STUDY GUIDE

Block - VII

I. Foundation-I & EBM
II. General & Clinical Pharmacology
III. Hematopoietic, Immunity & Transplant
IV. Forensic Medicine & Toxicology-I

3rd Year MBBS

Department of Medical Education

Aziz Fatimah Medical & Dental College

Faisalabad

Table of Contents

1. Introduction to Study Guide

The study guide serves several crucial purposes:

1. **Communicating information on the organization and management of the module:**

This aids students in identifying the appropriate point of contact in case they encounter any difficulties during the semester.

2. **Defining the objectives expected to be achieved by the end of the module:**

It outlines clear learning goals, ensuring that students understand what is expected of them academically.

3. **Identifying the learning strategies employed to achieve module objectives:**

These strategies may encompass various methods such as lectures, small group sessions, clinical skills practice, demonstrations, tutorials, and case-based learning.

4. **Providing a list of learning resources:**

Students are offered a comprehensive list of resources, including books, computer-assisted learning programs, web links, and journals. These resources empower students to maximize their learning potential.

5. **Highlighting information on the contribution of continuous assessment and semester examinations:**

This section emphasizes the significance of ongoing assessments and final exams in determining a student's overall performance in the module.

6. **Including information on assessment methods:**

Details about the various assessment methods employed to evaluate students' progress in achieving the objectives are outlined.

7. **Focusing on examination policies, rules, and regulations:**

This section clarifies the policies and regulations governing examinations, ensuring that students are well-informed about the rules they must adhere to during their assessments.

By providing students with this comprehensive guide, educational institutions aim to enhance their learning experience, facilitate effective academic management, and foster compliance with academic standards and regulations.

2. Implementation Team for Block 7 3rd Year MBBS

Academic Year In charge	Prof. Dr Kashif Baig	
Head of Medical Education	Dr. Ayesha Sadiq	
Block Coordinator	Block 7 Prof. Dr. Sarwat Jahan (HOD Pharmacology)	
Subject leads	**Subject**	**Leads**
	Community medicine Pathology Pharmacology Medicine Forensic Medicine Surgery PERL's CFRC	Prof. Dr. Humayun Suqrat Prof. Dr. Muhammad Kashif Baig Prof. Dr. Sarwat Jahan Prof. Dr. Ghulam Abbas Shaikh Dr. Khurram Sohail Raja Prof. Dr. Asrar Ahmad Khan Dr Ayesha Sadiq Dr. Rizwan Rasool
Assessment coordinator	Dr. Ayesha Sadiq	
Timetable coordinator	Miss Huma Afzal	

3. Introduction of BLOCK VII

The third year of MBBS marks a pivotal transition from pre-clinical learning to a more integrated clinical approach. This phase emphasizes the application of foundational knowledge to patient care and real-world medical scenarios. The following four modules **Foundation-II & Evidence-Based Medicine**, **General & Clinical Pharmacology**, **Hematopoietic, Immunity & Transplant**, and **Forensic Medicine & Toxicology-I** are designed to develop clinical reasoning, rational therapeutics, and medico legal awareness in budding physicians.

Foundation-II & Evidence-Based Medicine (EBM)

This module strengthens the link between basic sciences and clinical practice. Foundation-II focuses on understanding disease mechanisms within organ systems, correlating pathology with clinical signs and symptoms. Students are trained to think critically, approach cases systematically, and integrate interdisciplinary knowledge.

The EBM component equips students with essential skills to analyses medical literature and apply clinical research in decision-making. Students learn to assess the quality of evidence, interpret statistical outcomes, and practice medicine grounded in the best available data.

- Enhance clinical reasoning and case-based diagnostic thinking
- Understand research design, bias, and validity
- Interpret statistical outcomes in clinical literature
- Apply evidence in therapeutic and diagnostic decisions

General & Clinical Pharmacology

Pharmacology is central to safe and effective patient care. This module introduces the principles of drug action, including pharmacokinetics (how the body affects a drug) and pharmacodynamics (how the drug affects the body). Students are exposed to the major drug classes, therapeutic applications, and the rational basis of treatment protocols.

The clinical aspect bridges theoretical knowledge with practical prescribing. Emphasis is placed on adverse drug reactions, drug interactions, prescribing in special populations, and personalized medicine.

- Understand mechanisms, classifications, and clinical uses of drugs
- Develop safe prescribing habits aligned with current guidelines
- Recognize and manage adverse effects and drug interactions
- Apply pharmacological knowledge in patient-centered care

Hematopoietic, Immunity & Transplant Module

This module delves into the physiology and pathology of the hematologic and immune systems, covering conditions such as anemia, leukemias, bleeding disorders, autoimmune diseases, and immunodeficiencies. Emphasis is placed on interpreting diagnostic investigations, such as peripheral blood smears, bone marrow biopsy, and immunological assays.

The transplant medicine component explores organ and stem cell transplantation, graft rejection, and immunosuppressive therapies. Clinical relevance is ensured through case discussions and integration with pharmacology and pathology.

- Understand hematologic and immune system disorders
- Interpret laboratory findings and apply them clinically
- Comprehend immunological principles in transplant rejection
- Learn therapeutic approaches including immunosuppressants and biological.

Forensic Medicine & Toxicology-I

This module introduces the interface between medicine and the law. Students explore the medico-legal responsibilities of a physician, principles of forensic pathology, and basics of toxicology. It covers identification methods, postmortem changes, cause-of-death analysis, and documentation required in legal cases. Toxicology includes the study of poisons, clinical presentation of toxicity, and general principles of antidotal therapy. Ethical considerations and medical jurisprudence are also emphasized, preparing students for medico-legal duties in clinical settings.

- Understand legal aspects of medical practice
- Perform and interpret findings from postmortem examinations
- Identify common poisons and their clinical management
- Apply ethical principles and legal protocols in medical practice.

FOUNDATION-II & EBM MODULE

4. Foundation-II & EBM

4.1 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.

4.2 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.

4.3 Learning Objectives

4.3.1 Knowledge

PHARMACOLOGY

Code	Topic	Sub Topic	Learning objectives
F2-Ph-001	Pharmacology	Introduction	**1.** Define Pharmacology, different branches of Pharmacology, Drug Nomenclature and Pharmacopoeias
F2-Ph-002		Sources of drugs and active principles	**1.** Identify the Sources & Active Principles of Drugs with Clinical Applications of Active Principles. **2.** Describe different sources of drugs. **3.** Tabulate differences between fixed oils and volatile oils as sources of drugs.
F2-Ph-003		Parameters	**1.** Summarize definitions of various pharmacokinetic and pharmacodynamics parameters
F2-Ph-004		Routes of Administration	**1.** Name various routes of drug administration. **2.** Discuss the advantages & disadvantages of various routes of drug administration. **3.** Describe the factors that influence the route of administration of a drug. **4.** Understand the Clinical Relevance of the Selection of Routes of Administration
F2-Ph-005		Permeation	**1.** Enlist the different processes by which drugs are transported

			across cell membranes. **2.** Describe and differentiate each transport process
F2-Ph-006		Absorption	**1.** Describe drug absorption **2.** Describe drug-based factors affecting rate and extent of drug absorption. **3.** 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 Hassel Balch equation. **4.** Determine percentage of drug ionized or unionized when placed in a certain Ph. media. **5.** Explain ion trapping. **6.** Describe patient-based factors affecting rate and extent of drug absorption. **7.** Describe the Clinical Significance of Drug Absorption.
F2-Ph-007		Bioavailability and first pass effect	**1.** Define Bioavailability. **2.** Describe factors affecting bioavailability. **3.** Define Area under the curve (AUC). **4.** Explain first pass elimination. **5.** Explain extraction ratio. **6.** Understand that how bioavailability and the first pass effect, affect the different Clinical conditions.

