

AYUB MEDICAL COLLEGE ABBOTTABAD

DEPARTMENT OF MEDICAL EDUCATION



FOUNDATION II

3RD YEAR MBBS

BLOCK: G

DURATION: 5 WEEKS

FROM: 2022-2023

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:
<http://kmu.edu.pk/sites/default/files/curriculum/1st%262nd-Year.zip>
- 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 (see “For inquiry and troubleshooting”) or use the link given below. <https://forms.gle/ZfugPgAia9VvMeJ29>

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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.	Profes.Dr Naeema Afzal	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



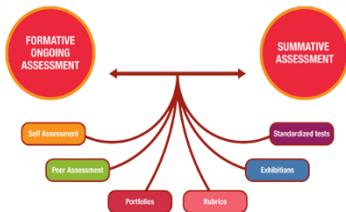
Introduction To Case



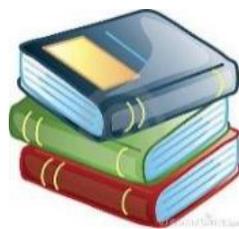
For Objectives



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 objectives

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

			Describe enzyme inhibition and its clinical significance.
			Describe suicide inhibition (mechanism-based inhibition) with examples of drugs.
	Excretion of drugs and drug clearance		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.
	Pharmacodyna	1	Define pharmacodynamics.

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

	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 its 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.
Pathology	Introduction to the subject	Lecture	1	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			Describe evidence, its types and recording of evidence
	PPC and CrPC			Describe the relevant sections of Pakistan penal code and CrPC
	Medical jurisprudence			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	Lecture	1	
	Health and disease			<p>Define community medicine, public health and preventive medicine.</p> <p>Discuss the history and philosophy of public health as well as its concepts and functions regionally & globally.</p> <p>Describe the stages in the natural history of a disease.</p> <p>Describe epidemiological triad, web of causation and multifactorial causation</p> <p>Describe the dimensions and determinants of health</p> <p>Describe the indicators of health and its characteristics</p> <p>Discuss the concept of disease control</p> <p>Discuss the different levels of prevention and their modes of interventions.</p> <p>Explain the natural history of disease.</p> <p>Describe the iceberg phenomenon</p> <p>Describe mode of intervention of diseases with emphasis on health education.</p>
	Primary Health Care	Lecture	1	<p>Define Primary health care (PHC).</p> <p>Describe the elements of PHC, its principles and strategies for implementation of PHC.</p> <p>Describe Health for all by the year 2000.</p> <p>Enumerate the MDGS & SDGS related to health.</p> <p>Describe the history of development of PHC</p> <p>Describe comprehensive & selective PHC</p> <p>Describe reasons for failure of PHC</p> <p>Describe Health Systems before & after PHC</p> <p>Describe district health care system</p> <p>Enumerate indicators for assessing PHC</p>
PRIME	Personal identity	Lecture	1	Describe personal identity in the context of medical education

	Professional identity			Define professional identity and Describe the basic pre-requisites of professional identity formation
	Patient safety, clinical governance and quality improvement			Explain the concept of patient safety, clinical governance and quality improvement in primary healthcare
	Professionalism-Trust			Explain the dynamics of professionalism and trust in health professional-patient relationship Adheres to principles of trust in day to day professional interactions
	Professional identity formation-Types and Multiple identities	Lecture		Define professional identity formation and explain the Students' roles in terms of professional identity
	Motivation	Lecture		Explain motivational skills for team members for clinical tasks

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
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				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	1	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			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.

