



LIAQUAT UNIVERSITY
OF MEDICAL & HEALTH SCIENCES,
JAMSHORO, SINDH

STUDY GUIDE

THIRD PROFESSIONAL MBBS

BATCH 2023-24

ACADEMIC SESSION 2025-26



ACADEMIC CALENDAR

Academic Session 2025-2026

Activity	Class Year	Dates
Classes starts	All Batches of MBBS	January 26, 2026
Summer Vacation/ Internship/Elective	1 st to Final Year MBBS	June 01 to 27, 2026
Classes Resumes	All Batches of MBBS	June 29, 2026
Classes Ends	1 st to 4 th Year MBBS	October 30, 2026
	Final Year MBBS	November 27, 2026
Exam Preparation	1 st to 4 th Year MBBS	November 01 to November 27, 2026
	Final Year MBBS	November 30 to December 25, 2026
Annual Examination	1 st to 4 th Year MBBS	November 30 to December 27, 2026
	Final Year MBBS	December 28, 2026 to January 30, 2027
New session will start	1 st to Final Year MBBS	January 11, 2027

THIRD PROFESIONAL MBBS (BATCH 2023-24)
FROM: MONDAY, 19 JANUARY 2026
TIME: 08.00AM TO 10.00AM

HOSPITAL POSTING

DATE	MEDICINE				ICU/ANESTHESIA EMERGENCY MED	PAEDS
	I	II	III	IV		
26-01-2026 TO 13-06-2026	A1	A2	A3	A4	A5	A6
16-02-2026 TO 06-03-2026	A2	A3	A4	A5	A6	A1
09-03-2026 TO 27-03-2026	A3	A4	A5	A6	A1	A2
30-03-2026 TO 17-04-2026	A4	A5	A6	A1	A2	A3
20-04-2026 TO 08-05-2026	A5	A6	A1	A2	A3	A4
11-05-2026 TO 29-05-2026	A6	A1	A2	A3	A4	A5
29-06-2026 TO 17-07-2026	B1	B2	B3	B4	B5	B6
20-07-2026 TO 07-08-2026	B2	B3	B4	B5	B6	B1
10-08-2026 TO 28-08-2026	B3	B4	B5	B6	B1	B2
31-08-2026 TO 18-09-2026	B4	B5	B6	B1	B2	B3
21-09-2026 TO 09-10-2026	B5	B6	B1	B2	B3	B4
12-10-2026 TO 30-10-2026	B6	B1	B2	B3	B4	B5
DATE	SURGERY				RADIOLOGY	NUCLEAR MEDICINE
	I	II	III	IV		
26-01-2026 TO 13-06-2026	B1	B2	B3	B4	B5	B6
16-02-2026 TO 06-03-2026	B2	B3	B4	B5	B6	B1
09-03-2026 TO 27-03-2026	B3	B4	B5	B6	B1	B2
30-03-2026 TO 17-04-2026	B4	B5	B6	B1	B2	B3
20-04-2026 TO 08-05-2026	B5	B6	B1	B2	B3	B4
11-05-2026 TO 29-05-2026	B6	B1	B2	B3	B4	B5
29-06-2026 TO 17-07-2026	A1	A2	A3	A4	A5	A6
20-07-2026 TO 07-08-2026	A2	A3	A4	A5	A6	A1
10-08-2026 TO 28-08-2026	A3	A4	A5	A6	A1	A2
31-08-2026 TO 18-09-2026	A4	A5	A6	A1	A2	A3
21-09-2026 TO 09-10-2026	A5	A6	A1	A2	A3	A4
12-10-2026 TO 30-10-2026	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 through the implementation of an integrated modular approach.

The cardiovascular system, musculoskeletal system, and respiratory system are few examples of system-based modules in an integrated modular curriculum that connects basic scientific knowledge to 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 teaching programme.

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 clinical conditions 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 in acquiring skills or attitudes. These sessions are organized with the help of specific tasks such as patient case, interviews or discussion topics. Students are then 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. Manzoor Ali Lakhair

Director Academics

Liaquat University of Medical & Health Sciences,
Jamshoro, Pakistan

STUDY GUIDE

A study guide is a strategic and effective approach to:

- ❖ Provide students a detailed framework of the modules organization
 - ❖ Support students in organizing and managing their studies throughout academic year.
 - ❖ Provide students information on assessment methods and the rules and regulations that apply.
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- 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 examinations and annual examinations on the student's overall performance.
 - Includes information on the assessment methods that will be held to determine every student's achievement of objectives.

ABBREVIATIONS

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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TEACHING FACULTY

DEPARTMENT OF PATHOLOGY			
VICE CHANCELLOR / PROFESSOR			
01	Prof. Ikram Din Ujjan		
PROFESSORS			
02	Prof Dr. Abid Hussain Chang {CHAIRMAN}		
03	Prof Dr. Kiran Amir {MODULE COORDINATOR}		
ASSOCIATE PROFESSORS			
04	Dr. Muhammad Rahil Khan		
05	Dr. Naila Shaikh		
06	Dr. Nazia Memon		
ASSISTANT PROFESSORS			
07	Dr. Zahida Shaikh		
08	Dr. Abdul Rehman Khalil		
09	Dr. Yousra Shafquat		
10	Dr. Zahid Ali Nohri		
11	Dr. Sidra Qadir		
12	Dr. Furqan Ahmed Bhatti		
13	Dr. Faheem Ahmed Memon		
LECTURERS			
14	Dr. Khalid Yousuf Memon	21	Dr. Ghulam Fatima
15	Dr. Shabnum Rustamani	22	Dr. Hina Khokhar
16	Dr. Muhammad Ali Memon	23	Dr. Elaf Rasool
17	Dr. Sorath Sindhu	24	Dr. Naureen Jalbani
18	Dr. Rameez Iqbal Memon	25	Dr. Sindhu Qasim
19	Dr. Yasmeen Bhutto	26	Dr. Sandhiya Kumari
20	Dr. Amara Urooj	27	Dr. Shariq Khan

DEPARTMENT OF PHARMACOLOGY	
ASSOCIATE PROFESSOR/ CHAIRMAN	
02	Dr. Mashkoor Ahmed Ansari
ASSISTANT PROFESSOR	
03	Dr. Gunesh Kumar
04	Dr. Sadat Memon
LECTURERS	
05	Dr. Adeela Mangrio
06	Dr. Rizwan Memon
07	Dr. Fazeela Mariam Memon
08	Dr. Naveeta Bai
09	Dr Mahnoor Legahri

DEPARTMENT OF COMMUNITY MEDICINE	
PROFESSOR/ CHAIRMAN	
01	Prof Dr. Muhammad Ilyas Siddiqui {DEAN COMMUNITY AND PUBLIC HEALTH}
02	Prof Dr. Shazia Rahman Shaikh {CHAIRPERSON}
ASSOCIATE PROFESSOR	
03	Dr. Gulzar Usman
04	Dr. Ambreen Aziz Sahito
ASSISTANT PROFESSORS	
05	Dr. Tariq Feroze
06	Dr. Faiza Memon
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11	Dr. Sindhu Almas
12	Dr. Urooj Din
13	Dr. Pirah Zardari
14	Dr. Sumaira
15	Dr. Sadaf Ujjan

DEPARTMENT OF FORENSIC MEDICINE	
PROFESSOR/ CHAIRMAN	
01	Dr. Waheed Ali Nahiyoan
ASSOCIATE PROFESSORS	
02	Dr. Abdul Samad Memon
03	Dr. Aisha Khalid
04	Dr. Ishrat Bibi
ASSISTANT PROFESSORS	
05	Dr. Nadia Aslam
LECTURERS	
06	Dr. Memoona Jameel Halepoto
07	Dr Zafar Ali Sehinro
08	Dr. Mahira Aijaz Kazi

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 productive by including several interactive 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 the future.

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 of the 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 in Apoptosis 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 cytogenetic terminology

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 Mendelian 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				
10	- 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				
11	- Define edema - Describe Pathophysiology of edema	Fnd-S2-Path-10 Edema	Interactive Lecture	SBQs & OSVE
12	- Define Hemorrhage, Hyperemia, Congestion - Describe their causes and pathophysiology	Fnd-S2-Path-11 Hyperemia, Congestion		
13	- Define Shock - Describe the pathophysiology of different type of Shock.	Fnd-S2-Path-12 Shock		
14	- Define Infarction - Discuss the etiology of infarction - Discuss the morphological classification of infarcts - Describe the morphological features of infarctions.	Fnd-S2-Path-13 Infarction		
15	- 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				
16	- 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 Infectious diseases 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 spread knowledge 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 relate with 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 of the 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 should also understand the rationale of the investigations to diagnose these diseases. They should also know the pharmacology of the various drugs used to treat infectious disease and the rationale to treat the common diseases.

