



# **STUDY GUIDE**

**BLOCK 7 (3<sup>rd</sup> YEAR MBBS)  
Session 2025-2026**

**PHARMACOLOGY & THERAPEUTICS  
DEPARTMENT**

**ALLAMA IQBAL MEDICAL COLLEGE  
LAHORE**

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## List of abbreviations

B	Biochemistry
BhS	Behavioral Sciences
C-FRC	Clinical-Foundation Rotation Clerkship
CM	Community Medicine
M	Medicine
P	Physiology
Pa	Pathology
PBL	Problem Based Learning
PERLs	Professionalism, Ethics, Research, Leadership
Ph	Pharmacology
S	Surgery
SDL	Self-directed learning

# INTRODUCTION

**Dear Students,**

Welcome to the *3rd Year MBBS Study Guide*, thoughtfully developed for those navigating the Integrated Modular System. This guide is designed to streamline your learning by unifying core and clinical subjects within a system-based framework. By aligning academic content with practical clinical application, it bridges the gap between theory and practice—ensuring that you are not only exam-ready but also clinically competent.

The third year marks a pivotal transition from basic sciences to hands-on clinical exposure. Within the modular system, disciplines such as Pathology, Pharmacology, Microbiology, Forensic Medicine, Behavioural Sciences and Community Medicine are seamlessly integrated with clinical modules including Medicine, Surgery, Pediatrics, and Obstetrics & Gynecology. This guide brings these subjects together in a cohesive format that promotes both vertical and horizontal integration.

Special emphasis is placed on high-yield modules that often span multiple disciplines or present diagnostic and management complexities. These are explored through clinical vignettes, case-based discussions, and critical thinking exercises to sharpen your clinical reasoning and decision-making skills.

To further support your clinical development, the guide incorporates content from your clinical rotations, helping you master the art of concise and accurate patient documentation—an essential skill for clinical rounds and case presentations.

Additionally, PERLS (Professionalism, Ethics, Research, and Leadership Skills) is embedded throughout each module, fostering the growth of not just a competent clinician, but also a reflective, ethical, and research-minded professional.

Whether you're preparing for modular assessments, OSPE, OSVE, OSCEs, or laying the foundation for your final clinical years, this guide is designed to be your trusted companion. Study smart, integrate deeply, and always keep the patient at the heart of your learning journey

With compliments from:

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Department of Pharmacology AIMC Lahore.

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## **VISION**

To achieve excellence in academics, professional and research oriented medical education that is aligned with international standards

## **MISSION**

AIMC aspires to serve the community by imparting professional, practical & research oriented knowledge & skills to graduates

We cherish a meritorious culture that strives to inculcate lifelong learning & ethical values among the graduates as future leaders that are useful for the society

