ISO CERTIFIED 9001:2015

LIAQUAT UNIVERSITY
OF MEDICAL & HEALTH SCIENCES,
JAMSHORO, SINDH

STUDY GUIDE

THIRD PROFESSIONAL
MBBS

BATCH 2022-23

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

SCHEDULE OF HOSPITAL POSTING

THIRD PROF MBBS BATCH 2022-23

DATE	MEDICINE				ICU/ EMERGENCY MEDICINE	CHEST MEDICINE
	I	II	III	IV		
27 JAN TO 14 FEB 2025	A1	A2	A3	A4	A5	A6
17 FEB TO 07 MAR 2025	A2	A3	A4	A5	A6	A1
10 MAR TO 28 MAR 2025	A3	A4	A5	A6	A1	A2
07 APR TO 25 APR 2025	A4	A5	A6	A1	A2	A3
28 APR TO 16 MAY 2025	A5	A6	A1	A2	A3	A4
19 MAY TO 06 JUNE 2025	A6	A1	A2	A3	A4	A5
07 JULY TO 25 JULY 2025	B1	B2	B3	B4	B5	B6
28 JULY TO 15 AUG 2025	B2	B3	B4	B5	B6	B1
18 AUG TO 05 SEPT 2025	B3	B4	B5	B6	B1	B2
08 SEPT TO 26 SEPT 2025	B4	B5	B6	B1	B2	B3
29 SEPT TO 17 OCT 2025	B5	B6	B1	B2	B3	B4
20 OCT TO 07 NOV 2025	B6	B1	B2	B3	B4	B5
DATE	SURGERY				RADIOLOGY	NUCLEAR MEDICINE
	I	II	III	IV		
27 JAN TO 14 FEB 2025	B1	B2	B3	B4	B5	B6
17 FEB TO 07 MAR 2025	B2	B3	B4	B5	B6	B1
10 MAR TO 28 MAR 2025	B3	B4	B5	B6	B1	B2
07 APR TO 25 APR 2025	B4	B5	B6	B1	B2	B3
28 APR TO 16 MAY 2025	B5	B6	B1	B2	B3	B4
19 MAY TO 06 JUNE 2025	B6	B1	B2	B3	B4	B5
07 JULY TO 25 JULY 2025	A1	A2	A3	A4	A5	A6
28 JULY TO 15 AUG 2025	A2	A3	A4	A5	A6	A1
18 AUG TO 05 SEPT 2025	A3	A4	A5	A6	A1	A2
08 SEPT TO 26 SEPT 2025	A4	A5	A6	A1	A2	A3
29 SEPT TO 17 OCT 2025	A5	A6	A1	A2	A3	A4
20 OCT TO 07 NOV 2025	A6	A1	A2	A3	A4	A5

PREFACE

The MBBS curriculum is designed to prepare the medical student to assume the role of the principal carer 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 endeavoured to seize the opportunity to comprehend the interdependencies and minimize duplication in the subjects being instructed throughthe 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 centres 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
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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'sachievement of objectives.

ABBREVIATIONS

FOUNDATION	Fnd
HAEMATOLOGY	Hem
INFECTIOUS DISEASE	ID
RESPIRATORY	RESP
CARDIOVASCULAR	CVS
GASTROINTESTINAL TRACT & LIVER	GIL
NEUROSCIENCE	NS
MUSCULOSKELETAL	MSK
ENDOCRINOLOGY	End
RENAL & EXCRETORY	EXC
REPRODUCTIVE	Rep
PATHOLOGY	Path
PHARMACOLOGY	Pharm
MEDICINE	Med
SURGERY	Surg
PAEDIATRICS	Paeds
COMMUNITY MEDICINE	CM
SPIRAL	S
MICROBIOLOGY	Micb

CONTRIBUTIONS

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PROFESSOR AND CHAIRMAN	
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ASSOCIATE PROFESSOR	
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04	Dr. Kiran Amir
05	Dr. Muhammad Rahil Khan
ASSISTANT PROFESSORS	
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07	Dr. Zahida Shaikh
08	Dr. Arshi Naz
09	Dr. Abdul Rehman Khalil
10	Dr. Yousra Shafquat
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12	Dr. Shabnum Rustamani
13	Dr. Faheem Memon
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15	Dr. Furqan Ahmed Bhatti
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17	Dr. Sadia Akbar
18	Dr. Sidra Qadir
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23	Dr Shariq Khan

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08	Dr. Naveeta Bai
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12	Dr. Kanwal Naz
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FOUNDATION & GENETICS-II MODULE

Introduction

Welcome to the Foundation II 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.
This module marks the beginning of transition to more focus on clinical learning. This module will introduce students to key concepts essential for understanding diseases process, their prevention and treatment. Students will be able to apply these key concepts in future, system-based modules to understand the diseases processes and their management. This module will deal with cell pathology, Genetics and Hemodynamics. The course covers the molecular level of cell biology including genetics and its role in pathology.

Rationale

This module will enable the students of third year to recognize the basics of general pathology. The student will develop the understanding of the cell pathology, genetic diseases and their diagnosis and diseases due to disturbance of hemodynamics. Concepts dealt with in this module will be revisited in other modules in thefuture

Duration **02 weeks**

Learning Outcomes

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

- Define Pathology and Pathogenesis and discuss cellular Responses to the injury and stages ofthe cellular Response to stress and injurious stimuli.
- Discuss morphological alterations in cell injury including both reversible and irreversible injury
- Discuss causes, morphological and biochemical changes, clinic-pathologic correlations inApoptosis and Necrosis
- Define edema, effusion, exudate, transudate, hyperemia and congestion.
- Describe the clinical manifestations & consequences of pulmonary & systemic thromboembolism
- Describe the mechanism of three major types of shock and Describe the three stages of shock
- Discuss the transmission pattern of single gene disorder
- Discuss chromosomal abnormalities and define normal karyotype and common cytogeneticterminology

Themes

Theme 1: Cell Pathology and Genetics
Theme 2: Hemodynamics

Theme 1: Cell Pathology and Genetics

S. #	LEARNING OBJECTIVES	TOPIC	TEACHING STRATEGY	ASSESSMENT
Pathology				
1	• Enumerate causes of Cell Injury • Discuss types of cell injury • Describes sequential morphologic changes in Cell Injury	**Fnd-S2-Path-1** Cell injury	Interactive Lecture	SBQs & OSVE
2	• Define Necrosis and its type • Describe the nuclear and cytoplasmic features of necrosis.	**Fnd-S2-Path-2** Necrosis		
3	• Define Apoptosis • Enumerate pathological and Physiological causes of Apoptosis • Describe Biochemical Features and Mechanism of Apoptosis	**Fnd-S2- Path-3** Apoptosis		
4	• Define and describe pathological calcification. • Discuss Dystrophic and metastatic calcification	**Fnd-S2- Path-4** Calcification and Pigmentation		
5	• Define Mutation and its type. • Describe the effects of different types of mutations	**Fnd-S2-Path-5** Mutations		
6	• Define Mendelian Disorder • Explain the pattern of inheritance in Mendalian Disorders • List the examples of autosomal, Recessive and sex linked disorders.	**Fnd-S2-Path-6** Mendelian Disorders		
7	• Describe normal Karyotype • Discuss various numerical and structural abnormalities of chromosomes.	**Fnd-S2-Path- 7** Chromosomal aberration.		
8	• Discuss various technique in diagnosis of genetic diseases.	**Fnd-S1- Path-8** Diagnosis of Genetic Diseases		
9	• Define Hypertrophy, Hyperplasia, Atrophy and Metaplasia. • Demonstrate gross and microscopic features of cellular adaptations	**Fnd-S2-Path-9** Cellular adaptation	Practical	OSPE & OSVE
Pharmacology				
	• Drug absorption • Bioavailability and half life • Drug distribution • Drug metabolism		Interactive Lecture	SBQs & OSVE

Theme 2: Hemodynamics

S. #	LEARNING OBJECTIVES	TOPIC	TEACHING STRATEGY	ASSESSMENT
Pathology				
10	• Define edema • Describe Pathophysiology of edema	**Fnd-S2-Path-10** Edema	Interactive Lecture	SBQs & OSVE
11	• Define Hemorrhage, Hyperemia,Congestion • Describe their causes and pathophysiology	**Fnd-S2-Path-11** Hyperemia, Congestion		
12	• Define Shock • Describe the pathophysiology ofdifferent type of Shock.	**Fnd-S2-Path-12** Shock		
13	• Define Infarction • Discuss the etiology of infarction • Discuss the morphological classification of infarcts • Describe the morphological features of infarctions.	**Fnd-S2-Path-13** Infarction		
14	• List and define causes of intracellular accumulation • Discuss the role of Intracellular Accumulations in metabolic derangements of cell.	**Fnd-S2-Path-14** Intracellular Accumulations	Practical	OSPE & OSVE
Pharmacology				
	• Review of pharmacokinetics • Pharmacodynamics -1 • Pharmacodynamics -11 • Adverse drug reaction • Teratogenicity		Interactive Lecture	SBQs & OSVE

INFECTIOUS DISEASE MODULE

Introduction Infectious diseases remain a serious public health problem in the 21st century. WHO has classified Infectiousdiseases as the second leading cause of death with approximately 15 million deaths worldwide every year. HIV/AIDS, tuberculosis, and malaria have been nicknamed the 'big three' because of their important impact on global human health.
At home, the story is no different. Pakistan is one of several countries, which together bear 95% of the burden of infectious diseases. Pakistan is ranked fifth out of twenty-two on the list of high-burden tuberculosis countries. An alarming average of about one million lives are also claimed yearly by malaria.1 Worst of all, Pakistan is one of the two remaining countries where polio is still endemic2. Hence, it is important to spreadknowledge and information on the importance of immunization to the general public. Other factors such as overcrowding, poor hand washing practices and lack of effective prescriptions contribute to further worsening the situation. An estimated 32% of general practitioners in Pakistan fail to administer the proper medication thus increasing the disease burden. It is therefore important as 3rd year medical students to enhance your existing knowledge of the prevalent infectious diseases, and build greater understanding and ability to recognize signs and symptoms, and relatewith appropriate investigations, and therapeutics.

Rationale

Infectious diseases are the most common problems of our community. In the under developed countries,like Pakistan, infectious diseases along with malnutrition are the commonest causes of mortality. Most ofthe diseases are identifiable and curable if recognized early. It is important for medical graduates to have sound understanding of microbiology of the organisms and the diseases that they cause. Students shouldalso understand the rationale of the investigations to diagnose these diseases. They should also know thepharmacology of the various drugs used to treat infectious disease and the rationale to treat the commondiseases.

Duration: **06 weeks**

Learning Outcomes **After completion of this module student should be able to:**

- Describe pathogenesis & clinical presentations of common bacterial, viral, fungal & microbialinfections.
- Recognize the clinical presentation of common infectious diseases in community.
- Take history & formulate appropriate plan of investigations for attaining differential diagnosis
- Analyze findings of history, examinations & investigations for diagnosis.
- Practice basic principles of management of infectious diseases.
- Recognize preventive measures & prognosis for counseling the patients.
- Be Aware of the prognosis and be able to counsel their patients accordingly.

Themes

Theme 1: Immuno-pathogenesis
Theme 2: Diagnostic Approach to Infection
Theme 3: Pyogenic Bacteria
Theme 4: Pyogenic Bacteria
Theme 5: Pyrexia of Unknown Origin

TOPICS WITH SPECIFIC LEARNING OBJECTIVES AND TEACHINGSTRATEGIES

S. #	LEANING OBJECTIVES	TOPIC	TEACHING STRATEGY	ASSESSMENT
Pathology				
1	Enlist essential and non-essential components of a typical bacterial cell withtheir function	**ID-S2-Path-1** Bacterial Structure	Interactive Lecture	SBQs & OSVE
2	• Classify bacteria on the basis of Gramstaining. • Differentiate characteristics of gram-positive and gram-negative bacteria • Define normal flora. • Describe colonization of normal flora. • Name the members of normal flora withtheir appropriate anatomical locations	**ID-S2-Path-2** Classification of bacteria & normalflora (human microbiota)		
3	• Define acute inflammation • Describe the sequence of vascular changes • Define exudates and transudate andtheir mechanism of formation	**ID-S2-Path-3** General features of inflammation & vascular changes		
4	• Describe the acute inflammatory cellsand their functions. • Name the various types of chemical mediators & their role • Describe the local and general clinicalfeatures of acute inflammation	**ID-S2-Path-4** Cellular events ofChemotaxis, phagocytosis		
5	• Define chronic Inflammation • Describe the characteristic features andtypes of chronic Inflammation • Define granuloma, mention a etiological classification of granuloma with examples	**ID-S2-Path-5** Chronic inflammation		
Microbiology				
6	• Outline various methods for transfer ofgenetic information in bacterium. • Describe the phases of bacterial growth.	**ID-S2-Micb-1** Bacterial genetics& bacterial growth	Interactive Lecture	SBQs & OSVE
7	• State the criteria are used in viral classification • Describe the characteristics of DNA andRNA viruses • Describe structure of virus	**ID-S2-Micb-2** Classification &structure of viruses		

8	• To demonstrate the principle & procedure of Gram's staining	**ID-S2-Micb-3** Gram's staining	Practical	OSPE & OSVE
Pharmacology				
9	• Pharmacology of common infectious diseases • Drugs used for relevant infectious diseases	**ID-S2-Pharm-1** Introduction to antibiotics	Interactive Lecture	SBQs & OSVE
10	• Describe the classification, mechanism ofaction & side effects of penicillin's	**ID-S2-Pharm-2** penicillin's		
11	• Describe the classification, mechanism of action & side effects of cephalosporin's & other cell wall synthesis inhibitors	**ID-S2-Pharm-3** cephalosporin's		

Theme 1: Immuno-Pathogenesis

S. #	LEANING OBJECTIVES	TOPIC	TEACHING STRATEGY	ASSESSMENT
Microbiology				
12	• Differentiate b/w true pathogens, opportunists andcommensals • List the routes of transmission of infection • Describe colonization, pathogenesis, spread and excretion of infectious agents.	**ID-S2-Micb-4** Bacterial pathogenesis-I	Interactive Lecture	SBQs & OSVE
13	• Differentiate b/w true pathogens, opportunists andcommensals • List the routes of transmission of infection • Describe colonization,pathogenesis, spread and excretion of infectious agents.	**ID-S2-Micb-5** Bacterial pathogenesis-II		
14	• Define viral pathogenesis. • Describe the effect of virus infection on host cell. • Explain specific and non-specific defense mechanism against viral infection.	**ID-S2-Micb-6** Viral pathogenesis		
15	• Describe host defense mechanism against bacteria. • Distinguish between passive & active adaptive immunity. • To discuss the failure of host defense against infections.	**ID-S2-Micb-7** Host defense against bacterial infection		

16	• Distinguish between innate and acquired immunity • Describe the role of interferons, natural killer cells, cytotoxic T cell in viral diseases • Explain how interferons limit cell-to-cell spread of viruses.	**ID-S2-Micb-8** Host defense against viral infection		
17	• Describe the steps of viral replication • Explain mode of replication of various RNA and DNA viruses.	**ID-S2-Micb-9** Viral Replication		
18	• Define sterilization and disinfection • Enlist various methods used for sterilization and disinfection	**ID-S2-Micb-10** Sterilization and disinfection		
19	• To demonstrate the principle & procedure of Acid-fast staining.	**ID-S2-Micb-11** Acid fast staining	Practical	OSPE & OSVE

Theme 2: Diagnostic Approach to Infection

S. #	LEANING OBJECTIVES	TOPIC	TEACHING STRATEGY	ASSESSMENT
Microbiology				
20	• Compare and contrast the various methods used to diagnose bacterial diseases • Describe various microscopic and culture techniques used for diagnosis • Discuss molecular techniques in diagnosis of infectious diseases.	**ID-S2-Micb-12** Laboratory diagnosis of bacterial diseases	Interactive Lecture	SBQs & OSVE
21	• Compare and contrast the various methods used to diagnose viral diseases • Describe various microscopic and culture techniques used for diagnosis • Discuss molecular techniques in diagnosis of infectious diseases.	**ID-S2-Micb-13** Laboratory diagnosis of viral diseases		
22	• Distinguish between fungal & bacterial cell • Contrast sexual & asexual reproduction of fungi. • Define dimorphism • Describe pathogenesis, fungal toxins and lab diagnosis of fungi	**ID-S2-Micb-14** Basic Mycology		
23	• Classify and explain important properties, transmission, pathogenesis, clinical findings and lab. diagnosis of cutaneous, systemic and opportunistic fungi.	**ID-S2-Micb-15** Cutaneous, systemic and opportunistic mycosis		

24	• Classify culture media • Enlist various ingredients used for making culture media • Demonstrate selective and biochemical test media	**ID-S2-Micb-16** Culture Media	Practical	OSPE & OSVE
Pathology				
25	• Define healing, repair andregeneration • Describe the mechanisms of primary and secondary wound heal • Distinguish the differences between healing by first and secondary • intention • List the local and general factors influencing healing • List the complications of wound healing	**ID-S2-Path-06** Healing & Repair	Interactive Lecture	SBQs & OSVE

