AYUB MEDICAL COLLEGE ABBOTTABAD

DEPARTMENT OF MEDICAL EDUCATION

FOUNDATION II

3RD YEAR MBBS

BLOCK: G

DURATION:5 WEEKS

SESSION: 2024

STUDENT NAME

_____

DISCLAIMER

- Developing a study guide is a dynamic process and undergoes iteration according to the needs and priorities.
- This study guide is subjected to the change and modification over the whole academic year.
- However, students are advised to use it as a guide for respective modules.
- It is to declare that the learning objectives (general and specific) and the distribution of assessment tools (both theory and practical) are obtained from Khyber Medical University, Peshawar. These can be obtained from:

https://kmu.edu.pk/examination/guidelines

- The time tables are for guiding purpose. It is to advise that final timetables are always displayed over the notice boards of each lecture hall.

Students are encouraged to provide feedback via coordinator.

Contents

1 Module Committee:

s.no	Name	Department	Role
1.	Prof. Dr. Umar Farooq	CEO & Dean	
2.	Prof. Dr. Irfan U. Khattak	Director DME	
Module Team			
3.	Dr. Jamila Farid	Pathology	Block Coordinator
4.	Dr. Nasreen Gul	Pathology	Module Coordinator
5.	Dr. Afsheen	Pharmacology	Member
6.	Dr. Salma Shazia	Forensic Medicine	Member
7.	Dr. Rizwana Hussain	Community Medicine	Member
8.	Dr.Bushra Aqil	EYE	Member
9.	Dr.Imran Shah	ENT	Member

2 What Is A Study Guide?

It is an aid to Inform students how student learning program of the module has been organized, to help students organize and manage their studies throughout the module and guide students on assessment methods, rules and regulations.

2.1 The study guide:

- Communicates information on organization and management of the module.
- This will help the student to contact the right person in case of any difficulty.
- Defines the objectives which are expected to be achieved at the end of the module.
- Identifies the learning strategies such as lectures, small group teachings.

2.2 Module objectives.

- Provides a list of learning resources such as books, computer-assisted learning programs, weblinks, and journals, for students to consult in order to maximize their learning.
- Highlights information on the contribution of continuous on the student's overall performance.
- Includes information on the assessment methods that will be held to determine every student's performance.

2.3 Achievement of objectives.

- Focuses on information pertaining to examination policy, rules and regulations.

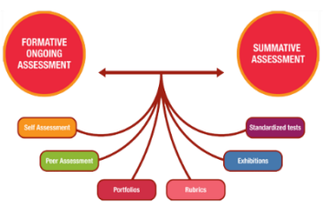
STUDENTS WILL EXPERIENCE INTEGRATED CURRICULUM

3 Recommended List Of Icons

Introduction To Case

For Objectives

Critical Questions



Assessment

Resource Material

4 Organization of Module

4.1 **Introduction**:

This module marks the beginning of transition to more focus on clinical learning. This module will introduce the students to key concepts essential for understanding diseases process, their prevention &treatment. Students will be in a better position to apply the key concepts in future, system-based modules for better understanding of the diseases processes and their management. The module covers the molecular level of cell biology including genetics and its role in microbiology and pathology and its application in clinical sciences. In community medicine, health issues and policies on disease control, health systems will be discussed. This module will also include basics of pharmacology and forensic medicine. Concepts dealt within this module will be revisited in the other modules afterwards.

4.2 **Rationale:**

The students of third year will acquire the basic knowledge of cell injury and its consequences, diagnosis and integrated application in the related subjects in third year and the coming modules in fourth and final year.

5 Learning Objectives

THEMES

Theme	Duration
Molecules, bacteria and cell injury	3 weeks
Ageing and death	2 weeks

5.1 General Learning Outcomes

By the end of Foundation-2 Module, 3rd year MBBS students will be able to:

1) Define pathology, its different branches and enumerate clinically important bacteria.
2) Describe the structure of bacterial cell and mechanisms by which they cause the disease.
3) Describe methods used to identify different microbes in laboratory and explain the interventions employed to prevent infections including vaccines.
4) Describe cell injury, its different mechanisms and sub cellular responses to cell injury.
5) Describe necrosis, apoptosis and adaptive changes seen in clinical settings and its identification in surgical specimens.
6) Define common terms related to Pharmacology.
7) Describe the basic principles of pharmacokinetics and pharmacodynamics and apply these principles to clinical practice as they relate to drug absorption, distribution, metabolism, excretion, mechanism of action, clinical action and toxicity.
8) Describe the cellular and biochemical sites where drugs bind to act.
9) Describe the general principles of drug interactions in relation to clinical practice.
10) Describe the process of new drug development.
11) Identify different dosage forms of drugs.
12) Demonstrate searching accurate information quickly in a formulary.
13) Demonstrate administration of a drug through intramuscular and intravenous routes.
14) Write down the basic format of drug prescription and describe the general principles of prescribing drugs.
15) Write correctly medical abbreviations used in clinical practice.
16) Identify commonly used equipments in pharmacy.
17) Describe Forensic medicine, its different branches and importance.
18) Describe law and its various components.
19) Explain medicolegal system and legal procedure for a doctor.
20) Describe the contents of medical jurisprudence.
21) Describe the diagnosis of death and WHO death certificate.
22) Describe different refractive errors and its management.
23) Explain causes of watery eyes in both infants and elders and its management.

24) Describe the basic concept of health, disease and primary health care.

25) Demonstrate different pathological laboratory procedures and identify gross and microscopic features in the given specimens.

26) Demonstrate professionalism, respect, honesty and compassion by behaving in a courteous manner with colleagues and teachers during course activities like long lectures, SGDs and Practicals.