**TEAM BLOCK – 7**

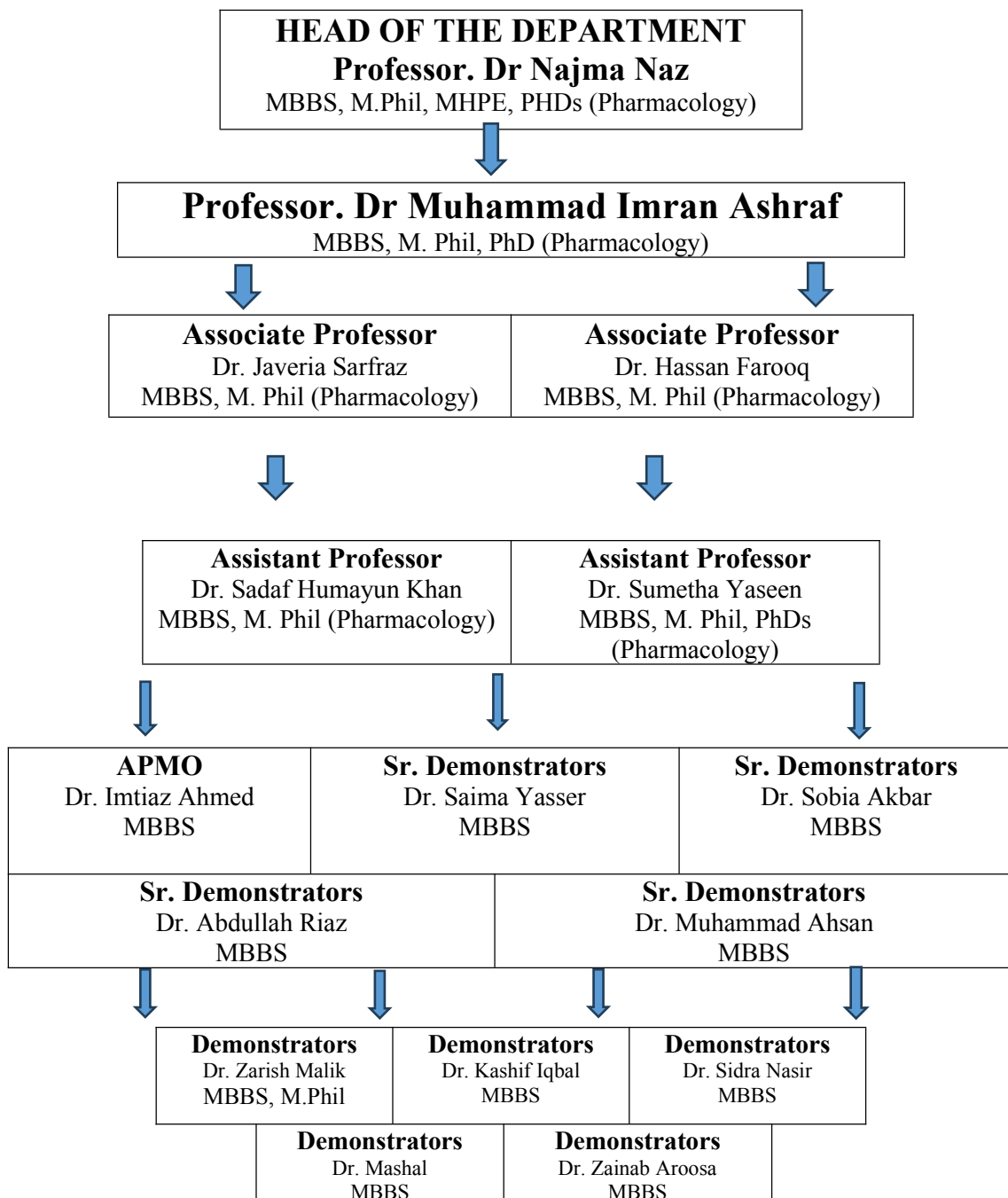
Duration of Block-7: 08 Weeks

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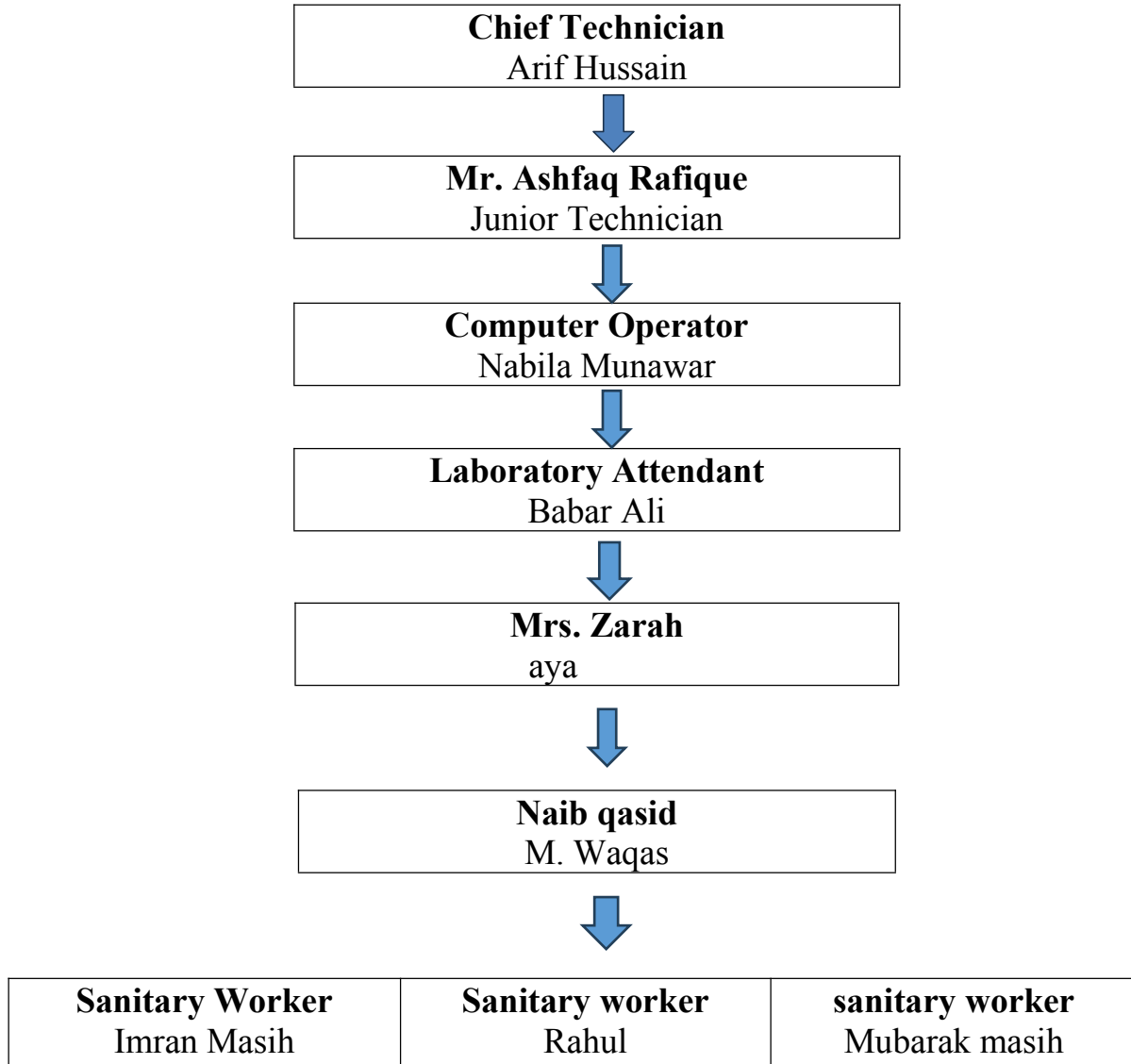
# FACULTY OF PHARMACOLOGY & THERAPEUTICS

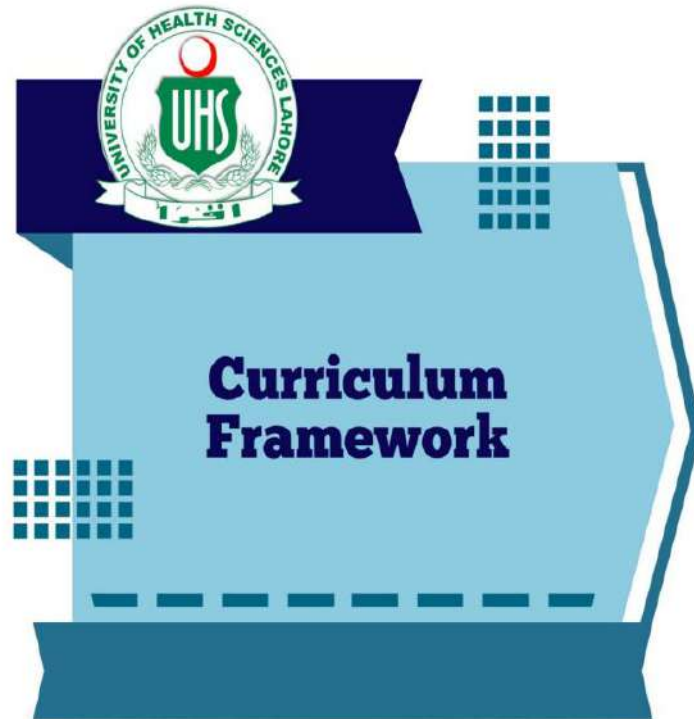


## ORGANOGRAM



# PARAMEDICAL STAFF ORGANOGRAM





# YEAR-3

## MODULES

### BLOCK-VII

FOUNDATION-2 & EBM

GENERAL & CLINICAL PHARMACOLOGY

HEMATOPOIETIC & IMMUNITY &  
TRANSPLANT

FORENSIC MEDICINE & TOXICOLOGY-I  
NEOPLASIA

### BLOCK-VIII

INFECTIOUS DISEASE

MUSCULOSKELETAL & LOCOMOTION-II

FORENSIC MEDICINE & TOXICOLOGY-II  
CARDIOVASCULAR-II

### BLOCK-IX

RESPIRATORY-II

COMMUNITY MEDICINE & FAMILY HEALTH-I

FORENSIC MEDICINE & TOXICOLOGY-III

PERLS-3

EXPOSITORY-3

C-FRC 3

(CLINICAL-FOUNDATION,  
ROTATION, CLERKSHIPS)