			7. Explain bioequivalence and therapeutic equivalence.
F2-Ph-008		Distribution	**1.** Define drug distribution. **2.** Describe the distribution of a drug through various body compartments. **3.** Explain selective distribution. **4.** Describe factors affecting distribution of a drug. **5.** Explain volume of distribution (Vd) and how to calculate Vd. understand the clinical significance of Vd **6.** Explain the characteristics of a drug that is bound to plasma proteins. **7.** Describe the clinical consequences of displacement of a drug from plasm protein binding.
F2-Ph-009		Metabolism and biotransformation	**1.** Explain metabolism and biotransformation. **2.** Describe the and outcomes of metabolism and biotransformation **3.** Explain a 'prodrug' **4.** Enlist and describe characteristics of Phase 1 and Phase 2 reactions of biotransformation. **5.** Describe microsomal and non-microsomal biotransformation reactions **6.** Describe the microsomal oxidation system.

			7. Explain Hoffman's elimination. **8.** Describe factors affecting metabolism & biotransformation **9.** Describe the clinical significance of enzyme induction and enzyme inhibition with their examples. **10.** Describe the clinical significance of metabolism & biotransformation. **11.** Describe clinical significance of enterohepatic recycling of drugs.
F2-Ph-010		Elimination	**1.** Define Plasma Half-Life, and understand the concept of plasma half-life. **2.** Describe factors affecting half-life and clinical significance of plasma half-life. **3.** Understand the concept of drug clearance. **4.** Describe factors affecting drug clearance. **5.** Explain the Clinical Significance of different values of Drug Clearance. **6.** Explain steady state plasma concentration. **7.** Explain Clinical Significance of Steady State plasma concentration. **8.** Define & Explain Elimination and Orders of Elimination – First & Zero Order Kinetics with examples. **9.** Describe Clinical Significance of

			First & Zero Order Kinetics. **10.** Tabulate differences between First order kinetics and Zero Order Kinetics. **11.** Define, explain & calculate maintenance dose and loading dose using appropriate formula
F2-Ph-011		Excretion	**1.** Describe drug excretion. **2.** Enlist routes of drug excretion. **3.** Describe processes of drug excretion through the kidneys. **4.** Describe factors affecting glomerular filtration & tubular reabsorption. **5.** Describe the Clinical Significance of Glomerular Filtration, Active Tubular Secretion and Passive tubular Reabsorption of Drugs

GENERAL PATHOLOGY

Code	Topic	Sub Topic	Learning objectives
F2-Pa-001	Pathology	Genetics	**1.** Define mutation and classify different types **2.** Describe the features and examples of the following • Autosomal dominant disorders • Autosomal recessive disorders • X-linked disorders **3.** Enlist types and steps of PCR.
F2-Pa-002		Genetic	**1.** Define karyotyping

		syndromes	2. Describe the salient features and lab diagnosis along with genetic abnormalities in the following syndromes: • Marfan syndrome • Ehlers-Danlos syndrome • Down syndrome • Klinefelter syndrome • Turner syndrome
F2-Pa-003	Pharmacology	Comparison of Gram-positive and negative Bacterial cell wall structure, how bacteria differ from viruses	1. Differentiate between Gram positive and Gram negative cell wall. 2. Discuss how it affects the choice of antibiotic.

MICROBIOLOGY

Code	Topic	Sub Topic	Learning objectives
F2-Pa-004	General Microbiology	Microbiology	1. Classify gram-positive and negative cocci. 2. Classify gram +ve and gram –ve rods. 3. Classify spirochetes and atypical bacteria. 4. Classify culture media and describe blood, chocolate, McConkey, nutrient, CLED, TCBS, TSI, citrate & urease media. Blood culture. Seaboard agar.

			5. Define conjugation, transduction, and transformation and describe mechanisms of antimicrobial resistance. 6. Define colonization resistance and enlist normal flora of skin, gut, respiratory tract, and vagina. 7. Classify DNA viruses and RNA viruses. 8. Classify medical mycoses fungi. 9. Classify medically important parasites

FORENSIC MEDICINE

Code	Topic	Sub Topic	Learning objectives
F2-For- 001	Forensic Medicine & Jurisprudence	Introduction to the subject of Forensic Medicine	Define forensic medicine and describe Forensic Medicine & its various branches.
F2-For- 002	Jurisprudence	Chain of evidence	Describe evidence, its types & recording of evidence
F2-For- 003		Introduction to Thanatology	Describe the importance of diagnosis of death
F2-For- 004		Death certificate	Describe the WHO format of the death certificate.

COMMUNITY MEDICINE)

Code	Topic	Sub Topic	Learning objectives
F2-CM- 001	Community Medicine	Health dimensions & Indicators	1. Define health. 2. Describe health dimensions. 3. Describe the good health indicators.

			4. Calculate and interpret health indicators of public health importance.

PATIENT SAFETY

Code	Topic	Sub Topic	Learning objectives
F2-PS-001	Medicine	Patient safety concept	Explain patient safety is a critical concern in healthcare and how it impacts the quality of patient care.
F2-PS-002	Surgery	Human factors and patient safety	Discuss the relationship between human factors and patient safety.

GENERAL SURGERY

Code	Topic	Sub Topic	Learning objectives
F2-S-001	Surgery	Wound Healing	**1.** Describe the basic stages of surgical wound healing. **2.** Differentiate between primary and secondary wound healing.
F2-S-002	Surgery	Burns	**1.** Classify burns based on depth and surface area. **2.** Outline the principles of initial surgical management of burns.
F2-S-003	Surgery	Shock & hemorrhage	**1.** Identify clinical signs of external and internal hemorrhage in trauma patients. **2.** Describe early features of hypovolemic shock. Outline the initial steps in managing hemorrhage and shock

GENERAL MEDICINE

Code	Topic	Sub Topic	Learning objectives
F2-M-001	Medicine	Bacterial & Viral diseases	**1.** Describe the common clinical features of infectious diseases. **2.** Explain the differences in clinical presentation between viral and bacterial infections.
F2-M-002			**1.** Identify warning signs in infections that require urgent referral or intervention. **2.** Outline basic principles of management and prevention of infections.

