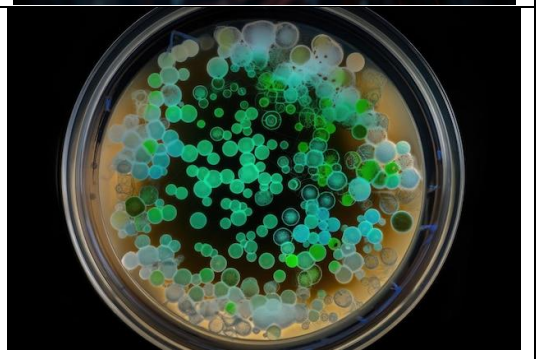
IBN-E-SINA UNIVERSITY MIRPURKHAS

STUDENT'S STUDY GUIDE
FOUNDATION-I MODULE
FIRST PROFESSIONAL MBBS

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1. DISCLAIMER

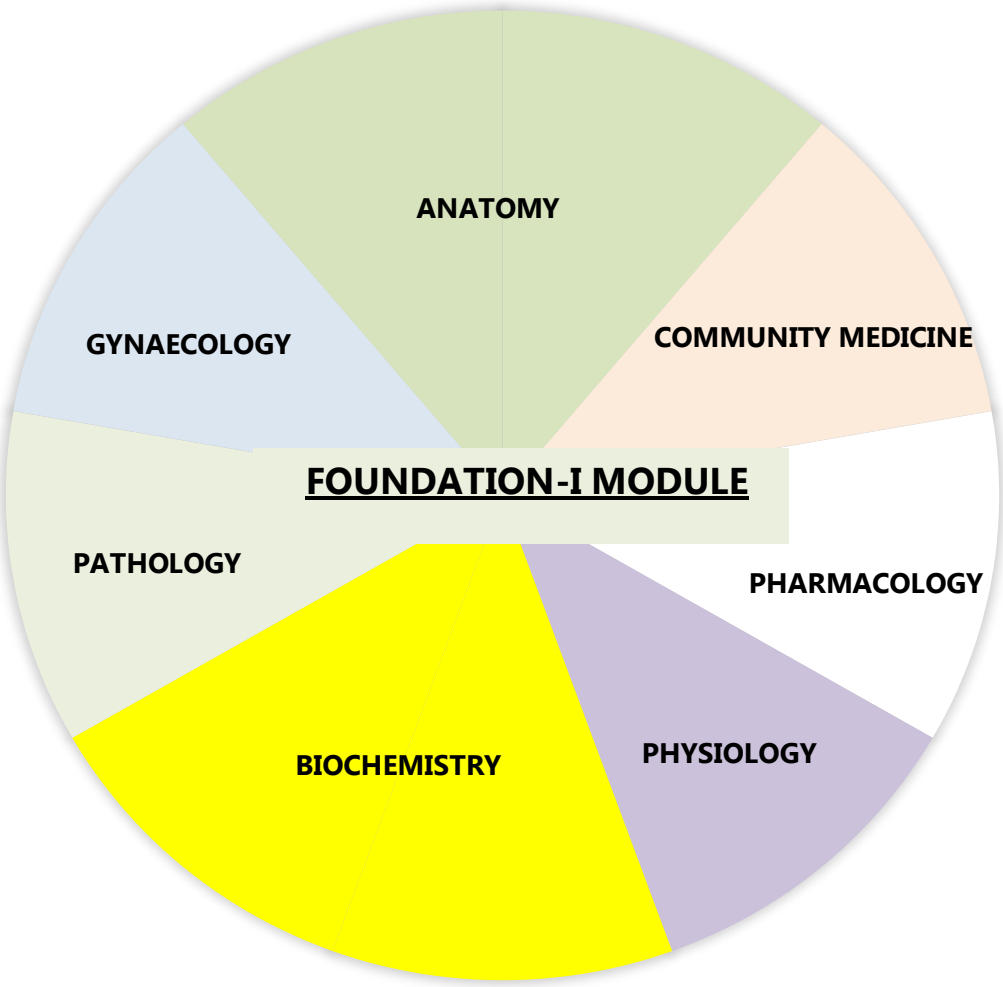
- Developing a study guide is a dynamic process and undergoes iteration according to the needs and priorities.
- This study guide is subjected to the change and modification over the whole academic year.
- However, students are advised to use it as a guide for respective modules.
- The time tables are 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

2. CURRICULUM FRAMEWORK

An educational strategy known as integrated curriculum places a strong emphasis on interdisciplinary learning, in which students gain knowledge by integrating it from several topic areas. By integrating many subjects and disciplines into a cohesive curriculum, this method seeks to give students a more relevant and interesting learning experience. Integrated curriculum means that subjects are presented as a meaningful whole for better understanding of basic sciences in relation to clinical experience and application.

Integrated curriculum comprises of system-based modules such as Foundation-I, Blood-I, CVS-I, Musculoskeletal-I and Respiratory-I Modules which links basic science knowledge to clinical problems.

INTEGRATING DISCIPLINES OF FOUNDATION-I MODULE



3. MODULE OVERVIEW

FOUNDATION MODULE-I MODULE DETAILS

Course	MBBS
Year	First professional
Duration	8 weeks
Learning Outcomes	The competent Medical Practitioner
Competencies covered	To develop medical professionals who are well - versed, adept, and have the right mindset.
Module Assessment	End module formative assessment
Teaching Methods	Interactive Lectures, Demonstrations, Case Based Learning, Practical Lab, Small Group Discussions, Self-Study Sessions, E-Learning, Clinical rotations
Assessment Methods	MCQs, SEQs, OSPE, VIVA

FOUNDATION MODULE-I COMMITTEE

Sr. No	Names	Department	Designation
MODULE COORDINATOR			
1.	Dr. Saqib Baloch	Anatomy	Assistant Professor
2.	Dr. Shahab Hanif	Anatomy	Assistant Professor
COMMITTEE MEMBERS			
1.	Prof: Dr. Syed Razi Muhammad	Surgery	Chancellor ISU
2.	Prof: Dr. Shams Ul Arfeen Khan	Biochemistry	Vice Chancellor ISU
3.	Prof: Dr. Aijaz Ahmed Memon	Surgery	Pro Vice Chancellor ISU

4. WHAT IS STUDY GUIDE

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

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.

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.

Achievement of objectives.

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

5. LEARNING METHODOLOGIES

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

- Interactive Lectures
- Small Group Discussion
- Case- Based Learning (CBL)
- Skills session
- Practicals
- Self-Directed Study

- **INTERACTIVE LECTURES:**

  Large group discussions are not the same as traditional lecture formats. When a teacher or instructor uses images, radiographs, patient interaction recordings, etc. to discuss a topic or typical clinical scenario, the lecture becomes interactive. When they are given tiny activities to do that allow them to apply the knowledge they have learned throughout the session and are asked questions, students actively participate in the learning process.

- **SMALL GROUP DISCUSSIONS (SGDS):**

  With the use of SGD, students can take an active role in their education, clarify ideas, develop psychomotor skills, and develop a positive attitude. Discussion themes, patient interviews, and clinical cases are used to design sessions in an organized manner. Pupils are inspired to express their ideas, apply the fundamental knowledge they have learned from lectures and independent study, and are encouraged to share their notions. In small groups, role play is a useful technique for acquainting pupils with real-world scenarios. Probing questions, rephrasing, and summarizing are used by the teacher to assist make the concepts obvious.

- **CASE-BASED LEARNING (CBL):**

  Learning is centered around a sequence of questions based on a clinical scenario in this small group discussion format. Students create new information by discussing and responding to the questions using pertinent prior knowledge from the clinical and fundamental health sciences modules. The relevant department will give the CBL.

- **SKILL SESSIONS:**

  Skills relevant to respective module are observed and practiced where applicable in skills laboratory.

- **PRACTICALS:**

  Basic science practical related to Anatomy, Physiology and Biochemistry have been schedule for student learning.

- **SELF STUDY:**

  Self-directed learning is a process in which students take charge, either on their own or with assistance from others. Students chart their learning objectives and determine their areas of need for learning. They select and employ their own learning methodologies, and they independently assess the learning objectives.

6. INTRODUCTION

This is the foundation module. Welcome. This fascinating module is going to be a foundational piece of your future medical practice. This module's numerous interactive features are meant to make learning engaging and fruitful for you. Students will be encouraged to learn the fundamental organization of the human body in terms of structure, function, and biochemical properties in an integrated way during this module, i.e. We will study and evaluate a variety of foundational topics together, such as anatomy, physiology, biochemistry, pharmacology, and pathology. Additionally, you will learn how to combine fundamental knowledge with application in the clinic. By taking this method, you will be ready for the day when you work as a doctor and patients come to you with issues that don't fit neatly into a specific discipline. We have revised the fundamental science curriculum to center it around a few significant health-related scenarios—real-world events—that house officers are likely to face in order to support your integrated learning. For the purpose of understanding the material and improving your learning, you will be required to consider the situations and take part in case-based learning sessions. It will also assist you in concentrating on the goals you have set for yourself in relation to the lectures, exercises, and tutorials that are planned for this module.

6.1 RATIONALE

A basic prerequisite for all medical students is orientation in medical sciences with regard to health and illness. As a result, the integration of fundamental ideas that form the basis of the basic sciences and their relevance and utilization in the clinical sciences is the purpose of this module. Additionally, clinical skills are taught to students, including how to compassionately and effectively connect with patients and their families, comprehending their concerns and difficulties and how to address them in the future.

6.2 IBN E SINA UNIVERSITY (ISU) VISION:

To become a world-leading organization in rural health and social care research, training, recruitment and best evidence-based practice.

6.3 IBN E SINA UNIVERSITY (ISU) MISSION:

Our Mission is to inspire hope, and contribute to health and well-being by providing the best care to every patient through integrated clinical practice, education and research. To provide a focal point for the development and collation of high-quality research pertinent to rural health and wellbeing. To improve the training, recruitment and retention of a professional workforce within rural communities. To be recognized as an exemplar in rural health and wellbeing on the international stage. To establish a network of individuals and groups that support research, innovation and development in rural health and social care.

7. LEARNING OBJECTIVES

7.1 General learning Objectives:

By the end of this module, the students should be able to:

1. To acquaint students with the problem-based curriculum and the MBBS integrated modular system.
2. To acknowledge the importance that several disciplines play in the study of the human body, its functions, and the course of disease.
3. To explain a cell's structure, purpose, and metabolic makeup.
4. To uphold discipline inside the college in order to preserve an atmosphere that is favorable to learning.
5. To appropriately adhere to the college's established norms Overall educational goals

7.2 Knowledge / Cognitive Domain

It involves knowledge and the development of intellectual skills. By the end of this module, the students should be able to:

1. Familiarize with the MBBS system-based curriculum
2. Recognize the role of different disciplines in studying human body and its diseases.
3. Describe the structure, function and biochemical composition of cell.
4. Describe the cell division, its types and genetic material along with its clinical correlation.
5. Describe the basic organization of human body.
6. Explain the maintenance of homeostatic mechanism.
7. Describe the various stages of pre embryonic human development and correlate them with various malformations.
8. Describe the importance of buffer and PH system.
9. Describe various cellular adaptations during cell growth, differentiation and cell injury.

7.3 Skills / Psychomotor Domain:

Includes physical movement, co-ordination and the use of motor skill areas. For this Module, these include:

1. Completing actual tasks in an orderly and secure manner as directed
2. Accurately make and document observations.
3. Describe the basic laboratory techniques and use of microscope.
4. Follow the basic laboratory protocols.
5. Perform biochemical analysis of carbohydrates.

7.4 Attitude / Affective Domain:

It Involves our feelings, emotions and attitudes. By the end of this module, the students should be able to:

1. Follow the basic laboratory protocols.
2. Participate in class and practical work efficiently.
3. Maintain discipline of the college.
4. Follow the norms of the college properly.
5. Communicate effectively in a team with colleagues and teachers.
6. Demonstrate professionalism and ethical values in dealing with patients, cadavers, colleagues and teachers.
7. Communicate effectively in a team with colleagues and teachers.
8. Demonstrate the ability to reflect on the performance.

