025	B2	B1	B4	B3		
24 FEB TO 28 FEB 2025					B5+6	
03 MAR TO 07 MAR 2025						
10 MAR TO 14 MAR 2025	B3	B4	B5	B6		B1+2
17 MAR TO 21 MAR 2025						
24 MAR TO 28 MAR 2025						
07 APR TO 11 APR 2025	B4	B3	B6	B5		
14 APR TO 18 APR 2025					B1+2	
21 APR TO 25 APR 2025						
28 APR TO 02 MAY 2025	B5	B6	B1	B2		B3+4
05 MAY TO 09 MAY 2025						
12 MAY TO 16 MAY 2025						

19 MAY TO 23 MAY 2025	B6	B5	B2	B1		
26 MAY TO 30 MAY 2025					B3+4	
02 JUNE TO 06 JUNE 2025						

DATE	INTEGUMENTARY		PAEDS		CARDI OLOGY	RENAL & EXCRETORY			ENT
	DERMATO LOGY	PLASTIC SURGERY	I	II		URO I	URO II	NEPHR OLOGY	
07 JULY TO 18 JULY 2025	B1	B2	B3a	B3b	B4	B5a	B5b	B6	B7+8
21 JULY TO 01 AUG 2025	B2	B1	B4a	B4b	B3	B6a	B6b	B5	
04 AUG TO 15 AUG 2025	B3	B4	B5a	B5b	B6	B7a	B7b	B8	B1+2
18 AUG TO 29 AUG 2025	B4	B3	B6a	B6b	B5	B8a	B8b	B7	
01 SEPT TO 12 SEPT 2025	B5	B6	B7a	B7b	B8	B1a	B1b	B2	B3+4
15 SEPT TO 26 SEPT 2025	B6	B5	B8a	B8b	B7	B2a	B2b	B1	
29 SEPT TO 10 OCT 2025	B7	B8	B1a	B1b	B2	B3a	B3b	B4	B5+6
13 OCT TO 24 OCT 2025	B8	B7	B2a	B2b	B1	B4a	B4b	B3	
27 OCT TO 07 NOV 2025	ALL GROUPS IN RESEARCH AT COMMUNITY MEDICINE DEPARTMENT								

DATE	ORTHOPAEDICS AND TRAUMATOLOGY		NEURO SCIENCE		RADIO LOGY	EYE
	ORTHO PAEDICS	NEURO SURGERY	NEURO LOGY	PYSCH IATRY		
07 JULY TO 11 JULY 2025	A1	A2	A3	A4		A5+A6
14 JULY TO 18 JULY 2025						
21 JULY TO 25 JULY 2025						
28 JULY TO 01 AUG 2025	A2	A1	A4	A3		
04 AUG TO 08 AUG 2025					A5+6	
11 AUG TO 15 AUG 2025						
18 AUG TO 22 AUG 2025	A3	A4	A5	A6		A1+A2
25 AUG TO 29 AUG 2025						
01 SEPT TO 05 SEPT 2025						
08 SEPT TO 12 SEPT 2025	A4	A3	A6	A5		
15 SEPT TO 19 SEPT 2025					A1+2	
22 SEPT TO 26 SEPT 2025						
29 SEPT TO 03 OCT 2025	A5	A6	A1	A2		A3+A4
06 OCT TO 10 OCT 2025						
13 OCT TO 17 OCT 2025						
20 OCT TO 24 OCT 2025	A6	A5	A2	A1		
27 OCT TO 31 OCT 2025					A3+4	
03 NOV TO 07 NOV 2025						

PREFACE

The MBBS curriculum is designed to prepare the medical student to assume the role of the principal career for patients. The majority of instruction in the various basic and clinical science disciplines is focused on attaining this objective. The amount of material and specificity that the student must acquire in order to complete the MBBS programme as a whole is substantial. Subject-based instruction affords students the chance to develop comprehensive and profound understanding of each respective subject. However, this instructional framework might result in the student failing to recognize the interconnectedness of knowledge across different disciplines, their interrelation, and most significantly, their significance in the context of patient care.

Over the years, numerous inventive approaches have been devised to tackle these obstacles. One such approach is the integration of instruction at multiple levels, which eliminates and reduces boundaries within subjects, both vertically and horizontally, across phases. LUMHS, while acknowledging the merits of these methodologies, has endeavored to seize the opportunity to comprehend the interdependencies and minimize duplication in the subjects being instructed through the implementation of an integrated modular approach.

The cardiovascular system, musculoskeletal system, and respiratory system are few examples of system-based modules in an integrated modular curriculum that connects basic scientific knowledgeto clinical problems. By means of integrated instruction, subjects are presented as a unified whole. Students can enhance their comprehension of basic scientific principles through consistent application of clinical examples in their learning. A skills lab provides early exposure to the acquisition of skills, case-based discussions, and self-directed learning are all elements of an integrated teachingprogramme.

LEARNING STRATEGIES

The following instructional and learning strategies are implemented to foster greater comprehension:

- Interactive Lectures
- Small group sessions
- Case-Based Learning (CBL),
- Self-Study,
- Practical,
- Skills lab sessions,
- Demonstrations
- Field visits

INTERACTIVE LECTURES

In large group, the lecturer actively involves the students by introducing the topic or common clinicalconditions and explains the underlying phenomena by questions, pictures, videos of patients' interviews, exercises, etc. in order to enhance their learning process.

SMALL GROUP TEACHING (SGT):

This strategy is helpful for the students to make their concepts clear, and s acquiring skills or attitudes. These sessions are organized with the help of specific tasks such as patient case, interviews or discussion topics. Students are than encouraged to exchange their ideas and apply knowledge gained from lectures, tutorials and self-study. The facilitator employs probing questioning, summarization, or rephrasing techniques to enhance the understanding of concepts.

CASE- BASED LEARNING:

A format of small group discussion that centers on a sequence of questions derived from a clinical scenario, with the aim of facilitating learning. Students engage in discussions and provide answers by applying pertinent knowledge acquired in clinical and basic health sciences throughout the curriculum.

PRACTICAL:

Basic science practical related to anatomy, biochemistry, pathology, pharmacology and physiology are scheduled to promote student learning by application.

SKILLS LAB SESSION:

Skills relevant to respective module are observed and practiced where applicable in skills laboratory.

SELF DIRECTED LEARNING:

Students take on the responsibility of their own learning by engaging in independent study, collaborating and talking with classmates, accessing knowledge from the Learning Resources available, teachers, and other experts. Students can make use of the designated self-study hours provided by the college.

FIELD VISITS:

Students visit community health areas to understand the common diseases and their preventive measures.

HOSPITAL POSTINGS:

Students attend tertiary care hospital postings and learn common diseases and their management.

Prof. Dr. Samreen Memon
Module Coordinator
Director Academics
Liaquat University of Medical & Health Sciences,Jamshoro, Pakistan

STUDY GUIDE

A study guide is a strategic and effective approach to:

- Provide students a detailed framework of the modules organization
- Support students in organizing and managing their studies throughout academic year.
- Provide students information on assessment methods and the rules and regulations that apply.

- It outlines the outcomes which are expected to be achieved at the end of each module.
- Ascertains the education strategies such as lectures, small group teachings, demonstration, tutorial and case based learning that will be implemented to achieve the module objectives.
- Provides a list of learning resources for students in order to increase their learning.
- Emphasizes information on the contribution of attendance, end module tests, block examinationsand annual examinations on the student's overall performance.
- Includes information on the assessment methods that will be held to determine every student's achievement of objectives.

ABBREVIATIONS

OPHTHALMOLOGY	Ophth
OTORHINOLOGY	ENT
ORTHOPAEDICS & TRAUMATOLOGY	Orth-T
ORTHOPAEDICS	Ortho
NEUROSURGERY	Nsurg
NEUROSCIENCE	NS
NEUROLOGY	NeuM
PSYCHIATRY	PSY
RENAL & EXCRETORY	EXC
NEPHROLOGY	Neph
UROLOGY	Uro
PHARMACOLOGY	Pharm
SPIRAL	S
INTEGUMENTARY	IM
PLASTIC SURGERY	Psurg
DERMATOLOGY	Derm
RADIOLOGY	Rad

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DEPARTMENT OF OPHTHALMOLOGY	
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03	Dr. Mahtab Alam
04	Dr. Azfar Ahmed Mirza
05	Dr. Asad Ullah Jatoi
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07	Dr. Ghulam Hyder
08	Dr. Ghazi Khan
09	Dr. Mona Liza
LECTURER	
10	Dr. Irfan Memon

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04	Dr. Muhammad Imran Khan

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03	Dr. Zamir Hussain Tunio
ASSISTANT PROFESSORS	
04	Dr. Muhammad Faraz
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09	Dr. Nizam Ahmed
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06	Dr. Sanaullah
07	Dr. Aurangzeb

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05	Dr. Shoukat Ali Mughal
06	Dr. Waqar Ahmed Memon
SENIOR REGISTRAR	
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08	Dr. Tamoor Ahmed Jatoi

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04	Dr. Seema Nayab
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07	Dr. Asma Jatoi
CLINICAL DEMONSTRATOR	
08	Dr. Saima Zafar
09	Dr. Abu Zafar Moinual Haque

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SENIOR REGISTRAR	
03	Dr. Kashan Qayoom Shaikh

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04	Dr. Adeel

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03	Dr. Hira Shafquat Memon

OPHTHALMOLOGY MODULE

Introduction

- To feel more comfortable performing a basic eye examination
- To identify common eye conditions and be able to treat or triage these disorders.
- To expose students to the field of ophthalmology
- To identify potential longitudinal patients that could be followed in other clinics.

Rationale: The purpose of the Ophthalmology curriculum is to produce doctors with the generic professional and specialty specific capabilities needed to understand and diagnose a wide range of medical conditions affecting the eyes, orbits and visual pathways. Eye disorders are frequently seen in the practice of medicinein all age groups. The scope of medical ophthalmology is broad and includes refraction problems, ocular inflammatory diseases like conjunctivitis, cataracts, glaucoma, retina disorders, neuro-ophthalmic conditionsand urgent eye care in adults and children. A physician also has to understand the fundamentals of fundoscopy in order to evaluate common eye problems.

Duration **04 Weeks**

Curriculum Goals

After completion of MBBS course the student should be able to:

- To feel more comfortable performing a basic eye examination
- To identify common eye conditions and be able to treat or triage these disorders.
- To expose students to the field of ophthalmology
- To identify potential longitudinal patients that could be followed in other clinics.

Learning Objectives At the end of the ophthalmology rotation the student should be able to:

1. **Perform the following skills:**
   - ***a)*** **History taking regarding**
     - Pain in and around the eye
     - Abnormal appearance of the eye and orbit
     - Discharge from the eye
     - Defect in visual activity, colour vision, field of vision and diplopia.
   - ***b)*** **Physical examination**
     - Visual acuity test for distance and near
     - Pin Hole Examination
     - Colour vision
     - Measure the IOP by palpation
     - External (pen torch) Adnexa anterior segment by examination by inspection and palpation,
     - upperlid eversion
     - Regurgitation test.
     - Pupillary examination
     - Ophthalmology (distant direct and direct)
     - Ocular alignment and motility tests (corneal reflection test, cover test andmotility test)
     - Visual field test (confrontation method)
   - ***c)*** **Management**
     - Ocular irrigation (chemical burns)
     - Instillation of eye drops
     - Patching (pressure patch and eye shield)
2. **Diagnose and manage common eye problems such as:**

- Blepharitis
- Hordeolum (styes)
- Periorbital cellulitis (mild)
- Conjunctivitis
- Ophthalmia neonatorum
- Trachoma
- Episcleritis
- Subconjunctival hemorrhage

3. **Recognize / Evaluate and refer as appropriate**:
   - Acute red eye
   - Corneal ulceration and its complications
   - Herpes simplex and Herpes zoster infections
   - Orbital cellulitis
   - Pterygium
   - Diseases of lids: lumps, Trichiasis, entropion, ectropion, ptosis
   - Disease of lacrimal passage: epiphora, acute and chronic dacryocystitis
   - Acute visual loss
   - Chronic visual loss
   - Cataract
   - Refractive error and presbyopia
   - Glaucomas
   - Childhood squint
   - Childhood cataract (white pupil)
   - Moderate to severe eye injuries, chemical burns
   - Ocular manifestations of nervous diseases: papilloedema, nerve palsies
   - Ocular manifestations of systemic diseases: diabetic retinopathy, thyroid eye disease

Topics with PMDC Syllabus

S. #	LEARNING OBJECTIVES	TOPIC	TEACHING STRATEGY	ASSESSMENT
1		**Anatomy of Eye – Review** • Orbit: Bones and Contents • Eye ball, • Extraocular muscles, • Adnexia (lid, conjunctiva & lacrimal system) • Vascular supply • Cranial nerves II, III, IV, VI & VII cranial nerves)	Lecture/ Demonstration, SGD, Practical, CBL/ PBL	SBQs & OSVE, OSCE, ClinicalExam SBQs & OSVE, OSCE, ClinicalExam
2		**Physiology of Eye – Review** • Visual functions • Aqueous humour dynamics		

3		**Eyelid** • Stye • Chalazion • Blepharitis • Trichiasis • Entropion • Ectropion • Ptosis • Basal cell carcinoma • Squamous cell carcinoma		
4		**Conjunctiva** • Infective Conjunctivitis - Bacterial Conjunctivitis - Viral Conjunctivitis • Ophthalmia Neonatorum • Trachoma • Vernal keratoconjunctivitis (VKC) • Keratoconjunctivitis Sicca (Dry Eye) • Pterygium • Pinguecula • Vitamin A Deficiency		
5		**Nasolacrimal system** • Lacrimation & epiphora • Congenital Nasolacrimal Duct Block • Acute Dacryocystitis • Chronic Dacryocystitis		
6		**Cornea** • Infective keratitis (Corneal ulcer) - Viral - Bacterial - Fungal - Amoebia • Contact lens related problems • Kerato-refractive surgeries		
7		**Sclera** • Scleritis • Episcleritis		
8		**Lens** • Congenital cataract - Classification & Etiology - Clinical features - Differential diagnosis - Management • Acquired Cataract - Types & Etiology	Lecture/ Demonstration ,SGD, Practical, CBL/ PBL	

		- Clinical features - Management • Complication of Cataract surgery		
9		**Glaucoma** • Classification • Primary open angle glaucoma • Primary Angle Closure Glaucoma • Diagnostic Tools • Congenital Glaucoma • Secondary Glaucoma - Lens induced - Neovascular - Inflammatory		
10		**Uveitis** • Classification • Clinical features of Acute and Chronic uveitis • Management of uveitis		
11		**Medical Retina** • Diabetic retinopathy • Hypertensive retinopathy • Retinal vein occlusion • Retinal artery occlusion • Age-related macular degeneration • Retinoblastoma • Retinopathy of prematurity (ROP)		
12		**Surgical Retina** • Retinal detachment – Rhegmatogenous, Exudative and tractional detachment • Management of retinal detachment • Vitreous hemorrhage		
13		**Neurophthalmology** • Pupillary & Visual pathway • Relative Afferent Pupillary Defect (RAPD) • Optic neuritis • Papilledema • Optic atrophy • Third, Fourth, Sixth & Seventh Cranial Nerves		

14		**Orbit** • Proptosis • Orbital Infection and Inflammation - Preseptal Cellulitis - Orbital Cellulitis • Thyroid Eye Disease		
15		**Ocular injuries** • Ocular Foreign bodies • Blunt injuries • Penetrating injuries • Chemical injuries - Acid burns - Alkaline burns		
16		**Strabismus** • Amblyopia • Non paralytic squint • Paralytic squint		
17		**Refractive error** • Emetropia • Ametropia - Hypermetropia - Myopia - Astigmatism • Presbyopia		

Common symptoms/ Signs of Ophthalmology

i. **Red Eye:** Painful and Painless
ii. Watery eye
iii. **Visual Loss**: Gradual and Sudden
iv. Causes of Diplopia
v. Halos
vi. Hyphema
vii. Hypopyon
viii. Distortion of images
ix. White pupillary reflex (leukokoria)
x. Dilated pupil
xi. Small pupil
xii. Proptosis
xiii. Night blindness
xiv. Eso deviation
xv. Exo deviation

Assessment at the end of posting

- MCQs and OSPE

OTORHINOLARYNGOLOGY (ENT) MODULE

Introduction This module uses an integrated curriculum of basic science and clinical material to develop the student's knowledge and ability to describe and diagnose conditions related to Ear, Nose and Throat. It covers learning a wide range of areas using team-based and small-group learning exercises, lectures, anatomy labs, hands-on clinical skills labs, independent learning, clinical experiences and radiological imaging. In addition, the students will learn the microbiology, physiology and pharmacology of the upper respiratory region. The goal of this module is to provide medical students with a comprehensive pathophysiologic understanding of the Ear, Nose and Throat and their diseases. Otorhinolaryngology, is an important, interesting and diverse specialty and the study guide is carefully designed in such manner that the students are able to better comprehend and analyze the objectives of their course of the ENT department.

