BLOCK 7
3rd Year MBBS

Table of Content

Curricular Framework

The modular integrated curriculum aligns the MBBS program outcomes with the nationally defined competencies of seven-star doctors. The program outcomes are at par with the outcomes that the national regulatory authorities have processed till date for the MBBS graduates. Curriculum outcomes translate the seven-star competencies to the objectives specific learning outcomes for the sessions. The outcomes are fragmented to objectives representing the three domains of learning and then graduated in spirals and horizontally integrated so as to acquire a professional approach, develop a broad-based practical knowledge, to nurture the learner's epistemic curiosity and to promote higher order thinking.

The horizontal integration is evident in the modular configuration where different basic disciplines approach the themes simultaneously. Module has been structured where all the basic disciplines are represented based on their respective weightage of content. Assessment framework ensures that the applied/clinical aspect also is inculcated in the concept development of the learner keeping the clinical relevance and context at the core.

Clinical Skills follow a spiral which is entirely skills dominant. This spiral is the core of psychomotor training. The clinical orientation along with the applied/clinical component of the knowledge base will channelize the learner for the practical and professional aspect of learning.

All module objectives are preceded by the recommended themes and clinical relevance. These are grounded in the rationale of the module so that pattern of learning could be steered for a practical professional approach. However institutional discretion does not prohibit adopting any other thematic approach provided that the program outcomes are adequately achieved

BLOCK VII	BLOCK VIII	BLOCK IX
FOUNDATION-2 & EBM	NEOPLASIA	CARDIOVASCULAR - 2
GENERAL & CLINICAL PHARMACOLOGY	INFECTIOUS DISEASES	RESPIRATORY – 2
HEMATOPOIETIC & IMMUNITY & TRANSPLANT	MUSCULOSKELETAL & LOCOMOTION – 2	COMMUNITY MEDICINE & FAMILY HEALTH – 1
FORENSIC MEDICINE & TOXICOLOGY – 3	FORENSIC MEDICINE & TOXICOLOGY – 3	FORENSIC MEDICINE & TOXICOLOGY – 3
PERLS-3	EXPOSITORY - 3	
C-FRC 3 (CLINICAL – FOUNDATION, ROTATION CLERKSHIPS.		

INTRODUCTION TO STUDY GUIDE

INTRODUCTION TO STUDY GUIDE

WHAT IS A STUDY GUIDE?

It is an aid to: Inform students how student learning program of the subject has been Organized
Help students organize and manage their studies throughout the module/block
Guide students on assessment methods, rules and regulations

THE STUDY GUIDE:

- Communicates information on organization and management of the module.
- This will help the student to contact the right person in case of any difficulty.
- Defines the objectives which are expected to be achieved at the end of the program.
- Identifies the learning strategies such as lectures, small group teachings, clinical skills,
- Demonstration, tutorial and case based learning that will be implemented to achieve the Learning objectives.
- Provides a list of learning resources such as books, computer assisted learning program, web-links, and journals, for students to consult in order to maximize their learning.
- Highlights information on the contribution of continuous and semester 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.
- Focuses on information pertaining to examination policy, rules and regulations

TIMELINE FOR BLOCK 7

BLOCK 7

Block 7			
1	16-03-26 to 21-03-26	Module 12: Foundation II and EBM	Module 12 test: 04-04-26
2	23-03-26 to 28-03-26	**Spring Break**	
3	30-03-26 to 04-04-26	Module 12: Foundation II and EBM	
4	06-04-26 to 11-04-26	Module 13: General and Clinical Pharmacology	Module 13 test 25-04-26
5	13-04-26 to 18-04-26		
6	20-04-26 to 25-04-26		
7	27-04-26 to 02-05-26	Module 14: Hemopoietic and Lymphoid	Module 14 test 09-05-26
8	04-05-26 to 09-05-26		
9	11-05-26 to 16-05-26	Module 15: Forensic Medicine	Module 15 test 16-05-26
10	18-05-26 to 23-05-26	FINAL BLOCK EXAMINATION	
11	25-05-26 to 30-05-26		
Parent teacher meeting		13-06-2026	

Clinical rotation:

	SURGERY AND ALLIED		MEDICINE AND ALLIED	
	S-1	**S-2**	**M-1**	**M-2**
16-03-26 to 04-04-26	A	B	C	D
06-04-26 to 18-04-26	B	A	D	C
20-04-26 to 02-05-26	C	D	A	B
04-05-26 to 16-05-26	D	C	B	A

ASSESSMENT

BLOCK EXAM

MBBS 3rd Professional						
Block-7						
Subject	Written Exam		Oral/Practical/Clinical Exam			
	MCQ (1 mark)	Marks	OSPE /OSCE (8 marks Each observed)	OSCE (10 marks each observed)	OSVE (14 marks each observed)	Marks
Pharmacology	55	55	03	-	01	38
Pathology	50	50	03	-	01	38
Community Medicine	02	02	01	-	-	08
Surgery	05	05	01	-	-	08
Medicine	05	05	01	-	-	08
Forensic	18	18	01	-	01	22
Behavioral	02	02	-	-	-	-
Patient Safety	03	03	-	-	-	-
CFRC	-	-	01	-	-	08
PERLs + ExposITory	-	-	-	01	-	10
Total	140	140	11 stations x 08 = 88	01 stations x 10 = 10	03 stations x 14=42	140

Internal Assessment (Theory)			
No.	Scoring Parameter	Marks out of 20%	Marks distribution
1	Attendance in Lectures	85-90%=1%, > 90%=2%	85-90%= 01 mark > 90%=02 marks
		Remedial classes – re-sit examination allowed only after case endorsed and submitted by the college Principal and approval given by the Competent Authority. However, no marks given	
		Remedial classes – re-sit exam allowed only in genuine cases after approval from Competent Authority. However, no marks given	
2	Block Examination	15%	27
3	Continuous Internal Assessment/ Class Quiz/Class participation/ Professional Behaviour/ Ethical practices/ Leadership traits/ Module Exam Discipline/ Punctuality	3%	06

Internal Assessment (Theory)			
No.	Scoring Parameter	Marks out of 20%	Marks distribution
1	Attendance in Lectures	85-90%=1%, > 90%=2%	85-90%= 01 mark > 90%=02 marks
		Remedial classes – re-sit examination allowed only after case endorsed and submitted by the college Principal and approval given by the Competent Authority. However, no marks given	
		Remedial classes – re-sit exam allowed only in genuine cases after approval from Competent Authority. However, no marks given	
2	Block Examination (OSPE/OSCE/OSVE)	13%	23
3	CFRC Log Book / PERLs Portfolio	02%	06
4	Ward / Clinical / Bedside assessment based on the clinical rotation / DOPS	02%	04

EDUCATIONAL RESOURCES

Anatomy

- Snell's Clinical Anatomy 10th ed.
- Langman's Medical Embryology 12th ed
- Medical Histology by Laiq Hussain Siddiqui 8th edition.
- General Anatomy by Laiq Hussain Siddiqui 6th edition.

Biochemistry

- Harpers illustrated Biochemistry (latest edition). Rodwell.V.W MCGrawHill publishers.
- Lippincott illustrated Review (latest edition). Kluwer.W.
- Essentials of Medical Biochemistry vol 1&2 by Mushtaq Ahmed.

Pathology

- Vinary Kumar, Abul K. Abbas and Nelson Fausto Robbins and Cotran, Pathologic basis of disease. WB Saunders.
- Robbins and Cotran Pathological Basis of Disease. Kumar, V., Abbas, A. and Aster, J. Latest Edition
- Richard Mitchall, Vinary Kumar, Abul K. Abbas and Nelson Fausto Robbins and Cotran, Pocket Companion to Pathologic basis of diseases, Saunder Harcourt.
- Walter and Israel. General Pathology. Churchill Livingstone.
- Robbins & Kumar, Medical Microbiology and Immunology Levinson.

General Medicine

- Principles and Practice of Medicine by Davidson (latest edition)
- Clinical Medicine by Parveen J Kumar & Michaell Clark
- Oxford Handbook of Medicine
- Macleod's Clinical Examination book
- Medicine and Toxicology by C.K. Parikh
- Hutchison's Clinical Methods by Michael Swash. 21st edition

Pharmacology And Therapeutics

- Katzung and Trevor's Pharmacology: Examination and Board Review- 15th Edition
- Basic and Clinical Pharmacology by Bertram G Katzung (case scenarios only) - 16th Edition-
- Current Medical Diagnosis and Treatment- reference book –Edition-2024
- Basic and Clinical Pharmacology by Bertram G Katzung (case scenarios only) - 15th Edition
- Basic and Clinical Pharmacology by Katzung, McGraw-Hill. 16th Edition. 305
- Pharmacology by Champe and Harvey, Lippincott Williams & Wilkins 8th Edition.
- Katzung Basic and Clinical pharmacology, Lippincot Illustated reviews.
- Clinical Pathology Interpretations by A. H. Nagi

Behavioural Sciences

- Handbook of Behavioural Sciences by Prof. Mowadat H.Rana, 3rd Edition
- Medical and Psychosocial aspects of chronic illness and disability 6th edition by Donna R.Falvo and Beverely E.Holland,
- Integrating behavioral sciences in healthcare, Asma Humayun,2003, 1st edition

Community Medicine

- Parks Textbook of Preventive and Social Medicine. K. Park
- Public Health and Community Medicine by Ilyas Ansari
- MSDS manual of Government of Punjab
- Text book of Community Medicine by Park J E. Latest Edition

Surgery

- Bailey & Love's Short Practice of Surgery (latest edition)
- Browse's Introduction to the Symptoms & Signs of Surgical Disease 4th Edition
- Bailey & Love Short Practice of Surgery, Clinical Surgery pearls by Dayananda Babu
- RACS for Surgical Audits.

Patient Safety

- Patient Safety Currciulum Guide: Multi Professional Guide

Microbiology

- Levinson's review of Microbiology
- Medical Microbiology and Immunology by Levinson and Jawetz,

Pediatrics Medicine

- Nelson Textbook of Pediatrics
- Basis of Pediatrics by Pervez Akbar Khan

Gynecology

- Gynecology by Ten Teachers

Infection Control

- National Guidelines Infection Prevention and control, National Institute of Health Pakistan

Biosafety

- Biosafety in Microbiological and Biomedical Laboratories, 6th Edition (CDC, USA)
- WHO Laboratory Biosafety Manual, Fourth Edition, And Associated Monographs
- WHO safe management of wastes from healthcare facilities chapter 7 -8 page 77-99,105-125)

Family Medicine

- Oxford Handbook of General Practice, 5th Edition

Orthopedics

- Apley and Solomon's System of Orthopaedics and Trauma by Ashley Blom (Editor)

Rheumatology

- Davidson's Principles and Practice of Medicine
- Clinical Medicine by Parveen J Kumar & Michaell, Clark
- Hutchison's Clinical Methods by Michael Swash

Radiology

- Aids to Radiological Differential Diagnosis by Chapman S. and Nakielny R. 4th edition. Elsevier Science Limited; 2003.

