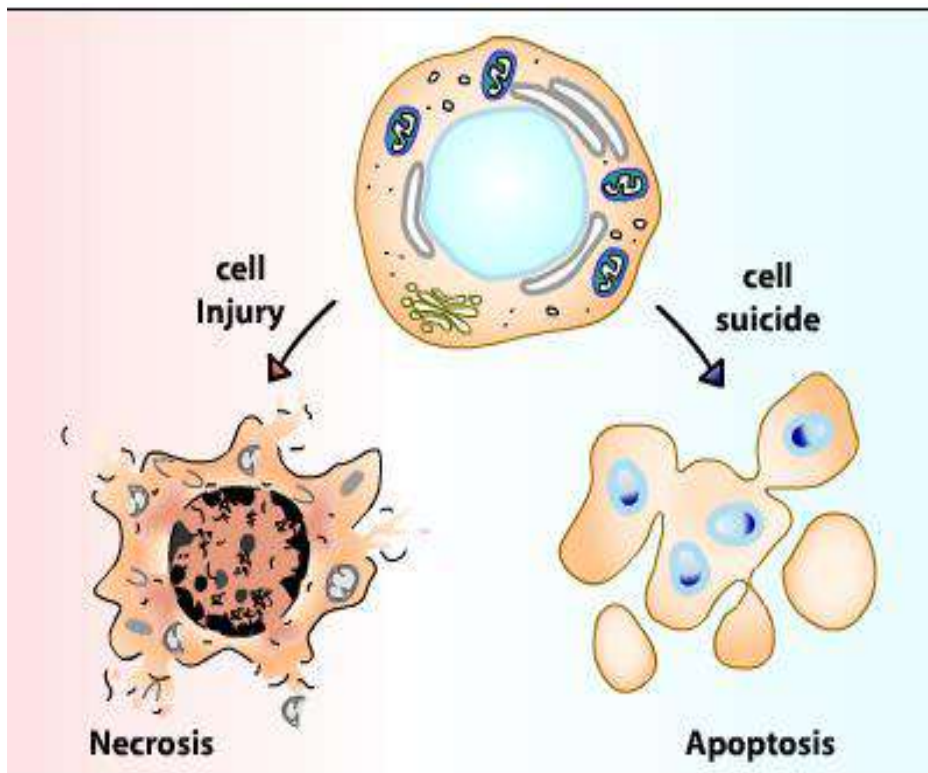


# FOUNDATION-II MODULE 3RD YEAR STUDY GUIDE



This study guide of the module /course outlines the key components and areas for the facilitation of the students.

**Department of Medical Education.**

## Vision and Mission of KGMC

### Khyber Medical University: Vision



Khyber Medical University will be the global leader in health sciences academics and research for efficient and compassionate health care.

### Khyber Girls Medical College: Vision



“Excellence in health care, research ,teaching and training in the service of Humanity”

### Khyber Girls Medical College: Mission

The mission of KGMC is to promote compassionate and professional health care leaders Who are knowledgeable, skillful, and community oriented lifelong learners serving humanity through evidence based practice

## Curriculum Committee KGMC

### Chair:

Professor Dr. Zahid Aman Dean KGMC.

### Co-Chair:

Dr. Amin ul Haq, Associate Dean KGMC.

### Clinical Sciences:

- Dr. Mohammad Noor Wazir ,Department of Medicine KGMC/HMC
- Dr. Bushra Rauf Department of Gynae KGMC/HMC.
- Dr. Sofia Iqbal, Department of Ophthalmology KGMC/HMC.
- Dr. Said Amin Department of Medicine KGMC/HMC.
- Dr. Ghareeb Nawaz Department of ENT KGMC/HMC.
- Dr. Jamshed Alam Department of Surgery KGMC/HMC.
- Dr. Ambreen Ahmad, Department of Pediatrics KGMC/HMC.
- Dr. Ain-ul-Hadi Department of Surgery KGMC/HMC.
- Dr. Fawad Rahim Department of Medicine KGMC/HMC.

### Behavioral Sciences:

- Dr. Ameer Abbas Department of Psychiatry KGMC/HMC.