PSYCHIATRY

Code	Topic	Sub Topic	Learning objectives
F2-BhS- 001	Behavioral sciences	Introduction to Health Behavior and Its Determinants	**1.** Define health behavior and discuss the importance of behavioral sciences in medical practice. **2.** Identify biological, psychological, and social factors that influence health behaviors and decision- making. **3.** Discuss key behavioral change models (e.g., Health Belief Model, Theory of Planned Behavior) and their application in patient care.

4.3.2 Practical / Lab Work

PHARMACOLOGY

Code	Topic	Sub Topic	Learning objectives
F2-Ph- 012	Pharmacology	Drug dosing	Calculations of drug dosing (e.g., IV infusion) & dose of children.
			1. Calculations Mean, Mode, Median, Standard deviation, and Standard Error, t-test. 2. Interpret metrology. And abbreviations.

PATHOLOGY

Code	Topic	Sub Topic	Learning objectives
F2-Pa-005	Microbiology	Use of Microscope & Gram staining	1. Demonstrate the correct steps of Gram staining on a specimen. 2. Interpret the results of Gram staining to guide antibiotic choice.

FORENSIC MEDICINE

Code	Topic	Sub Topic	Learning objectives
F2-For-005	Forensic Medicine	Trace evidence	Describe trace evidence and its types.
F2-For-006		Dactylography Recording of evidence	1. Describe the types of fingerprints and their medico legal importance. 2. Demonstrate the method of recording different types of fingerprints.
			1. Demonstrate the procedure for

			recording a dying declaration. **2.** Explain its significance in medico legal practice.
F2-For-007		Consent form	Take written informed consent for various procedures.

GENERAL & CLINICAL PHARMACOLOGY

5. General & Clinical Pharmacology

5.1 Module Rationale

The General & Clinical Pharmacology module consists of General Pharmacology and Autonomic Nervous System Pharmacology. It is designed to emphasize on various pharmacodynamics 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 pharmacogenomics 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.

5.2 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 pharmacodynamics principles to predict drug effects and optimize therapy.
- Understand different types of drugs that act on the autonomic nervous system and their clinical usage.

5.3 Learning Objectives

5.3.1 Knowledge

PHARMACOLOGY

Code	Topic	Sub Topic	Learning objectives
GCPh-Ph-001	Pharmacology	Pharmacodynamics	Define Pharmacodynamics, Affinity, Efficacy, Potency
			Explain Agonists, (partial agonists, inverse agonists, bias) allosteric agonists, and modulators with Examples.
			Describe spare receptors and give clinical importance.
			Elaborate Transmembrane signaling pathways
			Name the Effectors controlled by G-proteins
			1. Describe various Drug–antagonism types with examples **2.** Compare and discuss the information derived from Graded and Quantal dose-response curves. **3.** 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 importance.
			1. Define the following with

			examples: **2.** Desensitization, tachypylaxis, tolerance, resistance, super sensitivity, hypersensitivity, superinfection, iatrogenic effect, and idiosyncrasy.
			Describe the phenomenon of regulation of receptors.
			Describe Pharmacogenetics with examples.
			Illustrate various phases of drug development.
GCPh-Ph-002	Pharmacology	Autonomic Pharmacology Cholinergic System	List the cholinergic receptors and recall their site of action and 2nd messenger system.
			Classify cholinergic agonists and antagonists.
			Discuss the pharmacological actions / systemic effects of cholinergic agonists and antagonists.
			Outline the clinical uses and adverse effects of Cholinomimetics.
			Differentiate between myasthenia crisis and cholinergic crisis.
			Outline the management of Myasthenia gravis.
			Explain the pharmacological management of Alzheimer's disease.
			1. Describe the process of 'aging' in OPC poisoning and its management. **2.** Discuss the management of Organophosphate (OPC) poisoning.

			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	Pharmacology	Autonomic Pharmacology (Adrenergic System)	**1.** Enlist the adrenergic receptors with their site of action and transduction mechanism. **2.** Classify adrenergic agonists.
			1. Describe general characteristics of catecholamines. **2.** Compare the structural characteristics of catecholamines & non-catecholamines
			1. Discuss the pharmacological actions / systemic effects of direct and indirect-acting adrenergic agonists. **2.** Discuss the therapeutic uses, adverse effects, and contraindications of direct-acting adrenergic agonists.
			1. Classify alpha blockers. **2.** Discuss the clinical uses and adverse effects of alpha- blockers.

			3. Discuss epinephrine reversal. **4.** Discuss the adverse effects of alpha-blockers.
			1. Classify beta-blockers. **2.** Discuss the clinical indications and adverse effects. Of using beta antagonists. **3.** 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	Topic	Sub Topic	Learning objectives
GCPh-B-001	Biochemistry	Signal Transduction & Second Messengers	**1.** Describe the features of Signal transduction. **2.** Describe types of second messengers **3.** Differentiate the G protein and non-G protein mediated signal transduction pathways.

PHYSIOLOGY

Code	Topic	Sub Topic	Learning objectives
GCPh-P-001	Medical physiology	Autonomic Nervous System	**1.** Describe the types of adrenergic and cholinergic receptors and their functions. **2.** Explain the effects of sympathetic and parasympathetic on various organs/systems of the body

BEHAVIOURAL SCIENCES

Code	Topic	Sub Topic	Learning objectives
GCPh- BhS-001	Behavioural sciences	Ethical dilemmas	Describe common ethical dilemmas in drug trials & pharmaceutical industry.

PATIENT SAFETY

Code	Topic	Sub Topic	Learning objectives
GCPh- PS-001	Pharmacology	Learning from errors to prevent harm	Describe the terms error, slip, lapse, mistake, violation, near miss and hindsight bias.
GCPh- PS-002		Medication safety	Explain the ways to improve the safety of medication use.

5.3.2 Practical / Lab Work

PHARMACOLOGY

Code	Topic	Sub Topic	Learning objectives
GCPh- Ph-004	Pharmacology	Prescription & Drug preparation and dispensing	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 % KMnO4 solution using a stock solution.
			Prepare and dispense 12 g of Sulphur ointment B-P 10%.
GCPh- Ph-005	Pharmacology	Autonomic Nervous System	Analyze and interpret the pharmacological effects of Drugs (Acetylcholine, Atropine Adrenaline, and 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 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.

HEMATOPOIETIC, IMMUNITY & TRANSPLANT

6. Hematopoietic, Immunity Transplant

6.1 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.

6.2 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 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 hyper acute, 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.

6.3 Learning Objectives

6.3.1 Knowledge

HEMATOLOGY

Code	Topic	Sub Topic	Learning objectives
HIT-H-001	Hematology	Hematopoietic system	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
			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 deficiencies.
			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.