Duration: 06 weeks

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

- ☐ Describe pathogenesis & clinical presentations of common bacterial, viral, fungal & microbial infections.
- ☐ 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 TEACHING STRATEGIES

S. #	LEANING OBJECTIVES	TOPIC	TEACHING STRATEGY	ASSESSMENT
Pathology				
1	Enlist essential and non-essential components of a typical bacterial cell with their function	ID-S2-Path-1 Bacterial Structure	Interactive Lecture	SBQs & OSVE
2	- Classify bacteria on the basis of Gram staining. - Differentiate characteristics of gram- positive and gram-negative bacteria - Define normal flora. - Describe colonization of normal flora. - Name the members of normal flora with their appropriate anatomical locations	ID-S2-Path-2 Classification of bacteria & normal flora (human microbiota)		
3	- Define acute inflammation - Describe the sequence of vascular changes - Define exudates and transudate and their mechanism of formation	ID-S2-Path-3 General features of inflammation & vascular changes		
4	- Describe the acute inflammatory cells and their functions. - Name the various types of chemical mediators & their role - Describe the local and general clinical features of acute inflammation	ID-S2-Path-4 Cellular events of Chemotaxis, phagocytosis		
5	- Define chronic Inflammation - Describe the characteristic features and types of chronic Inflammation - Define granuloma, mention an etiological classification of granuloma with examples	ID-S2-Path-5 Chronic inflammation		
Microbiology				
6	- Outline various methods for transfer of genetic 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 and RNA 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 of action & 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. #	LEARNING OBJECTIVES	TOPIC	TEACHING STRATEGY	ASSESSMENT
Microbiology				
12	- Differentiate b/w true pathogens, opportunists and commensals - 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 and commensals - 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. #	LEARNING 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 and regeneration - Describe the mechanisms of primary and secondary wound heal - Distinguish the differences between healing by first and secondary intention	ID-S2-Path-06 Healing & Repair	Interactive Lecture	SBQs & OSVE

	- List the local and general factors influencing healing - List the complications of wound healing			
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Theme 3: Pyogenic Bacteria

S. #	LEARNING 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 of diphtheria & 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 chloramphenicol	ID-S2-Pharm-8 Chloramphenicol		
36	Describe classification, mechanism of action & side effects of sulfonamides	ID-S2-Pharm-9 Sulfonamides		
37	Describe classification, mechanism of action & side effects of fluoroquinolones	ID-S2-Pharm-10 Fluoroquinolones		

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 positive bacilli (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	Interactive Lecture	SBQs & OSVE
45	Classify anti helminths drugs with their mechanism and side effects	ID-S2-Phar-12 Anti-parasitic drugs/ anti helminths drugs		
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. #	LEARNING 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 HIV infection - Outline opportunistic infection in late stage of AIDS	ID-S2-Micb-31 HIV		
50	- Classify medically important Trematodes - Describe life cycle clinical feature and lab. diagnosis	ID-S2-Micb-32 Trematodes (Flukes)		
51	- Classify medically important Tissue Nematodes - 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 for treatment of dengue fever	ID-S2-Pharm-14 Anti-viral drugs for dengue fever	Interactive Lecture	SBQs & OSVE
54	Describe the antiviral drugs used for treatment of HIV with their mechanisms and side effects.	ID-S2-Pharm-15 Antiretroviral drugs		
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 expected to critically think about the clinical 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 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 Health Promoter
- ☐ Problem-solver
- ☐ Professional
- ☐ Researcher
- ☐ Leader and Role Model

Cognitive Domain

- ☐ To Describe Neoplasia, its etiology, pathophysiology, molecular basis, diagnosis of cancers and its therapy.
- ☐ Explain the pathophysiology, clinical features and diagnostic approach of various Red cell disorders.
- ☐ 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: Palloriness (Anaemia)
- Theme 3: Hemostatic abnormalities
- Theme 4: Lymphadenopathy
- Theme 5: Hematological Malignancies
- Theme 6: Immunological disorders & Transplantation

TOPICS WITH SPECIFIC LEARNING OBJECTIVES AND TEACHING STRATEGIES

Theme 1: Oncology

S. #	LEARNING OBJECTIVES	TOPIC	TEACHING STRATEGY	ASSESSMENT
Pathology				
1	- Describe the definition of neoplasia. - Describe the nomenclature of neoplasia.	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 malignant transformation - 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 of cancers - To discuss different types of carcinogens - To discuss the Mechanism of action of radiation carcinogen	Hem-S2-Path-5 Carcinogenic Agents (Radiation Carcinogenesis)		

6	To discuss the Mechanism of action of 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: Palloriness (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 filmfindings 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 Hemostasis - 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 Purpura (TTP) and Hemolytic Uremic Syndrome (HUS) - Define and explain Disseminate Intravascular Coagulopathy (DIC)	Hem-S2-Path-14 MAHA (Microangiopathic 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, drug interactions 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 of the Thrombolytic drugs.	Hem-S2-Pharm-8 Fibrinolytic and Anti-fibrinolytic Drugs		
Clinical Lectures				
28	Discuss approach to a patient with Thrombotic 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 with deep 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's lymphoma	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 of Lymphoma	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 of acute leukemias - Describe the pathogenesis, clinical features and laboratory diagnosis of Acute Myeloid leukemia.	Hem-S2-Path-23 Acute Myeloid leukemia	Interactive Lecture	SBQs & OSVE
40	Describe the pathogenesis, clinical features and laboratory diagnosis of Acute Lymphoblastic leukemia.	Hem-S2-Path-24 Acute Lymphoblastic Leukemia		
41	- The classification of Myeloproliferative disorders - Discuss the pathogenesis, clinical features and laboratory diagnosis of Chronic 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
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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 of different 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 respiratory diseases.

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 peers, staff and teachers
- Demonstrate professionalism and ethical values in dealing with patients, peers, staff and teachers.
- Communicate effectively in a team with peers 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 TEACHING STRATEGIES

Theme 1: Lung Injury, Edema, Collapse & Obstructive Pulmonary Diseases

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 histopathological features	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	Interactive 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 adenomatous hyperplasia - 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 the differential 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 peers, 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 TEACHING STRATEGIES

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 Heart Disease		
7	Interpret the following on a given biochemical 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 based on the mechanism of action. - Describe adverse effects and drug interaction 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 and classify it. - Describe the pathogenesis, patterns, morphological changes, clinical features, and complications of various cardiomyopathies.	CVS-S2-Path-6 Cardiomyopathies	Interactive Lecture	SBQs & OSVE
12	- Define valvular stenosis and insufficiency. - 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 Heart Disease		

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 of drugs used in CCF.	CVS-S2-Pharm-7 Drugs used to treat Congestive Cardiac Failure (CCF)		
Clinical Lecture				
15	- Describe the sign and symptoms of RF and RHD - Describe the drugs used to treat RHD and their 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.			
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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 given histopathology 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 productive by including several interactive 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 Liver Disease, 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 their 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 the disease in order to reduce morbidity and mortality.

This module provides an integrative understanding and detailed and clinically relevant information of pathology 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 processes related 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 TEACHING STRATEGIES

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
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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 ulcer and 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 peptic disease and endoscopic management of bleeding peptic ulcer	GIL-S2-Med-2 Diagnosis and management of gastritis/Acid peptic disease and endoscopic management of bleeding peptic ulcer	Interactive Lecture	SBQs & OSVE

14	Surgical management in Acid peptic disease and carcinoma of stomach.	GIL-S2-Surg-2 Surgical management in Acid peptic disease & carcinoma of stomach.	
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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 coeliac 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 microbial agents 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 of small 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) - Rotor's 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 and microscopic 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 hepatic failure	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 hepatorenal 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) directly into 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 endocrine hormone 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 adrenocorticotrophic (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 of diabetes mellitus.
- Describe the pharmacokinetics, mechanism of action and adverse effects of insulin and oral hypoglycemic agents.
- Classify mineralocorticoids & glucocorticoids on the basis of duration of action, anti-inflammatory and 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 consequences of specific endocrine disorders.
- Discuss the epidemiology and consequences of iodine deficiency and the salient features of iodine control 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 TEACHING STRATEGIES

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 - Lactotroph Adenoma - Somatotroph Adenoma - Corticotroph Adenoma - Other Anterior Pituitary Tumors - 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			
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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 thyroidadenoma and papillary carcinoma	End-S2 Path-7 Thyroid Neoplasms-I		
12	• Causes, pathogenesis, morphological features and laboratory diagnosis of follicularcarcinoma, 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 itsinterpretation 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	End-S2-Pharm-2+3 Thyroid and Parathyroid hormones	Interactive Lecture	SBQs & OSVE
17	• Drugs used in parathyroid disorders(Tetany)			
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 and laboratory 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 II diabetes 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 Hypocortisolism (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 adrenal cortex 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	Discuss the 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 and productive by including several interactive 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 with systemic 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 with systemic 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 TEACHING STRATEGIES

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

S. #	LEARNING OBJECTIVES	TOPIC	TEACHING STRATEGY	ASSESSMENT
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 clinical features 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 system disorders and Isolated glomerular abnormalities		
5	- Name kidney function test - Mention clinical interpretation of serum urea, creatinine, BUN and creatinine clearance test.	EXC-S2-Path-5 Kidney function tests	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 tubulointerstitial injury - Etiology, pathogenesis and morphology of acute tubular necrosis. - Describe etiopathogenesis and morphology of tubulointerstitial nephritis.	EXC-S2-Path-6 Tubulo interstitial Injury	Interactive Lecture	SBQs & OSVE
7	- Identify predisposing factors of pyelonephritis - Describe causes, pathogenic mechanisms and morphology of acute pyelonephritis. - Describe clinical course and complications of acute pyelonephritis.	EXC-S2-Path-7 Pyelonephritis		
8	- Define chronic pyelonephritis - Enumerate causes and morphological features of chronic pyelonephritis.	EXC-S2-Path-8 Chronic Pyelonephritis		
9	- Identify the causes of UTI. - Describe predisposing factors and clinical presentation.	EXC-S2-Path-9 Urinary tract infections		
10	- Classify renal vascular disease. - Discuss etiology, pathogenesis, morphology, clinical features of benign and malignant nephrosclerosis. - Define renal artery stenosis mention its causes, clinical features. Describe thrombotic microangiopathy and other vascular disorders	EXC-S2-Path-10 Renal Vascular disease		
11	Describe urine detail report and different methods of urine culture	EXC-S2-Path-11 Urine Analysis and Urine Culture	Practical	OSPE & OSVE

Theme 3: Obstructive Uropathy (Urolithiasis, Hydronephrosis)

S. #	LEARNING OBJECTIVES	TOPIC	TEACHING STRATEGY	ASSESSMENT
Pathology				
12	- Name various types of renal calculi. - 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 productive by including several interactive activities.