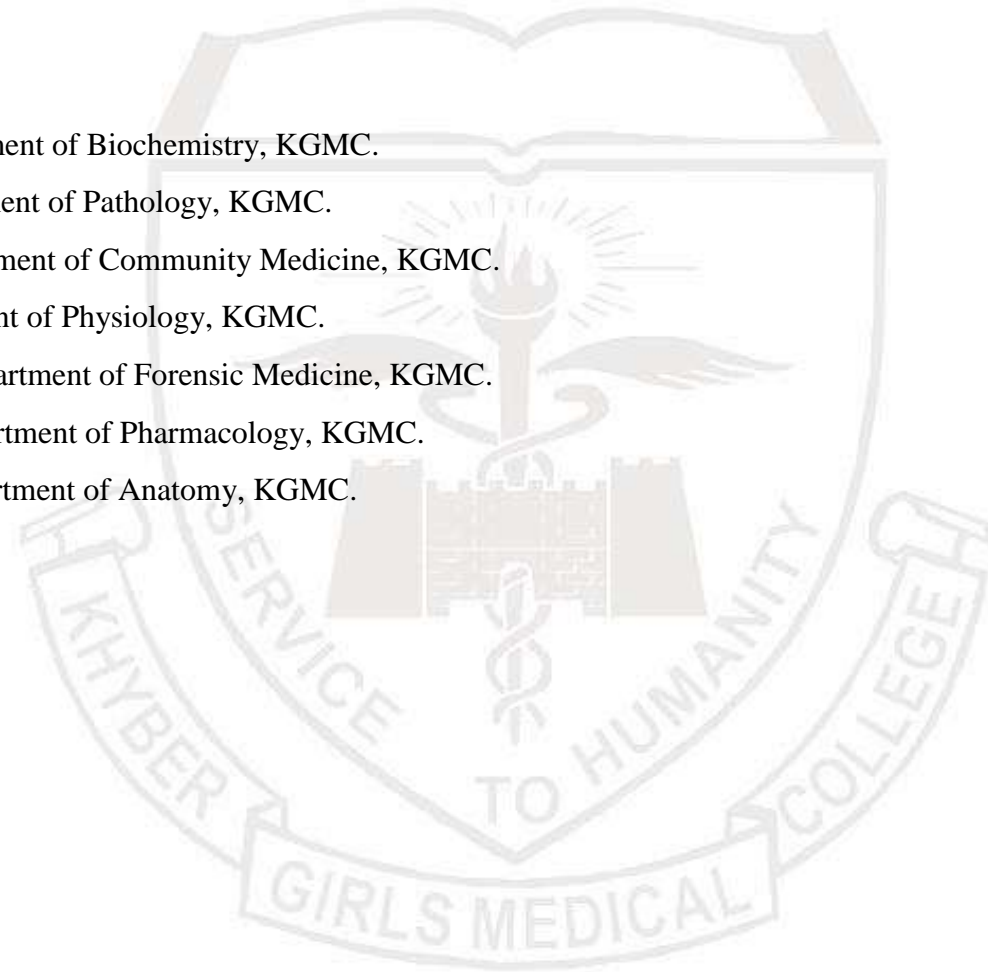
### Medical Education

- Dr. Naheed Mahsood, Department of Medical Education, KGMC.
-

- Dr. Naveed Afzal Khan, Department of Medical Education, KGMC.
- Dr Onaiza Nasim , Department of Medical Education, KGMC

**Basic Sciences:**

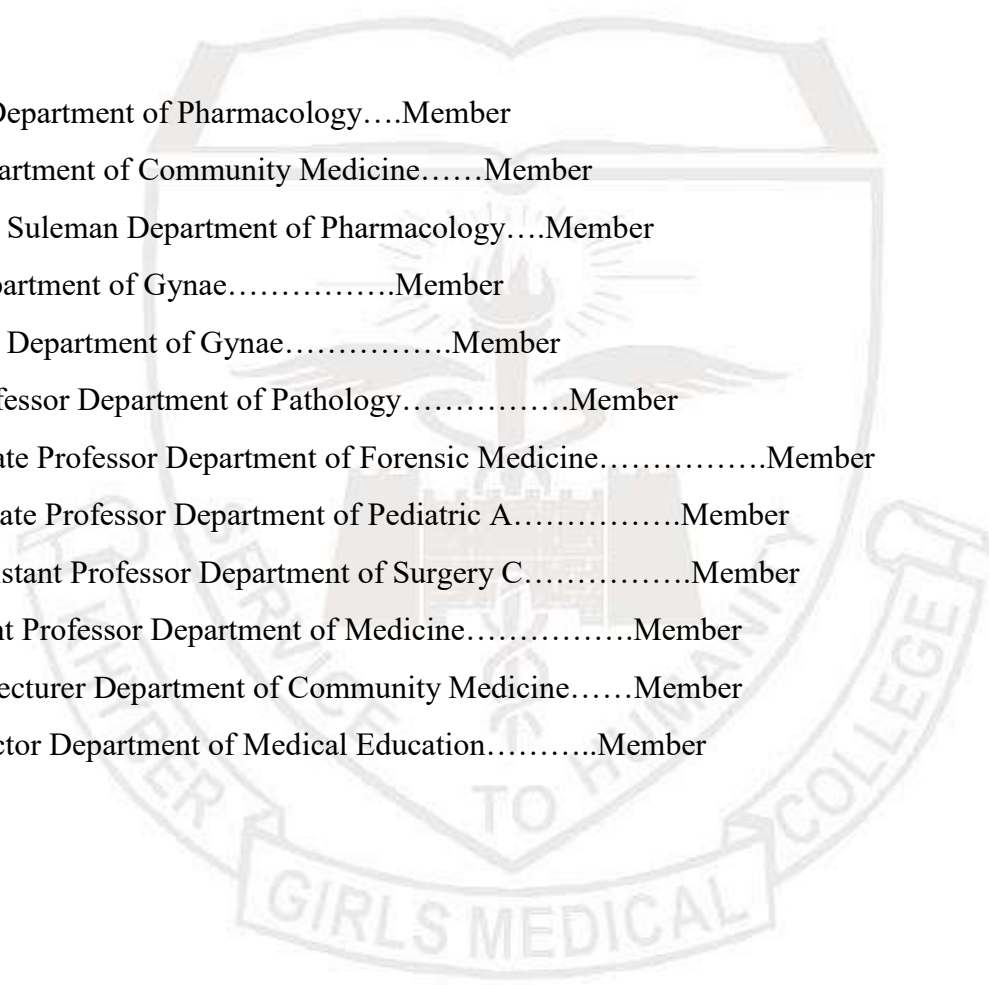
- Dr. Amin-ul-Haq Department of Biochemistry, KGMC.
- Dr. Khalid Javed Department of Pathology, KGMC.
- Dr. Raheela Amin Department of Community Medicine, KGMC.
- Dr. Zubia Shah Department of Physiology, KGMC.
- Dr. Naheed Siddique Department of Forensic Medicine, KGMC.
- Dr. Shams Suleman Department of Pharmacology, KGMC.
- Dr. Shahab-ud-Din, Department of Anatomy, KGMC.