			Explain the biochemical mechanisms of hemolysis in hereditary spherocytosis and elliptocytosis.
			Explain the biochemical basis of hemolysis in vitamin E deficiency.
			Describe the clinical manifestations, clinically differentiating features and clinical course of patient with anemia
	Hematology / Surgery		Describe the indications, and expected benefits of splenectomy in hematological and immunological disorder.
			Explain the risks and complications of splenectomy.
			Discuss the preventive measures and basic perioperative considerations associated with splenectomy.
	Hematology		Describe etiology, pathogenesis, clinical types and diagnosis of thalassemia with emphasis on incidence, common mutations, associated psychosocial problems and prevention.
	Hematology/ Biochemistry		**1.** Differentiate between quantitative and qualitative hemoglobinopathies. **2.** Elaborate the genetic basis and inheritance of important types of quantitative hemoglobinopathies (alpha and beta thalassemias). **3.** Elaborate the genetic basis and inheritance of important types of qualitative hemoglobinopathies (HbS, HbC, and HbSC). **4.** Explain how electrophoresis helps in confirming the diagnosis of various

			types of qualitative hemoglobinopathies (HbS, HbC, and HbSC). **5.** Enlist the inherited and acquired causes of methemoglobinemia's and elaborate the consequences. **6.** Describe etiology, clinical features, lab diagnosis of Von Willebrand's disease, Hemophilia A&B and Polycythemia. **7.** Explain the biochemical basis of hemorrhage in vitamin K and vitamin C deficiencies. **8.** Explain underlying mechanisms of neutropenia/agranulocytosis. **9.** Explain how deficiency of glucose-6-phosphate translocase results in neutropenia and recurrent infections.
HIT-H-002	Hematology	Lymphoid system	Differentiate between infective and malignant causes of leukocytosis with reference to infectious mononucleosis, acute and chronic non-specific lymphadenitis.
			1. Explain Non-Hodgkin's lymphoma in terms of classification, etiology, pathogenesis, clinical features, diagnosis, staging and prognosis. **2.** Explain Hodgkin's lymphoma in terms of classification, etiology, pathogenesis, clinical features, diagnosis, staging and prognosis.
	Surgery		**1.** Explain the pathophysiology of lymphomas, including gastric MALT

			and diffuse large B-cell types. **2.** Explain the indications, procedure, and significance of lymph node biopsy in the diagnosis of lymphoma.
HIT-H-003	Hematology/ Medicine	Haemopoietic system	**1.** Explain classification, etiology, pathogenesis, clinical features, diagnosis, staging and prognosis of acute and chronic leukemia. **2.** Describe the clinical manifestations, clinically differentiating features and clinical course of patient with leukemia. **3.** Explain etiology, pathogenesis, morphology, clinical features, diagnosis, staging and prognosis of multiple myeloma.
	Hematology		Explain etiology, pathogenesis, morphology, clinical features, diagnosis, prognosis and management of disseminated intravascular coagulation (DIC).
	Pharmacology		**1.** Classify anticlotting drugs. **2.** Describe the mechanisms of action, clinical uses and adverse effects of anticoagulants. **3.** Compare unfractionated heparin, LMW heparins and oral anticoagulants.
			1. Differentiate the mechanism of action, clinical uses, and toxicities of the oral anticoagulants (warfarin, Rivaroxaban, and dabigatran). **2.** Explain the pharmacokinetic and

			pharmacodynamics drug interactions of warfarin.
			1. Describe the mechanisms of action, clinical uses and adverse effects of antiplatelet drugs. **2.** Illustrate where the site of action of major classes of antiplatelet drugs act. **3.** Differentiate between Clopidogrel and Ticlopidine.
			1. Discuss the mechanism of action, clinical uses, adverse effects and contraindications of thrombolytic. Tabulate differences between streptokinase and recombinant tissue plasminogen activators. **2.** Enlist the drugs used to treat bleeding disorders
			1. Enumerate hematopoietic growth factors. **2.** Explain their mechanism of action, uses and adverse effects.
	Hematology		**1.** Classify thrombocytopenia based on etiology. **2.** Explain the pathogenesis of decreased platelet production and survival. **3.** Describe the morphological changes in peripheral blood smear and bone marrow. **4.** Identify the clinical features of thrombocytopenia. Outline the diagnostic approaches for thrombocytopenia. **5.** Interpret the prognosis in different

			causes of thrombocytopenia. **6.** Describe the management strategies for thrombocytopenia. **7.** Interpret coagulation profile for bleeding disorders.
HIT-H-004	Hematology	Blood Transfusion	Explain the ABO and Rhesus blood groups, their clinical importance, and the methods of blood group typing.
			1. Explain the common indications for transfusion of blood products (red cells, platelets, and plasma). **2.** Identify the hazards and complications of blood transfusion. **3.** Discuss methods to prevent transfusion-related hazards. **4.** Apply knowledge of indications, risks, and preventive measures to different clinical scenarios.
	Biochemistry		**1.** Enlist the biochemical changes that occur in stored blood. **2.** Explain the significance of rejuvenation of stored blood.

GENERAL PATHOLOGY

Code	Topic	Sub Topic	Learning objectives
HIT-Pa-001	General Pathology	Immunology	**1.** Explain the clinical aspects of acquired immunity. **2.** Explain the clinical aspects of active and passive immunity
			1. Classify the types of cells involved in the immune response (Phagocytes, T cells, B cells & NK cells). **2.** 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
			1. Explain the types of Major Histocompatibility Complex **2.** (MHC) and elaborate their role in clinical diseases.
			1. Classify different types of antibodies. **2.** Describe the structure and functions of major immunoglobulins (IgG, IgA, IgM, IgE, IgD). **3.** Explain the role of antibodies in immune defense and immunopathology. **4.** Interpret the clinical significance of antibodies in diagnosis. **5.** Discuss the pathological consequences of abnormal antibody responses.
HIT-Pa-002	Pharmacology	Hematopoietic system	**1.** Classify immunosuppressants and antibodies. **2.** Explain their mechanism of action, clinical uses, and toxicities.
			1. Identify the major cytokines and other immunomodulating agents with their clinical applications.
HIT-Pa-003	General Pathology	Immunology	**1.** Classify the types of hypersensitivity reactions. Describe the immunological mechanisms underlying each type. **2.** Explain the clinical features and examples of diseases associated with

			each type. **3.** Discuss the laboratory and pathological findings in hypersensitivity reactions. **4.** Interpret the clinical relevance of hypersensitivity reactions in infectious and autoimmune diseases.
HIT-Pa-004	General Pathology	Transplantation	**1.** Describe types of transplant rejection. **2.** Explain Graft vs Host disease and apply this knowledge to different clinical scenarios
			1. Explain the concept and pathogenesis of autoimmunity. **2.** Classify autoimmune diseases and describe their pathological and clinical features.

6.3.2 Practical / Lab Work

GENERAL PATHOLOGY

Code	Topic	Sub Topic	Learning objectives
HIT-H-005	Hematology	Hematopoietic and Lymphoid System	Perform CBC on analyzer and interpret the report.
HIT-H-006		Hematopoietic System	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 Leukemias.

HIT-Pa-005	Immunology	Pathology / Immunology	Interpret ELISA results for various immunological tests

FORENSIC MEDICINE & TOXICOLOGY-I

7 Forensic Medicine & Toxicology-I

7.1 Module Rationale

The Forensic Medicine and Toxicology Module 1 prepare 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.