# BLOCK-7



## SECTION A

### THEORY & PRACTICAL

- **MODULE 12** - FOUNDATION II & EBM
- **MODULE 13** - GENERAL & CLINICAL PHARMACOLOGY
- **MODULE 14** - HEMATOPOIETIC, IMMUNITY & TRANSPLANT
- **MODULE 15** - FORENSIC MEDICINE & TOXICOLOGY-I



## SECTION B

### CFRC



## SECTION C

### PERLS & EXPOSITORY WRITING

# SECTION A

## DISCIPLINE WISE LEARNING OBJECTIVES

### THEORY & PRACTICAL

**Modular Integrated  
Curriculum 2K23**  
*Volume-03*

**MODULE**

**12**

**FOUNDATION-II & EBM**



## MODULE RATIONALE

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 THE MODULE**

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

## PHARMACOLOGY

Topic	Code	Learning Outcomes	Teaching strategy	No. of hours	Method of Assessment
				Total Hrs. Theory = 17 Practical = 03	
Introduction	F2-Ph-001	Define Pharmacology, different branches of pharmacology, drug nomenclature and pharmacopoeias	Lectures, SGD's	2	MCQs, VIVA
Sources of drugs and active principles	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	Lectures, SGD's	1	MCQs, VIVA
Parameters	F2-Ph-003	Summarize definitions of various pharmacokinetic and pharmacodynamics parameters.	Lectures, SGD's	1	MCQs, VIVA
Routes of Administration	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.	Lectures, SGD's	1	MCQs, VIVA
Permeation	F2-Ph-005	Enlist the different processes by which drugs are transported across cell membranes. Describe and differentiate each transport process	Lectures, SGD's	1	MCQs, VIVA
Absorption	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. Pharmacology Absorption Describe patient-based factors affecting rate and extent of drug absorption. Describe the clinical significance of drug absorption	Lectures, SGD's	1	MCQs, VIVA
Bioavailability and first pass effect	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.	Lectures, SGD's	2	MCQs, VIVA

STUDENT STUDY GUIDE FOR block 7 (2025)

Distribution	F2-Ph-008	<p>Define drug distribution.</p> <p>Describe the distribution of a drug through various body compartments.</p> <p>Describe factors affecting distribution of a drug.</p> <p>Explain volume of distribution (Vd) and how to calculate Vd.</p> <p>Explain the clinical significance of Vd.</p> <p>Explain the characteristics of a drug that is bound to plasma proteins.</p> <p>Describe the clinical consequences of displacement of a drug from plasma protein binding.</p>	Lectures, SGD	2	MCQs, VIVA
Metabolism and biotransformation	F2-Ph-009	<p>Explain metabolism and biotransformation.</p> <p>Describe the outcomes of metabolism and biotransformation.</p> <p>Explain a 'prodrug' Enlist and describe characteristics of Phase 1 and Phase 2 reactions of biotransformation</p> <p>Describe microsomal and non-microsomal biotransformation reactions.</p> <p>Describe the microsomal oxidation system</p> <p>Explain Hoffman's elimination.</p> <p>Describe factors affecting metabolism &amp; biotransformation.</p> <p>Describe the clinical significance of enzyme induction and enzyme inhibition with their examples.</p> <p>Describe the clinical significance of metabolism &amp; biotransformation.</p> <p>Describe clinical significance of enterohepatic recycling of drugs.</p>	Lectures, SGD	3	MCQs, VIVA
Elimination	F2-Ph-010	<p>Define plasma half-life and explain the concept of plasma half-life.</p> <p>Describe factors affecting half-life and clinical significance of plasma half-life.</p> <p>Explain the concept of drug clearance.</p> <p>Describe factors affecting drug clearance.</p> <p>Explain steady state plasma concentration.</p> <p>Explain clinical significance of steady state plasma concentration.</p> <p>Define and explain elimination and orders of elimination – first &amp; zero order kinetics with examples. Describe clinical significance of first &amp; zero order kinetics.</p> <p>Tabulate differences between first order kinetics and zero order kinetics.</p> <p>Define, explain and calculate maintenance dose and loading dose using appropriate formula.</p>	Lectures, SGD	2	MCQs, VIVA
Excretion	F2-Ph-011	<p>Describe drug excretion.</p> <p>Enlist routes of drug excretion.</p> <p>Describe processes of drug excretion through the kidneys.</p> <p>Describe factors affecting glomerular filtration &amp; tubular reabsorption.</p> <p>Describe the clinical significance of glomerular filtration, active tubular secretion</p>	Lectures, SGD	1	MCQs, VIVA

STUDENT STUDY GUIDE FOR block 7 (2025)

		and passive tubular reabsorption of drugs			
Drug dosing	F2-Ph-012	Calculate drug dosing (e.g., IV infusion) and dose in children. Calculate mean, mode, median, range, standard deviation, standard error, t-test. Interpret metrology and abbreviations.	Practical	3	OSPE/Viva

**GENERAL PATHOLOGY**

Topic	Code	Learning Outcomes	Teaching strategy	No. of hours	
				Total Hrs. Theory = 6 + 9 Practical = 02	Method of Assessment
Genetics	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.	Lectures, SGDs	3	MCQs, VIVA
Genetic syndromes	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	Lectures, SGDs	3	MCQs, VIVA