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

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

Rationale

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

This module will enable the students of fourth year to recognize the clinical presentations of common reproductive diseases. The student will develop the understanding of the pathology, clinical presentation, and diagnosis 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 TEACHING STRATEGIES

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	
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		SBQs & OSVE
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 genital tract - 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, their clinical 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 may require 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 and productive by including several interactive 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 with essential 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, diagnostic techniques, 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 Forming Tumors and Tumors of Unknown Origin
- Theme 4: Soft Tissue Tumors

TOPICS WITH SPECIFIC LEARNING OBJECTIVES AND TEACHING STRATEGIES

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

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

Theme 2: Fracture, Osteomyelitis and Arthritis

S. #	LEARNING OBJECTIVES	TOPIC	TEACHING STRATEGY	ASSESSMENT
3	- Define terms related to fracture - Describe mechanism of bone healing - Complications of fracture - Pathophysiology of bone infection (osteomyelitis)	MSK-S2-Path-3 Fractures, bone repair and 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 osteoarthritis and 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, Malignant Bone 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 Forming Tumors	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 Adipose Tissue - Lipoma - Liposarcoma - Fibrous Tumors - Nodular Fasciitis - Fibromatoses - Superficial Fibromatosis - Deep Fibromatosis (Desmoid Tumors) - Skeletal Muscle Tumors - Rhabdomyosarcoma - Smooth Muscle Tumors - Leiomyoma - Leiomyosarcoma	MSK-S2-Path-8 Soft Tissue Tumors	Interactive Lecture	SBQs & OSVE
9	Gross and Microscopic Features	MSK-S2-Path-9 Soft Tissue Tumors	Practical	OSPE & OSVE

Theme 5: Skin Module

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

S. #	LEARNING OBJECTIVES	TOPIC	TEACHING STRATEGY	ASSESSMENT
10	Explain the pathophysiology, clinical features, laboratory diagnosis and treatment of acute and chronic inflammatory dermatosis.	MSK-S2-Path-10 Acute and Chronic Inflammatory Dermatoses (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 and productive by including several interactive 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 acute CNS problems like cerebrovascular accidents and infections prevents morbidity and mortality. Early diagnosis and prompt treatment of ischemic, infective and tumorous conditions like meningitis, cerebrovascular accident and brain tumors is important to reduce the occurrence of disability burden on community. After Understanding the structure and function of nervous system and its relationship with pathophysiology of diseases in neuroscience module-I, the students will be able to understand various infective and tumorous conditions of nervous system the neuropathology module-II by integrating the teachings of basic and clinical pathology, 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 Central Nervous System infections including 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, Naegleria fowleri and Cysticercosis	NS-S2-Path-3 Inflammation and infections of CNS-3		
	Infection of Brain & Meninges & CSF interpretation	NS-S2-Path-4 Inflammation and infections of CNS-4		
	List the most common organisms that cause CNS infection in different age groups	NS-S2-Path-5 Inflammation and infections of CNS-5		
	Discuss CSF findings of bacterial, tuberculous, viral and fungal meningitis	NS-S2-Path-6 Inflammation and infections of CNS-6		

Theme 2: Tumors of Central Nervous System

S. #	LEARNING OBJECTIVES	TOPIC	TEACHING STRATEGY	ASSESSMENT
3	- Classify CNS tumors according to WHO classification - List genetic mutations, pathogenesis, morphology and clinical features of brain tumors - Including all types of Glioma, Ependymoma, Medullo-blastoma and Meningioma - Discuss the metastatic tumors to brain	NS-S2-Path-7 Brain tumors	Lecture/ Demonstration, SGD, Practical, CBL/PBL	SBQs & OSVE, OSCE, Clinical Exam
Pharmacology				
1	- Classify different types of antiepileptic agents. - Describe the mechanism of action, and	NS-S2-Pharm-1 Anti-epileptics 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 of migraine headaches - Discuss both pharmacologic and non-pharmacologic treatment 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 2023-24

DEPARTMENT OF COMMUNITY MEDICINE

ACADEMIC SESSION 2025-26

S.No	Field visits
1	Field visit to T.B sanitarium Kotri
2	Field visit to Industry and Social Security Hospital
3	Field visit to water treatment plant/ Field visits to water testing and surveillance lab LUMHS, Jamshoro
4	Field visit to Regional family Planning Center

INFECTIOUS DISEASE EPIDEMIOLOGY: (INFECTIOUS DISEASE MODULE)

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 wingless 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	Topic/ Lecture	Learning Objectives
01	Introduction Communicable Diseases	• To define communicable disease and other basic definitions regarding the communicable disease including Communicable disease, Incubation period, Infective period, and Generation time • To describe the relation of Agent, Host (Immune vs. Susceptible), and Environment • To explain the concepts of Iceberg Phenomenon and Herd Immunity.

02	Transmission Dynamics in communicable diseases	• To define the reservoirs of infection and Carriers. • To describe the "Chain of Infection" and its significance • To discuss the different modes of Transmission of disease: Direct vs. Indirect (Fomites, vector) • To describe the general principles of prevention and control of communicable diseases
03	Vertical public health programs in Pakistan	• To define "Vertical Programs" and distinguish them from Integrated Health Services. • To overview the major disease control programs currently operational in Pakistan. • To discuss the successes and challenges of these programs
04	Communicable diseases Classification and Control Concepts	• To define and classify the communicable Diseases as Sporadic, Endemic, Epidemic, Pandemic • To discussion the animal-Human Interface: Epizootic, Exotic, Zoonotic. • To describe the Healthcare-Associated Issues: Cross infection, Nosocomial infection, Opportunistic infections, Iatrogenic disorders.
Air-borne and Droplet Infections		
05	Epidemiology, prevention & Control of Tuberculosis	• To define the concept of air-borne and droplet infections. • To discuss the magnitude of Tuberculosis as a public health problem globally and specifically within Pakistan • To discuss the etiological Agent, source of infection, mode of transmission. • To identify the environmental and host factors that contribute to the spread of TB • To differentiate between Primary and Post-Primary (Reactivation/Re-infection) Tuberculosis • To enumerated the standard diagnostic methods used in public health and their role in screening • To describe the Control measures of Tuberculosis prevention in Pakistan and the components of the DOTS strategy
Field visit to T.B sanitarium Kotri		
06	Epidemiology, prevention & Control of Influenza & Common Respiratory Viruses	• To describe Influenza Epidemiology. • To discriminate between Antigenic Drift (seasonal outbreaks) and Antigenic Shift (pandemic potential) in Influenza A viruses. • To describe the role of aerosols, droplets, and fomites in the rapid spread of respiratory viruses in community settings

		• To discuss the importance of global surveillance systems for detecting novel strains (e.g., Avian Flu, Swine Flu). • To discuss the appropriate control measures, including the indications for seasonal influenza vaccination and respiratory hygiene etiquette
07	Epidemiology, prevention & Control of Exanthematous Fevers (MMR)	• To define and explain the public health importance of Exanthematous fevers (Measles, Mumps, Rubella) • To discuss the high transmission rate of measles and the importance of Herd Immunity coverage to prevent outbreaks • To explain the public health significance of Rubella, specifically focusing on the prevention of Congenital Rubella Syndrome (CRS) in pregnant women • To describe the serious complications associated with Mumps (e.g., infertility risk) • To explain the prevention and control measures of exanthematous fevers by integrating the EPI vaccination schedule
08	Epidemiology, prevention & Control of Chicken pox	• To discuss the epidemiology of chicken pox • To describe the serious complications associated with Chickenpox (e.g., secondary) • To describe the prevention and control measures of chicken pox
09	Epidemiology, prevention & Control of Meningitis	• To describe the epidemiology of Meningitis. • To explain how droplet and direct contact transmission facilitate the spread of meningitis. • To discuss the role of environmental factors, specifically overcrowding (e.g., military barracks, dormitories, religious gatherings like Hajj), in disease outbreaks • To discuss the available vaccines and their role in routine immunization for preventing the disease
	Fecal-oral, Water-borne, and Food-borne Diseases	
10	Epidemiology, prevention & Control of Poliomyelitis (Polio)	• To define the concept of fecal-oral, water-borne and food-borne diseases. • To discuss the epidemiology of poliomyelitis. • To describe Agent, host, environmental factors, and fecal-oral transmission. • To identify the risk factors of Poliomyelitis. • To discuss the global eradication effort and current status in Pakistan

		To discuss the prevention and control of poliomyelitis including PEI (Polio Eradication Initiative), OPV vs. IPV, and surveillance
11	Epidemiology, prevention & Control of Enteric Fevers (Typhoid)	- To define and classify the Enteric fevers - To discuss the epidemiology of outbreaks, transmission via contaminated water/food - To define and discuss the problem statement of typhoid fever and its epidemiology - To discuss the preventive and control measures of Typhoid fever specifying WaSH (Water, Sanitation, and Hygiene) and vaccination (Typhoid Conjugate Vaccine)
12	Epidemiology, prevention & Control of Cholera	- To discuss the epidemiology of cholera - To discuss the preventive and control measures of cholera
Blood-borne, Unsafe Injection & Sexually Transmitted Infections		
13	Epidemiology, prevention & Control of Hepatitis B, C, & D	- To define the concept of blood-borne routes, unsafe injections, surgical procedures, vertical transmission of diseases - To describe the epidemiology of Hepatitis B, C, D - To determine the factors responsible for the spread of Hepatitis B, C and D in Pakistan. - To discuss the Hepatitis Control Program strategies, vaccination (Hep B), and injection safety in Pakistan
14	Epidemiology, prevention & Control Sexually Transmitted Diseases (STDs) & HIV/AIDS	- To define the problem statement of STDs & HIV/AIDS with causative agents. - To discuss the epidemiology of STDs & HIV/AIDS with focus on high-risk groups and behaviors - To discuss the prevention strategies and control measures of disease
Vector-borne and Arthropod-borne Diseases		
15	Introduction to Medical Entomology	- To define entomology and its public health importance - To classify the common Arthropods of public health importance - To discuss the diseases spread by different arthropods - To describe the general prevention and control measures for arthropods (chemical, biological, environmental control).
16	Epidemiology, prevention & Control of Malaria	- To define the problem statement of malaria, causative agent and vectors (Anopheles). - To describe the epidemiology of Malaria - To discuss the seasonal variation and malaria endemic areas