27) Describe the PMC code of Ethics

28) Describe the steps of process of developing a research protocol

5.2 Specific Learning ojectives

Theme-1 (Molecules and Bacteria)

Subject	Topic	MIT	No. of Hours	Learning objectives
Pharmacology	Introduction to the subject	Lecture	1	Define basic terms like Pharmacology, Clinical Pharmacology, Therapeutics, drug, medicine, pro-drugs, prototype drugs, Materia medica, pharmacopoeia, formulary, national formulary, poisons, toxins, pharmacokinetics, pharmacodynamics, excipient, compounding and dispensing.
				Describe the branches of Pharmacology like Pharmacy, Pharmacognosy, pharmacogenetics, pharmacogenomics, toxicology and posology.
				Define prescription drugs, OTC drugs, WHO essential drugs and Orphan drugs with examples.
	Nomenclature of drugs	Lecture	1	Describe how drugs are named, i.e. chemical, generic, approved, official and trade names of drugs with examples.
	Sources of drugs		2	Enlist various sources of drugs.
				Give examples of drugs obtained from plants, animals, mineral and synthetic sources.
				Describe the genetic engineering source of drugs with examples.
	Active Principles of crude drugs			Enlist important principles of crude drugs with examples.
	Routes of drug administration		3	Enlist various routes of drug administration.
				Describe the merits and demerits of oral, sublingual, rectal, intramuscular, subcutaneous, intravenous, intra-arterial, inhalational, spinal, topical and transdermal routes of drug administration.

				Give examples of drugs given through oral, sublingual, rectal, intramuscular, subcutaneous, intradermal, intravenous, intra-arterial, inhalational, spinal, topical and transdermal routes of drug administration.
				Describe the difference between topical and transdermal routes of drug administration.
				Describe the difference between subcutaneous and intradermal routes of drug administration.
	Absorption of drugs		1	Define drug absorption.
				Describe various mechanisms of drug absorption like simple diffusion, facilitated diffusion, active transport, ion-pair transport, endocytosis and filtration with examples.
				Describe the concept of ionization of drug molecules and clinical significance of ion trapping.
				Describe factors affecting drug absorption.
	Bioavailability and Bioequivalence	lecture	1	Define bioavailability, bioequivalence and pharmaceutical equivalence.
				Explain Time-Concentration curve.
				Describe AUC (Area Under the Curve).
				Describe the factors affecting bioavailability.
	Hepatic first-pass effect (Pre-systemic elimination)			Describe hepatic first-pass effect (Pre-systemic elimination) and its clinical significance.
	Enterohepatic circulation			Define enterohepatic circulation.
				Describe enterohepatic circulation with examples and its clinical significance.
	Distribution of drugs		2	Define distribution of drugs.
				Define redistribution of drugs with example.
				Describe plasma protein binding and its clinical significance in diseased conditions.
				Describe factors affecting drug distribution.
	Volume of			Define volume of distribution.

	distribution			Enlist drugs with small volume of distribution.
				Enlist drugs with large volume of distribution.
				Apply formula for calculating volume of distribution.
				Describe volume of distribution with reference to its clinical significance.
	Loading dose			Define loading dose of a drug.
				Enlist some drugs whereby loading dose is administered.
				Apply formula for calculating loading dose.
	Physiological barriers to Transport of drugs			Enlist important physiological barriers to transport of drugs.
				Describe important physiological barriers to transport of drugs like blood- brain barrier and placental barrier with reference to their clinical significance.
	Biotransformation (metabolism) of drugs		3	Define biotransformation.
				Define xenobiotics.
				Describe the objectives of biotransformation and fate of drugs after biotransformation.
				Name major sites of biotransformation.
				Describe major drug metabolizing enzymes i.e. microsomal (P450) and non-microsomal enzymes.
				Describe the phases and reactions of biotransformation.
				Describe the factors affecting drug biotransformation.
	Genetic influence on			Define pharmacogenetics and pharmacogenomics.
				Define idiosyncrasy with examples.
	biotransformation of drugs			Describe the genetic factors influencing biotransformation of drugs with examples.
	Enzyme induction			Define enzyme induction.
				Enlist enzyme inducers.
				Describe enzyme induction and its clinical significance.
	Enzyme			Define enzyme inhibition.

	inhibition			Enlist enzyme inhibitors.
				Describe enzyme inhibition and its clinical significance.
				Describe suicide inhibition (mechanism-based inhibition) with examples of drugs.
	Excretion of drugs and drug clearance		1	Define drug excretion and drug clearance.
				Enlist major and minor routes of drug excretion.
				Differentiate between excretion, elimination and clearance.
				Apply the formula for calculating drug clearance.
	Maintenance dose			Define maintenance dose of a drug.
				Apply the formula for calculating the maintenance dose.
				Apply Young's formula, Dilling's formula and Clark's formula for calculating doses of drugs.
	Plasma half life			Define plasma half-life.
				Enlist drugs with short half-life.
				Enlist drugs with long half-life.
				Apply the formula for calculating plasma half life.
				Explain the clinical significance of half life.
	Steady-state concentration of drugs		2	Define steady-state concentration of drugs.
				Describe the time to reach steady-state concentration of drugs.
				Describes the importance of steady-state concentration in clinical practice.
	First- and zero-order kinetics			Define first- and zero-order kinetics.
				Differentiate between first- and zero-order kinetics with examples.
				Explain the clinical significance of first- and zero-order kinetics
	Bioassay and standardization			Define bioassay and standardization.
				Describe the relative importance of bioassay compared with physical or chemical assays.
				Describe the most common type of bioassay, i.e. three-point assay.