Forensic Medicine

- Knight's Forensic Pathology by Barnard Knight 3rd edition
- G. Principles and Practice of Forensic Medicine by Prof. NasibR. Awan,2nd edition
- Forensic DNA Typing – 2nd Edition, Author: John M. Butler
- Parikh's Text book of Medical Jurisprudence, Forensic Medicine and Toxicology by C.K. Parikh 6th Ed., CBS Publisher.
- Gun Shot Wounds 2nd edition by V.J.Deimaio
- Knight B. Simpson's Forensic Medicine.
- Knight and Pekka. Principles of Forensic Medicine

Forensic Pathology

- Forensic pathology 2nd edition by V.J.Deimaio CRC press Boca Raton London New York Washington DC

Toxicology

- Principles of clinical toxicology 3rd edition Thomas. Gossel CRC press Taylor and Francis group

Forensic Sciences

- Fundamentals of Forensic Science- 3rd Edition: Author: Max M Houck, Jay A. Siegel
- Text Book of forensic medicine and toxicology Principles and Practice 5th edition by Krishan Vig

Biomedical ethics

- Principles of Biomedical ethics, 8th edition by Tom. L. Beauchamp, James F. Childress.

Evidence Based Medicine

- Databases for the latest articles/manuscripts
- Clinical Practice Guidelines- local and international - (within last 3 years)
- Books (Latest edition-within last 5 years)

Pediatrics

- Nelson's Book of Pediatric 22 edition Illustrated book of Pediatrics, Pervaiz Akbar textbook peads medicine

Islamiyat

- Standard Islamiyat (compulsory) for B.A, BSc, MA, MSc, MBBS by Prof M Sharif Islahi.
- Ilmi Islamiyat(compulsory) for BA, BSc & equivalent.

MODULE - 12
FOUNDATION - II & EBM

Module committee

Title	Department	Doctor Name
Incharge	**Pharmacology**	**Dr. Ubaid**
Member	Pathology	
Member	Pharmacology	
Member	Community medicine	
Member	Forensic medicine	
Member	Patient safety	
Member	Surgery	
Member	Medicine	
Member	Psychiatry	

Module weeks	Recommended Minimum Hours
174	**62**

End of module assessment
Written paper
50 MCQ,s

	Subject	MCQ, s
1	Pharmacology	20
2	Pathology & microbiology	20
3	Other Specialities	10

MODULE 12: FOUNDATION - II & EBM

The Foundation 2 module is designed to build upon and consolidate the foundational knowledge acquired in the earlier years of medical education, particularly from the Foundation-I module. As students transition into their clinical years, it is crucial to reinforce and deepen their understanding of basic medical sciences to support the integration of new, clinically relevant concepts.

This module serves as a bridge, revisiting core topics in general Pharmacology, Pathology, and Forensic medicine with an emphasis on their clinical applications. By doing so, it ensures that students develop a more comprehensive understanding, which is vital for the advanced study of organ systems in subsequent modules (e.g., CVS 2, Respiratory-2, GIT-2, Neurosciences-2, and Reproduction 2). Mastery of these topics is essential before students can effectively approach the complexities of clinical scenarios.

The revisiting of these concepts throughout the curriculum ensures a robust and integrated understanding, laying a solid foundation for clinical competence.

Module outcomes

- Apply Integrated Knowledge of Basic and Clinical Sciences: Synthesize concepts from general Pharmacology, Pathology, and Forensic Medicine to better understand the physiological and pathological processes underlying common clinical conditions. Correlate the foundational knowledge of disease mechanisms with their clinical presentations in Surgery and Medicine.
- Demonstrate Competency in Core Pharmacological Principles: Understand and explain the pharmacokinetics and pharmacodynamics of commonly used drugs in clinical practice.
- Analyze drug interactions, adverse effects, and therapeutic uses in various organ systems, including cardiovascular, respiratory, gastrointestinal, and neurological systems.
- Interpret Pathological Findings: Interpret key pathological processes such as inflammation, infection, neoplasia, and tissue repair in the context of disease progression. Apply knowledge of histopathology and laboratory medicine in diagnosing common diseases seen in clinical practice.
- Apply Forensic Medicine Principles in Clinical Contexts: Demonstrate understanding of medicolegal aspects of medical practice, including documentation, consent, patient rights, and legal responsibilities. Analyze and interpret findings relevant to forensic medicine, such as injury patterns, cause of death, and toxicology, and understand their clinical significance.
- Develop Surgical and Medical Clinical Reasoning: Utilize foundational knowledge to assess and plan appropriate management strategies for common surgical and medical conditions. Integrate surgical principles with an understanding of anatomy and pathology to explain clinical presentations and operative approaches.
- Practice Patient Safety Principles: Identify potential risks to patient safety in clinical settings, including medication errors, procedural risks, and diagnostic mistakes. Apply strategies to mitigate risks and promote patient safety, including adhering to clinical guidelines, infection control measures, and communication best practices.
- Demonstrate Ethical and Professional Conduct: Recognize the importance of ethical decision-making and professionalism in both clinical practice and forensic medicine. Engage in responsible clinical practice, demonstrating accountability, integrity, and respect for patient autonomy and confidentiality.
- Employ Critical Thinking and Problem-Solving Skills: Use clinical reasoning to solve complex problems related to pharmacological treatment plans, pathological diagnoses, and surgical management. Analyze case scenarios that integrate knowledge across multiple subjects, drawing from basic and clinical sciences to reach accurate clinical conclusions.

- Communicate Effectively in Multidisciplinary Teams: Demonstrate the ability to collaborate and communicate clearly with peers and healthcare professionals from various specialties. Present clinical findings, diagnoses, and management plans effectively in both written and verbal formats, ensuring clarity and precision.

Subjects integrated in module

1. Pathology
2. General pharmacology
3. Community medicine
4. Forensic Medicine
5. Patient Safety
6. Surgery
7. Medicine
8. Psychiatry

IMPLEMENTATION TORs

- The time calculation for completion of modules and blocks is based on 35 hours per week. Total hours of teaching, learning and formative/summative internal assessment to be completed in a year are 1200.
- The hours mentioned within each module are the mandatory minimum required. The rest of the hours are left to the discretion of the institution that can be used in teaching, learning and assessment as per decision of the institutional academic council.
- The content and the intended learning outcomes written are mandatory, to be taught, at the level required, as the end year assessment will be based on these.
- However, the level of cognition can be kept at a higher level by the institution.
- The Table of Specifications provided will be used for the three papers of the first professional examination. The same table of specifications should be used for the respective three block exams for internal assessment.

WEEK 1: Time Table Third year MBBS block 7, Module 12							
	Lecture 08:00 to 08:45	**Lecture 08:45 to 09:30**	**Ward 09:30 to 11:00**	**Practical/tutorial 11:00 to 12:15**	**Lecture 12:15 to 01:00**	**BREAK**	**Tutorial 01:15 to 02:00**
Mon	INTRODUCTION	Pharmacology F2-Ph-001	Clinical rotation	A-pathology practical F2-Pa-005 B-pharmacology practical F2-Ph012 C-forensic practical F2-For009 D-CFRC skills LAB F2-M-007-8	Pathology F2-Pa-001		Forensic Medicine
Tue	Pathology F2-Pa-002	Pharmacology F2-Ph-002 F2-Ph-003	Clinical rotation	B-pathology practical F2-Pa-005 C-pharmacology practical F2-Ph012 D-Forensic Practical F2-For009 A-CFRC skills LAB F2-M-007-8	Community medicine F2-CM001		Forensic Medicine
Wed	Forensic Medicine F2-For001	Pharmacology F2-Ph-004	Clinical rotation	C-pathology practical F2-Pa-005 D-pharmacology practical F2-Ph012 A-Forensic Practical F2-For009 B-CFRC skills LAB F2-M-007-8	Pathology F2-Pa-003 Integrated with Pharmacology		Patient Safety F2-PS-001
Thur	Pathology F2-Pa-004	Pharmacology F2-Ph-005	Clinical rotation	D-pathology practical F2-Pa-005 A-pharmacology practical F2-Ph012 B-Forensic Practical F2-For009 C-CFRC skills LAB F2-M-007-8	Forensic Medicine F2-For002		Medicine F2-M-001
Fri	Surgery F2-S-001 Integrated with Pathology	Pharmacology F2-Ph-006	Clinical rotation	A & B pathology tutorial C & D pharmacology tutorial			
Sat	Pharmacology F2-Ph-007	Forensic Medicine F2-For003	Clinical rotation	C & D pathology tutorial A & B pharmacology tutorial	Pathology F2-Pa-004		PERL PERLs-3-001 Community Medicine

WEEK 2: Time Table Third year MBBS block 7 Module 12							
	Lecture 08:00 to 08:45	**Lecture 08:45 to 09:30**	**Ward 09:30 to 11:00**	**Practical/tutorial 11:00 to 12:15**	**Lecture 12:15 to 01:00**	**BREAK**	**Tutorial 01:15 to 02:00**
Mon	Behavioral sciences GPhBhS-001	Pharmacology F2-Ph-008	Clinical rotation	A-pathology practical HIT-H005 B-pharmacology practical F2-Ph013 C-forensic practical F2-For0010 D-CFRC skills LAB F2-M-009	Pathology HIT-H001		Forensic Medicine
Tue	Pathology HIT-H001	Pharmacology F2-Ph-009	Clinical rotation	B-pathology practical HIT-H005 C-pharmacology practical F2-Ph013 D-Forensic Practical F2-For0010 A-CFRC skills LAB F2-M-009	Community medicine F2-CM001		Forensic Medicine
Wed	Forensic Medicine F2-For004	Pharmacology F2-Ph-010	Clinical rotation	C-pathology practical HIT-H005 D-pharmacology practical F2-Ph013 A-Forensic Practical F2-For0010 B-CFRC skills LAB F2-M-009	Pathology HIT-H001		Surgery Patient Safety F2-PS-002
Thur	Pathology HIT-H002	Pharmacology F2-Ph-011	Clinical rotation	D-pathology practical HIT-H005 A-pharmacology practical F2-Ph013 B-Forensic Practical F2-For0010 C-CFRC skills LAB F2-M-009	Forensic Medicine For-Th001		Medicine F2-M-002
Fri	Surgery F2-S-002	Pharmacology	Clinical rotation	A & B pathology tutorial C & D pharmacology tutorial			
Sat	Pharmacology	Forensic Medicine For-Th001	Clinical rotation	C & D pathology tutorial A & B pharmacology tutorial	Pathology HIT-H002		PERL PERLs-3-002-003 Community Medicine