**MICROBIOLOGY**

Microbiology	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, and 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.	Lectures, SGDs	9	MCQs, VIVA
Microbiology	F2-Pa-005	"Demonstrate the correct steps of Gram staining on a specimen. Interpret the results of Gram staining to guide Antibiotic choice. "	Practical	02	OSPE/Viva

## FORENSIC MEDICINE

Topic	Code	Learning Outcomes	Teaching strategy	No. of hours	Method of Assessment
				Total Hrs. = 02	
Introduction to the subject of Forensic Medicine + chain of evidence + death certificate	F2-For- 001 - 002 - 003 - 004	Describe trace evidence and its types Describe the types of fingerprints and their medicolegal importance. Demonstrate the method of recording different types of fingerprints. Demonstrate the procedure for recording a dying declaration. Explain its significance in medico-legal practice. Take written informed consent for various procedures.	Lecture, SGDs	1	MCQS & VIVA
Life & Death	F2-Th- 001	Define life and 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.	Lecture, SGDs	1	MCQS & VIVA

**COMMUNITY MEDICINE**

Topic	Code	Learning Outcomes	Teaching strategy	No. of hours	Method of Assessment
				Total Hrs. = 03	
Health dimensions and indicators	F2-CM-001	Define health, describe health dimensions, describe good health indicators, Calculate and interpret health indicators of public health importance.	Lectures, SGD's	3	MCQ's, OSPE, Viva

**PSYCHIATRY / BEHAVIORAL SCIENCES**

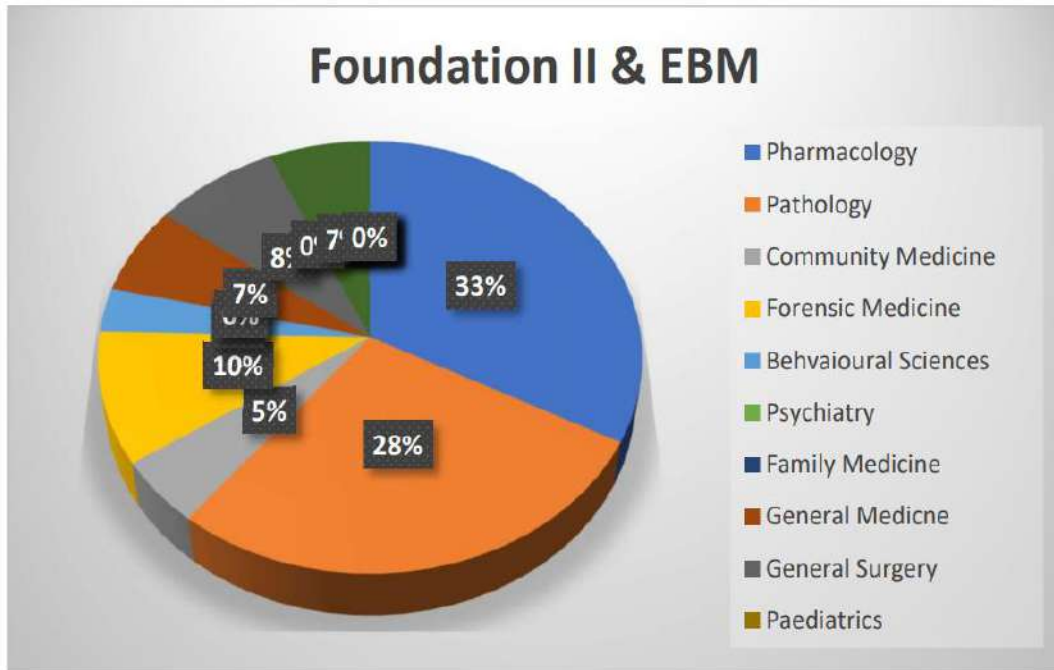
Topic	Code	Learning Outcomes	Teaching strategy	No. of hours	Method of Assessment
				Total Hrs. = 02	
Introduction to Health Behavior and Its Determinants	F2-BhS-001	Define health behavior and discuss the importance of behavioral sciences in medical practice. Identify biological, psychological, and social factors that influence health behaviors and decision making. Discuss key behavioral change models (e.g., Health Belief Model, Theory of Planned Behavior) and their application in patient care.	Lectures, SGD's	2	MCQ's, OSPE, Viva

**GENERAL MEDICINE**

Topic	Code	Learning Outcomes	Teaching strategy	No. of hours	Method of Assessment
				Total Hrs. = 2 + 2	
Bacterial & viral diseases	F2-M-001	Describe the common clinical features of infectious diseases. Explain the differences in clinical presentation between viral and bacterial infections.	Lectures, SGD's	2	MCQ's, OSPE, Viva
<b>PATIENT SAFETY</b>					
Patient safety concept	F2-PS-001	Explain patient safety as a critical concern in healthcare and its impact on the quality of patient care.	Lectures, SGD's	2	MCQ's, OSPE, Viva

**GENERAL SURGERY**

Topic	Code	Learning Outcomes	Teaching strategy	No. of hours	Method of Assessment
				Total Hrs. = 3 + 2	
Wound healing	F2-S-001	Describe the basic stages of surgical wound healing. Differentiate between primary and secondary wound healing.	Lectures, SGD's	1	MCQ's, OSPE, Viva
Burns	F2-S-002	Classify burns based on depth and surface area. Outline the principles of initial surgical management of burns.	Lectures, SGD's	1	MCQ's, OSPE, Viva
Shock & hemorrhage	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.	Lectures, SGD's	1	MCQ's, OSPE, Viva
<b>PATIENT SAFETY</b>					
Human factors and patient safety	F2-PS-002	Discuss the relationship between human factors and patient safety.	Lectures, SGD's	2	MCQ's, OSPE, Viva



Module Weeks	Recommended Minimum Hours
<b>02</b>	<b>61</b>

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Curriculum 2K23**  
*Volume-03*

**MODULE**

**13**

**GENERAL & CLINICAL  
PHARMACOLOGY**



## 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 wide-ranging 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 THE MODULE