Rationale The knowledge and skills acquired in this module will enable students to appropriately evaluate, diagnose, treat and manage a broad spectrum of common problems like hearing loss, ear ache and discharge, rhinorrhea, sore throat. Student can order suitable investigations and diagnose common conditions and be able to undertake adequate referral where appropriate. This module will act as a guide to identify various common ENT conditions and implement their knowledge in medical practices.

Duration **04 Weeks**

Learning Outcomes

Knowledge: At the end of the course, the student should have knowledge of:

- Common problems affecting the Ear, Nose and Throat.
- Principles of management of major ENT emergencies
- Effects of local and systemic diseases on patient and the necessary action required to minimizethe sequelae of such diseases;

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

- Know how to remove the foreign bodies from the ear, nose and throat.
- know the indication for tracheostomy and explain its procedure postoperative care and complications
- know the methods to control the Epistaxis

Attitude At the end of course, the student should have:

- Patient-Centered Attitude:
  - o Cultivate respect and compassion for patients, actively listening to their concerns and involvingthem in their care.
- **Empathetic Understanding:**
  - o Develop empathy for patients experiencing discomfort, acknowledging their emotional andphysical challenges.
- **Cultural Sensitivity:**
  - o Appreciate the importance of culturally sensitive care, respecting diverse backgrounds ofpatients.
- **Ethical Commitment:**
  - o Uphold ethical standards, maintaining patient confidentiality and informed consent.
- **Interdisciplinary Collaboration:**
  - o Respect collaboration with other professionals for comprehensive patient care.

Themes:

Theme 1: Disorders of Ear and Audio-Vestibular System
(Pain, Itching, Discharge, Facial Palsy, Tinnitus, Vertigo, Deafness)

Theme 2: Disorders of Nose & Para Nasal Sinuses
(Nasal Obstruction, Rhinorhea, Sneezing, Itching, Impaired Smell, Epistaxis,Headache)

Theme 3: Disorders of Oral Cavity, Pharynx and Oesophagus (Sore Throat, Difficulty in Swallowing, Change of Voice)

Theme 4: Disorders of Larynx Trachea and Bronchi
(Cough, Hoarseness of Voice, Difficulty in Breathing)

Topics with Specific Learning Objectives and Teaching Strategies

Theme 1: Disorders of Ear and Audio-Vestibular System
(Pain, Itching, Discharge, Facial Palsy, Tinnitus, Vertigo,Deafness)

S #	LEARNING OBJECTIVES	THEME AND SUB-THEMES	TEACHING STRATEGY	ASSESSMENT
1	Explain Anatomy & Physiology of the Ear	**ENT-S2-Ana-1** Clinical Basis of EAR	Lecture/ Demonstration ,SGD, Practical, CBL/ PBL	SBQs & OSVE, OSCE, Clinical Exam
2	Discuss the Causes, clinical features, investigation & management	**ENT-S2-ENT-1 PAIN** **A.** D/D of Earache & referredearache **B.** Disorder of External Ear. **1.** Traumatic- Frost Bite, Perichondritis and AuralHematoma. **2.** Inflammatory a. Bacterial- **i.** Acute Otitis Externa **ii.** Diffuse and Malignant Otitis Externa b. Viral-Herpes Zoster Oticus. C. Disorder of Middle Ear. i. Acute Otitis Media. ii. Otitis Media with Effusion iii. Otitic Baro-trauma		
3	Diagnosis & management	**ENT-S2-ENT-2 ITCHING** Wax and Foreign Bodies in Ear Fungus- Otomycosis		
4	Discuss the Causes, clinical features, investigation & management	**ENT-S2-ENT-3 DISCHARGE** Disorder of Middle Ear. Chronic Suppurative Otitis Media, Cholesteatoma and Complications		
5	Causes, Investigation & management	**ENT-S2-ENT-4 FACIAL PALSY** Facial Nerve Palsy, Middle Ear Surgery & itscomplications		
6	Describe the clinical features, investigation & principle of management	**ENT-S2-ENT-5 TINNITUS** D/D of Tinnitus,Glomus tumor, Acoustic neuroma & Otosclerosis **ENT-S2-ENT-6 VERTIGO** D/D of Vertigo, Labrynthitis, BPPV / Meinear's Disease.		

7	Discuss causes, Clinical features, investigations/ assessment and Management of Congenital and Acquired conditions Causing Hearing Deficit.	**ENT-S2-ENT-7 DEAFNESS** Causes and assessment of hearing impairment. D/D of Conductive and Sensory neural hearing deficit, Disorder of Inner Ear. Noise Induced Hearing Loss / Ototoxicity/ Presbiacuses.		

Theme 2: Disorders of Nose & Para Nasal Sinuses
(Nasal Obstruction, Rhinorhea, Sneezing, Itching, ImpairedSmell, Epistaxis, Headache)

S #	LEARNING OBJECTIVES	THEME AND SUB-THEMES	TEACHING STRATEGY	ASSESSMENT
8	Explain Anatomy & Physiology of Nose and ParanasalSinuses	**ENT-S2-Ana-2** Clinical Basis of Nose & Paranasal sinuses	Lecture/ Demonstration ,SGD, Practical, CBL/ PBL	SBQs & OSVE, OSCE, Clinical Exam
9	Discuss the Causes, clinical features, investigation & management	**ENT-S2-ENT-8** **NASAL OBSTRUCTION** • D/D of Nasal obstruction • Septal DeformitiesAdenoid Hypertrophy		
		ENT-S2-ENT-9 RHINORHEA • D/D of Rhinorhea • Rhino-sinusitis		
		ENT-S2-ENT-10 SNEEZING • Allergic Rhinitis Non Allergic Rhinitis		
		ENT-S2-ENT-11 ITCHING • Foreign Bodies & Rhinolith		
		ENT-S2-ENT-12 **IMPAIRED SMELL** • Sino-Nasal Polyps		
		ENT-S2-ENT-13 EPISTAXIS • D/D of Epistaxis • AngiofibromaHemangioma		
		ENT-S2-ENT-14 HEADACHE • Sinusitis • Sino-Nasal Tumors		

Theme 3: Disorders of Oral Cavity, Pharynx and Oesophagus (Sore Throat, Difficulty in Swallowing, Change of Voice)

S #	LEARNING OBJECTIVES	THEME AND SUB-THEMES	TEACHING STRATEGY	ASSESSMENT
10	Explain Anatomy & Physiology of Digestive track	**ENT-S2-Ana-3** Clinical Basis Digestive track		

11	Discuss the Causes, clinical features, investigation & management	**ENT-S2-ENT-15 SORE THROAT** • D/D of Sore throat • Mouth Ulcers • Pharyngitis & Tonsillitis • Infectious mononucleosis • Diphtheria/ Vincent Angina/ • Scarletfever **ENT-S2-ENT-16** **DIFFICULTY IN SWALLOWING** • Dysphagia • causes & management **ENT-S2-ENT-17** **CHANGE OF VOICE** • Rhinolalia Clausa & Aperta • Tumors of Pharynx	Lecture/ Demonstration ,SGD, Practical, CBL/ PBL	SBQs & OSVE, OSCE, Clinical Exam

Theme 4: Disorders of Larynx Trachea and Bronchi (Cough, Hoarseness of Voice, Difficulty in Breathing)

S #	LEARNING OBJECTIVES	THEME AND SUB-THEMES	TEACHING STRATEGY	ASSESSMENT
12	Explain Anatomy & Physiology of Airway track	**ENT-S2-Ana-4** Clinical Basis of Airway track	Lecture/ Demonstration, SGD, Practical, CBL/ PBL	SBQs & OSVE, OSCE, Clinical Exam
13	Discuss the Causes, clinical features, investigation & management	**ENT-S2-ENT-18 COUGH** Airway Foreign Bodies **ENT-S2-ENT-19** **HOARSENESS OF VOICE** • Congenital Laryngeal web / Laryngocele • Inflamatory Acute Laryngo-tracheo-bronchitis / Tuberculus Laryngitis • Non- Neoplastic • Vocal Nodule / Vocal polyps • Neoplastic Laryngeal papilomatosis / Malignant lesions Recurrent laryngeal Palsy **ENT-S2-ENT-20** **DIFFICULTY IN BREATHING** • Laryngomalacia • Acute Epiglotittis • Subglottic/Tracheal stenosis • Airway management		

ORTHOPAEDIC & TRAUMATOLOGY MODULE

ORTHOPAEDICS

Introduction **Rationale**

The integrated module on Orthopaedic Surgery, Traumatology and musculoskeletal system is multi-fold, it provides the students with basic knowledge of bone and joint problems. Interdisciplinary learning is fostered, simulating real-world medical scenarios where collaborative care is crucial. The integration also cultivates a well-rounded skill set by comparing immediate emergency interventions with long-term therapeutic strategies. Including musculoskeletal trauma, fractures, infections, tumours, Degenerative and metabolic disorders. Therefore, the module is designed to offer a balanced, resourceful, and interdisciplinary approach to medical education aimed to impart at undergraduate level. The Orthopaedics and Traumatology module in the basic cycle has already provided a sound basis of the related anatomy, physiology, surgical and pathological basis of bone diseases. In this 2nd clinical spiral, apart from basic revision of different subjects, students will be able to define and learn the clinical presentations, diagnoses and management of these diseases.

Duration **06 Weeks**

Learning Outcomes:

By the end of this module, the students will be able to:

- Demonstrate the principles and clinical considerations in Orthopaedics and Traumatology, including diagnoses and treatment.
- Develop immediate and long-term treatment strategies for orthopaedic and traumatic conditions.
- Adopt a patient-centered approach, considering both immediate and long-term needs in treatment planning.
- Take and demonstrate history taking, and also able to perform physically examination.
- Make proper differential diagnoses and prescribe medicine accordingly.

Themes:

Theme 1: Fractures & Dislocations
Theme 2: Infections
Theme 3: Metabolic Bone Disorders
Theme 4: Bone Tumors
Theme 5: Congenital Annmolies
Theme 6: Degenerative Disorders

Topics with specific learning objectives and teaching strategies

Theme 1: Fracture and Dislocation

S. #	LEARNING OBJECTIVE	TOPIC	LEARNING STRATEGY	ASSESSMENT
1	Discuss structure of bone, joints movements and blood supply	**ORTH-T-S2-Ana-1** Re-visit of bone and joint anatomywith blood supply	Lecture/ Demonstration ,SGD, Practical, CBL/ PBL	SBQs & OSVE, OSCE, Clinical Exam
2	Discuss development ofbone	**ORTH-T-S2-Ana-2-E-1** Bone development ossification of bone & joint		
3	• Define fracture • Classify types of fractures	**ORTH-T-S2-Orth-1** Definition of fracture, types		
4	Identify bone lesions in the imaging scans	**ORTH-S2-Rad-1** X-Ray Definition X-ray reading &views		
5	Define different types of fractures based on clinical presentation	**ORTH-T-S2-Orth-2** Sign & symptoms of fracturesopen & closed fractures		
6	Define joint dislocations	**ORTH-T-S2-Orth-3** Types of dislocations & subluxations		
7	Assess the patient for fractures and bone disorders	**ORTH-T-S2-Orth-4** History taking & bed side teaching		
8	Identify different types of congenital bone defects	**ORTH-T-S2-Ana-3** Developmental abnormalities andbone structures		
9	Discuss management ofopen and closed type of fractures	**ORTH-T-S2-Orth-6** Management of open and closefracture		
10	Describe consequences of fractures & dislocations	**ORTH-T-S2-Orth-7** Complications of Open fracturesand dislocations		
11	Discuss Imaging techniques	**ORTH-T-S2-Rad-2** Imaging techniques X-ray CT-Scan and MRI		
12	Discuss post-surgical complications	**ORTH-S2-Orth-8** Complications of open fracturesand post-surgical complications		
13	Prevention and multidisciplinary approach	**ORTH-S2-Orth-9** Rehabilitation and physiotherapy		

14	Pathophysiological changes in fracture healing	**ORTH-T-S2-Phy-1** Fracture healing, Remodeling functions of Osteoclasts & Osteoblasts		
15	Types of bone union	**ORTH-S2-Orth-10** Fracture union Primary and Secondary union		
16	Bone findings on Imaging	**ORTH-S2-Orth-11** X-ray Reading		
17	Approach to patient with bone disorder, fracture	History taking and bed side teaching		

Theme 2: Infections

Theme 3: Metabolic Bone Diseases

S #	LEARNING OBJECTIVE	TOPIC	LEARNING STRATEGY	ASSESSMENT
18	Bone infections, pathophysiology	**ORTH-T-S2-Path-1** Bone Infection Types of infection, Patho-Physiology of Osteomyelitis	Lecture/ Demonstration ,SGD, Practical, CBL/ PBL	SBQs & OSVE, OSCE, Clinical Exam
19	Define osteomyelitis and its types	**ORTH-T-S2-Orth-1** Definition of Osteomyelitis Types of Osteomyelitis		
20	Diagnosis and managementof osteomyelitis	**ORTH-T-S2-Orth-2** Investigations and treatment options		
21	Assess findings of osteomyelitis by imaging techniques	**ORTH-T-S2-Rad-1** Imaging and OsteomyelitisX-ray Ct-scan and MRI		
22	Surgical management of osteomyelitis	**ORTH-T-S2-Orth-3** Surgical Interventions and osteomyelitis		
23	Prevention and multidisciplinary approach tomanagement	**ORTH-T-S2-Orth-4** Rehabilitation and Infection Prevention		
24	Discuss Calcium and vitamin D metabolism	**ORTH-T-S2-Bio-1** Calcium Metabolism Parathyroid hormone and vitamin D Metabolism		
25	Definition, causes and bonechanges in rickets	**ORTH-T-S2-Orth-5** Definition of Rickets, effects ofCalcium & Vitamin D on Bone		
26	Discuss clinical features, treatment and prevention of Rickets & osteomalacia	**ORTH-T-S2-Orth-6** Clinical Feature of Rickets and Osteomalacia Treatment and Prevention		

27	Define osteoporosis and osteomalacia	**ORTH-T-S2-Phy-1** Osteoporosis & Osteomalacia		
28	Discuss hyperparathyroidism and itsclinical presentation	**ORTH-T-S2-Orth-7** Diagnosis, Clinical Features and Management of Hyper-Parathyroidism		
29	Discuss Management and prevention of Osteoporosis and Osteomalacia	**ORTH-T-S2-Orth-8** Management and prevention of Osteoporosis and Osteomalacia		
30	Define WHO Classification of bone tumors	**ORTH-T-S2-Path-2** Bone tumors and WHO Classification		
31	Define a management planof trauma patient	**ORTH-T-S2-Orth-9** Management of Upper Limb Trauma		
32	Discuss Approach to a trauma patient	**ORTH-T-S2-Orth-10** Approach to Trauma patient		
33	Approach to patient	History taking and bed side teaching		