THEORY

GENERAL PHARMACOLOGY			
CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 17	
		INTEGRATING DISCIPLINE	TOPIC
F2-Ph-001	Define Pharmacology, different branches of pharmacology, drug nomenclature and pharmacopoeias	Pharmacology	Introduction
F2-Ph-002	Identify the sources and active principles of drugs with clinical applications of active principles. Tabulate differences between fixed oils and volatile oils as sources of drugs.		Sources of drugs and active principles
F2-Ph-003	Summarize definitions of various pharmacokinetic and pharmacodynamic parameters.		Parameters
F2-Ph-004	Name various routes of drug administration. Discuss the advantages & disadvantages of various routes of drug administration. Describe the factors that influence the route of administration of a drug. Discuss the clinical relevance of the selection of routes of administration.		Routes of Administration
F2-Ph-005	Enlist the different processes by which drugs are transported across cell membranes. Describe and differentiate each transport process.	Pharmacology	Permeation
F2-Ph-006	Describe drug absorption. Describe drug-based factors affecting rate and extent of drug absorption. Predict the relative permeation of a clinically useful weak acid or a weak base from knowledge of its pKa, the pH of the medium using the Henderson Hasselbalch equation. Determine percentage of drug ionized or unionized when placed in a certain Ph media. Explain ion trapping. Describe patient-based factors affecting rate and extent of drug absorption. Describe the clinical significance of drug absorption.	Pharmacology	Absorption
F2-Ph-007	Define bioavailability. Describe factors affecting bioavailability. Define area under the curve (AUC). Explain first pass elimination. Explain extraction ratio. Describe how bioavailability and the first pass effect, affect the different clinical conditions. Explain bioequivalence and therapeutic equivalence.	Pharmacology	Bioavailability and first pass effect
F2-Ph-008	Define drug distribution. Describe the distribution of a drug through various body compartments. Describe factors affecting distribution of a drug. Explain volume of distribution (Vd) and how to calculate Vd. Explain the clinical significance of Vd. Explain the characteristics of a drug that is bound to plasma proteins. Describe the clinical consequences of displacement of a drug from plasma protein binding.	Pharmacology	Distribution

F2-Ph-009	Explain metabolism and biotransformation. Describe the outcomes of metabolism and biotransformation. Explain a 'prodrug' Enlist and describe characteristics of Phase 1 and Phase 2 reactions of biotransformation. Describe microsomal and non-microsomal biotransformation reactions. Describe the microsomal oxidation system. Explain Hoffman's elimination. Describe factors affecting metabolism & biotransformation. Describe the clinical significance of enzyme induction and enzyme inhibition with their examples. Describe the clinical significance of metabolism & biotransformation. Describe clinical significance of enterohepatic recycling of drugs.	Pharmacology	Metabolism and biotransformation
F2-Ph-010	Define plasma half-life and explain the concept of plasma half-life. Describe factors affecting half-life and clinical significance of plasma half-life. Explain the concept of drug clearance. Describe factors affecting drug clearance. Explain steady state plasma concentration. Explain clinical significance of steady state plasma concentration. Define and explain elimination and orders of elimination – first & zero order kinetics with examples. Describe clinical significance of first & zero order kinetics. Tabulate differences between first order kinetics and zero order kinetics. Define, explain and calculate maintenance dose and loading dose using appropriate formula.	Pharmacology	Elimination
F2-Ph-011	Describe drug excretion. Enlist routes of drug excretion. Describe processes of drug excretion through the kidneys. Describe factors affecting glomerular filtration & tubular reabsorption. Describe the clinical significance of glomerular filtration, active tubular secretion and passive tubular reabsorption of drugs	Pharmacology	Excretion

GENERAL PATHOLOGY			
CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 06	
		INTEGRATING DISCIPLINE	TOPIC
F2-Pa-001	Define mutation and classify different types. Describe the features and examples of the following: I. Autosomal dominant disorders II. Autosomal recessive disorders III. X-linked disorders Enlist types and steps of PCR.	Pathology	Genetics
F2-Pa-002	Define karyotyping Describe the salient features and lab diagnosis along with genetic abnormalities in the following syndromes: i. Marfan syndrome ii. Ehlers-Danlos syndrome iii. Down syndrome iv. Klinefelter syndrome v. Turner syndrome	Pathology	Genetic syndromes
F2-Pa-003	Differentiate between Gram positive and Gram negative cell wall. Discuss how it affects the choice of antibiotic.	Pharmacology	Comparison of Gram-positive and negative Bacterial cell wall structure, how bacteria differ from viruses

MICROBIOLOGY			
CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 09	
		INTEGRATING DISCIPLINE	TOPIC
F2-Pa-004	Classify gram positive and gram negative cocci. Classify gram positive and gram negative rods. Classify spirochetes and atypical bacteria. Classify culture media and describe blood, chocolate, McConkey, nutrient, CLED, TCBS, TSI, citrate & urease media, blood culture and seaboard agar. Define conjugation, transduction, transformation and describe mechanisms of antimicrobial resistance. Define colonization resistance and enlist normal flora of skin, gut, respiratory tract, and vagina. Classify DNA viruses and RNA viruses. Classify medical mycoses fungi. Classify medically important parasites.	Microbiology	Microbiology

FORENSIC MEDICINE			
CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 02	
		INTEGRATING DISCIPLINE	TOPIC
F2-For-001	Define forensic medicine and describe its various branches.	Forensic Medicine & Jurisprudence	Introduction to the subject of Forensic Medicine
F2-For-002	Describe evidence, its types & recording of evidence	Jurisprudence	Chain of evidence
F2-For-003	Describe the importance of diagnosis of death		Introduction to Thanatology
F2-For-004	Describe the WHO format of the death certificate.		Death certificate

COMMUNITY MEDICINE			
CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 02	
		INTEGRATING DISCIPLINE	TOPIC
F2-CM-001	Define health. Describe health dimensions. Describe the good health indicators.	Community medicine	Health dimensions & Indicators
	Calculate and interpret health indicators of public health importance.		

PATIENT SAFETY			
CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 04	
		INTEGRATING DISCIPLINE	TOPIC
F2-PS-001	Explain patient safety as a critical concern in healthcare and its impact on the quality of patient care.	Medicine	Patient safety concept
F2-PS-002	Discuss the relationship between human factors and patient safety.	Surgery	Human factors and patient safety

GENERAL SURGERY			
CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 03	
		INTEGRATING DISCIPLINE	TOPIC
F2-S-001	Describe the basic stages of surgical wound healing. Differentiate between primary and secondary wound healing.	Surgery	Wound Healing
F2-S-002	Classify burns based on depth and surface area. Outline the principles of initial surgical management of burns.	Surgery	Burns
F2-S-003	Identify clinical signs of external and internal hemorrhage in trauma patients. Describe early features of hypovolemic shock. Outline the initial steps in managing hemorrhage and shock	Surgery	Shock & hemorrhage

GENERAL MEDICINE			
CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 02	
		INTEGRATING DISCIPLINE	TOPIC
F2-M-001	Describe the common clinical features of infectious diseases. Explain the differences in clinical presentation between viral and bacterial infections.	Medicine	Bacterial & viral diseases
F2-M-002	Identify warning signs in infections that require urgent referral or intervention. Outline basic principles of management and prevention of infections.		

PSYCHIATRY			
CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 02	
		INTEGRATING DISCIPLINE	TOPIC
F2-BhS-001	Define health behavior and discuss the importance of behavioral sciences in medical practice. Identify biological, psychological, and social factors that influence health behaviors and decisionmaking. Discuss key behavioral change models (e.g., Health Belief Model, Theory of Planned Behavior) and their application in patient care.	Behavioral sciences	Introduction to Health Behavior and Its Determinants

PRACTICALS

FORENSIC MEDICINE			
CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 04	
		INTEGRATING DISCIPLINE	TOPIC
F2-For-005	Describe trace evidence and its types.	Forensic Medicine	Trace evidence
F2-For-006	Describe the types of fingerprints and their medicolegal importance. Demonstrate the method of recording different types of fingerprints.		Dactylography Recording of evidence
	Demonstrate the procedure for recording a dying declaration. Explain its significance in medicolegal practice.		Shock & hemorrhage
F2-For-007	Take written informed consent for various procedures.		Consent form

PATHOLOGY			
CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 02	
		INTEGRATING DISCIPLINE	TOPIC
F2-Pa-005	Demonstrate the correct steps of Gram staining on a specimen. Interpret the results of Gram staining to guide antibiotic choice.	Microbiology	Use of Microscope & Gram staining

PHARMACOLOGY			
CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 02	
		INTEGRATING DISCIPLINE	TOPIC
F2-Ph-012	Calculate drug dosing (e.g., IV infusion) and dose in children.	Pharmacology	Drug dosing
	Calculate mean, mode, median, range, standard deviation, standard error, t-test. Interpret metrology and abbreviations.		

MODULE - 13
GENERAL & CLINICAL PHARMACOLOGY

Module committee

Title	Department	Doctor Name
Incharge	**Pharmacology**	**Dr. Mubashara**
Member	Patient safety	

Module weeks	Recommended Minimum Hours
2.25	**79**

End of module assessment
Written paper
50 MCQ,s

	Subject	MCQ, s
1	Pharmacology	45
2	Patient Safety	05

MODULE RATIONALE

The General & Clinical Pharmacology module consists of General Pharmacology and Autonomic Nervous System Pharmacology. It is designed to emphasize on various pharmacodynamic processes, drug interactions, and adverse drug reactions, all of which are integral in understanding how the drugs work and how they are used in clinical practice.

Additionally, it highlights the role of pharmacogenetics in drug responses and explores the phases of drug development, providing students with the basic knowledge necessary for safe, effective, and personalized pharmacological interventions in clinical practice.

The Autonomic Pharmacology module introduces third-year medical students to the pharmacological principles of the autonomic nervous system (ANS), which regulates essential involuntary functions such as heart rate, blood pressure, digestion, and respiratory function. The module covers both the cholinergic and adrenergic systems, providing a strong foundation for understanding how drugs interact with these systems to treat diseases/conditions. Given the wideranging clinical applications of autonomic drugs, this module plays a critical role in bridging basic pharmacology with clinical medicine, particularly in fields like cardiovascular, gastrointestinal, and respiratory medicine.

Module outcomes

- Explain the fundamentals of pharmacodynamics and how drugs interact with biological systems and their mechanism of action. Describe dose-response relationships, drug efficacy, and potency.
- Recognize therapeutic windows and factors influencing drug response.
- Apply pharmacodynamic principles to predict drug effects and optimize therapy.
- Understand different types of drugs that act on the autonomic nervous system and their clinical usage.

Subjects integrated in module

1. Pharmacology & Therapeutics
2. Biochemistry
3. Physiology
4. Behavioural Sciences
5. General Medicine

IMPLEMENTATION TORs

- The time calculation for completion of modules and blocks is based on 35 hours per week. Total hours of teaching, learning and formative/summative internal assessment to be completed in a year are 1200.
- The hours mentioned within each module are the mandatory minimum required. The rest of the hours are left to the discretion of the institution that can be used in teaching, learning and assessment as per decision of the institutional academic council.
- The content and the intended learning outcomes written are mandatory, to be taught, at the level required, as the end year assessment will be based on these.
- However, the level of cognition can be kept at a higher level by the institution.
- The Table of Specifications provided will be used for the three papers of the first professional examination. The same table of specifications should be used for the respective three block exams for internal assessment.