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

## PHARMACOLOGY

Topic	Code	Learning Outcomes	Teaching strategy	No. of hours		Method of Assessment
				Total Hrs.	Theory = 58 + 03 Practical = 12	
Pharmacodynamics	GCPHPh-001	<p>Define pharmacodynamics, affinity, efficacy, potency.</p> <p>Explain agonists, (partial, inverse, and bias), allosteric modulators with examples.</p> <p>Describe spare receptors with their clinical importance.</p> <p>Elaborate transmembrane signaling pathways. Name the effectors controlled by G-proteins.</p> <p>Describe various drug-antagonism types with examples.</p> <p>Compare and discuss the information derived from Graded and Quantal dose-response curves.</p> <p>Explain the significance of semi-log transformation.</p> <p>Define Median Effective (ED50), Median Toxic (TD50) &amp; Median Lethal Dose (LD50) with clinical relevance.</p> <p>Define therapeutic index and give its clinical importance.</p> <p>Define therapeutic window and explain its clinical importance.</p> <p>Define the following with examples: desensitization, tachyphylaxis, tolerance, resistance, super sensitivity, hypersensitivity, superinfection, iatrogenic effect, and idiosyncrasy.</p> <p>Describe the phenomenon of regulation of receptors.</p> <p>Describe pharmacogenetics with examples.</p> <p>Illustrate various phases of drug development.</p>	Lectures, SGD's	20		MCQs, VIVA
Autonomic Pharmacology Cholinergic System	GCPHPh-002	<p>List the cholinergic receptors with their site of action and 2nd messenger system.</p> <p>Classify cholinergic agonists and antagonists. Discuss the pharmacological actions / systemic effects of cholinergic agonists and antagonists.</p> <p>Outline the clinical uses and adverse effects of cholinomimetics.</p> <p>Differentiate between myasthenic crisis and cholinergic crisis.</p> <p>Outline the management of Myasthenia gravis</p> <p>Explain the pharmacological management of Alzheimer's disease.</p> <p>Describe the process of 'aging' in Organophosphate (OPC) Poisoning and its management.</p> <p>Discuss the management of OPC</p> <p>Discuss the therapeutic uses of</p>	Lectures, SGD's	20		MCQs, VIVA

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		<p>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.</p>			
Autonomic Pharmacology (Adrenergic System)	GCPHPh-003	<p>Enlist the adrenergic receptors with their site of action and transduction mechanism.                      Classify adrenergic agonists.                      Describe general characteristics of catecholamines.                      Compare the structural characteristics of catecholamines &amp; 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.                      Classify alpha blockers.                      Discuss the clinical uses and adverse effects of alpha blockers.                      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 methyl dopa).</p>	Lectures, SGD's	18	MCQs, VIVA
Prescription writing & Drug preparation and dispensing	GCPH-Ph-004	<p>Identify and describe components of prescription including its format, types, and rationale of prescription                      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 % KMnO<sub>4</sub> solution using a stock solution.                      Prepare and dispense 12 g of Sulphur ointment B-P 10%</p>	Practical	6	OSPE, VIVA
Autonomic Nervous System	GCPH-Ph-005	<p>Analyze and interpret the pharmacological effects of                      Drugs (Acetylcholine, Atropine Adrenaline, Propranolol) on animal through online videos / simulations / graphs / practical performance.                      Analyze and interpret different concentrations of acetylcholine on rabbit's ileum through online videos / simulations / graphs / practical</p>	Practical	6	OSPE, VIVA

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		<p>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.</p>			
<b>PATIENT SAFETY</b>					
Learning from errors to prevent harm	GCPH-PS-001	Describe the terms error, slip, lapse, mistake, violation, near miss and hindsight bias.	Lectures, SGDs	1.5	MCQs, VIVA
Medication safety	GCPH-PS-002	Explain the ways to improve the safety of medication use.	Lectures, SGDs	1.5	MCQs, VIVA

**PSYCHIATRY / BEHAVIORAL SCIENCES**

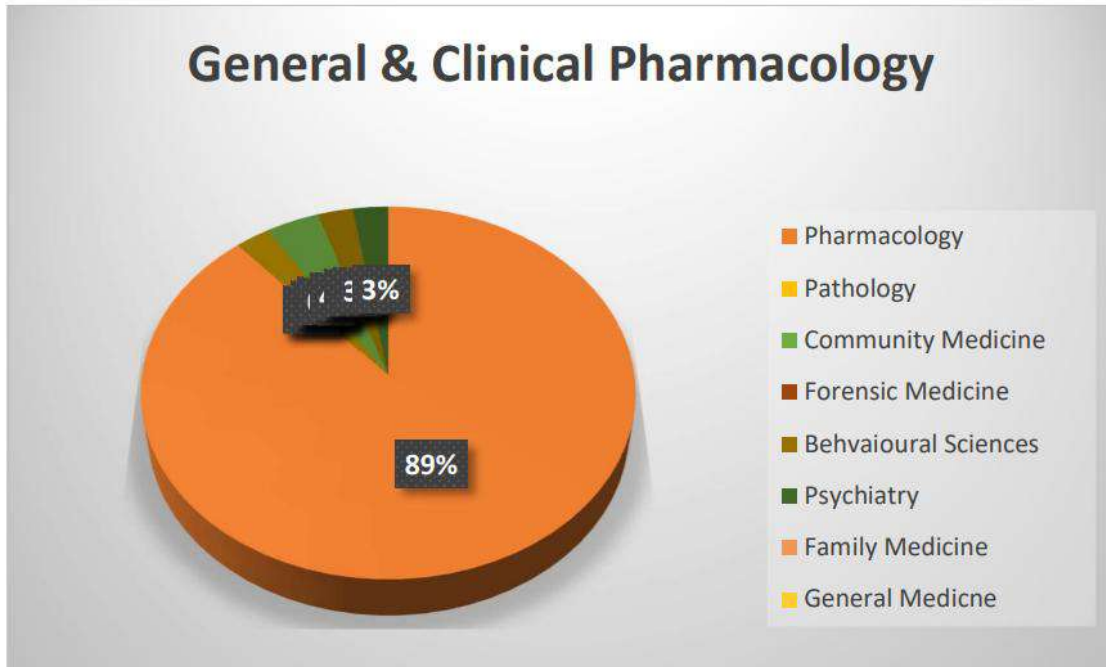
Topic	Code	Learning Outcomes	Teaching strategy	No. of hours	Method of Assessment
				Total Hrs. = 02	
Ethical dilemmas	GCPH-BhS-001	Describe common ethical dilemmas in drug trials & pharmaceutical industry.	Lectures, SGD's	2	MCQ's, OSPE, Viva