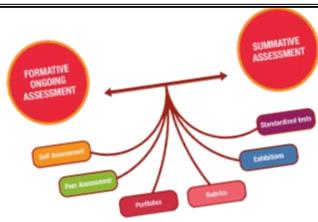
	& Medical abbreviations		Describe metric and imperial systems of measurements. Calculate the equivalency of metric system with imperial system. Describe the common medical abbreviations. Apply these abbreviations correctly in medical documentations.
	Dosage forms of drugs	02	Define dosage form. Enlist 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 IV 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.
	Prescription 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 processing	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		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.	
		Define atrophy	
Atrophy			

	(Testicular atrophy)	2	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	2	Formulate death certificate based on WHO criteria
	Legal procedure	2	Doctor in a witness box- role play
	Recording of evidence	2	Recording of dying declaration
	Consent form	2	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	19
Pharmacology	23
Forensic Medicine	10
Community Medicine	13
ENT	01
Eye	04
PRIME	08
Total	78
Practical/ SGDs	
Pathology	18
Pharmacology	20
Forensic Medicine	08
Total	46



6 Examination and Methods of Assessment:

- 1) Block-1(Foundation 2 and Infection and Inflammation modules) will be assessed in **paper-G**.
- 2) Each written paper consists of 120 MCQs and
- 3) Internal assessment will be added to final marks in KMU as shown in below table.

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.

Year 3 Professional Exam in System-based Curriculum

Theor y paper	Modules	Theor y marks	Internal assessment theory (10%)	OSPE/OSP E	Internal assessment OSPE/OSPE (10%)	TOTAL MARK S
Paper G	Foundation-II	120	1	120	1	268
	Inf.&Inflamm		4		4	
Paper H	Multisystem Blood	120	1	120	1	267
	MSK-II		3		4	
Paper I	CVS-II	120	1	120	1	265
	Respiratory-II		3		2	
TOTAL MARKS		360	40	360	40	800

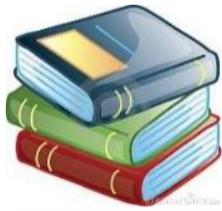
6.1 Paper-G (Foundation 2 and Infection & Inflammation) Blueprints Theory

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	4	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	54	66	120

6.2 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 (6 marks 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

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 2022
WEEK 01: Foundation II Module Theme 01 (Molecules and Bacteria)
31.01.2022 – 04.02.2022

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	Introduction Concept of health Dr. Ashfaq Ahmed Community Med	Introduction Dr. Fouzia Jehangir Gen. pathology	HOSPITAL DUTY		Introduction/ Terms & nomenclature Dr. Haqnawaz Pharmacology	PRAYER BREAK	A: Pharmacodynamics B: Pharmacy C: Pathology D: Forensic Medicine	
Tue	Introduction/ Terms & nomenclature Dr. Haqnawaz Pharmacology	Introduction Dr. Idrees Microbiology	HOSPITAL DUTY		Introduction Dr. Omair Forensic Med		A: Forensic Medicine B: Pharmacodynamics C: Pharmacy D: Pathology	
Wed	Health dimensions & determinants Dr. Ashfaq Ahmed Community Med	Sources & drug development Dr. Saima Bukhari Pharmacology	HOSPITAL DUTY		Bacterial cell Dr. Jamila Farid Microbiology		Introduction Dr. Sohail Malik ENT	PMC's code of ethics Dr. Salma Shazia PRIME (Forensic Med)
Thurs	Bacterial cell Dr. Jamila Farid Microbiology	Introduction Dr. Sajid Kazmi Ophthalmology	HOSPITAL DUTY		Sources & drug development Dr. Saima Bukhari Pharmacology		A: Pathology B: Forensic Medicine C: Pharmacodynamics D: Pharmacy	
Fri	PRACTICAL A: Pharmacy B: Pathology C: Forensic Medicine D: Pharmacodynamics		Classification of bacteria Dr. Jamila Farid Microbiology	Measuring health status Dr. Ashfaq Ahmed Community Med	PMC's code of ethics Dr. Salma Shazia PRIME (Forensic Med)		HALFDAY	

Pharmacodynamics: Introduction
 Pharmacy: Introduction
 Pathology: Sterilization & Gram staining
 Forensic medicine: Consent form

Name & signature of module coordinator

AYUB MEDICAL COLLEGE ABBOTTABAD
TIMETABLE OF 3RD YEAR MBBS CLASS FOR THE SESSION 2022
WEEK 02: Foundation II Module Theme 01 (Molecules and Bacteria)
07.02.2022 – 11.02.2022