WEEK 3: Time Table Third year MBBS block 7, Module 13							
	Lecture 08:00 to 08:45	**Lecture 08:45 to 09:30**	**Ward 09:30 to 11:00**	**Practical/tutorial 11:00 to 12:15**	**Lecture 12:15 to 01:00**		**Tutorial 01:15 to 02:00**
Mon 21-04	Behavioral sciences	Pharmacology GPh-Ph001	Clinical rotation	A-pathology practical HIT-H006A B-pharmacology practical GPh-Ph004.A C-forensic practical For-Th012 D-CFRC skills LAB CFRC3-003	Pathology HIT-H002	BREAK	Forensic Medicine
Tue 22-04	Pathology HIT-H002	Pharmacology GPh-Ph001	Clinical rotation	B-pathology practical HIT-H006A C-pharmacology practical GPh-Ph004.A D-Forensic Practical For-Th012 A-CFRC skills LAB CFRC3-003	Community medicine F2-CM001		Forensic Medicine
Wed 23-04	Forensic Medicine For-Th002	Pharmacology GPh-Ph001	Clinical rotation	C-pathology practical HIT-H006A D-pharmacology practical GPh-Ph004.A A-Forensic Practical For-Th012 B-CFRC skills LAB CFRC3-003	Pathology HIT-H002		Patient Safety GPh-PS001
Thur 24-04	Pathology HIT-H002	Pharmacology GPh-Ph001	Clinical rotation	D-pathology practical HIT-H006A A-pharmacology practical GPh-Ph004.A B-Forensic Practical For-Th012 C-CFRC skills LAB CFRC3-003	Forensic Medicine For-Th002		Medicine GPh-Ph002
Fri 25-04	Surgery HIT-H001	Pharmacology GPh-Ph001	Clinical rotation	A & B pathology tutorial C & D pharmacology tutorial			
Sat 26-04	Pharmacology GPh-Ph001	Forensic Medicine For-Th002	Clinical rotation	C & D pathology tutorial A & B pharmacology tutorial	Pathology HIT-H002		PERL PERLs-3-004-005 Community Medicine

WEEK 4: Time Table Third year MBBS block 7, Module 13							
	Lecture 08:00 to 08:45	**Lecture 08:45 to 09:30**	**Ward 09:30 to 11:00**	**Practical/tutorial 11:00 to 12:15**	**Lecture 12:15 to 01:00**	**BREAK**	**Tutorial 01:15 to 02:00**
Mon 28-04	Behavioral sciences	Pharmacology GPh-Ph002	Clinical rotation	A-pathology practical HIT-H006B B-pharmacology practical GPh-Ph004.B C-forensic practical For-Th013 D-CFRC skills LAB CFRC3-0014-15	Pathology HIT-H003		Forensic Medicine
Tue 29-04	Pathology HIT-H003	Pharmacology GPh-Ph002	Clinical rotation	B-pathology practical HIT-H006B C-pharmacology practical GPh-Ph004.B D-Forensic Practical For-Th013 A-CFRC skills LAB CFRC3-0014-15	Community medicine F2-CM001		Forensic Medicine
Wed 30-04	Forensic Medicine For-Th003	Pharmacology GPh-Ph002	Clinical rotation	C-pathology practical HIT-H006B D-pharmacology practical GPh-Ph004.B A-Forensic Practical For-Th013 B-CFRC skills LAB CFRC3-0014-15	Pathology HIT-H003		Patient Safety GPh-PS002
Thur 01-05	Pathology HIT-Pa003	Pharmacology GPh-Ph002	Clinical rotation	D-pathology practical HIT-H006B A-pharmacology practical GPh-Ph004.B B-Forensic Practical For-Th013 C-CFRC skills LAB CFRC3-0014-15	Forensic Medicine For-Th004		Medicine GPh-Ph002
Fri 02-05	Surgery HIT-H002	Pharmacology GPh-Ph002	Clinical rotation	A & B pathology tutorial C & D pharmacology tutorial			
Sat 03-05	Pharmacology GPh-Ph002	Forensic Medicine For-Th005	Clinical rotation	C & D pathology tutorial A & B pharmacology tutorial	Pathology HIT-Pa003		PERL PERLs-3-006 Community Medicine

WEEK 5: Time Table Third year MBBS block 7, Module 13							
	Lecture 08:00 to 08:45	**Lecture 08:45 to 09:30**	**Ward 09:30 to 11:00**	**Practical/tutorial 11:00 to 12:15**	**Lecture 12:15 to 01:00**		**Tutorial 01:15 to 02:00**
Mon 05-05	Forensic Medicine For-Th006	Pharmacology GPh-Ph003	Clinical rotation	A-pathology practical HIT-H006C B-pharmacology practical GPh-Ph004.C C-forensic practical For-Au014 D-CFRC skills LAB CFRC3-0015	Pathology HIT-H004	BREAK	Forensic Medicine
Tue 06-05	Pathology HIT-H004	Pharmacology GPh-Ph003	Clinical rotation	B-pathology practical HIT-H006C C-pharmacology practical GPh-Ph004.C D-Forensic Practical For-Au014 A-CFRC skills LAB CFRC3-0016	Community medicine F2-CM001		Forensic Medicine
Wed 07-05	Forensic Medicine For-Th007	Pharmacology GPh-Ph003	Clinical rotation	C-pathology practical HIT-H006C D-pharmacology practical GPh-Ph004.C A-Forensic Practical For-Au014 B-CFRC skills LAB CFRC3-0016	Pathology HIT-H004		Patient Safety
Thur 08-05	Pathology HIT-H004	Pharmacology GPh-Ph003	Clinical rotation	D-pathology practical HIT-H006C A-pharmacology practical GPh-Ph004.C B-Forensic Practical For-Au014 C-CFRC skills LAB CFRC3-0016	Forensic Medicine For-Th008		Medicine GPh-Ph003
Fri 09-05	Surgery F2-S-002	Pharmacology GPh-Ph003	Clinical rotation	A & B pathology tutorial C & D pharmacology tutorial			
Sat 10-05	Pharmacology GPh-Ph003	Forensic Medicine For-Th009	Clinical rotation	C & D pathology tutorial A & B pharmacology tutorial	Pathology HIT-H004		PERL PERLs-3-008-009 Community Medicine

THEORY

PHARMACOLOGY			
CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 58	
		INTEGRATING DISCIPLINE	TOPIC
GCPh-Ph-001	Define pharmacodynamics, affinity, efficacy, potency.	Pharmacology	Pharmacodynamics
	Explain agonists, (partial, inverse, and bias), allosteric modulators with examples.		
	Describe spare receptors with their clinical importance.		
	Elaborate transmembrane signaling pathways.		
	Name the effectors controlled by G-proteins.		
	Describe various drug–antagonism types with examples. Compare and discuss the information derived from Graded and Quantal dose-response curves. Explain the significance of semi-log transformation.		
	Define Median Effective (ED50), Median Toxic (TD50) & Median Lethal Dose (LD50) with clinical relevance.		
	Define therapeutic index and give its clinical importance.		
	Define therapeutic window and explain its clinical Define the following with examples: desensitization, tachyphylaxis, tolerance, resistance, super sensitivity, hypersensitivity, superinfection, iatrogenic effect, and idiosyncrasy. importance.		
	Describe the phenomenon of regulation of receptors.		
	Describe pharmacogenetics with examples.		
	Illustrate various phases of drug development.		
GCPh-Ph-002	List the cholinergic receptors with their site of action and 2nd messenger system.	Pharmacology	Autonomic Pharmacology Cholinergic System
	Discuss the pharmacological actions / systemic effects of cholinergic agonists and antagonists.	Pharmacology	
	Outline the clinical uses and adverse effects of cholinomimetics.		
	Differentiate between myasthenic crisis and cholinergic crisis.	Pharmacology	
	Outline the management of Myasthenia gravis.		
	Explain the pharmacological management of Alzheimer's disease.	Pharmacology	
	Describe the process of 'aging' in OPC poisoning and its management. Discuss the management of Organophosphate (OPC) poisoning.	Pharmacology	
	Discuss the therapeutic uses of antimuscarinics.		
	Discuss the role of anticholinergic drugs in the management of Parkinson's disease.		
	Enlist the toxicity and contraindications of atropine along with their rationale.		
	Enlist the toxic effects and pharmacological treatment of nicotine poisoning.		
	Enlist the toxic effects and pharmacological treatment of mushroom poisoning.		
GCPh-Ph-003	Enlist the adrenergic receptors with their site of action and transduction mechanism. Classify adrenergic agonists.	Pharmacology	Autonomic Pharmacology (Adrenergic System)
	Describe general characteristics of catecholamines. Compare the structural characteristics of catecholamines & non-catecholamines		

	Discuss the pharmacological actions / systemic effects of direct and indirect-acting adrenergic agonists. Discuss the therapeutic uses, adverse effects, and contraindications of direct-acting adrenergic agonists.	Pharmacology	
	Classify alpha blockers. Discuss the clinical uses and adverse effects of alphablockers. Discuss epinephrine reversal. Discuss the adverse effects of alpha-blockers.		
	Classify beta-blockers. Discuss the clinical indications and adverse effects. of using beta antagonists. Enlist their adverse effects.		
	Compare and contrast the characteristics of Reserpine and Guanethidine.		
	Explain the pharmacological actions of ganglion blockers.		
	Discuss the mechanism of action, clinical uses, and adverse effects of centrally acting sympatholytic drugs (clonidine and methyldopa).		

BIOCHEMISTRY			
CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 02	
		INTEGRATING DISCIPLINE	TOPIC
GCPh-B-001	Describe the features of signal transduction. Describe types of second messengers. Differentiate the G protein and non-G protein mediated signal transduction pathways.	Biochemistry	Signal Transduction & Second Messengers

PHYSIOLOGY			
CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 02	
		INTEGRATING DISCIPLINE	TOPIC
GCPh-P-001	Describe the types of adrenergic and cholinergic receptors and their functions. Explain the effects of sympathetic and parasympathetic on various organs/systems of the body.	Medical Physiology	Autonomic Nervous System

BEHAVIOURAL SCIENCES			
CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 02	
		INTEGRATING DISCIPLINE	TOPIC
GCPh-BhS-001	Describe common ethical dilemmas in drug trials & pharmaceutical industry.	Behavioural sciences	Ethical dilemmas

PATIENT SAFETY			
CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 03	
		INTEGRATING DISCIPLINE	TOPIC
GCPh-PS-001	Describe the terms error, slip, lapse, mistake, violation, near miss and hindsight bias.	Pharmacology	Learning from errors to prevent harm
GCPh-PS-002	Explain the ways to improve the safety of medication use.		Medication safety

PRACTICAL

PHARMACOLOGY			
CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 12	
		INTEGRATING DISCIPLINE	TOPIC
GCPh-Ph-004	Identify and describe components of prescription including its format, types, and rationale of prescription.	Pharmacology	Prescription writing & Drug preparation and dispensing
	Write prescription of the following conditions: motion sickness, anaphylactic shock, cardiogenic shock, iron deficiency anemia, and scabies.		
	Prepare and dispense 100 ml of 0.1 % KMnO4 solution using a stock solution.		
	Prepare and dispense 12 g of Sulphur ointment B-P 10%.		
GCPh-Ph-005	Analyze and interpret the pharmacological effects of Drugs (Acetylcholine, Atropine Adrenaline, Propranolol) on animal through online videos / simulations / graphs / practical performance.	Pharmacology	Autonomic Nervous System
	Analyze and interpret different concentrations of acetylcholine on rabbit's ileum through online videos / simulations / graphs / practical performance.		
	Analyze and interpret drug antagonism between acetylcholine and atropine on rabbit's ileum through online videos / simulations / graphs / practical performance.		
	Analyze and interpret drugs (pilocarpine, adrenaline, atropine, homatropine, proparacaine) on rabbit's eye through online videos / simulations / graphs / practical performance.		