	Pharmacodynamics		2	Define pharmacodynamics.
				Define agonist, antagonist, partial agonist and inverse agonist with examples.
				Describe receptors.
				Define orphan receptors, serpentine receptors and spare receptors.
				Describe the biochemical and cellular sites of drug targets.
				Describe intracellular Second-messenger system and enlist some important Second-messengers.
				Describe up regulation and down regulation of receptors with examples.
				Define drug selectivity and specificity.
	Dose-response curves (Graded and Quantal)		2	Define dose response curve, graded dose-response curve and quantal dose-response curve.
				Describe graded dose-response curve and quantal dose-response curve.
				Describe the limitations of graded dose-response curve and its remedy in aquantal dose-response curve.
				Describe the significance of constructing dose-response curves.
				Explain the advantages of taking log dose values on the dose axis.
	Therapeutic index			Define therapeutic index.
				Describe therapeutic index with reference to its clinical importance.
				Apply formula for calculating therapeutic index
				Define median lethal dose, median toxic dose and median effective dose.
				Enlist some drugs with narrow therapeutic index.
				Enlist some drugs with broad therapeutic index.
	Protective index			Define protective index.
				Differentiate between therapeutic index and protective index.
	Therapeutic window			Define therapeutic window.
				Describe therapeutic window with reference to its

				clinical importance.
	Potency and efficacy			Define potency and efficacy.
				Describe potency and efficacy with examples.
	Drug antagonism			Describe the clinical importance of efficacy compared to potency.
				Define drug antagonism.
				Enlist types of antagonism.
				Describe chemical, physiological (functional) and pharmacological (competitive/surmountable and non-competitive) antagonisms with examples.
	Drug interactions		2	Define drug interaction.
				Define drug incompatibilities with examples.
				Describe pharmacokinetic drug interactions with examples and its clinical significance.
				Describe pharmacodynamics drug interactions with examples and it clinical significance.
				Describe drug-food interactions and drug-disease interactions with examples.
				Define summation, synergism and potentiation with examples.
	Tolerance and Tachyphylaxis			Define Tolerance, cross tolerance, reverse tolerance (sensitization), innate tolerance, tachyphylaxis and drug resistance.
				Describe the mechanisms of development of tolerance and tachyphylaxis.
				Define drug holidays with example.
	Adverse drug reactions			Define adverse drug effect, secondary effect and intolerance to a drug.
				Classify adverse drug reactions.
				Describe dose-related adverse effects (side effects and toxic effects) with examples.
				Describe non-dose-related adverse effects (idiosyncrasy and drug allergy) with examples.
				Describe causes of adverse drug reactions.

				Enlist some drugs causing hepatotoxicity.
				Enlist some drugs causing renal toxicity.
				Enlist some cardio toxic drugs.
				Enlist some drugs causing adverse effects on reproduction.
	New drug development			Describe the processes involved in drug discovery and development.
				Define lead compound and drug screening.
				Describe pre-clinical and clinical studies.
				Define placebo, placebo response and nocebo response.
				Define no-effect dose and minimum lethal dose.
				Describe 04 phases of clinical trials.
				Define post-marketing surveillance.
				Define single-blind, double-blind, crossover and ADME studies.
				Describe the role of Food and Drug Administration (FDA) in the drug development process.
				Differentiate between IND (Investigational New Drug) and NDA (New Drug Application).
Pathology	Introduction to the subject (General introduction & introduction to microbiology)	Lecture	2	Define pathology, microbiology and list its major branches
				Describe essential characteristics of five major groups of microorganisms
				Differentiate between prokaryotes and eukaryotic cells based on their structure and complexity of their organization
	Introduction to cell	Lecture	1	Define cell
				Describe structure of cell membrane
				Describe cell organelles
	Classification of Bacteria	Lecture	1	Describe classification of bacteria based on oxygen requirement as aerobes and anaerobes with examples.
				Describe classification of bacteria based on staining characteristics, nature of cell wall, ability to grow in the presence of oxygen and ability to form spores.

	Structure of bacterial cell	Lecture	2	Describe structure and function of each of various parts of the bacterial cell including cell wall, cytoplasmic membrane, Mesosome, ribosomes, granules and nucleoid.
				Describe specialized structures outside the cell wall including capsule, flagella, pilli and glycocalyx
				List the differences between cell wall characteristics of Gram Positive and Gram Negative Bacteria
				Describe classification and important functions of plasmids.
				Describe functions and arrangement of transposons.
				Describe structure, functions and medical importance of bacterial spores with examples.
	Bacterial growth curve	Lecture	2	Describe various phases of bacterial growth curve
	Normal Flora			Describe medically important members of normal flora and their anatomic location
	Bacterial genetics	Lecture	1	Define mutation
				Describe the classification of various types of mutations and their common causes.
				Describe methods of transfer of DNA within bacterial cells including process of conjugation, transduction, recombination and transformation.
	Lab diagnosis of bacterial infections	Lecture	1	Describe the bacteriologic approach to diagnosis of bacterial infections including blood, throat, stool, sputum, spinal fluid, urine, genital tract and wound cultures.
				Describe general principals of various immunologic and nucleic acid based methods for identification of an organism.
	Bacterial pathogenesis	Lecture	1	Define the term pathogen, infection, virulence, communicable, endemic, epidemic and pandemic diseases, carrier, pathogens, opportunists, commensals and colonizers.
				Describe stages/determinants of bacterial pathogenesis.

		Lecture		Describe colonization, invasion, toxins, immune-pathogenesis.
				Differentiate between exotoxins and endotoxins.
				Describe the various modes of action of endotoxins and endotoxins produced by gram positive and gram-negative bacteria.
				Describe the four stages of a typical infectious disease and Koch's postulates for establishing the causal role of an organism in the disease.
	Antibacterial Vaccines		1	Define immunization and vaccination.
				Describe role of immunization in inducing active and passive acquired immunity.
				Enlist the current bacterial vaccines and their indications.
				Describe various types of bacterial vaccines in terms of composition, preparation, indications, route of administration and common side effects.
Forensic medicine	Introduction to the subject of Forensic Medicine		1	Describe forensic medicine and its various branches
				Describe pillars of forensic medicine
				Describe the various terminologies used in forensic medicine
	Introduction to medicolegal system			Discuss different prevailing medicolegal systems in the world
				Define law.
	Introduction to Law	Lecture	1	Describe its various types.
	Legal proceedings			Describe court procedures for a doctor
	Chain of evidence		1	Describe evidence, its types and recording of evidence
	PPC and CrPC			Describe the relevant sections of Pakistan penal code and CrPC