Theme 4: Bone Tumors

Theme 5: Congenital Anomalies

Theme 6: Degenerative Disorders

S #	LEARNING OBJECTIVE	TOPIC	LEARNING STRATEGY	ASSESSMENT
34	Common sites of benign andmalignant tumors	**ORTH-T-S2-Path-1** Benign & malignant bone Tumor		
35	Radiographic features of bone tumors	**ORTH-T-Rad-1** Imaging in Tumor X-ray Ct-Scan and MRI		
36	Discuss Management protocols of bone tumors	**ORTH-T-S2-Orth-1** Management of bone Tumors		
37	• Define Bone tumors diagnostic protocols • Discuss Basic Principals of tumor biopsies	**ORTH-T-S2-Orth-2** Tumor Protocol and Biopsy Principles		
38	Discuss Surgical management of bone tumors	**ORTH-T-S2-Orth-3** Surgical Interventions and Bone Tumors		
39	Discuss Prosthetic management of bone disorders	**ORTH-T-S2-Orth-4** Prosthesis and Orthosis		

40	Define types of joints, theirstructure and functions	**ORTH-T-S2-Ana-1** Type of joints, joint Lining	Lecture/ Demonstration ,SGD, Practical, CBL/ PBL	SBQs & OSVE, OSCE, Clinical Exam
41	Define congenital anomalies of bone Discuss clinical features	**ORTH-T-S2-Orth-5** Congenital Telepies Equino Varus, Developmental Dysplasia Hip, Sign & Symptoms & Clinical Features		
42	Discuss treatment and prevention of CTEV and DDH	**ORTH-T-S2-Orth H-6** Treatment of CTEV and DDH and its prevention		
43	Describe Metabolic pathway of uric acid production and accumulation	**ORTH-T-S2-Pharm-1** Uric Acid pathway and metabolism		
44	Define the pathophysiologyand clinical features of Osteo-Arthritis, RheumatoidArthritis, Gout	**ORTH-T-S2-Orth-7** Degenerative Disorders: Osteo-Arthritis, Rheumatoid Arthritis, Gout		
45	Discuss Diagnostic and Management approach to OA, RA and Gout	**ORTH-T-S2-Orth-8** Diagnosis and Management ofOsteo-Arthritis Rheumatoid Arthritis, Gout		
46	Define appropriate pain management plan	**ORTH-T-S2-Pharm-2** NSAIDs,DMRDs its Effectsand Side Effects		
47	Discuss surgical management of bone degenerative disorders	**ORTH-T-S2-ORTH-9** Surgical Options in Degenerative Disorders		
48	Define Post- Surgical Complications	**ORTH-T-S2-ORTH-10** Post- Surgical Complications		
49	Approach to patient	History taking & Bed Side teaching		

NEUROSURGERY

Learning Objectives

By the end of the curriculum the student shall be able to:

- Recall functional neuroanatomy brain and spinal cord.
- Revised embryology and histology of neuron, nerve and neuroglia.
- Enlist the investigations for diagnosing neurological disorder.
- History taking and examination of head injury and spinal cord pathology patient.
- Discuss the assessment and management of raised ICP, cerebral edema and brain herniation.
- Classify brain tumors and evaluate management plan.
- Assess the vascular pathology of brain.
- Know the approach for assessment and management of congenital disorder the brain and spine.

Themes

Theme 1: Congenital anomalies of CNS
Theme 2: Traumatic Brain Injury
Theme 3: Intracranial hemorrhage
Theme 4: Composition, Synthesis and Flow of CSF, Hydrocephalus and Its Management
Theme 5: Approaches and Management of CNS tumors at different ages
Theme 6: Spinal cord trauma and myelopathy

Topics with specific learning objectives and teaching strategies

Theme 1: Congenital Anomalies of CNS

S #	LEARNING OBJECTIVE	TOPIC	LEARNING STRATEGY	ASSESSMENT
1	Revisit the neuroanatomy of brain	**ORTH-T-S2-Ana-1** Functional Neuroanatomy of Brain	Lecture/ Demonstration, SGD, Practical, CBL/ PBL	SBQs & OSVE, OSCE, Clinical Exam
2	Revisit the development of the brain	**ORTH-T-S2-Ana-2-E1** Development of brain		
3	Formulate the cases and consequences of various birth defect and developmental disorder involving CNS	**ORTH-T-S2-NSur-1** Neural tube defects, fore brain anomalies, posterior fossa anomalies.		
4	Revisit histology of neurons and neuroglia	**ORTH-T-S2-Ana-3-H-1** Neurons and neuroglia		

Theme 2: Traumatic Brain Injury

S #	LEARNING OBJECTIVE	TOPIC	LEARNING STRATEGY	ASSESSMENT
5	Predict the general reaction of brain to various injurious processes in terms of brain edema or razed intracranial pressure and develop a management plan	**ORTH-T-S2-NSUR-2** Assessment of causes and management of cerebral edema, raised intracranial pressure and brain herniation **ORTH-T-S2-Rad-1** CT-scan & MRI Brain **ORTH-T-S2-NSUR-3** **1.** Skull fractures **2.** Parenchymal injuries • Concussion • Direct parenchymal injuries • Diffuse axonal injuries **3.** Traumatic vascularinjuries • Epidural hematoma • Subdural hematoma • Parenchymal **4.** Sequelae of brain trauma	Lecture/ Demonstration ,SGD, Practical, CBL/ PBL	SBQs & OSVE, OSCE, Clinical Exam

Theme 3: Intracranial Hemorrhage

S #	LEARNING OBJECTIVE	TOPIC	LEARNING STRATEGY	ASSESSMENT
6	Manage ischemic or hemorrhagic cerebrovascular events by knowing their effect on brain parenchyma and various clinical effects along with radiological diagnosis	**ORTH-T-S2-Ana-4** Circulation of brain and basalganglion **ORTH-T-S2-NSUR-4** Intracranial hemorrhage **ORTH-T-S2-Rad-2** CT Scan & MRI	Lecture/ Demonstration, SGD, Practical, CBL/ PBL	SBQs & OSVE, OSCE, Clinical Exam

Theme 4: Composition, Synthesis and Flow of CSF, Hydrocephalus andIts Management

S #	LEARNING OBJECTIVE	TOPIC	LEARNING STRATEGY	ASSESSMENT
7	Synthesis and flow of CSF along with its composition, hydrocephalus and its management	**ORTH-T-S2-Phy-1** Flow and circulation of CSF **ORTH-T-S2-Ana-5** Ventricular System **ORTH-T-S2-NSUR-5** Presentation and management **ORTH-T-S2-Rad-3** CT Scan & MRI	Lecture/ Demonstration, SGD, Practical, CBL/ PBL	SBQs & OSVE, OSCE, Clinical Exam

Theme 5: Approaches and Management of CNS tumors at different ages

S #	LEARNING OBJECTIVE	TOPIC	LEARNING STRATEGY	ASSESSMENT
8	Relate the neoplastic processes involving different parts of brain with their clinical presentations and differentages	**ORTH-T-S2-Path-1** Brain tumor **ORTH-T-S2-NSUR-6** Approach and management of CNS Tumors & different ages **ORTH-T-S2-Rad-4** Radiological appearance of brain tumor	Lecture/ Demonstration, SGD, Practical, CBL/ PBL	SBQs & OSVE, OSCE, Clinical Exam

Theme 6: Spinal cord trauma and myelopathy

S #	LEARNING OBJECTIVE	TOPIC	LEARNING STRATEGY	ASSESSMENT
9	To localizes the lesion of compressive spinal cord pathology including vascular, neoplastic, infective and traumatic	**ORTH-T-S2-Ana-6** Brief view of Spinal Cord **ORTH-T-S2-NSUR-7** Etiology, clinical presentation andmanagement **ORTH-T-S2-Rad-5** X-rays, CT-Scan & MRI	Lecture/ Demonstration, SGD, Practical, CBL/ PBL	SBQs & OSVE, OSCE, Clinical Exam

NEUROSCIENCES MODULE

NEUROLOGY

Introduction Neuroscience is a multidisciplinary field that looks into the causes underlying neurological illness as well as the development and cellular operations of the nervous system. This module includes basic anatomical, physiological and biochemical concepts in relation to the nervous system and its link with clinical aspects related to the diseases of brain and nerves. This curriculum combines the chance to learn about the field broadly with in-depth knowledge in one of the three primary areas of neuroscience: clinical neuroscience, functional and integration neuroscience, and cellular and systems neuroscience.

Rationale The main goal of this module is to provide the foundation for understanding the impairments of sensation, action & cognition that accompany injury, disease or dysfunction in the central nervous system. This module will build upon the knowledge acquired through prior studies of cell molecular biology, general physiology & human anatomy with primary focus on the CNS. It will cover the important clinical aspects, pathological features, therapeutics & other common diseases of the CNS. Through this module student will develop an integrated, scientific knowledge and will be able to practice in a clinical setting and develop problem-solvingskills helping to progress scientific discovery into neurological aspects of clinical and medical practice.

Duration **03 weeks**

Learning Outcomes **By the end of this module, the students will be able to:**

- Develop a well-rounded understanding of the neuroanatomy, neurophysiology, and neuropsychology that underlie both neurological and psychiatric disorders.
- Acquire the skills to correlate anatomy, pathology, and pharmacology with clinical presentationsin both neurology and psychiatry.
- Demonstrate the utilization of diagnostic tests such as EEG, CT, MRI, and plain X-rays, along withpsychiatric evaluation tools, for accurate diagnosis.
- Formulate holistic treatment plans incorporating pharmacological, psychological, and Neuro-rehabilitation strategies for managing both neurological and psychiatric disorders.

Themes

Neurology

Theme 1: Weakness (Monoplegia, Hemiplegia)
Theme 2: Loss of Consciousness and Fits
Theme 3: Headache
Theme 4: Tremors and Difficulty in Walking / Loss of Balance (Ataxia)
Theme 5: Vertigo and Loss of Vision
Theme 6: Forgetfulness and Loss of Memory
Theme 7: Paraplegia, Quadriplegia
Theme 8: Loss of Vision
Theme 9: Numbness and Parasthesias (Tingling, Needling Sensation)

S #	LEARNING OBJECTIVE	TOPIC	LEARNING STRATEGY	ASSESSMENT
1	Revisit the neuro anatomy of brain, cranial nerves and cerebellum**(revisit)** + Localize the lesion in CNS and PNS +Evaluation of ischemic or hemorrhagic cerebrovascular eventsand their clinical effect on brain parenchyma	**NS-S2-Ana-1** Functional Neuroanatomy and blood supply brain	Lecture/ Demonstration, SGD, Practical, CBL/ PBL	SBQs & OSVE, OSCE, Clinical Exam
		NS-S2-Ana-2 Functional Neuroanatomy of Spinal Cord		
2	To learn about the pathological processes affecting the neurons system. And Correlation between clinical presentations and pathogenic mechanisms.	**NS-S2-Path-1** Cerebral hypoxia and cerebraledema		
		NS-S2-Path-2 Degenerative disorders of brain and spinal cord pathological perspective		
		NS-S2-Path-3 Pathological perspective/ classification of neuropathies		
3	Investigations for Neurological Disorders + Correlate between clinical presentations and pathogenic mechanisms involved in CNS infections and infestations. + Identify the involvement of isolated or multiple brain regions and structures in degenerative disorders and know resulting clinical syndromes. + Localize the lesion in various neruo axis. + To learn about clinical presentation and diagnosis and investigation about stroke, headache and epilepsy. +Differentiate between different types of anterior horn cell disorders, neuropathies and Myopathies by knowing their pathology, clinical features and investigations. lesions and their radiological appearance + Predict the general reaction of	**NS-S2-Neu-1** Cerebrovascular Disorders diagnosis		
		NS-S2-Neu-2 Definition and classification of seizure disorders		
		NS-S2-Neu-3 Cerebrovascular disorders management		
		NS-S2-Neu-4 Diagnosis & management of epilepsy		
		NS-S2-Neu-5 Meningitis		
		NS-S2-Neu-6 Encephalitis		
		NS-S2-Neu-7 Brain abscess		
		NS-S2-Neu-8 Migraine		
		NS-S2-Neu-9 Loss of consciousness / coma(approach to diagnosis and management)		

	brain to various injurious processes in terms of brain edema or raised intracranial pressure and develop a management a plan. +	**NS-S2-Neu-10** Parkinson disease		
		NS-S2-Neu-11 Cerebellar dysfunctions diagnosis and management		
		NS-S2-Neu-12 Chorea		
		NS-S2-Neu-13 Friedreich's ataxia		
		NS-S2-Neu-14 Wilson disease		
		NS-S2-Neu-15 Normal pressure hydrocephalus		
		NS-S2-Neu-16 Leuko dystrophies		
		NS-S2-Neu-17 Alzheimer disease		
		NS-S2-Neu-18 Multiples sclerosis		
		NS-S2-Neu-19 Transverse myelitis		
		NS-S2-Neu-20 Neuro electro physiology (NCSEMG, VEP, BERA, EEG)		
		NS-S2-Neu-21 TB spine		
		NS-S2-Neu-22 Acute and chronic peripheralneuropathies		
		NS-S2-Neu-23 Sub-acute combine degeneration of cord		
		NS-S2-Neu-24 Myasthenia gravis		
		NS-S2-Neu-25 Muscular dystrophies		
		NS-S2-Neu-26 Approach to the visual loss		
		NS-S2-Neu-27 Metabolic and inflammatory Myopathies		

4	To learn the basic concept about neuroimaging and their interpretation	**NS-S2-Rad-1** basics of neuro imagining (X -ray, CT Scan and MRI)		
		NS-S2-Rad-2 Neuro imaging of multiple sclerosis		
5	To learn about theindication contraindication ofvarious drugs used formanagement of commonneurological disorders	**NS-S2-Pharm-1** Anti-epileptic drugs + Drugs formigraine		
		NS-S2-Pharm-2 Anti tubercles and drugs for theCNS infections		
		NS-S2-Pharm-3 Drugs for parkinsonism		
6	Recognize the importance of Community medicine in neurological disorders	**NS-S2-CM-1** Overview on global burden ofneurological Disorders		
		NS-S2-CM-2 Public health principles and awareness about neurological disorders		
7	To learn about the basic knowledge about Neuro rehabilitation	**NS-S2-PMR-1** Neuro rehabilitation of commonUMN and LMN disorders		

PSYCHIATRY

Introduction is a fascinating and important area of medicine. Due to the nature of psychiatric illness (which may often be present/co-morbid with other conditions and/or affect the way people behave in a variety of situations), improved knowledge of Psychiatry would benefit professionals working in fields supplementary toPsychiatry and/or likely to come into contact with psychiatric illness on a regular basis.

Rationale The psychiatry module aims to provide students with an in-depth knowledge of the basic science, characteristics and presentation of psychiatric illness. Psychiatric illnesses are becoming increasingly common in all the socioeconomic as well as ethnic communities in all genders and age groups. This modulewill be helpful in understanding that how psychiatric illness is managed and the appropriateness of referralsfor specific management plans. The students will also develop the ability to critically appraise, synthesize and evaluate research relating to psychiatric illness.

Duration 03 weeks

Learning Outcomes: By the end of this module, the students will be able to:

- Develop a well-rounded understanding of the neuroanatomy, neurophysiology, and neuropsychology that underlie both neurological and psychiatric disorders.
- Acquire the skills to correlate anatomy, pathology, and pharmacology with clinical presentationsin both neurology and psychiatry.
- Demonstrate the utilization of diagnostic tests such as EEG, CT, MRI, and plain X-rays, along withpsychiatric evaluation tools, for accurate diagnosis.

- Formulate holistic treatment plans incorporating pharmacological, psychological, and Neuro-rehabilitation strategies for managing both neurological and psychiatric disorders.