MODULE - 14
HEMATOPOIETIC, IMMUNITY & TRANSPLANT

Module committee

Title	Department	Doctor Name
Incharge	**Pathology**	**Prof. Rafique Cheema**
Member	Surgery	
Member	Medicine	
Member	Pharmacology	

Module weeks	Recommended Minimum Hours
02	**70**

End of module assessment
Written paper
50 MCQ,s

	Subject	MCQ, s
1	Pathology	35
2	Surgery	05
3	Medicine	05
4	Pharmacology	05

MODULE RATIONALE

The study of hematopoietic immunity and transplantation is critical for 3rd-year MBBS students as it forms the foundation for understanding the pathological basis for immune function, blood disorders, and the life-saving field of organ and tissue transplantation. This module integrates immunology, hematology, and clinical medicine, providing students with essential knowledge, skills and behavior about hematopoietic stem cells, immune responses, and their role in diseases like leukemia, lymphoma, and immunodeficiencies.

Understanding graft rejection, immunosuppression, and transplant-related complications prepares students to manage clinical cases involving blood transfusions, organ transplants, and autoimmune diseases. In addition, it integrates key concepts from pharmacology, general medicine, surgery and ethics, preparing students for future clinical practice, decision-making, and research in advanced therapies like immunotherapy and bioengineered organs. The module also emphasizes the ethical and legal considerations of organ donation, helping students navigate the complexities of modern transplantation medicine.

Module outcomes

- Describe the process of hematopoiesis including sites of blood cell formation in embryonic and adult stages.
- Describe the differentiation of stem cells into various mature blood cell lines.
- Classify the key factors and signaling pathways for haemopoietic stem cell development and maintenance.
- Describe the characteristics of various blood cell, including erythrocytes, leukocytes and platelets.
- Explain the various hematological disorders such as inherited and acquired anemias, acute and chronic leukemias, Hodgkin and Non Hodgkin lymphomas and coagulation disorders in terms of inheritance, etiology, classification, pathogenesis, clinical features, diagnosis and prognosis.
- Explain and interpret the data of inheritance, etiology, classification, pathogenesis, clinical features, diagnosis and prognosis of Primary & Secondary Polycythemia and other myeloproliferative neoplasms.
- Interpret the patient and laboratory/radiological data of various hematological disorders such as inherited and acquired anemias, acute and chronic leukemias, Bone Marrow Failure Syndromes, Hodgkin and Non-Hodgkin lymphomas and coagulation disorders in terms of inheritance, etiology, classification, pathogenesis, clinical features, diagnosis and prognosis.
- Classify and explain mechanisms which can cause neutropenia/agranulocytosis, eosinophilia, lymphocytosis, neutrophilia and basophilia.
- Differentiation between infective and malignant causes of leukocytosis with special reference
- to infectious mononucleosis, acute and chronic non-specific lymphadenitis.
- Explain and interpret the data of multiple myeloma with respect to etiology, pathogenesis, morphology, clinical features and diagnosis.
- Explain and apply knowledge of different drugs used to treat anemias, polycythemias, coagulation disorders, myeloproliferative disorders and bone marrow failure syndromes.
- Explain ABO and Rhesus blood groups, their clinical importance and method of group typing.
- Explain and identify common indications of blood products (red cells, platelets and plasma) in different clinical scenarios.
- Explain and interpret the data regarding hazards of blood transfusion and apply methods of their prevention in different clinical scenarios.
- Describe concepts of immune system and different immunities as passive, active, innate and adaptive

- Compare and contrast the various immune cell
- Elaborate the primary (bone marrow and thymus) and secondary (Spleen, lymph nodes and MALT {mucosa associated lymphoid tissue}) lymphoid organs.
- Analyze the mechanisms of antigen recognition/presentation and interpret the data regarding the related diseases.
- Describe the processes involved in antibody production and B cell role in humoral immunity.
- Describe the complement activation pathways and interpret the data regarding their role in immune response to infections, autoimmunity, transplant rejection and immune deficiency diseases.
- Explain and interpret the data regarding clinical aspects of hypersensitivity reactions (infectious diseases and autoimmune diseases).
- Describe the principles of organ and tissue transplantation including the various types as allograft, isograft etc.
- Identify the common organs/tissue transplanted such as kidneys, liver, cornea, lung etc.
- Understand the role of Human Leukocyte Antigen (HLA) system and tissue matching.
- Illustrate the pharmacological drugs used in immunosuppression along with their mechanism of action.
- Explain the different types of rejection as hyperacute, acute and chronic.
- Apply knowledge of haemopoietic, immune and transplant principles to clinical scenarios along with management of hematological disorders and transplant patients.
- Explain recent advancements in haemopoietic stem cell research, immunotherapy and transplantation techniques.
- Describe the ethical considerations such as consent, national and international laws governing organ donation and transplantation.
- Identify the future challenges in field of transplantation such as bioengineered organs.

Subjects integrated in module

1. Pharmacology & Therapeutics
2. General Medicine
3. General Surgery
4. Biochemistry

IMPLEMENTATION TORs

- The time calculation for completion of modules and blocks is based on 35 hours per week.
- Total hours of teaching, learning and formative/summative internal assessment to be completed in a year are 1200.
- The hours mentioned within each module are the mandatory minimum required. The rest of the hours are left to the discretion of the institution that can be used in teaching, learning and assessment as per decision of the institutional academic council.
- The content and the intended learning outcomes written are mandatory, to be taught, at the level required, as the end year assessment will be based on these.
- However, the level of cognition can be kept at a higher level by the institution.
- The Table of Specifications provided will be used for the three papers of the first professional examination. The same table of specifications should be used for the respective three block exams for internal assessment.

WEEK 6: Time Table Third year MBBS block 7, Module 14							
	Lecture 08:00 to 08:45	**Lecture 08:45 to 09:30**	**Ward 09:30 to 11:00**	**Practical/tutorial 11:00 to 12:15**	**Lecture 12:15 to 01:00**	**BREAK**	**Tutorial 01:15 to 02:00**
Mon 12-05	Forensic Medicine For-Th0010	Pharmacology HIT-H003 Inte with Pathology	Clinical rotation	A-pathology practical HIT-H006D B-pharmacology practical GPh-Ph004.D C-forensic practical For-Pl011 D-CFRC skills LAB CFRC3-003	Pathology HIT-Pa001		Forensic Medicine
Tue 13-05	Pathology HIT-Pa001	Pharmacology HIT-H003 Inte with Pathology	Clinical rotation	B-pathology practical HIT-H006D C-pharmacology practical GPh-Ph004.D D-Forensic Practical For-Pl011 A-CFRC skills LAB CFRC3-003	Community medicine F2-CM001		Forensic Medicine
Wed 14-05	Forensic Medicine For-Th0011	Pharmacology HIT-H003 Inte with Pathology	Clinical rotation	C-pathology practical HIT-H006D D-pharmacology practical GPh-Ph004.D A-Forensic Practical For-Pl011 B-CFRC skills LAB CFRC3-003	Pathology HIT-Pa002		Patient Safety
Thur 15-05	Pathology HIT-Pa002	Pharmacology HIT-H003 Inte with Pathology	Clinical rotation	D-pathology practical HIT-H006D A-pharmacology practical GPh-Ph004.D B-Forensic Practical For-Pl011 C-CFRC skills LAB CFRC3-003	Forensic Medicine For-Au001		Medicine GPh-Ph003
Fri 16-05	Surgery F2-S-002	Pharmacology HIT-H003 Inte with Pathology	Clinical rotation	A & B pathology tutorial C & D pharmacology tutorial			
Sat 17-05	Pharmacology HIT-H003	Forensic Medicine For-Au002 Inte with Pathology	Clinical rotation	C & D pathology tutorial A & B pharmacology tutorial	Pathology HIT-Pa003		PERL PERLs-3-007 Pharmacology

WEEK 7: Time Table Third year MBBS block 7, Module 14							
	Lecture 08:00 to 08:45	**Lecture 08:45 to 09:30**	**Ward 09:30 to 11:00**	**Practical/tutorial 11:00 to 12:15**	**Lecture 12:15 to 01:00**	**BREAK**	**Tutorial 01:15 to 02:00**
Mon 19-05	Forensic Medicine For-Au003-4	Pharmacology HIT-Pa003 Inte with Pathology	Clinical rotation	A-pathology practical HIT-H007 B-pharmacology practical GPh-Ph004.E C-forensic practical For-Pl012 D-CFRC skills LAB CFRC3-004	Pathology HIT-Pa003		Forensic Medicine
Tue 20-05	Pathology HIT-Pa003	Pharmacology HIT-Pa003 Inte with Pathology	Clinical rotation	B-pathology practical HIT-H007 C-pharmacology practical GPh-Ph004.E D-Forensic Practical For-Pl012 A-CFRC skills LAB CFRC3-004	Community medicine F2-CM001		Forensic Medicine
Wed 21-05	Forensic Medicine For-Au005-6	Pharmacology HIT-Pa004 Inte with Pathology	Clinical rotation	C-pathology practical HIT-H007 D-pharmacology practical GPh-Ph004.E A-Forensic Practical For-Pl012 B-CFRC skills LAB CFRC3-004	Pathology HIT-Pa004		Patient Safety
Thur 22-05	Pathology HIT-Pa004	Pharmacology HIT-Pa004 Inte with Pathology	Clinical rotation	D-pathology practical HIT-H007 A-pharmacology practical GPh-Ph004.E B-Forensic Practical For-Pl012 C-CFRC skills LAB CFRC3-004	Forensic Medicine For-Au007-8		Ophthalmology GPh-Ph002
Fri 23-05	Surgery F2-S-002	Pharmacology HIT-Pa004 Inte with Pathology	Clinical rotation	A & B pathology tutorial C & D pharmacology tutorial			
Sat 24-05	Pharmacology HIT-Pa004	Forensic Medicine For-Au009-10-11 Inte with Pathology	Clinical rotation	C & D pathology tutorial A & B pharmacology tutorial	Pathology HIT-Pa004		PERL PERLs-3-010 Community Medicine