7.2 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

7.3 Learning Objectives

7.3.1 Knowledge

THANATOLOGY

Code	Topic	Sub Topic	Learning objectives
For1-Th-001	Forensic Medicine	Life & Death	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
For1-Th-002	Forensic Medicine	Post-mortem changes - (Immediate early and late)	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 medico legal

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

AUTOPSY

Code	Topic	Sub Topic	Learning objectives
For1- Au-001	Forensic medicine	Autopsy, Its types and objectives.	Define autopsy
			Summarize types of autopsies
			Differentiate between medical and medico legal autopsy.
			Enlist objectives and essentials of autopsy
For1- Au-002	Forensic medicine	Global systems of death investigations	Differentiate four death investigation systems • Coroner s system, • Medical examiner system, • Continental system, • Procurator fiscal system in Scotland.
For1- Au-003			Define autopsy protocol. • Preliminary documents required for autopsy • Bio data. • Identification • External examination • Internal examination • Conclusion. • Documentation.
		Autopsy Protocol	Differentiate between narrative and numerical autopsy protocol.
For1- Au-004		Autopsy incisions	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.

For1- Au-005		Autopsy techniques	Differentiate Letulle, Ghon, Virchow, and Rokitansky autopsy techniques.
For1- Au-006		Collection of viscera at autopsy	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.
For1- Au-007		Essential of autopsy suite	Describe standard autopsy suite.
			Summarize the requirements of autopsy room.
For1-Au-008		Hazards of autopsy	Summarize the hazards of autopsy.
For1- Au-009		Negative autopsy	Define Negative autopsy.
			Explain the causes of negative autopsy.
For1- Au-010		Exhumation	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
For1- Au-011	Anatomy	Examination of fragmentary / Mutilated / Skeletal remains	Summarize the objectives of autopsy on mutilated dead body/fragmentary remains.

PERSONAL IDENTITY

Code	Topic	Sub Topic	Learning objectives
For1-PI-001	Forensic Medicine	Personal Identity	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.
For1-PI-002		Age determination	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.
For1-PI-003	Anatomy	Sex determination	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.
For1-PI-004	Forensic Medicine	Forensic Odontology	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 forensic examination. Relate medico legal importance of identification with odontology.
For1-PI-005		Race determination	Describe the parameters to determine race of a person.
For1-PI-006		Stature estimation	Explain methods to determine stature of a person.
For1-PI-007		Anthropometry	Describe anthropometry with reference to age Determination.
For1-PI-008		Dactylography	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
For1-PI-009	Pathology	DNA Profiling	Describe the role of DNA fingerprinting in identification.
			Enlist the samples required for DNA profiling in medico legal cases.
			Describe the medico legal importance of DNA Fingerprinting.
For1-PI-010	Forensic Medicine	Mass Disaster Identification	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.

7.3.2 Practical / Lab Work

THANATOLOGY

Code	Topic	Sub Topic	Learning objectives
For1- Th-010	Forensic Medicine	Autopsy	Identify the immediate, early, and late changes after death.
			Calculate the estimated time since death on the basis of findings noted in the corpse.
For1- Au-011		WHO guidelines of death certificate	Prepare a death certificate of cause of death according to WHO guidelines.
For1- Au-012	Forensic medicine	Autopsy	Observe the procedure of autopsy examination and dissection.
			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-PI-011	Forensic medicine	Personal identification	Determine age and sex for identification in medico-legal cases.
			Take fingerprints by plain and rolling method and classify according to Galton's Classification.
			Estimate the age of a person for medico-legal purposes.
For1-PI-012	Forensic medicine	Bite marks analysis	Identify and analyse the bite marks.
For1-PI-	Forensic	Age & sex	Estimate the age of the person from the

013	medicine	determination	oral examination of the teeth.
			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.

8 CFRC for Block-7

Subjects	CFRC Code	CFRC
Medicine	CFRC3-001	• Medical History taking skills Take focused medical history including presenting complaints, history of presenting illness, past medical and surgical history, drug and allergy history, family history, social history, and systems review to identify symptoms, risk factors, and relevant clinical information.
	CFRC3-002	• General physical examination: • Perform a systematic general physical examination to assess vital signs and abnormal clinical findings.
	CFRC3-004	• Anemia Identify signs of anemia (pallor, koilonychia, and glossitis) during examination.
	CFRC3-009	• WHO Death Certificate: Fill WHO death certificate based on case data.
Behavioural Sciences	CFRC3-010	• Informed Consent: Take informed written consent for common procedures.
	CFRC3-011	• Communication Skills: Demonstrate empathetic communication during patient interaction.
Surgery	CFRC3-012	• Wound Assessment • Inspect and describe the physical appearance of a wound, including its size, shape, edges, wound bed characteristics, exudate, surrounding skin, and signs of infection. Identify signs of wound infection.
	CFRC3-013	• Wound dressing • Assist in wound dressing using sterile technique.
	CFRC3-014	• Burn wound care • Observe and narrate the initial management steps for a burn patient (cooling, covering, fluids). • Counsel on burn wound care and infection prevention.
	CFRC3-015	• Assessment of hemorrhage

		• Measure and interpret vital signs in suspected shock. • Identify signs of external/internal bleeding. • Initiate first aid management for hemorrhage.
	CFRC3-019	• Scrubbing technique • Perform the correct technique of scrubbing in for surgical procedures in operation theatre while adhering to aseptic principles and infection control protocols.
	CFRC3-020	• Surgical History Taking: Perform focused surgical history-taking (e.g., neck lump, trauma, abdominal pain) and conduct physical examination to identify key findings for diagnosis and management.
	CFRC3-021	• Suturing • Observe the steps of basic suturing techniques, including instrument handling, knot tying, and wound edge approximation, while following principles of asepsis.
	CFRC3-022	• Post-Surgical Infections: Observe appropriate antimicrobial prophylaxis by selecting and justifying preoperative antibiotics, and management of post-surgical infections according to standard guidelines.
Pathology	CFRC3-005	• Blood sampling technique • Observe and narrate the correct technique for collecting, labelling, and storing blood samples while maintaining aseptic precautions and ensuring specimen integrity.
	CFRC3-006	• CBC Analysis • Interpret CBC and peripheral smear findings. • Differentiate microcytic, macrocytic, and hemolytic anemia patterns on reports.
	CFRC3-007	• Coagulation profile analysis • Interpret PT, APTT, and platelet count results. • Identify clinical signs of bleeding disorders (petechiae,

		ecchymoses).
	CFRC3-008	• Blood transfusion • Demonstrate correct patient identification and crossmatch verification before blood • Transfusion. • Observe and describe steps of blood transfusion setup. • Document blood transfusion record.
Pharmacology	CFRC3-017	• Routes of drug administration: • Observe and identify various routes of drug administration (oral, intravenous, intramuscular, subcutaneous, inhalational, topical, and rectal) and describe the rationale for selecting a specific route for drug administration.
	CFRC3-018	• Aseptic precautions in parenteral drug administration: • Demonstrate and practice aseptic precautions during parenteral drug administration. (hand hygiene, use of sterile equipment, skin antisepsis, wearing gloves, avoiding contamination of sterile parts, clean environment, verifying drug integrity, single use of syringes/needles, safe disposal of sharps, applying sterile dressing).
Community Medicine	CFRC3-003	• Assessment of Growth and Nutritional Status • Measure BMI and interpret nutritional status. • Record height, weight, and calculate growth percentiles in OPD/community settings.
	CFRC3-016	• Infection prevention & management • Demonstrate isolation precautions and hand hygiene. • Counsel patients on infection prevention and immunization. Monitor fever charts and interpret temperature trends. Observe antibiotic administration and IV fluid therapy.