		- To discuss the preventive and control measures of malaria (Vector control (LLINs, IRS) and Chemoprophylaxis) - To discuss the malaria control program of Pakistan and its significance in controlling the disease
17	Epidemiology & Control of Dengue Fever	- To define the problem statement of Dengue (vectors and causative agents) - To discuss the dengue serotypes (DENV 1-4) and urban epidemiology - To explain the role of source reduction and community mobilization for prevention and control of dengue.
18	Epidemiology & Control of Yellow Fever	- To define the problem statement of Yellow fever (vectors and causative agents) - To describe the epidemiology, importance to Pakistan (quarantine/travel regulations), and vaccination of yellow fever - To explain the control and prevention of yellow fever.
19	Epidemiology, prevention & Control of Leishmaniasis	- To define and classify the Leishmaniasis (Cutaneous vs. Visceral). - To discuss the vector and causative agent for Leishmaniasis (Sandfly vector and transmission) - To discuss the epidemiology of disease in specific regions (global and Pakistan) - To discuss the preventive and control measures of Leishmaniasis (Reservoir control and vector protection)
	Zoonotic & Soil-borne Diseases	
20	Epidemiology, prevention & Control measure of Rabies	- To describe the epidemiology of rabies. - To discuss the zoonotic nature (Dog bites and other mammals) - To describe the concept of agent, host, and fatal nature of the disease. - To explain the modes of transmission. - To clarify the prevention and control measures of rabies (post-exposure prophylaxis (PEP), Pre-exposure vaccination, and stray dog population management)
21	Epidemiology, prevention & Control of Tetanus	- To describe the epidemiology of Tetanus and its public health importance - To classify the diseases (Neonatal Tetanus vs. Adult Tetanus). - To discuss the non-communicable nature of disease (infectious but not contagious).

		- To describe the role of spores in soil/dust and entry via trauma/wounds. - To explain the prevention and control methods for disease with focus on Immunization (TT/Td) and safe delivery practices
22	Emerging and Re-emerging diseases of Public Health Importance: Epidemiology of Emerging and Re-emerging Diseases	- To define the emerging pathogens (e.g., COVID-19, Ebola, Zika) - To describe the factors contributing to re-emergence of old diseases. - To explain the global health security and surveillance.

CONTROL AND PREVENTION OF NON-COMMUNICABLE DISEASES OF PUBLIC HEALTH IMPORTANCE (CVS MODULE):

Learning Outcomes:

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

- Define non-communicable diseases (NCDs) and classify major NCDs prevalent globally and in Pakistan.
- Describe the epidemiology and burden of NCDs, with special reference to cardiovascular diseases, diabetes, cancers, and chronic respiratory diseases.
- Identify modifiable and non-modifiable risk factors associated with NCDs at individual and community levels.
- Describe strategies for prevention and control of NCDs through lifestyle modification, health promotion, and early detection.
- Discuss the role of primary health care and community-based interventions in reducing NCD burden.
- Recognize the importance of national NCD programs and policies in improving population health outcomes

S.No	Topic/ Lecture	Learning Objectives
1	Introduction to Non-Communicable Diseases and National Action Plan for NCDs	- To define the Non communicable disease - To discuss the epidemiological aspects of non-communicable diseases - To discuss the concept of Web of causation - To know the national health program for non-communicable diseases of Pakistan
2	Cardiovascular diseases and Cerebrovascular Accidents	- To discuss the epidemiological aspects of Cardiovascular diseases and Cerebrovascular Accidents - To classify the risk factors of Cardiovascular diseases and Cerebrovascular Accidents - To describe the preventive measures for Hypertension (DASH diet) - To discuss the prevention of Coronary Heart disease and cerebrovascular accidents

3	Obesity	- To define and classify obesity - To describe the causes of obesity - To assess obesity (BMI and its calculation) - To discuss the epidemiology and control measure of obesity.
4	Diabetes Mellitus	- To describe Diabetes Mellitus (DM) and its different types. - To know the global burden of DM and its public health importance - To describe the distribution and determinants of DM in Pakistan - To explain the screening and its importance in DM as per WHO criteria. - To describe the Prevention and control measures for diabetes mellitus.
5	Cancers	- To describe the epidemiological features of cancer at global and national level - To describe different risk factors and causes of cancer - To describe various screening methods for different types of cancers - To explain the control and prevention of cancers
6	Blindness	- To describe the epidemiological determinants of Blindness. - To discuss the prevention of blindness.

OCCUPATIONAL HEALTH (*HEMATOLOGY & ONCOLOGY MODULE*)

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.No	Topic / Lecture	Learning Objectives
1	Introduction to Occupational health and health hazards	- To discuss the Concepts, of occupational health, occupational medicine and occupational hygiene - To discuss the occupational health hazard and diseases - To discuss the occupational health services in Pakistan (social security) - To describe the legislation of occupational health in Pakistan (Labour law)
2	Measure for prevention of	To define ergonomics

	occupational health hazards. Medical and Engineering Methods	- 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
3	Pneumoconiosis and its control measures	- To define pneumoconiosis - To differentiate the types of pneumoconiosis on basis of dust - To discuss the preventative and control measures of pneumoconiosis
4	Lead poisoning & its control measurement	- To define lead poisoning - To discuss the preventive and control measures of lead poisoning
	Field visit to Industry and Social Security Hospital	
5	SNAKE BITE Epidemiology, prevention and control measures for Snake Bites	- To discuss the Epidemiology and identification of snake bite. - To describe types of snakes according to toxin production: hemolytic toxins, musculo-toxins and neuro-toxin - To Differentiate between signs and symptoms of different snake-bites - To Discuss Personal protection and management
6	Disaster management and preparedness	- Define, classify and differentiate between different disasters - To discuss the fundamental aspects of disaster management - Epidemiological surveillance and disease control during disasters - Disaster Preparedness (NDMA and PDMA)

ENVIRONMENTAL HEALTH (*RESPIRATORY MODULE*)

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	Topic	SubTopic/ Lecture	Learning Objectives
1	WATER:	Water and Sources	- To discuss the different sources of water - To describe the concept of Hydrological cycle - To describe the physical, chemical and biological quality of water - To Discuss the water surveillance
2		Water Pollution its causes and Hazards (Water Borne Disease) and prevention	- To define water pollution and its sources - To describe different types of Health Hazards arising from consuming polluted water. - To define various water borne diseases caused due to consuming polluted water - To define the concept of hardness of water and its effect on health
3		Methods of Purification of Water.	- To define water purification - To learn different Large Scale and Small Scale Methods of purification of water - To understand the role of rapid and slow sand filtration in water purification
4		World Health Organization (WHO) criteria for purification of water	- To define WHO criteria for purification of water - To describe the physical, chemical, and bacteriological standards set by WHO. - To identify bacteriological requirements including absence of coliform organisms
		Field visit to water treatment plant/ Field visits to water testing and surveillance lab LUMHS, Jamshoro	
5	AIR	Global Warming and Climate Change (Effect of Heat and Cold extremes)	- To define global warming and climate change - To discuss greenhouse effect - To describe the effects of climate change and Global warming on human health - To describe the effects and management of extreme heat and extreme cold on human body

6		Air Pollution: Cause, Effect Prevention and Control of Air Pollution	• To define the Composition of air. • To define Causes and sources of Air pollution. • To discuss the concept of smog • To describe the effects, control and prevention of air pollution
7	NOISE	Prevention and control of noise pollution	• To define noise and sources of noise pollution • To describe preventive and control measures of noise pollution
8	RADIATION HAZARDS	Prevention and control of the radiation hazards	• To define radiation, its sources and types of radiation (alpha, beta and gamma rays) • To discuss the radiation hazards on humans • To discuss the preventive and control measures for radiation hazards
9	DISPOSAL OF WASTE	Public health importance of waste management	• To Define waste and its types (solid and liquid, Domestic, Industrial and Hospital waste) • To learn about different sources of wastes • To discuss the public health importance of various types of wastes • To explain different methods of collection and disposal of waste
10	HOSPITAL WASTE MANAGEMENT	Types of Hospital Waste Management	• To identify the sources of hospital wastes • To classify different types of hospital waste • To explain different methods for prevention and control of hospital wastes
11	HOUSING	Concept of Healthful housing	• To describe the public health importance of housing • To discuss the criteria of healthful housing • To explain the concept and related hazards of overcrowding

DEMOGRAPHY (*ENDOCRINE MODULE*)

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	Topic/ Lecture	Learning Objectives
1	Introduction to Demography & Population Trends (Global & National) Demographic & social implications of high population growth. Census & Types	• Define population and population studies • Comprehend the basic concepts and definition of Demography • Discuss the population doubling time • Demographic equations
2	Population pyramid and its uses Age Dependency Ratio, Sex Ratio	• Describe and interpret the population pyramid • Compare the population pyramid of developing and developed countries
3	Demographic Cycle, Transition and Momentum and its public health importance	• Describe the concept of population or demographic transition • Discuss the stages of demographic transition
4	Measurement of Fertility And Related Statistics	• Define population and vital statistics. • Define fertility and mortality. • Describe the determinants of fertility and mortality. • Describe different indicators of population statistics. • Describe indicators of vital statistics • Determine the factors affecting fertility-related statistics.
5	Urbanization and Social Mobilization	• Define urbanization • Understand the importance of social mobilization • Determine the social implication of high population growth

REPRODUCTIVE AND CHILD HEALTH (*REPRODUCTIVE SYSTEM MODULE*)

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

- Explain the concept of safe motherhood and identify key interventions for reducing maternal and neonatal morbidity and mortality.
- Describe family planning methods and their role in improving maternal, child, and community health.
- Identify major reproductive health issues in adolescents and strategies for promoting adolescent health.
- Recognize the role of primary health care and community-based services in safe motherhood, family planning, and adolescent health.
- Explain the importance of health education and counseling in reproductive health promotion.