THEORY

HEMATOLOGY			
CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 39	
		INTEGRATING DISCIPLINE	TOPIC
HIT-H-001	Describe the stages in formation of red blood cells (RBCs), white blood cells (WBCs), platelets.	Hematology	Hematopoietic system
	Correlate hematopoiesis with various hematopoietic growth factors along with normal bone marrow morphology.		
	Identify normal values of RBC, WBC, hemoglobin level, packed cell volume, MCH, MCV, MCHC and platelet count.		
	Classify and interpret the anemias on basis of morphology and underlying pathogenesis of RBC production.		
	Describe and interpret data related to causes, clinical features, clinical presentation and diagnosis of hypochromic anemia, megaloblastic anemia, anemia of chronic disease, Hereditary Spherocytosis, aplastic anemia and hemolytic anemias		
	Explain the biochemical basis of megaloblastic anemia in vitamin B9 and B12 deficiency.	Hematology	
	Explain the biochemical basis of microcytic anemia in vitamin B6, vitamin B2, vitamin C, vitamin A, and iron deficiencies.		
	Explain the biochemical mechanisms of hemolysis in pyruvate kinase and glucose-6-phosphate dehydrogenase deficiencies.		
	Describe the clinical manifestations, clinically differentiating features and clinical course of patient with anemia.		
	Describe the indications, and expected benefits of splenectomy in hematological and immunological disorder.	Hematology/ Surgery	
	Explain the risks and complications of splenectomy.		
	Discuss the preventive measures and basic perioperative considerations associated with splenectomy.		
	Describe etiology, pathogenesis, clinical types and diagnosis of thalassemia with emphasis on incidence, common mutations, associated psychosocial problems and prevention.	Hematology	
	Differentiate between quantitative and qualitative hemoglobinopathies. Elaborate the genetic basis and inheritance of important types of quantitative hemoglobinopathies (alpha and beta thalassemia's). Elaborate the genetic basis and inheritance of important types of qualitative hemoglobinopathies (HbS, HbC, HbSC). Explain how does electrophoresis help in confirming the diagnosis of various types of qualitative hemoglobinopathies (HbS, HbC, HbSC). Enlist the inherited and acquired causes of methemoglobinemia's and elaborate the consequences.	Hematology/ Biochemistry	
	Describe etiology, clinical features, lab diagnosis of Von Willebrand's disease, Hemophilia A&B and Polycythemia. Explain the biochemical basis of hemorrhage in vitamin K and vitamin C deficiencies. Explain underlying mechanisms of neutropenia/agranulocytosis. Explain how does deficiency of glucose-6-phosphate translocase result in neutropenia and recurrent infections.	Hematology/ Biochemistry	
HIT-H-002	Differentiate between infective and malignant causes of leukocytosis with reference to infectious mononucleosis, acute and chronic non-specific lymphadenitis.	Hematology	Lymphoid system
	Explain Non-Hodgkin's lymphoma in terms of classification, etiology, pathogenesis, clinical features, diagnosis, staging and prognosis. Explain Hodgkin's lymphoma in terms of classification, etiology, pathogenesis, clinical features, diagnosis, staging and prognosis.		

	Explain the pathophysiology of lymphomas, including gastric MALT and diffuse large B-cell types. Explain the indications, procedure, and significance of lymph node biopsy in the diagnosis of lymphoma.	Surgery	
HIT-H-003	Explain classification, etiology, pathogenesis, clinical features, diagnosis, staging and prognosis of acute and chronic leukemia. Describe the clinical manifestations, clinically differentiating features and clinical course of patient with leukemia.	Hematology/ Medicine	Haemopoietic system
	Explain etiology, pathogenesis, morphology, clinical features, diagnosis, staging and prognosis of multiple myeloma.		
	Explain etiology, pathogenesis, morphology, clinical features, diagnosis, prognosis and management of disseminated intravascular coagulation (DIC).	Hematology	
	Classify anticlotting drugs. Describe the mechanisms of action, clinical uses and adverse effects of anticoagulants. Compare unfractionated heparin, LMW heparins and oral anticoagulants.	Pharmacology	
	Differentiate the mechanism of action, clinical uses, and toxicities of the oral anticoagulants (warfarin, rivaroxaban, and dabigatran). Explain the pharmacokinetic and pharmacodynamic drug interactions of warfarin.		
	Describe the mechanisms of action, clinical uses and adverse effects of antiplatelet drugs. Illustrate where the site of action of major classes of antiplatelet drugs act. Differentiate between Clopidogrel and Ticlopidine.		
	Discuss the mechanism of action, clinical uses, adverse effects and contraindications of thrombolytics. Tabulate differences between streptokinase and recombinant tissue plasminogen activators. Enlist the drugs used to treat bleeding disorders	Pharmacology	
	Enumerate hematopoietic growth factors. Explain their mechanism of action, uses and adverse effects.		
	Classify thrombocytopenia based on etiology. Explain the pathogenesis of decreased platelet production and survival. Describe the morphological changes in peripheral blood smear and bone marrow. Identify the clinical features of thrombocytopenia. Outline the diagnostic approaches for thrombocytopenia. Interpret the prognosis in different causes of thrombocytopenia. Describe the management strategies for thrombocytopenia. Interpret coagulation profile for bleeding disorders.	Hematology	
HIT-H-004	Explain the ABO and Rhesus blood groups, their clinical importance, and the methods of blood group typing.	Hematology	Blood Transfusion
	Explain the common indications for transfusion of blood products (red cells, platelets, and plasma). Identify the hazards and complications of blood transfusion. Discuss methods to prevent transfusion-related hazards. Apply knowledge of indications, risks, and preventive measures to different clinical scenarios.		
	Enlist the biochemical changes that occur in stored blood. Explain the significance of rejuvenation of stored blood.	Biochemistry	

GENERAL PATHOLOGY			
CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 10	
		INTEGRATING DISCIPLINE	TOPIC
HIT-Pa-001	Explain the clinical aspects of innate and acquired immunity. Explain the clinical aspects of active and passive immunity.	General Pathology	Immunology
	Classify the types of cells involved in the immune response (phagocytes, T cells, B cells, and NK cells). Explain the clinical importance of these immune cells.		
	Correlate complement activation pathways with their role in immune response to infections, autoimmunity, transplant rejection and immune deficiency disease.		
	Explain the types of Major Histocompatibility Complex (MHC) and elaborate their role in clinical diseases.		
	Classify different types of antibodies. Describe the structure and functions of major immunoglobulins (IgG, IgA, IgM, IgE, IgD). Explain the role of antibodies in immune defense and immunopathology. Interpret the clinical significance of antibodies in diagnosis. Discuss the pathological consequences of abnormal antibody responses.		
HIT-Pa-002	Classify immunosuppressants and antibodies Explain their mechanism of action, clinical uses, and toxicities.	Pharmacology	Hematopoietic system
	Identify the major cytokines and other immunomodulating agents with their clinical applications.		
HIT-Pa-003	Classify the types of hypersensitivity reactions. Describe the immunological mechanisms underlying each type. Explain the clinical features and examples of diseases associated with each type. Discuss the laboratory and pathological findings in hypersensitivity reactions. Interpret the clinical relevance of hypersensitivity reactions in infectious and autoimmune diseases.	General Pathology	Immunology
HIT-Pa-004	Describe the types of transplant rejection. Explain graft-versus-host disease and apply this knowledge to different clinical scenarios.		Transplantation
	Explain the concept and pathogenesis of autoimmunity. Classify autoimmune diseases and describe their pathological and clinical features.		Autoimmune diseases

PRACTICAL

PHARMACOLOGY			
CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 12	
		INTEGRATING DISCIPLINE	TOPIC
HIT-H-005	Perform CBC on analyzer and interpret the report.	Hematology	Hematopoietic and Lymphoid System
HIT-H-006	Analyze RBC indices, Platelet Indices and WBC parameters.		Hematopoietic System
	Perform PT, APTT and Bleeding Time. Interpret the reports.		
	Perform Blood Group and Cross Match. Interpret the reports.		
	Identify normal blood cells.		
	Identify common malignant disorders e.g. CML, CLL, Acute Leukemias.		
HIT-Pa-005	Interpret ELISA results for various immunological tests.	Pathology / Immunology	Immunology

MODULE - 15
FORENSIC MEDICINE & TOXICOLOGY I

Module committee

Title	Department	Doctor Name
Incharge	Forensic Medicine	Dr. Humaira Arshad

Module weeks	Recommended Minimum Hours
01	33

End of module assessment
Written paper
50 MCQ,s

	Subject	MCQ, s
1	Forensic Medicine	50

MODULE RATIONALE

The Forensic Medicine and Toxicology Module 1 prepares the medical graduate to handle the complexities of life and death and the medico-legal cases they encounter in their early career as doctors. The Autopsy training provides them with diagnostic skills for determining the cause of death, personal identity is essential for disaster victim identification, and medico-legal cases involving unidentified bodies. The death indicators and certification of death are important in their clinical practice. Introducing these topics in the 3rd year builds a strong foundation for handling medico-legal cases; ensuring students are ready to navigate the complexities of death-related issues in their future careers.

Module outcomes

- Explain the concept of death and its medico-legal aspect
- Discuss the indicators of death
- Describe the inter-relationship of cause, mechanism, mode, and manner of death
- Determine the parameters of personal identification in living and dead
- Describe the types, objectives, rules, and techniques of autopsy
- Discuss the post-mortem artifacts and their medic-legal significance
- Discuss the methodologies and techniques employed for personal identification.
- Describe the methods of age certification

Subjects integrated in module

1. Anatomy
2. Biochemistry
3. Pathology
4. Medicine

IMPLEMENTATION TORs

- The time calculation for completion of modules and blocks is based on 35 hours per week.
- Total hours of teaching, learning and formative/summative internal assessment to be completed in a year are 1200.
- The hours mentioned within each module are the mandatory minimum required. The rest of the hours are left to the discretion of the institution that can be used in teaching, learning and assessment as per decision of the institutional academic council.
- The content and the intended learning outcomes written are mandatory, to be taught, at the level required, as the end year assessment will be based on these.
- However, the level of cognition can be kept at a higher level by the institution.
- The Table of Specifications provided will be used for the three papers of the first professional examination. The same table of specifications should be used for the respective three block exams for internal assessment.