9 PERL's for Block-7

FOUNDATION-II & EBM				
Code	**Topic**	**Sub Topic**	**Learning objectives**	**Proposed Portfolio Entry**
PERLs-3-001	**Professionalism**	Professional Responsibility in Clinical Rotations	**1.** Understand the basic professional behaviors expected in clinical rotations, such as punctuality, appropriate communication, and respectful interactions with patients and staff. **2.** Observe a clinical setting and identify key professional behaviors demonstrated by healthcare staff, such as maintaining punctuality and professional communication	A brief reflection on the key professional behaviors observed during the first clinical rotation session, noting how these behaviors contribute to patient care and professional conduct.
PERLs-3-002	**Research**	Legal and Ethical Frameworks governing medical research	**1.** 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	**1.** Discuss the role of Institutional Review Boards (IRBs) in the research process. **2.** Identify and explain the different components of your institutional ethical review proforma to demonstrate its understanding.	
PERLs-3-004	**Ethics**	Reporting medical errors	**1.** Discuss the ethical obligations in reporting medical errors and the role of transparency in maintaining patient trust and improving care quality. **2.** 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	**1.** Participate in a mentoring session where they will discuss their strengths and weaknesses with their mentor, receive	Mentoring Session V Key decisions

			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.	

GENERAL & CLINICAL PHARMACOLOGY				
Code	**Topic**	**Sub Topic**	**Learning objectives**	**Proposed Portfolio Entry**
PERLs-3-006	**Professionalism**	Responsible use of social media Platforms	**1.** Discuss the principles of responsible use of social media platforms, including safeguarding patient confidentiality, conducting ethical interactions, and practicing careful online sharing. **2.** Discuss available social media use guidelines in	Develop and submit personal social media guidelines that reflect ethical use in professional and medical contexts

			healthcare.	
PERLs-3-007	**Ethics**	Conflict of interest, Dealing with Pharmaceuticals	**1.** Explain the ethical challenges related to conflicts of interest in healthcare, particularly when dealing with pharmaceutical companies, and understand how to manage these situations maintain professional integrity. 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	**1.** Discuss the importance of identifying gaps in existing literature for	

			formulating meaningful research problems. **2.** Identify at least one significant gap from the literature review of a selected topic that requires further exploration. **3.** Formulate a research question or hypothesis to address the identified literature gap. **4.** Refine a previously selected research title in light of the identified gap.	
PERLs-3-009	**Leader**	Artificial Intelligence in Research	**1.** Explore the role of artificial intelligence (AI) in medical research, including its applications, potential benefits, and challenges,	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

			while identifying ways AI can innovate and enhance research methodologies. **2.** Discuss the ethical implications of using AI in research, including bias, data privacy, transparency, and accountability concerns. **3.** Demonstrate the use of AI tools as supplementary tools in research.	transparency.

HEMATOPOETIC, IMMUNITY & TRANSPLANT				
Code	**Topic**	**Sub Topic**	**Learning objectives**	**Proposed Portfolio Entry**
PERLs-3-010	Professionalism	Maintaining Patient Confidentiality	**1.** Discuss the principles for maintaining patient confidentiality. **2.** Appreciate the Importance of maintaining patient	Reflective entry on a clinical case where confidentiality was maintained, detailing the challenges and how they were addressed.

			confidentiality in clinical practice. 3. Discus legal and ethical implications of patient confidentiality.	
PERLs-3-011	Research	Research References	1. Identify different reference styles. 2. Use reference management software to apply Vancouver style of referencing. 3. Use reference management software to apply APA style of referencing.	

FORENSIC MEDICINE & TOXICOLOGY				
Code	**Topic**	**Sub Topic**	**Learning objectives**	**Proposed Portfolio Entry**
PERLs-3-012	Ethics	Human Rights & Malpractice	1. Discuss ethical principles surrounding human rights in healthcare, particularly in malpractice cases, and recognize the professional	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

			obligations to uphold patients' rights while preventing and addressing malpractice.	patient rights.
PERLs-3-013	Research	Introduction section of Research	**1.** Write and submit the introduction section of a research proposal with proper referencing for teachers' feedback. **2.** Refine the research title and introduction based on feedback received.	
PERLs-3-014	Leadership	Project Management	**1.** Introduce the basic concepts of project management in healthcare, including planning, organizing, and executing small projects, such as case studies or group assignments. **2.** Participate in a class activity, where they will plan and organize tasks, set timelines,	Write a Class activity report with assigned roles taken by each group member. Critically evaluate the challenges observed with proposed recommendations.

			and assign roles to ensure the project is completed efficiently.	

10 Teaching & Learning Methodologies

- **Interactive Lectures**

  Interactive lecturing involves an increased interchange between teachers, students, and the lecture content. The use of interactive lectures can promote active learning, heighten attention and motivation, give feedback to the teacher and the student, and increase satisfaction for both.

- **Small group discussions**

  Small-group discussion is a student-centered methodology that allows students to actively involve and be partners in the teaching-learning process. Students interact with peers and instructors, discussing, and sharing ideas. They develop the ability to build consensus in a group.

- **Practical's**

  Hands-on performance of skills in laboratory

- **Clinical Ward Rotation**

  During clinical rotations, students learn history taking and physical examination, recognize common clinical presentations, and get introduced to basic diagnostic procedures and treatment planning. They also develop professional behavior and communication skills essential for patient care.

- **Case based Learning**

  Case-based learning is a student-centered learning approach where students read and discuss complex situations and apply their knowledge to each situation. Students typically examine the case together as a team and address the problems within the realistic scenario to develop a reasonable conclusion.

- **Self-directed learning**

  Self-directed learning is an instructional strategy where the students with guidance from the teacher decide what and how they will learn. It can be done individually or with group, learning, but the overall concept is that students take honor ship of their learning

11 Assessment Methodologies

Theory

1. MCQ's

A multiple-choice question (MCQ) is composed of two parts: a stem that identifies the question or problem, and a set of alternatives or possible answers that contain a key that is the best answer to the question, and several distractors that are plausible but incorrect answers to the question.

Practical

1. OSPE

"Objectively Structured Practical Examination.", as a tool for the assessment of practical skills of undergraduate Medical Students.