**BIOCHEMISTRY**

Topic	Code	Learning Outcomes	Teaching strategy	No. of hours	Method of Assessment
				Total Hrs. = 02	
Signal Transduction & Second Messengers	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.	Lectures, SGD's	2	MCQ's

**PHYSIOLOGY**

Topic	Code	Learning Outcomes	Teaching strategy	No. of hours	Method of Assessment
				Total Hrs. = 02	
Autonomic Nervous System	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.	Lectures, SGD's	2	MCQ's



Module Weeks	Recommended Minimum Hours
2.25	79

**Modular Integrated  
Curriculum 2K23**  
*Volume-03*

**MODULE**

**14**

**HEMATOPOIETIC,  
IMMUNITY & TRANSPLANT**



## 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 THE MODULE**

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

## HEMATOLOGY

Topic	Code	Learning Outcomes	Teaching strategy	No. of hours	
				Total Hrs. Theory = 31 + 09 Practical = 15	Method of Assessment
Hematopoietic system	HIT-H 001	<p>Describe the stages in formation of red blood cells (RBCs), white blood cells (WBCs), platelets. Correlate hematopoiesis with various hematopoietic growth factors along with normal bone marrow morphology.</p> <p>Identify normal values of RBC, WBC, hemoglobin level, packed cell volume, MCH, MCV, MCHC and platelet count.</p> <p>Classify and interpret the anemias on basis of morphology and underlying pathogenesis of RBC production.</p> <p>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 anemia.</p> <p>Explain the biochemical basis of megaloblastic anemia in vitamin B9 and B12 deficiency. Explain the biochemical basis of microcytic anemia in vitamin B6, vitamin B2, vitamin C, vitamin A, and iron deficiencies.</p> <p>Explain the biochemical mechanisms of hemolysis in pyruvate kinase and glucose-6-phosphate dehydrogenase deficiencies.</p> <p>Explain the biochemical mechanisms of hemolysis in hereditary spherocytosis and elliptocytosis.</p> <p>Explain the biochemical basis of hemolysis in vitamin E deficiency. Describe the clinical manifestations, clinically differentiating features and clinical course of patient with anemia.</p> <p>Describe the indications, and expected benefits of splenectomy in hematological and immunological disorder. Explain the risks and complications of splenectomy.</p> <p>Discuss the preventive measures and basic perioperative considerations associated with splenectomy. (Haematology/Medicine)</p> <p>Describe etiology, pathogenesis, clinical types and diagnosis of thalassemia with emphasis on incidence, common mutations, associated psychosocial problems and prevention.</p> <p>Differentiate between quantitative and qualitative hemoglobinopathies.</p> <p>Elaborate the genetic basis and inheritance of important types of quantitative hemoglobinopathies (alpha and beta thalassemia's).</p> <p>Elaborate the genetic basis and inheritance of important types of qualitative hemoglobinopathies (HbS, HbC, HbSC). Sickle Cell Disease in detail.</p> <p>Explain how does electrophoresis help in</p>	Lectures, SGD's	10	MCQs, OSPE, VIVA

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		<p>confirming the diagnosis of various types of qualitative hemoglobinopathies (HbS, HbC, HbSC).</p> <p>Enlist the inherited and acquired causes of methemoglobinemia's and elaborate the consequences. (Biochemistry)</p> <p>Describe etiology, clinical features, lab diagnosis of Von Willebrand's disease, Hemophilia A&amp;B and Polycythemia.</p> <p>Explain the biochemical basis of hemorrhage in vitamin K and vitamin C deficiencies.</p> <p>Explain underlying mechanisms of neutropenia / agranulocytosis.</p> <p>Explain how does deficiency of glucose-6-phosphate translocase result in neutropenia and recurrent infections. (Biochemistry)</p>			
Lymphoid system	HIT-H 002	<p>Differentiate between infective and malignant causes of leukocytosis with reference to infectious mononucleosis, acute and chronic non-specific lymphadenitis.</p> <p><b>Myeloproliferative Neoplasms</b></p> <p>Explain Non-Hodgkin's lymphoma in terms of classification, etiology, pathogenesis, clinical features, diagnosis, staging and prognosis.</p> <p>Explain Hodgkin's lymphoma in terms of classification, etiology, pathogenesis, clinical features, diagnosis, staging and prognosis.</p> <p><b>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/Pathology)</b></p>	Lectures, SGDs	10	MCQs, OSPE, VIVA
Haemopoietic system	HIT-H 003	<p>Explain classification, etiology, pathogenesis, clinical features, diagnosis, staging and prognosis of acute and chronic leukemia.</p> <p>Describe the clinical manifestations, clinically differentiating features and clinical course of patient with leukemia. Explain etiology, pathogenesis, morphology, clinical features, diagnosis, staging and prognosis of multiple myeloma. (Medicine/Pathology)</p> <p>Explain etiology, pathogenesis, morphology, clinical features, diagnosis, prognosis and management of disseminated intravascular coagulation (DIC).</p> <p>Classify thrombocytopenia based on etiology.</p> <p>Explain the pathogenesis of decreased platelet production and survival.</p> <p>Describe the morphological changes in peripheral blood smear and bone marrow.</p> <p>Identify the clinical features of thrombocytopenia.</p> <p>Outline the diagnostic approaches for thrombocytopenia.</p> <p>Interpret the prognosis in different causes of thrombocytopenia.</p> <p>Describe the management strategies for</p>	Lectures, SGDS (Tutorial, CBL)	07	MCQs, OSPE, VIVA

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		thrombocytopenia. Interpret coagulation profile for bleeding disorders.			
Blood Transfusion	HIT-H 004	Explain the ABO and Rhesus blood groups, their clinical importance, and the methods of blood group typing. 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.	Lectures, SGDS	04	MCQs, OSPE, VIVA