Theme 3: Pyogenic Bacteria

S. #	LEANING OBJECTIVES	TOPIC	TEACHING STRATEGY	ASSESSMENT
Microbiology				
26	• Enlist the species of Staphylococci • Enlist the virulence factors & toxins. • Describe pyogenic and toxin mediated diseases caused by staphylococcus aureus. • Discuss lab diagnosis of staphylococci	**ID-S2-Micb-17** Staphylococci	Inter active Lecture	SBQs & OSVE
27	• Classify medically important streptococci • Describe toxins, enzymes & hemolysins produced by streptococci. Discuss their pyogenic, toxigenic & post streptococcal diseases. • Describe the lab diagnosis of streptococci.	**ID-S2-Micb-18** Streptococci		
28	• Describe morphology, pathogenesis, clinical features and lab diagnosis of Pneumococcus.	**ID-S2-Micb-19** Pneumococci		
29	• Enlist species of Neisseria. • Describe their morphology, pathogenesis and laboratory diagnosis.	**ID-S2-Micb-20** Neisseria		
30	• Define Diphtheria & Listeriosis. • Describe important properties, transmission, pathogenesis ofdiphtheria & Listeria. • Discuss the laboratory diagnosis of Corynebacterium diphtheria & Listeria monocytogens.	**ID-S2-Micb-21** Corynebacterium diphtheria & Listeria monocytogens		
31	• Describe various microscopic and culture techniques used for diagnosis	**ID-S2-Micb-22** Lab diagnosis of gram positive & negative cocci.	Practical	OSPE & OSVE

Pharmacology				
32	Describe classification, mechanism of action & side effects of Aminoglycosides	**ID-S2-Pharm-5** Aminoglycosides	Interactive Lecture	SBQs & OSVE
33	Describe classification, mechanism of action & side effects of tetracyclines	**ID-S2-Pharm-6** Tetracyclines		
34	Describe classification, mechanism of action & side effects of macrolides	**ID-S2-Pharm-7** Macrolides		
35	Describe classification, mechanism of action & side effects of chloromphenicol	**ID-S2-Pharm-8** Chloromphenicol		
36	Describe classification, mechanism of action & side effects of sulfonamides	**ID-S2-Pharm-9** Sulfonamides		
37	Describe classification, mechanism of action & side effects flouroquinolones	**ID-S2-Pharm-10** Flouroquinolones		

Theme 4: Pyogenic Bacteria

S. #	LEANING OBJECTIVES	TOPIC	TEACHING STRATEGY	ASSESSMENT
Microbiology				
38	• Outline morphology, pathogenesis, clinical features and lab diagnosis of Bacillus	**ID-S2-Micb-23** Bacillus	Interactive Lecture	SBQs & OSVE
39	• Classify clostridia • Describe morphology, pathogenesis, clinical features and lab diagnosis of Clostridia	**ID-S2-Micb-24** Clostridia		
40	• Enlist pathogenic strains of E. coli • Describe morphology, virulence factors, cultural characteristics and Lab diagnosis of E.coli and Klebsiella	**ID-S2-Micb-25** E.coli & Klebsiella		
41	• Classify different strains of Salmonella & Shigella • Describe antigenic structure and virulence factor of salmonella & Shigella • Discuss lab diagnosis of Salmonella & shigella	**ID-S2-Micb-26** Salmonella &Shigella		
42	• Enlist various species of proteus and pseudomonas • Describe pathogenesis and lab diagnosis	**ID-S2-Micb-27** Proteus & Pseudomonas		
43	Describe various microscopic and cultural characteristics used for diagnosis	**ID-S2-Micb-28** Lab diagnosis of gram positivebacilli (rods)	Practical	OSPE & OSVE
Pharmacology				
44	To treat the infection in the intestines To stop the passing of cysts from the intestine	**ID-S2-Phar-11** Treatment of amoebiasis		

45	Classify anti helminths drugs with their mechanism and side effects	**ID-S2-Phar-12** Anti-parasitic drugs/ anti helminths drugs	Interactive Lecture	SBQs & OSVE
46	To treat fungal infections that affect the skin hair and nails Treating yeast infections	**ID-S2-Phar-13** Anti-Fungal Drugs		

Theme 5: Pyrexia of Unknown Origin

S. #	LEANING OBJECTIVES	TOPIC	TEACHING STRATEGY	ASSESSMENT
Microbiology				
47	• Classify the medically important Spirochetes. • Describe the important properties ,transmission & clinical findings. • Discuss the lab diagnosis of Syphilis	**ID-S2-Micb-29** Spirochetes (Treponema, Borrelia, Leptospira)	Interactive Lecture	SBQs & OSVE
48	• Define Dengue fever • Describe vector, life cycle and clinical manifestation of dengue virus • Discuss mode of transmission, pathogenesis and clinical feature of polio virus	**ID-S2-Micb-30** Dengue & polio virus		
49	• Describe structure of HIV • Discuss clinical stages of HIVinfection • Outline opportunistic infection in latestage of AIDS	**ID-S2-Micb-31** HIV		
50	• Classify medically important Trematodes • Describe life cycle clinical feature andlab. diagnosis	**ID-S2-Micb-32** Trematodes (Flukes)		
51	• Classify medically important TissueNematodes • Describe their important properties,clinical findings and lab. diagnosis	**ID-S2-Micb-33** Tissue Nematodes (Wuchereria, Onchocerca,Loa, Dracunculus)		
52	• Describe various microscopic and culture techniques used for diagnosis	**ID-S2-Micb-34** Lab diagnosis of gram negative bacilli (rods)	Practical	OSPE & OSVE
Pharmacology				
53	Describe the different drug options fortreatment of dengue fever	**ID-S2-Pharm-14** Anti-viral drugs for dengue fever		

54	Describe the antiviral drugs used for treatment of HIV with their mechanisms and side effects.	**ID-S2-Pharm-15** Antiretroviral drugs	Interactive Lecture	SBQs & OSVE
55		**ID-S2-Pharm-16** Immune stimulants		
56		**ID-S2-Pharm-17** Immune suppressant		
Clinical Lectures				
57	Discuss clinical presentations and management of Syphilis	**ID-S2-Med- 1** Syphilis	Interactive Lecture	SBQs & OSVE
58	Discuss clinical presentations & management of Dengue fever	**ID-S2-Med-2** Dengue Fever		
59	Discuss clinical presentations and management of AIDS	**ID-S2-Med- 3** AIDS		

HEMATOLOGY MODULE-II

Introduction: Welcome to the Hematology module-II. This module aims to provide the basic understanding of Cancer, chemo therapeutic agents and preventive measures. The module is also designed to provide basic knowledge of hematological diseases to the students in order to deal with various Hematological and Immuno- Hematological disorders of adults and children. In this regard students will also learn to take history, examine patients and relevant Laboratory tests, their interpretations, differential diagnosis, treatment regimens and prognostic values of various disorders.

Rationale The module will give the 3rd year medical students, an opportunity to know the clinical findings and management of common hematological, immunological and neoplastic disorders. Students will be expectedto critically think about the clinical scenarios and participate in case-based learning sessions for clearing yourconcepts and better learning. It will also help you focus your attention on what you need to achieve from the lectures, practical and clinical rotation that have been scheduled in this module.

Duration: 05 weeks

Learning Outcomes the Outcomes of the Hematology Module are as follows:

- Knowledgeable
- Skillful
- Community Heath Promoter
- Problem-solver
- Professional
- Researcher
- Leader and Role Model

Cognitive Domain

- To Describe Neoplasia, its etiology, pathophysiology, molecular basis, diagnosis of cancers andits therapy.
- Explain the pathophysiology, clinical features and diagnostic approach of various Red cellsdisorders.
- Explain the pathophysiology, clinical features and diagnostic approach of bleeding disorders
- To describe the hemolytic disease of new born (RH, ABO, Minor group incompatibility).
- To describe the etiology & pathophysiology of lymphadenopathy and hepatosplenomegaly
- To describe the difference Hematological malignancies.
- To describe the transplantation and graft rejection.
- To describe the blood parasites.
- Identify the role of pharmacology (drugs) in anemia and bleeding disorders.
- To describe the Immuno suppressants, immune modulators related to transplantation
- Role of balanced diet in the prevention of blood disorders in community.
- Recognize the common causes of anemia prevalent in our community

Psychomotor Domain

Description of the psychomotor skills to be developed and the level of performance required:

- Carry out practical work as instructed in an organized and safe manner.
- Make and record observations accurately.
- General physical examination of patient.
- Interpretation of diagnostic tests for cancer.
- Interpretation of laboratory tests for the diagnosis of Anemia.
- Interpretation of laboratory tests for the diagnosis of Anemia.
- Perform Manual blood grouping by tube method & compatibility testing.
- Interpretation of morphological features and immune histochemical results of Hodgkin and non-Hodgkin lymphoma.
- Interpretation of laboratory tests for the diagnosis of Acute & Chronic Leukemia.

Attitude & Behavior

- To give and receive feedback, Respect for self and peers.
- To give sympathy and care to patients.
- Counseling of patients and family members for inherited anemias.
- Counseling of families for prenatal diagnosis of Thalassaemia.
- Counseling of patients and family members for Hematological malignancies.
- Develop communication skills with sense of Responsibility towards patients.
- Demonstrate good laboratory practices

Themes

Theme 1: Oncology
Theme 2: Pallorness (Anaemia)
Theme 3: Hemostatic abnormalities
Theme 4: Lymphadenopathy
Theme 5: Hematological Malignancies
Theme 6: Immunological disorders & Transplantation

TOPICS WITH SPECIFIC LEARNING OBJECTIVES AND TEACHINGSTRATEGIES

Theme 1: Oncology

S. #	LEARNING OBJECTIVES	TOPIC	TEACHING STRATEGY	ASSESSMENT
Pathology				
1	• Describe the definition of neoplasia. • Describe the nomenclature ofneoplasia.	**Hem-S2-Path-1** Neoplasia	Interactive Lecture	SBQs & OSVE
2	• To describe the Characteristic of benign & Malignant tumor • To know Pathways of spread, seeding, lymphatic and Hematogenous spread	**Hem-S2-Path-2** Characteristic Features of Tumor		
3	• Normal cell cycles and fundamental principal of cancer regarding cycle • Essential alterations in malignanttransformation • Steps of cell proliferation Proto-oncogenes and growth factors and their receptors	**Hem-S2-Path-3** Molecular Basis of Cancer –I		

4	• Two-hit hypothesis of Knudsen • Tumor suppressor genes • Cellular changes in tumor cells • DNA repair defects • Homing of tumor cells • Development of sustained angiogenesis	**Hem-S2-Path-4** Molecular Basis of Cancer -II		
5	• To discuss Epidemiology ofcancers • To discuss different types ofcarcinogens • To discuss the Mechanism ofaction of radiation carcinogen	**Hem-S2-Path-5** Carcinogenic Agents (Radiation Carcinogenesis)		
6	• To discuss the Mechanism of actionof chemical & viral carcinogen.	**Hem-S2-Path-6** Carcinogenic Agents (Chemical & Viral Carcinogenesis)		
7	• To discuss Clinical features of cancer. • To discuss Grading and staging of cancer. • To discuss diagnostic methods used for Cancer.	**Hem-S2-Path-7** Diagnostic approach of Neoplasia	Practical	OSPE & OSVE
Microbiology				
8	• Classify the tumor Viruses • Describe the role of tumor viruses in malignant transformation. • Discuss the mechanism involved in carcinogenesis.	**Hem-S2-Micb-1** Tumor Viruses	Interactive Lecture	SBQs & OSVE
Pharmacology				
9	•	**Hem2-S2-Phar-1** Introduction to Anti-cancer Drugs	Interactive Lecture	SBQs & OSVE
10	• Classify the Anticancer Drugs. • Describe the mechanism of • action, indication, adverse effects, drug-drug interactions.	**Hem2-S2-Phar-2** Anti-cancer Drugs- I		
11	• Describe the mechanism of resistance of Anticancer Drugs. • Describe the general principles of combination chemotherapy in treatment of cancer	**Hem2-S2-Phar-3** Anti-cancer Drugs-II		

Theme 2: Pallorness (Anaemia)

S. #	LEARNING OBJECTIVES	TOPIC	TEACHING STRATEGY	ASSESSMENT
		Pathology		
12	• To enlist the causes, clinical features and laboratory diagnosis of iron deficiency & Megaloblastic anemias.	**Hem-S2-Path-8** Nutritional Anemias	Interactive Lecture	SBQs & OSVE
13	• To Enlist the causes, pathogenesis, clinical features and laboratory diagnosis of Aplastic anemia.	**Hem-S2-Path-9** Aplastic anemia		
14	• To discuss the pathogenesis, clinical features and laboratory diagnosis of Hereditary spherocytosis & G6PD deficiency	**Hem-S2-Path-10** Hemolytic Anemia		
15	• To explain pathogenesis of Hemoglobinopathies. • To identify morphological features on peripheral blood smear.	**Hem-S2-Path-11** Hemoglobinopathies		
16	• Define Malaria and classify malarial parasites. • Describe life cycle of malarial parasites. • Differentiate between Benign and Malignant Tertian malaria. • Discuss complications of Plasmodium Falciparum.	**Hem-S2-Micb-2** Plasmodium		
17	• Interpretation of CBC. • To discuss the Peripheral film findings of different types of anemia. • To discuss the different tests used for the diagnosis of Anemia.	**Hem-S2-Path-12** Laboratory diagnosis of Anemia	Practical	OSPE & OSVE
18	• Classify anti-malarial drugs with their mechanism and side effects	**Hem-S2-Pharm-4** Anti-malarial drugs		
		Clinical lecture		
19	• Assess, classify and manage child with anemia	**Hem-S2-Paeds-1** Anaemia in children	Interactive Lecture	SBQs & OSVE

Theme 3: Hemostatic Abnormalities

S. #	LEARNING OBJECTIVES	TOPIC	TEACHING STRATEGY	ASSESSMENT
Pathology				
20	• Overview of normal Hemostatsis • Discuss Quantitative & Qualitative platelets disorders. • To discuss ITP and diagnosis.	**Hem-S2-Path-13** Platelets disorders	Interactive Lecture	SBQs & OSVE
21	• Define & enlist the causes microangiopathic hemolytic anemias • Define & explain Thrombotic Thrombocytopenic Perpura (TTP) and Hemolytic Ureamic Syndrome (HUS) • Define and explain Dissemminate Intravascular Coagulopathy (DIC)	**Hem-S2-Path-14** MAHA (Micro angiopathic hemolytic anemia)		
22	• Overview of inherited & acquired coagulation disorders • Discuss the pathogenesis and pathophysiology of hemophilia A &B, VWD. • Diagnose hemophilia based on clinical features and laboratory findings	**Hem-S2-Path-15** Coagulation disorders (Hemophilia, vWD)		
23	• To discuss the thrombosis, pathogenesis, types and fate of thrombosis. • To Define Embolism, its types and morphological features of Embolism.	**Hem-S2-Path-16** Thromboembolism		
24	• Discuss and perform different laboratory tests for diagnosis of bleeding disorders	**Hem-S2-Path-17** Laboratory diagnosis of Bleeding disorders	Practical	OSPE & OSVE
25	• Classify the coagulants drugs. • Describe the mechanism of action, clinical uses, adverse effects, druginteractions and contraindications of the coagulant drugs.	**Hem-S2-Pharm-5** The Coagulants	Interactive Lecture	SBQs & OSVE
26	• Classify the Anticoagulants drugs. • Describe the mechanism of action, clinical uses, adverse effects, drug interactions and contraindications of the Anticoagulant drugs.	**Hem-S2-Pharm-6** Oral Anti-Coagulants **Hem-S2-Pharm-7** Parenteral Anti-Coagulants		

27	• Classify the thrombolytic drugs. • Describe the mechanism of action, clinical uses, adverse effects, drug interactions and contraindications ofthe Thrombolytic drugs.	**Hem-S2-Pharm-8** Fibrinolytic and Anti-fibrinolytic Drugs		
Clinical Lectures				
28	Discuss approach to a patient withThrombotic disorders	**Hem-S2-Med-1** Approach to a patient with Thrombotic disorders	Interactive Lecture	SBQs & OSVE
29	Discuss approach to a patient with inherited bleeding disorders	**Hem-S2-Paeds-2** Bleeding disorders		
30	Discuss approach to a patient withdeep vein thrombosis	**Hem-S2-Surg-1** Deep Venous Thrombosis		

Theme 4: Lymphadenopathy

S. #	LEARNING OBJECTIVES	TOPIC	TEACHING STRATEGY	ASSESSMENT
Pathology				
31	• Describe lymphoma, its etiology &classification. • Discuss the pathogenesis, types & morphological features of Hodgkin'slymphoma	**Hem-S2-Path-18** Hodgkin Lymphoma	Interactive Lecture	SBQs & OSVE
32	• Describe Non-Hodgkin's lymphoma • The classification and staging of non Hodgkin's lymphomas. • Discuss the pathogenesis, clinical features and diagnosis of Chronic lymphocytic leukemia	**Hem-S2-Path-19** Non-Hodgkin Lymphoma-I		
33	• Brief Discussion of Burkitt, follicular and DLBCL lymphoma.	**Hem-S2-Path-20** Non-Hodgkin Lymphoma-II		
34	• Discuss the pathogenesis, clinical features and laboratory diagnosis of Multiple Myeloma	**Hem-S2-Path-21** Multiple Myeloma		
35	• To see the Morphological features and Immuno-histochemical findings ofLymphoma	**Hem-S2-Path-22** Practical Approach towards lymphoma	Practical	OSPE & OSVE
Clinical lectures				

36	Discuss approach to a patient with lymphadenopathy with or without Splenomegaly	**Hem-S2-Med-2** Approach to patient with lymphadenopathy with or without splenomegaly	Interactive Lecture	SBQs & OSVE
37	Discuss approach to Lymphedema	**Hem-S2-Med-3** Lymphedema		
38	Discuss approach to Disorders of Spleen & Splenectomy	**Hem-S2-Surg-2** Disorders of Spleen & Splenectomy		