## Module Committee for Foundation II

### Foundation Module:

- Prof. Dr. Abdul Hameed Department of Pharmacology....Member
- Prof. Dr. Sabina Aziz Department of Community Medicine.....Member
- Associate Prof. Dr. Shams Suleman Department of Pharmacology....Member
- Prof. Dr. Bushra Rauf Department of Gynae.....Member
- Prof. Dr. Samia Tabassum Department of Gynae.....Member
- Dr. Saeed-ur-Rehman Professor Department of Pathology.....Member
- Dr. Anwar-ul-Haq Associate Professor Department of Forensic Medicine.....Member
- Dr. Jahanzeb Khan Associate Professor Department of Pediatric A.....Member
- Dr. Muhammad Shah Assistant Professor Department of Surgery C.....Member
- Dr. Fawad Rahim Assistant Professor Department of Medicine.....Member
- Dr. Salma Akbar Senior Lecturer Department of Community Medicine.....Member
- Dr Naheed Mahsoud Director Department of Medical Education.....Member



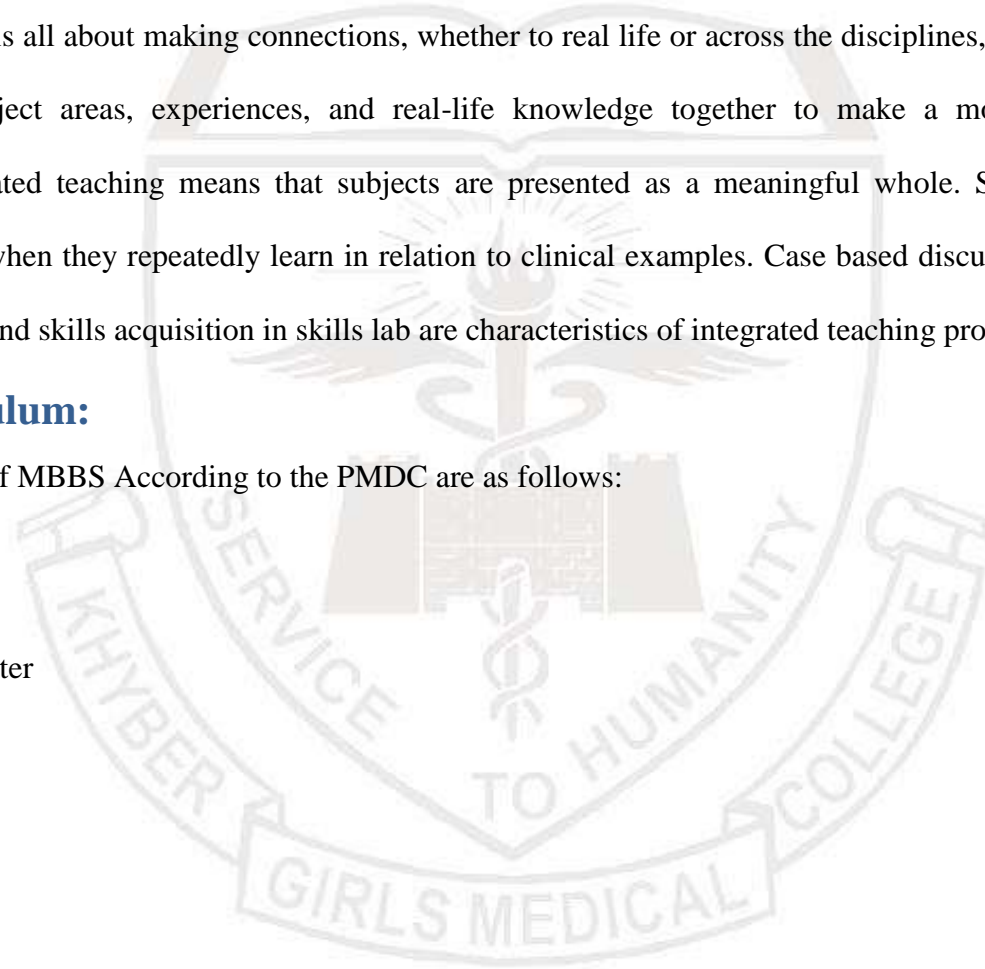
## **Integrated curriculum:**

An integrated curriculum is all about making connections, whether to real life or across the disciplines, about skills or about knowledge. An integrated curriculum fuses subject areas, experiences, and real-life knowledge together to make a more fulfilling and tangible learning environment for students. Integrated teaching means that subjects are presented as a meaningful whole. Students will be able to have better understanding of basic sciences when they repeatedly learn in relation to clinical examples. Case based discussions, computer-based assignments, early exposure to clinics, wards, and skills acquisition in skills lab are characteristics of integrated teaching program.