7.5 Outcomes of Foundation-I Module

1. Knowledgeable
2. Skillful
3. Community Heath Promoter
4. Problem-solver
5. Professional
6. Researcher
7. Leader and Role Model

8. THEMES FOR FOUNDATION-I MODULE

S. NO	Theme	Duration
1	**Introductory Week**	1 week
2	**Cell structure, Chemistry and Function**	1 week
3	**Cellular interactions, Cell injuries, Cellular responses and Adaptations**	1 week
4	**Body fluids: Composition, Function & Homeostasis**	1 weeks
5	**Macromolecules: Fundamental tissues/systems of the human body**	2 weeks
6	**Fundamental tissues/systems of the human body**	1 weeks
7	**Development, Differentiation and Growth**	1 weeks
8	**Genetics and Developmental anomalies**	1 weeks

9. SPECIFIC LEARNING OBJECTIVES THEME WISE

INTRODUCTORY WEEK

S. NO	LEAR3NING OBJECTIVES	TOPIC	TEACHING STRATEGY	ASSESSMENT
		ANATOMY		
1	State the history of subject Anatomy including its various branches and practicalapplications of Anatomy as a foundation in different fields of medicine	**Int -S1-Ana-G1** Introduction to thesubject of Anatomyand its subdivisions	Interactive Lecture	BCQs, SEQs
2	Comprehend the exact location of dissected /prosecuted part /organ of human body with respect to various terms of positions,direction, and body planes	**Int -S1-Ana-G2** Anatomical position, , Anatomical planes & terms of position	Interactive Lecture	BCQs, SEQs
3	Interpret the movements of different partsof human body the knowledge of various terms of movement.	**Int -S1-Ana-G3** Terms of movements	Interactive Lecture	BCQs, SEQs
4	Explain the appendicular and axial skeleton	**Int --S1-Ana-G4** Introduction to the parts of axial and appendicular skeleton	Interactive Lecture	BCQs, SEQs
		PHYSIOLOGY		
5	Define physiology and Enumerate thebranches of physiology	**Int -S1-Phy-1** Introduction to Physiology	Interactive Lecture	BCQs, SEQs
		BIOCHEMISTRY		
6	Define biochemistry and Discuss the role of biochemistry in medicine	**Int -S1-Bioc-1** Introduction to biochemistry and its implication in medicine	Interactive Lecture	BCQs, SEQs
		PATHOLOGY		
7	Define the pathology Enumerate the different branches ofpathology Describe the terminologies used in Pathology	**Int -S1-Path-1** Introduction topathology	Interactive Lecture	BCQs, SEQs
		PHARMACOLOGY		
8	Define the pharmacology and role ofpharmacology in medicine Discuss pharmaco-dynamics and pharmacokinetics	**Int -S1-Pharm-1** Introduction to pharmacology and its implication in medicine	Interactive Lecture	BCQs, SEQs
		COMMUNITY MEDICINE		
9	To define different definition of public health/Community Medicine To learn evolution of public health, it importance in today's world To discuss basic functions of Publichealth/community Medicine To define the difference between	**Int -S1-COM-M-1** Introduction to Community Medicine &public Health	Interactve Lecture	BCQs ,SEQs

	clinical andcommunity medicine To discuss the Non-Governmental organizations, International agencies andNational Programs of Pakistan			
FORENSIC MEDICINE				
10	Define Forensic Medicine, Forensicpathology and state Medicine Know the branches and the historyof Forensic Medicine briefly Discuss the scope of Forensic Medicine inpractice Identify the essential facilities formedico legal investigation. Define medical jurisprudence and differentiate it from Forensic medicine	**Int-S1-FOR-M-1** Introduction to forensic Medicine andToxicology	Interactive Lecture	BCQs, SEQs
MEDICAL EDUCATION				
11	Describe the curriculum and modulesunder implementation Describe the use of study guides (not to beassessed) Differentiate between various teaching &learning strategies Enlist various assessment tools, and assessment policy	**Int -S1-MED-E-1** Curriculum structure teaching learning strategies	Interactive Lecture	Workplace based assessment
12	Describe various study skills strategies	**Int -S1-MED-E-2** Study skills strategies	Interactive Lecture	Workplace based assessment

THEME 1: CELL STRUCTURE, CHEMISTRY AND FUNCTIONS

SR. NO	LEARNING OBJECTIVES	TOPICS	TEACHING STRATEGY	ASSESSMENT
ANATOMY				
13	Describe the basic structure and functions of cell membrane Describe the basic structure and functions of the Nucleus.	Fnd-S1-Ana-H1 Cell structure and function (Membrane structure and the Nucleus)	Interactive Lecture	BCQ, SEQ
14	Describe the structural Organization of different organelles of a cell. (Endoplasmic Reticulum, Golgi Apparatus, Ribosomes, Centrioles, Mitochondria, Lysosomes, Peroxisomes)	Fnd-S1-Ana-H2 Cell Organelles	Demonstration	BCQ, SEQ
15	Identify the different parts of the light microscope. Discuss the functions of these parts How to use the light microscope to Visualize a slide.	Fnd-S1-Ana-H3 Parts of Light microscope	Interactive Practical	BCQ, SEQ, OSPE
PHYSIOLOGY				
16	Describe the Functional arrangement of different level of organization and General structure, physiology and composition of cell, tissues, organs, organ systems, cell nutrition, capillary and venules.	Fnd-S1-Phy-2 Functional arrangement of different levels of organization and General structure and composition of Cell.	Interactive lecture	BCQ, SEQ, OSPE
17	Define the Functional organization of different components of a cell and its organelles Describe the functions of lysosomes & peroxisomes, Endoplasmic Reticulum, Golgi complex	Fnd-S1-Phy-3 Cell Organelles-I (Lysosomes, Peroxisomes, Endoplasmic Reticulum, Golgi complex)	Interactive lecture	BCQ, SEQ, OSPE
18	Describe the functions of mitochondria, Its special features & its role in generation of ATP Describe the functions of ER, Golgi apparatus, Ribosomes , and cytoskeleton.	Fnd-S1-Phy-4 Cell organelles-II Mitochondria, Microtubules & Microfilaments, Ribosomes Vaults Centromere.	Interactive lecture	BCQ, SEQ, OSPE
19	Give structure & functions of Nucleus	Fnd-S1-Phy-5 Nucleus & its functions	Interactive lecture	BCQ, SEQ, OSPE
20	Show the Parts and Functions of the Microscope	Fnd-S1-Phy-6 Introduction to Microscope	Interactive Practical	BCQ, SEQ, OSPE
BIOCHEMISTRY				
21	Describe the chemical structure and significance of mitochondria, functions and location of enzymes for metabolic	**FND-S1-Bioc-2**	Interactive Lecture	

	pathways & chemical reactions that occur in mitochondria.	Mitochondria: Structure, functions & location of enzymes for metabolic pathways		BCQ, SEQ, OSPE
22	Describe the significance of Protection protocols to keep yourself safe during Biochemistry laboratory work. To know the importance of chemicals and reagents in the different reactions of biomolecules Introduction to techniques of using glassware and handling of biochemical instruments during laboratory work.	**Int-S1-Bioc-3+4+5** Laboratory Hazards & Protection Protocols Chemicals and reagents Use of glassware & Instruments for laboratory work	Practical	BCQs, SEQs
PATHOLOGY				
23	Define Hypertrophy, Hyperplasia, Atrophy and Metaplasia. Enlist physiological and pathological mechanisms of cellular adaptation	FND-S1-path-2 Cellular adaptations	Interactive Lecture	BCQ, SEQ, OSPE
COMMUNITY MEDICINE				
24	To understand the concept of disease and health To discuss the Spectrum of health and Iceberg phenomenon of disease To understand the Health Dimensions To understand determinants of health with special focus on social determinants of health (SDH)	FND-S1-CM-2 Health and its dimension and determinants of Health	Interactive Lecture	SEQ OSPE

THEME 2: CELLULAR INTERACTIONS, CELL INJURIES, CELLULAR RESPONSES AND ADAPTATIONS

SR. NO.	OBJECTIVES	TOPICS	TEACHING STRATEGY	ASSESSMENT
ANATOMY				
25	Describe components of cell surface modifications and junction complex	**FND-S1-Ana-H-4** Cell surface modifications and cell Junctions	Interactive Lecture	BCQs, SEQs
26	Differentiate between normal and abnormal cell division and their consequences	**FND-S1-Ana-E-1** Cell cycle: Mitosis and Meiosis cell divisions	Interactive Lecture	BCQs, SEQs
27	Enlist steps of tissue processing. Define the artifacts. Know the basic histological stains. Define H&E Staining.	**FND-S1-Ana-H-5** Slide preparation and the H&E Staining	Interactive Practical	BCQs, SEQs, OSPE, Viva
BIOCHEMISTRY				
28	To know the difference between all types of solutions and there quantities in different chemicals reaction.	**FND-S1-Bioc-6** Solutions, concentration expression (Percent solutions, Molarity, Molality, Normality)	Interactive Practical	BCQ, SEQ, OSPE, Viva
PHYSIOLOGY				
29	Explain composition and basic structure of cell membrane, its functional importance and adaptation	**FND-S1- Phy-7** Plasma membrane & its structure and function	Interactive Lecture	BCQs, SEQs, OSPE
30	Describe types and process of transport across the membrane and their effects.	**FND-S1- Phy-8** Types of transport Simple Diffusion	Interactive. Lecture	BCQs, SEQs, OSPE
31	Describe the Transport across cell membrane via protein mediated method. Describe the process of osmosis	**FND-S1- Phy-9** Protein mediated transport Facilitated diffusion Osmosis	Interactive. Lecture	BCQs, SEQs, OSPE
32	Explain the physiological mechanism and types of transport. (Passive & Active)	**FND-PHY-10** Active transport Primary active transport Secondary active transport Bulk transport	Interactive lecture	BCQs, SEQs, OSPE
33	Describe the membrane potential its development & maintenance of resting membrane potential. Explain Permeability of cell membrane Explain the Propagation of action potential – I and its ionic basis	**FND-PHY-11** Resting membrane Potential Graded potential, Factors affecting membrane potential	Interactive lecture	BCQs, SEQs, OSPE

34	Discuss action potential Give mechanism of propagation of action potential & its ionic changes	**FND-PHY-12** Action potential	Interactive lecture	BCQs, SEQs, OSPE
35	Types And Methods	**FND-PHY-13** Sterilization	Interactive Practical	BCQs, SEQs, OSPE
PATHOLOGY				
36	Enumerate the Causes of Cell Injury Discuss the types of cell injury Describes the sequential morphologic changes in Cell Injury	**FND-S1- Path-3** Cell injury	Interactive Lecture	BCQs, SEQs, OSPE
37	Define Necrosis and its type Describe the nuclear and cytoplasmic features of necrosis.	**FND-S1- Path-4** Necrosis	Interactive Lecture	BCQs, SEQs, OSPE
38	Define Apoptosis Enumerate pathological and physiological Causes of Apoptosis Describe Biochemical Features and Mechanism of Apoptosis	**FND-S1- Path-5** Apoptosis	Interactive. Lecture	BCQs, SEQs, OSPE
39	Demonstrate gross and microscopic features of cellular adaptations and Necrosis	**FND-S1-Path-6** Cell pathology	Interactive Practical	BCQs, SEQs, OSPE
PHARMACOLOGY				
40	Enlist different routes of drug administration& describe the merits & demerits of the different routes of drug administration	**FND-S1- Pharm-2** Routes of drug administration (entral, Par-entral) drugs	Interactive Lecture	BCQs, SEQs, OSPE
41	Describe drug absorption & factors affecting rate and extent of drug absorption	**FND-S1- Pharm-3** Absorption: Process of absorption & Factors modifying drug absorption	Interactive Lecture	BCQs, SEQs, OSPE
COMMUNITY MEDICINE				
42	To learn about health delivery system of Pakistan. To define the primary health care (PHC) and its elements. To discuss the Alma Ata Declaration and Universal Health Care (UHC), Astana declaration.	**FND-S1-CM-3** Health Delivery system of Pakistan (PHC)	Interactive Lecture	BCQs, SEQs, OSPE