S.No	Topic/ Lecture	Learning Objectives
01	Introduction to Reproductive Health and Family Planning	• To describe the importance of reproductive health • To describe basic concept of family planning methods and its scope • To discuss contraception and its application according to the needs of Pakistan • To discuss the opportunities and failures of family planning services in Pakistan.
02	Safe motherhood and its components.	• To describe the concept and purpose of safe-motherhood initiative. • To discuss the pillars of Safe-motherhood • To describe effectiveness of safe motherhood initiative in reduction of maternal mortality
03	IMNCI	• To define the importance of IMNCI • To discuss the danger signs in IMNCI • To classify the disease assessment based on IMNCI • To discuss the challenges and opportunities
04	Adolescent Health	• To define adolescence and describe its stages (early, middle, late). • To identify common health issues in adolescents (physical, mental, sexual, and reproductive health). • To explain the importance of nutrition, growth, and development during adolescence.
	• Field visit to Regional family Planning Center	

Undergraduate Research Module
Certificate Course for Undergraduate MBBS Students
Total lectures in Research Module Unit I and II = 25
Basics of Epidemiology, Biostatistics, and Research (BEBR)
Research Module – I

Learning Outcomes:

By the end of Module- I, the 3rd Year MBBS student will be able to:

- Define Evidence-Based Medicine and explain the components of the Epidemiological Triad (Agent, Host, Environment).
- Differentiate between key measures of disease frequency (Incidence and Prevalence) and explain the appropriate context for using each.
- Distinguish between the major observational study designs (Descriptive, Case-Control, Cohort) and experimental studies (RCTs).
- Interpret basic measures of association (Odds Ratio, Relative Risk) to determine if an exposure is a risk factor.
- Formulate a specific, focused clinical research question using the PICOT (Population, Intervention, Comparison, Outcome, Time) format.
- Draft the preliminary section (Phase 1) of a research proposal, including a Title, Rationale, and specific Objectives.

Rationale

In the First and Second year of MBBS, students are introduced to the basic sciences (Anatomy, Physiology) to understand the normal functioning of the human body. It is equally critical to introduce the "Basic Science of Public Health" Epidemiology. This module provides the logical framework for understanding how diseases interact with populations. By learning study designs and the concept of risk early, students develop critical thinking skills necessary to understand *why* we treat patients the way we do, moving beyond rote memorization to an evidence-based mindset.

Lecture	Learning Objectives
Unit 1: Foundation and Fundamentals of Epidemiology (Measuring Health & Disease) <i>Focus: What is research and what are we looking for? How do we track diseases in a population?</i>	
Lecture 1. Introduction to Research & Evidence-Based Medicine	○ The "Physician-Scientist" concept ○ Research and Evidence based medicine importance ○ Triad of Evidence Based Medicine ○ Role of the Physician-Scientist as a bridge between the lab and the bedside ○ Why research is essential for patient care ○ Students poll on why research matters for their future patients

Lecture 2. Introduction of epidemiology and concept of The Epidemiological Triad	○ Define epidemiology ○ Describe the basic terminologies objectives and uses of epidemiology ○ The Epidemiological Triad: Agent, Host, and Environment interaction. ○ Burden of Disease: How to use global data (WHO/CDC) to justify why a research topic is important.
Lecture 3. Measures of Disease Frequency	○ Incidence vs. Prevalence: The "Bathtub Analogy" (New cases vs. Existing cases). ○ Rate, Ratio and Odds ○ Morbidity vs. Mortality rates
Lecture 4. The Concept of Risk	○ Association vs. Causation (Bradford Hill Criteria). ○ Risk Factors: Modifiable vs. non-modifiable.
Lecture 5: Framing the Research Question (PICOT)	○ Review of Population, Intervention, Comparison, Outcome. ○ Convert a vague statement ("I want to study smoking") into a PICOT question ("In adult males [P], does vaping [I] compared to cigarettes [C] reduce the risk of lung cancer [O] over 5 years [T])
Lecture 6: Proposal Writing Phase 1 (The "What" & "Why")	○ The Anatomy of a Proposal (Skeleton: Title → Introduction → Methods → Analysis) ○ Drafting the Title ○ Writing the Rationale ○ Writing SMART Objectives
Unit 2: Study Designs & Epidemiology <i>Focus: How do we design a study to answer the question?</i>	
Lecture 7: Descriptive Studies	○ Study Designs and their purpose ○ Descriptive: Case Reports, Case Series. ○ Cross-sectional study (Prevalence studies) ○ Purpose and Uses ○ Advantages vs Disadvantages ○ Measure of occurrence in cross-sectional study
Lecture 8: Analytical Studies (Case-Control)	○ Concept of the Medical Detective: purpose of Case-Control study ○ Case-Control Studies (Looking Backward) ○ Advantages vs Disadvantages

	○ Measure of occurrence and association in Case-control studies.
Lecture 9: Analytical Studies (Cohort Study)	○ Concept of the Medical Detective: purpose of Cohort study ○ Cohort Studies (Looking forward) ○ Advantages vs Disadvantages ○ Measure of occurrence and association in Cohort Study.
Lecture 10: Experimental Studies	○ Introduction to Experimental Research ○ Core Components of a Randomized Control Trial ○ Blinding (Masking)
Lecture 11: Measures of associations	○ Different types of measures of associations ○ Measures used in different study designs ○ Rate ratio vs Risk ratio ○ Odds Ratio

Research Module – II

Learning Outcomes:

By the end of Research Module – II, the student will be able to:

- Classify data variables (Qualitative vs. Quantitative) in order to select appropriate statistical tests.
- Explain key concepts of inferential statistics, including Normal Distribution, p-values, and Confidence Intervals.
- Critically appraise a published research paper by identifying common errors, biases, and methodological flaws.
- Recognize the ethical standards of research, including the avoidance of plagiarism, fabrication, and falsification.
- Conduct a basic literature search using medical databases (e.g., PubMed) to support research arguments.
- Demonstrate basic data entry and cleaning skills using software (e.g., Excel/SPSS).
- Calculate and visualize descriptive statistics (Mean, Median, Mode, SD, Graphs).
- Develop the methodology section (Phase 2) of a research proposal, including Sampling techniques and Data Analysis plans.

Rationale:

Having understood *how* studies are designed in Research Module – I – the student

must now learn *how* to handle the evidence. As students dive deeper into Pathology and Pharmacology, they encounter data (lab values, drug efficacy rates). This module equips them with Biostatistics and Data Literacy skills. It transitions from theoretical design to practical execution by teaching students how to collect, analyze, and ethically present data, thereby preparing them for future independent research projects and clinical decision-making.

Unit 3: Basic Biostatistics (Interpreting the Data) <i>Focus: Making sense of the numbers (Data Literacy)</i>	
Lecture 12: Data and Variables	○ Data vs Variables ○ Types of data and Variables ○ Qualitative vs Quantitative - Categorical (Nominal/Ordinal) vs. Numerical (Discrete/Continuous).
Lecture 13: Descriptive Statistics (Central Tendency)	○ Measures of Central Tendency: ○ Concept of Mean, Median, Mode (When to use which?) ○ Importance in research Basic Calculations
Lecture 14: Descriptive Statistics (Data dispersion and the Normal Distribution)	○ Measures of Dispersion: ○ Concept of Standard Deviation and Range (Concept: How spread out is the data?). ○ Understanding the normal distribution of data "Bell Curve." Skewness vs normally distributed data
Lecture 15: Inferential Statistics	○ The Null Hypothesis (H_0): The assumption that "nothing happened." ○ The P-Value: The probability of results happening by chance. ○ Confidence Intervals: Understanding precision
Lecture 16: Methodology & Sampling	○ Population vs sample ○ Purpose of sampling ○ Sampling Techniques: Random vs. Non-random
Lecture 17: Data Collection and Presentation	○ Different methods of collection of data ○ Primary vs secondary data ○ Define the data presentation and its importance in research and public health ○ To describe the different methods of data presentation (tables, graphs & diagrams)
Lecture 18: Data Entry	○ Determine the steps of data entry using statistical software.

	○ Understand the basics of operating SPSS. ○ Describe how to analyze data using SPSS
Lecture 19: Data Analysis Methods	○ Define the statistical tests ○ Describe the different statistical tests. Describe the interpretation of data analyzed through t-test and Chi-square test
Unit 4: The Research Process (Finding the Evidence)	
Lecture 20: Literature Search Strategies	○ How to search literature ○ Steps in literature search using key words strategy Search engines: PubMed/Google Scholar basics
Lecture 21: Errors in research	○ Define different type off errors in research. ○ Define validity and reliability ○ Random vs Systematic errors ○ Confounders vs Effect modifiers ○ To identify various biases in research Discuss the method to minimize or eliminate these errors and biases.
Lecture 22: Critical Appraisal <i>(How to read a research paper)</i>	○ Reading a paper and identifying: ▪ What is citation? ▪ What was the research question / Objective? ▪ What was the Study Design? ▪ What was / were the outcome variable? ▪ What was/ were the exposure variables? ▪ What was the P-value? Is it significant? ▪ Is there any bias?
Lecture 23: Application & Ethics (Focus: Putting it all together)	○ Purpose of Research Ethics ○ Informed Consent (what is consent, informed consent, its significance in research) ○ Privacy & Confidentiality ○ The Declaration of Helsinki and handling vulnerable populations
Lecture 24: Research Misconduct & Plagiarism	○ Plagiarism ○ Using AI in research ○ Institutional and HEC policies for plagiarism and AI in research

	○ Different ways to address these issues
Lecture 25: Proposal Writing Phase 2 (The "How")	○ Writing the Methodology Section ○ Describing Data collection ○ The Analysis Plan ○ Writing ethical consideration ○ References



Liaquat University of Medical
& Health Sciences, Jamshoro

THIRD PROFESSIONAL
MBBS 2023-24

DEPARTMENT OF FORENSIC MEDICINE

ACADEMIC SESSION 2025-26

**Parallel Integrated Module Committee
Forensic Medicine & Toxicology
LUMHS, Jamshoro**

Modular Coordinator:

Dr. Abdul Samad Memon

Associate Professor

Department of Forensic Medicine & Toxicology, LUMHS, Jamshoro.