## **Outcomes of the curriculum:**

The outcomes of the curriculum of MBBS According to the PMDC are as follows:

- Knowledge
- Skillful
- Community Health Promoter
- Problem-Solver
- Professional
- Researcher
- Leader and Role Model



## **KNOWLEDGE**

By the end of five year MBBS program the KGMC student should be able to;

1. Acquire a high level of clinical proficiency in history taking, physical examination, differential diagnosis, and the effective use of medicine's evolving diagnostic and procedural capabilities including therapeutic and palliative modalities
2. Manage the common prevalent diseases in community
3. Identify the common medical emergencies
4. Develop plan for prevention of common community diseases
5. Formulate a referral plan
6. Compose a prescription plan

## **PSYCHOMOTOR**

By the end of five year MBBS program the KGMC student should be able to;

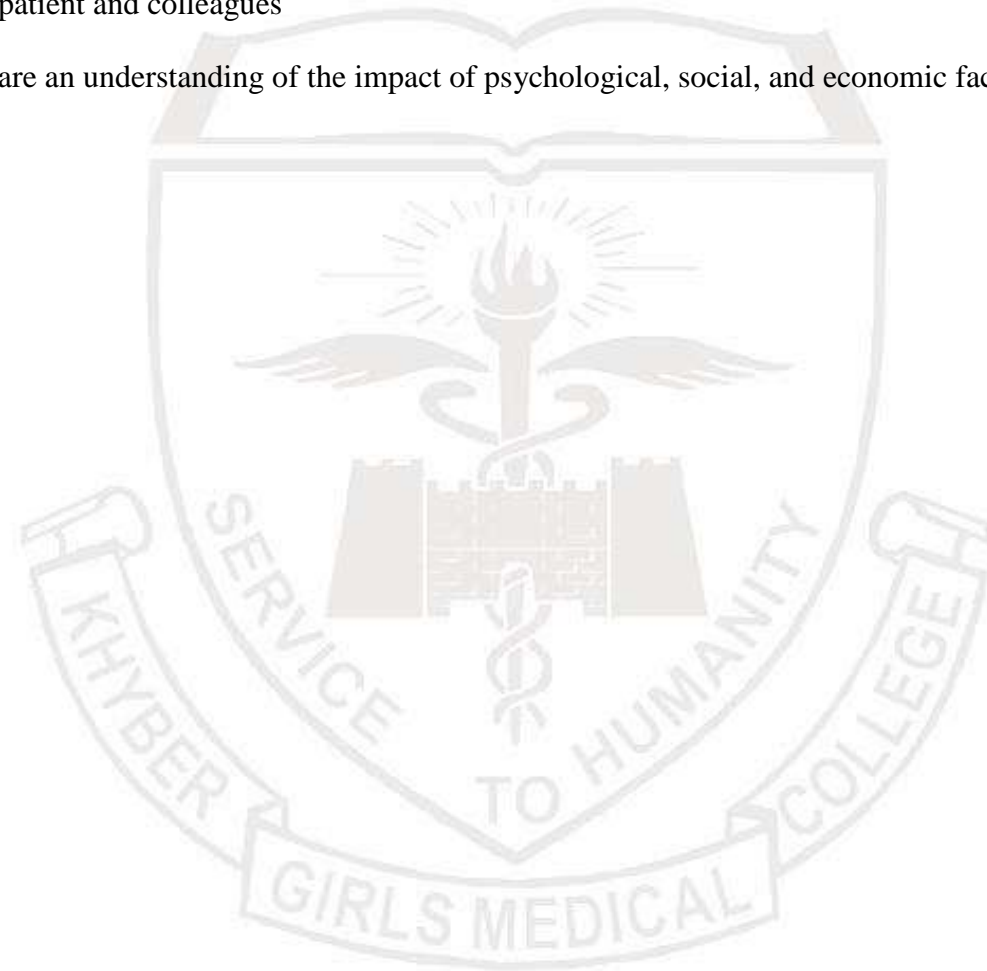
1. Demonstrate the ability to perform the disease specific relevant examination
2. Respond to common medical emergencies
3. Master the skill of first aid
4. Perform BLS
5. Apply the best evidenced practices for local health problems

## **AFFECTIVE**

By the end of five year MBBS program the KGMC student should be able to

1. Relate to patient and careers vulnerability

2. Demonstrate ethical self-management
3. Counsel and educate patients and their families to empower them to participate in their care and enable shared decision-making.
4. Display compassion with patient and colleagues
5. Demonstrate in clinical care an understanding of the impact of psychological, social, and economic factors on human health and disease