THEME 3: BODY FLUIDS: COMPOSITION, FUNCTION & HOMEOSTASIS

S. NO	OBJECTIVES	TOPICS	TEACHING STRATEGY	ASSESSMENT
PHYSIOLOGY				
43	Describe the divisions of body fluids into intracellular, extracellular and intravascular compartments.	**FND-S1- Phy-14** Body fluids	Interactive Lecture	BCQs, SEQs, OSPE
44	Recognize the physiochemical aspects for the maintenance of homeostasis, ECF, Internal environment and role of various body systems in homeostasis.	**FND-S1- Phy-15** Homeostasis	Interactive Lecture	BCQs, SEQs, OSPE
45	Explain the concepts of homeostasis and its regulation through feedback mechanism. Negative feedback, Positive Feedback, Feed-forward Stress & disease	**FND-S1- Phy-16** Mechanisms of Homeostasis	Interactive lecture	BCQs, SEQs, OSPE
46	introduction of physiology experiments and introduction to power lab.	**FND-S1- Phy-17** Power lab	Interactive Practical	BCQs, SEQs, OSPE
PHARMACOLOGY				
47	Explain bioavailability & describe factors affecting bioavailability	**Fnd-S1-Phrm-4** Bioavailability +half-life + 1st Pass Effect	Interactive Lecture	BCQs, SEQs, OSPE
48	Describe the distribution of a drug through various body compartments & explain clinical significance of Vd	**Fnd-S1-Phrm-5** Drug Distribution & Reservoir	Interactive Lecture	BCQs, SEQs, OSPE
PATHOLOGY				
49	List and define causes of intracellular accumulation Discuss the role of Intracellular Accumulations in metabolic derangements of cell.	**FND-S1- Path-7** Intracellular Accumulations	Interactive Lecture	BCQs, SEQs, OSPE
50	Define and describe pathological calcification. Discuss Dystrophic and metastatic calcification	**FND-S1- Path-8** Calcification and Pigmentation	Interactive Lecture	BCQs, SEQs, OSPE
51	Define cell aging Discuss events in Cellular Aging	**FND-S1- Path-9** Cell Aging	Interactive Lecture	BCQs, SEQs, OSPE
52	Define edema Describe Pathophysiology of edema	**FND-S1- Path-10** Edema	Interactive Lecture	BCQs, SEQs, OSPE

53	Define Hemorrhage, Hyperemia, Congestion Describe their causes and pathophysiology	**FND-S1- Path-11** Hemorrhage, Hyperemia, Congestion	Interactive Lecture	BCQs, SEQs, OSPE
COMMUNITY MEDICINE				
54	To understand the Natural history of diseases. To discuss the ice berg phenomenon.	**FND-S1-CM-4** Natural history of diseases & ice berg phenomenon	Interactive Lecture	BCQs, SEQs, OSPE

THEME 4: MACROMOLECULES/ FUNDAMENTAL TISSUES/SYSTEMS OF THE HUMAN BODY

S. NO	OBJECTIVES	TOPICS	TEACHING STRATEGY	ASSESSMENT
Anatomy				
55	Define the divisions & functions of skeletal system. Classify bones on the basis of shape, development, region, structure and microscopic features. Gross structure of adult long bone. Parts of young long bone.	FND-S1- **Ana-G5** The skeletal system (classification of bones.)	Demonstratio n	BCQs, SEQs, OSPE, Viva, Feedback
56	Describe general concepts of development, ossification and blood supply of bones	FND-S1- **Ana-G6** Bone development (ossification), Blood supply of long bones	Demonstratio n	BCQs, SEQs, OSPE, Viva, Feedback

57	Define the joints.Classify joints on the basis of structure, regions and functions, Discuss the characteristics of synovial joints and classify on basis of structure & movement	FND-S1- **Ana-G7** The joints and its types. The synovial joints.	Demonstration	BCQs, SEQs, OSPE, Viva
58	Define dislocation, sprain and inflammation of joints	**FND-S1-Orth-1** Fractures	Interactive Lecture	Feedback
59	Describe the microscopic features of epithelial tissues, Explain their functional importance and their surface modifications	FND-S1- **Ana-H-0s6** The Epithelium	Interactive Lecture	BCQs, SEQs, OSPE, Viva
60	Discuss gross and microscopic features of exocrine glands	FND-S1- **Ana-H-07** Exocrine glands	Interactive Lecture	BCQs, SEQs, OSPE, Viva
61	Define the composition of the connective tissue. Describe and differentiate the microscopic features of the different types of the connective tissues	FND-S1- **Ana-H-08** Histology of Connective tissue	Demonstration	BCQs, SEQs, OSPE, Viva
62	Demonstrate histological features of cartilage. Describe the types of the cartilage.	FND-S1- **Ana-H-09** The cartilage and its types	Demonstration	BCQs, SEQs, OSPE, Viva
63	Define and identify the different types of the epithelium on the light microscope	FND-S1- **Ana-H-10** Epithelium	Interactive Practical	BCQs, SEQs, OSPE, Viva
PHYSIOLOGY				
64	Identify the indications of hand washing / Demonstrate the protocols and steps of hand washing in sequential manner	**Fnd-Phy-18** Hand washing	Interactive Practical	BCQs, SEQs, OSPE, Viva
BIOCHEMISTRY				
65	Apply the basic knowledge of carbohydrates in chemistry for health	FND-S1- **Bioc-07** carbohydrates : introduction , classification and its biochemical significance	Interactive lecture	BCQs, SEQs, OSPE, Viva
66	Describe the Biochemical structure of polysaccharides with its clinical importance	FND-S1- **Bioc-08** Monosaccharides: Classification, Structure, Functions	Interactive lecture	BCQs, SEQs, OSPE, Viva
67	Discuss functions of carbohydrates in cell membrane, energy provision and nutrition supply to different parts of body	**FND-S1- Bioc-09** Chemical Properties & Derivatives of Monosaccharides & their biochemical significance in biological systems.	Interactive .lecture	BCQs, SEQs, OSPE, Viva

68	Describe Different isomers of monosaccharides e.g Glactose, mannose, fructose, dextrose.	**FND-S1- Bioc-10** Isomerism: Structural & Optical Isomerism in carbohydrates & their biochemical significance.	Interactive lecture	BCQs, SEQs, OSPE, Viva
69	Explain Structure of disaccharides and oligosaccharides	**FND-S1- Bioc-11** Glycosidic Linkage, Biologically important disaccharides and oligosaccharides	Interactive lecture	BCQs, SEQs, OSPE, Viva
70	Describe classification of polysaccharides and their functions.	**FND-S1-Bioc-12** Polysaccharides: Classification, Structure & Functions of Homopolysaccharides	Interactive lecture	BCQs, SEQs, OSPE, Viva
71	Detection of an unknown carbohydrate in a given fluid	**FND-S1-Bioc-13** Molisch's Test, Iodine Test, Benedict's Test	Interactive Practical	OSPE, Viva
72	To understand the all detection of carbohydrates by different tests	**FND-S1-Bioc-14** Selivanoff's Test, Barfoed's Test, Osazone Test	Interactive Practical	OSPE, Viva
73	Classify amino acids on the basis of their polarity, charge & nutritional significance.	**FND-S1- Bioc-15** Classification of Amino Acids on the basis of their structure, Properties, Nutrition and their role in human metabolism	Interactive lecture	BCQs, SEQs, OSPE, Viva
74	Describe physico-chemical classification of proteins. What is functional classification of proteins? How proteins are classified on the basis of their axial ratio?	**FND-S1- Bioc-16** Classification of Proteins on the basis of their structures, functions & chemical reactions.	Interactive lecture	BCQs, SEQs, OSPE, Viva

75	Describe the structural levels of proteins and their important biochemical features.	**FND-S1- Bioc-17** Structural Organization of Proteins	Interactive .lecture	BCQs, SEQs, OSPE, Viva
76	Tests for detection of unknown amino acid/protein in a given fluid	**FND-S1- Bioc-18** General Tests for Proteins & Amino acids	Interactive Practical	OSPE, Viva
77	To understand the all detection of proteins by color reaction tests	**FND-S1- Bioc-19** Color Reaction Tests of Proteins	Interactive Practical	OSPE, Viva
78	To understand the all detection of proteins by Separation tests	**FND-S1- Bioc-20** Separation Tests	Interactive Practical	OSPE, Viva
79	To understand the all detection of proteins by precipitation tests	**FND-S1- Bioc-21** Precipitation Tests	Interactive Practical	OSPE, Viva
80	Discuss the significance of Lipids for balanced diet and Health	**FND-S1- Bioc-22** Lipids: Classification & Biochemical significance.	Interactive lecture	BCQs, SEQs, OSPE, Viva
81	Solubility, Oily nature, Emulsification, Saponification Tests	**FND-S1- Bioc-23** Tests for Lipids	Interactive Practical	OSPE, Viva
PHARMACOLOGY				
82	Explain biotransformation & enlist phase I and phase II biotransformation reactions	**Fnd-S1-Phrm-6** Drug Biotransformation Phase I Reactions	Interactive lecture	BCQs, SEQs, OSPE, Viva
83	Explain biotransformation & enlist phase I and phase II biotransformation reactions	**Fnd-S1-Phrm-7** Drug Biotransformation Phase II reactions	Interactive lecture	BCQs, SEQs, OSPE, Viva
COMMUNITY MEDICINE				
84	To understand the concept of disease causation Ecological traid, Web causation To define the level of prevention Primordial, Primary Secondary ,Tertiary	**Fnd-S1-CM-5** Level of Prevention	Interactive lecture	BCQs, SEQs,

THEME 5: FUNDAMENTAL TISSUES/SYSTEMS OF THE HUMAN BODY

S. NO	OBJECTIVES	TOPICS	TEACHING STRATEGY	ASSESSMENT
ANATOMY				
85	Define the parts of the skin Define the appendages of the skin. Recognize the role of Component tissues of Skin and fascia in Support and Protection	**Fnd-S1-Ana-G-08** Introduction to Integumentary system (Skin and fascia)	Demonstration	SBQs, SEQs, OSPE
86	Explain the types and functions of blood vessels. (Arteries, veins, capillaries and Anastomosis)	**Fnd-S1-Ana-G-09** Blood vascular system	Interactive Lecture	SBQs, SEQs, OSPE
86	Integrate the function of Defense with the structure of lymph nodes and lymphatics	**Fnd-S1-Ana-G-10** Introduction to lymphatic system	Interactive Lecture	SBQs, SEQs, OSPE, Viva
87	Define the types of muscles Describe the internal structure of , muscle action, nerve supply and naming of skeletal muscles Define smooth and cardiac muscles.	**Fnd-S1-Ana-G-11** Definition and classification of muscles	Demonstration	SBQs, SEQs, OSPE, Viva
88	Describe the Nervous system and classification of NS Define the central and peripheral nervous system	**Fnd-S1-Ana-G-12** Introduction to Nervous System	Demonstration	SBQs, SEQs, OSPE
89	Describe the structure and the structure of the typical spinal nerve.	**Fnd-S1-Ana-G-13** Formation and structure of Typical Spinal Nerve	Interactive Lecture	SBQs, SEQs, OSPE
90	Define the autonomic nervous system. Describe the types and functions of the Autonomic Nervous System.	**Fnd-S1-Ana-G-14** General Concepts of Autonomic nervous system	Interactive Lecture	SBQs, SEQs, OSPE
91	Describe the process of Gametogenesis	**Fnd-S1-Ana-E-2** Gametogenesis	Interactive Lecture	SBQs, SEQs, OSPE
92	Discuss ovulation and phases and outcomes of fertilization	**Fnd-S1-Ana-E-3** Ovulation Fertilization	Interactive Lecture	SBQs, SEQs, OSPE

93	Enumerate the events of first week of development (cleavage and blastocyst formation and implantation)	**Fnd-S1-Ana-E-4** The First week of development	Interactive Lecture	SBQs, SEQs, OSPE
94	Enumerate the events of Second week of development (Formation of amniotic cavity, amnion, bilaminar embryonic disc, yolk sac, chorionic sac and primary chorionic villi)	**Fnd-S1-Ana-E-5** The second week of development	Demonstration	SBQs, SEQs, OSPE
95	Overview of the male & female genitalia. Describe the process of fertilization (conception).	**Fnd-S1-Cli-G&O-1** Fertilization (The conception)	Interactive Lecture	SBQs
PHYSIOLOGY				
96	Describe the Physiological Concepts and organization of nervous system. general physiological concepts and organization of Autonomic Nervous System	**FND-S1- Phy-19** Introduction Organization of the Nervous system	Demonstration	SBQs, SEQs, OSPE
97	Describe the basic Structure and function of neuron & neuroglia Describe the Excitable cells and their types(Synapse)	**FND-S1- Phy-20** Neuron and neuroglial cells	Interactive Lecture	SBQs, SEQs, OSPE
98	Definition, structure, functions and types of synapse Properties of synapse	**FND-S1- Phy-21** Synapses and neural integration & synaptic transmission	Interactive Lecture	SBQs, SEQs, OSPE
PHARMACOLOGY				
99	Describe drug excretion & enlist routes of drug excretion	**Fnd-S1-Phrm-8** Drug Excretion	Interactive Lecture	SBQs, SEQs, OSPE
COMMUNITY MEDICINE				
100	To discuss the Indicator vs health index	**FND-S1-CM-6** Health Indicators	Interactive Lecture	SBQs, SEQs, OSPE