Committee Members:

1. Prof. Mohammad Akber Kazi, Chairman Forensic Medicine BMC-LUMHS
2. Prof. Waheed Ali Nahyoon, Chairman Forensic Medicine LUMHS
3. Dr. Aisha Khalid Shaikh, Associate Professor Forensic Medicine LUMHS
4. Dr. Ishrat Bibi, Associate Professor Forensic Medicine LUMHS

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.

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

**Index of Parallel Integrated Module
Forensic Medicine & Toxicology**

1. Module: Infectious Diseases (7week)

2. Module: Haematology II (5 week)

3. Module: Respiratory system II &CVS-II (8 week)

4. Module: Gastrointestinal Tract & Liver (5 week)

5. Module: Endocrine-II (2 week)

6. Module: Uro-genital (7 week)

7. Module: Musculoskeletal (2week)

S #	Wks.	Module	Forensic Medicine		Demonstration / Tutorial Classes/Lab	
1.	7	Module:1	Forensic Medicine & Toxicology (Intro) Law in relation to Physicians Pakistan Legal System		Gen Toxi, Corrosive, Metallic & P 1	
2.	5	Module:2	Personal Identity		Delirants Poison(s), Medicinal & Poisonous Plants P 02 & Visit-1	
3.	8	Module:3	Traumatology Firearm & Blast injuries		Organophosphorus, Narcotics, Hypnotics & Sedatives P 3-4, Visit-2	
4.	5	Module:4	Thanatology	Autopsy	Forensic Pediatrics	Venomous Animals, Paraphenylenediamine P 5/Visit-3
5.	2	Module:5	Sexual Offences & Forensic Sexology		P 6 & 7	
6.	7	Module:6	Asphyxia	Forensic Psychiatry	Alcohol, Fumigants poisoning, P 8 -10	
7.	2	Module:7	Forensic Science in Crime Detection		--	

LIST OF ABBREVIATIONS

Abbreviations	Subject/Topic(s)
As	Asphyxia
Au	Autopsy
Fi	Firearm & Blast Injuries
For	Forensic Medicine
Fp	Forensic Pediatrics
Fps	Forensic Psychiatry
Fs	Forensic Science
Fsx	Forensic Sexology
In	Introduction
La Pls	Law in Relation to Physicians Pakistan Legal System
Pi	Personal Identification
Pr	Practical
Qd	Qisas & Diyat
So	Sexual Offences
Tox	Toxicology
Th	Thanatology
Tr	Traumatology
Vi	Visit

MODULE 1: INFECTIOUS DISEASES

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.	For-In-01	Interactive Lecture	SBQs, OSPE & VIVA Voce
LAWS IN RELATION TO MEDICAL PHYSIANS				
02	●Describe Hippocratic Oath and principles of Bioethics ●Discuss the duties of doctor as advised by international code of medical ethics	For-La-01	Interactive Lecture	SBQs, OSPE & VIVA Voce
03	●Describe the composition, functions of Pakistan Medical & Dental Council atpresent and its role in medical education ●DefinePrivileges & obligations of registered medical practitioners	For-La-02		
04	●Defineconsent, types of consent & roles of consent in Medical Examination ●DiscussCriteria for giving valid consent ●DefineDoctrine of informed consent ●DetermineCertain legal deviations/exemptions of consent	For-La-03		
05	● 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	For-La-04		
06	●Discuss Professional Secrecy &misconduct(Infamous conduct)	For-La-05		
PAKISTAN LEGAL SYSTEM				
07	●Define important legal terms such as Summons, warrant, perjury, deposition, exhibit, offence,	For-Pls-01	Interactive Lecture	SBQs, OSPE & VIVA Voce

	cognizable offence, non-cognizable offence, oath, conduct money, summons case, warrant case, bail & FIR. • Differentiate between dying declaration and dying deposition			
08	• 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)	For-Pls-02		
09	• Describe the Documents prepared by a Physician • Discuss Medico Legal Reports • Discuss Post mortem Reports	For-Pls-03		
10	• Describe the Documents prepared by a Physicians (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)	For-Pls-04		
11	• 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	For-Pls-05		
12	• Intro of Qisas & Diyat Ordinance. • Define & classify Qisas & Diyat. • Discuss Law regarding wounding of person.	For-Qd-01		
13	• Discuss Shajjah & Jurh • Discuss interpretation of injuries accordingly.	For-Qd-02		

DEMONSTRATION /TUTORIALS CLASS /LAB				
GENERAL TOXICOLOGY				
01	•Define Toxicology & Forensic Toxicology •Define poison & Its Classification •Explain routes of administration and elimination of poisons from the body. •Describe the factors influencing the manifestation of poisoning. •Discuss diagnosis of poisoning in living & dead. •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. •Explain the collection Preservation and dispatch evidentiary material in living & dead. •Discuss drug dependence	For-Tox-01	Interactive lecture/ Practical	OSPE & Viva Voce
SPECIAL TOXICOLOGY				
02	•Define volatile/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.	For-Tox-02	Interactive lecture/ Practical	OSPE & Viva Voce
03	•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	For-Tox-03		
04	•Collection, Preservation & Dispatch of Biological & other evidentiary material	For-Pr-01		

MODULE 2: HAEMATOLOGY II

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
PERSONAL IDENTITY				
14	•Intro of Personal Identity. •Describe Parameters of identification. • Discuss methods identification • Describe Complete and partial identification. •Describe Identification in living & dead. • Discuss Locard's principle of exchange & its medico legal importance	For-Pi-01	Interactive Lecture	SBQS, OSPE & VIVA Voce
15	• Describe Determination of race • Discuss Osteometric indices • Determine Sex and intersex states	For-Pi-02		
16	• Determine Age estimation in medico legal cases by General examination •Discuss Medico legal importance of age	For-Pi-03		
17	• Define Forensic Odontology & Radiology • Discuss Medicolegal importance of Forensic Odontology & Radiology	For-Pi-04		
18	•Discuss Acquired and congenital deformities. •Define Tattoo marks. •Medicolegal Importance of Name, Age, Sex & Race.	For-Pi-5		
19	•Define dactylography & its types •Discuss medicolegal importance of fingerprint	For-Pi-6		
20	•Discuss Identification of a dead, decomposed body. • Discuss Mutilated & burnt bodies, Skeletal & Fragmentary remains.	For-Pi-7		

21	• Discuss application of Blood groups in forensic work & DNA profiling. • Discuss disputed paternity & maternity. • Discuss Laboratory tests for examination of a blood staining.	For-Pi-8		
22	• Appraise the forensic importance of biological specimens (Semen, Saliva, Vomitus, Urine & Hair) • Discuss trace evidence (Examination of broken glass) • Explain Flow cytometry	For-Pi-9		

DEMONSTRATION /TUTORIALS CLASS /LAB				
SPECIAL TOXICOLOGY				
05	• Classify types of Deliriant 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.	For-Tox-04	Interactive lecture/ Practical	OSPE & Viva Voce
06	• Discuss the mechanism of medicinal poisoning • Discuss symptoms, signs & management of poisoning. • Discuss postmortem appearance and Medicolegal aspects of medicinal poisoning.	For-Tox-05		
07	• Classify types of poisonous plants • Describe symptoms, signs & management • Discuss PM appearance and ML importance of poisoning by poisonous plants.	For-Tox-06		
08	• DNA / Fingerprints examination and collection procedure	For-Pr-02		
09	• Observe Mental Health Ordinance	For-Vi-01		

MODULE 3: RESPIRATORY SYSTEM II & CVS-II

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
TRAUMATOLOGY				
23	• Discuss Mechanism of mechanical injury • Classify Mechanical Injuries • Define Injury, Hurt, Wound, Assault and Battery	For-Tr-01	Interactive lecture	SBQs, OSPE & VIVA Voce
24	• Describe Blunt weapon injuries- Abrasions, Bruises with medico legal significance.	For-Tr-02		
25	• Describe Lacerated wounds, types, mechanism of production and medico legal significance	For-Tr-03		
26	• Describe Sharp weapon injuries • Describe Incised wounds with medico legal significance.	For-Tr-04		
27	• Describe Stab wounds with medico legal significance.	For-Tr-05		
28	• 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.	For-Tr-06		
29	• 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 to abdominal aorta and intestines, • Define Pelvic injuries & its medico legal significance.	For-Tr-07		
30	• Define electrical burn and its types • Enlist the body tissues that are resistant to electrical burn & factors on which injury of electrical burn depends.	For-Tr-08		

	•Describe the mortality of electrical burn • Define Features of injuries due to various types of electrical current.			
31	• Describe Causes of death due to electrocution. • Discuss Lightning injuries and lightning deaths.	For-Tr-09		
32	Road traffic accidental injuries • Discuss transportation injuries. • Mechanism of RTA and their Medico legal aspects	For-Tr-10		
FIREARM & BLAST INJURIES				
33	•Define Ballistics, types of ballistics •Discuss Parts of a firearm weapon •Describe Cartridges of different firearms and types of projectiles i.e., pellets, bullets	For-Fi-01	Interactive lecture	SBQs, OSPE & VIVA Voce
34	•Define Types of gun powder •Discuss Mechanism of fire in firearm weapons	For-Fi-02		
35	•Discuss Characteristic features of wound of entry and exit of firearms •Describe Estimation of distance of fire	For-Fi-03		
36	•Discuss Fabricated firearm injuries •Discuss Postmortem findings in cases of firearm injuries	For-Fi-04		