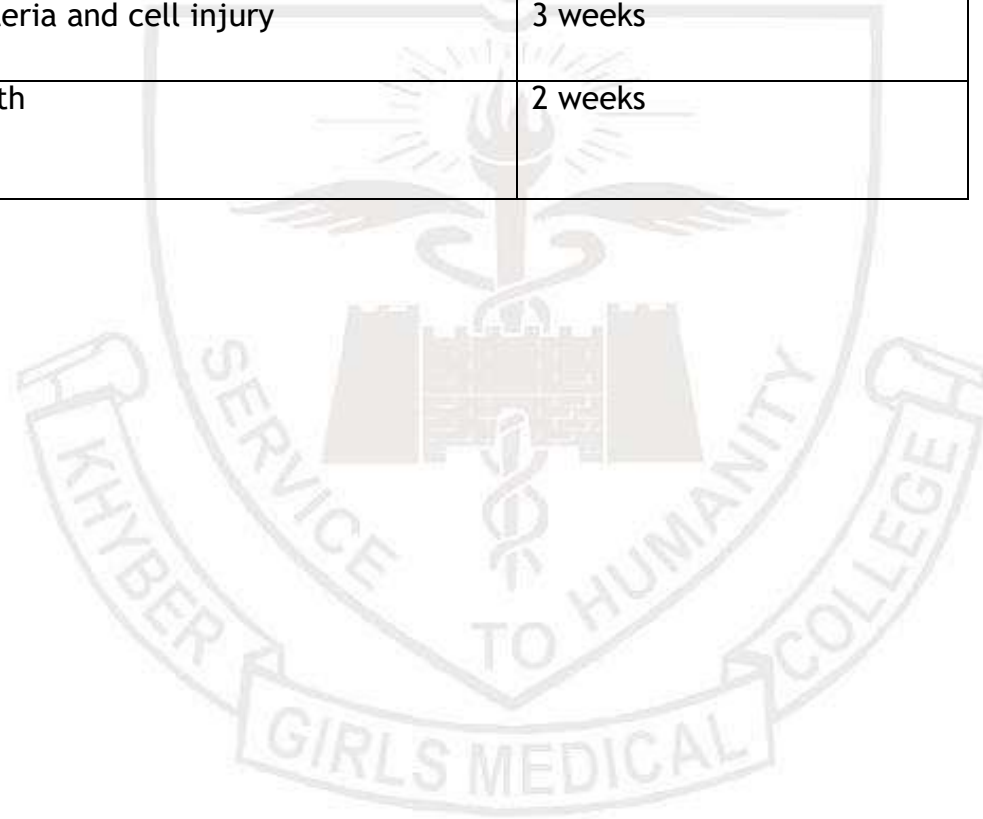
# Teaching Hours Allocation

Table 1 Hours Allocation

S. No	Subject	Hours needed
1	Pharmacology	32
2	Pathology	25
3	Forensic medicine	12
4	Community medicine	8
5	Family medicine	1
6	PRIME and Research	4+3
7	Eye	3
8	ENT	1
	Total	86

# List of Themes

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

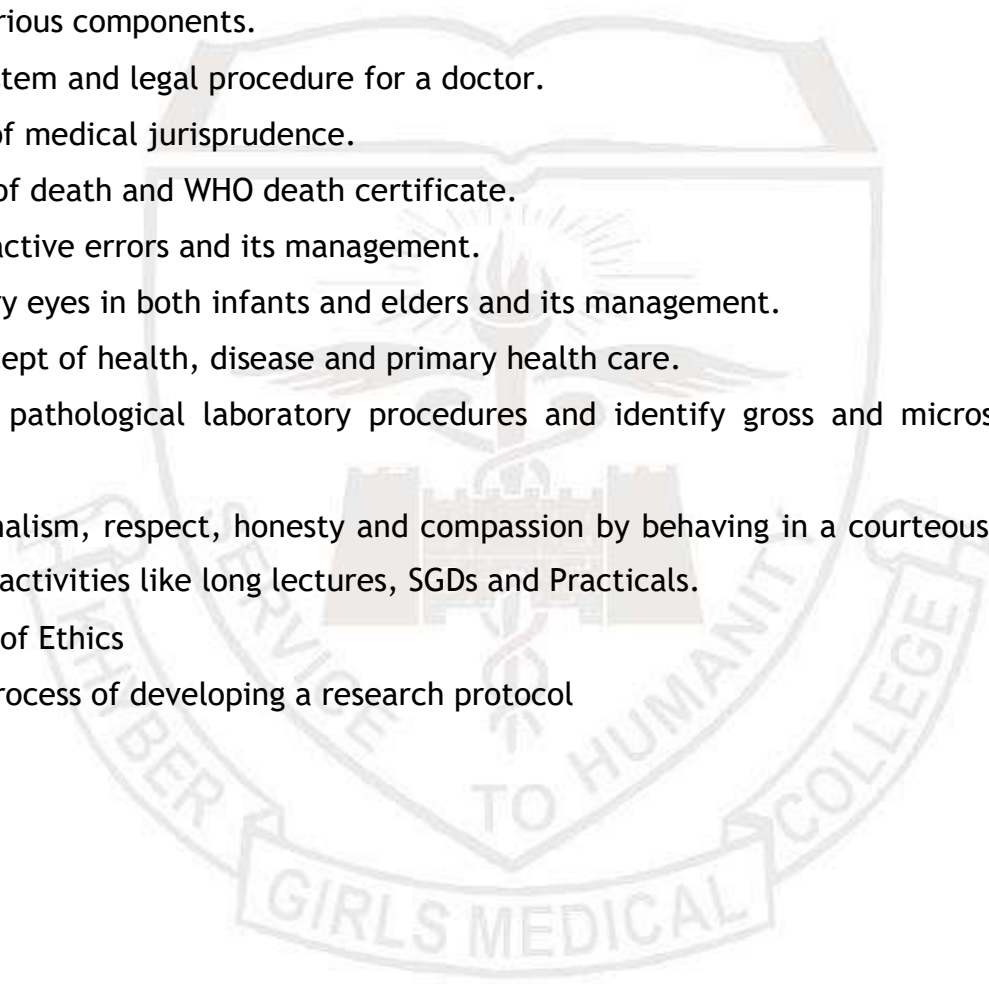


# Learning Objectives

By the end of Foundation-2 Module, 3<sup>rd</sup> 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