Theme 5: Hematological Malignancies

S. #	LEARNING OBJECTIVES	TOPIC	TEACHING STRATEGY	Assessment
Pathology				
39	• Overview & classification ofacute leukemias • Describe the pathogenesis, clinical features and laboratory diagnosis ofAcute Myeloid leukemia.	**Hem-S2-Path-23** Acute Myeloid leukemia	Interactive Lecture	SBQs & OSVE
40	• Describe the pathogenesis, clinical features and laboratory diagnosis ofAcute Lymphoblastic leukemia.	**Hem-S2-Path-24** Acute Lymphoblastic Leukemia		
41	• The classification of Myeloproliferative disorders • Discuss the pathogenesis, clinical features and laboratory diagnosis ofChronic myeloid Leukemia.	**Hem-S2-Path-25** Myeloproliferative disorders		
42	• Morphological features of acute &chronic leukemia.	**Hem-S2-Path-26** Laboratory diagnosis of Acute & Chronic leukemia	Practical	OSPE & OSVE
Medicine				
43	Describe the clinical features, laboratory investigations of acute & chronic leukemia.	**Hem-S2-Med-4** Approach to patient with Acute& Chronic leukemia	Interactive Lecture	SBQs & OSVE

Theme 6: Immunological Disorders

S. #	LEARNING OBJECTIVES	TOPIC	TEACHING STRATEGY	ASSESSMENT
Pathology				
44	• Define hypersensitivity reaction • Describe Pathogenesis of four types of hypersensitivity reactions with examples.	**Hem-S2-Path-27** Hypersensitivity Reactions	Interactive Lecture	SBQs & OSVE
45	• Discuss immunodeficiency and its causes and clinical features.	**Hem-S2-Path-28** Immunodeficiency disorders		
46	• Discuss tolerance. • Define Autoimmune disorders • Describe the etiology, Pathogenesis and clinical features of autoimmune disorders.	**Hem-S2-Path-29** Autoimmune Disorders		
47	• Definition of Transplantation • Types of transplantation • Sources of bone marrow transplantation • Define Rejection & mechanism ofdifferent types of rejections.	**Hem-S2-Path-30** Transplantation & Rejection		
48	• Define hemo flagellates. • Enumerate the medically important species of Leishmania & Trypanosoma. • Describe vector, life cycle, pathogenesis clinical manifestation and lab diagnosis • of Leishmaniasis & Trypanosomiasis.	**Hem-S2-Micb-3** Trypanosoma & Leishmania		
49	• Discuss the immunoassay techniques	**Hem-S2-Path-31** Immunoassay technique	Practical	OSPE & OSVE
Pharmacology				
50	• Classify Antihistamine agents. • Describe the Mechanism of Action,Indications, Adverse Effects And Drug Interactions of Antihistamines	**Hem-S2-Pharm-9** Anti-Histamine	Interactive Lecture	SBQs & OSVE
Clinical Lecture				
51	• Describe the clinical features, laboratory investigations of autoimmune disorders	**Hem-S2-Med-5** Approach to patient with Autoimmune disorders	Interactive Lecture	SBQs & OSVE

RESPIRATORY MODULE-II

Introduction This sensational module will be very necessary to your future work as doctors. This module is designed to make your learning both interesting and productive by including interactive activities. This module provides basic understanding by integrating the teaching of the basic pharmacology, pathology related to the disorders of the Respiratory system and their relevant clinical applications (Horizontal Integration). And Forensic Medicine, Community medicine (Vertical Integration). By adopting this approach, we are preparing you better for your future work as doctor, where patients will come to you with problems that are not categorized by discipline name. In order to help you learn in an integrated manner, we have updated the learning of basic sciences around a few key health-related situations (real life situations), which you are likely to encounter as third year medical students. You will be expected to think about the scenarios and participate in case based learning sessions for clearing your concepts and better learning. It will also help you focus your attention on what you need to achieve from the lectures, practical and tutorials that have been scheduled during this module.

Rationale Diseases of the Respiratory system are common all over the world. Timely diagnosis and management of acute Respiratory problems like Asthma, COPD prevents morbidity and mortality. Early diagnosis and prompt treatment of Asthma and COPD disease is important to reduce the occurrence of disability burden on community. Understanding the structure and function of Respiratory system and its relationship with pathophysiology of diseases is essential for diagnosis and management.

Duration: 03 weeks

Learning Outcomes

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

- Explain obstructive and restrictive pathologies involving respiratory system
- Describe the management of the respiratory diseases
- Perform the respiratory system examination
- Take the history of the patients and co-relate the respiratory sign & symptoms to reach the differential diagnosis
- To counsel the people in community regarding the risk factors of the respiratorydiseases.

Skills

- Microscopic identification of the different diseases of the respiratory system.
- Perform the cardiopulmonary resuscitation(CPR)
- Interpretation of ABGs, PFT
- Perform clinical examination of the respiratory system

Attitude

- Follow the basic laboratory protocols
- Participate in class and practical work professionally
- Communicate effectively in a team with pears, staff and teachers
- Demonstrate professionalism and ethical values in dealing with patients, pears, staff and teachers.
- Communicate effectively in a team with pears and teachers.
- Demonstrate the ability to reflect on the performance.

Themes

Theme 1: Lung Injury, Edema, Collapse & Obstructive Pulmonary Diseases
Theme 2: Chronic diffuse Interstitial/ Restrictive Lung diseases
Theme 3: Infectious & pleural diseases
Theme 4: Lung Tumors

TOPICS WITH SPECIFIC LEARNING OBJECTIVES AND TEACHINGSTRATEGIES

Theme 1: Lung Injury, Edema, Collapse & Obstructive PulmonaryDiseases

S. #	LEARNING OBJECTIVES	TOPIC	TEACHING STRATEGY	ASSESSMENT
Pathology				
1	• Types & causes of Atelectasis • Types & causes of pulmonary edema • Define acute lung injury • Describe the causes of ARDS • Discuss the characteristic features, morphology and pathogenesis of ARDS • Describe its consequences and clinical course	**RESP-S2-Path-1** Pulmonary Edema, ARDS & Atelectasis	Interactive Lecture	SBQs & OSVE
2	• Define Obstructive lung disease (OPD) • Classify types of OPD • Describe etiology pathogenesis & clinical features of chronic bronchitis + emphysema	**RESP-S2-Path-2** Obstructive lung diseases-I		
3	• Describe categories of Asthma • Explain pathogenesis • Discuss the immunological mechanisms of bronchial asthma and its triggering factors -Gross features & morphological Features • Define BRONCHIECTASIS • Describe its causes, • Pathogenesis and Gross & morphological features	**RESP-S2-Path-3** Obstructive lung diseases-II		
4	• Describe major categories • Explain the pathogenesis, morphology and clinical course of its important types • Idiopathic pulmonary fibrosis • Non-specific Interstitial • Pneumonia • Cryptogenic organizing • Pneumonia	**RESP-S2-Path-4** Restrictive lung diseases Chronic diffuse interstitial lung diseases		
5	• Describe the microscopic features	**RESP-S2-Path-5** Pleural fluid for DR	Practical	OSPE & OSVE

Pharmacology				
06	Classify the drugs used in Asthma and COPD. Describe the mechanism of action, side effects of beta-2 receptor Agonists, Phosphodiesterase inhibitors Leukotrienes Pathway Inhibitors and Discuss the role of corticosteroids in asthma.	**RESP-S2-Pharm-1** Drugs used in Asthma and COPD	Interactive Lecture	SBQs & OSVE

Theme 2: Chronic Diffuse Interstitial/ Restrictive Lung Diseases

S. #	LEARNING OBJECTIVES	TOPIC	TEACHING STRATEGY	ASSESSMENT
Pathology				
7	• Describe major categories • Explain the etiology, • pathogenesis, gross, • histological features • of its important types like • Coal worker • Pneumoconiosis • Silicosis • Asbestos-related diseases	**RESP-S2-Path-6** Chronic diffuse interstitial lung diseases II- Pneumoconiosis	Interactive Lecture	SBQs & OSVE
8	• Explain the etiology, • pathogenesis, gross, • histological features of • Sarcoidosis • Hypersensitivity Pneumonitis • Pulmonary Eosinophilia	**RESP-S2-Path-7** Chronic diffuse interstitial lung diseases III: Granulomatous Diseases		
9	• Smoking-related • Desquamative Interstitial Pneumonia • PAP (Pulmonary Alveolar Proteinosis) • Respiratory bronchiolitis-associated ILD	**RESP-S2-Path-8** Chronic diffuse interstitial lung diseases IV & smoking-related		
10	• Explain the etiology, • Pathogenesis & histological features of - Pulmonary Thromboembolism, HTN • Good pasture syndrome	**RESP-S2-Path-9** Pulmonary Thromboembolism, HTN & important Hemorrhagic Syndromes		

11	• Explain the etiology, • Pathogenesis and Clinical • features of • Pleural effusion • Pneumothorax • Explain the etiology, • Pathogenesis and microscopic features of • Benign Tumors Solitary fibrous tumor • Malignant Tumors • Mesothelioma	**RESP-S2-Path-10** Pleural diseases		
12	• Describe histopathologicalfeatures	**RESP-S2-Path-11** Inflammatory diseases of lung	Practical	OSPE & OSVE
Pharmacology				
13	To get rid of the infection and prevent complications	**RESP-S2-Pharm-2** Drugs used in the treatment of Pneumonia	Interactive Lecture	SBQs & OSVE

Theme 3: Vascular, Infectious & Pleural Diseases

S. #	LEARNING OBJECTIVES	TOPIC	TEACHING STRATEGY	ASSESSMENT
Pathology				
14	• Explain the pathogenesis of granuloma formation • Describe the five different clinical patterns of tuberculosis • Define primary and secondary tuberculosis • Describe lab diagnosis and complications	**RESP-S2-Path-12** Tuberculosis	Interacti ve Lecture	SBQs & OSVE
15	• Explain the etiology, Pathogenesis and Clinical features of • Pleural effusion • Pneumothorax • Explain the etiology, • Pathogenesis and Microscopic • features of • Benign Tumors Solitary fibrous tumor • Malignant Tumors • Mesothelioma	**RESP-S2-Path-13** Pleural diseases		
Microbiology				

16	• Classify the medically important mycobacteria. • Describe the important properties, virulence factors pathogenesis, clinical findings and lab diagnosis	**RESP-S2-Micb-1** Mycobacterium tuberculosis & laprae (Microbiology)	Interactive Lecture	SBQs & OSVE
17	• Classify the gram-negative rods related to the Respiratory tract. • Describe the important properties, pathogenesis, clinical findings and lab diagnosis of Hemophilus influenzae & Bordetella pertussis	**RESP-S2-Micb-2** Hemophilus influenzae & Bordetella pertussis (Microbiology)		
18	• Describe the clinical & microscopic features.	**RESP-S2-Path-14** Obstructive diseases of lung	Practical	OSPE & OSVE
Pharmacology				
19	□	**RESP-S2-Pharm-2** Drugs used in the treatment of Tuberculosis	Interactive Lecture	SBQs & OSVE

Theme 4: Lung Tumors

S. #	LEARNING OBJECTIVES	TOPIC	TEACHING STRATEGY	ASSESSMENT
Pathology				
20	• Explain histological features of - Squamous dysplasia & Carcinoma in situ • Atypical adenomatoushyperplasia • Adenocarcinoma in situ • Diffuse idiopathic pulmonary neuroendocrine cell hyperplasia (DIPNECH)	**RESP-S2-Path-15** Tumors of Lung-I	Interactive Lecture	SBQs & OSVE
21	• Explain the etiology, • pathogenesis, gross, • histological features of • Squamous cell carcinoma • Adenocarcinoma • Neuro endocrine carcinomas	**RESP-S2-Path-16** Tumors of Lung-II		
22	• Morphological features & immunohistochemistry	**RESP-S2-Path-17** Tumors of lung	Practical	OSPE & OSVE

CARDIOVASCULAR MODULE-II

Introduction Cardiovascular diseases are commonest causes of morbidity and mortality all over the world, such as hypertension, ischemic heart disease, cardiac failure, and valvular disorders. Hence a medical graduate is expected to manage these problems in the community at large. This module is designed to learn pathology and pharmacology related to the cardiovascular system applying the background knowledge of anatomy, physiology, and biochemistry. An emphasis is put on clinical correlation and problem-solving so that the student will be able to build on the knowledge of clinical presentation, diagnostic investigations, and management of cardiovascular disorders.

Apart from that, the parallel-running yet related courses in Forensic Medicine and Toxicology, Community Medicine, and Behavioral Sciences are also part of this exciting new module.

Rationale The orientation of various medical subjects is the fundamental requirement of every medical student. Therefore, this module is designed to provide the integration of core concepts that underlie the foundation of basic sciences and their correlation and application in the clinical context. Students also learn clinical skills such as how to communicate effectively with patients and their relatives with compassion and understanding of their issues/problems and how to resolve them in coming years. Working in groups will enhance students'team working skills and capacity and management skills. Along with Lectures, practical's and demonstrations;through supplemented case-based learning they develop problem-solving skills to apply their basic medical knowledge and skills to practical situations.

Duration: **03 weeks**

Learning Outcomes

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

- Enlist pathologies involving cardiovascular system.
- Describe the management of the cardiovascular diseases.
- Perform the cardiovascular system examination.
- Take the history of the patients and co-relate the cardiovascular sign & symptoms to reach thedifferential diagnosis
- To counsel the people in community regarding the risk factors of the cardiac diseases.

Clinical/ Practical skills

Placing electrodes and obtaining an electrocardiogram and interpretation of the basic ECG findings.Perform clinical examination of the cardiovascular system.

Attitude:

Follow the basic laboratory protocols.

Participate in class and practical work professionally. Communicate effectively in a team with pears, staff and teachers.

Demonstrate professionalism and ethical values in dealing with patients, peers, staff and teachers.

Demonstrate the ability to reflect on the performance.

Themes

Theme 1: Hypertension
Theme 2: Atherosclerosis
Theme 3: Myocardial diseases
Theme 4: Diseases of vessels
Theme 5: Pericardial and endocardial diseases, and cardiac tumors

TOPICS WITH SPECIFIC LEARNING OBJECTIVES AND TEACHINGSTRATEGIES

Theme 1: Hypertension

S. #	LEARNING OBJECTIVES	TOPIC	TEACHING STRATEGY	ASSESSMENT
Pathology				
1	• Define hypertension and classify itscauses. • Discuss the pathogenesis ofHypertension • Vascular Pathology inHypertension.	**CVS-S2-Path-1** Hypertensive Vascular Disease	Interactive Lecture	SBQs & OSVE
2	• Define Hypertensive heart disease. • Differentiate between systemic (Left-Sided) HHD and Pulmonary (Right-Sided) HHD (CorPulmonale). • Describe the diagnostic features and morphology of Systemic and Pulmonary HHD. • Describe various disorders predisposing to HHD.	**CVS-S2-Path-2** Hypertensive heartdisease (HHD)		
Pharmacology				
3	• Classify the antihypertensive agents based on mechanism of action. • Describe the hemodynamic Responses, adverse effects, and drug interactions of antihypertensive agents.	**CVS-S2-Pharm-1** Antihypertensive Drugs	Interactive Lecture	SBQs & OSVE
4	Identify the following in a given prescription:	**CVS-S2-Pharm-2** Drug-Drug interactions Flaws	Practical	OSPE & OSVE

Theme 2: Atherosclerosis

S. #	LEARNING OBJECTIVES	TOPIC	TEACHING STRATEGY	ASSESSMENT
Pathology				
5	• Describe the pathogenesis of Atherosclerosis. • Discuss the morphological features of Atherosclerosis. • Discuss the complications of Atherosclerosis.	**CVS-S2-Path-3** Atherosclerosis	Interactive Lecture	SBQs & OSVE

6	• Define Ischemic Heart Disease with its types. • Define Angina Pectoris with its pathogenesis, patterns, morphological changes, clinical features, and complications. • Define Myocardial Infarction with its pathogenesis, patterns, morphological changes, clinical features, and complications	**CVS-S2-Path-4** Ischemic HeartDisease		
7	• Interpret the following on a givenbiochemical report:	**CVS-S2-Path-5** Lipid Profile Cardiac Enzymes Pericardial Effusion	Practical	OSPE & OSVE
Pharmacology				
8	• Classify the Hypolipidemic drugs according to their mode of action. • Describe the clinical uses, drug interactions, and adverse effects of hypolipidemic drugs.	**CVS-S2-Pharm-3** Drugs to treat Hyperlipidemia (Lipid Lowering Drugs)	Interactive Lecture	SBQs & OSVE
9	• Classify anti-anginal drugs basedon the mechanism of action. • Describe adverse effects and druginteraction of antianginal drugs.	**CVS-S2-Pharm-4** Drugs used to treat Ischemic Heart Disease (anti-anginal drugs)		
10	• Write down a prescription based on a given scenario.	**CVS-S2-Pharm-5** Dyslipidemia Hypertension	Practical	OSPE & OSVE

Theme 3: Myocardial Diseases

S. #	LEARNING OBJECTIVES	TOPIC	TEACHING STRATEGY	ASSESSMENT
Pathology				
11	• Define Cardiomyopathy andclassify it. • Describe thepathogenesis, patterns, morphological changes, clinical features, and complicationsof various cardiomyopathies.	**CVS-S2-Path-6** Cardiomyopathies	Interactive Lecture	SBQs & OSVE

12	• Define valvular stenosis andinsufficiency. • Describe the causes of the major valvular lesions. • Describe the natural history of Rheumatic Fever. • Describe Calcific Valvular Degeneration and characterize it. • Discuss the morphology and clinical features.	**CVS-S2-Path-7** Valvular Heart Disease and Rheumatic HeartDisease		
Pharmacology				
13	• List the major classes of anti-arrhythmic drugs based on their mechanism of action. • Describe the clinical use, drug interactions, and adverse effects of anti-arrhythmic drugs.	**CVS-S2-Pharm-6** Drugs used to treat Cardiac Arrhythmias (anti-arrhythmic drugs)	Interactive Lecture	SBQs & OSVE
14	• Classify the major classes of drugs used to treat congestive cardiac failure based on their mechanism of action. • Describe the pharmacokinetics, mechanism of action, indications, and adverse effects of drugs used in acute and chronic heart failure. • Describe the clinical use, drug interactions, and adverse effects ofdrugs used in CCF.	**CVS-S2-Pharm-7** Drugs used to treat Congestive Cardiac Failure (CCF)		
Clinical Lecture				
15	• Describe the sign and symptoms ofRF and RHD • Describe the drugs used to treat RHD and there adverse effects	**CVS-S2-Cardio-1** Rheumatic Fever and Rheumatic Heart Disease (RHD)	Interactive Lecture	SBQs & OSVE
16	• Describe the sign and symptoms of pericarditis, myocarditis, and infective endocarditis. • Describe the treatment of pericarditis, myocarditis, and infective endocarditis.	**CVS-S2-Cardio-2** Cardiac inflammation		

Theme 4: Diseases of Vessels

S. #	LEARNING OBJECTIVES	TOPIC	TEACHING STRATEGY	ASSESSMENT
Pathology				
17	• Define vasculitis and classify primary forms. • Describe causes and mechanisms. • Describe the typically involved vascular sites. • Describe the following and characterize them: • Giant Cell (Temporal) Arteritis • Thromboangiitis Obliterans (Buerger Disease)	**CVS-S2-Path-8** Vasculitis	Interactive Lecture	SBQs & OSVE
18	• Describe varicose veins and their clinical features.	**CVS-S2-Path-9** Diseases of Veins and Lymphatics		
19	• Differentiate between Thrombophlebitis and Phlebothrombosis based on pathogenesis and clinical features. • Describe Lymphangitis and Lymphedema.			