	To define Uses of indicators To identify the Characteristics of good health indicator To explain the Common indicators metrics To describe the Types of indicators Index I. Human development index(HDI), II. uman poverty index(HPI)			

THEME 6: DEVELOPMENT, DIFFERENTIATION AND GROWTH

S. No	Objectives	Topics	Teaching strategy	Assessment
ANATOMY				
101	Define the process of fertilization. Describe the Ectopic pregnancy & its consequences.	**Fnd-S1-CL-O&G-2** Ectopic pregnancy	Interactive lecture	SBQs, SEQs,
102	Explain main events of third week of development Formation of primitive streak, Gastrulation and notochord	**Fnd-S1-Ana-E-6** Third week of development (Trilaminar germ disc)	Interactive Lecture	SBQs, SEQs, OSPE
103	Formation of neural tube and Formation of somites External appearance of embryo during the second month	**Fnd-S1-Ana-E-7** Third week to eighth week of development (Embryonic period)	Interactive Lecture	SBQs, SEQs, OSPE
104	Enlist the derivatives of Ectoderm and neural crest cells	**Fnd-S1-Ana-E-08** Derivatives of ectodermal germ layer and neural crest cells	Interactive Lecture	SBQs, SEQs, OSPE
105	Enlist the derivatives of mesodermal and endodermal germ layers	**Fnd-S1-Ana-E-09** Derivatives of mesodermal and endodermal germ layers	Interactive Lecture	SBQs, SEQs, OSPE
106	Describe the development of fetus & parturition Clinicals	**Fnd-S1-Ana-E-10** 3rd month to birth (Fetal Period)	Interactive Lecture	SBQs, SEQs, OSPE
107	Explain the interchange of substances between maternal and fetal blood by applying the knowledge of structure and functions of placenta and fetal Membranes & clinicals	**Fnd-S1-Ana-E-11** Placenta and fetal membranes	Interactive Lecture	SBQs, SEQs, OSPE

THEME 7: GENETICS AND DEVELOPMENTAL ANOMALIES

S. NO	OBJECTIVES	TOPICS	TEACHING STRATEGY	ASSESSMENT
ANATOMY				
108	Define teratogenesis and the basic principles of teratogenesis. Categorize the common teratogens	**Fnd-S1-Ana-E-12** Teratogenesis	Interactive lecture	BCQs, SEQs, OSPE, Viva
109	Explain the types of twin / multiple pregnancies and clinical significance	**Fnd-S1-Ana-E-13** Twin pregnancy	Interactive lecture	BCQs, SEQs, OSPE, Viva
110	Calculate the expected date of delivery (EDD) and describe various methods used to assess fetal wellbeing	**Fnd-S1-Gyn &Obs-3** The Fetal wellbeing & EDD	Interactive lecture	BCQs
BIOCHEMISTRY				
111	To know the different types of nucleotides and their basis in genetics.	**FND-S1- Bioc-24** Structure and types of nucleotides.	Interactive .lecture	BCQs, SEQs, OSPE, Viva
112	To know the different types of nucleotides and their basis in genetics	**FND-S1- Bioc-25** Structure of DNA & RNA	Interactive Lecture	SBQs, SEQs, OSPE
PHYSIOLOGY				
113	Describe Physiological basis of gene and functions of DNA and RNA	**FND-S1- Phy-22** DNA ,Gene, Genetic code RNA ,Types, codan , anti codan	Interactive lecture	BCQs, SEQs, OSPE

114	Describe control of gene functions	**FND-S1- Phy-23** Control of gene functions	Interactive lecture	BCQs, SEQs, OSPE
PHARMACOLOGY				
115	Explain the term 'pharmacodynamics & Explain the terms affinity, efficacy, intrinsic activity & potency	**Fnd-S1-Pharm-09 Introduction to Dynamics Drug Receptors** A. Relation between drug concentration & response & signaling Mechanism	Interactive lecture	BCQs, SEQs, OSPE
116	Describe second messengers & receptor regulation	**Fnd-S1-Pharm-10 Drug Receptors** B. Second messengers & receptor regulation	Interactive lecture	BCQs, SEQs, OSPE
117	Describe the general mechanisms by which drugs act	**Fnd-S1-Phrm-11** Factors Modifying drug action &Therapeutics Index	Interactive lecture	BCQs, SEQs, OSPE
118	Correlate the principles of general pharmacology for the appropriate therapy of disorders / diseases	**Fnd-S1-Phrm-12** Adverse drug reaction (ADR)	Interactive lecture	BCQs, SEQs, OSPE
119		**Fnd-S1-Phrm-13** Teratogenic drugs	Interactive .lecture	BCQs, SEQs, OSPE
PATHOLOGY				
120	Define Mutation and its type. Describe the effects of different types of mutations	**FND-S1- Path-12** Mutations	Interactive lecture	BCQs, SEQs, OSPE
121	Define Mendelian Disorder Explain the pattern of inheritance in Mendalian Disorders List the examples of autosomal, Recessive and sex linked disorders.	**FND-S1- Path-13** Mendelian Disorders	Interactive lecture	BCQs, SEQs, OSPE

122	Describe the normal Karyotype Discuss various numerical and structural abnormalities of chromosomes.	**FND-S1- Path-14** Chromosomal aberration.	Interactive .lecture	BCQs, SEQs, OSPE
123	Discuss various technique in diagnosis of genetic diseases.	**FND-S1- Path-15** Diagnosis of Genetic Diseases	Interactive lecture	BCQs, SEQs, OSPE
124	Describe causes and pathogenesis of congenital fetal abnormalities	**FND-S1- Path-16** Congenital fetal abnormalities	Interactive lecture	BCQs, SEQs, OSPE
RADIOLOGY				
125	Basic Principle of Radiation Protection and knowing the law in relation to the use of ionizing radiation.	**FND-S1- Radio-1** Basic Radiology	Interactive lecture	BCQs, OSPE

9.1 TAGGED SUBJECTS

Topic	Contents	Learning Objectives	Teaching Method	Module	Hours	Assessment
BEHAVIORAL SCIENCES						
Model of healthcare	-Bio-Psycho-Social model of health care	Describe Bio-Psycho-Social model of health care	Lecture/ Group Discussion	Foundation 1	1	MCQ SEQ
	-Health and behavioral sciences	Correlate health with Behavioral sciences. Describe Important of behavioral sciences in health.	Lecture/ Group Discussion	Foundation 1	1	MCQ SEQ
Affective domain	-Attitude	Describe Attitudes in health professionals Describe factors affecting it.	Lecture/ Group Discussion	Foundation 1	1	MCQ SEQ
PROFESSIONALISM						
Introduction to Professionalism	-Definition of a professionalism, behavior's, attitudes, emotions, and their attributes	Define Professionalism, and its attributes	Lectures/Group discussion	Foundation 1	2	MCQ, SEQ,

Dynamics of Professionalism	-Trust definition, its attributes, and components, and its' application	Dynamics of trust in health professional-patient relationship	Lecture Role Play Workplace	Foundation 1	1	MCQ
Professional identity formation (PIF)	-White coat ceremony, -Types, multiple identities, Components, Professional identity formation	Students' roles in terms of professional identity	White coat ceremony	Foundation 1	2	MCQ
Professional identity formation (PIF)	-Identifies his own strengths and weaknesses	Identifies his own strengths and weaknesses	Interactive Lecture /Group discussion/Role Play	Foundation 1	1	MCQ
Personal Development Plan (PDP)	-Personal development plan & reflective portfolios	Prepare personal development plan & reflective portfolios	Interactive Lecture	Foundation 1	2	Assignment
COMMUNICATION SKILLS						
Communicating with administration	-Share with administration on matters one feels sensitive about	Communicating with administration	Interactive Lecture	Foundation 1	3	MCQ, SEQ
	-Evaluating the qualityof teaching	Understanding of methods to Evaluate the effectiveness and quality of teaching	Interactive Lecture /Group Discussion	Foundation 1	1	MCQ, SEQ

	-Evaluating the qualityof teaching and qualityof teaching	Understanding of methods to Evaluate the effectiveness and quality of teaching	Interactive Lecture /Group Discussion	Foundation 1	1	MCQ, SEQ
LEADERSHIP AND MANAGEMENT						
Introduction	-Definition of a leader & manager -Differences between leadership and management	Differentiate between leadership and management	Interactive Lecture	Foundation 1	1	MCQ, SEQ
Self-management skills	-What is self-management? -Its importance. -Self-management Mechanisms	Demonstrate self-management skills	Interactive Lecture	Foundation 1	1	MCQ, SEQ
ETHICS						
Ethical principles	-Ethical principles. (Autonomy, Beneficence, Non maleficence, Justice)	Explain the pillars of medical ethics and their application in different situations	Interactive Lecture/Group Discussion	Foundation 1	1	MCQ, SEQ
RESEARCH						
Introduction	-Background, concepts, uses. -Definition of medical research Need of medical research	Describe the Background and purpose of research.	Interactive Lecture/Group Discussion	Foundation 1	1	MCQ, SEQ

Types of Research	-Types of Research & Epidemiological methods (descriptive, analytic and experimental).	Explain different types of research.	Lecture/ Group Discussion	Foundation 1	1	MCQ, SEQ
Formulation of Research Question	-Importance of Research Question in starting research -Scope of research question -Study design implications for research question Describe how to develop a research question	formulate research question	Lecture/ Group Discussion	Foundation 1	1	MCQ, SEQ
Research objectives Hypothesis	-Developing objectives and hypothesis	Write research objectives for a research study. Develop hypothesis for a study. Select a study design for a study.	Lecture/ Group Discussion	Foundation 1	2	MCQ, SEQ

9.2 CLINICAL SCIENCES SUBJECTS

FOUNDATION MODULE				
S. No	**Clinical Sciences Subjects**	**Learning Objectives**	**Hours**	**Learning Strategy**
1.	**ISLAMIC STUDY** Islamic perspective of the practice of Medical profession I	Concept of treatment in Islam Medical Ethics Vs Islamic medical ethics	1	Lecture
		Doctor Vs Muslim doctor Roles of a Muslim doctor	1	Lecture
		Historic perspective of health care and the contribution of Muslim physicians Leadership role of doctors in the society	1	Lecture
		The view of the Muslim doctor regarding human life and other forms of life	1	Lecture
2.	**PAKISTAN STUDY**	Structure of health service delivery system in Pakistan	1	Lecture
		Health houses (LHWs)	1	Lecture
		Basic health unit – its composition and function	1	Lecture
		Rural health centre – composition and function	1	Lecture
3.	**ANAESTHESIA** Anesthesia Equipments	Introduction to Anaesthesia	1	Lecture
		Identify the equipments of Genera anesthesia	1	Lecture
		Identify the components of Spinal Anesthesia	1	Lecture
4	**CRITICAL CARE** General Concepts	Introduction to Critical Care	1	Lecture
		Organisation and management of care in the ICU	1	Lecture
		Triage, admission / discharge criteria	1	Lecture
		ICU scoring systems	1	Lecture
5.	**ORTHOPAEDICS &**	Introduction to orthopaedic	1	Lecture

	TRAUMA **General Concepts**	Fractures and their types	1	Lecture
		Description and classification of soft tissue	1	Lecture
		neurological and bony extremity injuries	1	Lecture
		AO Classification	1	Lecture
		Growth Plate Injuries	1	Lecture
6.	**UROLOGY**	Introduction to Urology	1	Lecture
		Enumerate the various parts of Urinary tract	1	Lecture
7.	**FAMILY MEDICINE** **Core concept**	Introduction to Family Medicine	1	Lecture
		Practice of Family Medicine	1	Lecture

10. TEACHING HOURS ALLOCATION

S. No	Subject	Teaching Hours	Practical Hours
1	Anatomy	44	6
2	Biochemistry	26	18
3	Physiology	24	8
4	Pathology	17	2
5	Pharmacology	14	-
6	Community Medicine	7	-
7	Gynaecology	3	-
8	Medical Education	2	-
9	Orthopaedics	1	-
10	Forensic medicine	1	-
11	CBL 6 (Physiology)*	12	-
12	Radiology	1	-
13	Islamic Study	4	-
14	Pakistan Study	4	-
15	Anesthesia	3	-
16	Critical Care	3	-
17	Orthopaedics and Trauma	6	-
18	Urology	2	-
19	Family Medicine	2	-
	Total hours	**176**	**34**