2. OSCE

OSCE stands for "Objectively Structured Clinical Examination." OSCEs are very helpful in medical education because they allow a student to practice and demonstrate clinical skills in a standardized medical scenario.

3. OSVE

OSVE stands for "Objectively Structured Viva Examination". In the viva you have to answer questions and engage with your examiners.

4. EOR

End-of-Rotation (EOR) assessments are summative evaluations conducted at the conclusion of a clinical rotation or academic module. These assessments aim to measure the knowledge, skills, attitudes, and clinical competencies a student has acquired over the duration of the rotation.

ASSESSMENT POLCIY AND TOS OF UHS

12 Exam Regulations by UHS

Regulations

1. Professional examination shall be open to any student who: -
   - **a.** Has been enrolled/registered and completed one academic year preceding the concerned professional examination in a constituent/affiliated college of the University.
   - **b.** Has his/her name submitted to the Controller of Examinations, for the purpose of examination, by the Principal of the college in which he / she is enrolled & is eligible as per all prerequisites of the examination?
   - **c.** Has his/her marks of internal assessment in all the Blocks/Clinical Clerkships sent to the Controller of Examinations through office of the Principal of the concerned college, at the end of each Block/Clinical Clerkships, as well as at the conclusion of the academic session along with the admission form for the professional examination.
   - **d.** Has been certified by the principal of his/her college:
     - **i.** of good character;
     - **ii.** of having attended not less than cumulative 75%* of the full course of lectures delivered, practical and clinical rotations conducted in the particular academic session, while maintaining 75 % attendance in each Block/Clinical Clerkship,
     - **iii.** of having appeared at the Block/Clinical Clerkship Examinations conducted by the college of enrolment with at least 50 % marks* in each Block/Clinical Clerkship examination, as well as in aggregate score of all Blocks/Clinical Clerkships examinations for the concerned year;
2. Written/Theory paper in all Professional Examinations in Modular Integrated MBBS or BDS Curricula shall consist of MCQs alone, with effect from Annual 2026 Examinations. (Ref: No. UHS/REG-25/2379, dated 17.11.2025)
3. The minimum number of marks required to pass the professional examination for each Block/Clinical Clerkship shall be fifty percent (50%) in Written and fifty percent (50%) in the 'Oral/Practical/Clinical' examinations and fifty percent (50%) in aggregate, independently and concomitantly, at one and the same time.
4. A candidate failing in one or more Blocks/Clinical Clerkships in the annual examination shall be provisionally allowed to join the next professional class till the commencement of supplementary examinations. The candidate, however, shall have to

pass the failed Block/s or Clinical Clerkship in this supplementary examination failing which he / she shall be detained in the professional year. Under no circumstances, a candidate shall be promoted to the next professional class till he/she has previously passed all the Blocks/Clinical Clerkships in the preceding professional examination.

If a student appears in the Supplementary Examination for the first time as he/she did not appear in the annual examination for any reason and failed in any Block/Clinical Clerkship in the Supplementary Examination, he/she will be detained in the same class and will not be promoted to the next class.

*Notification No.UHS/REG-25/2351 Dated 13-11-2025

5. Only one annual and one supplementary of each Professional Examination shall be allowed in a particular academic session. However, in exceptional situations, i.e., national calamities, war or loss of solved answer books in case of accident, special examination may be arranged after having observed due process of law. This will require permission of relevant authorities, i.e., Syndicate and Board of Governors.
6. Any student who fails to clear the First or Second Professional MBBS / First Professional BDS Examination, in four consecutive attempts, each, inclusive of both availed as well as un-availed attempts, after becoming eligible for the examination, and has been expelled on that account shall not be eligible for continuation of studies and shall not be eligible for admission as a fresh candidate in either MBBS or BDS.
7. The application for admission of each candidate to the professional examination shall be submitted to the Controller of Examination, through the Principal of the College, on the prescribed format, as per notified schedule, accompanied by the prescribed fee.
8. The candidates shall pay their fee through the principal of their respective Colleges, who shall forward the Examination Forms along with the duly paid challan of the examination fee generated from the Online Examination Form.
9. The continuous internal assessment through the Block/Clinical Clerkship, conducted by the college of enrollment, shall carry 20% weightage in the total allocated marks for the concerned Block/Clinical Clerkship in the Professional Examination conducted by the university. The score will be equally distributed to the Written and "Oral/Practical/Clinical" Examinations.
10. The marks of internal assessment through Blocks/Clinical Clerkships examination and attendance record shall be submitted to Controller of Examinations, along with question papers and keys for the Block/Clinical Clerkship examination, within two weeks of completion of each Blocks/Clinical Clerkships examination.

Further, parent-teacher meetings shall be arranged by the colleges after every Block/Clinical Clerkship examination to share feedback on the progress of students with their parents. Minutes of parent teacher meetings, academic timetables/schedule of Blocks/Clinical Clerkships and academic year study guides shall be submitted to the Department of Medical Education UHS, as well.

11. It is emphasized that fresh internal assessment or a revision of assessment for supplementary examination shall not be permissible. However, a revised internal assessment for the detained students can be submitted. The internal assessment award in a particular year will not be decreased subsequently detrimental to the detainee candidate. A proper record of the continuous internal assessment shall be maintained by the concerned department/s in the colleges.

12. The colleges may arrange remedial classes and one re-sit for each Block/Clinical Clerkship examination after fulfillment of prescribed requirements given below. The remedial classes and re-sit examination can be conducted during summer vacation/weekends, before or during preparatory leave for the concerned professional examination, subject to the following conditions:

Block/Clinical Clerkship Attendance	Remedial Classes
<75%, ≥ 50% (50-74%)	**1.** Principal of the college may conduct remedial classes and submit result to the Examination Department, UHS, independently. **2.** Principal of the college may conduct remedial classes for detained students, who have short attendance in the first Block/Clinical Clerkship of a professional year after detention. The college may submit record of the remedial classes to the Examination Department, UHS, independently.
<50%	**1.** Principal of the college may submit attendance record of such students to Department of Medical Education, UHS, and seeking permission for conduct of remedial Classes. The conduct of remedial classes in such cases shall be arranged only after permission from the Competent

	2. Authority in the university. 3. The colleges shall also have to provide the university with the reasons submitted by the candidates for short attendance along with documentary evidence for the same duly verified by the principal. 4. The following shall be considered as valid reasons for short attendance of the students for consideration of permission for remedial classes: a. Illness/accident/surgery of the student or sickness/death of an immediate relative/being afflicted by a natural/man-made calamity or disaster or detained students (missed the first Block/Clinical Clerkship of the year), students clearing their preceding professional examination in supplementary, or late b. admitted students who have been permitted for joining by UHS