Theme 5: Pericardial and Endocardial Diseases, and Cardiac Tumors

S. #	LEARNING OBJECTIVES	TOPIC	TEACHING STRATEGY	ASSESSMENT
Pathology				
20	• Classify vascular tumors and tumor-like conditions. • Describe the pathogenesis, morphology, and clinical characteristics of the following: • Hemangiomas • Lymphangiomas • Intermediate-Grade (Borderline) Tumors • Malignant Tumors	**CVS-S2-Path-10** Vascular Tumors	Interactive Lecture	SBQs & OSVE
21	• Describe the pathogenesis, morphology, and clinical characteristics of IE, Pericarditis, and cardiac tumors.	**CVS-S2-Path-11** Infective Endocarditis (IE),Pericarditis, and Tumors of the Heart	Interactive Lecture	SBQs & OSVE
22	• Interpret the gross and microscopic features of the following on a givenhistopathology report:	**CVS-S2-Path-12** Hemangiomas Cardiac Myxoma	Practical	OSPE & OSVE

GASTROINTESTINAL TRACT & LIVER MODULE II

Introduction

Welcome to the GIT and Liver 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.
This module covers the topics which are Inflammatory and Neoplastic Diseases of Salivary Gland, Non- neoplastic and Tumor of Esophagus, Gastritis and Peptic Ulcer, Malignancies of Stomach, Diarrheal Diseases, Malabsorption Syndromes and Inflammatory Bowel Diseases, Benign and Malignant Lesions of Small and Large Intestine. Pathological conditions of Liver like Jaundice and cholestasis, Autoimmune liver diseases & Cholangiopathies, Metabolic Liver Diseases-1, Drug and Toxin Induced Liver Injury & Fatty LiverDisease, Cirrhosis of liver, Tumors of Liver, Inflammatory Diseases and Tumors of Gall Bladder. All these diseases are very common in clinical practice and will be helpful in understanding the GIT and Liver pathology. Real life scenarios have been added in the module which will be discussed in small groups to help students to develop them clinical approach to understand and solve the clinical problem by correlating their basic knowledge of anatomy, physiology, biochemistry and pathology with findings of a clinical case.

Rationale

Diseases of the GIT are common all over our country. It is essential to make early diagnosis and treat thedisease in order to reduce morbidity and mortality.

This module provides an integrative understanding and detailed and clinically relevant information ofpathology related to the digestive and biliary system.

Learning Outcomes

At the end of the module, the students will be able to relate understanding of the pathological processesrelated to the gastrointestinal tract & Liver.

Duration: **04 weeks**

Themes

Theme 1:	Disease of oral cavity and esophagus
Theme-2:	Disease of stomach
Theme-3:	Diarrheal diseases and malabsorption syndromes
Theme-4:	Intestinal disorders
Theme-5:	Jaundice & cholestasis
Theme-6:	Metabolic & drug/toxin related liver diseases
Theme-7:	Cirrhosis
Theme 8:	Tumors of liver and gall bladder

TOPICS WITH SPECIFIC LEARNING OBJECTIVES AND TEACHINGSTRATEGIES

Theme 1: Disease of Oral Cavity and Esophagus

S. #	LEARNING OBJECTIVES	TOPIC	TEACHING STRATEGY	ASSESSMENT
Pathology				
1	• Define leukoplakia and erythroplakia. • Describe ulcer of oral cavity and define dental caries, fungal infection and inflammatory condition of oral cavity. • Name the malignant tumors of oral mucosa & describe their etiopathology, morphology and clinical features.	**GIL-S2-Path-1** Ulcer/ inflammatory lesion and cancer of oral cavity	Interactive Lecture	SBQs & OSVE
2	• Mention cause of sialadenitis, clinical features and morphology. • Name benign and malignant tumors of salivary gland. • Describe etiopathology, morphology and clinical features.	**GIL-S2-Path-2** Disease of salivary gland inflammation and tumor		
3	• Define achalasia, mention its causes and morphology. • Describe causes of Hematemesis. • Describe pathogenesis, clinical features of GERD • Mention causes of dysphagia.	**GIL-S2-Path-3** Motor disorders. Esophageal varices, inflammatory condition and gastroesophageal reflux		
4	• Name benign and malignant tumors of esophagus. • Describe etiopathology, clinical features and morphology of carcinoma esophagus.	**GIL-S2-Path-4** Tumors of esophagus		
5	Demonstrate Gross and microscopic features of oral cavity carcinoma, salivary gland tumor and carcinoma esophagus.	**GIL-S2-Path-5** Gross and microscopic features of oral cavity carcinoma, salivary gland tumor and carcinoma esophagus.	Practical	OSPE & OSVE
Clinical Lectures				
7	Discuss Gastroesophageal reflux, esophagitis, Barrett's esophagus and hiatal hernia	**GIL-S2-Med-1** Gastroesophageal reflux, esophagitis, Barrett's esophagus and hiatal hernia	Interactive Lecture	SBQs & OSVE

8	Discuss Surgical causes, presentation and management of hematemesis, dysphagia and carcinoma esophagus	**GIL-S2-Surg-1** Surgical causes, presentation and management of hematemesis, dysphagia and carcinoma esophagus	Interactive Lecture	SBQs & OSVE

Theme 2: Disease of Stomach

S. #	LEARNING OBJECTIVES	TOPIC	TEACHING STRATEGY	ASSESSMENT
Pathology				
9	• Mention causes, pathogenesis of gastritis (Acute and chronic) • Describe causes, etiopathology, complication and morphology of peptic ulcer disease. • Mention role of H. Pylori in peptic ulcer disease, describe various methods of diagnosis of H. Pylori infection.	**GIL-S2-Path-6** Gastritis and peptic ulcer disease	Interactive Lecture	SBQs & OSVE
10	• Name benign and malignant tumors of stomach, describe etiopathology, clinical features and morphology of carcinoma stomach.	**GIL-S2-Path-7** Tumor of stomach		
11	• Demonstrate Gross and microscopic features of peptic ulcerand carcinoma stomach	**GIL-S2-Path-8** Gross and microscopic features of peptic ulcer and carcinoma stomach	Practical	OSPE & OSVE
Pharmacology				
12	• Describe drugs used for Acid peptic disorders including H. Pylori infection proton pump inhibitors	**GIL-S2-Pharm-2** Drugs used for Acid peptic disorders	Interactive Lecture	SBQs & OSVE
Clinical Lectures				
13	• Discuss diagnosis and management of gastritis/Acid pepticdisease and endoscopic management of bleeding peptic ulcer	**GIL-S2-Med-2** Diagnosis and management of gastritis/Acid pepticdisease and endoscopic management of bleeding peptic ulcer	Interactive Lecture	SBQs & OSVE

14	• Surgical management in Acid pepticdisease and carcinoma of stomach.	**GIL-S2-Surg-2** Surgical management in Acidpeptic disease & carcinoma of stomach.		

Theme 3: Diarrheal Diseases and Malabsorption Syndromes

S. #	LEARNING OBJECTIVES	TOPIC	TEACHING STRATEGY	ASSESSMENT
		Pathology		
15	• Name various cases of enterocolitis. • Mention various causes of diarrhea and dysentery (Microbiology). • Describe clinical features. • Mention etio-pathogenesis and clinical features.	**GIL-S2-Path-9** Enterocolitis and ischemic colitis, Hemorrhoids	Interactive Lecture	SBQs & OSVE
16	• Define malabsorption and name various causes. • Describe clinical features, etiopathology, morphology and diagnosis of coelic disease.	**GIL-S2-Path-10** Malabsorption syndrome (Coeliac disease)		
17	• Name inflammatory bowel disease. • Describe etiopathology, clinical features and morphological features of Crohn's disease and ulcerative colitis.	**GIL-S2-Path-11** Inflammatory bowel diseases		
18	• Describe various microbialagents causing diarrhea and dysentery and mention their lab diagnosis.	**GIL-S2-Path-12** various microbial agents causing diarrhea and dysentery and mention their lab diagnosis.	Practical	SBQs & OSVE
		Pharmacology		
19	Describe Anti-Diarrheal Drugs	**GIL-S2-Pharm-3** Anti-Diarrheal Drugs	Interactive Lecture	SBQs & OSVE
		Clinical lecture		
20	Explain Causes and clinical presentation and management of malabsorption syndrome / Coeliac disease. Irritable bowel syndrome.	**GIL-S2-Med-3** Causes and clinical presentation and management of malabsorption syndrome / Coeliac disease. Irritable bowel syndrome.		

21	Discuss Clinical presentation and surgical management of inflammatory bowel disease.	**GIL-S2-Surg-3** Clinical presentation and surgical management of inflammatory bowel disease.	Interactive Lecture	SBQs & OSVE
22	Discuss causes and clinical presentation and management of acute diarrhea.	**GIL-S2-Paeds-1** Causes and clinical presentation and management of acute diarrhea.		

Theme 4: Intestinal Disorders

S. #	LEARNING OBJECTIVES	TOPIC	TEACHING STRATEGY	ASSESSMENT
		Pathology		
23	• Mention various causes of intestinal obstruction • Define volvulus, intussusception, hernias and adhesions. • Discuss etio-pathogenesis, clinical features and morphology of Hirschsprung disease.	**GIL-S2-Path-13** Intestinal obstruction	Interactive Lecture	SBQs & OSVE
24	• Define acute appendicitis. • Describe causes, clinical features and morphology of acute appendicitis. • Mention clinical features and morphology of Meckel's diverticulitis. • Define diverticulosis, describe etiopathology and morphology.	**GIL-S2-Path-14** Inflammatory condition of abdomen		
25	• Name benign polypoidal lesion of intestine. • Describe etiopathology, clinical features and morphology of benign polyp. • Define familial adenomatous polyposis syndrome. • Describe etiopathology and morphology of FAP syndrome.	**GIL-S2-Path-15** Benign tumors of small intestine and large intestine-1		
26	• Name malignant tumor of large intestine. • Describe etiopathology, clinical features and morphological features.	**GIL-S2-Path-16** Malignant tumors ofsmall intestine and large intestine-2		
27	• Describe gross and microscopic features of benign and malignant tumors of intestine.	**GIL-S2-Path-17** Benign and malignant tumors of intestine.	Practical	OSPE & OSVE

Pharmacology				
28	• Describe drugs used in constipation. • Explain management of diarrhea and inflammatory bowel syndrome.	**GIL-S2-Pharm-4** Drugs used in constipation.	Interactive Lecture	SBQs & OSVE
Clinical Lecture				
29	• Discuss causes and management of intestinal obstruction	**GIL-S2-Surg-4** Causes and management of intestinal obstruction.	Interactive Lecture	SBQs & OSVE

Theme 5: Jaundice & Cholestasis

S. #	LEARNING OBJECTIVES	TOPIC	TEACHING STRATEGY	ASSESSMENT
Pathology				
30	Describe • Bile Formation and Secretion • Pathophysiology of Hyperbilirubinemia • Explain etiology & clinical diagnosis of • Pre-Hepatic Jaundice • Hepatic Jaundice • Post-Hepatic Jaundice • Hereditary Hyperbilirubinemia • Gilbert's syndrome Crigler–Najjar syndrome type I &II • Dubin-Johnson syndrome (DJS) • Rotors syndrome (DJS)	**GIL-S2-Path-18** Jaundice and cholestasis	Interactive Lecture	SBQs & OSVE
31	Explain etiology, pathogenesis & clinical features & Diagnostic criteria of • Type I Autoimmune liver diseases • Type II Autoimmune liver diseases • Primary Biliary Cholangitis (PBC) • Primary Sclerosing Cholangitis (PSC)	**GIL-S2-Path-19** Autoimmune liver diseases & Cholangiopathies		

Theme 6: Metabolic & Drug/Toxin Related Liver Diseases

S. #	LEARNING OBJECTIVES	TOPIC	TEACHING STRATEGY	ASSESSMENT
		Pathology		
32	Explain etiology, pathogenesis & clinical features & Diagnostic criteria of • Hemochromatosis • Wilson Disease • α1-Antitrypsin Deficiency	**GIL-S2-Path-20** Metabolic Liver Diseases-1	Interactive Lecture	SBQs & OSVE
33	Explain etiology, pathogenesis & clinical features &Diagnostic criteria of • Alcoholic Liver Disease • Nonalcoholic Fatty liver	**GIL-S2-Path-21** Drug- and Toxin-Induced Liver Injury & Fatty Liver Disease		

Theme 7: Cirrhosis

S. #	LEARNING OBJECTIVES	TOPIC	TEACHING STRATEGY	ASSESSMENT
		Pathology		
34	• Describe etiology, pathogenesis, symptoms and complications	**GIL-S2-Path-22** Cirrhosis of liver	Interactive Lecture	SBQs & OSVE
35	• Demonstrate gross andmicroscopic features	**GIL-S2-Path-23** Cirrhosis of liver	Practical	OSPE & OSVE
		Pharmacology		
36	Describe drugs used in Hepatitis	**GIL-S2-Pharm-5** Drugs used in Hepatitis	Interactive Lecture	SBQs & OSVE
		Clinical Lecture		
37	Discuss Clinical presentation and outline management of Hepatitis B&C	**GIL-S2-Med-4** Clinical presentation and outline management of Hepatitis B&C	Interactive Lecture	SBQs & OSVE
38	Discuss management of acute hepatitis and fulminant hepaticfailure	**GIL-S2-Med-5** Management of acute hepatitis and fulminant hepatic failure		
39	Discuss clinical presentation and indication of surgery in liver cirrhosis.	**GIL-S2-Surg-5** Clinical presentation and indication of surgery in liver cirrhosis.		

Theme 8: Tumors of Liver and Gall Bladder

S. #	LEARNING OBJECTIVES	TOPIC	TEACHING STRATEGY	ASSESSMENT
Pathology				
40	Describe Etiology, pathogenesis, gross & histologic Features of • Focal Nodular Hyperplasia,cavernous Hemangioma • Hepatocellular Adenoma • Hepatoblastoma • Hepatocellular Carcinoma • Malignant Biliary Tumors	**GIL-S2-Path-24** Tumors of liver	Interactive Lecture	SBQs & OSVE
41	State congenital anomalies etiology, pathogenesis, gross &histologic Features of • Cholelithiasis (Gall stones) • Acute & Chronic Cholecystitis • Gall bladder Carcinoma	**GIL-S2-Path-25** Diseases & Tumors of gall bladder		
42	• Demonstrate gross and microscopic feature of hepatocellular carcinoma and carcinoma gall bladder	**GIL-S2-Path-26** Ca liver and Gall Bladder	Practical	SBQs & OSVE
Clinical Lecture				
43	Describe Cirrhosis, partial hypertension, variceal bleeding, medical and endoscopic management.	**GIL-S2-Med-6** Cirrhosis, partial hypertension, variceal bleeding, medical and endoscopic management.	Interactive Lecture	SBQs & OSVE
44	Describe Ascites, Hepatic encephalopathy and hepato renal syndrome	**GIL-S2-Med-7** Ascites, Hepatic encephalopathy and hepato renal syndrome		
45	Describe Clinical presentation and management of cholelithiasis	**GIL-S2-Surg-6** Clinical presentation and management of cholelithiasis		

ENDOCRINOLOGY MODULE II

Introduction The Endocrine system is made up of ductless glands, which secrete chemical substances (hormones) directlyinto blood, relays information and maintains a constant internal environment of the body called homeostasis. The endocrine glands where hormones are produced, stored, and released. Once released into the bloodstream, they travel to their target organ or tissue, which has receptors that recognize and react to the hormone. Hormones of the endocrine system coordinate and control growth, metabolism, temperature regulation, the stress response, reproduction, and many other functions.

This module will help the students to develop knowledge and understanding the basic concepts of endocrinehormone their disorders relates to primary pathogenesis, and how this knowledge help in diagnosis and treatment.