*Minimum 2 hours are allotted for each CBL session per Module

S. No	Tagged Subject	Teaching Hours
1	Behavioral Sciences	3
2	Professionalism	8
3	Communication Skills	5
4	Leadership and Management	2
5	Ethics	1
6	Research	5
	Total hours	**24**

11. EXAMINATION AND METHODS OF ASSESSMENT

11.1 EXAMINATION RULES AND REGULATIONS

- Student must report to examination hall/venue, in time for smooth conduction of the exams.
- No student will be allowed to enter the examination hall after 10 minutes of scheduled examination time.
- No students will be allowed to sit in exam without College ID Card, and Lab Coat
- Students must sit according to their roll numbers mentioned on the seats.
- Student must bring their own stationary items (Pen, Pencil, Eraser, and Sharpener) – Sharing is prohibited
- Any disturbance or Indiscipline in the exam hall/venue is not acceptable.
- Students must not possess any written material or communicate with their fellow students
- Cell phones are strictly not allowed in examination hall. If any student is found with cell phone in any mode (silent, switched off or on) he/she will be **not be allowed to continue their exam.**
- **No student is allowed to leave the examination hall before half the time is over, paper is handed over to the examiner and properly marking the attendance.**

11.2 ASSESSMENT

11.2.1 Internal: Total 10% (20 marks)

- Students will be assessed comprehensively through multiple methods to determine achievement of module objectives through two methods: Module examination and Graded assessment by Individual department
    - **Module Examination**: It will be scheduled on completion of each module. The method of examination comprises theory exam (which includes SEQs and MCQs) and OSPE / OSCE exam (which includes static and interactive stations).
    - **Graded Assessment by individual department**: It includes weekly MCQs tests on Survive online LMS program, viva, practical, weekly theme based assignments, post-test discussion sessions, peer assessments, presentations, small group activities such as CBL, ward activities, examinations and log books, all of which have specific marks allocation.
- Marks of both modular examination and graded assessment will constitute 10% weightage.
- 10% marks of internal evaluation will be added to the ISU annual professional exam.
- The marks distribution is based on Formative Assessment done individually by all the concerned departments. It may include:

- NOTE: **at least 75% attendance is mandatory** to appear in the annual university examination.
- Exam branch is responsible to maintain the attendance record for Main Campus in coordination with all the concerned departments.

11.2.2 University Annual Exam: Total 90%

- Annual Exam has 90% marks in total
- It includes theory and OSPE / OSCE.
- Each written paper consists of 100 MCQs and 10 SEQs and internal assessment marks will be added tothe final marks.

11.3 METHODS OF ASSESSMENT

11.3.1 Multiple Choice Questions

- Single best type MCQs having five options with one correct answer and four distractors are part of assessment.
- Total 100 MCQs are included which are formulated through the table of specification from learning objectives of Module interactive lectures.
- Time duration for MCQs will be 1 and half hour.
- MCQs are used to assess objectives covered in each module.
- Students after reading the statement / scenarios select one appropriate response from the given options.
- Correct answer carries one mark, and incorrect will be marked zero. Rule of negative marking is not applicable.
- Students attempt the MCQs exam on Computer screen on Moodle / LMS program in IT Lab.

11.3.2 Short Essay Questions (SEQs):

- Short-answer questions are structured way of asking open-ended questions that require students to create their answers based on their knowledge.
- Commonly used in examinations to assess the depth of knowledge and understanding.
- Includes 10 questions each carrying 10 marks.
- Time Duration for Essay type paper is 2 hours.
- Questions are selected from the specific learning objectives of the specific ongoing module.

11.3.3 OSPE / OSCE

- Each student will be assessed on the same content and have same time to complete the task.
- Time allocated for each station is five minutes as per Examination rules of Ibn e Sina University, Mirpurkhas
- All students are rotated through the same stations.

- OSPE / OSCE Comprises of 15 - 20 stations.
- Each station may assess a variety of diagrammatic identifications and clinical tasks. These tasks may include history taking, physical examination, skills and application of skills and knowledge
- Stations are Interactive, observed, unobserved (static) and rest stations.
  - Interactive Stations:
    - In this station, examiner ask questions related to the task within the allocated time.
  - Observed Stations:
    - In observed stations, internal or external examiner don't interact with candidate and just observe the performance of the skills or procedures.
  - Unobserved (static) Stations:
    - It will be static stations in which there may be models, specimens, multiple identification points, X-ray, Labs reports, flowcharts, pictures, or clinical scenarios (to assess cognitive domain) with related questions for students will be used to answer on the provided answer copy.
  - Rest station
    - It is a station where there is no task given and in this time student can organize his/her thoughts

11.3.4 ASSIGNMENTS

- An online assignment on the Ibn-e-Sina University moodle uploaded according to the topic of the week.
- All assignments should be checked by the teacher who has taken the lecture on the topic during the same week.
- The assignment should cover enough material to include the requirement of the curriculum and syllabus, so the student should be able to answer the annual examination questions by revising these notes (assignments) only.
- The assignments are checked and graded also with comment to guide, motivate and encourage the students to work whole heartedly. Frequent guidance and motivation will go a long way in improving the students' performance.
- Assignments of the whole Professional year MBBS are counted as in Internal Assessment.

11.3.5 WEEKLY TESTS

- The weekly tests are conducted for all classes. The tests are conducted online and are on topics displayed on the portal (Moodle). It consists of 35 MCQs. 5 MCQs will be from the previous weeks (slightly altered to change the answer or the right option). Everyone taking lectures, submit two MCQs to the Chairperson of the department who will check and pass them to the class moderator. MCQs can also be sent directly to the class moderator, who submits the MCQs to IT department for final placement on the moodle.

- The MCQs are not merely simple recall, but test higher level of cognition. As far as possible, they test an important concept related to one of the topics of the week.

- It is different from the summative assessment (Annual or Semester Examinations) in that the goal of summative assessment is to evaluate student's learning at the end of an instructional unit by comparing it against some standard or benchmark, to decide if the student can be promoted or not, whereas the goal of these weekly tests is to check the understanding of the students on the important concepts related to the topics that have been displayed on the portal for the week, the teachers have taught them and the students have made assignments on them.
- Results of weekly tests of the whole Professional year MBBS are counted as in Internal Assessment.

11.3.6 POST-TEST DISCUSSION (PTD)

- Every student has to prepare a special assignment where he/she selects all the questions he/she got wrong. Then he/she makes 3 boxes. In box A he/she writes the questions he/she got wrong in his/her own words, highlighting and underlining the keywords. In box B the student explains why he/she has chosen this answer. In box C the student mentions what he/she has learnt after reading the explanation and how the concept has got clear now.
- The moderator will check, assess and grade PTD
- Next day, the class moderator of the class conducts a class where he/she discusses the mistakes committed and the post-test assignments submitted in detail with the class
- PTD assignments of the whole Professional year MBBS are counted as in Internal Assessment.

12. GRADING POLICY

Marks obtained in Percentage range	Numerical Grade	Alphabetical Grade
80-100	4.0	**A+**
75-79	4.0	**A**
70-74	3.7	**A-**
67-69	3.3	**B+**
63-66	3.0	**B**
60-62	2.7	**B-**
56-59	2.3	**C+**
50-55	2.0	**C**
<50 Non gradable	0	**N**

- A student obtaining GPA less than 2.0 (50%) is declared fail.

13. ASSESMENT BLUEPRINT

FOUNDATION-I MODULE

Assessment is based on Table of Specification (TOS)

	ASSESMENT	TOOLS	MARKS
MODULE EXAM	THEORY	MCQ's	100
		SEQ's	100
	OSPE	OSPE Static	50
		OSPE Interactive	50
		Total	300

14. RECOMMENDED BOOKS

ANATOMY

- **CLINICALLY ORIENTED ANATOMY**

KEITH.L. MOORE, ARTHUR F. DALLEY, ANNE M.R. AGUR
7TH OR LATEST EDITION

- **GRAY'S ANATOMY FOR STUDENTS**

DRAKE & VOGL & MITCHELL
3RD OR LATEST EDITION

- **CLINICAL ANATOMY BY REGIONS (REFERENCE BOOK)**

RICHARD S. SNELL
9TH EDITION

- **LAST'S ANATOMY: REGIONAL & APPLIED (REFERENCE BOOK)**

CHUMMY S. SINNATAMBY
12TH OR LATEST EDITION

- **ATLAS OF HUMAN ANATOMY**

FRANK H. NETTER
6TH EDITION

EMBRYOLOGY

- **LANGMAN'S MEDICAL EMBRYOLOGY**

T.W. SADLER
13TH EDITION

- **THE DEVELOPING HUMAN CLINICALLY ORIENTED EMBRYOLOGY (REFERENCE BOOK)**

MOORE & PERSAUD & TORCHIA
10TH EDITION

HISTOLOGY

- **MEDICAL HISTOLOGY**

LAIQ HUSSAIN SIDDIQUI

5TH OR LATEST EDITION

- **WHEATERS FUNCTIONAL HISTOLOGY**

BARBARA YOUNG
5TH EDITION

- **BASIC HISTOLOGY (TEXT AND ATLAS) (REFERENCE BOOK)**

LUIZ JUNQUEIRA, JOSE CARNEIRO
11TH OR LATEST EDITION

PHYSIOLOGY

- **GUYTON AND HALL TEXTBOOK OF MEDICAL PHYSIOLOGY**

GUYTON AND HALL
13TH EDITION

BIOCHEMISTRY

- **LIPPINCOTT'S ILLUSTRATED REVIEWS SERIES**

DENISE R. FERRIER
6TH EDITION

- **HARPERS ILLUSTRATED BIOCHEMISTRY (REFERENCE BOOK)**

VICTOR RODWELL, DAVID BENDER, KATHLEEN M. BOTHAM, PETER J. KENNELLY, P. ANTHONY WEIL
28TH EDITION

COMMUNITY MEDCINE

- **PARK'S TEXTBOOK OF PREVENTIVE AND SOCIAL MEDICINE**

K. PARK
26TH EDITION

PATHOLOGY

- **ROBBINS & COTRAN PATHOLOGIC BASIS OF DISEASE**

VINAY KUMAR, ABUL K. ABBAS, JON C. ASTER
10TH EDITION

PHARMACOLOGY

- **LIPPINCOTT ILLUSTRATED REVIEWS: PHARMACOLOGY**
  KAREN WHALEN, CARINDA FEILD, RAJAN RADHAKRISHNAN
  7TH EDITION

IBN-E-SINA UNIVERSITY MIRPURKHAS
FACULTY OF BASIC MEDICAL SCIENCES

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? Yes ☐ No ☐

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.

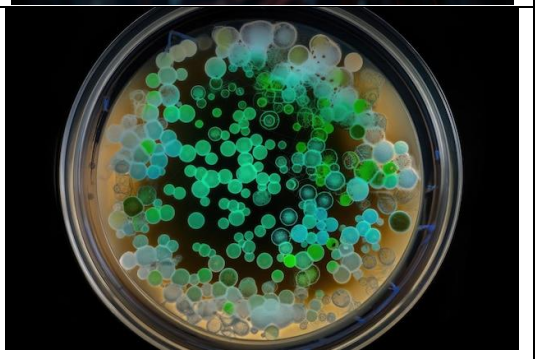
Optional - Your name and contact address:

Thank you!!