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	Concept of disease Disease causation Models Dr. Ashfaq Ahmed Community Med	Lab dx of bacterial infections Dr. Jamila Farid Microbiology	HOSPITAL DUTY		Bacterial growth curve Dr. Nasreen Gul Microbiology	PRAYER BREAK	A: Pharmacodynamics B: Forensic Medicine C: Pathology 1 D: Pathology 2	
Tue	Natural history of disease Dr. Ashfaq Ahmed Community Med	Routes of drug administration Dr. Nisar Ahmed Pharmacology	HOSPITAL DUTY		Normal flora Dr. Jamila Farid Microbiology		A: Pathology 2 B: Pharmacodynamics C: FORENSIC Medicine D: Pathology 1	
Wed	Disease control & prevention Dr. Ashfaq Ahmed Community Med	Routes of drug administration Dr. Nisar Ahmed Pharmacology	HOSPITAL DUTY		Bacterial genetics Dr. Nasreen Gul Microbiology		Professional identity Dr. Aisha Saleem PRIME (psychiatry)	Bacterial pathogenesis Dr. Sadaf Microbiology
Thurs	Disease control & prevention Dr. Ashfaq Ahmed Community Med	Antibacterial vaccines Dr. Sadaf Microbiology	HOSPITAL DUTY		Drug absorption Dr. Jamila sahir Pharmacology		A: Pathology 1 B: Pathology 2 C: Pharmacodynamics D: Forensic Medicine	
Fri	PRACTICAL A: Forensic Medicine B: Pathology 1 C: Pathology 2 D: Pharmacodynamics		Philosophy & history of Public Health L8 Dr. Ashfaq Ahmed Community Med	Routes of drug administration Dr. Nisar Ahmed Pharmacology	Personal identity Dr. Zainab Khalid PRIME (psychiatry)		HALFDAY	

Pharmacodynamics: Demonstration of IV injection

Forensic Med: Recording of Evidence

Pathology 1: Culture Media

Pathology 2: Tissue processing

Name & signature of module coordinator

AYUB MEDICAL COLLEGE ABBOTTABAD
TIMETABLE OF 3RD YEAR MBBS CLASS FOR THE SESSION 2022
WEEK 03: Foundation II Module Theme 01 (Molecules and Bacteria)
14.02.2022 – 18.02.2022

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	Drug bioavailability Dr. Jamila sahir Pharmacology	Refractive Errors Dr. Sajid Kazmi Ophthalmology	HOSPITAL DUTY		Philosophy & history of Public Health Dr. Ashfaq Ahmed Community Med	PRAYER BREAK	A: Pharmacodynamics B: Pharmacy C: Pathology D: Forensic Medicine	
Tue	Drug distribution Dr. Mahwish Gul Pharmacology	Watery Eyes Dr. Danish Ophthalmology	HOSPITAL DUTY		Biotransformation Dr. Afsheen Siddiqui Pharmacology		A: Forensic Medicine B: Pharmacodynamics C: Pharmacy D: Pathology	
Wed	Primary health care Dr. Ashfaq Ahmed Community Med	Drug distribution Dr. Mahwish Gul Pharmacology	HOSPITAL DUTY		Biotransformation Dr. Afsheen Siddiqui Pharmacology		Law & medicolegal system Dr. Omair Forensic Med	SDL
Thurs	Primary health care Dr. Ashfaq Ahmed Community Med	Cataract Dr. Amir Zeb Ophthalmology	HOSPITAL DUTY		Pharmacokinetics Dr. Sumbal Tariq Pharmacology		A: Pathology B: Forensic Medicine C: Pharmacodynamics D: Pharmacy	
Fri	PRACTICAL		MDGs & SGDs Dr. Ashfaq Ahmed Community Med	Pharmacokinetics Dr. Sumbal Tariq Pharmacology	SDL		HALFDAY	

Pharmacodynamics: Routes of Drug Administration

Pharmacy: Metrology & Medical Abbreviations

Pathology: ZN staining

Forensic medicine: Legal procedures

Name & signature of module coordinator

AYUB MEDICAL COLLEGE ABBOTTABAD
TIMETABLE OF 3RD YEAR MBBS CLASS FOR THE SESSION 2022
WEEK 4: Foundation II Module Theme 02 (Cell injury, Ageing & Death)
21.02.2022 – 25.02.2022