DEMONSTRATION /TUTORIALS CLASS /LAB				
SPECIAL TOXICOLOGY				
10	•Discuss the mode of action. Describe common uses of organophosphorus. •Discuss the clinical feature & evaluation of a patient with suspected O-P toxicity. •Explain mgt&medicolegal importance of it. • Discuss postmortem appearance and medicolegal importance.	For-Tox-07	Interactive lecture/ Practical	OSPE & Viva Voce
11	• Define Narcotics & its Pathophysiology • Discuss S/S of acute & chronic opium poisoning. •Discuss sources, S/S, fatal dose, fatal period and clinical Management. • Discuss prevention to avoid side effects •Discuss postmortem appearances and medicolegal importance's.	For-Tox-08		

	•Explain Classification. •Explain Features of Acute & Chronic Toxicity & the Methods used for the Detection, Management & Postmortem changes in a Victim of Toxicity. •Discuss Fatal & Lethal Doses, Medico-legal Aspects of sedatives & hypnotics.			
12	•Medicolegal Autopsies. •Exhumation Protocol & Autopsy Instruments.	For-Pr-03-04		
13	• Observe Medicolegal Examinations	For-Vi-02		

MODULE -4 GASTROINTESTINAL TRACT & LIVER

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
	THANATOLOGY			
37	•Define death • Explain Scientific concepts regarding death •Discuss WHO criteria of death • Explain Medico-legal aspects of brain death, sudden & unexpected deaths.	For-Th-01	Interactive lecture	SBQs ,OSPE & VIVA Voce
38	•Discuss Cause, manner, mode and mechanism of death.	For-Th-02		
39	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.	For-Th-03		
40	•Describe Physio-chemical changes in various body tissues and organs undervarious environmental conditions, such as changes in muscular system after death. •Describe Changes in the blood, CSF, Vitreousumor&Bone marrow	For-Th-04		
41	Describe Late signs of death i.e., Putrefaction, mechanism, changes, gases of decomposition •Explain Adipocere formation &Mummification	For-Th-05		
AUTOPSY				
42	• Define Autopsy, •Discuss Aims, objects &Autopsy protocol •Classify Types of autopsies •Discuss establishment of autopsy suit	For-Au-01	Interactive lecture	SBQs,OSPE & VIVA Voce

43	•Describe Types of incisions •Describe Techniques of autopsy •Discuss Negative and Obscure autopsy •Discuss Internal examination of Cranial, thoracic and abdominal cavities&Dissection of viscera's	For-Au-02		
44	•Explain Exhumationprocedure •Explain Preservation of viscera for Chemical and Histo pathological examination •Explain Preservatives used in mortuary	For-Au-03		
FORENSIC PEDIATRICS				
45	• 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 • ExplainAutopsy on bodies of new born babies	For-Fp-01	Interactive lecture	SBQs, OSPE & VIVA Voce
46	• 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.	For-Fp-02		

DEMONSTRATION /TUTORIALS CLASS /LAB				
SPECIAL TOXICOLOGY				
14	•Classify types of snakes •Discuss Diagnosis, Clinical features & Management of a snake bite •Discuss PM appearance &ML importance.	For-Tox-09	Interactive lecture/ Practical	OSPE & Viva Voce
15	•Define Paraphenylenediamine Poisoning. •Explain clinical features, laboratory findings and outcomes of PPD poisoning. •Discuss post mortem findings &Medicolegal importance of Kala pathar.	For-Tox-10		
16	•Medical Certificates & Medicolegal Examinations/Certificate(s) • Observe Postmortem examinations	For-Pr-05 For-Vi-03		

MODULE -5 ENDOCRINE-II

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
SEXUAL OFFENCES				
47	• Define& Classify Sexual offences • Define Legal definition of Rape • Describe Procedure of examination a victim & accused person of rape and Collection of specimens during examination • Define Rape in children • Define Incest and its legal aspects	For-So-01	Interactive Lecture	SBQs, OSPE & VIVA Voce
48	• 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 • Define, Classify & Discuss Sexual perversions	For-So-02		
FORENSIC SEXOLOGY				
49	• 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	For-Fsx-01	Interactive Lecture	SBQs, OSPE & VIVA Voce
50	• Define Abortion, types& causes of abortion& its Medico legal aspects/post-mortem findings • Define Criminal abortion and its types according to Pakistan Penal Code • Describe Deliveryand its medico legal aspects • Describe Signs of recent delivery in living& dead • Describe Signs of remote delivery in living&dead	For-Fsx-02		

	• 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			
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Demonstration /Tutorials Class /Lab				
Practical Work				
17	•Clinical Examination(s) in case of <u>Sexual Offences</u>	For-Pr-06	Interactive lecture/ Practical	OSPE & Viva Voce
18	•Examination (s) of Blood Stains & Seminal Stains	For-Pr-07		

MODULE 6 URO-GENITAL

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
ASPHYXIA				
51	•Discuss etiology, Patho physiology of asphyxia& stages of asphyxia. •Describe Hanging, types of hanging •Describe post-mortem findings of hanging & Throttling	For-As-01	Interactive Lecture	SBQs, OSPE & VIVA Voce
52	•Describe death from asphyxia and postmortem appearance of Suffocation, Smothering, choking &Strangulation	For-As-02		
53	• 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	For-As-03		
54	•Discuss Traumatic Asphyxia •Discuss Sexual asphyxia (auto erotic asphyxia)	For-As-04		
FORENSIC PSYCHIARY				
55	•Describe the Mental Health ordinance 2001 with special reference to admission, care and discharge of a mentally ill person.	For-Fps-01	Interactive Lecture	SBQs,OSPE & VIVA Voce

56	•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.	For-Fps-02		
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DEMONSTRATION /TUTORIALS CLASS /LAB				
SPECIAL TOXICOLOGY				
19	•Define alcohol & its metabolism •Discuss acute & chronic alcohol poisoning •Discuss diagnostic methods of alcohol poisoning, sample collection for examinationmanagement. •Discuss postmortem appearances and medicolegal importance's.	For-Tox-12	Interactive lecture/ Practical	OSPE & Viva Voce
20	•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.	For-Tox-13		
21	•Forensic Odontology a. Role of dental evidence in identification b. Bite marks and their analysis c. Dental evidence: Trauma and Poisoning d. Basic dental charting/record e. Relevant laws	For-Pr-08		
22	•Forensic Radiology	For-Pr-09		
23	•Role of Chemistry and specialized technique	For-Pr-10		

MODULE 7 MUSCULOSKELETAL

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
ROLE OF FORENSIC SCIENCE IN CRIME DETECTION				
57	• Explain the basic principles of crime scene protection, including securing, isolating, and preserving the scene. • Describe systematic methods of crime scene search, such as zone, grid, spiral, and strip methods. • Identify common types of physical evidence found at crime scenes and their forensic relevance. • Outline the steps of documentation, including notes, photography, sketching, and evidence collection procedures.	For-Fs-01	Interactive Lecture	SBQs, OSPE & VIVA Voce
58	• Describe the structure of DNA and its role in human identification. • Explain the steps involved in DNA collection, preservation, and laboratory analysis. • Differentiate between types of DNA techniques, such as STR analysis, mtDNA, and PCR. • Discuss the forensic applications and legal value of DNA evidence in crime investigation and paternity cases.	For-Fs-02		

Lecture Codes:

S.No	Lecture Code	Topic(s)
1	For-In-01	Introduction Forensic Medicine
2	For-La-01	Bio-ethics
3	For-La-02	PM & DC
4	For-La-03	Consent
5	For-La-04	Medical Negligence
6	For-La-05	Professional Secrecy/ Misconduct
7	For-Pls-01	Legal Terminology
8	For-Pls-02	Protocol of Court Evidence
9	For-Pls-03	Medicolegal Documents
10	For-Pls-04	Medical Certificate(s)
11	For-Pls-05	Criminal Justice System
12	For-Qd-01	Qisas & Diyat Ordinance -1
13	For-Qd-02	Qisas & Diyat Ordinance -2
14	For-Tox-01	General Principles of Toxicology
15	For-Tox 02	Volatile poisons & Corrosives (Carbon monoxide, hydrocarbons, cyanides, sulphuric acid, oxalic acid, carbolic acid [Phenol], alkalis)
16	For-Tox-03	Inorganic Elements/ Metallic Poisoning (Arsenic, lead, mercury, copper & phosphorus)
17	For-Pr-01	Collection, Preservation & Dispatch of Biological & other evidentiary material
18	For-Pi-01	Personal Identification
19	For-Pi-02	Race & Sex Determination
20	For-Pi-03	Age Determination
21	For-Pi-04	Forensic Odontology & Radiology
22	For-Pi-09	Forensic Serology-2
23	For-Pi-05	Methods of Identification
24	For-Pi-06	Dactylography
25	For-Pi-07	Mass Disaster Identification
26	For-Pi-08	Forensic Serology-1
27	For-Pi-09	Forensic Serology-2
	For-Tox-04	Deliriant Poison(s)/Stimulants(Cannabis Indica, Cocaine & Datura)
28	For-Tox-05	Medicinal poisoning (Salicylates, Paracetamol & others)
29	For-Tox-06	Poisonous plants (Aconite, Belladonna, Hyoscyamus, Stramonium, Digitalis, Ergot, Nux Vomica, Oleander & Tobacco)
30	For-Pr-02	DNA / Fingerprints examination and collection procedure
31	For-Vi-01	Sir Cowasjee Jehangir Institute of Psychiatry & Behavioural Sciences Hyderabad
32	For-Tr-01	Mechanical Injuries-1(Intro)
33	For-Tr-02	Mechanical Injuries-2 (Blunt force Trauma)
34	For-Tr-03	Mechanical Injuries-3(Lacerated wounds)
35	For-Tr-04	Mechanical Injuries-4 (Sharp force Trauma)
36	For-Tr-05	Injuries of Head & Neck
37	For-Tr-06	Injuries of Chest & Abdomen
38	For-Tr-07	Thermal, Electrical injuries & Burn
39	For-Tr-08	Electrocution, Lightning & Injuries due to cold