IBN-E-SINA UNIVERSITY MIRPURKHAS

STUDENT'S STUDY GUIDE
BLOOD-I MODULE
FIRST PROFESSIONAL MBBS

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1. DISCLAIMER

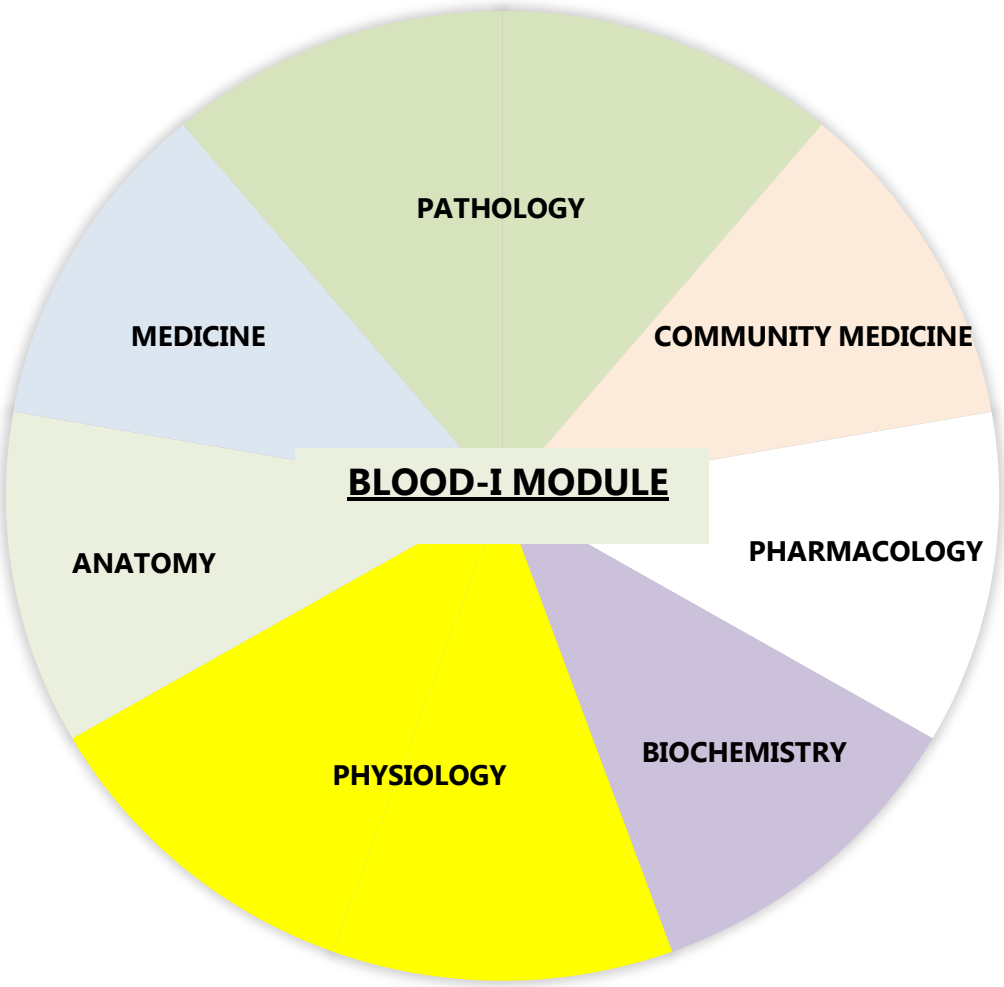
- Developing a study guide is a dynamic process and undergoes iteration according to the needs and priorities.
- This study guide is subjected to the change and modification over the whole academic year.
- However, students are advised to use it as a guide for respective modules.
- The time tables are 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

2. CURRICULUM FRAMEWORK

An educational strategy known as integrated curriculum places a strong emphasis on interdisciplinary learning, in which students gain knowledge by integrating it from several topic areas. By integrating many subjects and disciplines into a cohesive curriculum, this method seeks to give students a more relevant and interesting learning experience. Integrated curriculum means that subjects are presented as a meaningful whole for better understanding of basic sciences in relation to clinical experience and application.

Integrated curriculum comprises of system-based modules such as Foundation-I, Blood-I, CVS-I, Musculoskeletal-I and Respiratory-I Modules which links basic science knowledge to clinical problems.

INTEGRATING DISCIPLINES OF BLOOD-I MODULE



3. MODULE OVERVIEW

BLOOD MODULE-I MODULE DETAILS

Course	MBBS
Year	First professional
Duration	5 weeks
Learning Outcomes	The competent Medical Practitioner
Competencies covered	To develop medical professionals who are well - versed, adept, and have the right mindset.
Module Assessment	End module formative assessment
Teaching Methods	Interactive Lectures, Demonstrations, Case Based Learning, Practical Lab, Small Group Discussions, Self-Study Sessions, E-Learning, Clinical rotations
Assessment Methods	MCQs, SEQs, OSPE, VIVA

BLOOD MODULE-I COMMITTEE

Sr. No	Names	Department	Designation
MODULE COORDINATOR			
1.	Dr. Saqib Baloch	Anatomy	Assistant Professor
2.	Dr. Shahab Hanif	Anatomy	Assistant Professor
COMMITTEE MEMBERS			
1.	Prof: Dr. Syed Razi Muhammad	Surgery	Chancellor ISU
2.	Prof: Dr. Shams Ul Arfeen Khan	Biochemistry	Vice Chancellor ISU
3.	Prof: Dr. Aijaz Ahmed Memon	Surgery	Pro Vice Chancellor ISU

4. WHAT IS STUDY GUIDE

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

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.

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.

Achievement of objectives.

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

5. LEARNING METHODOLOGIES

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

- Interactive Lectures
- Small Group Discussion
- Case- Based Learning (CBL)
- Skills session
- Practicals
- Self-Directed Study

- **INTERACTIVE LECTURES:**

  Large group discussions are not the same as traditional lecture formats. When a teacher or instructor uses images, radiographs, patient interaction recordings, etc. to discuss a topic or typical clinical scenario, the lecture becomes interactive. When they are given tiny activities to do that allow them to apply the knowledge they have learned throughout the session and are asked questions, students actively participate in the learning process.

- **SMALL GROUP DISCUSSIONS (SGDS):**

  With the use of SGD, students can take an active role in their education, clarify ideas, develop psychomotor skills, and develop a positive attitude. Discussion themes, patient interviews, and clinical cases are used to design sessions in an organized manner. Pupils are inspired to express their ideas, apply the fundamental knowledge they have learned from lectures and independent study, and are encouraged to share their notions. In small groups, role play is a useful technique for acquainting pupils with real-world scenarios. Probing questions, rephrasing, and summarizing are used by the teacher to assist make the concepts obvious.

- **CASE-BASED LEARNING (CBL):**

  Learning is centered around a sequence of questions based on a clinical scenario in this small group discussion format. Students create new information by discussing and responding to the questions using pertinent prior knowledge from the clinical and fundamental health sciences modules. The relevant department will give the CBL.

- **SKILL SESSIONS:**

  Skills relevant to respective module are observed and practiced where applicable in skills laboratory.

- **PRACTICALS:**

  Basic science practical related to Anatomy, Physiology and Biochemistry have been schedule for student learning.

- **SELF STUDY:**

  Self-directed learning is a process in which students take charge, either on their own or with assistance from others. Students chart their learning objectives and determine their areas of need for learning. They select and employ their own learning methodologies, and they independently assess the learning objectives.

6. INTRODUCTION

Welcome to the module on hematology. The goal of this module is to provide a fundamental understanding of hemostasis and hematopoiesis at the molecular level. The goal of this module is to teach and incorporate fundamental blood cell knowledge that has practical applications. With more hands-on activities, this module aims to make learning engaging and fruitful for you. It will incorporate clinical sciences with an emphasis on the fundamental pathological, physiological, and pharmacological aspects of infections and chemotherapeutic drugs.

First-year medical students will have the opportunity to learn about the presentations and management concepts of common immunological, hematological, inflammatory, and neoplastic illnesses through this module. To help you understand the material and learn more effectively, you will be expected to consider the situations and take part in case-based learning sessions. It will also assist you in concentrating on the goals you have set for yourself in relation to the lectures, exercises, and tutorials scheduled for this module.

6.1 RATIONALE

The goal of the Blood module is to provide a fundamental understanding of hemostasis and hematopoiesis at the molecular level. Along with discussing the fundamental pharmacological elements of blood-related disorders and their prevalence in society, it will also detail the underlying pathological mechanisms that lead to the development of anemias.

6.2 IBN E SINA UNIVERSITY (ISU) VISION:

To become a world-leading organization in rural health and social care research, training, recruitment and best evidence-based practice.

6.3 IBN E SINA UNIVERSITY (ISU) MISSION:

Our Mission is to inspire hope, and contribute to health and well-being by providing the best care to every patient through integrated clinical practice, education and research. To provide a focal point for the development and collation of high-quality research pertinent to rural health and wellbeing. To improve the training, recruitment and retention of a professional workforce within rural communities. To be recognized as an exemplar in rural health and wellbeing on the international stage. To establish a network of individuals and groups that support research, innovation and development in rural health and social care.

7. LEARNING OBJECTIVES

7.1 General learning Objectives:

By the end of this module, the students should be able to:

1. Describe the composition of blood in relation to its biochemistry and Physiology
2. Define anemia and its pathophysiology.
3. Classify different types of anemias on the basis of its pathophysiology
4. Recognize ABO/RH blood grouping system
5. Practice history taking of a patient presented with blood disorders
6. Explain hemostatsis and roll of thrombolysis
7. Describe pathophysiology of bleeding disorders & identify its different types.
8. Identify role of pharmacology in anemia and bleeding disorders
9. Define and explain research methodology.
10. Identify and describe immunology on the basis of its pathophysiology
11. Enlist pharmaceutical agents used in different immunological disorders

7.2 Knowledge / Cognitive Domain

It involves knowledge and the development of intellectual skills. By the end of this module, the students should be able to:

1. Explain the physical attributes and makeup of whole blood.
2. To understand how blood functions.
3. To research the origins of red blood cells (RBC, WBC, and platelets) as well as their shape
4. Researching different blood indices, their normal ranges, and abnormalities.
5. Explain the formation, structure, and breakdown of hemoglobin.
6. Explain how normal coagulation and hemostasis are regulated.
7. Describe the etiology of different bleeding diseases.
8. Describe the foundational ideas and practical implications of the ABO/RH blood grouping system.
9. Describe the fundamental traits of the immune system and the conditions that affect it.
10. Talk about the biochemical features, structural makeup, and roles of the lymphoid system.
11. Describe how pharmacology—the study of drugs—relates to bleeding problems and anemia.
12. A healthy diet's role in preventing community blood disorders

7.3 Skills / Psychomotor Domain:

Includes physical movement, co-ordination and the use of motor skill areas. For this Module, these include:

1. Completing actual tasks in an orderly and secure manner as directed
2. Accurately make and document observations.
3. Calculate the hemocrit, or percentage of produced blood constituents.
4. Recognize RBCs, be able to count them in a counting chamber, and be aware of their typical values. Moreover, group anemia according to its morphology.
5. Use the device to measure hemoglobin and be aware of normal and abnormal values.
6. Recognize the various types of WBCs and their morphology. You should be able to count them in a counting chamber and be aware of their typical values significance of each WBC for diagnosis.
7. Recognize platelets and be aware of normal ranges. The significance of this diagnostic tool for bleeding problems
8. Check bleeding and clotting times, and be aware of typical ranges and their significance for bleeding problem diagnosis.
9. Type blood groups and determine the Rh factor.
10. Conduct an ESR test to determine its normal range and predictive significance.

7.4 Attitude / Affective Domain:

It Involves our feelings, emotions and attitudes. By the end of this module, the students should be able to:

1. Comply with standard laboratory procedures
2. Engage in professional classroom and practical work.
3. Work as a team to effectively communicate with instructors, staff, and pears.
4. Act with professionalism and moral principles when interacting with teachers, personnel, cadavers, and patients.
5. Work well as a team to communicate with instructors and pears.
6. Show that you have the capacity to evaluate your performance.