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	Biotransformation Dr. Afsheen Pharmacology	Cell injury Dr. Basharat Gen. pathology	HOSPITAL DUTY		Medicolegal system Dr. Omair Forensic Med	PRAYER BREAK	A: Pharmacy B: Pathology 1 C: Pathology 2 D: Pharmacodynamics	
Tue	Chain of evidence Dr. Salma Shazia Forensic Med	Necrosis Dr. Basharat Gen. pathology	HOSPITAL DUTY		Health care Model & Health Care services Family Medicine (C. Med)		A: Pathology 2 B: Pharmacodynamics C: Pharmacy D: Pathology 1	
Wed	Mechanism of cell injury Dr. Basharat Gen. pathology	Research Protocol Dr. Ashfaq Ahmed PRIME (Com. Med)	HOSPITAL DUTY		Medical jurisprudence Dr. Salma Shazia Forensic Med		Mechanism of cell injury Dr. Basharat Gen. pathology	SDL
Thurs	A: Pathology 1 B: Pharmacodynamics C: Pharmacy D: Pathology 2		HOSPITAL DUTY		Pharmacokinetics Dr. Sumbal Tariq Pharmacology		Health System Research Dr. Ashfaq Ahmed PRIME (Com. Med)	Cellular adaptation Dr. Basharat Gen. pathology
Fri	PRACTICAL		Medical Jurisprudence Dr. Salma F. Med	Apoptosis Dr. Basharat Gen. pathology	Drug receptors Dr. Saad Mufti Pharmacology		HALFDAY	
	A: Pharmacy B: Pathology 1 C: Pathology 2 D: Pharmacodynamics							

Pharmacy: Dosage form of drugs

Pathology 1: Hyperplasia & Atrophy

Pathology 2 : Gram Staining

Pharmacodynamics: Routes of drug administration (Subcutaneous)

Name & signature of module coordinator

AYUB MEDICAL COLLEGE ABBOTTABAD
TIMETABLE OF 3RD YEAR MBBS CLASS FOR THE SESSION 2022
WEEK 5: Foundation II Module Theme 02 (Cell injury, Ageing & Death)
28.02.2022 – 04.03.2022

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	Drug receptors Dr. Saad Mufti Pharmacology	Intracellular accumulation Dr. Basharat Gen. pathology	HOSPITAL DUTY		Health System Research Dr. Ashfaq Ahmed PRIME (Com. Med)	PRAYER BREAK	A: Pharmacodynamics B: Pharmacy C: Pathology D: Forensic Medicine	
Tue	Dose response curve Dr. Wajid Ali Pharmacology	Medical jurisprudence Dr. Salma Shazia Forensic Med	HOSPITAL DUTY		Health System Research Dr. Ashfaq Ahmed PRIME (Com. Med)		A: Forensic Medicine B: Pharmacodynamics C: Pharmacy D: Pathology	
Wed	Pathologic calcification Dr. Basharat Gen. Pathology	Dose response curve Dr. Wajid Ali Pharmacology	HOSPITAL DUTY		Thanatology Dr. Nighat Seema Forensic Med		Death certificate Dr. Sadia Forensic Med	SDL
Thurs	A: Pathology B: Forensic Medicine C: pharmacodynamics D: Pharmacy		HOSPITAL DUTY		Post-mortem changes Dr. Salma Shazia Forensic Med		Drug interactions Dr. M. Fahim Pharmacology	SDL
Fri	PRACTICAL		Drug interactions Dr. M. Fahim Pharmacology	MODULE EXAM			HALFDAY	

Pharmacodynamics: Route of drug administration (intradermal)

Pharmacy: Searching information in a formulary

Pathology: Motility Test

Forensic medicine: death certificate

Name & signature of module coordinator

9 For inquiry and troubleshooting



Please contact
To be added

F. Please give overall rating of the course

90% - 100% ()

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!!