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Marks in Block/ Clinical Clerkship Examination	Re-sit Examination
<50% Marks/ Absence from Block /Clinical Clerkship Examination	1. Principal of the college may submit record of such students to Department of Medical Education, UHS, and seeking permission for conduct of re-sit examination. 2. The conduct of re-sit examination in all cases shall be arranged only after permission from the Competent Authority in the university. 3. The colleges shall also have to provide the university with the reasons submitted by the candidates for absence from the Block/Clinical Clerkship examination, along with documentary evidence for the same duly verified by the principal. 4. The following shall be considered as valid reasons for

	absence of a student from Block/Clinical Clerkship examination, and for consideration of permission for re-sit examination: **a.** Illness/accident/surgery of the student or sickness/death of an immediate relative/being afflicted by a natural/man-made calamity or disaster or detained students (missed the first **b.** Block/Clinical Clerkship of the year), students clearing their preceding professional examination in supplementary, or late admitted students who have been permitted for joining by UHS

13. The following policy shall be applicable for transition of students From Traditional Subject-Based Scheme to the Modular Integrated Curriculum Scheme:

a. The students who fail in all subjects of the professional examination, either by taking the examination or due to non-appearance, and are detained in the respective professional year, shall follow the Modular Integrated Curriculum Scheme for their teaching and assessment.

b. The students who fail in one or more subjects but not all the subjects of a professional examination, either by taking the examination or due to non-appearance, and are detained in the respective professional year, shall attend classes with students following the Modular Integrated Curriculum Scheme, but they will be examined in the failed subject/s according to their parent scheme, i.e., the Traditional Subject-Based Curriculum Scheme.

13 Examination Rules AFMDC

- Students must report to examination hall/ venue at least 30 minutes before the exam.
- Exam will start sharp at time.
- Late comers arriving at the examination hall more than 15 minutes after the start of the paper will not be allowed to enter the examination hall.
- All students should wear Lab coats before appearing in the exam.
- Students are not allowed to take into the examination hall textbooks, notes or manuscript of any kind.
- Students must bring the necessary stationary items for exam with them e.g. pen/pencil/eraser/ball point/sharpener etc.
- Mobile phones and gadgets are strictly prohibited in examination hall. If any student found with Mobile Phone (Silent/Switched off/on) he/she will not be allowed to continue the exam.

14 Internal Assessment Policy (UHS)

	Scoring Parameter	Weightage (percentage)
Theory 10 %	Attendance	75% attendance -1 % >85% attendance -2 %
	Block Exam	5 %
	Continuous assessment	3 %
Practical 10 %	Attendance	75% attendance -1 % >85% attendance -2 %
	Block Exam	5 %
	Clinical logbooks	3%

15 Internal Assessment Policy (AFMDC)

(Theory = 10% = 35 Marks)

Block weightage (Total Marks = 18)

Criteria for Block weightage

Less than 50%= 08 Marks

50%= 09 Marks

51-55%=11 Marks

56-60%=13 Marks

61-65% =14 Marks

66-70%= 15 Marks

71-75% = 16 Marks

More than 75% = 18 Marks

Attendance (Total Marks = 07)

Criteria for Attendance

75% Attendance = 3.5 Marks

>85 Attendance = 07 Marks

Individual Subjects Weightage (Total Marks = 10)

Criteria for individual subjects Weightage

Sr. No	Subject	Total Marks
1.	Pathology	04 Marks
2.	Pharmacology	03 Marks
3.	Forensic Medicine	03 Marks

(Practical = 10% = 35 Marks)

Block weightage (Total Marks = 18)

Criteria for Block weightage

Less than 50%= 08 Marks

50%= 09 Marks

51-55%=11 Marks

56-60%=13 Marks

61-65% =14 Marks

66-70%= 15 Marks

71-75% = 16 Marks

More than 75% = 18 Marks

Attendance (Total Marks = 07)

Criteria for Attendance

75% Attendance = 3.5 Marks

>85 Attendance = 07 Marks

CFRC Log book + Portfolio + End of Rotation Exam Weightage (Total Marks = 10)

Criteria for individual subjects Weightage

Sr. No	Subject	Total Marks	Responsibility
1.	CFRC Log book	03 Marks	Block Coordinator
2.	End of Rotation	03 Marks	Block Coordinator
3.	Portfolio	04 Marks	DME

16 Table of Specification (TOS)

MBBS 3rd Professional						
Block-7						
Subject	Written Exam	Marks	Oral/Practical/Clinical Exam			
	MCQ (1 mark)		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**

17 Frame work of Block 7 3rd Year MBBS Timetable 2025-26

DAY	1	2	3		4	5
	08:00 - 09:00	09:00 - 10:00	10:00 - 11:30		11:30 - 12:00	12:00 - 02:00
Monday	Forensic Medicine Lecture	Pharmacology Lecture	Practical		Break/ Transportation Time	Ward
Tuesday	Pathology Lecture	Pharmacology Lecture	Practical			Ward
Wednesday	Pharmacology Lecture	Pathology Lecture	Practical			Ward
DAY	1	2	3	4	5	6
	08:00 - 09:00	09:00 - 10:00	10:00 - 11:00	11:00 - 12:30	12:30 - 01:00	01:00 - 02:00
Thursday	Pharmacology Lecture	Pathology Lecture	Pharmacology Lecture	Tutorial	Break/Namaz Break	General Medicine/General Surgery Lecture
DAY	1	2	3	4	5	6
	08:00 - 09:00	09:00 - 10:00	10:00 - 11:00	11:00 - 11:30	11:30 am - 01:00 pm	
Friday	Pathology Lecture	Forensic Medicine Lecture	Pathology Lecture	SDL	Tutorial	
DAY	1	2	3	4	5	6
	08:00 - 09:00	09:00 - 10:00	10:00 - 11:00	11:00 - 12:30	12:30 - 01:00	01:00 - 02:00
Saturday	PERLs Lecture	Pathology Lecture	Pharmacology Lecture	Tutorial	Break/Namaz Break	BS/Community Medicine

18 Clinical Ward Rotation of 3rd Year MBBS 2025-26

Group Wise Rotation 3rd Year MBBS

Rotations	Medicine	Medicine	Group 1 Specialities	Group 1 Specialities	Group 2 Specialities	Group 2 Specialities	Surgery	Surgery
	Medical Unit 1	Medical Unit I1	Pharmacology	Anaesthesia	Psychiatry	Community Medicine	Surgical Unit I	Surgical Unit II
Rotations 1	A1	A2	B1 (1st week) B2 (2nd Week)	B2 (1st week) B1 (2nd Week)	C1 (1st week) C2 (2nd Week)	C2 (1st week) C1 (2nd Week)	D1	D2
Rotations 2	D1	D2	A1 (1st week) A2 (2nd Week)	A2 (1st week) A1 (2nd Week)	B1 (1st week) B2 (2nd Week)	B2 (1st week) B1 (2nd Week)	C1	C2
Rotations 3	C1	C2	D1 (1st week) D2 (2nd Week)	D2 (1st week) D1 (2nd Week)	A1 (1st week) A2 (2nd Week)	A2 (1st week) A1 (2nd Week)	B1	B2
Rotations 4	B1	B2	C1 (1st week) C2 (2nd Week)	C2 (1st week) C1 (2nd Week)	D1 (1st week) D2 (2nd Week)	D2 (1st week) D1 (2nd Week)	A1	A2