Theme 1: Psychosis/ Schizophrenia Patho-Physiology, Classification Investigation /Management

Theme 2: Mood Disorders and Anxiety Disorders, Patho-Physiology, Classification Investigation / Management

S #	LEARNING OBJECTIVE	TOPIC	LEARNING STRATEGY	ASSESSMENT
1	• Explain the neuroanatomical changes associated with mentaland behavioral disorders. • Identify specific brain regionsaffected in different disorders. • Explain the relationship betweenbrain structures and behavioral manifestations.	**NS-S2-Ana-1** Neuroanatomical Changes in Mental and Behavioral Disorders	Lecture/ Demonstration,SGD, Practical, CBL/PBL	SBQs & OSVE, OSCE, Clinical Exam
2	• Define psychosis and its key characteristics. • Classify different types of psychosis. • Explain the clinical presentations of psychosis. • Differentiate between positive and negative symptoms ofpsychosis.	**NS-S2-PSY-1** Psychosis Concept and Classifications		
3	• Describe the clinical features of schizophrenia. • Identify the subtypes of schizophrenia. • Explain the course andprognosis of the disorder. • Explain the challenges inmanaging schizophrenia.	**NS-S2-PSY-2** Schizophrenia		
4	• Explain the mechanisms of action of antipsychoticmedications. • Identify common anti-psychotic drugs and their side effects.	**NS-S2-Pharm-1** Psycho-pharmacology of Antipsychotic		
5	• Explore disorders within the schizophrenia spectrum. • Explain the similarities and differences between thesedisorders.	**NS-S2-PSY-3** Schizophrenia Spectrum Disorders		
6	• Apply the bio psycho-social model in the management ofschizophrenia. • Develop comprehensivetreatment plans considering biological, psychological, andsocial factors.	**NS-S2-PSY-4** Management of Schizophrenia Bio-Psychosocial Model		

7	• Explain the role of mood stabilizers in psychiatric treatment. • Identify common mood stabilizers and their mechanismsof action. • Recognize indications and contraindications for mood stabilizer use.	**NS-S2-Pharm-2** Psychopharmacology of Mood Stabilizers		
8	• Define bipolar disorder and its diagnostic criteria. • Identify the different phases ofbipolar disorder. • Explain the challenges inmanaging bipolar disorder.	**NS-S2-PSY-5** Bipolar Disorder		
9	• Explore neurophysiological and biochemical changes associated with mental disorders. • Explain the role of neurotransmitters in psychiatric conditions. • Identify key biomarkers related to mental and behavioral disorders.	**NS-S2-Bio-1** Neurophysiological/ Biochemical Changes in Mental Disorders		
10	• Define personality and personality disorders. • Identify different types of personality disorders. • Explain the diagnostic criteria for personality disorders. • Explore the impact of personality disorders on an individual's functioning.	**NS-S2-PSY-6** Personality and Personality Disorders		
11	• Apply therapeutic approaches in the management of personality disorders. • Develop strategies for coping with challenging behaviors.	**NS-S2-PSY-7** Management of Personality Disorders		
12	• Explain the applications ofneuro-imaging in psychiatricconditions. Interpret neuro-imaging results in the context of mental health assessment.	**NS-S2-Rad-1** Basics of Neuro-imaging (CT Scanand MRI)		
13	• Identify general medical conditions that may present withacute psychosis. • Explain the relationship between medical conditions and psychiatric symptoms.	**NS-S2-CM-1** General Medical Conditions Presented with Acute Psychosis		

14	• Implement appropriate interventions for the management of psychosis in thecontext of general medicalconditions. • Collaborate with medicalprofessionals in addressing underlying medical issues. • Explain the importance of a multidisciplinary approach in such cases.	**NS-S2-CM-2** Management of General Medical Conditions Presented with Psychosis		
15	• Explain the mechanisms of action of antidepressant medications. • Identify common antidepressant drugs and their side effects.	**NS-S2-Pharm-3** Psycho-pharmacology of Antidepressants		
16	• Define major depressivedisorder and its diagnosticcriteria. • Recognize the symptoms and course of major depressive episodes. • Explain the impact of major depressive disorder on individuals and society.	**NS-S2-PSY-8** Major Depressive Disorder		
17	• Apply the bio-psychosocial model in the management of major depressive disorder. • Develop comprehensive treatment plans considering biological, psychological, and social factors.	**NS-S2-PSY-9** Management of MajorDepressive DisorderBio-Psychosocial Model		
18	• Explain the social factors influencing suicide. • Identify risk and protectivefactors related to suicide. • Discuss the impact of societalattitudes on individuals at risk of suicide.	**NS-S2-PSY-10** Social Perspective of Suicide		
19	• Identify risk factors associated with deliberate self-harm and suicide. • Conduct a comprehensive assessment of suicide risk. • Develop intervention strategies for individuals at risk.	**NS-S2-PSY-11** Deliberate Self-Harm / Suicide Risk Factors and Assessment		

20	• Explain the mechanisms of action of anxiolytic and sedativemedications. • Identify common drugs in these categories and their side effects. • Explain the role of anxiolytics and sedatives in the treatment ofanxiety-related disorders.	**NS-S2-Pharm-4** Psycho-pharmacology of Anxiolytics & Sedatives		
21	• Define anxiety disorders andtheir key characteristics. • Classify different types of anxiety disorders. • Explain the clinical presentationsof anxiety disorders.	**NS-S2-PSY-12** Anxiety Disorders Concept and Classification		
22	• Apply the bio-psychosocial model in the management of anxiety disorders. • Develop comprehensive treatment plans considering biological, psychological, and social factors. • Implement strategies for coping with anxiety symptoms.	**NS-S2-PSY-13** Management of Anxiety Disorder Bio-Psychosocial Model		
23	• Define acute stress disorder and post-traumatic stress disorder. • Identify the diagnostic criteria and symptoms associated with each disorder. • Explain the impact of trauma on mental health. • Develop strategies for managing acute stress and PTSD.	**NS-S2-PSY-14** Acute Stress Disorder & Post Traumatic Stress Disorder		
24	• Explore the relationship between stress and physical/mental health. • Explain the physiological and psychological effects of stress. • Identify coping mechanisms for stress management.	**NS-S2-PSY-15** Stress and its Relationship with Illness		
25	• Define adjustment disorder and its diagnostic criteria. • Identify common stressors leading to adjustment disorder. • Explain the impact of adjustmentdisorder on an individual's functioning. • Develop interventions for coping with adjustment difficulties.	**NS-S2-PSY-16** Adjustment Disorder		

26	• Implement strategies for the management of acute stressdisorder. • Provide psychoeducation oncoping with acute stress. • Address immediate and long- term needs of individuals experiencing acute stress.	**NS-S2-PSY-17** Management of AcuteStress Disorder		
27	• Classify different types of sleep disorders. • Explain the diagnostic criteria for common sleep disorders. • Explore the impact of sleep disorders on mental and physicalhealth. • Develop management strategiesfor various sleep disorders.	**NS-S2-PSY-18** Sleep Disorders: Classification and Management		
28	• Define somatoform and dissociative disorders. • Classify different types of somatoform and dissociative disorders. • Explain the clinical presentationsof these disorders. • Explore the relationship between psychological factors and somatic symptoms.	**NS-S2-PSY-19** Somatoform & Dissociative Disorders Classification and Clinical Presentations		
29	• Apply therapeutic approaches in the management of somatoform and dissociative disorders. • Develop strategies foraddressing somatic symptoms ina holistic manner. • Collaborate with healthcare professionals for comprehensivecare.	**NS-S2-PSY-20** Management of Somatoform & Dissociative Disorders		
30	• Explain the neurobiologicalbasis of addiction. • Identify the impact of substanceson the brain's reward system. • Explore the concept of tolerance, dependence, and withdrawal. • Recognize the role of genetics in addiction susceptibility.	**NS-S2-PSY-21** Neurobiological Basis of Addiction		

31	• Conduct a comprehensive assessment for substance use disorders. • Identify diagnostic criteria for different substance usedisorders. • Explain the impact of substance use on mental and physical health. • Differentiate between substance abuse and dependence.	**NS-S2-PSY-22** Substance Use Disorders: Assessment and Diagnosis		
32	• Develop individualized treatment plans for substance use disorders. • Implement evidence-based interventions for substance use disorders. • Address co-occurring mental health issues in the context of substance use.	**NS-S2-PSY-23** Management of Substance Use Disorder		
33	• Explain the stages of child development. • Identify key milestones in cognitive, social, and emotional development. • Explore factors influencing child development.	**NS-S2-PSY-24** Child Development		
34	• Define pervasive developmental disorders (autism spectrum disorders). • Identify diagnostic criteria for different disorders within thespectrum. • Explain the challenges faced by individuals with pervasive developmental disorders.	**NS-S2-PSY-25** Pervasive Developmental Disorders		
35	• Conduct comprehensive assessments for developmental disorders. • Develop intervention plans tailored to the individual needs of children with developmental disorders.	**NS-S2-PSY-26** Assessment and Management of Developmental Disorders		
36	• Differentiate between dementiaand delirium. • Explain the clinical presentationsof dementia and delirium. • Identify risk factors for thesedisorders.	**NS-S2-PSY-27** Dementia and Delirium		

37	• Recognize the signs and symptoms of dementia and delirium. • Explain the progression of cognitive decline in dementia. • Identify reversible causes of delirium.	**NS-S2-PSY-28** Clinical Presentations of Dementia and Delirium		
38	• Implement strategies for managing behavioral and cognitive symptoms in dementia. • Provide support for individuals and caregivers coping with dementia	**NS-S2-PSY-29** Management of Dementia and Delirium		
39	• Explain the concept of stigma in the context of mental health. • Explore the impact of stigma on individuals seeking mental health services. • Engage in mental health advocacy to reduce stigma.	**NS-S2-PSY-29** Stigma & Mental Health Advocacy		
40	• Explain the legal framework surrounding mental health. • Identify the rights and responsibilities of individuals with mental health issues. • Navigate the legal processes related to involuntary commitment and treatment.	**NS-S2-PSY-30** Legal Aspects of Mental Health		

CARDIOLOGY

Introduction Welcome to the Cardiology module. This interesting module very essential to build your foundation in medicine and allied. This module is designed to make your learning both interesting and productive by including several inter active activities.

This module comprehensively covers the clinical applications that we encounter in everyday life as a cardiologist. All these topics are interactive and helpful in understanding the disease process as well as theirmanagement.

Rationale Heart is the one of if not the most essential organ of the body, it has a complex interaction with other essentialorgans of the body, its importance in human life is critical for survival of human being to understand the complex functioning as well as the common disease process is critical for every medical student to learn andby understanding it one can truly excel in medicine.

Duration **02 Weeks**

Learning Outcomes **After completion of MBBS course the student should be able to:**

- Recognize the clinical presentations of common cardiovascular diseases in the community.
- Diagnose these diseases on the basis of history, examination and clinical investigations.
- Identify the preventive measures for counseling their patients.
- Practice basic principles of management of common disease and make appropriate referral.
- Recognize of the prognosis to counsel their patients.
- Be aware of the specific diagnostic tools for cardiovascular diseases, and their interpretation.

Topics with specific learning objectives and teaching strategies

Theme 1: Ischemia, Heart Failure, Congenital Heart Diseasesand Vascular Diseases

S #	LEARNING OBJECTIVE	TOPIC	LEARNING STRATEGY	ASSESSMENT

1	• NSTE-ACS:
	  ○ Unstable Angina
	  ○ NSTEMI
	• STEMI
		CAR-S2-Cardio-1 Acute Coronary Syndrome	Lecture/ Demonstration, SGD, Practical, CBL/ PBL	SBQs & OSVE, OSCE, Clinical Exam

2	• Introduction • Clinical Presentation • Diagnostic testing • Therapy	**CAR-S2-Cardio-2** Chronic Coronary Syndrome		
3	• Heart Failure with systolic Dysfunction • Heart Failure with preserved ejection fraction	**CAR-S2-Cardio-3** Heart Failure		
4	• ASD • VSD • PDA • Coarctation of Aorta\ • Tetralogy of Fallot	**CAR-S2-Cardio-4** Congenital Heart Diseases		
5	• Venous thromboembolism • Peripheral Arterial disease • Carotid artery disease.	**CAR-S2-Cardio-5** Vascular Diseases		

Theme 2: Arrythmias, Valvular Heart Disease and HeartDiseases and Pregnancy

S #	LEARNING OBJECTIVE	TOPIC	LEARNING STRATEGY	ASSESSMENT
1	• Supraventricular arrhythmias • Ventricular arrythmias	**CAR-S2-Cardio-6** Tacchyarrythmia	Lecture/ Demonstration, SGD, Practical, CBL/ PBL	SBQs & OSVE, OSCE, Clinical Exam
2	• Sinus Node Dysfunction • 1st degree AV Blocks • 2nd degree AV Block • 3rd degree AV Block	**CAR-S2-Cardio-7** Bradyarrythmias		
3	• Mitral Valve Disease • Mitral stenosis • Mitral Regurgitation	**CAR-S2-Cardio-8** Valvular Heart Disease		
4	• Aortic Valve Disease • Aortic stenosis • Aortic Regurgitation	**CAR-S2-Cardio-9** Valvular Heart Disease		
5	• Introduction • Normal Physiologic changes during pregnancy • Cardiovascular evaluation during pregnancy • Pregnancy in women withCHD • VHD and pregnancy • Hypertensive disorders in Pregnancy	**CAR-S2-Cardio-10** HeartDiseasesand Pregnancy		

EXCRETORY & RENAL MODULE

NEPHROLOGY

Introduction Welcome to the Nephrology module. This module is very essential to build foundation in the field of medicineand allied. This module is designed to make learning both interesting and productive by including several interactions.

This module covers the structural anatomy, and physiology of the kidneys, as well as common renal disordersencounter in our society. All these topics are interactive and helpful in understanding the renal diseases.

Rationale The kidneys are very important the organs of the body, Maintaining the blood pressure (hemodynamic status),pH, electrolytes, body volume & excretion of waste products from the body. The kidneys are vulnerable to many systemic diseases, genetic diseases, and environmental diseases, infections, communicable & non communicable diseases. Understanding therapeutic and preventive measures for many renal diseases is the need of time, not only to save the cost of treatment which is very high for managing kidney diseases but also for maintaining the better quality of life.

At the end of module, the student shall gain the understanding to diagnose & manage common renal problems including Acute Kidney Injury, Chronic Kidney Injury, and Electrolyte disorders such as sodium, potassium, calcium, magnesium & interpretation of ABGs disorders. Understanding the clinical renal module will not only will be important for patients management but will also be helpful for clearing in various licensing examination for many countries.

Duration **04 Weeks**

Learning outcomes **After completion of MBBS course the student should be able to:**

- Recognize the clinical presentations of common renal disorders.
- Diagnose these disorders on the basis of history, examination and clinical investigations.
- Identify the preventive measures for counseling regarding the non-communicable diseases.
- Practice basic principles of management of common disease and make appropriate referral.
- Estimate the prognosis to counsel the patients and family members.
- Aware of the specific diagnostic tools for renal diseases, and their interpretation.