This endocrine system module will facilitate to recognize the clinical presentations of common endocrinological and metabolic disorders and relate clinical manifestations to basic sciences.

Rationale Endocrine disorders like Diabetes Mellitus and Thyroid related diseases are very common in all parts of Pakistan. This module provides the basis on which 3rd year MBBS students will learn not only knowledge application to know the pathology but will be able to link abnormalities with treatment options in the 2nd spiral of the curriculum.

Common endocrinological disorders like Diabetes mellitus, thyrotoxicosis, hypothyroidism, Cushing syndrome, pituitary disorders are necessary to be understood for comprehensive management. These diseases are commonly encountered in medical practice. In this module with the integration of the basic knowledge obtained in the first spiral, a sound clinical base is developed by learning their pharmacotherapy in detail.

Duration: 02 weeks

Learning Outcomes

- Describe the clinical uses and adverse effects of growth hormone and adrenocorticotropic (ACTH)hormones.
- Explain the therapeutic effects of thyroxine in the treatment of hypothyroidism.
- Explain the mechanism of action, therapeutic and adverse effects of anti-thyroid drugs.
- Explain the therapeutic and preventive role of iodine in thyroid disorders.
- Classify diabetes mellitus on the basis of WHO criteria.
- Describe the pathogenesis, clinical features, pathological changes, complications and prevention ofdiabetes mellitus.
- Describe the pharmacokinetics, mechanism of action and adverse effects of insulin and oralhypoglycemic agents.
- Classify mineralocorticoids & glucocorticoids on the basis of duration of action, anti-inflammatoryand salt retaining properties.
- Describe the clinical uses and adverse effects of mineralocorticoids and glucocorticoids.
- To describe and discuss the roles of hormone receptors in hormone action including their location,type and signaling pathways.
- To apply endocrinological principles to determine the pathophysiological basis and consequencesof specific endocrine disorders.
- Discuss the epidemiology and consequences of iodine deficiency and the salient features of iodinecontrol program in Pakistan
- Describe the epidemiology of diabetes mellitus in terms of global perspectives in Pakistan
- Describe the levels of prevention of diabetes mellitus and its control.

Themes

Theme 1: Non-neoplastic & neoplastic diseases of Pituitary Gland
Theme 2: Non-neoplastic & neoplastic diseases of Thyroid & Parathyroid
Theme 3: Non-neoplastic & neoplastic diseases of Pancreas
Theme 4: Non-neoplastic & neoplastic diseases of Adrenal Gland
Theme 5: Multiple Endocrine Neoplasia Syndromes

TOPICS WITH SPECIFIC LEARNING OBJECTIVES AND TEACHINGSTRATEGIES

Theme 1: Non-Neoplastic & Neoplastic Diseases of Pituitary Gland

S. #	LEARNING OBJECTIVES	TOPIC	TEACHING STRATEGY	ASSESSMENT
		Pathology		
1	• Describe clinical manifestations of Anterior Pituitary gland disorders & Syndromes • Describe the pathophysiology and Histologic features of i. Lactotroph Adenoma ii. Somatotroph Adenoma iii. Corticotroph Adenoma iv. Other Anterior PituitaryTumors • Explain histologic features of Hypothalamic Suprasellar Tumors	**End-S2-Path-1** Disorders and neoplasms of Pituitary gland.	Interactive Lecture	SBQs & OSVE
		Pharmacology		
2	• Discuss the pharmacology of anterior pituitary growth hormone (Somatotropin)	**End-S2 Pharm-1** Anterior pituitary hormones	Interactive Lecture	SBQs & OSVE
		Clinical Lecture		
3	• Describe clinical manifestations of the anterior & posterior pituitary gland.	**End-S2 Med-1** Hypopituitarism/ Pan hypopituitarism, GHD, Sheehan Syndrome. Diabetes Insipidus	Interactive Lecture	SBQs & OSVE
4	• Describe the clinical features of pituitary tumors + Hypothalamic suprasellar tumors. • Clinical features of Hyper function tumors + Mass effects	**End-S2 Med-2** Pituitary tumors + Hypothalamic suprasellar tumors		
5	• Identify the indications for trans sphenoidal Hypophysectomy • Describe the technique in	**Endo-S2-Surgery-1** Hypophysectomy		

	regards to trans sphenoidal Hypophysectomy • Outline the appropriate evaluation of the potential complications of trans sphenoidal Hypophysectomy • Review some inter professional team strategies for improving care, coordination and communication to advance transsphenoidal Hypophysectomy and improve outcomes			

Theme 2: Non-Neoplastic & Neoplastic Diseases of Thyroid & Parathyroid

S. #	LEARNING OBJECTIVES	TOPIC	TEACHING STRATEGY	ASSESSMENT
		Pathology		

6	• Describe the pathophysiology of
	  • Hyperparathyroidism
	  • Primary Hyperparathyroidism
	  • Secondary Hyperparathyroidism Hypoparathyroidism
	  • Pseudohypoparathyroidism
		End-S2-Path-2
		Disorder of Parathyroid gland
			Interactive Lecture	SBQs & OSVE

7	• Histology thyroid hormones T3 and T4 synthesis and functions. • Pathophysiology, clinical features and laboratory diagnosis of simple and multinodular goiter. • Toxic multinodular goiter	**End-S2-Path-3** Diseases of Thyroid gland Introduction Simple goiter and Multinodular goiter		
8	• Hyperthyroidism and thyrotoxicosis. • Primary and secondary hyperthyroidism. • Pathophysiology causes, clinical features and laboratory diagnosis of Graves' disease	**End-S2-Path-4** Hyperthyroidism. Graves' disease Thyroid storm Apathetic hyperthyroidism		
9	Hypothyroidism its causes clinical features and laboratory diagnosis	**End-S2-Path-5** Hypothyroidism Cretinism Myxedema		

10	Discuss Clinical and morphological features of: i. Hashimoto Thyroiditis ii. Subacute Lymphocytic Thyroiditis iii. Granulomatous Thyroiditis	**End-S2-Path-6** Inflammatory diseases of Thyroid gland		
11	• Causes, pathogenesis, morphological features and laboratory diagnosis of thyroid adenoma and papillary carcinoma	**End-S2 Path-7** Thyroid Neoplasms-I		
12	• Causes, pathogenesis, morphological features and laboratory diagnosis of follicular carcinoma, medullary carcinoma and anaplastic carcinoma.	**End-S2-Path-8** Thyroid Neoplasms-II		
13	• Laboratory interpretation of parathyroid gland diseases	**End-S2-Path-9** Parathyroid gland Lab interpretation	Practical	OSPE & OSVE
14	• Thyroid function test and its interpretation according to disease	**End-S2-Path-10** Thyroid function tests		
15	• Neoplastic lesions of thyroid gland	**End-S2-Path-11** Benign and malignant tumors of thyroid gland		
Pharmacology				
16	• Classify the drugs used in Thyroid disorders • Pharmacological effects of anti-thyroid drugs • Discuss the drugs used for hypothyroidism • Drugs used in parathyroid disorders(Tetany)	**End-S2-Pharm-2+3** Thyroid and Parathyroid hormones	Interactive Lecture	SBQs & OSVE
17				
Clinical Lecture				
18	• Describe the clinical features & management of & Hyperparathyroidism	**End-S2-Med-3** Primary+ Secondary+ tertiary. Hyperparathyroidism		
19	• Describe the clinical features & management of hypoparathyroidism	**End-S2-Med-4** Primary+ Secondary+ tertiary. Hypoparathyroidism + Pseudo hypoparathyroidism		

20	• Discuss Clinical features of inflammatory thyroid disorders	**End-S2-Med-5** Thyroiditis. Hypothyroidism (Hashimoto thyroid disease, Myxedema and cretinism)	Interactive Lecture	SBQs & OSVE
21	• Discuss Clinical features of inflammatory thyroid disorders	**End-S2-Med-6** Hyperthyroidism (Graves' disease)		
22	• Discuss Toxic adenoma. • Multinodular Goiter • Simple Nontoxic goiter • Types of thyroid carcinomas.	**End-S2-Med-7** Goiter + Adenoma +Thyroid Malignancies.		
23	• Identify the indications of Para thyroidectomy • Describe the technique of Para thyroidectomy. • Review the clinical significance of Para thyroidectomy. • Summarize the potential complications of Para thyroidectomy	**End-S2-Surg-2** Para thyroidectomy.		

Theme 3: Non-Neoplastic & Neoplastic Diseases of Pancreas

S. #	LEARNING OBJECTIVES	TOPIC	TEACHING STRATEGY	ASSESSMENT
		Pathology		
24	• Glucose homeostasis, metabolic action of insulin and mechanism of insulin release. Classification of diabetes mellitus. Types of incretins. Impaired glucose tolerance test. Laboratory diagnosis of diabetes mellitus	**End-S2-Path-12** Disorder of Endocrine Pancreas Diabetes Mellitus-1	Interactive Lecture	SBQs & OSVE
25	• Pathogenesis of type-I and type-II diabetes mellitus, clinical presentation and complications of diabetes mellitus.	**End-S2-Path-13** Disorder of Endocrine Pancreas Diabetes mellitus-II		
26	• Discuss clinical presentation, pathogenesis and histologic features of Common Pancreatic Endocrine Neoplasms Hyperinsulinism (Insulinoma) Zollinger-Ellison Syndrome • (Gastrinoma) Pancreatic carcinoid tumors	**End-S2-Path-14** Pancreatic tumors		
27	• Diabetes mellitus its type andlaboratory interpretation	**End-S2-Path-15** Diabetes mellitus Lab interpretation		

Pharmacology				
28	• Describe the pharmacology of insulin and benefits of glycemic control in diabetes mellitus type-I	**End-S2-Pharm-4** Anti-Diabetic Drugs Pancreas (Insulin)	Interactive Lecture	SBQs & OSVE
29	• Describe the drugs used in type IIdiabetes mellitus.	**End-S2-Pharm-5** Non-Insulin antidiabetic agents		
Clinical Lecture				
30	• Describe Diabetes (Definition +WHO Classification). • Management of diabetes.	**End-S2-Med-8** Diabetes Mellitus-I	Interactive Lecture	SBQs & OSVE
31	• Discuss Acute & chronic complications of diabetes.	**End-S2-Med-9** Diabetes Mellitus-II		

Theme 4: Non-Neoplastic & Neoplastic Diseases of Adrenal Gland

Theme 5: Multiple Endocrine Neoplasia Syndromes

S. #	LEARNING OBJECTIVES	TOPIC	TEACHING STRATEGY	ASSESSMENT
Pathology				
32	• Describe the hyper-secretory & hypo-secretory disorders of adrenal cortex • Adrenocortical Hyperfunction Hypercortisolism (Cushing • Syndrome) Primary Hyperaldosteronism Adrenogenital Syndromes • Adrenocortical Insufficiency Primary Acute Adrenocortical • Insufficiency Primary Chronic Adrenocortical • Insufficiency (Addison Disease) • Discuss clinical presentation, pathogenesis and histologic features of • Adrenocortical Neoplasms Adrenocortical adenomas Pheochromocytoma.	**End-S2-Path-16** Non-neoplastic diseases of adrenalcortex Neoplastic diseases of adrenal cortex & Medulla MEN-I & MEN-II	Interactive Lecture	SBQs & OSVE
Pharmacology				
33	• Describe the pharmacokinetic pharmacodynamics clinical uses and toxicity of glucocorticoids	**End-S2-Pharma-6** Corticosteroids (Glucocorticoids).	Interactive Lecture	SBQs & OSVE
34	• Discussthe pharmacology of mineralo corticoids.	**End-S2-Pharm-7** Mineralo corticoids		
35	• Discuss the corticosteroid antagonists	**End-S2-Pharm-8** Corticosteroid antagonists		

Medicine				
36	• Describe Diabetes (Definition + WHO Classification). • Management of diabetes.	**End-S2-Med-8** Diabetes Mellitus-I	Interactive Lecture	SBQs & OSVE
37	Discuss Acute & chronic complications of diabetes.	**End-S2-Med-9** Diabetes Mellitus-II		
38	Describe the clinical manifestations of Hyper functioning of the Adrenal gland. (Cortex)	**End-S2-Med-10** Cushing Syndrome		
39	Describe the clinical manifestations of hypo functioning of the Adrenal gland. (Cortex)	**End-S2-Med-11** Adrenal insufficiencies (Addison disease)		
40	Describe the clinical features of. Corticotrophin adenoma.	**End-S2-Med-12** Corticotrophin adenoma. (Cushing Syndrome of pituitary origin)		
41	Discuss the Clinical manifestation of Adrenal Medullary tumors + paragangliomas	**End-S2-Med-13** Pheochromocytoma + paragangliomas		
42	Discuss the genetic mutation in Endocrinology	**End-S2-Med-14** MEN-I, MEN-II, A&B		
Surgery				
43	• Identify the indications of adrenalectomy • Describe the management of adrenalectomy • Outline the complications of adrenalectomy	**End-S2-Surg-3** Adrenalectomy	Interactive Lecture	SBQs & OSVE

RENAL/ EXCRETORY SYSTEM MODULE-II

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. In this 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 Renal and 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.

Duration: **02 weeks**

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.

Themes

Theme 1:	Glomerular conditions including glomerular syndromes, conditions associated withsystemic disorders and Isolated glomerular abnormalities.
Theme 2:	Kidney/ Excretory Infections and Renal Vascular Disorders
Theme 3:	Obstructive uropathy (Urolithiasis, Hydronephrosis)
Theme 4:	Tumors of Renal/ excretory System

TOPICS WITH SPECIFIC LEARNING OBJECTIVES AND TEACHINGSTRATEGIES

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

S. #	LEARNING OBJECTIVES	TOPIC	TEACHING STRATEGY	ASSESSMENT
		Pathology		
1	• Classify glomerular disease. • Define glomerular syndrome • Discuss pathogenesis of glomerular injury and mediators of glomerular injury.	**EXC-S2-Path-1** Glomerular diseases	Interactive Lecture	SBQs & OSVE
2	• Describe various glomerular syndromes • Define nephritic syndrome • Describe pathophysiology and clinical features of nephritic syndrome • Differentiate between nephritic and nephrotic syndrome.	**EXC-S2-Path-2** Nephritic Syndrome		
3	• Define and describe causes: • Pathophysiology and clinicalfeatures of nephrotic syndrome. • Differentiate between nephritic and nephrotic syndrome.	**EXC-S2-Path-3** Nephrotic Syndrome		
4	• Discuss the pathophysiology, morphology and clinical features in glomerular conditions associated with systemic disease e.g Diabetic nephropathy, Lupus nephritis, henoch schonlein purpura. • Explain isolated glomerular abnormalities including IGA nephropathy, Hereditary nephritis, Alport syndrome.	**EXC-S2-Path-4** Glomerular conditions associated with systemdisorders 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	Practical	OSPE & OSVE

Theme 2: Kidney/ Excretory Infections and Renal Vascular Disorders

S. #	LEARNING OBJECTIVES	TOPIC	TEACHING STRATEGY	ASSESSMENT
Pathology				
6	• Describe causes and pathogenic mechanism of tubulointerstitialinjury • Etiology, pathogenesis and morphology of acute tubular necrosis. • Describe etiopathogenesis and morphology of tubulointerstitial nephritis.	**EXC-S2-Path-6** Tubulo insterstitial Injury	Interactive Lecture	SBQs & OSVE
7	• Identify predisposing factors of pyelonephritis • Describe causes, pathogenic mechanisms and morphology ofacute pyelonephritis. • Describe clinical course and complications of acutepyelonephritis.	**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 andUrine Culture	Practical	OSPE & OSVE

Theme 3: Obstructive Uropathy (Urolithiasis, Hydronephrosis)

S. #	LEARNING OBJECTIVES	TOPIC	TEACHING STRATEGY	ASSESSMENT
Pathology				
12	• Name various types of renalcalculi. • Describe etiopathology causes and complication.	**EXC-S2-Path-12** Kidney stones	Interactive Lecture	SBQs & OSVE
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
Pathology				
14	• Name benign and malignant tumor of kidney. • Describe etiopathology, risk factor and morphology and clinical features of Renal Cell 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 urinary bladder tumors	Practical	OSPE & OSVE
Pharmacology				
17	• Classify different types of Diuretics. • Describe the mechanism of action of Diuretics, • Identify the clinical uses and adverse effects of Diuretics	**EXC-S2-Pharm-01** Diuretics	Interactive Lecture	SBQs & OSVE

REPRODUCTIVE SYSTEM MODULE-II

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 thereproductive 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 reproductivesystems 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.

Duration: 03 weeks

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 of infertility.
- 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

Themes

Theme 1: Lesions of Female Genital Tract
Theme 2: Lesions of Breast
Theme 3: Lesions of Male Genital Tract

TOPICS WITH SPECIFIC LEARNING OBJECTIVES AND TEACHINGSTRATEGIES

Theme 1: Lesions of Female Genital Tract

Theme 2: Lesions of Breast

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	Interactive Lecture	SBQs & OSVE
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		
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		
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		
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 antiestrogen preparations • 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** Androgen and Anti-Androgen		
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		

MUSCULOSKELETAL MODULE-II

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 andproductive 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:

Duration: **02 weeks**

Learning Outcomes

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

Themes

Theme 1:	Developmental Disorders of Bone & Cartilage, Basic Structure & Function of Bone.
Theme 2:	Fractures, Osteomyelitis and Arthritis.
Theme 3:	Benign Bone and Cartilage Forming Tumors, Malignant Bone and Cartilage FormingTumors and Tumors of Unknown Origin
Theme 4:	Soft Tissue Tumors

TOPICS WITH SPECIFIC LEARNING OBJECTIVES AND TEACHINGSTRATEGIES

Theme 1: Developmental Disorders of Bone & Cartilage, BasicStructure & 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 Proteinsand Transcription Factors • Diseases Associated with defects in Hormones and Signal Transduction Proteins • Diseases Associated with defects in Metabolic Pathways (Enzymes, Ion Channels, 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		
	• To treat non-inflammatory conditions • The main mechanism of action of NSAIDs is the inhibition of the enzymes COX	**MSK-S2-Pharma-1** NSaids		
	• To alleviating the pain and inflammation • To reduce uric acid level in the blood	**MSK-S2-Pharma -2**		

		Drugs used in the treatment of Gout		
	• To minimize joint inflammation • To prevent further joint damage • To improve joint function to improve quality of life	**MSK-S2-Pharma -3** Treatment of Rheumatoid Arthritis		

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 MicroscopicFeatures	**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)		

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 are interactive and helpful in understanding the renal pathology.