	Medical jurisprudence		2	Describe the components of medical jurisprudence (consent, negligence, secrecy, professional misconduct and privileged communication)
				Describe code of medical ethics
				Describe the duties of a registered medical practitioner
ENT	Introduction to the subject	Lecture	1	Describe common ENT symptoms.
				Name common diseases of ENT.
				Name recommended books that students must read.
Ophthalmology	Introduction to the subject; Career in Ophthalmology	Lecture	1	Define Ophthalmology and its branches
				Highlight the scope of field of Ophthalmology as a future career
	Refractory errors	Lecture	1	Describe refractive error and its effect on vision.
				Describe the concept of myopia and its correction.
				Describe the concept of hypermetropia and its correction.
				Describe the concept of astigmatism & cylindrical lens.
				Describe the concept of presbyopia, its possible causes and correction.
				Describe aphakia and possible methods of its correction.
	Watery Eyes	Lecture	1	Explain the structural details, development and functions of lacrimal system.
				Correlate the clinical presentation of watery eye with anatomical structures.
				Correlate the clinical features with a disease entity.
				Describe the causes, clinical features and treatment of congenital nasolacrimal duct obstruction.
				Assess the time of probing.
				Describe the causes, clinical presentation and treatment modalities.
				Differentiate between acute and chronic dacryocystitis.
Community medicine	Introduction to the subject	Lecture	1	Define Community medicine and Public health
				Describe the role of teaching of public health in prevention of diseases

	Health system of Pakistan	Lecture	1	Define health care system of Pakistan using WHO Health system framework
	Introduction to Health and disease	Lecture	2	Define community medicine, public health and preventive medicine.
				Discuss the history and philosophy of public health as well as its concepts and functions regionally & globally.
				Describe the stages in the natural history of a disease.
				Describe epidemiological triad, web of causation and multifactorial causation
				Describe the dimensions and determinants of health
				Describe the indicators of health and its characteristics
				Discuss the concept of disease control
				Discuss the different levels of prevention and their modes of interventions.
				Explain the natural history of disease.
				Describe the iceberg phenomenon
				Describe mode of intervention of diseases with emphasis on health education.
	Primary Health Care	Lecture	1	Define Primary health care (PHC).
				Describe the elements of PHC, its principles and strategies for implementation of PHC.
				Describe Health for all by the year 2000.
				Enumerate the MDGS & SDGS related to health.
				Describe the history of development of PHC
				Describe comprehensive & selective PHC
				Describe reasons for failure of PHC
				Describe Health Systems before & after PHC
				Describe district health care system
				Enumerate indicators for assessing PHC

PRIME	Research Protocol		1	Describe the steps of developing the research protocol
	Health System Research		1	Define Research and Health System research List types of research Describe characteristics of Health system Research Describe Building blocks of Health system Discuss briefly research methodology Define and catogerize types of Health research
	Purpose and Process of Health Research		1	Explain the purpose of Health research
	Professionalism and behavioural sciences (Dynamics)		1	Trust definition, its attributes and components, and its applications
	Professional Identity formation		1	White coat ceremony Types, Multiple identities, Components, Professional Identity formation
	Attributes		1	Priniciple of trust in daily work activities
	Communication Skills			
	- Dealing with Patients		1	Patient reception and respect
	- Communication with Administration		2	Communicating with Administration
	- Dealing with patients		1	Answer to patient queries
	- Motivation		1	Motivation, Team Working, Explain motivation skills for team members
	Research Methods, Statistics and Proposal		2	Define and catogerize health research Explain the Purpose of Health Research

	Development			
Theme-2 (Aging and Death)				
Pathology	Cellular injury, cell death	Lecture	2	Define the following terms: Pathology, disease, etiology, pathogenesis, morphology, cell injury and homeostasis.
				Describe the causes of cell injury from gross physical trauma to single gene defect.
				Describe the nature and severity of cell injury with cellular responses.
				Enumerate different classes of pathology.
				Describe the following basic mechanisms of cell injury: General Biochemical mechanisms, Ischemic and hypoxic injury, Ischemic/reperfusion injury, Free radical induced cell injury and chemical injury.
				Differentiate between reversible and irreversible cell injury.
				Describe the mechanism, morphological and biochemical changes and functional alterations in reversible and irreversible cell injury.
				Define phagocytosis, endocytosis, pinocytosis, autophagy and heterophagy.
				Describe the subcellular responses to injury including lysosomal catabolism, heterophagy and autophagy.
	Cellular adaptation	Lecture	1	Describe types of cellular adaptations.
				Differentiate between physiologic and pathologic adaptation.
				Define hypertrophy, hyperplasia, atrophy and metaplasia.
				Describe the causes and mechanism of hypertrophy, hyperplasia, atrophy and metaplasia.
				Describe hypertrophy of the smooth endoplasmic reticulum with examples and mitochondrial alterations.
				Describe cytoskeletal abnormalities in pathological states with examples.

	Necrosis	Lecture	2	Define necrosis.
				Describe types of necrosis with examples.
				Describe the mechanism and morphology of necrosis.
	Apoptosis			Define apoptosis.
				Describe physiological and pathological causes of apoptosis with examples.
				Describe morphology with alterations in cell structure.
				Describe the biochemical features of apoptosis altering the cell structure.
				Describe the intrinsic and extrinsic pathways of apoptosis.
				Differentiate between necrosis and apoptosis.
				Describe role of apoptosis in health and disease.
				Describe the mechanism and causes of cellular ageing including genetic & environmental factors, structural & biochemical changes.
				Describe adaptive changes in clinical settings.
	Steatosis	Lecture	2	Describe causes and mechanism of steatosis.
				Explain the morphology and consequences of steatosis.
	Intracellular accumulations			Describe three general pathways for abnormal intracellular accumulations.
				Define steatosis.
				Describe causes, mechanism, morphology and consequences of lipid accumulation.
				Describe causes, mechanism, morphology, consequences of protein and glycogen accumulation
				Describe types of pigments
				Differentiate between endogenous and exogenous pigments.
	Pathologic calcification			Define Pathologic calcification
				Describe types, morphology and functional alterations of pathologic calcification with examples.
				Differentiate between dystrophic and metastatic calcification.