7.5 Outcomes of Blood-I Module

1. Knowledgeable
2. Skillful
3. Community Heath Promoter
4. Problem-solver
5. Professional
6. Researcher
7. Leader and Role Model

8. THEMES FOR BLOOD-I MODULE

SNO	Theme	Duration
1	**Red cell disorders (Anemia, Polycythemia)**	1 week
2	**Infections & Inflammation**	1 week
3	**Bleeding & thromboembolic disorders**	1 week
4	**ABO & Rh-Incompatibility**	1 week
5	**Immunological disorders**	1 week

9. SPECIFIC LEARNING OBJECTIVES THEME WISE

THEME 1: RED CELL DISORDERS (ANEMIA, POLYCYTHEMIA)

S. NO	LEANING OBJECTIVES	TOPIC	TEACHING STRATEGY	ASSESS MENT
		ANATOMY		
1	Illustrate the organization of hematopoietic tissue &List the sites and source of hematopoiesis before and after the birth.	**Hem-S1-Ana-E1** Development of blood	Interactive Lecture	BCQs, SEQs, OSPE, Viva
2	Discuss & classify the structure of RBC, WBC & platelets. Methods used to study blood and bone marrow cells.	**Hem-S1-Histo-P1** Morphology of blood cells	Interactive Practical	BCQs, SEQs, OSPE, Viva
		PHYSIOLOGY		
3	To, discuss the cellular components of blood, To define hematocrit, normal values &factors affecting hematocrit	**Hem -S1-PHYS-1** Composition of blood & its cellular components	Demonstration	BCQs, SEQs, OSPE, Viva
4	Describe the structure of RBC and its membrane. Discuss various functions of RBC	**Hem -S1-PHYS-2** Structure and functions ofRBC and its membranes	Demonstration	BCQs, SEQs, OSPE, Viva
5	To discuss the various stages of RBC'S formation. Discuss various sites of erythropoiesis	**Hem -S1-PHYS-3** Erythropoiesis (stages of RBC Formation)	Demonstration	BCQs, SEQs, OSPE, Viva
6	Enlist the factors necessary for erythropoiesis. Discuss the significance of Reticulocyte count	**Hem -S1-PHYS-4** Important factors of Erythropoiesis	Demonstration	BCQs, SEQs, OSPE, Viva

7	Enlist types of hemoglobin. Discuss normal and abnormal structureof hemoglobin.	**Hem -S1-PHYS-5** Hemoglobin types and structure	Demonstration	BCQs, SEQs, OSPE, Viva
8	Describe various functions of hemoglobin. Discuss the role of haemoglobin in carrying O2 & CO2.	**Hem -S1-PHYS-6** Functions of Hemoglobin	Interactive Lecture	BCQs, SEQs, OSPE, Viva
9	Determine hemoglobin concentration (Sahli's method)	**Hem -S1-PHYS-P1** Hemoglobin concentration (Sahli's method)	Interactive Practical	BCQs, SEQs, OSPE, Viva
10	Estimate erythrocyte sedimentation rate (ESR by wester green method)	**Hem -S1-PHYS-P2** Estimation of erythrocyte sedimentation rate (ESR by wester green method)	Interactive Practical	BCQs, SEQs, OSPE, Viva

BIOCHEMISTRY				
11	Functions, Biochemical Properties, Absorption, Storage & its regulation	**HEM-S1-Bio-1** Iron Metabolism	Interactive Lecture	BCQs, SEQs, OSPE, Viva
12	General introduction, general functionsand classification of the vitamins	**HEM-S1-Bio-2** Classification of Vitamins & General Functions	InteractiveLecture	BCQs, SEQs, OSPE, Viva
13	sources of vitamins, RDA, absorption, functions and clinical aspects of Vitamin C, K, B6, Folic Acid, Cobalamin	**HEM-S1-Bio-3** Role of Vitamins in Erythropoiesis (Vitamin C, K, B6, Folic Acid, Cobalamin)	Interactive Lecture	BCQs, SEQs, OSPE, Viva
14	Structural details of molecule specially its quaternary structure. The T and R forms of Hemoglobin. The oxygenation of hemoglobin molecule. Comparison of hemoglobin and myoglobin molecule with respect to structure and function.	**HEM-S1-Bio-4** Hemoglobin structure	Interactive Lecture	BCQs, SEQs, OSPE, Viva
15	Hemoglobinopathies: Normal globin chain configuration Classification of thalassemia Possible alpha thalassemia syndromes Mutations responsible for beta thalassemia Lab test responsible for diagnosing hemoglobinopathies and thalassemia	**HEM-S1-Bio-5** Hemoglobinopathies	Interactive Lecture	BCQs, SEQs, OSPE, Viva
16	describe the synthesis and structure ofheme. Explain the importance of the heme containing substances.	**HEM-S1-Bio-6** Heme synthesis	Interactive Lecture	BCQs, SEQs, OSPE, Viva
17	Defects of Heme Synthesis Major forms of Porphyria's. Variants of Hemoglobin	**HEM-S1-Bio-7** Porphyria's	Interactive Lecture	BCQs, SEQs, OSPE, Viva
18	Normal turnover of erythrocytes. Sites of erythrocyte and hemoglobin degradation.	**HEM-S1-Bio-8** Normal turnover of erythrocytes	Interactive Lecture	BCQs, SEQs, OSPE, Viva
19	Relate the levels of bilirubin with the discoloration of tissues. Excretion of bile pigments.	**HEM-S1-Bio-09** Bilirubin	Interactive Lecture	BCQs, SEQs, OSPE, Viva

20	Introduction to Electrophoresis	**HEM-S1-Bio-P1** Electrophoresis & its Biochemical significance	Interactive practical	BCQs, SEQs, OSPE, Viva

21	Types , clinical features and laboratorydiagnosis of anemia.	**HEM-S1-Bio-P2** Laboratory diagnosis of anemia	Interactive practical	BCQs, SEQs,
PATHOLOGY				
22	To describe classification of anemia & to differentiate the different types of anemias on the basis of Morphology &Pathophysiology.	**Hem-S1-Path-1** Introduction of Anemia	Interactive Lecture	BCQs, SEQs, OSPE, Viva
23	to know the different types of nutritionalAnemias, To Enlist the causes of iron deficiency & Megaloblastic anemias, clinical features and laboratory diagnosis of Nutritional Anemias	**Hem-S1-Path-2** Nutritional Anemias	Interactive Lecture	BCQs, SEQs, OSPE, Viva
24	To Explain the pathophysiology, clinical features and laboratory diagnosis of Hereditary spherocytosis, G6PDdeficiency	**Hem-S1-Path-3** Membrane disorder & Red cell Enzyme disorder (Hemolytic Anemia)	Interactive Lecture	BCQs, SEQs, OSPE, Viva
25	To discuss Thalassemia Syndromes and sickle cell disease. To understand different types of mutations. To explain pathogenesis and laboratory diagnosis.	**Hem-S1-Path-4** Haemoglobinopathies	Interactive Lecture	BCQs, SEQs, OSPE, Viva
PHARMACOLOGY				
26	Role of oral & injectable iron in iron deficiency anemia Role of Vit. B12 & Folic acid in Macrocytic anemia	**Haem-S1-Pharm-1** Drug therapy in nutritional anemia	Interactive Lecture	BCQs, SEQs, OSPE, Viva
COMMUNITY MEDICINE				
27	To describe the main features of the Expanded Program on Immunization To discuss the EPI vaccination coveragestatus in Pakistan. To understand mechanism of cold chainand maintenance of vaccines	**Hem-S1-CM-1** Expanded Program of immunization	Interactive Lecture	BCQs, SEQs, OSPE, Viva
	Field visit:	To the EPI center, LUH, Jamshoro		
MEDICINE				
28	**Clinical Lecture**	Anemia	Interactive Lecture	BCQs, SEQs, OSPE, Viva

THEME 2: INFECTIONS & INFLAMMATION

S. NO	LEANING OBJECTIVES	TOPIC	TEACHING STRATEGY	ASSESS MENT
		ANATOMY		
29	Discuss the embryological source of lymphoid organs	**Hem -S1- Ana-E2** Development of lymphoid organs	Interactive Lecture	BCQs, SEQs, OSPE, Viva
30	Discuss the components, location & structure of lymphoid issue. Describe parts, surfaces and relations ofLymphoid organs	**Hem -S1-Ana-G1** Gross features of lymphoid organs	Interactive Lecture	BCQs, SEQs, OSPE, Viva
31	Discuss the histological classification & microscopic features of lymphoid organs.	**Hem -S1-Ana-H1** Microscopic anatomy of lymphoid organs	Interactive Lecture	BCQs, SEQs, OSPE, Viva
32	Discuss the histological classification & microscopic features of WBCs	**Hem -S1-Ana-H2** Microscopic features of WBCs	Interactive Lecture	BCQs, SEQs, OSPE, Viva
33	Define histological features of spleen & lymph node.	**Hem-S1-Histo-P2** Spleen & Lymph node	Interactive Practical	BCQs, SEQs,
34	Define histological features of Thymus gland & Tonsil.	**Hem-S1-Histo-P3** Thymus &Tonsil	Interactive Practical	BCQs, SEQs,
		PHYSIOLOGY		
35	Describe the process of leukocyte genesis Enlist various types of granulocytes and agranulocytes, their functions & values	**Hem -S1-PHYS-7** Types and functions of WBC Neutrophils and monocyte	Interactive Lecture	BCQs, SEQs, OSPE, Viva
36	Describe the Physiological role of neutrophils and macrophages in inflammation	**Hem -S1-PHYS-8** Role of Neutrophils and macrophages in inflamation	Interactive Lecture	BCQs, SEQs, OSPE, Viva
37	Discuss functions of Eosinophils and basophils Enlist their normal count.	**Hem -S1-PHYS-9** Eosinophils and Basophils	Interactive Lecture	BCQs, SEQs, OSPE, Viva
38	Explain the significance of Reticuloendothelial system,	**Hem -S1-PHYS-10** Monocyte-macrophage system (Reticuloendothelial system)	Interactive Lecture	BCQs, SEQs, OSPE, Viva

39	Discuss the process of developments of lymphocytes Enlist the functions of T and B lymphocytes.	**Hem -S1-PHYS-11** Development and Functions of T and B lymphocytes	Interactive Lecture	BCQs, SEQs, OSPE, Viva

40	Prepare blood film & Identify and quantify different types of white blood cells on blood film	**Hem -S1-PHYS-P3** Preparation of blood film & Identification and quantification of white blood cells on blood film	Interactive Practical	BCQs, SEQs, OSPE, Viva
PATHOLOGY				
41	Define acute inflammation. Describe the changes, systemic effects occurring in acute inflammation. Describe the cellular events of chemotaxis.	**Hem-S1-Path-5** Overview of Acute Inflammation	Interactive Lecture	BCQs, SEQs, OSPE, Viva
42	Describe the chronic inflammation. Describe the chronic inflammatory cells and mediators. Discuss the granuloma formation	**Hem-S1-Path-6** Overview of Chronic inflammation	Interactive Lecture	BCQs, SEQs, OSPE, Viva
43	Describe the causes of Neutrophilia & Neutropenia Eosinophilia, Lymphocytosis, Monocytosis	**Hem-S1-Path-7** Non. Neoplastic WBC Disorders	Interactive Lecture	BCQs, SEQs, OSPE, Viva
COMMUNITY MEDICINE				
44	To understand injection safety. To describe hazards) of unsafe injections and its prevention. To discuss the blood born disease hepatitis B, C and HIV due to unsafe injections To understand the role of health education in prevention of blood born disease	**Hem-S1-CM-2** Unsafe injections; hazardsand its prevention	Interactive Lecture	BCQs, SEQs, OSPE, Viva
MEDICINE				
45	**Clinical Lecture**	Acute and chronic inflammatory disorders: A physician aspect	Interactive Lecture	BCQs, SEQs, OSPE, Viva

THEME 3: BLEEDING & THROMBOEMBOLIC DISORDERS

S. NO	LEANING OBJECTIVES	TOPIC	TEACHING STRATEGY	ASSESS MENT
		PHYSIOLOGY		
46	To describe the four-basic mechanisms of Hemostasis	**Hem -S1-PHYS-12** Hemostasis & role of Thrombocytes	Interactiv eLecture	BCQs, SEQs, OSPE, Viva
47	Explain the mechanism of formation of platelet plug. To explain the general mechanismof blood coagulation	**Hem -S1-PHYS-13** Clotting factors	Interactiv eLecture	BCQs, SEQs, OSPE, Viva
48	To enlist the clotting factors, to describe the role of clotting factors in coagulation & steps involved in intrinsic and extrinsic pathway for coagulation,	**Hem -S1-PHYS-14** Clotting cascade Pathways	Interactiv eLecture	BCQs, SEQs, OSPE, Viva
49	Role of Intravascular anticoagulants protein C, S, to prevent blood clotting innormalvascular system.	**Hem -S1-PHYS-15** Anticlotting mechanism	Interactiv eLecture	BCQs, SEQs, Structured Viva
50	Discuss bleeding disorders and hemophilia and their causes and deficiency of different clotting factors	**Hem -S1-PHYS-16** Conditions causing excessivebleeding and Hemophilia	Interactiv eLecture	BCQs, SEQs, Structured Viva
51	Estimate bleeding time, clotting time (BT & CT)	**Hem -S1-PHYS-P4** Estimation of bleeding time, clotting time	Interactiv ePractical	BCQs, SEQs, OSPE, Viva
		BIOCHEMISTRY		
52	Components of Plasma. Plasma Proteins & their significance. Role of Plasma Proteins in BloodCirculation	**HEM1-S1-Bio-10** Plasma Proteins	Interactiv eLecture	BCQs, SEQs, Viva
53	Enzyme chemistry, biomedical importance, Classification, How Enzymes Work	**HEM1-S1-Bio-11** Introduction to enzymes	Interactiv eLecture	BCQs, SEQs, OSPE, Viva
54	Properties, Factors affecting rate,Enzyme Inhibition	**HEM1-S1-Bio-12** Enzyme properties and inhibitors	Interactiv eLecture	BCQs, SEQs, OSPE, Viva
55	To estimate the plasma proteins	**HEM1-S1-Bio-P3** Estimation of plasma proteins	Interactiv epractical	OSPE, Viva