Themes

Theme 1:	Glomerular Conditions Including Glomerular Syndromes, Conditions Associated withSystemic Disorders and Isolated Glomerular Abnormalities
Theme 2:	Renal Excretory Infections and Vascular Disease
Theme 3:	Obstructive Uropathy (Urolithiasis, Hydronephrosis)
Theme 4:	Tumors of Renal/ Excretory System

Topics with specific learning objectives and teaching strategies

S #	LEARNING OBJECTIVE	TOPIC	LEARNING STRATEGY	ASSESSMENT
1	• Basic and advance renal investigations • When, how, which and what type of investigation to be sent according to renal illness • The basics that how such investigation to be interpret • The significance of test in disease,its prognosis and monitoring. • Basic case scenarios on various important investigations.	**EXC-S2-Neph-1** Investigations in renal medicine	Lecture/ Demonstration, SGD, Practical, CBL/ PBL	SBQs & OSVE, OSCE, Clinical Exam
2	• Definition of terms • Basic classification of glomerular diseases • Proteinuria and its types • Difference b/w nephritic and nephrotic syndrome • Approach to a patient with glomerular diseases • Management of nephritic and nephritic syndrome • Case based scenarios on various glomerular diseases.	**EXC-S2-Neph-2** Clinical presentation and basic management of glomerular diseases: nephritic & nephrotic syndrome		
3	• Describe an over view of anatomy & physiology of urinary system. • Explain the classification of acute renal injury. • Discuss the clinical picture and presentation of acute renal injury. • Basic management • Case based scenarios.	**EXC-S2-Neph-3** Acute kidney injury		
4	• Identify the causes of chronic kidney disease • Explain the pathogenesis of chronic kidney disease • Describe the signs and symptoms and presentation of CKD • Management • Clinical case-based scenarios	**EXC-S2-Neph-4** Chronic kidney disease		
5	• Different modalities of dialysis • Over view of renal transplant Common post renal transplant medical complications.	**EXC-S2-Neph-5** Renal replacement therapy		

S #	LEARNING OBJECTIVE	TOPIC	LEARNING STRATEGY	ASSESSMENT
1	• Describe the distribution of potassium in the body. • Enlist the causes of hypokalemia andhyperkalemia. • Discuss the diagnosis and management of these disorders	**EXC-S2-Phy-1** Potassium Disorders	Lecture/ Demonstration ,SGD, Practical, CBL/ PBL	SBQs & OSVE, OSCE, Clinical Exam
2	• Describe the distribution of sodium in the body. • Enlist the causes of hyponatremia andhypernatremia. • Discuss the diagnosis and management of these disorders	**EXC-S2-Phy-2** Sodium disorders		
3	• Physiology of acid base homeostasis • Metabolic acidosis: causes. Pathophysiology, case-based interpretation with compensation. • Metabolic alkalosis: causes. Pathophysiology, case-based interpretation with compensation • Respiratory acidosis: causes. Pathophysiology, case-based interpretation with compensation • Respiratory acidosis: causes. Pathophysiology, case-based interpretation with compensation • Mixed disorders, diagnosis	**EXC-S2-Neph-6** Management of Acid base disorders& Arterial blood Gases interpretation (twodays)		
4	• Case based scenarios (50 questions). • Clinical examination at bed side history/systemic examination.	Assessment	**Award to beststudent of thegroup**	**SBQs & OSVE**

UROLOGY

Introduction Its Renal Excretory Module, module comprises of conditions related with Kidneys, Ureter, Urinary Bladder, Prostate, Male Genitalia and accessory glands. it is collectively known as Urology. It is one of most diverse fields of medicine which share major chunk of innovations in the field of medicine. This module will enable you to understand conditions related to organs which are related to this module, its clinical implications and ways for treating the related diseases in most constructive and interactive manner.

Rationale This module comprises of multiple important organs of body. Thy are having pivotal role in the homeostasisof the human body. Organs like kidneys, ureter, bladder, prostate and male genitals are complex organs and functions in very diverse ways so disease process also take very unusual pathways so it is beyond discussionthat it is very important to know treating strategy for urological conditions like urolithiasis, urological neoplasms, infertility and paediatric urological conditions etc and preventing the recurrence of the disease.

Learning Outcomes **At the end of module candidate should be able to:**

- Understand the normal functioning of organs in the module.
- Take thorough history, clinical examination emphasising on Urological structures.
- Interpret diagnostic tests and their proper indications.
- Diagnose clinical conditions involving mentioned organs with the help of basic as well asadvanced investigative tools.
- Advice proper treatment modalities to commonly occurring conditions.
- Design preventive measures for different conditions discussed in module.
- Provide proper follow-ups to get good prognosis.

Topics with specific learning objectives and teaching strategies

S #	LEARNING OBJECTIVE	TOPIC	LEARNING STRATEGY	ASSESSMENT
1	Pathogenesis of stone formationwith different theories	**EXC-S2-URO-1** Stone disease 1	Lecture/ Demonstration,SGD, Practical,CBL/ PBL	SBQs & OSVE, OSCE, Clinical Exam
2	Diagnosis with brief introduction to investigations	**EXC-S2-URO-2** Stone disease 2		
3	Pathogenesis of BPE and carcinoma of prostate, overview of investigative modalities'	**EXC-S2-URO-3** Prostate (benign andMalignant)		
4	Types of bladdar tumors, pathogenesis and diagnosis	**EXC-S2-URO-4** Urinary bladder Neoplasms		
1	History, Clinical examination, Investigations, medical and surgical management	**EXC-S2-URO-5** Urolithiasis		
2	History, Clinical examination, Investigations, medical and surgical management.	**EXC-S2-URO-6** Benign prostatic enlargement		

3	History, Clinical examination, Investigations, medical and surgical management,prognosis, follow up.	**EXC-S2-URO-7** Prostatic neoplasms	Lecture/ Demonstration,SGD, Practical,CBL/ PBL	SBQs & OSVE, OSCE, Clinical Exam
4	History, Clinical examination, Investigations, management. History, clinical examination, diagnosis,	**EXC-S2-URO-8** Urinary tract infection		
5	Medical and surgical management, follow up and prognosis	**EXC-S2-URO-9** Renal Neoplasms		
6	PUJO, PUV, VUR, cryptorchidism	**EXC-S2-URO-10** Paediatrics Urology		
7	Renal, ureter, bladder, male genitals	**EXC-S2-URO-11** Urological Trauma		
8	Hydrocele, varicocel, epididymal cyst.	**EXC-S2-URO-12** Benign scrotal conditions		
9	History, Clinical examination, Investigations, management. History, clinical examination, diagnosis, Medical and surgical management, follow up and prognosis	**EXC-S2-URO-13** Malignant scrotal conditions		
10	Oral/ MCQs	Assessment		**SBQs & OSVE**

INTEGUMENTARY MODULE

DERMATOLOGY

Introduction Welcome to the Integumentary module. This interesting module very essential to build your foundation in medicine and allied. This module is designed to make your learning both interesting and productive by including several inter active activities.

This module covers the structural anatomy and physiology of the skin as well as common skin disorders encounter in our society. All these topics are interactive and helpful in understanding the skin diseases.

Rationale Skin is the largest organ of the body. Its exposed position makes it susceptible to a large number of disorders which include, allergic conditions, infections, and involvement in metabolic disorders. In this dermatology module the student shall gain the understanding of skin diseases, their clinical presentation, diagnosis and their management.

Learning Outcomes **After completion of MBBS course the student should be able to:**

- Recognize the clinical presentations of common Skin diseases in the community.
- Diagnose these diseases on the basis of history, examination and clinical investigations.
- Identify the preventive measures for counseling their patients.
- Practice basic principles of management of common disease and make appropriate referral.
- Recognize of the prognosis to counsel their patients.
- Be aware of the specific diagnostic tools for Skin diseases, and their interpretation.

Duration **02 Weeks**

Topics with specific learning objectives and teaching strategies

Theme 1: Introduction and Inflammatory Dermatosis

S. #	LEARNING OBJECTIVES	TOPICS	TEACHING STRATEGY	ASSESSMENT
1	Recognize the Layers of epidermis & Dermis Recognize the appendages Explore the functions of epidermis and dermis	**IM-S2-Derm-1** Anatomy and physiology of the skin	Lecture/ Demonstration ,SGD, Practical, CBL/ PBL	SBQs & OSVE, OSCE, Clinical Exam
2	Recognize primary and secondarycutaneous lesions	**IM-S2-Derm-2** Primary and secondary skin lesions		
3	To diagnose different types of psoriasis & their management	**IM-S2-Derm-3** Psoriasis		
4	To diagnose acne vulgaris & its management	**IM-S2-Derm-4** Acne vulgaris		
5	To diagnose atopic Eczema & study its management	**IM-S2-Derm-5** Atopic dermatitis		

Theme 2: Infections of Skin

S #	LEARNING OBJECTIVES	TOPICS	TEACHING STRATEGY	ASSESSMENT
6	To diagnose superficial cutaneousbacterial infections, and their management	**IM-S2-Derm-6** Bacterial Infection		

7	To diagnose different types of superficial fungal infections andtheir management	**IM-S2-Derm-7** Fungal	Lecture/ Demonstration, SGD, Practical, CBL/ PBL	SBQs & OSVE, OSCE, Clinical Exam
8	To diagnose common cutaneous viral infections and their management	**IM-S2-Derm-8** Viral Infections		
9	To diagnose the Leishmaniasis and their management	**IM-S2-Derm-9** Parasitic Infections		
10	To diagnose scabies and its management.	**IM-S2-Derm-10** Parasitic Infections		

PLASTIC SURGERY/ BURNS

By the end of this module, 4th-year undergraduate medical students should be able to:

- Enlist the type of skin and its behavior after injuries like pigmentation, hypertrophic scar and Keloid.
- Enumerate the relevant investigation in a given scenario including blood investigations, relevant X-ray, Echo, CT and MRI scan.
- Diagnose the type of wound and its management.
- Enlist the different skin lesion and tumor and its management on the basis of local and regional flaps.
- Discuss the axial pattern flap for distant area coverage.
- Explain the biological and artificial skin for coverage.
- Describe the acute burn care.
- Discuss how the graft applied
- Enumerate and identify various benign and malignant skin lesions.
- Enlist and describe various congenital anomalies dealt in Plastic surgery.
- Identify appropriate patient referral for further management

Duration 02 Weeks

Topics with specific learning objectives and teaching strategies

Theme: Basic

S #	LEARNING OBJECTIVES	TOPICS	TEACHING STRATEGY	ASSESSMENT
11	The student will be able to: • Define what is plastic surgery • Describe history of plastic surgery • Define sub-specialties in plastic surgery • Describe factors involved in obtaining fine line scar • Describe step ladder in plastic surgical armamentarium	**IM-S2-PSurg-1** Introduction to Plastic Surgery	Lecture/ Demonstration, SGD, Practical, CBL/ PBL	SBQs & OSVE, OSCE, Clinical Exam

Theme: Burns and Wound Healing

S #	LEARNING OBJECTIVES	TOPICS	TEACHING STRATEGY	ASSESSMENT
12	The student will be able to: • Define and Identify different typesand degrees of burns • Describe management of acuteburns • Enumerate complications of Burns • Describe measures for prevention ofburns and its complications	**IM-S2-PSurg-2** Burns	Lecture/ Demonstration, SGD, Practical, CBL/ PBL	SBQs & OSVE, OSCE, Clinical Exam
13	The student will be able to: • Define stages of wound healing • Describe mechanisms involved inwound healing • Describe aberrant wound healing • Identify factors causing delayedwound healing • Describe options for wound management • Describe recent advances in wound healing strategies	**IM-S2-PSurg-3** Wound healing		
14	• The student will be able to define: • What is skin graft, Types of skin graft, Mechanism of skin graft take, Uses ofskin graft, Complications of skin grafts, The student is able to Define: What is a flap, Different types of flaps, Types of local flaps, Z-plasty, Uses of different flaps, Complications of different flaps	**IM-S2-PSurg-4** Graft/ Flaps		

Theme: Birth Defects

S #	LEARNING OBJECTIVES	TOPICS	TEACHING STRATEGY	ASSESSMENT
15	The student will be able to describe:	**IM-S2-PSurg-5** Congenital anomalies	Lecture/ Demonstration,	SBQs & OSVE, OSCE, Clinical
	Cleft lip deformity, Cleft palate deformity, Hypospadias, Haemangioma, Vascular malformations, Syndactyly		SGD, Practical, CBL/ PBL	Exam

Theme: Skin lesions/ tumours

S #	LEARNING OBJECTIVES	TOPICS	TEACHING STRATEGY	ASSESSMENT
16	The student will be able to identify: • Benign skin lesion • Cutaneous malignancies • Squamous cell carcinoma • Basal cell carcinoma • Melanoma	**IM-S2-PSurg-6** Skin lesion/tumors	Lecture/ Demonstration, SGD, Practical, CBL/ PBL	SBQs & OSVE, OSCE, Clinical Exam

PAEDIATRICS

MISSION OF UNDERGRADUATE PEDIATRIC TRAINING:

To deliver excellence in teaching and learning and actively engage students to develop the minimum essential clinical knowledge, psychomotor skills, critical thinking decision making, and counseling and communication skills regarding the management of pediatric illnesses to ensure the delivery of safe patient care keeping in mind the contextual needs of the community and to effectively deal with global healthcare challenges.

PURPOSE OF STUDY GUIDE

To facilitate the student's learning by providing an outline of the modules, teaching methods, assessment process, and evaluation strategies in context to their themes and sub themes required to achieve the exit competencies in the field of Paediatrics. This study guide also contain details of the teaching schedule and assigned faculty members for each module whom they can contact anytime for guidance or queries.

RULES AND REGULATIONS:

1. Daily timings for pediatric posting is 8.30am to 3.00pm, biometric (digital) and manual attendance both will be taken into account for this purpose.

2. 75% of class attendance is mandatory to appear in end of rotation test.

3. After 9.00 a.m. Students are considered to be late and three late coming will be count as one absent.

4. Attendance of all three sessions will be mandatory for attendance of the day.

5. Formative assessment in form of end modular test/ TBL and WBA (Mini-Cex) will be taken multiple times throughout the rotation while summative assessment will be arranged on last day of rotation (clinical examination & OSCE).

Discipline-Specific Outcomes of Pediatric teaching (undergraduate).

At the end of the Pediatric clerkship, the students should be able to:

1.Take the appropriate history, of patients taking into consideration the age, birth history development, socioeconomic status, family, nutritional, and immunization aspects.

2. Demonstrate Physical examination skill that reflects consideration of clinical presentation and comfort according to age and development of child

3. Formulate problem list of active and chronic issues, including a differential diagnosis of their pediatric presentations. A safe and patient-centered approach should be used for the diagnosis of major presenting problems encountered in pediatrics by using clinical reasoning skills based on the following:

- Relevant basic and clinical science knowledge and Evidence-based medicine.

4. **Select the most appropriate investigation** relevant to each of the presenting clinical scenarios with justification for its selection.

5. **Develop a management plan** for each problem on the problem list, justify it, interpret data, and learn to identify critical and acute pediatric illnesses.

6. **Demonstrate proficiency in specific procedural skills.**

7. **Demonstrate practical communication skills with the patient's family.**

- Establish rapport with children
- Counseling of patients regarding common pediatric presentations
- Communicate the result of pediatric history and physical examination in a well-organized written and oral report.

8. Able to demonstrate professionalism. Professional behavior in the form of:

- Punctuality
- Expresses awareness of emotional, personal, family, and cultural influences on patient well being
- Respectable and professional dressing, including wearing a white coat.
- Demonstration of respect and courtesy towards patients and classmates.

09. Ensure patient safety: The student should be aware of practice the principles of patient safety, which include.

- Understanding and learning from errors
- Engaging with patients and caregivers
- Improving medication safety

10. Identify and access information/resources on evidence-based pediatric practice.

- Demonstrate continuous learning
- Participate in departmental Continuing Medical Education activities to update their knowledge.

PROGRAM

4th-year MBBS Pediatric clinical posting comprises 02-weeks of clinical rotation in pediatric department. Students go through the pediatric outpatient clinic, the EPI clinics, pediatric ward, pediatric ICU, and Neonatal ICU.

TEACHING/LEARNING STRATEGY: During rotation, students will learn through

- Case-based learning
- Bedside clinical teaching sessions
- Outpatient-based teaching
- Interactive lectures

Case base learning:

Students present the history and examination of a patient the then differential diagnosis, investigations and management is discussed in detail

Bedside teaching:

History taking, clinical examination, will be taught and practiced at the bedside or at OPD as task of the day

Seminar: Students will be taught by lead facilitator theoritical aspects of assigned topic for the day.

EPI/OPD: Students go to OPD and EPI Center in small groups to learn Vaccination and practice clinical skills, mainly focusing on IMNCI.

Clinical skills: Students master their examination and procedural skills.

Interactive lectures: Small group discussions on specific topics, scenarios, or clinical cases to enhance the active participation of students.

ASSESSMENT:

Students go through formative and summative assessments in their (02) weeks of clinical rotation.

Formative assessment:

Formative assessment focuses on learning and improvement of students by giving them specific tasks and providing them constructive feedback.

1. End Modular test: That will be taken after end of each module. Though that will be formative but we will assign 5% weightage.

2. Structured Bedside Assessment: is a method of formative assessment in which groups of 4-5 students are observed while they perform clinical skills, followed by structured feedback. by facilitator and co facilitators.

3. TBL Team based learning: taken after some modules which are cognitively rich. Though that will be formative because feedback will be given but we will assign 5% weightage as well.

Summative Assessment:

Summative assessment focuses on cumulative evaluation of the student learning. Its further divided into Continuous assessment and End of rotation test. 10% of the total marks are carried to the final year university-based assessment at the end of the course.