Forensic Medicine	Introduction to Thanatology	Lecture	1	Define death and describe its phases.
				Describe criteria of diagnosis of death.
				Enlist the importance of diagnosis of death
	Death			Describe the medicolegal aspects of brain stem death and suspended animation
				Define cause, mode, manner and mechanism of death
				Enlist various methods of disposal of dead body
	Death certificate	Lecture	1	Define cause of death
				Describe the WHO format of death certificate
Ophthalmology	Cataracts	Lecture	1	Define cataract
				Describe the types of cataracts
				Describe the pathogenesis and complications of cataracts
				Describe the management of cataracts
PRIME Research	Research Protocol	Lecture	1	Describe the steps of developing a research protocol
	Health system research		3	Define research and health system research.
				List types of research.
				Describe characteristics of health system research.
				Describe building blocks of health system.
				Discuss key areas of concern in health system.
				Discuss briefly research methodology.
				Define and categorize types of health research
	Purpose and process of health research			Explain the purpose of health research
Family Medicine	History and current structure of general practice	Lecture	1	Describe the historical perspectives of general practice
				Explain the structure of general practice nationally and internationally

	Models of healthcare			describe the models of healthcare
	Essential health service package (levels of health services in KP)			Describe the levels of health services in the province of KP.

Practical work			
Subject	**Topic**	**No of Hours**	**LOs**
Pharmacology	Lab protocols; Introduction to Pharmacy; Apparatus used in Pharmacy	02	Identify and name common apparatus used in pharmacy laboratory.
			Identify and label common apparatus used in the field of Pharmacy.
	Metrology	02	Define metrology.
			Describe metric and imperial systems of measurements.
			Calculate the equivalency of metric system with imperial system.
			Describe the common medical abbreviations.
			Apply these abbreviations correctly in medical documentations.
	Dosage forms of drugs	02	Define dosage form.
			Enlist the types of dosage forms.
			Describe the characteristic properties of each dosage form.
			Identify dosage forms administered through different routes.
	Searching information in a formulary	02	Define formulary.
			Describe National Formulary.
			Demonstrate searching accurate information quickly in a formulary.

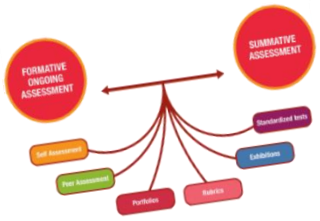
			Describe the general protocols for IM and IV injection of a drug.
	To demonstrate IM and I injection of drugs on a dummy (manikin)	04	Demonstrate standard protocols during administration of a drug through Intramuscular route.
			Demonstrate standard protocols during administration of an IV drug through Intravenous route.
	To demonstrate sub-cutaneous injections	02	
	To demonstrate the Intradermal injections	02	
	Prescriptio n writing	02	Define a medical prescription.
			Describe the components of a prescription.
			Describe how to reduce medication errors.
			Define compliance to the prescribed treatment.
			Write down the basic format of drug prescription.
Pathology	Biosafety procedures/ Precautions in Microbiology Lab	2	Define sterilization and disinfection.
			Demonstrate steps of hand washing.
			Enlist various physical and chemical methods of sterilization and disinfection.
			Define biosafety and biosecurity.
	Tissue processin g	2	Describe steps involved in tissue processing.
			Identify various tools/instruments involved in tissue processing and their indications.
			Demonstrate slide focusing.
	Gram staining	2	Describe principal and significance of Gram staining.
			Enlist steps of Gram staining.

			Demonstrate Gram staining procedure.
			Identify Gram positive and Gram-negative bacteria morphologically under the microscope.
	ZN staining	2	Describe principal and significance of ZN staining.
			Enlist steps of ZN staining.
			Demonstrate ZN staining procedure.
			Identify AFB and inflammatory cells microscopically.
	Culture media	2	Define terms like culture, bacterial colony, media, aerobe, anaerobe, agar, selective and differential.
			Describe classification of culture media.
			Describe basic and enriched media, transport media, selective media and differential media.
			Describe preparation/ inoculation of culture media.
			Enlist ingredients, indications, important properties and organisms grown on various culture media.
	Bacterial motility	2	Enumerate motile bacteria
			Identify motile bacteria under the microscope
	Hyperplasia (BPH)	2	Define hypertrophy and hyperplasia.
			Differentiate between hypertrophy and hyperplasia.
	BPH	2	Describe gross and microscopic morphology of BPH.
			Identify the slide of BPH.
	Atrophy (Testicular atrophy)	2	Define atrophy
			Describe gross and microscopic features of atrophy over a slide of testicular atrophy as an example
	Pathologic calcification	2	Describe causes and various types of calcification.
			Identify the slide.
Forensic medicine	Death certificate	1.5	Formulate death certificate based on WHO criteria

	Legal procedure	1.5	Doctor in a witness box- role play
	Recording of evidence	1.5	Recording of dying declaration
	Consent form	1.5	Take written informed consent for various procedures

MIT:mode of information transfer. E.g. lecture, SGD, DSL, Practical, skill lab etc

Hours Distribution	
Theory	
Discipline	**No. of hours**
Pathology	18
Pharmacology	23
Forensic Medicine	07
Community Medicine	08
ENT	01
Eye	04
PRIME	10
Total	**71**
Practical	
Pathology	20
Pharmacology	18
Forensic Medicine	06
Total	**44**



6 Examination and Methods of Assessment:

The year-3 will be assessed in 3 blocks.

1) Block-1 (Foundation 2 and Infection and Inflammation modules) will be assessed in **paper-G.**
2) Block-2 (Multisystem, blood and MSK modules) will be assessed in **paper-H.**
3) Block-3 (CVS and Respiratory module) will be assessed in **paper-I.**
4) Each written paper consists of 120 MCQs.
5) Internal assessment will be added to final marks in KMU.
6) In OSPE, each station will be allotted 6 marks, and a total of 120 (+10% marks of internal assessment) marks are allocated for each OSPE/OSCE examination.
7) Practical assessment will be in the form of OSPE/OSCE which will also include embedded viva stations. The details of each section are given in the tables given below.