**GENERAL PATHOLOGY**

Immunology	HIT-Pa-001	Explain the clinical aspects of innate and acquired immunity. Explain the clinical aspects of active and passive immunity. 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.	Lectures, SGDS	04	MCQs, VIVA
Immunology	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 relevance of hypersensitivity reactions in infections and autoimmune diseases.	Lectures, SGDS	04	MCQs, VIVA
Transplant and Autoimmune disorders	HIT-Pa-004	Describe the types of transplant rejection. Explain graft-versus-host disease and apply this knowledge to different clinical scenarios. Explain the concept and pathogenesis of autoimmunity. Classify autoimmune diseases and describe their pathological and clinical features.	Lectures, SGDS	02	MCQs, VIVA

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Hematopoietic and Lymphoid System	HIT-H-005	Perform CBC on analyzer and interpret the report.	Practical	02	OSPE, VIVA
Hematopoietic System	HIT-H-005	Analyze RBC indices, Platelet Indices and WBC parameters. 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 Leukemia.	Practical	11	OSPE, VIVA
Immunology	HIT-Pa-005	Interpret ELISA results for various immunological tests.	Practical	02	OSPE, VIVA

## PHARMACOLOGY

Topic	Code	Learning Outcomes	Teaching strategy	No. of hours	Method of Assessment
				Total Hrs. = 05	
Drugs Used in Disorders of Coagulation & hematopoietic growth factors	HIT-H-003	<p>Classify anticlotting drugs.</p> <p>Describe the mechanisms of action, clinical uses and adverse effects of anticoagulants.</p> <p>Compare unfractionated heparin, LMW heparins and oral anticoagulants.</p> <p>Differentiate the mechanism of action, clinical uses, and toxicities of the oral anticoagulants (warfarin, rivaroxaban, and dabigatran).</p> <p>Explain the pharmacokinetic and pharmacodynamics drug interactions of warfarin.</p> <p>Describe the mechanisms of action, clinical uses and adverse effects of antiplatelet drugs.</p> <p>Illustrate where the site of action of major classes of antiplatelet drugs act.</p> <p>Differentiate between Clopidogrel and Ticlopidine.</p> <p>Discuss the mechanism of action, clinical uses, adverse effects and contraindications of thrombolytics.</p> <p>Tabulate differences between streptokinase and recombinant tissue plasminogen activators.</p> <p>Enlist the drugs used to treat bleeding disorders</p> <p>Enumerate hematopoietic growth factors.</p> <p>Explain their mechanism of action, uses and adverse effects.</p>	Lectures, SGD's	04	MCQs, VIVA
Haemopoietic system	HIT-Pa-002	<p>Classify immunosuppressants and antibodies</p> <p>Explain their mechanism of action, clinical uses, and toxicities.</p> <p>Identify the major cytokines and other system immunomodulating agents with their clinical applications.</p>	Lectures, SGD's	01	MCQs, VIVA

**GENERAL MEDICINE**

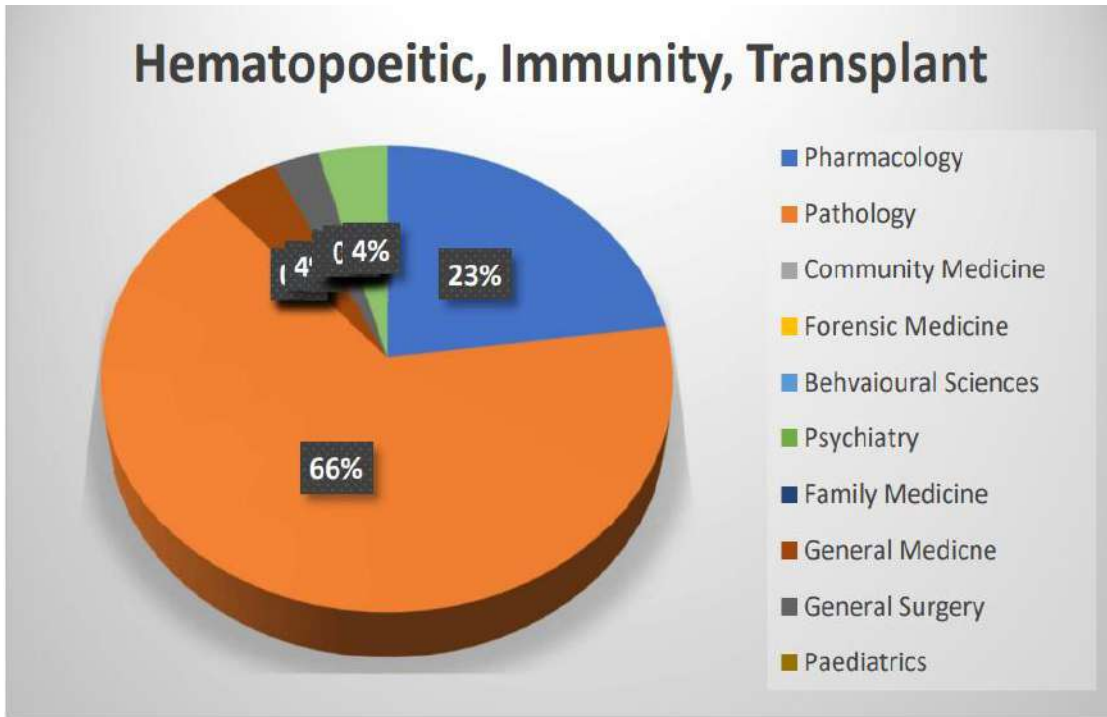
Topic	Code	Learning Outcomes	Teaching strategy	No. of hours	Method of Assessment
				Total Hrs. = 01	
ACL & Myeloma	HIT-H-003	<p>Explain classification, etiology, pathogenesis, clinical features, diagnosis, staging and prognosis of acute and chronic leukemia.</p> <p>Describe the clinical manifestations, clinically differentiating features and clinical course of patient with leukemia.</p> <p>Explain etiology, pathogenesis, morphology, clinical features, diagnosis, staging and prognosis of multiple myeloma.</p>	Lectures, SGD's	01	MCQ's, Viva