WEEK 8: Time Table Third year MBBS block 7, Module 15							
	Lecture 08:00 to 08:45	**Lecture 08:45 to 09:30**	**Ward 09:30 to 11:00**	**Practical/tutorial 11:00 to 12:15**	**Lecture 12:15 to 01:00**	**BREAK**	**Tutorial 01:15 to 02:00**
Mon 26-05	Forensic Medicine For-PI001-2	Pharmacology HIT-Pa003	Clinical rotation	A-pathology practical HIT-H007 B-pharmacology practical GPh-Ph004.E C-forensic practical For-PI013 D-CFRC skills LAB CFRC3-009	Pathology HIT-Pa003		Forensic Medicine
Tue 27-05	Pathology HIT-Pa003	Pharmacology HIT-Pa003	Clinical rotation	B-pathology practical HIT-H007 C-pharmacology practical GPh-Ph004.E D-Forensic Practical For-PI013 A-CFRC skills LAB CFRC3-009	Community medicine F2-CM001		Forensic Medicine
Wed 28-05	Forensic Medicine For-PI002-3	Pharmacology HIT-Pa004	Clinical rotation	C-pathology practical HIT-H007 D-pharmacology practical GPh-Ph004.E A-Forensic Practical For-PI013 B-CFRC skills LAB CFRC3-009	Pathology HIT-Pa004		PERL PERLs-3-011-012 Community Medicine
Thur 29-05	Pathology HIT-Pa004	Pharmacology HIT-Pa004	Clinical rotation	D-pathology practical HIT-H007 A-pharmacology practical GPh-Ph004.E B-Forensic Practical For-PI013 C-CFRC skills LAB CFRC3-009	Forensic Medicine For-PI004-5		
Fri 30-05	Surgery F2-S-002	Pharmacology HIT-Pa004	Clinical rotation	A & B pathology tutorial C & D pharmacology tutorial			
Sat 31-05	Pharmacology HIT-Pa004	Forensic Medicine For-PI006-7	Clinical rotation	C & D pathology tutorial A & B pharmacology tutorial	Pathology HIT-Pa004		

WEEK 9: Time Table Third year MBBS block 7, Module 15							
	Lecture 08:00 to 08:45	**Lecture 08:45 to 09:30**	**Ward 09:30 to 11:00**	**Practical/tutorial 11:00 to 12:15**	**Lecture 12:15 to 01:00**	**BREAK**	**Tutorial 01:15 to 02:00**
Mon 02-06	Forensic Medicine For-PI008	Pharmacology HIT-Pa003	Clinical rotation	A-pathology practical HIT-H007 B-pharmacology practical GPh-Ph004.E C-forensic practical D-CFRC skills LAB CFRC3-001-2	Pathology HIT-Pa003		Forensic Medicine
Tue 03-06	Pathology HIT-Pa003	Pharmacology HIT-Pa003	Clinical rotation	B-pathology practical HIT-H007 C-pharmacology practical GPh-Ph004.E D-Forensic Practical A-CFRC skills LAB CFRC3-001-2	Community medicine F2-CM001		Forensic Medicine
Wed 04-06	Forensic Medicine For-PI009	Pharmacology HIT-Pa004	Clinical rotation	C-pathology practical HIT-H007 D-pharmacology practical GPh-Ph004.E A-Forensic Practical B-CFRC skills LAB CFRC3-001-2	Pathology HIT-Pa004		PERL PERLs-3-013-014 Community Medicine
Thur 05-06	Pathology HIT-Pa004	Pharmacology HIT-Pa004	Clinical rotation	D-pathology practical HIT-H007 A-pharmacology practical GPh-Ph004.E B-Forensic Practical C-CFRC skills LAB CFRC3-001-2	Forensic Medicine For-PI0010		
Fri 06-06	OFF	OFF	OFF	OFF	OFF		OFF
Sat 07-06	OFF	OFF	OFF	OFF	OFF		OFF

THEORY

THANATOLOGY			
CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 05	
		INTEGRATING DISCIPLINE	TOPIC
For1-Th-001	Define life and death.	Forensic Medicine	Life & Death
	Describe views about death of different authorities.		
	Differentiate between somatic and molecular death.		
	Diagnose a case of death clinically.		
	Describe the legal procedure of disposal of a dead body-known / unclaimed.		
	Describe brain death.		
	Explain criteria of diagnosis of brain death.		
	Enlist guiding principles to diagnose a case of brain death		
	Describe the medico legal importance of brain stem death.		
	Summarize ethical, legal and moral considerations related with organ transplant and brain death.		
	Differentiate between death and apparent/suspended animation.		
	Describe different clinical conditions simulating with suspended animation.		
For-Th-002	Classify post-mortem changes.	Forensic Medicine	Post-mortem changes - (Immediate early and late)
	Describe immediate signs of somatic death.		
	Explain early eye changes after death.		
	Explain post-mortem cooling of dead body (Algor Mortis) and its medicolegal implications.		
	Describe methods of recording the temperature of a dead body.		
	Explain cooling curve of a dead body.		
	State different formulas applied for calculating body temperature after death.		
	Summarize factors affecting Algor Mortis.		
	Explain postmortem lividity and its mechanism of development.		
	Explain its medicolegal implications.		
	Summarize factors affecting post-mortem lividity.		
	Differentiate postmortem lividity from congestion and bruise.		
	Explain Rigor Mortis and its mechanism of development.		
	Describe its medicolegal implications.		
	Summarize factors affecting Rigor Mortis.		
	Summarize conditions simulating Rigor Mortis.		
	Distinguish rigor mortis from cadaveric spasm and instantaneous rigor.		
	Enlist late changes after death.		
	Explain the process of putrefaction.		
	Describe different stages of putrefaction.		
	Summarize factors affecting putrefaction.		
	Describe forensic entomology and its role in the estimation of post mortem interval.		
	Summarize the procedure to collect specimens of forensic entomology.		
	Draw and label graphic representation of post-mortem changes.		
	Infer the importance of putrefaction in toxicological analysis.		
	Describe the process of mummification.		
	Describe the process of adiopocere formation.		

For1-Th-003	Summarize the biochemical changes in blood, vitreous humour and CSF after death.	Forensic Medicine	Bio chemical changes,
For1-Th-004	List of different parameters to determine PMI. Describe rate method and concurrent methods to estimate PMI.	Forensic Medicine	Estimation of Post-mortem interval
For1-Th-005	Define sudden death. Summarize common causes of sudden death.	Forensic Medicine	Sudden death
For1-Th-006	Differentiate between modes, manner cause and mechanism of death.		Mechanism, manner, cause, modes of death,
For1-Th-007	Define and classify post mortem artefacts Explain medico legal significance of artefacts.	Forensic medicine	Post-mortem artefacts
For1-Th-008	Discuss the use of flow-cytometry in forensic medicine.		Flowcytometry
For1-Th-009	Define sudden infant death syndrome. Describe the risk factors and clinical features associated with SIDS. Describe preventive strategies and parental counseling.	Forensic Medicine	Sudden infant death syndrome (SIDS)

AUTOPSY			
CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 6	
		INTEGRATING DISCIPLINE	TOPIC
For1-Au-001	Define autopsy	Forensic medicine	Autopsy, Its types and objectives.
	Summarize types of autopsies		
	Differentiate between medical and medico legal autopsy.		
	Enlist objectives and essentials of autopsy		
For1-Au-002	Differentiate four death investigation systems i. Coroner s system, ii. Medical examiner system, iii. Continental system, iv. Procurator fiscal system in Scotland.		Global systems of death investigations
For1-Au-003	Define autopsy protocol. i. Preliminary documents required for autopsy ii. Bio data. iii. Identification iv. External examination v. Internal examination vi. Conclusion. vii. Documentation.		Autopsy Protocol
	Differentiate between narrative and numerical autopsy protocol.		
For1-Au-004	Differentiate primary, secondary, and tertiary autopsy incisions.		Autopsy incisions
	Explain autopsy incisions to dissect neck, heart, brain, spinal cord, limb and bone marrow.		
	Explain incisions to reveal pneumothorax, DVT, Fat embolism and pulmonary embolism.		
For1-Au-005	Differentiate Letulle, Ghon, Virchow, and Rokitansky autopsy techniques.		Autopsy techniques
For1-Au-006	List the viscera with quantity to be taken for toxicological and histopathological analysis.		Collection of viscera at autopsy
	List the preservatives used for autopsy samples.		
	Explain the process of preserving viscera for forensic analysis.		
	Explain the autopsy protocol for collection/recovery, preservation, labelling and dispatch of biological and non-biological material.		

For1-Au-007	Describe standard autopsy suite.	Forensic medicine	Essential of autopsy suite
	Summarize the requirements of autopsy room.		
For1-Au-008	Summarize the hazards of autopsy.		Hazards of autopsy
For1-Au-009	Define Negative autopsy.		Negative autopsy
	Explain the causes of negative autopsy.		
For1-Au-010	Define exhumation.		Exhumation
	Enlist the objectives of exhumation.		
	Explain the procedure and limitations of exhumation.		
	Enlist the specimens collected in exhumation.		
	Summarize the precautions during exhumation.		
For1-Au-011	Summarize the objectives of autopsy on mutilated dead body/fragmentary remains.	Anatomy	Examination of fragmentary / Mutilated / Skeletal remains

PERSONAL IDENTITY			
CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 05	
		INTEGRATING DISCIPLINE	TOPIC
For1-PI-001	Define Personal Identity.	Forensic Medicine	Personal Identity
	Describe types of personal identity.		
	List the purpose of identification in living & dead.		
	Describe the parameters of personal Identity in living and dead.		
	Describe methods of determining personal identity.		
	Enlist the ages of medico-legal importance for civil & criminal responsibility.		
For1-PI-002	Determine the age of a living person for medico-legal purpose.		Age determination
	Determine the age of a fetus regarding its length, weight, and morphological features.		
	Determine the approximate age of an individual based on physical appearance and the union of ossification centers of different bones.		
	Identify the sequence of appearance of ossification centers during intrauterine life.		
	Relate the medico-legal importance of bones in the identification.		
For1-PI-003	Differentiate male and female sex based on anatomical features and chromosome analysis.	Anatomy	Sex determination
	Identify the disorders of sexual development.		
	Describe the medico legal importance of sex determination.		
	Enlist limitations of sex determination in dead.		
For1-PI-004	Describe the process of estimation of age from primary, secondary & mixed dentition.	Forensic Medicine	Forensic Odontology
	Describe different methods for age estimation from odontology.		
	Enlist the information obtained from dental forensic examination. Relate medico legal importance of identification with odontology.		
For1-PI-005	Describe the parameters to determine race of a person.		Race determination
For1-PI-006	Explain methods to determine stature of a person.		Stature estimation
For1-PI-007	Describe anthropometry with reference to age Determination.		Anthropometry

For1-PI-008	Classify fingerprint patterns according to Galton's classification.	Forensic Medicine	Dactylography
	Explain different methods of recording fingerprints.		
	Describe the advantages & medico legal importance of Dactylography		
	Define Poroscopy / Locards method		
For1-PI-009	Describe the role of DNA fingerprinting in identification.	Pathology	DNA Profiling
	Enlist the samples required for DNA profiling in medicolegal cases.		
	Describe the medicolegal importance of DNA Fingerprinting.		
For1-PI-010	Discuss different methods of identification in case of mutilated, burnt and decomposed dead bodies.	Forensic Medicine	Mass Disaster Identification

THEORY

PRACTICAL / LAB WORK			
THANATOLOGY			
CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 06+05+05	
		INTEGRATING DISCIPLINE	TOPIC
For1-Th-010	Identify the immediate, early, and late changes after death.	Forensic Medicine	Autopsy
	Calculate the estimated time since death on the basis of findings noted in the corpse.		
For1-Au-011	Prepare a death certificate of cause of death according to WHO guidelines.		WHO guidelines of death certificate
For1-Au-012	Observe the procedure of autopsy examination and dissection.	Forensic medicine	Autopsy
	Write a structured autopsy report using the standard format.		
	Demonstrate the correct method of preservation and labeling of specimens. Dispatch specimens for histopathological and toxicological analysis following standard protocols.		
For1-Pl-011	Determine age and sex for identification in medicolegal cases.	Forensic medicine	Personal identification
	Take fingerprints by plain and rolling method and classify according to Galton's Classification.		
	Estimate the age of a person for medico-legal purposes.		Bite marks analysis
For1-Pl-013	Estimate the age of the person from the oral examination of the teeth.	Forensic medicine	Age & sex determination
	Interpret the findings from x-rays of bones for appearance and union of ossification centres for age determination.		
	Identify the sex and age from morphological features of different bones.		