# Specific Learning Objectives

Theme-1 (Molecules and Bacteria)			
Subject	Topic	Hours	Learning objectives
Pharmacology	Introduction to the subject	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	1	Describe how drugs are named, i.e. chemical, generic, approved, official and trade names of drugs with examples.
	Sources of drugs	1	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	2	<p>Enlist various routes of drug administration.</p> <p>Describe the merits and demerits of oral, sublingual, rectal, intramuscular, subcutaneous, intravenous, intra-arterial, inhalational, spinal, topical and transdermal routes of drug administration.</p> <p>Give examples of drugs given through oral, sublingual, rectal, intramuscular, subcutaneous, intradermal, intravenous, intra-arterial, inhalational, spinal, topical and transdermal routes of drug administration.</p> <p>Describe the difference between topical and transdermal routes of drug administration.</p> <p>Describe the difference between subcutaneous and intradermal routes of drug administration.</p>
	Absorption of drugs	1	<p>Define drug absorption.</p> <p>Describe various mechanisms of drug absorption like simple diffusion, facilitated diffusion, active transport, ion-pair transport, endocytosis and filtration with examples.</p> <p>Describe the concept of ionization of drug molecules and clinical significance of ion trapping.</p>

			Describe factors affecting drug absorption.
Bioavailability and Bioequivalence	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)	1		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	1		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 distribution			Define volume of 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	1	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	1	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	1	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 inhibition		Define enzyme 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	1		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)	1		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 a quantal 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	1		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	1		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.

			Describe the clinical importance of efficacy compared to potency.
	Drug antagonism		Define drug antagonism.
			Enlist types of antagonism.
			Describe chemical, physiological (functional) and pharmacological (competitive/surmountable and non-competitive) antagonisms with examples.
	Drug interactions	1	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	1	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	1	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	1	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	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	1	Define cell
			Describe structure of cell membrane
			Describe cell organelles
	Classification of Bacteria	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	1	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	1		Describe various phases of bacterial growth curve
Normal Flora			Describe medically important members of normal flora and their anatomic location
Bacterial genetics	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	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	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.

			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
		1	Define law.



	Introduction to Law		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	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	1	Define Ophthalmology and its branches
			Highlight the scope of field of Ophthalmology as a future career

	Refractory errors	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	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	1	Define Community medicine and Public health
			Describe the role of teaching of public health in prevention of diseases
	Health system of Pakistan:	1	Define health care system of Pakistan using WHO Health system framework

	Introduction		
	Health and disease	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	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	Personal identity	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	1	Explain the concept of patient safety, clinical governance and quality improvement in primary healthcare
	Professionalism-Trust	1	Explain the dynamics of professionalism and trust in health professional-patient relationship
Professional identity formation-	Adheres to principles of trust in day to day professional interactions		
			Define professional identity formation and explain the Students' roles in terms of professional identity

	Types and Multiple identities		
	Motivation	1	Explain motivational skills for team members for clinical tasks

## Theme-2 (Aging and Death)

Subject	Topic	Hours	Learning objectives
Pathology	Cellular injury, cell death	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	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	1		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	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;	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	1	Define cause of death
			Describe the WHO format of death certificate
	Ophthalmology	Cataracts	1
Describe the types of cataracts			
Describe the pathogenesis and complications of cataracts			
Describe the management of cataracts			
PRIME Research	Research Protocol	1	Describe the steps of developing a 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 key areas of concern in health system.
			Discuss briefly research methodology.
		Define and categorize types of health research	



	Purpose and process of health research	1	Explain the purpose of health research
Family Medicine	History and current structure of general practice	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

Pharmacology	Lab protocols; Introduction to Pharmacy; Apparatus used in Pharmacy	1.5	Identify and name common apparatus used in pharmacy laboratory.
			Identify and label common apparatus used in the field of Pharmacy.
Metrology & Medical abbreviations		1.5	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		1.5	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		1.5	Define formulary.
			Describe National Formulary.
			Demonstrate searching accurate information quickly in a formulary.
		1.5	Describe the general protocols for IM and IV injection of a drug.

	To demonstrate IM and IV injection of drugs on a dummy (manikin)		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	1.5	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	1.5	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	1.5	Describe steps involved in tissue processing.
		Identify various tools/instruments involved in tissue processing and their indications.	
		Demonstrate slide focusing.	

Gram staining	1.5	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	1.5	Describe principal and significance of ZN staining.
		Enlist steps of ZN staining.
		Demonstrate ZN staining procedure.
		Identify AFB and inflammatory cells microscopically.
Culture media	1.5	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	1.5	Enumerate motile bacteria
		Identify motile bacteria under the microscope
Hyperplasia (BPH)	1.5	Define hypertrophy and hyperplasia.
		Differentiate between hypertrophy and hyperplasia.

			Describe gross and microscopic morphology of BPH.
			Identify the slide of BPH.
	Atrophy (Testicular atrophy)		Define atrophy
			Describe gross and microscopic features of atrophy over a slide of testicular atrophy as an example
	Pathologic calcification		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