Table-1: Total Marks Distribution 3rd Year MBBS

Assessment Plan of 3rd Year MBBS						
Theory paper	**Modules**	**Theory marks**	**Internal assessment theory (10%)**	**OSPE/OSPE**	**Internal assessment OSPE/OSPE(10%)**	**Total Marks**
Paper G	Foundation-II	120	14	120	14	268
	Inf.&Inflamm.					
Paper H	Multisystem Blood	120	13	120	14	267
	MSK-II					
Paper I	CVS-II	120	13	120	12	265
	Respiratory-II					
Total Marks		360	40	360	40	800

Paper-G (Foundation 2 and Infection and Inflammation)

Table-1: MCQs

Subject	Foundation 2 module	Infection and Inflammation module	Total MCQs
Pharmacology	19	20	39
Pathology	12	23	35
Forensic medicine	6	08	14
Community medicine	5	10	15
ENT	1	03	04
Eye	3	02	05
PRIME including Research	1+2 (3)	0	03
Medicine	0	01	01
Surgery	0	02	02
Gynaecology	0	01	01
Pediatrics	0	01	01
Total	**49**	**71**	**120**

Table-2: OSPE

Subject	OSPE/OSCE	Viva stations	Total *
Pharmacology	2	2	4
Pathology	5	2	7
Forensic medicine	2	2	4
Community medicine	1	2	3
Medicine (history and physical examination)	1	0	1
Surgery (history and physical examination)	1	0	1
Total	12	8	20

* A minimum of 20 stations will be used in final exams. Total marks will be 120 (6marks for each station)

7 Learning Opportunities and Resources

7.1 Books:

7.1.1 1)Pharmacology:

- Basic & Clinical Pharmacology, 14th edition
- Goodman Gilman's The Pharmacological Basis of Therapeutics, 13th edition
- Lippincott Illustrated Reviews Pharmacology, 7th edition

7.1.2 2)Pathology:

- M Jawtz Medical Microbiology 28th edition
- Robbin's Basic Pathology 10th edition
- Warren Levinson Microbiology 16th edition

Website: https://www.medicotime.com

7.1.3 3)Forensic Medicine: 1-Principles and practice of Forensic Medicine by Naseeb R awan

2-Text book of Forensic Medicine and Toxicology by Nagesh Kumar G Rao.

3-Praikhs textbook of medical jurisprudence and toxicology .

Website:

AIDS Medicolegal Aspects-NCBI:https://ncbi.nlm.nih.gov

7.1.4 4)Community Medicine:

1. Park K. Park's textbook for preventive and social medicine. 23rd ed. Bhanot publishers: Jabalpur;2015

Link for free download PDF: https://medicalstudyzone.com/download-parks-textbook-of-preventive-and-social-medicine-25th-edition-pdf-free/#Download_Park8217s_Textbook_of_Preventive_and_Social_Medicine_PDF_free

2. Ansari IS. Textbook of Community Medicine. 8th ed. Time publisher, medical division

8 Timetables

AYUB MEDICAL COLLEGE ABBOTTABAD

TIMETABLE OF 3RD YEAR MBBS CLASS FOR THE SESSION 2024

WEEK 01: Foundation II Module Theme 01 (Molecules and Bacteria)

Days	8:00-9:00	9:00-10:00	10:00-11:00	11:00-12:00	12:00-12:45	12:45-1:15	PRACTICAL 1:15-2:00	PRACTICAL 2:00-3:00
Mon	**Community Med** Introduction to subject Dr. Rizwana **L1**	**Gen. Pathology** Introduction Dr. Fouzia **L1**	**HOSPITAL DUTY**		**Pharmacology** Introduction/Terms & Nomenclature Dr. Haqnawaz **L1**	PRAYER BREAK	**A: Pharmacodynamics** **B: Pharmacy** **C: Pathology** **D: Forensic Med**	
Tue	**Pharmacology** Introduction/Terms & Nomenclature Dr. Haqnawqaz **L2**	**Microbiology** Introduction Dr. Jamila Farid **L2**	**HOSPITAL DUTY**		**Forensic Med** Introduction Dr. Omair **L1**		**A: Forensic Med** **B: Pharmacodynamics** **C: Pharmacy** **D: Pathology**	
Wed	**Community Med** Health System Introduction Dr. Rizwana **L2**	**Pharmacology** Sources & Drug Development Dr. Saima Bukhari **L3**	**HOSPITAL DUTY**		**Microbiology** Bacterial Cell Dr. Nasreen Gul **L3**		**ENT** Introduction Dr. Imran Shah **L1**	**PRIME** **Psychiatry** Dynamics Dr. Zainab Khalid **L1**
Thurs	**PRACTICAL** **A: Pathology** **B: Forensic Med** **C: Pharmacodynamics** **D: Pharmacy**		**HOSPITAL DUTY**		**Ophthalmology** Introduction Dr. Sajid Kazmi **L1**		**Microbiology** Bacterial Cell Dr. Nasreen **L4**	**Pharmacology** Sources & Drug Development Dr. Saima Bukhari **L4**
Fri	**PRACTICAL** **A: Pharmacy** **B: Pathology** **C: Forensic Med** **D: Pharmacodynamics**		**Microbiology** Classification of Bacteria Dr. Nasreen Gul **L5**	**Community Med** Health & Disease Dr. Rizwana **L3**	**PRIME** **Psychiatry** Professional Identity Dr. Ayesha Saleem **L2**		**HALFDAY**	

Pharmacodynamics: Lab Protocols
Pharmacy: Lab Protocols
Pathology: Sterilization
Forensic medicine: Consent form

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TIMETABLE OF 3RD YEAR MBBS CLASS FOR THE SESSION 2024

WEEK 02: Foundation II Module Theme 01 (Molecules and Bacteria)