CFRC

BLOCK-07	
CODE	**Description of Skill**
CFRC3-001	Prescribing antihypertensives
CFRC3-002	Prescribing antibiotics for infection
CFRC3-003	Monitoring for drug side effects
CFRC3-004	Adjusting medications based on response
CFRC3-005	Knowledge of common drug classes relevant to foundational clinical care (e.g., antibiotics, analgesics, antihypertensives).
CFRC3-006	Ability to calculate and adjust dosages for common medications based on patient factors.
CFRC3-007	Perform proper hand hygiene, aseptic techniques, and basic infection control protocols.
CFRC3-008	Demonstrate appropriate use of PPE and understand its importance in preventing healthcare-associated infections.
CFRC3-009	Take detailed patient history and perform general physical exams.
CFRC3-010	Understand fluid compartments and the basics of electrolyte balance.
CFRC3-011	Offer guidance on health maintenance, such as hygiene, nutrition, and medication adherence.
CFRC3-012	Perform and interpret measurements of vital signs (e.g., BP, pulse, temperature, respiratory rate).
CFRC3-054	Effective communication during consultations (shared decision-making)
CFRC3-055	Ethical considerations (confidentiality, informed consent)
CFRC3-058	Able to scrub in for major and minor surgical procedures
CFRC3-059	Assist in minor surgical procedures (observed in OT)
CFRC3-061	General physical examination(medicine)
CFRC3-023	Wound management and suturing
CFRC3-024	History of infections related to surgical wounds
CFRC3-026	Inspecting and diagnosing surgical wound infections
CFRC3-027	Antimicrobial prophylaxis and post-surgical infection management
CFRC3-013	Recognize abnormal vital signs and escalate care accordingly.
CFRC3-014	Perform basic blood sampling (e.g., venipuncture) with proper aseptic technique.

PERL

FOUNDATION-II & EBM				
*Proposed Sequence of Topics Men oned below. Medical Colleges are at liberty to manage according to their resources. Topics can switch within each Block				Total Hours = 7.5
*Research (R) in the PERL curriculum will be delivered by the Department of Community Medicine as a longitudinal component from the first to the fourth year of the MBBS program. At the end of the fourth year, students' research projects will be assessed through a dedicated PERL station.				
Code	**Domain**	**Topic**	**Specific Learning Objectives**	**Proposed Portfolio Entry**
PERLs-3-001	Professionalism	Professional Responsibility in Clinical Rotations	• Understand the basic professional behaviours expected in clinical rotations, such as punctuality, appropriate communication, and respectful interactions with patients and staff. • Observe a clinical setting and identify key professional behaviours demonstrated by healthcare staff, such as maintaining punctuality and professional communication	A brief reflection on the key professional behaviours observed during the first clinical rotation session, noting how these behaviours contribute to patient care and professional conduct.
PERLs-3-002	Research	Legal and Ethical Frameworks governing medical research	• Discuss the legal and ethical frameworks governing medical research, including protection of human subjects, informed consent, privacy, and compliance with national and international regulations.	
PERLs-3-003	Research	Institutional Ethical Review	• Discuss the role of Institutional Review Boards (IRBs) in the research process. • Identify and explain the different components of your institutional ethical review proforma to demonstrate its understanding.	
PERLs-3-004	Ethics	Reporting medical errors	• Discuss the ethical obligations in reporting medical errors and the role of transparency in maintaining patient trust and improving care quality. • Draft an incident report on a simulated medical error, outlining the ethical considerations and steps taken to address the issue	Submit a written incident report on a simulated or real medical error, including the ethical implications and actions taken.
PERLs-3-005	Leadership	Role Modelling/ Mentoring Session V	• Participate in a mentoring session where they will discuss their strengths and weaknesses with their mentor, receive feedback, and collaboratively create an action plan for personal and professional development. Discuss any challenges faced while carrying out any action plan if already created and related solutions to overcome those challenges.	Mentoring Session V Key decisions

GENERAL & CLINICAL PHARMACOLOGY				
*Proposed Sequence of Topics Men oned below. Medical Colleges are at liberty to manage according to their resources. Topics can switch within each Block				Total Hours = 06
*Research (R) in the PERL curriculum will be delivered by the Department of Community Medicine as a longitudinal component from the first to the fourth year of the MBBS program. At the end of the fourth year, students' research projects will be assessed through a dedicated PERL station.				
Code	**Domain**	**Topic**	**Specific Learning Objectives**	**Proposed Portfolio Entry**
PERLs-3-006	Professionalism	Responsible use of social media Platforms	• Discuss the principles of responsible use of social media platforms, including safeguarding patient confidentiality, conducting ethical interactions, and practising careful online sharing. 1. Discuss available social media use guidelines in healthcare.	Develop and submit personal social media guidelines that reflect ethical use in professional and medical contexts
PERLs-3-007	Ethics	Conflict of interest, Dealing with Pharmaceuticals	• Explain the ethical challenges related to conflicts of interest in healthcare, particularly when dealing with pharmaceutical companies, and understand how to manage these situations to maintain professional integrity. 2. Analyze a case study where a conflict of interest occurred involving pharmaceutical companies, and propose strategies for ethically managing such situations	Submit an analysis of a case involving a conflict of interest in pharmaceutical dealings, including recommendations for handling the situation ethically and how such conflicts can be avoided in future practice.
PERLs-3-008	Research	Gaps in Literature	• Discuss the importance of identifying gaps in existing literature for formulating meaningful research problems. 4. Identify at least one significant gap from the literature review of a selected topic that requires further exploration. 5. Formulate a research question or hypothesis to address the identified literature gap. 6. Refine a previously selected research title in light of the identified gap.	
PERLs-3-009	Leader	Artificial Intelligence in Research	• Explore the role of artificial intelligence (AI) in medical research, including its applications, potential benefits, and challenges, while identifying ways AI can innovate and enhance research methodologies. • Discuss the ethical implications of using AI in research, including bias, data privacy, transparency, and accountability concerns. • Demonstrate the use of AI tools as supplementary	Develop and submit a code of conduct for the responsible use of AI tools in research, focusing on ethical issues such as bias, data privacy, informed consent, and transparency.

HEMATOPOETIC, IMMUNITY & TRANSPLANT				
*Proposed Sequence of Topics Men oned below. Medical Colleges are at liberty to manage according to their resources. Topics can switch within each Block				Total Hours = 1.5
*Research (R) in the PERL curriculum will be delivered by the Department of Community Medicine as a longitudinal component from the first to the fourth year of the MBBS program. At the end of the fourth year, students' research projects will be assessed through a dedicated PERL station.				
Code	**Domain**	**Topic**	**Specific Learning Objectives**	**Proposed Portfolio Entry**
PERLs-3-010	Professionalism	Maintaining Patient Confidentiality	• Discuss the principles for maintaining patient confidentiality. • Appreciate the importance of maintaining patient confidentiality in clinical practice. • Discus legal and ethical implications of patient confidentiality.	Reflective entry on a clinical case where confidentiality was maintained, detailing the challenges and how they were addressed.
PERLs-3-011	Research	Research References	• Identify different reference styles. • Use reference management software to apply Vancouver style of referencing. • Use reference management software to apply APA style of referencing.	

FORENSIC MEDICINE & TOXICOLOGY				
*Proposed Sequence of Topics Men oned below. Medical Colleges are at liberty to manage according to their resources. Topics can switch within each Block				Total Hours = 4.5
*Research (R) in the PERL curriculum will be delivered by the Department of Community Medicine as a longitudinal component from the first to the fourth year of the MBBS program. At the end of the fourth year, students' research projects will be assessed through a dedicated PERL station.				
Code	**Domain**	**Topic**	**Specific Learning Objectives**	**Proposed Portfolio Entry**
PERLs-3-012	Ethics	Human Rights & Malpractice	• Discuss ethical principles surrounding human rights in healthcare, particularly in malpractice cases, and recognize the professional obligations to uphold patients' rights while preventing and addressing malpractice.	Case analysis of a malpractice incident, discussing the implications of human rights and detailing measures that could have been implemented to avoid the violation of patient rights.
PERLs-3-013	Research	Introduction section of Research	• Write and submit the introduction section of a research proposal with proper referencing for teachers' feedback. • Refine the research title and introduction based on feedback received.	
PERLs-3-014	Leadership	Project Management	• Introduce the basic concepts of project management in healthcare, including planning, organizing, and executing small projects, such as case studies or group assignments. • Participate in a class activity, where they will plan and organize tasks, set timelines, and assign roles to ensure the project is completed efficiently.	Write a Class activity report with assigned roles taken by each group member. Critically evaluate the challenges observed with proposed recommendations.

ASSIGNMENTS

NO.	ASSIGNMENTS
MODULE 12: FOUNDATION II & EBM	
1	A brief reflection on the key professional behaviours observed during the first clinical rotation session, noting how these behaviours contribute to patient care and professional conduct.
2	Create a case report detailing the application of EBP to a specific disease management scenario, including references to the literature.
3	Poster Submission of a medical error case, including both root cause analysis and a Swiss Cheese Model diagram that illustrates the alignment of system failures – along with proposed recommendations.
4	Submit a written incident report on a simulated or real medical error, including the ethical implications and actions taken.
5	Mentoring Session V Key decisions
MODULE 13: GENERAL & CLINICAL PHARMACOLOGY	
6	Develop and submit personal social media guidelines that reflect ethical use in professional and medical contexts.
7	Submit an analysis of a case involving a conflict of interest in pharmaceutical dealings, including recommendations for handling the situation ethically and how such conflicts can be avoided in future practice.
8	Submit a literature review summary identifying key gaps in the research.
9	Develop and submit a code of conduct for the responsible use of AI tools in research, focusing on ethical issues such as bias, data privacy, informed consent, and transparency.
MODULE 14: HEMATOPOETIC, IMMUNITY & TRANSPLANT	
10	Reflective entry on a clinical case where confidentiality was maintained, detailing the challenges and how they were addressed.
MODULE 15: FORENSIC MEDICINE & TOXICOLOGY-I	
11	Case analysis of a malpractice incident, discussing the implications of human rights and detailing measures that could have been implemented to avoid the violation of patient rights.
12	Review and submit the Patient Information Sheet/ Informed Consent Sheet of your College IRB and propose any improvement if needed.
13	Write a Class activity report with assigned roles taken by each group member. Critically evaluate the challenges observed with proposed recommendations.
14	Review and submit the Patient Information Sheet/ Informed Consent Sheet of your College IRB and propose any improvement if needed.
15	Write a Class activity report with assigned roles taken by each group member. Critically evaluate the challenges observed with proposed recommendations.