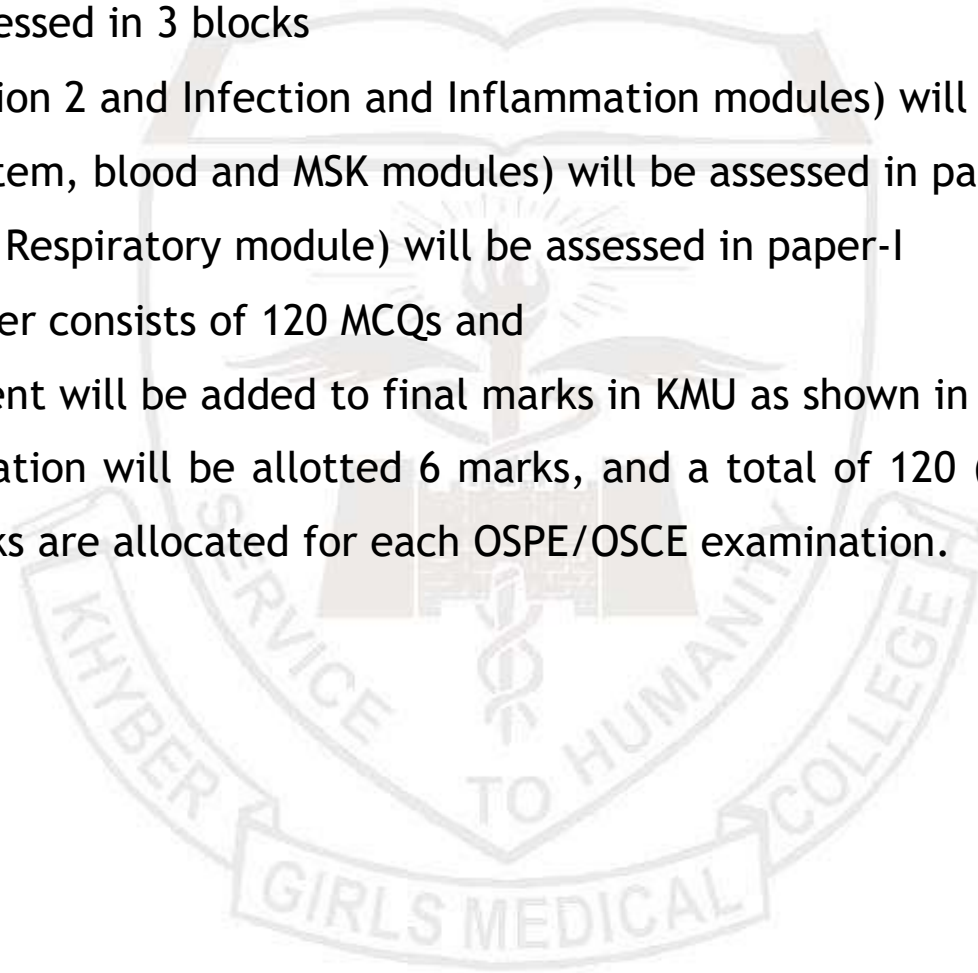
## Learning Resources

S.No	Subjects	Textbooks
1.	Community Medicine	1. Community Medicine by Parikh 2. Community Medicine by M Illyas 3. Basic Statistics for the Health Sciences by Jan W Kuzma
2.	Forensic Medicine	1. Nasib R. Awan. Principles and practice of Forensic Medicine 1st ed. 2002. 2. Parikh, C.K. Parikh's Textbook of Medical Jurisprudence, Forensic Medicine and Toxicology. 7th ed. 2005. 3. Knight B. Simpson's Forensic Medicine. 11th ed. 1993. 4. Knight and Pekka. Principles of forensic medicine. 3rd ed. 2004 5. Krishan VIJ. Text book of forensic medicine and toxicology (principles and practice). 4th ed. 2007 6. Dikshit P.C. Text book of forensic medicine and toxicology. 1st ed. 2010 7. Polson. Polson's Essential of Forensic Medicine. 4th edition. 2010. 8. Rao. Atlas of Forensic Medicine (latest edition). 9. Rao. Practical Forensic Medicine 3rd ed, 2007. 10. Knight: Simpson's Forensic Medicine 10th 1991, 11th ed. 1993 11. Taylor's Principles and Practice of Medical Jurisprudence. 15th ed. 1999
3.	Pathology	1. Robbins & Cotran, Pathologic Basis of Disease, 9th edition. 2. Rapid Review Pathology, 4th edition by Edward F. Goljan MD
4.	PHARMACOLOGY	1. Lippincott Illustrated Pharmacology 2. Basic and Clinical Pharmacology by Katzung
5.	ENT	Diseases of Ear, Nose and Throat, 7 <sup>th</sup> Edition by P. L. Dhingra

# Assessment Plan - 3rd Year MBBS

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 and
- 5) Internal assessment will be added to final marks in KMU as shown in below table.
- 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.



## Year 3 Professional Exam in System-based Curriculum

Theory paper	Modules	Theory marks	Internal assessment theory (10%)	OSPE/OSPE	Internal assessment OSPE/OSPE (10%)	TOTAL MARKS
Paper G	Foundation-II Inf.&Inflamm.	120	14	120	14	268
Paper H	Multisystem Blood MSK-II	120	13	120	14	267
Paper I	CVS-II Respiratory-II	120	13	120	12	265
<b>TOTAL MARKS</b>		360	40	360	40	800

\*Research viva of 20 marks will be conducted in paper-L. However, the rest of 15 marks will be decided by the concerned department internally for the contribution of the students in research project/thesis.

GIRLS MEDICAL



# Assessment Blueprints

Table 2: Paper G (Infection & Inflammation & Foundation II)

Subjects	Total MCQs
Infection & Inflammation	54
Foundation 2	66
<b>Total</b>	<b>120</b>

Table 3: Paper G OSCEs

Subject	Total OSCE stations
Infection & Inflammation	10
Foundation 2	10
<b>Total</b>	<b>20</b>

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

## Teaching and learning strategies:

The following teaching learning methods are used to promote better understanding:

- Interactive Lectures
- Hospital Clinic visits
- Small Group Discussion
- Skills session
- Self-Directed Study



### Interactive lectures:

An interactive lecture is an easy way for instructors to intellectually engage and involve students as active participants in a lecture-based class of any size. Interactive lectures are classes in which the instructor breaks the lecture at least once per class to have students participate in an activity that lets them work directly with the material.