Marks assigned on Assessment:

Continuous assessment has 50% weightage, and it has following components

- End module assessment 15X2 =30
- TBL 10x2=20

Mandatory requirement to appear in final end rotation assessment

- Attendance/punctuality during clinical posting. (75% attendance)
- Logbook (history and daily work record)

End of rotation test: 50%

- Students should submit a clinical Logbook at the end of their rotation in Pediatrics.
- 75% attendance is required to be eligible for the end-of-rotation test.
- In summative assessment, students will be examined for
- Short case 20 marks
- Ten stations of OSCE (static and interactive) 6x5=30

Course Content: We have divide the course contents into 2 modules

Introduction module • Overview of Pediatric Medicine • Overview of growth and development • Pediatric history taking (inpatient) • Pediatric history taking and examination (outpatient) • Physical examination.	**. Nutrition** • Normal Nutrition/ IYCF • CMAM/ SAM • Micronutrient deficiency • Wasting / Obesity

Modular Integrated Teaching for fourth year MBBS

First Module: Paediatric history, integrated approach & IMNCI

Learning outcomes: At the end of this module students will be able to:

- Take Paediatric history of indoor patient.
- Take Paediatric history of outdoor patient.
- Perform the general physical examination on admitted patients
- Perform the focused examination according to IMNCI guidelines
- Assess the growth and development of child under 5 years

Specific learning objectives:

Cognitive: At the end of this module students will be able to:

- Comprehend the importance of paediatric history especially BIND (birth, immunization, nutritional, developmental history).
- Comprehend the importance of focused history and examination at outdoor area (integrated approach with 5 main symptoms and therapeutic and preventive aspect of IMNCI)
- Enlist the domains of growth and development in the child.
- Enlist the therapeutic and preventive aspects of IMNCI
- Write an assignment on importance of integrated / holistic Paediatric approach.

Psychomotor skills: At the end of this module students will be able to:

- Take Paediatric history and check for general danger signs and severe classification on admitted cases.
- Take Paediatric history of outdoor patient and able to fill the CRF (Both age groups)
- Perform the general physical examination on admitted patients.

Affective domain: At the end of this module students will be able to:

- Able to counsel about when to return.
- Able to counsel about breast feeding and nutrition
- Able to counsel about immunization
- Able to counsel about mother's own health

Aligning LO with teaching methodology and assessment plan

S. No	LO	Teaching methodology	Assessment tool
1	Take Paediatric history of indoor patient.	Bed allotment will be done. Patients will be assigned to the group of students (3-4) who will take the history on prescribed proforma given in their log-books (direct supervision) Daily 3 to 4 students sub groups will present the cases in the class room followed by discussion and feedback.	Case presentation in the Long case presentation Mini-CEX (WPBA)
2	Take Paediatric history of outdoor patient.	Practical session on focused history and filling of CRF	Case presentation Filling of CRF in the log books
3	Perform the general physical examination on admitted patients	Demonstration on the patient in the class by lead facilitator Followed by practice in small groups on identified patients	Mini-CEX (WPBA) Short case and long case
4	Perform the focused examination according to IMNCI guidelines	OPD posting at-least once in week. Practical session on focused history and filling of CRF	TBL on IMNCI
5	Enlist the domains of growth and development in the child Assess the growth and development of child under 5 years	Demonstration of growth and developmental assessment on patient by lead facilitator Followed by practice in small groups on identified patients	Growth and development assessment on the patients
6.	Enlist the therapeutic and preventive aspects of IMNCI	Write an assignment on importance of integrated / holistic Paediatric approach.	Designing the rubric for that assignment. Score on rubric on assignment should be 6 out of 10

WEEK 1					
Day	**08.30 - 09.30 am**	**09:30 11:00 am**	**11.30– 01:00 pm**	**01:00-02:00 pm**	**02:00-03:00pm**
1.	Paediatrics history with importance of BIND and systemic enquiry	Practice on history taking in small groups	Growth and development Assessment Practical demonstration on patient.	Practice on history taking with assessment of growth and development	Summarization of today's task **Home assignment** IMNCI an integrated and holistic approach
2.	Introduction to IMNCI with demonstration on wall charts 02 months to 59 months	History taking by students in groups Integration of IMNCI	Practical demonstration by lead facilitator on general physical examination on patient.	Practice on general physical examination in small groups	Summarization of today's task Introduction to CRF 2month to 5 years (5 main symptoms)
3.	Practice on filling of CRF (2month - 5 years) Check for general danger signs And 5 main symptoms	Practical demonstration on IMNCI strategy.	Practice on filling of CRF On five main symptoms at indoor (severe classification)	Brief introduction to sick young infant's module	Summarization of today's task Home assignment for check for possible bacterial infection (PBI).
4.	Demonstration on neonatal examination Practice on filling of CRF 0-2 months	SGD and CBD on sick young infant and NNS	\SGD and CBD on NNJ Difference in physiological and pathological jaundice CBD	Practice on filling of CRF Demonstration and practice on whole process	
5.	First TBL on IMNCI	First formative assessment on history taking / general physical examination and IMNCI approach / process			

Second week: Module Two Nutrition and Nutritional disorders

Topics to be covered:

- Normal nutrition
- IYCF (BFHI , nutrition during first 1000 days)
- CMAM / SAM
- Micronutrient deficiency

<u>Learning outcomes: At the end of this module the students will be able to</u>

- Enlist the objectives and components of CMAM
- Define hidden hunger (micronutrient deficiency)
- Assess and classify the nutritional status of children under 5 years
- Manage the case of SAM without complication (OPT management)

- Enlist the 10-step management protocol of SAM child (complication of SAM).
- Counsel the families about normal nutrition (IYCF key messages).
- Counsel the families about hyegnic food preparation
- Counsel about responsive feeding and TLC

Specific learning objectives:

At the end of this module the students will be able to

Cognitive:

- Recall statistics about the nutritional parameters or indicators in the children of Pakistan (Sindh).
- Describe the five-star diet and role of normal nutrition in first 2 years (1000 days)
- Enlist the 4 components of CMAM and admission and discharge criteria for NSC and OTP
- Able to manage the case of SAM without complication
- Enlist the 10-step management of SAM child admitted in NSC
- Able enlist the ingredients for Preparing F 75 and F 100 (manually)
- Enumerate the difference in ORS and ReSoMal

Psychomotor Skills:

- Take the nutritional history and can estimate the caloric intake
- Screen the children for nutritional status by doing MUAC and checking for bilateral pitting edema.
- Perform Anthropometry of children under 5 and Plot on growth charts and calculate Z score
- Filling of CCP form and daily care forms

Affective Domain:

- Counselling for breast feeding / normal nutrition
- Role plays of SAM
- Able to counsel the children for nutrition to MAM and underweight

Aligning LO with teaching methodology and assessment plan

S. No	LO	Teaching methodology	Assessment tool
1	Enlist the objectives and components of CMAM	Tutorial / lead presentation to introduce the topic.	Written assessment (SBQ & SEQ)
2	Define hidden hunger (micronutrient deficiency)	Tutorial / lead presentation to introduce the topic Assignment	Designing the rubric for that assignment. Score on rubric on assignment should be 6 out of 10
3	Assess and classify the nutritional status of children under 5 years	Demonstration on the patient in the class by lead facilitator Followed by practice in small groups on identified patients	Short case and Mini CEX
4	Manage the case of SAM without complication (OTP management protocol)	Patients allotted in OPD on assigned	Screening done by students under direct supervision Visit to OTP

5	Enlist the 10-step management protocol of SAM child (complication of SAM).	Case based discussion in small groups	Mini-CEX (WPBA) During indoor visit of NSC OSCE
6	Counsel the families about normal nutrition (IYCF key messages).	Lead session by facilitator on counseling Role plays	During OPD visit and during taking history in the ward posting (WPBA)
7	Counsel about responsive feeding and TLC	Live counseling session with the mothers at NSC / role plays	WPBA
8	Counsel the families about hyegnic food preparation	Live counseling session with the mothers at NSC / role plays	WPBA

WEEK 2					
Day	**08.30-09.30 am**	**09:30 – 11:00am**	**11.30 – 01:00 pm**	**01:00- 02:00 pm**	**02:00-03:00pm**
06.	Introduction CMAM With brief description of Four components	Practice on Screening by MUAC and Anthropometry	Practical demonstration by lead facilitator on GPE at NSC	Practice on GPE in small groups on patient SAM child (Macro & micro nutrients	Summarization of today's task Home task self-reading on 10 step management of SAM
07.	10 step management of SAM Demonstration on filling of CCP form	Case based discussion on SAM with complication	Outdoor visit of OTP OPT protocol	Indoor visit of NSC Short case evaluation in NSC essential task to be assesses on each student nutritional assessment and GPE on SAM child (Mini CEX)	Summarization of today's task BFHI / IYCF key messages Responsive feeding and its importance
08	IYCF key messages Responsive feeding and its importance	Practical session on Nutritional counselling with role plays	Role play on nutritional counselling	BFHI introduction	Revision of any concept required
09	Second formative assessment on CMAM, SAM and BFHI / IYCF Management (TBL)			Student feedback	
10	Summative Assessment - OSCE - Short Case				

Liaquat University of Medical
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FOURTH PROFESSIONAL
MBBS 2020-21

DEPARTMENT OF
PATHOLOGY &
PHARMACOLOGY

ACADEMIC SESSION 2024-25

RENAL/ EXCRETORY II MODULE

Introduction Welcome to the Renal & excretory module. This exciting module will serve as building block and is very essential to your future work as doctors. This module is designed to make your learning both interesting andproductive by including several inter active activities.

This module covers the topics which are Pathogenesis of glomerular disease, Glomerular conditions associated with system disorders and Isolated glomerular abnormalities, Renal vascular disease, Obstructive uropathy (Urolithiasis, Hydronephrosis), Tumors of Renal and Lower Urinary System, Kidney function tests, Urine Analysis and Urine C/S. All these topics are interactive and helpful in understanding the renal pathology.

Rationale Renal system and excretory system is Responsible for the body to get rid of waste and toxic substances. Inthis module the renal and excretory system will be examined in detail with emphasis on Pathogenesis of glomerular disease, Glomerular conditions associated with system disorders and Isolated glomerular abnormalities, Renal vascular disease, Obstructive uropathy (Urolithiasis, Hydronephrosis), Tumors of Renaland Lower Urinary System, Kidney function tests, Urine Analysis and Urine C/S.

This module will enable the students of third year to recognize the clinical presentations of common renal diseases and relate clinical manifestations to basic sciences.

Learning Outcomes At the end of this module, the students will be able to understand common clinical problems like kidney syndromes and to correlate with Pathogenesis of glomerular disease, Glomerular conditions associated withsystemic disorders and Isolated glomerular abnormalities, Renal vascular disease, like benign and malignant nephrosclerosis, Obstructive uropathy (Urolithiasis, Hydronephrosis), Tumors of Renal and Lower Urinary System, Kidney function tests, Urine Analysis and Urine C/S.

Topics with specific learning objectives and teaching strategies

Theme 1: Glomerular Conditions Including Glomerular Syndromes, Conditions Associated with Systemic Disorders and Isolated Glomerular Abnormalities

S. #	LEARNING OBJECTIVES	TOPIC	TEACHING STRATEGY	ASSESSMENT
1	• Classify glomerular disease. • Define glomerular syndrome • Discuss pathogenesis of glomerular injury and mediators of glomerular injury.	**EXC-S2-Path-1** Glomerular diseases		
2	• Describe various glomerular syndromes • Define nephritic syndrome • Describe pathophysiology and clinical features of nephritic syndrome • Differentiate between nephritic andnephrotic syndrome.	**EXC-S2-Path-2** Nephritic Syndrome	Interactive Lecture	SBQs & OSVE

3	• Define and describe causes: • Pathophysiology and clinical features of nephrotic syndrome. • Differentiate between nephritic andnephrotic syndrome.	**EXC-S2-Path-3** Nephrotic Syndrome		
4	nephropathy, Hereditary nephritis,Alport syndrome.	**EXC-S2-Path-4** Glomerular conditions associated with system disorders and Isolated glomerular abnormalities		
5	• Name kidney function test • Mention clinical interpretation of serum urea, creatinine, BUN and creatinine clearance test.	**EXC-S2-Path-5** Kidney function tests		

Theme 2: Kidney/ Excretory Infections and Renal Vascular Disorders

S. #	LEARNING OBJECTIVES	TOPIC	TEACHING STRATEGY	ASSESSMENT
6	• Describe causes and pathogenic mechanism of tubulointerstitial injury • Etiology, pathogenesis and morphology of acute tubular necrosis. • Describe etiopathogenesis and morphology of tubulointerstitial nephritis.	**EXC-S2-Path-6** Tubulo insterstitial Injury	Lecture/ Demonstration, SGD, Practical, CBL/ PBL	SBQs & OSVE, OSCE, Clinical Exam
7	• Identify predisposing factors of pyelonephritis • Describe causes, pathogenic mechanisms and morphology of acute pyelonephritis. • Describe clinical course and complications of acute pyelonephritis.	**EXC-S2-Path-7** Pyelonephritis		
8	• Define chronic pyelonephritis • Enumerate causes and morphological features of chronic pyelonephritis.	**EXC-S2-Path-8** Chronic Pyelonephritis		
9	• Identify the causes of UTI. • Describe predisposing factors andclinical presentation.	**EXC-S2-Path-9** Urinary tract infections		

10	• Classify renal vascular disease. • Discuss etiology, pathogenesis, morphology, clinical features of benign and malignant nephrosclerosis. • Define renal artery stenosis mention its causes, clinical features. Describe thrombotic microangiopathy and other vascular disorders	**EXC-S2-Path-10** Renal Vascular disease		
11	Describe urine detail report and different methods of urine culture	**EXC-S2-Path-11** Urine Analysis and Urine Culture	Practical	OSPE & OSVE

Theme 3: Obstructive Uropathy (Urolithiasis, Hydronephrosis)

S. #	LEARNING OBJECTIVES	TOPIC	TEACHING STRATEGY	ASSESSMENT
12	Name various types of renal calculi. Describe etiopathology causes and complication	**EXC-S2-Path-12** Kidne y stones	Lecture/ Demonstration, SGD, Practical, CBL/PBL	SBQs & OSVE, OSCE, Clinical Exam
13	Identify causes, pathophysiology, gross and microscopic features & clinical features of hydronephrosis.	**EXC-S2-Path-13** Hydronephrosis		

Theme 4: Tumors of Renal/ Excretory System

S. #	LEARNING OBJECTIVES	TOPIC	TEACHING STRATEGY	ASSESSMENT
14	• Name benign and malignant tumor of kidney. • Describe etiopathology, risk factor and morphology and clinical features of RenalCell Carcinoma.	**EXC-S2-Path-14** Tumors of Kidney-I	Interactive Lecture	SBQs & OSVE
15	• Classify urothelial tumor. • Discuss etiology, pathogenesis, morphology,clinical features and diagnosis of urothelial tumors.	**EXC-S2-Path-15** Tumor of Urinary System-II		
16	Describe gross and microscopic features of benign & malignant kidney and urinary bladder tumors	**EXC-S2-Path-16** Kidney and urinarybladder tumors	Practical	OSPE & OSVE
17	Classify difference types of Diuretics, Describe the mechanism ofaction of Diuretics Identify the clinical uses and adverse effects of Diuretics	**EXC-S2-Pharm-1** Diuretics,	Interactive Lecture	SBQs & OSVE

MUSCULOSKELETAL II MODULE

Introduction Welcome to the soft tissue and bone module. This exciting module will serve as building block and is very essential to your future work as doctors. This module is designed to make your learning both interesting and productive by including several inter active activities.
This module covers the topics which are basic structure and function of bone, developmental disorders of bone and cartilage, fractures, bone repair and osteomyelitis, arthritis, benign bone and cartilage forming tumors, malignant bone and cartilage forming tumors, tumors of unknown origin and soft tissue tumors. All these topics are interactive and helpful in understanding the soft tissue and bone pathology.