Rationale

Diseases of the nervous system are common all over the world. Timely diagnosis and management of acuteCNS 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.

Duration: **02 weeks**

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 brain parenchymal disease,related investigations like CSF examination and biopsies

Themes

Theme 1: Meningitis Including Bacterial, Viral, Fungal and T.B Meningitis
Theme 2: Tumors of Central Nervous System
Theme 3: Autonomic Nervous system

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/ Demonstrati on,SGD, Practical, CBL/PBL	SBQs & OSVE, OSCE, Clinical Exam
Pharmacology				
1	• Classify different types of antiepileptic agents. • Describe the mechanism of action, and	**NS-S2-Pharm-1** Anti-epiletics drugs		

	clinical uses and side effects of Anti-Epileptics.			
2	• Classify the Anti-Psychotics • Difference between typical and Atypical Anti-Psychotics • Discuss the clinical uses and side effects of typical and Atypical Anti-Psychotics	**NS-S2-Pharm-2** Antipsychotics		
3	• Classify the Anti-Parkinson drugs • Discuss the clinical uses and side effects of Anti-Parkinson drugs	**NS-S2-Pharm-3** Drugs used in Parkinson Disease		
4	• Discuss the pathophysiology ofmigraine headaches • Discuss both pharmacologic and non-pharmacologictreatment strategies for migraine.	**NS-S2-Pharm-4** Treatment of Migraine		
5	• Classify the Anti-Depressants • Discuss the clinical uses and side effects of MAO's inhibitors • Discuss the clinical uses and side effects of TCA's • Discuss the clinical uses and side effects of SSRI'S AND SNRI'S	**NS-S2-Pharm-5** Anti-Depressants		
6	• Classify the Sedative Hypnotics • Discuss the mechanism of action, clinical uses and side effects of benzo diazepam • Discuss the mechanism of action, clinical uses and side effects of Barbiturates	**NS-S2-Pharm-6** Sedatives and Hypnotics		
7	• Classify the General Anesthetic Agents • Discuss the mechanism of action, clinical uses and side effects of Inhaled Anesthetic Agents	**NS-S2-Pharm-7** General anesthesia -1 (inhaled)		
8	• Discuss the mechanism of action, clinical uses and side effects of Intravenous Anesthetic Agents	**NS-S2-Pharm-8** General anesthesia -2 (I.V)		
9	• Classify the Local Anesthetic Agents • Discuss the mechanism of action, clinical uses and side effects of local Anesthetic Agents	**NS-S2-Pharm-9** Local Anesthetic Agents		
10	• To treat acute pain • Give in palliative care and end of life care	**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

THIRD PROFESSIONAL
MBBS 2022-23

DEPARTMENT OF
COMMUNITY MEDICINE

ACADEMIC SESSION 2024-25

COMMUNICABLE DISEASES
(PREVENTION AND CONTROL OF INFECTIOUS DISEASE)

Learning Outcomes: By the end of the course, student should be able to:

- Understand the basics of communicable disease and its epidemiology
- Discuss the emerging and re-emerging diseases and provide examples.
- Explain the differences among outbreak, epidemics, endemics and pandemics with examples.
- know the different infectious disease control programs in Pakistan
- Understand the chain of transmission of infection and its role in infectious disease control.
- Understand the different infectious agent and their mode of transmission and the disease that they cause.
- Differentiate winged and winless insects
- Apply the control and prevention measures of specific infections.

Rationale: Globally, Infectious diseases continues to keep on increasing the list of global public health threats. Understanding the transmission of infections and their effective control is an important public health issue. The purpose of this course is to introduce students to infectious disease/communicable diseases and the agents that cause them. This course will clear the difference between communicable disease and non-communicable disease, distinguish among outbreak, epidemics, endemic, pandemics and emerging and re-emerging disease, explore the different kinds of organisms that cause disease and will be helpful for understanding the control and prevention of specific infection and introduce students to differentiate winged and wingless insect and apply control and preventive measure of specific infection.

S.NO	Content/Area	Learning Objectives	Teaching strategy	Assessment tool
1.	Introduction to communicable disease and basic concept and infectious disease control program in Pakistan	• To define communicable disease and other basic definitions regarding the infectious disease • To differentiate between infection, contamination, pollution, infestation • To classify the communicable disease • To discuss the infectious disease control programs in Pakistan	Teaching Methodology • Lecture	Type Of Assessment • SBQs
2.	Chain of transmission & Its role in infectious disease control	• To understand the chain of infection • To describe the various route of transmission of infectious diseases • To describe the preventive and control measures of infectious diseases	Teaching Methodology • Lecture	Type Of Assessment • SBQs
3.	Steps of investigation of epidemics	• To discuss the steps of investigation of epidemics (Epidemic endemic, pandemic and steps of investigation of epidemics, explain with examples)	Teaching Methodology • Lecture	Type Of Assessment • SBQs • SEQ
4.	Epidemiology & control measure of Malaria	• To discuss the problem statement of malaria • To define the malaria and vectors of malaria • The describe the epidemiology of Malaria • To discuss the preventive and control measures of malaria	Teaching Methodology • Lecture	Type Of Assessment • SBQs
5.	Epidemiology & control measure of Leishmaniasis	• To define the Leishmaniasis and its types • To understand the epidemiology of Leishmaniasis • To discuss the preventive and control measures of Leishmaniasis	Teaching Methodology • Lecture	Type Of Assessment • SBQs
6.	Epidemiology & control measure of Influenza	• To discuss the problem statement of influenza • To understand the epidemiology of influenza • To define and describe the mode of transmission of influenza • To discuss the preventive and control measures of influenza	Teaching Methodology • Lecture	Type Of Assessment • SBQs
7.	Epidemiology & control measure	• To define the yellow fever • To understand the epidemiology of	Teaching Methodology	Type Of Assessment

	of yellow fever	yellow fever • To discuss the importance of yellow fever to Pakistan • To discuss the preventive and control measures of yellows fever	• Lecture	• SBQs
8.	Epidemiology & control measure of Chickenpox	• To discuss the problem statement of chicken pox • To define chickenpox and describe the mode of transmission of chickenpox • To understand the epidemiology of chickenpox • To discuss the preventive and control measures of chickenpox	Teaching Methodology • Lecture	Type of Assessment • SBQs
9.	Epidemiology & control measure of Measles, Mumps, Rubella	• To discuss the problem statement of Measles, Mumps, Rubella • To understand the epidemiology of Measles, Mumps, Rubella • To define and describe the modes of transmission of Measles, Mumps, Rubella • To describe diagnosis of mumps. • To discuss the preventive and control measures of Measles, Mumps, Rubella	Teaching Methodology • Lecture	Type of Assessment • SBQs
10.	Epidemiology & control measure of Typhoid	• To discuss the problem statement of typhoid fever • To define the typhoid fever • To understand the epidemiology of typhoid fever • To discuss the preventive and control measures of Typhoid fever	Teaching Methodology • Lecture	Type of Assessment • SBQs
11.	Epidemiology & control measure of Whooping Cough	• To discuss the problem statement of Whooping Cough • To understand the epidemiology of Whooping Cough • To define Whooping Cough and describe the mode of transmission of Whooping Cough • To discuss the preventive and control measures of Whooping Cough	Teaching Methodology • Lecture	Type Of Assessment • SBQs
12.	Epidemiology and control measure of Amoebiasis	• To discuss the problem statement of amoebiasis • To Know public health importance of amoebiasis	Teaching Methodology • Lecture	Type Of Assessment • SBQs

		• To discuss the Important factors of Agent/Host/Environment responsible for occurrence of amoebiasis • To discuss the preventive and control measures of amoebiasis		
13.	Epidemiology & control measure of Meningitis	• To discuss the problem statement of Meningitis • To understand the epidemiology of Meningitis • To define Meningitis and describe the mode of transmission of Meningitis • To discuss the preventive and control measures of Meningitis	Teaching Methodology • Lecture	Type Of Assessment • SBQs
14.	Epidemiology & control measure of Dengue Fever	• To discuss the problem statement of dengue fever • To discuss the type of dengue fever • To understand the epidemiology of dengue fever • To discuss the preventive and control measures of dengue fever	Teaching Methodology • Lecture	Type Of Assessment • SBQs
15.	Epidemiology & control measure of Sexually Transmitted disease (STDs) & HIV/AIDS	• To discuss the problem statement of Sexually Transmitted disease & HIV/AIDS • To define Sexually Transmitted disease & HIV/AIDS • To understand the epidemiology of Sexually Transmitted disease & HIV/AIDS • To discuss the preventive and control measures of Sexually Transmitted disease & HIV/AIDS	Teaching Methodology • Lecture	Type Of Assessment • SBQs

OCCUPATIONAL HEALTH

Learning Outcomes: By the end of Occupational health sessions, student should be able to:

- Understand the basics of occupational health and its importance in public health
- Discuss the legislation of occupational health in Pakistan
- Explain the common occupational health hazards of agricultural and industrial sectors
- know the medical and engineering methods for prevention of occupational health hazards
- Apply the control and prevention measures of occupational hazards

S.N Wks	Content/Area	Learning Objectives	Teaching Strategy	Assessment tool
1.	Introduction to occupational health and safety	• To define occupational health. • To discuss the occupational health hazard • To discuss the occupational health services in Pakistan • To describe the legislation of occupational health in Pakistan.	Teaching Methodology • Lecture	Type Of Assessment • SBQs
2.	Occupational health hazards in agricultural workers	• To discuss the agriculture health hazards • To define pneumoconiosis • To differentiate the types of pneumoconiosis on basis of dust • To discuss the preventative and control measures of pneumoconiosis	Teaching Methodology • Lecture	Type Of Assessment • SBQs
3.	Occupational health hazards in industrial workers. Lead poisoning	• To discuss the industrial health hazards. • To define lead poisoning • To discuss the preventive and control measures of lead poisoning	Teaching Methodology • Lecture	Type Of Assessment • SBQs
4.	Preventive measures of occupational health hazards	• To define ergonomics • To discuss the importance of ergonomics in occupational health • To describe the absenteeism • To discuss the medical methods of prevention of occupational hazards. • To discuss the engineering methods of prevention of occupational hazards	Teaching Methodology • Lecture	Type Of Assessment • SBQs
5.	Epidemiology & control measures of cancer	• To understand the magnitude of cancer problem in Pakistan. • To understand the epidemiological features of cancer.	Teaching Methodology • Lecture	Type Of Assessment • SBQs

		• To describe different causes of cancer • To explain screening of cancer. • To describe risk factors of cancer. • To explain the control measures and prevention of cancer		
6.	Snake bite	• Epidemiology, Personal protection and management • Types of snakes according to toxin production: hemolytic toxins, musculo-toxins and neuro-toxin • Differentiate between signs and symptoms of different snake-bites • Discuss preventive measures against snake bites.	Teaching Methodology • Lecture	Type Of Assessment • SBQs
	Field visit	**Industry and Social Security Hospital (after lecture number 4)**		

ENVIRONMENTAL HEALTH

Learning Outcomes:

- This course has been designed to introduce the basics of environmental health
- The course will cover the environmental public health practice
- The course focus on the relationship between the environment and health
- This will teach the main categories of environmental health hazards and the principles of hazard management
- This course will teach the main types of environmental pollution and the basic principles of pollution management
- At the end of this course, students will be able to understand the basics of environmental health, its hazards and their prevention and importance for clinicians

S. NO	Content/Area	Learning Objectives	Teaching strategy	Assessment Tool
1.	Methods of purification of water	• To define water purification • To learn the methods of water purification • To understand the best method in different situations • To describe the advantages and disadvantages of each method	Teaching Methodology • Lecture	Type Of Assessment • SBQs
2	World Health Organization (WHO) criteria for purification of water	• To define WHO criteria for purification of water • To learn about different pathogens causing water pollution as per WHO criteria • To Discuss the water surveillance • To describe the physical, chemical, biological and bacteriological quality of water	Teaching Methodology • Lecture	Type Of Assessment • SBQs
3.	Hydrological cycle & sources of water pollution	• To learn about hydrological cycle • To define water pollution • To understand sources of water pollution and types	Teaching Methodology • Lecture	Type Of Assessment • SBQs
4	Health Hazards arising from consuming polluted water; water borne disease	• To describe different types of health hazards arising from consuming polluted water • To understand various water borne diseases caused due to consuming polluted water	Teaching Methodology • Lecture	Type Of Assessment • SBQs
5.	Slow sand & rapid sand filters	• To describe rapid and slow sand filters • To understand the role of rapid and slow sand filtration in water purification	Teaching Methodology • Lecture	Type Of Assessment • SBQs
6	Radiation Hazards	• To define radiation and its hazards • To describe the relative hazards to humans when exposed to alpha, beta and gamma rays • To discuss the preventive measures of radiation hazards	Teaching Methodology • Lecture	Type Of Assessment • SBQs

7.	**Disposal of waste** Introduction, Public Health importance of waste management. methods of collection & disposal of refuse	• To define waste and its types • To understand the public health importance of various types of wastes • To learn about different sources of wastes • To learn about different methods of collection and disposal of refuse	Teaching Methodology • Lecture	Type Of Assessment • SBQs •
8.	Methods of disposal of human excreta & sewage	• To understand the methods of human excreta disposal • The describe the hazards of improper excreta disposal • To understand different methods of sewage disposal	Teaching Methodology • Lecture	Type Of Assessment • SBQs
9.	Hospital Waste management	• To learn about sources of hospital wastes • To understand different types of hospital waste • To learn about different methods for prevention and control of hospital wastes and treatment of hospital waste	Teaching Methodology • Lecture	Type Of Assessment • SBQs
10.	Healthful housing	• To learn about the relationship between health and housing • To learn about the criteria of healthful housing	Teaching Methodology • Lecture	Type Of Assessment • SBQs
11.	Noise pollution	• To define noise and noise pollution • To understand types and sources of noise pollution • To describe preventive and control measures of noise pollution	Teaching Methodology • Lecture	Type Of Assessment • SBQs
12.	Effect of health and cold extremes	• To describe the effects of extreme heat and extreme cold on human body • To describe how to manage the effects of heat and cold extremes	Teaching Methodology • Lecture	Type Of Assessment • SBQs
	Field visit	**Water treatment Plant (After lecture number 5)**		

FOOD & NUTRITION

Learning Outcomes:

At the conclusion of this course, students will be able to:

1. Comprehend the public health importance of Nutrition.
2. Understand the nutritional requirement for different ages and gender.
3. Identify the factors for micro and macronutrient deficiencies in Pakistan.
4. Identify the risk factors of Malnutrition in children < 5 and over 5 years of age
5. Classify the types of malnutrition among children under and over 5 years.
6. Differentiate food preservation, fortification and adulteration.

S.NO	Content/Area	Learning Objectives	Teaching strategy	Assessment tool
1.	Balanced Diet and Nutritional status assessment	• Define balanced diet • Understand the importance of a balanced diet • Explain the food pyramid • Describe the different focus groups in a balanced diet • Enumerate the routine dietary requirements and nutritional values at different age groups. • Describe the routine dietary needs of pregnant and lactating mothers. • Define the nutritional status, growth and development. • Describe the purpose of nutritional assessment. • Understand and discriminate between internal and external methods of nutritional assessment in children and adults. • Enumerate different nutritional indices in adults	Teaching Methodology • Lecture	Type Of Assessment • SBQs
2.	Micro and macro nutritional Deficiencies And Malnutrition in under and over five years age children	• Describe micro and macro-nutrient components. • Comprehend the importance of micro and macro nutrient components. • Enumerate the different factors of micro and macronutrient deficiencies. • Describe the burden of micro and macronutrient deficiency in Pakistan. • Describe the malnutrition • Classify the types of malnutrition among children under and over 5 years. • Discriminate between the risk factors responsible for malnutrition among	Teaching Methodology • Lecture	Type Of Assessment • SBQs

		children under and over 5 years of age. • Discuss the epidemiology of Malnutrition in Pakistan. • Discriminate between Kwashiorkor and Marasmus • Discuss the strategies for controlling malnutrition in Pakistan		
3.	Food preservation, fortification and adulteration/ Food Poisoning	• Define food preservation, fortification and adulteration. • Describe the public health importance of food preservation and fortification. • Discriminate between food adulteration and fortification. • Define food poisoning • Describe what causes food poisoning • Explain the effects of food poisoning	Teaching Methodology • Lecture	Type Of Assessment • SBQs

INFORMATION, EDUCATION & COMMUNICATION

Learning Outcomes:

- This course has been designed to introduce the basics of Health Education and Communication.
- The course will enable the graduates to understand the importance of Health Education and its role in prevention of diseases and promotion of Health of the communities
- This course will also equip the students with various skills of Communication and modes/methods of transferring health related knowledge to others, which will lead to positive behavior change.
- Social Sciences and its role in Public Health will also be covered in this course, which will ultimately help graduates in understanding and applying the holistic approach of Health

Rationale: Health Education and Communication is an important specialty of Community Medicine, which aims to spread health awareness amongst masses through well trained healthcare providers. The graduates may apply the knowledge and skills of this module in protection and promotion of health and well-being of the community, which makes it possible that "Prevention is better than Cure".