40	For-Tr-09	Transportation Injuries
41	For-Fi-01	Firearm/Ballistics-1
42	For-Fi-02	Firearm/Ballistics-2
43	For-Fi-03	Firearm Injuries-1
44	For-Fi-04	Firearm Injuries-2
45	For-Tox-07	Organophosphorus Poisoning
46	For-Tox-08	Narcotics(Opiates, opioids, heroin & others), Hypnotics & Sedatives
47	For-Pr-03 & 04	-Medicolegal Autopsies - Exhumation Protocol & Autopsy Instruments
48	For-Vi-02	MLC Section LUH Hyderabad/Jamshoro
49	For-Th-01	Death(Concept Ofdeath)
50	For-Th-02	Inter-relationship ofCause, Manner, Mode & Mechanism of Death
51	For-Th-03	Immediate & Early corporeal post-mortem changes
52	For-Th-04	Post-mortem chemical changes
53	For-Th-05	Late corporeal post-mortem changes
54	For-Au-01	Autopsy protocol & Techniques
55	For-Au-02	External & Internal Examinations of Dead body
56	For-Au-03	Exhumation
57	For-Fp-01	Infanticide
58	For-Fp-02	Battered Baby Syndrome &Sudden Infant death syndrome (SIDS)
59	For-Tox-09	Venomous Animals (Snake bite)
60	For-Tox-10	Paraphenylenediamine (Kala Pather)
61	For-Pr-05/ For-Vi-03	Medical Certificates & Medicolegal Examinations/Certificate(s) Mortuary@ MLC Section LUH Hyderabad/Jamshoro
62	For-So-01	Sexual Offences (Intro) & Natural Sexual Offences and Its Legal Aspects
63	For-So-02	Unnatural Sexual Offences and ItsLegal Aspects& Sexual perversions
64	For-Fsx-01	Virginity, Pregnancy & Delivery
65	For-Fsx-02	Abortion & Impotence
66	For-Pr-06 & 07	Clinical Examination(s) in case of <u>Sexual</u> Offences Examination (s)of Blood Stains & Seminal Stains
67	For-As-01	Intro &Hanging & strangulation
68	For-As-02	Suffocation, Gagging &Chocking
69	For-As-03	Drowning
70	For-As-04	Traumatic, Sexual & Postural Asphyxia
71	For-Fps-01	Diagnosis & Certification of Mental illness
72	For-Fps-02	Civil/Criminal responsibilities of a mentally ill & Insanity
73	For-Tox-12	Alcohol
74	For-Tox-13	Fumigants poisoning (Pesticides [Wheat pill poisoning], herbicides & insecticides)
75	For-Pr-08	Forensic Odontology
76	For-Pr-09	Forensic Radiology
77	For-Pr-10	Role of Chemistry and specialized technique
78	For-Fs-01	Principles and Methods of Crime Scene Investigation
79	For-Fs-02	DNA Profiling

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

Visit-2: MLC Section LUH Hyderabad/Jamshoro

Visit-3: Mortuary@ MLC Section LUH Hyderabad/Jamshoro

Practical's:

Practical-1: Collection, Preservation & Dispatch of Biological & other evidentiary material

Practical-2: DNA/ Fingerprints examination and collection procedure

Practical-3: Medicolegal Autopsies

Practical-4: Exhumation Protocol & Autopsy Instruments.

Practical-5: Medical Certificates & Medicolegal Examinations/Certificate(s)

Practical-6: Clinical Examination(s) in case of Sexual Offences

Practical-7: Examination (s)of Blood Stains & Seminal Stains

Practical-8: Forensic Odontology

- a. Role of dental evidence in identification
- b. Bite marks and their analysis
- c. Dental evidence: Trauma and Poisoning
- d. Basic dental charting/record
- e. Relevant laws

Practical-9: Forensic Radiology

Practical-10: Role of Chemistry and specialized technique

ANNUAL EXAMINATION ASSESSMENT

MBBS ASSESMENT STRUCTURE (THEORY) LUMHS

No.	Scoring Parameter	Marks in %
01	Main Examination Portion / BCQ's	80 %
02	Internal Evaluation Attendance as following 05 Marks Above 90% = 5, 89-80%= 4, 79-70%=3, 65-70%=2 Below 65%=00 Module Tests (BCQ's) 15 Marks	20 %
03	TOTAL	100 %

MBBS ASSESMENT STRUCTURE (PRACTICAL-FIRST TO FOURTH PROFESSIONAL) LUMHS

No.	Scoring Parameter	Marks in %
01	Main Examination Portion / OSPE and VIVA Static Stations and interactive/ viva stations	80 %
02	Internal Evaluation Research 05 Marks Practical Books 02 Marks Module Tests (OSPE/VIVA) 13 Marks	20 %
03	TOTAL	100

MBBS ASSESMENT STRUCTURE (PRACTICAL-FINAL PROFESSIONAL) LUMHS

No.	Scoring Parameter	Marks in %
01	Main Examination Portion / OSCE and VIVA Static Stations and clinical Viva at wards	80 %
02	Internal Evaluation Research 05 Marks log Books 02 Marks Module Tests (OSCE/VIVA) 13 Marks	20 %
03	TOTAL	100

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

- ❖ Lippincott 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

Annexure

Policy for Electives

I. Introduction:

The undergraduate medical program (MBBS) aims to develop healthcare providers who provides care to community at large. It also envisages the student as a future scholar, specialist, researcher and scientist.

An elective permits the students to think of a career beyond examinations and offers students a stimulus to think laterally and creatively besides laying down the foundation for future professional pathways. It also lets the students to match their aspirations with the ground reality in a field of their dreams being a health care professional.

Pakistan Medical & Dental Council recommends to develop medical college's policy on electives for undergraduate medical students, implement it, monitor it and maintain the record of the students selected the electives and evaluate the elective program.

Liaquat University of Health Sciences (LUMHS) Jamshoro, Sindh follows the guiding principles of Higher Education Commission (HEC) of Pakistan and Pakistan Medical & Dental Council (PMDC) and has developed the policy on electives for undergraduate medical students and incorporated in undergraduate medical curriculum.

II. Policy on Electives

a. Definition of elective:

An elective is a learning experience created in the undergraduate medical curriculum to provide an opportunity for the learner (student) to explore, discover and experience areas or streams of his/her interest.

b. Objectives of elective

The objectives of electives are to provide the learner (student) opportunities: 1) for diverse learning experiences and to conduct research or community or institutional project that stimulates inquiry-based learning, self-directed learning, lateral thinking and thinking out of the box.

c. Duration of elective:

Duration for 2 electives is Six-eight weeks (3-4 weeks for each); the duration must be put in the time schedule for elective rotations.

d. Time of electives in Phase of MBBS Curriculum:

After completion of summative (University) examination of third year MBBS, each students have to complete 2 electives.

e. Elective a Compulsory part of course:

It is mandatory for the students to do electives.

f. Departments for electives:

Electives will be done in Pre-clinical, Para clinical and Clinical department

g. Structure of Electives:

1. There are two slabs of electives
2. The learner has to rotate through two elective slabs; each slab is of 3-4 weeks.
3. Focus of slab one is on pre-clinical and para-clinical subjects and two on clinical subjects.
4. Institutions selected for electives, nature of elective, number of students in each elective, name of supervisors and available resources will be determined 6-8 weeks ahead of schedule.
5. The list for the choice of electives will be made available six months ahead of schedule of electives.
6. The students fill the log book meant for electives and get it signed from the supervisor (internal, external if any) after completion of elective in one slab.
7. Ninety percent attendance must be ensured in each elective.
8. Learning must be focused on all three domains of learning, cognitive, psychomotor and affective.

h. Electives Slabs

Slab one	Slab two
<i>Pre-Clinical and Para-clinical</i>	<i>Clinical</i>
Experiential learning in any laboratory Pathology, Microbiology, Biochemistry, Molecular Biology, Genetics, Immunology.	Community Experiential Learning Care at Rural Health Centre level Care at Basic Health Units Care at Specialized clinics in community such as Diabetic Clinic
Other experiential learnings Pharmacovigilance and clinical pharmacology Infection Control Program Activities in Hospital	Hospital Experiential Learning Emergency care in emergency Intensive care in ICU or HDU Outpatient care any of the clinical sciences departments for 3-4 weeks
Research Activities Students initiated research Participation in faculty research Surveys: Community or epidemiological	Others Rehabilitation and palliative Care Sports Medicine Clinical Ethics CPR
Community Experiential Learning School Health Program Immunization Program Maternal and Child Health Program Other National Health Programs such TB Control, Tobacco Control	
Others Bio informatics Artificial Intelligence in Healthcare	

i. Template to be used for planning electives

Item	Response
Name of Slab	
Name of elective	
Place where elective will be done	
Name of Internal Supervisor	
Name of External Supervisor	
Learning Objective/s of the elective	
Number of students to be accommodated at the designated place	
Pre-requisite for the elective	
Learning resource to be utilized by the students	
Logbook/Portfolio entry	
Assessment	
Any other	

j. Obligation of Faculty Members/mentors

- The faculty members/mentors shall counsel the students to help students select desired electives.
- The faculty members/mentors must ascertain a student's expectation must be met from the selected electives.
- The faculty members/mentors must make aware students of the rules regarding attendance, work schedule, documentation and assessment requirements for each elective.

k. Obligation of In-charge of electives program

l. Reflective Report on Elective:

Each student has to prepare 3-4 pages reflective report on elective. The font size will be 12 in Times New Roman. Student can include 1-2 photos of activities done during elective.

m. Evaluation of Electives Program

It is to be done every year by the independent team.

III. Conclusion:

Experiential learning through electives is essential for adult learner. This program helps in grooming of the students and permit students to reflect, plan and grow their career.

THE END