**GENERAL SURGERY**

Topic	Code	Learning Outcomes	Teaching strategy	No. of hours	Method of Assessment
				Total Hrs. = 02	
Splenectomy	HIT-H-001	<p>Describe the indications, and expected benefits of splenectomy in hematological and immunological disorder.</p> <p>Explain the risks and complications of splenectomy.</p> <p>Discuss the preventive measures and basic perioperative considerations associated with splenectomy.</p>	Lectures, SGD's	1	MCQ's, Viva
Lymphoma	HIT-H-002	<p>Explain the pathophysiology of lymphomas, including gastric MALT and diffuse large B-cell types.</p> <p>Explain the indications, procedure, and significance of lymph node biopsy in the diagnosis of lymphoma.</p>	Lectures, SGD's	1	MCQ's, Viva

## BIOCHEMISTRY

Topic	Code	Learning Outcomes	Teaching strategy	No. of hours	Method of Assessment
				Total Hrs. = 01	
Haemopoietic system	HIT-H-001	<p>Differentiate between quantitative and qualitative hemoglobinopathies.</p> <p>Elaborate the genetic basis and inheritance of important types of quantitative hemoglobinopathies (alpha and beta thalassemia's).</p> <p>Elaborate the genetic basis and inheritance of important types of qualitative hemoglobinopathies (HbS, HbC, HbSC).</p> <p>Explain how does electrophoresis help in confirming the diagnosis of various types of qualitative hemoglobinopathies (HbS, HbC, HbSC).</p> <p>Enlist the inherited and acquired causes of methemoglobinemia's and elaborate the consequences.</p> <p>Describe etiology, clinical features, lab diagnosis of Von Willebrand's disease, Hemophilia A&amp;B and Polycythemia.</p> <p>Explain the biochemical basis of hemorrhage in vitamin K and vitamin C deficiencies.</p> <p>Explain underlying mechanisms of neutropenia/agranulocytosis.</p> <p>Explain how does deficiency of glucose-6-phosphate translocase result in neutropenia and recurrent infections.</p>	Lectures, SGD's	01	MCQ's



Module Weeks	Recommended Minimum Hours
<b>02</b>	<b>70</b>



## 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 THE MODULE

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

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<b>FORENSIC MEDICINE / THANATOLOGY</b>						
<b>Topic</b>	<b>Code</b>	<b>Learning Outcomes</b>	<b>Teaching strategy</b>	<b>No. of hours</b>		<b>Method of Assessment</b>
				<b>Total Hrs.</b>	<b>Theory = 31 + 09 Practical =</b>	
POST-MORTEM CHANGES	for1-Th-002	Classify post-mortem changes. 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.	Lec & Prac	2	MCQs & VIVA	
Biochemical changes after death		Summarize the biochemical changes in blood vitreous humour and CSF after death List of different parameters to determine PMI. Describe rate method and concurrent methods to estimate PMI.	Lec & Prac	1	MCQs & SEQs	

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sudden death + postmortem artifacts	For1-Th-005 - 006 - 007	Define sudden death. Summarize common causes of sudden death. Differentiate between modes, manner cause and mechanism of death. Define and classify post mortem artefacts Explain medico legal significance of artefacts	Lec & Prac	1	MCQs & SEQs
flow-cytometry + SIDS	For-Th-008 - 009	Discuss the use of flow-cytometry in forensic medicine. Define sudden infant death syndrome. Describe the risk factors and clinical features associated with SIDS. Describe preventive strategies and parental counseling.	Lec & Prac	1	MCQs & SEQs
Autopsy & Global system of death investigation	For1-Au-001 -002	Define autopsy Summarize types of autopsies Differentiate between medical and medico legal autopsy. Enlist objectives and essentials of autopsy Differentiate four death investigation systems i. Coroner s system, ii. Medical examiner system, iii. Continental system, iv. Procurator fiscal system in Scotland.	Lec & Prac	1	mcq & seqs
Autopsy protocol & incisions	For1-Au-003 -004	i. Preliminary documents required for autopsy ii. Bio data. iii. Identification iv. External examination v. Internal examination vi. Conclusion. vii. Documentation. Differentiate between narrative and numerical autopsy protocol. Differentiate primary, secondary, and tertiary 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. Differentiate Letulle, Ghon, Virchow, and Rokitansky autopsy techniques.	Lec & Prac	1	mcq & seqs
viscera collection + hazards of autopsy+ negative autopsy	For1-Au-006 - 007 -008 -009	List the viscera with quantity to be taken for toxicological and histopathological analysis. 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.	Lec & Prac	1	mcq & seqs

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		Describe standard autopsy suite. Summarize the requirements of autopsy room. Summarize the hazards of autopsy. Define Negative autopsy. Explain the causes of negative autopsy.			
Exumation	For-Au-010	Define exhumation. Enlist the objectives of exhumation. Explain the procedure and limitations of exhumation. Enlist the specimens collected in exhumation. Summarize the precautions during exhumation	Lec & Prac	1	mcq & seqs
examination of mutilated body	For-Au-011	Summarize the objectives of autopsy on mutilated dead body/fragmentary remains.	Lec & Prac	1	mcq & seqs
personal identity & race determination	For1-PI-001 - 002	Define 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. Determine the age of a living person for medico-legal purpose. 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.	lec & prac	1	mcqs + seqs
odontology + sex determination	For1-PI-003 - 004	Differentiate male and female sex based on anatomical features and chromosome analysis Identify the disorders of sexual development. Describe the medico legal importance of sex determination. Enlist limitations of sex determination in dead. Describe the process of estimation of age from primary, secondary & mixed dentition. Describe different methods for age estimation from odontology. Enlist the information obtained from dental	lec & prac	1	mcqs + seqs

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		forensic examination. Relate medico legal importance of identification with odontology.			
anthropometry	For-PI-005 -006 -007	Describe the parameters to determine race of a person. Explain methods to determine stature of a person. Describe anthropometry with reference to age Determination.	lec & prac	1	mcqs + seqs
Dactylography	For-PI-008 -009 -010	Classify fingerprint patterns according to Galton's classification. Explain different methods of recording fingerprints. Describe the advantages & medico legal importance of Dactylography Define Poroscopy / Locards method Describe the role of DNA fingerprinting in identification. Enlist the samples required for DNA profiling in medicolegal cases. Describe the medicolegal importance of DNA Fingerprinting. Discuss different methods of identification in case of mutilated, burnt and decomposed dead bodies. Apply the international SOP of disaster Victim Identification (DVI) in mass disaster.	lec & prac	1	mcqs + seqs
		ASSESSMENT		1	