Days	8:00-9:00	9:00-10:00	10:00-11:00	11:00-12:00	12:00-12:45	12:45-1:15	PRACTICAL 1:15-2:00	PRACTICAL 2:00-3:00
Mon	**Community Med** Health & Disease Dr. Rizwana **L4**	**Microbiology** Bacterial growth Curve Dr. Nasreen Gul **L6**	**HOSPITAL DUTY**		**Microbiology** Lab Dx of Bacterial Infections Dr. Maria **L7**	PRAYER BREAK	**A: Pharmacodynamics** **B: Forensic Medicine** **C: Pathology 1** **D: Pathology 2**	
Tue	**Pharmacology** Routes of Drug Administration Dr. Nisar Ahmed **L5**	**Community Med** Primary Health Care Dr. Rizwana **L5**	**HOSPITAL DUTY**		**Microbiology** Normal Flora Dr. Sadaf **L8**		**A: Pathology 2** **B: Pharmacodynamics** **C: Forensic Medicine** **D: Pathology 1**	
Wed	**Microbiology** Bacterial Genetics Dr. Nasreen Gul **L9**	**Pharmacology** Routes of Drug Administration Dr. Nisar Ahmed **L6**	**HOSPITAL DUTY**		**PRIME** **Psychiatry** Attributes Dr. Ayesha Saleem **L3**		**Pharmacology** Routes of Drug Administration Dr. Nisar Ahmad **L7**	**Microbiology** Bacterial Pathogenesis Dr. Sadaf **L10**
Thurs	**PRACTICAL** **A: Pathology 1** **B: Pathology 2** **C: Pharmacodynamics** **D: Forensic Medicine**		**HOSPITAL DUTY**		**Microbiology** Antibacterial Vaccines Dr. Sadaf **L11**		**PRIME** **Surgery** Dealing with the Patient Dr. Danish **L4**	**Community Med** Research Protocol Dr. Zainab Nazmeen **L6**
Fri	**PRACTICAL** **A: Forensic Medicine** **B: Pathology 1** **C: Pathology 2** **D: Pharmacodynamics**		**Community Med** Health System Research Dr. Zainab Nazmeen **L7**	**Pharmacology** Drug Absorption Dr. Azfar **L8**	**PRIME** **Surgery** Communication with Adm Dr. Yousaf **L5**		**HALFDAY**	

Pharmacodynamics: Routes of Drug Administration
Forensic Med: Recording of Evidence
Pathology 1: Tissue Processing
Pathology 2: Culture Media

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AYUB MEDICAL COLLEGE ABBOTTABAD

TIMETABLE OF 3RD YEAR MBBS CLASS FOR THE SESSION 2024

WEEK 03: Foundation II Module Theme 01 (Molecules and Bacteria)

Days	8:00-9:00	9:00-10:00	10:00-11:00	11:00-12:00	12:00-12:45	12:45-1:15	PRACTICAL	
							1:15-2:00	2:00-3:00
Mon	**Pharmacology** Drug Bioavailability Dr. Maha **L9**	**Ophthalmology** Refractive Errors Dr. Sajid Kazmi **L2**	**HOSPITAL DUTY**		**PRIME** **Surgery** Communication with Adm Dr. Yousaf **L6**	PRAYER BREAK	**A: Pharmacodynamics** **B: Pharmacy** **C: Pathology** **D: Forensic Medicine**	
Tue	**Pharmacology** Drug Distribution Dr. Mahwish Gul **L10**	**Ophthalmology** Watery Eyes Dr. Danish **L3**	**HOSPITAL DUTY**		**Pharmacology** Drug Distribution Dr. Mahwish Gul **L11**		**A: Forensic Medicine** **B: Pharmacodynamics** **C: Pharmacy** **D: Pathology**	
Wed	**Community Med** Purpose & process of Health Research Dr. Zainab Nazmeen **L8**	**Pharmacology** Biotransformation Dr. Afsheen **L12**	**HOSPITAL DUTY**		**Pharmacology** Biotransformation Dr. Afsheen **L13**		**Forensic Med** Law & Medico Legal System Dr. Omair **L2**	**SDL**
Thurs	**PRACTICAL** **A: Pathology** **B: Forensic Medicine** **C: Pharmacodynamics** **D: Pharmacy**		**HOSPITAL DUTY**		**Pharmacology** Biotransformation Dr. Afsheen **L14**		**Ophthalmology** Cataract Dr. Amir Zeb **L4**	**Pharmacology** Pharmacokinetics Dr. Sumbal Tariq **L15**
Fri	**PRACTICAL** **A: Pharmacy** **B: Pathology** **C: Forensic Medicine** **D: Pharmacodynamics**		**Pharmacology** Pharmacokinetics Dr. Sumbal Tariq **L16**	**PRIME** **Surgery** Dealing with Patient Dr. Danish **L7**	**Forensic Med** Chain of Evidence Dr. Salma Shazia **L3**		**HALFDAY**	

Pharmacodynamics: Demonstrate IV Injection
Pharmacy: Metrology and Medical Abbreviations
Pathology: Gram Staining
Forensic medicine: Legal Proceedures

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AYUB MEDICAL COLLEGE ABBOTTABAD

TIMETABLE OF 3RD YEAR MBBS CLASS FOR THE SESSION 2024

WEEK 4: Foundation II Module Theme 02 (Cell injury, Ageing & Death)