Rationale The soft tissue and bone module is designed with a compelling rationale, aiming to equip students withessential knowledge and skills for various disciplines:

Learning outcomes At the end of this module, the students will be able to understand pathological conditions, etiology, diagnostic techniques, treatment planning, radiological interpretation, histopathology and clinical correlation.

Topics with specific learning objectives and teaching strategies

Theme 1: Developmental Disorders of Bone & Cartilage, Basic Structure & Function of Bone

S. #	LEARNING OBJECTIVES	TOPIC	TEACHING STRATEGY	ASSESSMENT
1	• Functions of Bone • Matrix • Cells • Development • Homeostasis and Remodeling	**MSK-S2-Path-1** Basic Structure and Function of Bone	Interactive Lecture	SBQs & OSVE
2	• Diseases Associated with Defects in Nuclear Proteins and Transcription Factors • Diseases Associated with defects in Hormones and Signal Transduction Proteins • Diseases Associated with defects in Metabolic Pathways (Enzymes, IonChannels, and Transporters) • Diseases Associated With Defects in Degradation of Macromolecules	**MSK-S2-Path-2** Developmental Disorders Of Bone AndCartilage		

Theme 2: Fracture, Osteomyelitis and Arthritis

S. #	LEARNING OBJECTIVES	TOPIC	TEACHING STRATEGY	ASSESSMENT
3	• Define terms related tofracture • Describe mechanism of bone healing • Complications of fracture • Pathophysiology of boneinfection (osteomyelitis)	**MSK-S2-Path-3** Fractures, bone repairand osteomyelitis	Interactive Lecture	SBQs & OSVE
4	• What is arthritis • Define Osteoarthritis and Rheumatoid Arthritis • Explain pathophysiology of osteoarthritis and Rheumatoid Arthritis. • Describe the clinical features of osteoarthritisand Rheumatoid Arthritis • Treatment of osteoarthritis and Rheumatoid Arthritis • Crystal-Induced Arthritis.	**MSK-S2-Path-4** Arthritis		
	• Drugs used in Gout	**MSK-S2-Pharma-1** Gout		
	•	**MSK-S2-Pharma -2** NSaids		

Theme 3: Benign Bone and Cartilage Forming Tumors, MalignantBone and Cartilage Forming Tumors and Tumors of Unknown Origin

S. #	LEARNING OBJECTIVES	TOPIC	TEACHING STRATEGY	ASSESSMENT
5	• Osteoid Osteoma • Osteoblastoma • Osteochondroma • Chondroma	**MSK-S2-Path-5** Benign Bone and cartilage FormingTumors	Interactive Lecture	SBQs & OSVE
6	Gross and Microscopic Features	**MSK-S2-Path-6** Cartilage And Bone Forming Tumors		
7	• Osteosarcoma • Chondrosarcoma • Tumors of Unknown Origin • Ewing Sarcoma • Giant Cell Tumor • Aneurysmal Bone Cyst	**MSK-S2-Path-7** Malignant Bone and cartilage Forming Tumors Tumors of Unknown Origin		

Theme 4: Soft Tissue Tumors

S. #	LEARNING OBJECTIVES	TOPIC	TEACHING STRATEGY	ASSESSMENT
8	• Tumors of AdiposeTissue • Lipoma • Liposarcoma • Fibrous Tumors • Nodular Fasciitis • Fibromatoses • Superficial Fibromatosis • Deep Fibromatosis (Desmoid Tumors) • Skeletal Muscle Tumors • Rhabdomyosarcoma • Smooth Muscle Tumors • Leiomyoma • Leiomyosarcoma	**MSK-S2-Path-8** Soft Tissue Tumors	Interactive Lecture	SBQs & OSVE
9	Gross and Microscopic Features	**MSK-S2-Path-9** Soft Tissue Tumors	Practical	OSPE & OSVE

Theme 5: Skin Module

Learning objectives of Skin Module: Describe the pathophysiology, pathophysiology, clinical features, laboratory diagnosis and treatment of skin tumors, acute and chronic inflammatory disorders, bullous disorders and common infections.

S. #	LEARNING OBJECTIVES	TOPIC	TEACHING STRATEGY	ASSESSMENT
10	Explain the pathophysiology, clinical features, laboratory diagnosis and treatment of acute and chronic inflammatory dermatosis.	**MSK-S2-Path-10** Acute and Chronic Inflammatory Dermatosis (Urticaria, Psoriasis, Lichen Planus)	Interactive Lecture	SBQs & OSVE
11	Explain the pathophysiology, clinical features, laboratory diagnosis and treatment of common skin tumors.	**MSK-S2-Path-11** Common Skin Tumors (BCC, SCC, Melanoma)		
12	To Explain the pathophysiology, clinical features, laboratory diagnosis and treatment of Bullous disorders.	**MSK-S2-Path-12** Blistering (Bullous) Disorders (Pemphigus, Pemphigoid)		
13	To Explain the pathophysiology, clinical features, laboratory diagnosis and treatment of common infections.	**MSK-S2-Path-13** Infections (Viral, Bacterial & Fungal Infections)		

REPRODUCTIVE MODULE

Introduction Welcome to the Reproductive module. This exciting module will serve as building block and is very essential to your future work as doctors. This module is designed to make your learning both interesting and productiveby including several inter active activities.

Reproductive health is a state of complete physical, mental and social well-being in all matters relating to the reproductive system. Reproductive Health is essential for peoples' overall well-being. Hence Reproductive health and specifically women's reproductive health is given prime importance at a global level.

This module will address inflammatory, neoplastic and non-neoplastic diseases of female genital organs, breast, sexually Transmitted Diseases and infertility. It will also address the inflammatory, non-neoplastic and neoplastic diseases of male reproductive system.

Rationale More than half of the population of Pakistan are females. Diseases related to female and male reproductive systems constitute a large segment of medical practice in all countries. These diseases together with pregnancy and its related disorders are the core teaching in this module. Reproductive module is expected to build students basic knowledge about normal structure, development and diseases of reproductive system. This will help the students to gain the knowledge about the etiology and pathogenesis of diseases of both male and female reproductive system and methods of diagnosis these diseases.

This module will enable the students of fourth year to recognize the clinical presentations of common reproductive diseases. The student will develop the understanding of the pathology, clinical presentation, anddiagnosis of reproductive disorders, normal pregnancy and its disorders.

Learning Outcomes: At the end of this module students should be able to:

- Recall the anatomy & physiology of male and female reproductive system.
- Discuss the etiology of early pregnancy disorders.
- Differentiate the non-neoplastic and neoplastic lesions of male and female genital tract.
- Differentiate between primary and secondary amenorrhea and discuss the management ofinfertility.
- Interpret the semen analysis report.
- Explain the clinical features diagnosis and management testicular tumors.
- Classify breast tumor and differentiate between non proliferative and proliferative breast lesions

Topics with specific learning objectives and teaching strategies

Theme 1: Lesions of Female Genital Tract

S. #	LEARNING OBJECTIVES	TOPIC	TEACHING STRATEGY	ASSESSMENT
1	• Discuss congenital anomalies of female genital tract • Define sexually transmitted infections • Define Pelvic Inflammatory Disease • List the organism causing genital tract infection • Discuss complications of PID	**Rep-S2-Path-1** Congenital anomalies & Infections of female genital tract		

2	• Discuss the morphology, pathogenesis and clinical presentation of non-neoplastic & neoplastic vulvar conditions. • Explain the pathogenesis and morphology of vaginal intraepithelial neoplasia and squamous cell carcinoma	**Rep-S2-Path-2** Non-neoplastic and neoplastic conditions of vulva and vagina	Interactive Lecture	SBQs & OSVE
3	• Explain the infections of cervix including acute & chronic cervicitis and Endocervical Polyps • Discuss risk factors, pathogenesis and morphology of cervical intraepithelial lesions and cervical carcinoma	**Rep-S2-Path-3** Non-neoplastic and neoplastic conditions of cervix		
4	• Discuss the etiology, pathogenesis, morphology and clinical features of Abnormal uterine bleeding and Anovulatory Cycle • Explain the etiology, pathogenesis, morphology and clinical features of acute and chronic Endometritis, Endometriosis and Adenomyosis and Endometrial Polyps • Define Endometrial hyperplasia • and explain its etiology and morphology	**Rep-S2-Path-4** Functional Endometrial Disorders & Endometrial Hyperplasia		
5	• Explain the procedure of pap smear • Differentiate the normal and abnormal pap smear	**Rep-S2-Path-5** Pap smear	Practical	OSPE & OSVE
6	• Discuss the etiology, pathogenesis, morphology and clinical features of Carcinoma of the Endometrium • Describe benign and malignant tumors of myometrium	**Rep-S2-Path-6** Tumors of Uterus	Interactive Lecture	SBQs & OSVE
7	• Describe non neoplastic and functional cyst of ovary • Explain etiology, morphology and clinical presentation of polycystic ovarian disease	**Rep-S2-Path-7** Diseases of ovary		

8	• Classify tumors of ovary • Discuss the etiology, pathogenesis, morphology and clinical features of ovarian tumors	**Rep-S2-Path-8** Tumors of ovary	Interactive Lecture	SBQs & OSVE
9	• Discuss the etiology, pathogenesis and morphology of hydatiform mole including complete mole, partial mole and invasive mole • Explain the pathogenesis and morphology of choriocarcinoma and placental site trophoblastic tumor	**Rep-S2-Path-9** Gestational Trophoblastic Diseases		
10	• Describe the morphology, gross and microscopic features of gestational tumors	**Rep-S2-Path-10** Gestational Tumor	Practical	OSPE & OSVE
11	• Name non proliferative and proliferative breast lesions • .Discuss the etiology, pathogenesis, morphology and clinical features of all non-proliferative and proliferative breast diseases	**Rep-S2-Path-11** Non proliferative & proliferative breast diseases	Interactive Lecture	BCQ SAQs OSPE
12	• Classify Breast tumors • Discuss the etiology, pathogenesis, morphology and clinical features of various types of breast cancer	**Rep-S2-Path-12** Carcinoma of Breast	Interactive Lecture	BCQ SAQs OSPE
13	• Describe the gross & microscopic feature of benign and malignant breast tumor	**Rep-S2-Path-13** Benign and malignant tumor of breast	Practical	OSPE

Theme 2: Lesions of Male Genital Tract

S. #	LEARNING OBJECTIVES	TOPIC	TEACHING STRATEGY	ASSESSMENT
11	• Discuss congenital anomalies of male genitaltract • Describe inflammatory conditions of testis and epididymis	**Rep-S2-Path-14** Congenital anomalies and inflammation of testis and epididymis	Interactive Lecture	SBQs & OSVE
12	• Classify testicular tumors • Discuss the etiology, pathogenesis, morphology and clinical features of various types of testicular tumors	**Rep-S2-Path-15** Testicular Tumors		

13	• Explain the etiology and morphology of prostatitis • Describe gross and microscopic features and complications of BPH	**Rep-S2-Path-16** Prostatitis & benign prostatic hyperplasia		
14	Describe etiology, morphology, type and staging of carcinoma of prostate	**Rep-S2-Path-17** Carcinoma of prostate		
15	Explain the sample collection,gross, microscopic and chemical examination of semen	**Rep-S2-Path-18** Semen D/R	Practical	OSPE & OSVE
Pharmacology				
16	• Enlist different estrogen and antiestrogenpreparations • Describe the pharmacological effects, clinical uses and side effects of these agents	**Rep-S2-Pharm-1** Estrogen And Antiestrogen	Lecture	SBQs & OSVE
17	• Enlist different types of hormonal contraceptives. • Describe the mechanism of action of hormonal, contraceptives, theirclinical uses and adverse effects of hormonal contraceptives.	**Rep-S2-Pharm-2** Hormonal Contraceptives		
18	• Describe the role of endogenous oxytocin in labour • Describe the clinical conditions that mayrequire the exogenous oxytocin • Discuss the unwanted effects of Oxytocin.	**Rep-S2-Pharm-3** Oxytocin		

NEUROSCIENCE II

Introduction Welcome to the Neuroscience module-II. This exciting module will serve as building block and is very essential to your future work as doctors. This module is designed to make your learning both interesting andproductive by including several inter active activities.
This module covers the topics which are Pathogenesis of infective and tumorous conditions of nervous system like meningitis including bacterial, viral, tuberculous and fungal meningitis CSF findings to differentiate various types of meningitis and brain tumors including both central and peripheral nervous system tumors like gliomas, neuronal tumors, meningiomas, peripheral nerve sheath tumors and others. All these topics areinteractive and helpful in understanding the renal pathology.

Rationale Diseases of the nervous system are common all over the world. Timely diagnosis and management of acute CNS problems like cerebrovascular accidents and infections prevents morbidity and mortality. Early diagnosis and prompt treatment of ischemic, infective and tumorous conditions like meningitis, cerebrovascular accident and brain tumors is important to reduce the occurrence of disability burden on community. After Understanding the structure and function of nervous system and its relationship with pathophysiology of diseases in neuroscience module-I, the students will be able to understand various infective and tumorous conditions of nervous system the neuropathology module-II by integrating the teachings of basic and clinicalpathology, clinical medicine and surgery related to the disorders of the central and peripheral nervous system.

Learning outcomes At the end of this module, the students will be able to understand common clinical problems like meningitis and brain tumors and to correlate with Pathogenesis of diseases of meninges and brainparenchymal disease, related investigations like CSF examination and biopsi

Topics with specific learning objectives and teaching strategies

Theme 1: Inflammatory and Infective Diseases of CNS

S. #	LEARNING OBJECTIVES	TOPIC	TEACHING STRATEGY	ASSESSMENT
	Pathology			
1	• Define meningitis and encephalitis • Discuss common CentralNervous System infectionsincluding acute (pyogenic) bacterial infections, acute aseptic viral infections, chronic bacterial meningo-encephalitis, and fungal meningo-encephalitis	**NS-S2-Path-1** Inflammation and infections of CNS-1	Lecture/ Demonstration ,SGD, Practical, CBL/ PBL	SBQs & OSVE, OSCE, Clinical Exam
2	Viral pathogens causing meningitis, Enteroviruses, HSV-2, Arboviruses	**NS-S2-Path-2** Inflammation and infections of CNS-2		
	Discuss pathogenesis of cerebral malaria, Naeglaria fowleri and Cysticercosis	**NS-S2-Path-3** Inflammation and infections of CNS-3		
	Infection of Brain & Meninges & CSF interpretation	**NS-S2-Path-4** Inflammation and infections of CNS-4		
	List the most common organisms that cause CNS infection in different age groups	**NS-S2-Path-5** Inflammation and infections of CNS-5		
	Discuss CSF findings of bacterial, tuberculous, viral and fungal meningitis	**NS-S2-Path-6** Inflammation and infections of CNS-6		

Theme 2: Tumors of Central Nervous System

S. #	LEARNING OBJECTIVES	TOPIC	TEACHING STRATEGY	ASSESSMENT
3	• Classify CNS tumors according to WHO classification • List genetic mutations, pathogenesis, morphology and clinical features of brain tumors • Including all types of Glioma, Ependymoma, Medullo-blastoma and Meningioma • Discuss the metastatic tumors to brain	**NS-S2-Path-7** Brain tumors	Lecture/ Demonstration ,SGD, Practical, CBL/ PBL	SBQs & OSVE, OSCE, Clinical Exam
Pharmacology				
1	• Classify different types of antiepileptic agents. • Describe the mechanism ofaction, and adverse effects.	**NS-S2-Pharm-1** Anti-epiletics		
2	• Classify different types of antipsychotic agents. • Describe the mechanism ofaction, and adverse effects.	**NS-S2-Pharm-2** Antipsychotics		
3	• Enlist different drugs that are used for the treatment of Parkinson disease. • Describe their mechanism of action and adverse effects.	**NS-S2-Pharm-3** Drugs used in Parkinson Disease		
4	• Discuss the pathophysiology of migraine headaches • Discuss both pharmacologic and non-pharmacologic treatment strategies for migraine.	**NS-S2-Pharm-4** Treatment of Migraine		
5	•	**NS-S2-Pharm-5** Anti-Depressants		
6	•	**NS-S2-Pharm-6** Sedatives Hypnotics		
7	•	**NS-S2-Pharm-7** General anesthesia -1 (inhaled)		
8	•	**NS-S2-Pharm-8** General anesthesia -2 (I.V)		
9	•	**NS-S2-Pharm-9** Local Anesthetic		