S.N Wks	Content/Area	Learning Objectives	Teaching strategy	Assessment Tool
wk. 1	Health Education: Concept, Aims and Objectives, Principles and Stages of Health Education	• To understand the Health Education • To discuss the importance of Health • To describe the Aims and Objectives of Health Education • To discuss various Principles of Health Education • To describe the Stages of Health Education	Lecture	Type Of Assessment • SBQs
wk. 2.	Communication Methods, Barriers and skills in Health Education	• To describe term Communication and its various Methods • To elaborate the Barriers of Communication and discuss how to overcome it.	Lecture	Type Of Assessment • SBQs

Wk 3.	Planning, Organizing and evaluating a Health Education Program	• To know how to organize a Health Education Program • To understand the Terms of IEC, KAP and BCC, through an example • To know the Steps of: Planning, Organizing and Evaluating the health education program	Lecture	Type Of Assessment • SBQs
Wk. 4	Types of Families, Social evils including Juvenile delinquency	• To define Family • To discuss various types of Families • To discuss the social evils and its consequences on Health	Lecture	Type Of Assessment • SBQs

MEDICAL DEMOGRAPHY (RE-VISIT)

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

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

EPIDEMIOLOGY (RE-VISIT)

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

- Classify epidemiological study designs and the most appropriate circumstances to use them.
- Describe epidemiological measures, calculate basic measures, and describe epidemiological patterns of disease occurrence.
- Describe, implement, and correctly calculate the different measures of occurrence and effects of disease.
- Classify different sampling techniques

S.NO	Content/Area	Learning Objectives	Teaching strategy	Assessment tool
1.	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
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.	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

BIOSTATISTICS (RE-VISIT)

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

- Describe measures of central tendency and measures of dispersion.
- To understand data interpretation using statistical tests

S.NO	Content/Area	Learning Objectives	Teaching strategy	Assessment tool
1.	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
2.	Statistical tests interpretations	• Define the statistical tests • Describe the different statistical tests. • Distinguish between categorical	Teaching Methodology	Type Of Assessment • SBQs

		and continuous measures. • Describe the interpretation of data analyzed through t-test and Chi-square test	• Lecture	

RESEARCH METHODS (RE-VISIT)

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

- 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)

S.NO	Content/Area	Learning Objectives	Teaching strategy	Assessment tool
1.	How to write a research proposal and develop research questionnaire	• Describe the major components of the research proposal. • Describe the SMART objectives in writing a research proposal. • Design a research questionnaire.	Teaching Methodology • Lecture	Type Of Assessment • SBQs
2.	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

Liaquat University of Medical
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THIRD PROFESSIONAL
MBBS 2022-23

DEPARTMENT OF
FORENSIC MEDICINE

ACADEMIC SESSION 2024-25

Parallel Integrated Module Committee
Forensic Medicine & Toxicology
LUMHS, Jamshoro

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RATIONALE

Forensic Medicine is one of the largest and most important areas of Forensic Science. Forensic Science is imperative to the detection or investigation of crime that has a pivotal role in the administration and execution of justice.

By studying the forensic medicine, the main aim is to prepare a responsible and competent medical professional who can efficiently apply his/her knowledge with an objective approach to deal with the problems of medico-legal nature confirmed by the society in order to help the administration of law for the furtherance of justice.

The learning objectives:

- Conduct a competent medico-legal autopsy, collect appropriate evidence pertaining to cause/mode/manner of death and identification of deceased and assailant. They must also be able to understand and interpret other important medico-legal aspects of death due to natural and unnatural conditions and poisonings.
- Have fundamental knowledge of all branches of medical disciplines related to their medico-legal applications. They must also be able to refer and understand relevant application of few other branches of science like botany, zoology, chemistry, and physics. It is also expected that they must be reasonably aware of using computer.
- Be aware of laws in relation to medico-legal work, medical practice and be acquainted with related relevant amendments and also related judgments passed by constitutional courts.
- Understand the important procedures and applicability of the general principals of analytical toxicology, ballistics, and immunology, occupational and environmental hazards

General learning outcomes:

By the end of this course, the students should achieve the following outcomes in the form of cognitive, psychomotor and affective domains:

Cognitive Domain: At the end of course, a student is able to:

1. Understand the prevailing laws and legal procedure of the country.
2. Understand the phenomenon of death and the background regarding evolution of various concepts, regarding death.
3. Understand the effects of violence on human body.
4. Enumerate the various toxic agents and intentionally/inadvertently in our environments.
5. Understand the importance and value of biological/non-biological specimens in

medico-legal work recognizes the significance of medico-legal documents prepared to denote the physical, sexual and mental condition of a person.

Pyschomotor Domain: Student after completion of course is able to:

1. perform physical examination and make accurate observations regarding physical, sexual and mental trauma caused by various causative agents/ actions.
2. Recover and preserve biological and non- biological material from human body both in living and dead.
3. Recognize, collect and preserve trace evidence providing clues regarding personal identification, crime detection from the locus of incident, living and dead body.
4. Dispatch with justification, the biological and non-biological material to appropriate laboratory/agency, maintaining the chain of custody.
5. Conduct autopsy on dead and exhumed bodies.
6. Examine the skeletonized material and fragmentary remains for identification and detect cause, manner and time of death by using scientific knowledge and procedures.
7. Diagnose, resuscitate and manage a case of poisoning.
8. Prepare medical documents depicting comprehensive report of his/her observations and scientific opinion regarding the examination of living and dead for production before the investigators, attorneys and courts.

Affective Domain: At the end of course, a student is able to display following virtues of personal character:

1. Depicts in his/her actions sense of responsibility towards state, community.
2. Demonstrate honesty and professionalism while certifying and testifying a medico-legal case.
3. Believe in the value of truth, devotion and dedication while performing his professional duties.
4. Facilitate the transfer of information that is required for the diagnosis and management of a case of poisoning.
5. Distinguish his/her professional obligation vis-à-vis privileges.
6. Equip and abreast himself/herself of latest technical and legal advancements in the field of medical, forensic sciences and law.
7. Recognize the role of planning, organizing and working of a medico-legal center including autopsy and medico-legal examination setup that can fulfill the objectives of public service.
8. Deal with patient/injured and the relatives with compassion, sympathy in a non-discriminatory, non-prejudice and free manner.

Preserve confidentiality regarding his patient's clinical condition within possible limits in his/her commands.

Index of Parallel Integrated Module Forensic Medicine & Toxicology

S #	Wks	Module	Forensic Medicine			Demonstration / Tutorial Classes/Lab
1.	**8**	**Module: 1-2**	**Law in relation to Medical Man-I**	**Traumatology-I**	**Personal Identity-I**	Gen Toxi, Corrosive, Metallic, Medicinal, Food poisoning & Visit-1
2.	**5**	**Module: 3**	**Law in relation to Medical Man-II**	**Firearm injuries**	**Personal Identity-II**	Deliriant, Nux Vomica, Sedative, Kala-pathar Poisoning & Visit-2
3.	**4**	**Module: 4**	**Legal Procedure-I**	**Autopsy-I**	**Asphyxia-I**	Organophosphorus, Naphthalene, Cyanides, Opium/Heroin & Visit-3
4.	7	**Module: 5-6**	**Legal Procedure-II**	**Autopsy-II**	**Asphyxia-II**	Dependence/Drug addiction, Narcotics/Nicotine, Aluminum Phosphide Amphetamine, Hallucinogens & Animal Visit-4
5.	8	**Module: 7-9**	**Sexual Offences**	**Thanatology**	**Forensic Sexology**	Practical Work
6.	**4**	**Module: 10-11**	**Forensic Pediatrics**	**Traumatology-II**	**Forensic Psychiatry**	Alcohol, Carbon Monoxide, Fumigants poisoning & Visit-5

MODULE 1-2

At the end of the Module, the student should be able to do the following:

FORENSIC MEDICINE

S. NO	LEANING OBJECTIVES	TOPIC	TEACHING STRATEGY	ASSESSMENT
01	• Define Forensic Medicine and Toxicology and its various branches. • Discuss the importance and utility of Forensic Medicine and Toxicology and its various branches, its role in crime detection and other medical, legal and ethical issues in civilized society.	**Introduction Forensic Medicine**	**Interactive** Lecture	SBA, SEQs, OSPE & VIVA Voce
	LAWS IN RELATION TO MEDICAL MAN-1			
02	• Describe Hippocratic Oath and principles of Bioethics • Discuss the duties of doctor as advised by international code of medical ethics	**Medical Ethics**		
03	• Describe the composition, functions of Pakistan Medical & Dental Council at present and its role in medical education	**PM & DC**		
04	• **Define** Privileges & obligations of registered medical practitioners • **Define** consent**, types of consent &** roles of consent in Medical Examination • **Discuss** Criteria for giving valid consent • **Define** Doctrine of informed consent • **Determine** Certain legal deviations/exemptions of consent	**Consent**	**Interactive Lecture**	SBA, SEQs, OSPE & VIVA Voce
	TRAUMATOLOGY-I			
05	• Discuss Mechanism of mechanical injury • Classify Mechanical Injuries • Define Injury, Hurt, Wound, Assault and Battery • Describe Blunt weapon injuries- Abrasions, Bruises with medico legal significance.	**Mechanical Injuries-1**		
06	• Describe Lacerated wounds, types, mechanism of production and medico legal significance	**Mechanical Injuries-2**	**Interactive** Lecture	SBA, SEQs, OSPE & VIVA Voce
07	• Describe Sharp weapon injuries • Describe Incised wounds with medico legal significance.	**Mechanical Injuries-3**		
08	• Describe Stab wounds with medico legal significance.	**Mechanical Injuries-4**		
09	• Intro of Qisas & Diyat Ordinance. • Define & classify Qisas & Diyat.	**Qisas & Diyat Ordinance-1**		

10	• Discuss Law regarding wounding of person. • Discuss Shajjah & Jurh • Discuss interpretation of injuries accordingly.	**Qisas & Diyat Ordinance-2**		
	PERSONAL IDENTITY- I			
11	• Intro of Personal Identity. • Describe Parameters of identification. • Discuss methods identification • Describe **Complete and partial identification.** • Describe **Identification in living and dead.** • Discuss Locard's principle of exchange & its medico legal importance	**Personal Identification**		
12	• Describe Determination of race • Discuss Osteometric indices • Determine Sex and intersex states	**Race & Sex Determination**	**Interactive** Lecture	SBA, SEQs, OSPE & VIVA Voce
13	• Determine Age estimation in medico legal cases by General examination • Discuss Medico legal importance of age	**Age Determination**		
14	• **Define** Forensic Odontology & Radiology • **Disc**uss Medicolega**l** importance of Forensic Odontology & Radiology	**Forensic Odontology & Radiology**		
	DEMONSTRATION /TUTORIALS CLASS /LAB			
	GENERAL TOXICOLOGY			
01	• Discuss Toxicology, Forensic Toxicology (Intro) • Define poison & Its Classification • Explain routes of administration and elimination of poisons from the body. • Describe the factors modifying action of poisons. • Discuss diagnosis of poisoning in living & dead.	**General Toxicology-1**		
02	• Enlist the common household poisons • Discuss the duties of doctor in a case of poisoning. • Discuss Law to related toxicology. • Discuss the forensic aspects of poisons. • Discuss General management of acute & chronic poisoning in living. • Enumerate the collection Preservation and dispatch evidentiary material in living & dead.	**General Toxicology-2**	Interactive lecture/ Practical	OSPE & Viva Voce

SPECIAL TOXICOLOGY

03	• Define Corrosive & classify. • Discuss mode of action, signs & symptoms, effects on different parts of body, different test and its management. • Discuss postmortem appearance(s) and medicolegal importance. • Define vitriolage and discuss its features, effect & punishment.	**Corrosive Poisoning (Oxalic Acid, Carbolic Acid [Phenol], Sulphuric Acid & Hydrochloric Acid)**		
04	• Describe general principles & basic methodology • Define procedure of enhanced elimination of poisoning regarding arsenic, lead, mercury & copper. • Discuss treatment of poisoning • Enumerate supportive & antidote therapy • Enlist of Medicolegal aspects of Metallic poisoning • Discuss post mortem finding	**Metallic Poisoning (Lead, Arsenis, Mercury & Copper poisoning)**		
05	• Discuss the mechanism of medicinal poisoning • Discuss symptoms, signs & management of poisoning. • Discuss postmortem appearance and Medicolegal aspects of medicinal poisoning.	**Medicinal Poisoning (Paracetamol & Salicylic Acid)**	Interactive lecture/ Practical	OSPE & Viva Voce
06	• Define food poisoning • Differentiate b/w food infection and food intoxication • Enlist the bacteria causing food poisoning • Discuss S/S, Diagnosis & Mgt of food poisoning • Describe the measure how to prevent food poisoning	**Food Poisoning**		
07	• Discuss procedure of CPD of Biological & other evidentiary materials	**Visit-1 (Forensic Museum, Forensic Science Lab/Forensic Molecular Biological Lab for DNA Testing)**		

MODULE 3:

At the end of the Module, the student should be able to do the following:

FORENSIC MEDICINE

S. NO	LEARNING OBJECTIVES	TOPIC	TEACHING STRATEGY	ASSESSMENT
	LAWS IN RELATION TO MEDICAL MAN-II			
01	• Define negligence, & its types. • **Define** Professional negligence • **Discuss** Res-Ipsa-Liquotar, Novus Actus Inter venus & **Vicarious Liability** • **List 5 D'S for plaintiff's success**	**Medical Negligence**	**Interactive Lecture**	SBA, SEQs, OSPE & VIVA Voce
02	• Discuss Professional Secrecy & misconduct (Infamous conduct)	**Professional Misconduct**		
	FIREARM INJURIES			
03	•Define Ballistics, types of ballistics •Discuss Parts of a firearm weapon •Describe Cartridges of different firearms and types of projectiles i.e., pellets, bullets	**Firearm/Ballistics-1**		
04	•Define Types of gun powder •Discuss Mechanism of fire in firearm weapons	**Firearm/Ballistics-2**		
05	•Discuss Characteristic features of wound of entry and exit of firearms •Describe Estimation of distance of fire	**Firearm Injuries-1**	**Interactive Lecture**	SBA, SEQs, OSPE & VIVA Voce
06	•Discuss Fabricated firearm injuries •Discuss Postmortem findings in cases of firearm injuries	**Firearm Injuries-2**		
	PERSONAL IDENTITY – II			
07	•Discuss **Acquired and congenital deformities.** • Define **Tattoo marks.** • Medicolegal Importance of Name, Age, Sex & Race.	**Methods of Identification**		
08	• Define dactylography & its types • Discuss medicolegal importance of fingerprint	**Dactylography**	**Interactive Lecture**	SBA, SEQs, OSPE & VIVA Voce
09	• Discuss **Identification of a dead, decomposed body.** • Discuss **Mutilated & burnt bodies, Skeletal & Fragmentary remains.**	**Mass Disaster Identification**		
10	• Discuss application of Blood groups in forensic work & DNA	**Forensic Serology-1**		

	profiling. • Discuss disputed paternity & maternity. • Discuss Laboratory tests for examination of a blood staining.			
11	• Appraise the forensic importance of biological specimens (Semen, Saliva, Vomitus, Urine & Hair) • Discuss trace evidence	**Forensic Serology-2 & Trace Evidence**		
	DEMONSTRATION /TUTORIALS CLASS /LAB			
	SPECIAL TOXICOLOGY			
01	• Introduction & Classify types of Deliriants poisons. • Discuss Clinical Features of Acute & Chronic Poisoning, investigation techniques for the detection. • Discuss Mode of action, Metabolism, Fatal doses, antidote and management • Discuss P/M appearances & medicolegal importance of deliriant poisons.	**Deliriants Poison(s) (Cannabis Indica, Cocaine & Dhatura)**		
02	Describe symptoms, signs, treatment and Medicolegal importance of poisoning by Nux Vomica.	**Nux Vomica**		
03	• Define Properties, Pharmacological Action, Absorption, Distribution & Elimination of Barbiturates. • Explain Classification, Features of Acute & Chronic Toxicity & the Methods used for the Detection, Management & Postmortem changes in a Victim of Barbiturate Toxicity. • Discuss Fatal & Lethal Doses, Medico-legal Aspects of Barbiturates.	**Sedative Poison(s) (Barbiturates)**	Interactive lecture/ Practical	OSPE & Viva Voce
04	• Classify types of snakes • Discuss Diagnosis, Clinical features & Management of a snake bite • Discuss PM appearance and ML importance.	**Animal Poison(s) (Snake Bites)**		
05	• Define Paraphenylenediamine	**Paraphenylenediamine**		

	Poisoning. • Explain clinical features, laboratory findings and outcomes of PPD poisoning. • Discuss post mortem findings & Medicolegal importance of Kala pathar.	**(Kala Pather)**		
06	• Observe Mental Health Ordinance	**Visit-2 (Sir Cowjee Institute of Behavioural Sciences)**		

MODULE 4:

At the end of the Module, the student should be able to do the following:

S. NO	LEARNING OBJECTIVES	TOPIC	TEACHING STRATEGY	ASSESSMENT
		LEGAL PROCEDURES – I		
01	• Define important legal terms such as Summons, warrant, perjury, deposition, exhibit, offence, cognizable offence, non-cognizable offence, oath, conduct money, summons case, warrant case, bail &FIR.	**Legal Terminology**		
02	• Differentiate between dying declaration and dying deposition • Define the types of witnesses, types of examination in the court • Describe the recording of evidence and procedure of court attendance with special emphasis on the guidelines for doctor in the witness box • Explain Professional secrecy and Privileged communication • Describe Medical evidence, types of evidence (oral, documentary, hearsay, circumstantial)	**Court Evidence**	**Interactive Lecture**	SBA, SEQs, OSPE & VIVA Voce
03	• Describe the Documents prepared by a medical man • Discuss Medico Legal Reports • Discuss Post mortem Reports	**Medicolegal Documents**		
		AUTOPSY-I		
04	• Define Autopsy, • Discuss Aims, objects & Autopsy protocol • Classify Types of autopsies • Discuss establishment of autopsy suit • **Describe** Types of incisions • **Describe** Techniques of autopsy • **Discuss** Negative and Obscure autopsy	**Autopsy-1**	**Interactive Lecture**	SBA, SEQs, OSPE & VIVA Voce
05	• **Discuss** Autopsy protocol	**Autopsy-2**		

	• **Describe** Types of incisions • **Describe** Techniques of autopsy • **Discuss** Negative and Obscure autopsy			
	ASPHYXIA-I			
06	• Discuss etiology, Patho physiology of asphyxia & stages of asphyxia. • Describe Hanging, types of hanging • Describe postmortem findings of hanging **&** Throttling	**Asphyxia-1 (Intro, Hanging & Throttling)**	**Interactive Lecture**	SBA, SEQs, OSPE & VIVA Voce
07	• **Describe death from asphyxia and postmortem appearance of** Suffocation, Smothering, choking & Strangulation	**Asphyxia-2 (Suffocation, Smothe**ring, Chocking & Strangulation)		
	DEMONSTRATION /TUTORIALS CLASS /LAB			
	SPECIAL TOXICOLOGY			
01	• Discuss the mode of action. Describe common uses of organophosphorus. • Discuss the clinical feature & evaluation of a patient with suspected organophosphorus toxicity. • Explain management of organophosphorus poisoning & medicolegal importance of it. • Discuss postmortem appearance and medicolegal importance.	**Organophosphorus Poisoning**		
2	• Enlist the other names of Naphthalene • Discuss routes of transmission of Naphthalene in body • Describe the clinical features, fatal dose and fatal period & management of Naphthalene toxicity. • Enlist the uses of Naphthalene. • Describe Principles and basic methodologies in treatment of poisoning: decontamination, supportive therapy, antidote therapy, procedures of enhanced elimination with regard to cyanides. • Discuss medicolegal importance.	**Naphthalene & Cyanides**	Interactive lecture/ Practical	OSPE & Viva Voce
03	• Define Narcotics (Opium & Heroin). • Discuss S/S of acute & chronic opium poisoning. • Discuss fatal dose & fatal period and management of narcotics. • Define heroin addiction • Discuss causes, symptoms and withdrawal	**Opium & Heroin**		

	of heroin addiction. • Discuss prevention to avoid side affects • Discuss postmortem appearance and medico legal aspect of Narcotics. • Observe Medico legal Examinations			
04		**Visit-3 (MLC Section LUH Hyd/Jamshoro)**		

MODULE 5-6:

At the end of the Module, the student should be able to do the following:

S. NO	LEARNING OBJECTIVES	TOPIC	TEACHING STRATEGY	ASSESSMENT
		LEGAL PROCEDURES – II		
01	• Describe the Documents prepared by a medical man (Certificates such as birth certificates, death certificates, prescription writing, sickness certificates, consent form, certificates of Physical fitness to drive a vehicle & Medical certificate for estimation of age)	**Medical Certificates**	**Interactive Lecture**	SBA, SEQs, OSPE & VIVA Voce
02	• Describe the Criminal Justice system in Pakistan, • Describe Pakistan Penal Code, Criminal Procedure Code and its execution and delivery • List the general presumptions and exemptions of law	**Criminal Justice System**		
		AUTOPSY-II		
03	• **Discuss** Internal examination of Cranial, thoracic and abdominal cavities & Dissection of viscera's	**Internal Examinations of Dead body**	**Interactive Lecture**	SBA, SEQs, OSPE & VIVA Voce
	• Explain Exhumation procedure	**Exhumation**		
04	• **Explain** Preservation of viscera for Chemical and Histo pathological examination • **Explain** Preservatives used in mortuary			
		ASPHYXIA-II		
05	• Define Drowning, its types • Discuss Mechanism of drowning • Describe Causes of death in drowning • Discuss Postmortem finding of drowning • Define Diatoms and their medico legal significance	**Drowning**	**Interactive Lecture**	SBA, SEQs, OSPE & VIVA Voce
06	• Discuss Traumatic Asphyxia • Discuss Sexual asphyxia (auto erotic asphyxia)	**Traumatic & Sexual Asphyxia**		

DEMONSTRATION /TUTORIALS CLASS /LAB

SPECIAL TOXICOLOGY

01	• Define drug, drug dependence & drug addiction. • Enlist addictive drugs. • Define drug abuse, habituation, hypnotics & narcotics. • Discuss different terminologies i.e. physical & psychological dependence, psychotropic drugs, sedative, stimulants and tolerance. • Discuss the law relate to drug Addiction/Abuse. • Discuss management of drug Addiction /Abuse.	**Dependence/ Drug addiction**		
02	• Introduction (Definition, Pathophysiology) • Discuss sources, S/S, fatal dose and fatal period and Management. • Discuss postmortem appearances and medicolegal importances.	**Narcotics & Nicotine**		
03	• Discuss Mode of Poisoning, Sign & Symptoms, Fatal Dose & fatal period, Management, Postmortem Appearances & Medicolegal importance of Aluminum Phosphide.	**Aluminium Phosphide**	**Interactive lecture/ Practical**	OSPE & Viva Voce
04	• Discuss Introduction, source, mode of action, S/S, fatal dose, fatal period and management of Amphetamine, • Discuss Postmortem appearance. • Describe the medicolegal importance.	**Amphetamine**		
05	• Discuss Introduction, source, mode of action, S/S, fatal dose, fatal period and management of Hallucinogens. • Discuss Postmortem appearance. • Describe the medicolegal importance.	**Hallucinogens**		
06	• Classify types of snakes • Discuss Diagnosis, Clinical features & Management of a snake bite • Discuss PM appearance and ML importance.	**Animal Poison(s) (Snake Bites)**		
07	• Observe Postmortem examinations	**Visit-4 (Mortuary)**		

MODULE 7-9:

At the end of the Module, the student should be able to do the following:

S. NO	LEANING OBJECTIVES	TOPIC	TEACHING STRATEGY	ASSESSMENT
	SEXUAL OFFENCES			
01	• **Define & Classify Sexual offences** • Define **Legal definition of Rape** • Describe **Procedure of examination a victim & accused personof of rape and Collection of specimens during examination** • Define **Rape in children** • **Define** Incest and its legal aspects	**Sexual Offences (Intro) & Natural Sexual Offences and Its Legal Aspects**		
02	• **Define** Legal definition of sodomy and its types • **Describe** Examination of a victim of Sodomy • **Describe** Examination of a habitual passive agent (Catamite) and habitual active agent (Sodomite) • **Describe** Collection of samples from passive and active agent • **Define** Bestiality with examination • **Define** Tribadism or female homosexuality and its legal aspects • **Define** Buccal coitus	**Unnatural Sexual Offences and Its Legal Aspects**	**Interactive Lecture**	SBA, SEQs, OSPE & VIVA Voce
03	• Define Sexual perversions • Classify Sexual perversions • **Discuss** Sexual perversions	Sexual Perversions		
	THANATOLOGY			
04	• Define death • Explain **Scientific concepts regarding death** • Discuss WHO **criteria of death** • Explain **Medico-legal aspects of brain death, sudden & unexpected deaths.**	**Death**	**Interactive Lecture**	SBA, SEQs, OSPE & VIVA Voce
05	• Discuss **Cause, manner, mode and mechanism of death.**	**Cause, Manner, Mode & Mechanism of Death**		
06	• Describe Immediate signs of death with special stress on Somatic or clinical death • Define Suspended animation • Discuss Early changes after death such as Changes in the eye, Algor Mortis, Rigor Mortis & Livor Mortis.	**Immediate & Early Signs of Death**		
07	• Describe Physio-chemical changes in various body tissues and organs under	**Physio-Chemical**		

	various environmental conditions, such as changes in muscular system after death. • Describe Changes in the blood, CSF, Vitreous humor & Bone marrow	**Changes of Death** **Death Changes in Blood, CSF, Vitreous Humour & Bone Marrow**		
08	• Describe Late signs of death i.e., Putrefaction, mechanism, changes, gases of decomposition • Explain Adipocere formation & Mummification	**Decomposition**		
	FORENSIC SEXOLOGY			
09	• Describe Virginity and its medico legal perspectives • Describe Signs of virginity on medico legal examination • Differentiate between true and false virgin on examination. • Discuss Pregnancy and its legal aspects	**Virginity & Pregnancy**		
10	• **Define** Abortion, types of abortion & its Medico legal aspects • **Define** Criminal abortion and its types according to Pakistan Penal Code • **Describe** Causes of death in criminal abortion and autopsy finding • Describe Delivery and its medico legal aspects • **Describe** Signs of recent delivery in living & dead • **Describe** Signs of remote delivery in living & dead	**Abortion & Delivery**	**Interactive Lecture**	SBA, SEQs, OSPE & VIVA Voce
11	• Define Impotence, Sterility and Artificial insemination along with causes • **Describe** Consummation of marriage, causes of nullity of marriage and divorce from legal aspects • **Discuss** Examination of a case of impotency and how to give opinion in such a case	**Impotence**		
	Demonstration /Tutorials Class /Lab			
	Practical Work			
01	**Practical-1**			
02	**Practical-2**			
03	**Practical-3**		Interactive lecture/ Practical	OSPE & Viva Voce
04	**Practical-4**			
05	**Practical-5**			
06	**Practical-6**			
07	**Practical-7**			

MODULE 10-11:

At the end of the Module, the student should be able to do the following:

S. NO	LEARNING OBJECTIVES	TOPIC	TEACHING STRATEGY	ASSESSMENT
	FORENSIC PEDIATRICS			
01	• Define Infanticide & Feticide. • Differentiate Still born & Dead born baby • Describe Signs of live birth • Discuss Criminal causes of death of new born babies i.e., Acts of commission and acts of omission • Explain Autopsy on bodies of new born babies	**Infanticide**	**Interactive Lecture**	SBA, SEQs, OSPE & VIVA Voce
02	• Define Battered Baby Syndrome, Shaken Baby Syndrome • Discuss Etiology & Clinical Features of a battered baby. • Describe Injuries seen in Shaken Baby Syndrome with mechanism & legal importance of SIDS.	**Battered Baby Syndrome & Sudden Infant death syndrome (SIDS)**		
	FORENSIC PSYCHIATRY			
03	• Describe the Mental Health ordinance 2001 with special reference to admission, care and discharge of a mentally ill person.	**Mental Health Ordinance**		
04	• Describe Civil and criminal responsibilities of a mentally ill person. • Discuss Testamentary capacity. • Discuss McNaughten rules, Durham rule and Currens rule. • Define insanity & differentiate between true insanity from feigned insanity.	**Civil/ Criminal responsibilities of a mentally ill & Insanity**	**Interactive Lecture**	SBA, SEQs, OSPE & VIVA Voce
	TRAUMATOLOGY-II			
05	• Describe **Head injuries to scalp & Fractures of Skull and their medico legal significance.** • **Classify** types of injuries to the brain, spine & their Medico legal importance. • **Discuss Face &** Neck including different cervical fractures, whiplash injuries, homicidal and suicidal cut throat.	**Injuries of Head & Neck**		
06	• **Discuss Face &** Neck including different cervical fractures, whiplash injuries, homicidal and suicidal cut throat. • **Describe** chest injuries including traumatic asphyxia, injuries to ribs, lungs, heart with special emphasis on penetrating injuries and Commotion Cordis. • **Describe** Abdominal injuries with medico legal aspects of rupture of liver, spleen,	**Injuries of Chest & Abdomen**	**Interactive Lecture**	SBA, SEQs, OSPE & VIVA Voce

	injuries to abdominal aorta and intestines, • **Define** Pelvic injuries & its medico legal significance.			
07	• Define electrical burn and its types • Enlist the body tissues that are resistant to electrical burn & factors on which injury of electrical burn depends. • Describe the mortality of electrical burn • Define Features of injuries due to various types of electrical current.	**Thermal Injury & Burn**		
08	• Describe Causes of death due to electrocution. • Discuss Lightning injuries and lightning deaths.	**Electrocution/ Lightning**		
	DEMONSTRATION /TUTORIALS CLASS /LAB			
	SPECIAL TOXICOLOGY			
01	• Define alcohol & its metabolism • Discuss acute & chronic alcohol poisoning • Discuss diagnostic methods of alcohol poisoning, sample collection for examination and management. • Discuss postmortem appearances and medicolegal importance's.	**Alcohol**		
02	.• Define Properties, Common sources, common features for absorption, Clinical Features, methods for the detection of Carbon Monoxide & its management. •Discuss Postmortem changes & Medico-legal aspects of Carbon Monoxide Poisoning.	**Carbon Monoxide**	Interactive lecture/ Practical	OSPE & Viva Voce
03	• Define fumigants • Enlist most common fumigants. • Discuss procedure of fumigation. • Describe types of fumigation methods. • Discuss factors affecting fumigation efficacy. • Discuss advantages and disadvantages of fumigation.	**Fumigants**		
04	• Observe the Court procedures	**Visit-5 [Court(s)]**		

Practical Work/Skills: Forensic Museum & Laboratory sessions are important as they provide opportunity for experiential learning in terms of study of Models, Poisons, slides and identification of tissues. Mortuary, Court Visits Postmortem sessions are important part of & curriculum to achieve psychomotor and affective outcomes. This provides opportunity for medical students in & will stimulate contextual learning. For proper orientation and practical demonstration.

Visits:

Visit-1: Forensic Museum, Forensic science laboratory/ Forensic Molecular & Biological Laboratory for DNA testing, LUMHS, Jamshoro.

Visit-2: Sir Cowasjee Jehangir Institute of Psychiatry & Behavioural Sciences Hyderabad.

Visit-3: MLC Section LUH Hyderabad/Jamshoro

Visit-4: Mortuary @ MLC Section LUH Hyderabad/Jamshoro

Visit-5: Court

Practical's:

Practical-1: Medical Certificates

Practical-2: Medicolegal Examinations/Certificate(s)

Practical-3: Application of Qisas & Diyat Laws in Medical Practice

Practical-4: Clinical Examination(s) in case of Sexual Offences

Practical-5: Collection, Preservation & Dispatch of Biological & other evidentiary material

Practical-6: Examination (s)of Blood Stains Seminal Stains

Practical-7: Medicolegal Autopsies.

Practical-8: Exhumation Protocol & Autopsy Instruments.

11 EXAMINATION ASSESSMENT

ASSESSMENT PLAN FOR EACH PAPER	END OF YEAR ASSESMENT	INTERNAL EVALUATION	TOTAL %AGE
THEORY (SBQS)	80%	20%	100%
PRACTICAL EXAM (OSVE; OSPE)	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, practicals, assignments)	**3%**
	Block tests	**4%**
		10%
TOTAL		**20%**

11 LEARNING RESOURCES

Pathology:

- **TEXT BOOKS**
- Robbins & Cotran, Pathologic Basis of Disease, 9th edition.
- Rapid Review Pathology, 4th edition by Edward F. Goljan MD

Pharmacology:

- **TEXT BOOKS**
- Lippincot Illustrated Pharmacology
- Basic and Clinical Pharmacology by Katzung

MicroBiology:

- **TEXT BOOKS**
- Review of Medical Microbiology and Immunology, Seventeenth Edition 17th Edition by by Warren Levinson (Author), Peter Chin-Hong (Author), Elizabeth A. Joyce (Author), Jesse Nussbaum (Author), Brian Schwartz (Author)
- Jawetz Melnick & Adelbergs Medical Microbiology 28 Edition

PARASITOLOGY:

- **TEXT BOOKS**
- Parasitology (Protozoology and Helminthology) by KD Chatterjee. 13th Edition
- A Guide to Human Parasitology by Blacklock and Southwell Hardcover 10th edition

COMMUNITY MEDICINE

- Parks Textbook of Preventive and Social Medicine – Latest Edition - Author: K. Park
- Public Health and Community Medicine – 8th Edition - Author: Ilyas, Ansari
- Textbook of Community Medicine and Public Health – 1st Edition, Edited by: Saira Afzal - Sabeen Jalal
- Fundamental of Preventive Medicine – 5th Edition, Author: Dr. Zulfikar Ali Shaikh

FORENSIC MEDICINE & TOXICOLOGY

- Nasib R. Awan. Principles and practice of Forensic Medicine 1st ed. 2002.
- Parikh, C.K. Parikh's Textbook of Medical Jurisprudence, Forensic Medicine and Toxicology. 6th ed.1999.
- Knight B. Simpson's Forensic Medicine. 11th ed.1993.
- Polson. Polson's Essential of Forensic Medicine. 4th edition. 1985.
- Taylor. Taylor's Principles and Practice of Medical Jurisprudence. 1984.
- Gradwhol, R.B.H. Gradwhol's Legal Medicine. 3rd ed.1976.
- Rao. Atlas of Forensic Medicine.
- Govindiah. Color Atlas of Forensic Medicine. 1999.

CDs:

- Lectures on Forensic Medicine.
- Atlas of Forensic Medicine.

WEBSITES: www.forensicmedicine.co.uk

THE END