Days	8:00-9:00	9:00-10:00	10:00-11:00	11:00-12:00	12:00-12:45	12:45-1:15	PRACTICAL 1:15-2:00	PRACTICAL 2:00-3:00
Mon	**Gen. Pathology** Cell Injury Dr. Fouzia **L12**	**Pharmacology** Pharmacokinetics Dr. Sumbal Tariq **L17**	**HOSPITAL DUTY**		**PRIME** **Surgery** Motivation Dr. Yousaf **L8**	PRAYER BREAK	**A: Pharmacy** **B: Pathology 1** **C: Pathology 2** **D: Pharmacodynamics**	
Tue	**Gen. Pathology** Necrosis Dr. Fouzia **L13**	**Forensic Med** Medical Jurisprudence Dr. Salma Shazia **L4**	**HOSPITAL DUTY**		**Pharmacology** Drug Receptors Dr. Saad Mufti **L18**		**A: Pathology 2** **B: Pharmacodynamics** **C: Pharmacy** **D: Pathology 1**	
Wed	**Gen. Pathology** Mechanism of Cell Injury Dr. Fouzia **L14**	**Forensic Med** Medical Jurisprudence Dr. Salma Shazia **L5**	**HOSPITAL DUTY**		**Pharmacology** Drug Receptors Dr. Saad Mufti **L19**		**Gen. Pathology** Mechanism of Cell Injury Dr. Fouzia **L15**	**SDL**
Thurs	**PRACTICAL** **A: Pathology 1** **B: Pharmacodynamics** **C: Pharmacy** **D: Pathology 2**		**HOSPITAL DUTY**		**Gen. Pathology** Apoptosis Dr. Fouzia **L16**		**PRIME** **Community Med** Purpose & Process of Health Research Dr. Zainab Nazmeen **L9**	**SDL**
Fri	**PRACTICAL** **A: Pharmacy** **B: Pathology 1** **C: Pathology 2** **D: Pharmacodynamics**		**Gen. Pathology** Cellular Adaptations Dr. Fouzia **L17**	**Pharmacology** Dose Response Curve Dr. Wajid Ali **L20**	**PRIME** **Community Med** Purpose & Process of Health Research Dr. Zainab Nazmeen **L10**		**HALFDAY**	

Pharmacy: Dosage form of Drugs

Pathology 1: ZN Staining

Pathology 2: Hyperplasia (BPH)

Pharmacodynamics: Routes of Drug Administration (Sub Cutaneous)

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AYUB MEDICAL COLLEGE ABBOTTABAD

TIMETABLE OF 3RD YEAR MBBS CLASS FOR THE SESSION 2024

WEEK 5: Foundation II Module Theme 02 (Cell injury, Ageing & Death)

Days	8:00-9:00	9:00-10:00	10:00-11:00	11:00-12:00	12:00-12:45	12:45-1:15	PRACTICAL 1:15-2:00	PRACTICAL 2:00-3:00
Mon	**Gen. Pathology** Intra Cellular Accumulation Dr. Fouzia **L18**	**Forensic Med** Thanatology Dr. Nighat Seema **L6**	**HOSPITAL DUTY**		**Pharmacology** Dose Response Curve Dr. Wajid Ali **L21**	PRAYER BREAK	**A: Pharmacodynamics** **B: Pharmacy** **C: Pathology** **D: Forensic Medicine**	
Tue	**Forensic Med** Death Certificate Dr. Sadia **L7**	**Pharmacology** Drug Interactions Dr. M Faheem **L22**	**HOSPITAL DUTY**		**Pharmacology** Drug Interactions Dr. M Faheem **L23**		**A: Forensic Medicine** **B: Pharmacodynamics** **C: Pharmacy** **D: Pathology**	
Wed	**Pathology** Cells & Vascular phase of Inflammation Dr. Ammar **L1**	**Pharmacology** Overview of Antiinflamatory Drugs Dr. Nisar **L1**	**HOSPITAL DUTY**		**Forensic Med** Antidot Dr. Saadia **L1**		**Ophthalmology** Acute & Chronic Dacryocystitis Dr. Bushra **L1**	**PRIME** **Psychiatry** Attributes of Professionalism Dr. Zainab Khalid **L1**
Thurs	**PRACTICAL** **A: Pathology** **B: Forensic Medicine** **C: Pharmacodynamics** **D: Pharmacy**		**HOSPITAL DUTY**		**Pharmacology** NSAIDs & Toxicity of NSAIDs Dr. Nisar **L2**		**Pathology** Cellular Phase of Acute Inflammation Dr. Ammar **L2**	**Community Med** Infectious Diseases Epidemiology Dr. Adnan **L1**
Fri	**PRACTICAL** **A: Pharmacy** **B: Pathology** **C: Forensic Medicine** **D: Pharmacodynamics**		**ENT** Acute & Chronic Pharyngitis Dr. Imran Shah **L1**	**Forensic Med** Steps of Management in a Case of Poisoning Dr. Saadia **L2**	**Pathology** Plasma & Cell derived Mediators Dr. Ammar **L3**		**HALFDAY**	

Pharmacodynamics: Route of Drug Administration (Intra Dermal)

Pharmacy: Searching Information In a Formulary

Pathology: Motility Test

Forensic medicine: Death Certificate

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Name & signature of module coordinator

9 For inquiry and troubleshooting

Please contact

To be added

10 Course Feedback Form

Course Title: _____

Semester/Module _____ Dates:_____

Please fill the short questionnaire to make the course better.

Please respond below with 1, 2, 3, 4 or 5, where 1 and 5 are explained.

THE DESIGN OF THE MODLUE

A. Were objectives of the course clear to you? Y ☐ N ☐

B. The course contents met with your expectations

l. Strongly disagree 5. Strongly agree ☐

C. The lecture sequence was well-planned

l. Strongly disagree 5. Strongly agree ☐

D. The contents were illustrated with

l. Too few examples 5. Adequate examples ☐

E. The level of the course was

l. Too low 5. Too high ☐

F. The course contents compared with your expectations

l. Too theoretical 5. Too empirical ☐

G. The course exposed you to new knowledge and practices

l. Strongly disagree 5. Strongly agree ☐

H. Will you recommend this course to your colleagues?

l. Not at all 5. Very strongly ☐

THE CONDUCT OF THE MODLUE

A. The lectures were clear and easy to understand

l. Strongly disagree 5. Strongly agree ☐

B. The teaching aids were effectively used

l. Strongly disagree 5. Strongly agree ☐

C. The course material handed out was adequate

l. Strongly disagree 5. Strongly agree ☐

D. The instructors encouraged interaction and were helpful

l. Strongly disagree 5. Strongly agree ☐

E. Were objectives of the course realized? Y N ☐ ☐

F. Please give overall rating of the course

90% - l00%	( )	60% - 70%	( )
80% - 90%	( )	50% - 60%	( )
70% - 80%	( )	below 50%	( )

Please comment on the strengths of the course and the way it was conducted.

Please comment on the weaknesses of the course and the way it was conducted.

Please give suggestions for the improvement of the course.

Optional – Your name and contact address:

Thank you!!