		Agents		
10	•	**NS-S2-Pharm-10** Opioids		

Theme 3: Autonomic Nervous System

S. #	LEARNING OBJECTIVES	TOPIC	TEACHING STRATEGY	ASSESSMENT
1	•	**ANS-S2-Pharm-1** Introduction To ANS	Lecture/ Demonstration,SGD, Practical, CBL/PBL	SBQs & OSVE, OSCE, Clinical Exam
2	• Receptor distribution of Cholinergic Nervous System • Classify the Cholinergic agonists • Describe the mechanism of direct and indirect Cholinergic agonists • Discuss the clinical uses of Cholinergic agonists • Discuss the side effects of Cholinergic agonists	**ANS-S2-Pharm-2** Cholinergic agonists		
3	• Classify the Cholinergic antagonists • Discuss the clinical uses of Cholinergic antagonists • Discuss the side effects of Cholinergic antagonists	**ANS-S2-Pharm-3** Cholinergic antagonists		
4	• Receptor distribution of adrenergic Nervous System • Classify the adrenergic agonists • Describe the mechanism of direct and indirect adrenergic agonists • Discuss the clinical uses of adrenergic agonists • Discuss the side effects of adrenergic agonists	**ANS-S2-Pharm-4** Adrenergic agonists-1		
5	• Classify the adrenergic antagonists • Discuss the clinical uses and side effects of Alpha Blockers • Discuss the clinical uses and side effects of Beta Blockers	**ANS-S2-Pharm-5** Adrenergic agonists-2		
6	•	**ANS-S2-Pharm-6** Alpha Blockers		
7	•	**ANS-S2-Pharm-7** Beta blockers		

Liaquat University of Medical
& Health Sciences, Jamshoro

FOURTH PROFESSIONAL
MBBS 2021-22

DEPARTMENT OF
COMMUNITY MEDICINE

ACADEMIC SESSION 2024-25

MEDICAL DEMOGRAPHY

Learning Outcomes: By the end of the course, the participants must be able to:

- Comprehend the basic concepts and definition of Demography.
- Describe the concept of population or demographic transition.
- Interpret the population pyramid.
- Understand the determinants of fertility and mortality.
- Describe different indicators of population and vital statistics.

Rationale: The aim of this course is to provide students with essential information related to Demography and population change, demographic transition, vital and population statistics, determinants of fertility and mortality in a population, interpreting the population pyramid and different information we can get from population pyramid.

S.NO	Content/Area	Learning Objectives	Teaching strategy	Assessment tool
1.	Introduction to demography	• Define population and population studies • Comprehend the basic concepts and definition of Demography • Discuss the population doubling time • Describe the concept of population or demographic transition. • Describe and interpret the population pyramid • Compare the population pyramid of developing and developed countries.	Teaching Methodology • Lecture	Type of Assessment • SBQs
2.	Demographic indicators	• Define population and vital statistics. • Define fertility and mortality. • Describe the determinants of fertility and mortality. • Describe different indicators of population statistics. • Describe indicators of vital statistics • Determine the factors affecting fertility-related statistics.	Teaching Methodology • Lecture	Type of Assessment • SBQs
3.	Urbanization and social mobilization	• Define urbanization • Understand the importance of social mobilization • Determine the social implication of high population growth	Teaching Methodology • Lecture	Type of Assessment • SBQs

EPIDEMIOLOGY

Learning Outcomes: At the end of Epidemiology sessions, students will be able to;

- Demonstrate proficiency in the use of common data sources in descriptive epidemiology and be aware of their strengths and weaknesses.
- Describe epidemiological measures, calculate basic measures, and describe epidemiological patterns of disease occurrence.
- Classify epidemiological study designs and the most appropriate circumstances to use them.
- Describe, implement, and correctly calculate the different measures of occurrence and effects of disease.
- Understand the merits and demerits of epidemiological studies
- Distinguish between association and causation and be aware of the relevant issues in deducing causation from observational designs.
- Describe the different errors and biases in research.
- Verify the ability to review and evaluate observational studies.
- Summarize screening principles and the conditions in which a screening program could be most suitable.

Rationale: This course aims to provide students with a fundamental understanding of epidemiology, including the measurement and interpretation of disease incidence patterns; the use of routine data sources, their advantages, and disadvantages; the design of epidemiological studies and when to use them; and epidemiological causal models.

S.NO	Content/Area	Learning Objectives	Teaching strategy	Assessment tool
1.	Introduction to Epidemiology	• Define epidemiology • Describe the basic terminology and concept of epidemiology • Understand the objectives and approaches of epidemiology. • Understand the concept of descriptive epidemiology. • Describe the concept and importance of time place, and person.	Teaching Methodology • Lecture	Type of Assessment • SBQs
2.	Measures of occurrence of diseases	• Define the measure of occurrences and effects of diseases. • Describe Proportions, Risk, Rate, Ratio and Odds • Understand the concept of prevalence and incidence. • Describe the concept of Crude, specific and standardized rates	Teaching Methodology • Lecture	Type of Assessment • SBQs

3.	Causation in Epidemiology	• Define the principles of causation. • Determine the concept of necessity and sufficiency. • Describe the different models of causation. • Discuss Bradford Hill's criteria of causation.	Teaching Methodology • Lecture	Type of Assessment • SBQs
4.	Introduction to epidemiological study design	• Discuss the epidemiological study design. • Differentiate between observational and experimental studies. • Identify the key concept of descriptive epidemiology. • Differentiate between Descriptive and analytical studies. • Determine how and when to select the appropriate study design	Teaching Methodology • Lecture	Type of Assessment • SBQs
5.	Case-report, Case series, and Cross-sectional study	• Describe case reports and case series. • Define cross-sectional study • Discuss the uses of the cross-sectional study. • Compare the relative strengths and weaknesses of Cross-sectional studies	Teaching Methodology • Lecture	Type of Assessment • SBQs
6.	Case-control study	• Define the case-control study. • Describe the advantages and limitations of case-control studies. • Analyze and interpret the Odd ratio.	Teaching Methodology • Lecture	Type Of Assessment • SBQs
7.	Cohort Study	• Define the cohort study • Discuss the importance, uses, and limitations of the cohort study • Analysis and interpretation of relative risk and rate ratio	Teaching Methodology • Lecture	Type Of Assessment • SBQs
8.	Errors in epidemiological research	• Define different errors in research. • Define validity and reliability • Define confounder and its impact on research • Determine different biases in research	Teaching Methodology • Lecture	Type Of Assessment • SBQs
9.	Experimental studies	• Define Experimental Studies.	Teaching Methodology	Type Of Assessment • SBQs

		• Differentiate randomized control trail and non-randomized control trials. • Discuss the importance of randomized control trials.	• Lecture	
10.	Screening	• Define screening • Discuss the type of screening • Understand the concept of sensitivity and specificity. • Describe the predictive values.	Teaching Methodology • Lecture	Type Of Assessment • SBQs

BIOSTATISTICS

Learning Outcomes: By the end of sessions, the students will be able to:

- Define Biostatistics and different types of data.
- Classify Variables and Discuss the scales of measurements
- Describe measures of central tendency and measures of dispersion.
- Understand the normal distribution curve
- Classify different sampling techniques

Rationale: This course aims to provide students with a fundamental understanding of Biostatistics, including the measurement of mean, mode, median, range, standard deviation, and variance; the management and use of routine data. Sampling technique and data interpretation using statistical tests.

S.NO	Content/Area	Learning Objectives	Teaching strategy	Assessment tool
1.	Introduction to Biostatistics and Data	• Define basic concepts and uses of biostatistics. • Define the data and its types • Define variables and their different types • Describe the different methods of data presentation	Teaching Methodology • Lecture	Type of Assessment • SBQs
2.	Measures of Central Tendency	• Define the measures of central tendency. • Define and compute Mean, Mode, and Median • Construct data tables that facilitate the calculation of mean, mode, and median. • Apply the concept of central tendency measures in raw data.	Teaching Methodology • Lecture	Type Of Assessment • SBQs
3.	Measure of Dispersion	• Define the measures of dispersion. • Explain the purpose of measures of dispersion	Teaching Methodology • Lecture	Type Of Assessment • SBQs

		• Define and compute Variance, standard deviation, range, and interquartile range • Construct data tables that facilitate the calculation of Variance and standard deviation • Apply the concept of measure of dispersion in raw data.		
4.	Normal Distribution	• Define the normal distribution. • Describe the purpose and importance of normal distribution in biostatistics. • Describe the normal distribution curve	Teaching Methodology • Lecture	Type Of Assessment • SBQs
5.	Statistical tests interpretations	• Define the statistical tests • Describe the different statistical tests. • Distinguish between categorical and continuous measures. • Describe the interpretation of data analyzed through t-test and Chi-square test	Teaching Methodology • Lecture	Type Of Assessment • SBQs
6.	Sampling	• Define sampling • Describe the purpose and importance of sampling. • Describe different methods of sampling. • Differentiate between probability and non-probability sampling.	Teaching Methodology • Lecture	Type Of Assessment • SBQs

RESEARCH METHODOLOGY

Learning Outcomes: By the end of the course, the students will be able to:

- Define research and differentiate between qualitative and quantitative research.
- Describe the purpose of conducting research and the steps in research
- Describe the steps in writing a research proposal.
- Classify the type of questionnaire and develop questionnaire.
- Determine the steps of data entry using statistical software (SPSS)

Rationale: This course aims to provide students with a fundamental understanding of research methods, errors in research, and biases. How to write a research proposal, literature search, data entry, and statistical analysis? How to write a research paper?

S.NO	Content/Area	Learning Objectives	Teaching strategy	Assessment tool
1.	Introduction to Research Methodology	• Define research and research methods. • Define the survey methodology • Differentiate between qualitative and quantitative research. • Describe the purpose of conducting research.	Teaching Methodology • Lecture	Type of Assessment • SBQs
2.	How to write a research proposal	• Define the research proposal • Describe the major components of the research proposal. • Understand how to write a good research question. • Distinguish the purpose statement, a research question or hypothesis, and a research objective. • Describe the SMART objectives in writing a research proposal.	Teaching Methodology • Lecture	Type of Assessment • SBQs
3.	Developing a research questionnaire	• Understand the role of the questionnaire in the data collection process. • Describe the steps in developing a good survey questionnaire. • Design a research questionnaire.	Teaching Methodology • Lecture	Type of Assessment • SBQs
4.	Data entry and Statistical analysis	• Determine the steps of data entry using statistical software. • Understand the basics of operating SPSS. • Describe how to analyze data using SPSS	Teaching Methodology • Lecture	Type of Assessment • SBQs

ASSESMENT

ASSESSMENT PLAN FOR EACH PAPER	END OF YEAR ASSESMENT	INTERNAL EVALUATION	TOTAL %AGE
THEORY (SBQS)	80%	20%	100%
PRACTICAL EXAM (OSVE; OSCE)	80%		

ALLOCATION OF INTERNAL ASSESSMENT MARKS		
COMPONENT	**SCORING MATRIX**	**PERCENTAGE**
THEORY	ATTENDANCE (>90%=03; 89-80%=02; 79-70%=01;<70%=00	**3%**
	Module tests	**3%**
	Block tests	**4%**
		10%
PRACTICAL	ATTENDANCE (>90%=03; 89-80%=02; 79-70%=01;<70%=00	**3%**
	Module tests including ethics, conduct, practical's, assignments)	**3%**
	Block tests	**4%**
		10%
TOTAL		**20%**

LEARNING RESOURCES

ENT

1. Logan Turner's Diseases of the Nose, Throat, and Ear: Head and Neck Surgery" by Michael J. Gleeso, 12th Edition
2. Diseases of Ear, Nose, and Throat" by P. L. Dhingra and Shruti Dhingra, 7th Edition
3. Oto-Rhino-Laryngology A Problem Oriented Approach – 2nd EditionIqbal Hussain Udaipurwala
4. Current Diagnosis & Treatment Otolaryngology—Head and Neck Surgery, 4th Edition

PLASTIC SURGERY

1. Plastic Surgery: Volume 1: Principles" and "Plastic Surgery: Volume 2: Aesthetic Surgery" By Peter C. Neligan
2. Essentials of Plastic Surgery" by Jeffrey E. Janis

DERMATOLOGY

1. ABC of Dermatology, Authors: Paul K. Buxton, Rachael Morris-Jones, 7th Edition
2. Rook's Textbook of Dermatology, Authors: Christopher Griffiths, Jonathan, 9th Edition

PATHOLOGY

1. Robbins Basic Pathology, Authors: Vinay Kumar, Abul K. Abbas, Jon C. Aster, 10th Edition
2. Rapid Review Pathology" Author: Edward F. Goljan MD, 4th Edition

PHARMACOLOGY

1. Lippincott Illustrated Reviews: Pharmacology. Authors: Richard A. Harvey, Pamela C. Champe, 7th Edition.
2. Basic and Clinical Pharmacology by Katzung. Authors: Bertram G. Katzung, Anthony J. Trevor. 14th Edition.

OPTHALMOLOGY

1. Clinical Ophthalmology" by J. J. Kanski, 9th Edition
2. Clinical Ophthalmology by Shafi Muhammad Jatoi

NEPHROLOGY

1. Davidson's principles and practice of Medicine, Ian D Penman, Stuart H. Ralston, MD 24th

Edition
2. Current Medical diagnosis and Treatment, Maxine A. Papadakis, Stephen J. McPhee, Michael W.Rabow, 5th Edition
3. Primer on Kidney Disease, Scott J. Daniel & Weiner, 8th Edition

UROLOGY

1. Bailey & Love's Short Practice of Surgery, 28th Edition.
2. Smith and Tanagho's General Urology, by Jack McAninch & Tom Lue, 19th Edition 19th Edition
3. Oxford Handbook of Urology, John Reynard, Simon F. Brewster, 4th Edition

ORTHOPAEDICS

1. Campbell's Operative Orthopaedics, Frederick M. Azar & S. Terry Canale & James H. Beaty. 14th Edition
2. Miller's Review of Orthopaedics, Mark D. Miller, Stephen R. Thompson, 8th Edition
3. Orthopedic Physical Assessment by David J Magee, 6th Edition

NEUROSURGERY

1. Neurology and Neurosurgery Illustrated, Kenneth W. Lindsay, Ian Bone, Geraint Fuller, 5th Edition
2. Greenberg's Handbook of Neurosurgery by Mark S. Greenberg, 10th Edition

PSYCHIATRY

1. Shorter Oxford textbook of Psychiatry – 7th Edition
2. Behavioral Sciences by Mowadat H. Rana, 3rd Edition

NEUROLOGY

1. Davidson's principles and practice of Medicine
2. Hutchison's Clinical Methods: An Integrated Approach to Clinical Practice
3. Macleod's Clinical Examination – 14th Edition

PAEDIATRICS

Text Books:

1. Nelson textbook of pediatrics, 21st edition
2. Nelson Essentials of Pediatrics
3. Current Diagnosis & Treatment Pediatrics, 23edition
4. Pakistan pediatric association textbook
5. Illustrated Pediatrics by Tom Lissauer

WHO publications and society guidelines:

6. WHO publications on IMNCI
7. GINA Guidelines, Global Strategy for Asthma Management and Prevention.
8. WHO; Global Database on child growth and Malnutrition
9. WHO publication on Tuberculosis
10. Expanded Program on Immunization in Pakistan

Clinical Methods:

11. Macleod's Clinical Examination
12. Hutchison's Clinical Methods

COMMUNITY MEDICINE

1. Parks Textbook of Preventive and Social Medicine – Author: K. Park
2. Public health and Community Medicine – Author: Ilyas, Ansari
3. Textbook of Community Medicine and Public Health Edited by: Saira Afzal - Sabeen Jalal
4. Fundamental of Preventive Medicine – Author: Dr. Zulfikar Ali Shaikh

THE END