- The instructor might begin the interactive segment with an engagement trigger that captures and maintains student attention.
- Then the instructor incorporates an activity that allows students to apply what they have learned or give them a context for upcoming lecture material.
- As the instructor feels more comfortable using interactive techniques he or she might begin to call upon a blend of various interactive techniques all in one class period.

**Hospital/Clinic visits:**

In small groups, students observe patients with signs and symptoms in hospital or clinical settings. This helps students to relate knowledge of basic and clinical sciences of the relevant module.

**Small Group Discussion (SGD):**

The shy and less articulate are more able to contribute. Students learn from each other. Everyone gets more practice at expressing their ideas. A two way discussion is almost always more creative than individual thoughts. Social skills are practiced in a 'safe' environment e.g. tolerance, cooperation. This format helps students to clarify concepts acquire skills or attitudes. Students exchange opinions and apply knowledge gained from lectures, tutorials and self-study. The facilitator role is to ask probing questions, summarize, or rephrase to help clarify concepts.

**Skills Practical Session:**

Skills relevant to respective module are observed and practiced where applicable in skills laboratory or Laboratories of various departments.

**Self-Directed learning (SDL):**

Self-directed learning, which involves studying without direct supervision in a classroom Library, is a valuable way to learn and is quickly growing in popularity among parents and students. Students' assume responsibilities of their own learning through individual study, sharing and discussing with peers, seeking information from Learning Resource Centre, teachers and resource persons within and outside the college. Students can utilize the time within the college scheduled hours of self-study.

## **Time Table:**

The timetables for the module will be shared via Edmodo and the notice boards in advance.

## **Assessment tools:**

Theoretical knowledge is tested by a written examination system constituted by multiple choice questions (MCQs). The assessment of practical knowledge involves oral, spot, or objective structured practical examinations (OSPE).

### **Multiple Choice Questions (MCQs):**

- Multiple choice questions (MCQs) are a form of assessment for which students are asked to select the best choice from a list of answers.
- MCQ consists of a stem and a set of options. The stem is usually the first part of the assessment that presents the question as a problem to be solved; the question can be an incomplete statement which requires to be completed and can include a graph, a picture or any other relevant information. The options are the possible answers that the student can choose from, with the correct answer called the key and the incorrect answers called distractors.
- Correct answer carries one mark, and incorrect 'zero mark'. There is NO negative marking.
- Students mark their responses on specified computer-based sheet designed for the college.
- The block exam will comprise of 120 MCQs and will be compiled according to the shared blueprint.

## Objective Structured Practical Examination (OSPE)

- The content may assess application of knowledge, or practical skills.
- Student will complete task in define time at one given station.
- All the students are assessed on the same content by the same examiner in the same allocated time.
- A structured examination will have observed, unobserved, interactive and rest stations.
- Observed and interactive stations will be assessed by internal or external examiners.
- Unobserved will be static stations in which students will have to answer the questions related to the given pictures, models or specimens the provided response sheet.
- Rest station is a station where there is no task given, and in this time student can organize higher thoughts.
- The Block OSPE will be comprise of 20 examined station and 5 rest stations. The stations will be assigned according to the shred blueprint. There will be 8 stations for viva of core subjects like Pathology, Pharmacology, Forensic Medicine and Community Medicine (2 station for viva of each core subject) and 2 clinical station and rest of 10 out of 20 stations will be assigned according to shared blueprints.

-

### **Internal Evaluation:**

Internal evaluation is a process of quality review undertaken within an institution for its own ends. 10% marks of internal evaluation will be added to final marks. This 10% will be based on

<b>Marks obtained</b>	<b>13 out of total 40 marks of internal assessment in block G Paper</b>

<b>Marks obtained</b>	<b>13 out of total 40 marks of internal assessment in block G OSPE</b>

## **Attendance Requirement:**

More than 75% attendance is mandatory to sit for the examinations.



## **Physiology**

- Guyton and Hall physiology
- Ganong physiology
- Human Physiology from cells to system by lauree sherwood
- BRS Physiology
- Neuroscience by Dale Purves

## **Biochemistry**

- Chatterjee text book of Biochemistry
- Harpers Biochemistry
- Lippincotts Biochemistry
- Satya Narayan biochemistry

## **Pharmacology**

- Basic & Clinical Pharmacology, 14edition
- Katzung & Trevor's Pharmacology: Examination & Board Review, 10edition
- Lippincott Illustrated Reviews: Pharmacology, 8<sup>th</sup> edition
- Pharmacology for Medical Graduates by Tara V. Shanbhag

## **Forensic Medicine**

- Parikh's textbook of Medical Jurisprudence and Toxicology.
- Principles and Practice of Forensic Medicine by Nasir R Awan
- Forensic medicine and toxicology principals and practice by Krishan Vij
- Knights forensic pathology by Bernard knight, Pekka saukko
- Forensic medicine and toxicology Nagesh Kumar G rao



### **Pathology**

- Robbins textbook of pathology
- Harsh mohan text book of pathology
- Levison text book of microbiology
- Paniker parasitology
- Chatterjee book of parasitology

Apart from these resources learning, students can consult books available in library or recommended by the specialty experts.