56	To estimate the serum albumin	**HEM1-S1-Bio-P4** Estimation of serum albumin	Interactiv epractical	OSPE, Viva

PATHOLOGY				
57	Discuss Quantitative & Qualitativ eplatelets disorders. To discuss the differenttypes of bleeding disorders: haemophilia and Von Willebrand disease.	**Hem-S1-Path-8** Platelet and bleedingdisorders	Interactiv eLecture	BCQs, SEQs, OSPE, Viva
58	To discuss the thrombosis, pathogenesis, types and fate of thrombosis.	**Hem-S1-Path-9** Thrombosis	Interactiv eLecture	BCQs, SEQs, OSPE, Viva
59	To Define Embolism, its types and morphological features of Embolism.	**Hem1-S1-Path-10** Embolism	Interactiv eLecture	BCQs, SEQs, OSPE, Viva
MEDICINE				
60	**Clinical Lecture**	Bleeding & Clotting Disorders	Interactiv eLecture	BCQs, SEQs, OSPE, Viva

THEME 4: ABO & RH-INCOMPATIBILITY

S. NO	LEANING OBJECTIVES	TOPIC	TEACHING STRATEGY	ASSESS MENT
		PHYSIOLOGY		
61	Describe the antigens & Agglutinins for A, B, AB & O blood group To define Agglutinogens, agglutinin, and agglutination &what takes placewhen incompatible blood types are mixed. Identify universal donor &recipient & explain why?	**Hem -S1-PHYS-17** ABO Blood group system Antigens & Agglutinins for A,B,AB& O bloodgroups	Interactiv e Lecture	BCQs, SEQs, OSPE, Viva
62	To enlist various Rh antigens & Rhimmune response. What is erythroblastosis fetalis & how itcan be prevented	**Hem -S1-PHYS-18** Rh antigens & Rh immune response. Erythroblastosis fetalis.	Interactiv e Lecture	BCQs, SEQs, OSPE, Viva
63	Identify different blood groups	**Hem -S1-PHYS-P5** Blood groups	Interactiv e practical	BCQs, SEQs,
		PATHOLOGY		
64	To know the different types ofblood transfusion reaction	**Hem-S1-Path-11** Blood Transfusion Reaction	Interactiv e Lecture	BCQs, SEQs, OSPE,

THEME 5: IMMUNOLOGICAL DISORDERS

S. NO	LEANING OBJECTIVES	TOPIC	TEACHING STRATEGY	ASSESS MENT
		PHYSIOLOGY		
65	To Understand the overall organization of immune system To differentiate b/w innate & acquired immunity	**Hem -S1-PHYS-19** Immunity and Classification of immunity	Interactiv e Lecture	BCQs, SEQs, OSPE, Viva
66	Discuss humoral immunity To describe the formation & Mechanismof action of antibodies.	**Hem -S1-PHYS-20** Humoral immunity	Interactiv e Lecture	BCQs, SEQs, OSPE,
67	To understand cell mediated immunity Discuss the Active and passive immunity	**Hem -S1-PHYS-21** Cell mediated Immunity Active and passive immunity.	Interactiv e Lecture	BCQs, SEQs, OSPE, Viva
68	To understand the complement system, interferon and NK cells	**Hem-S1-PHYS-22** Natural immunity	Interactiv e Lecture	BCQs, SEQs, OSPE,
		BIOCHEMISTRY		
69	Define Immunoglobins. Describe chemistry, structure, classification & functions	**Hem-S1-Bio 13** Immunoglobins	Interactiv e Lecture	BCQs, SEQs, OSPE,
70	To estimate blood glucose levels	**Hem-S1-Bio-P5** Estimation of glucose	Interactiv e Practical	BCQs, SEQs,
71	introduction to spectrophotometry, significance and applications	**Hem-S1-Bio-P6** spectrophotometry	Interactiv e practical	BCQs, SEQs,
		PATHOLOGY		
72	Define immunity, and differentiate b/winnate and acquired Immune response.	**Hem-S1-Path 12** Introduction of immunity	Interactiv e Lecture	BCQs, SEQs, OSPE,
73	Define hypersensitivity Describe Pathogenesis of Type I & II hypersensitivity Reactions with examples	**Hem1-S1-Path-13** Hypersensitivity reaction Type I & II	Interactiv e Lecture	BCQs, SEQs, OSPE,
74	Describe type III & IV Hypersensitivityreactions with examples. Describe different e.g. of type IV hypersensitivity reactions.	**Hem1-S1-Path-14** Hypersensitivity reaction Type III & IV	Interactiv e Lecture	BCQs, SEQs, OSPE, Viva

75	Discuss Primary immunodeficiency and its causes Discuss Secondary immunodeficiency and its causes	**Hem1-S1-Path-15** Immunodeficiency	Interactive Lecture	BCQs, SEQs, OSPE, Viva
MEDICINE				
76	**Clinical Lecture**	**HIV/AIDS**	Interactive Lecture	BCQs, SEQs, OSPE, Viva

9.1 TAGGED SUBJECTS

Topic	Contents	Learning Objectives	Teaching Method	Module	Hours	Assessment
BEHAVIORAL SCIENCES						
Affective Domain	Attention and concentration	Define attention and concentration. What factor affect them?	Lecture/ Group Discussion	Blood 1	1	MCQ
PROFESSIONALISM						
Emotional intelligence	Emotional and social intelligence in given contexts	Describe & Display appropriate emotional and social intelligence	Lecture/Group discussion/Role Play	Blood 1	2	MCQ
COMMUNICATION SKILLS						
Cultural sensitivity	Concepts of Equality and Equity, Cultural sensitivities.	Display sensitivity towards individual and cultural differences keeping in view the principles of equality and equity	Lecture equity, equality/Role play,	Blood 1	1	MCQ
Teamwork	Dynamics of Teamwork	Display teamwork in group activities for creativity and problem solving	Role play,	Blood 1	2	MCQ
Confidentiality	Confidentiality of colleagues and patients Appropriate use of social media	Ensuring confidentiality	Lecture/Role play / Group Discussion	Blood 1	1	MCQ

RESEARCH						
Literature Search	Literature Review (Background, keywords)	Describe techniques of literature search and review. conduct literature search to finalize the research question using Boolean logic	Lecture/ Group Discussion	Blood 1	4	MCQs Assignments
Title, Rationale, Purpose	Title, Rationale, Purpose	Explain the process of title selection for a research study. Describe the Purpose and justification of any selected title.	Lecture/ Group Discussion	Blood 1	2	MCQs Assignment
Operational Definitions	Operational Definitions	Describe Operational Definitions	Lecture/ Group Discussion	Blood 1	1	MCQs Assignment

9.2 CLINICAL SCIENCES SUBJECTS

BLOOD MODULE				
S. No	**Clinical Sciences Subjects**	**Learning Objectives**	**Hours**	**Learning Strategy**
1.	**ISLAMIC STUDY** The view of the Muslim doctor regarding human life and other forms of lif	Preservation of human life 1. the right of foetus to live 2. The suckling right to life 3. Preference of life maintenance to all other legislative considerations) Preservation of human dignity. Life related legislative controls. Human related factors of equality and preference Maintenance of non-human life and relationship with other living forms and the environment	1 1	Lecture Lecture
2.	**PAKISTAN STUDY**	Tehsil headquarter hospitals – composition and function District headquarters hospital – composition and function	1 1	Lecture Lecture
3.	**ANAESTHESIA** Anesthesia Equiqments	Classify the monitors Interpret the values of vitals on monitors Explain problems and Basic management	1 1 1	Lecture Lecture Lecture
4.	**CRITICAL CARE** Circulation	Oxygen transport and delivery, regulation of blood pressure and blood volume Hypotension and hemodynamic instability Evaluation and Management of hypertension in ICU Hemodynamic monitoring	1 1 1 1	Lecture Lecture Lecture Lecture
5.	FAMILY MEDICINE Core concept	Documentation and Medical Records Evidence- Based Medicine	1 1	Lecture Lecture

10. TEACHING HOURS ALLOCATION

S. No	Subject	Teaching Hours	Practical Hours
1	Physiology	27	10
2	Biochemistry	13	12
3	Pathology	15	-
4	Anatomy	5	6
5	Medicine	4	-
6	Community Medicine	2	-
7	Pharmacology	1	-
8	CBL 4 (Anatomy)*	8	-
9	CBL 5 (Physiology)*	10	-
10	Islamic Study	2	-
11	Pakistan Study	2	-
12	Anesthesia	3	-
13	Critical Care	4	-
14	Family Medicine	2	-
	Total hours	**98**	**28**

*Minimum 2 hours are allotted for each CBL session per Module

S. No	Tagged Subject	Teaching Hours
1	Behavioral Sciences	1
2	Professionalism	2
3	Communication Skills	4
4	Research	7
	Total hours	**14**

11. EXAMINATION AND METHODS OF ASSESSMENT

11.1 EXAMINATION RULES AND REGULATIONS

- Student must report to examination hall/venue, in time for smooth conduction of the exams.
- No student will be allowed to enter the examination hall after 10 minutes of scheduled examination time.
- No students will be allowed to sit in exam without College ID Card, and Lab Coat
- Students must sit according to their roll numbers mentioned on the seats.
- Student must bring their own stationary items (Pen, Pencil, Eraser, and Sharpener) – Sharing is prohibited
- Any disturbance or Indiscipline in the exam hall/venue is not acceptable.
- Students must not possess any written material or communicate with their fellow students
- Cell phones are strictly not allowed in examination hall. If any student is found with cell phone in any mode (silent, switched off or on) he/she will be **not be allowed to continue their exam.**
- **No student is allowed to leave the examination hall before half the time is over, paper is handed over to the examiner and properly marking the attendance.**

11.2 ASSESSMENT

11.2.1 Internal: Total 10% (20 marks)

- Students will be assessed comprehensively through multiple methods to determine achievement of module objectives through two methods: Module examination and Graded assessment by Individual department
    - **Module Examination**: It will be scheduled on completion of each module. The method of examination comprises theory exam (which includes SEQs and MCQs) and OSPE / OSCE exam (which includes static and interactive stations).
    - **Graded Assessment by individual department**: It includes weekly MCQs tests on Survive online LMS program, viva, practical, weekly theme based assignments, post-test discussion sessions, peer assessments, presentations, small group activities such as CBL, ward activities, examinations and log books, all of which have specific marks allocation.
- Marks of both modular examination and graded assessment will constitute 10% weightage.
- 10% marks of internal evaluation will be added to the ISU annual professional exam.
- The marks distribution is based on Formative Assessment done individually by all the concerned departments. It may include:

- NOTE: **at least 75% attendance is mandatory** to appear in the annual university examination.
- Exam branch is responsible to maintain the attendance record for Main Campus in coordination with all the concerned departments.

11.2.2 University Annual Exam: Total 90%

- Annual Exam has 90% marks in total
- It includes theory and OSPE / OSCE.
- Each written paper consists of 100 MCQs and 10 SEQs and internal assessment marks will be added tothe final marks.

11.3 METHODS OF ASSESSMENT

11.3.1 Multiple Choice Questions

- Single best type MCQs having five options with one correct answer and four distractors are part of assessment.
- Total 100 MCQs are included which are formulated through the table of specification from learning objectives of Module interactive lectures.
- Time duration for MCQs will be 1 and half hour.
- MCQs are used to assess objectives covered in each module.
- Students after reading the statement / scenarios select one appropriate response from the given options.
- Correct answer carries one mark, and incorrect will be marked zero. Rule of negative marking is not applicable.
- Students attempt the MCQs exam on Computer screen on Moodle / LMS program in IT Lab.

11.3.2 Short Essay Questions (SEQs):

- Short-answer questions are structured way of asking open-ended questions that require students to create their answers based on their knowledge.
- Commonly used in examinations to assess the depth of knowledge and understanding.
- Includes 10 questions each carrying 10 marks.
- Time Duration for Essay type paper is 2 hours.
- Questions are selected from the specific learning objectives of the specific ongoing module.

11.3.3 OSPE / OSCE

- Each student will be assessed on the same content and have same time to complete the task.
- Time allocated for each station is five minutes as per Examination rules of Ibn e Sina University, Mirpurkhas

- All students are rotated through the same stations.
- OSPE / OSCE Comprises of 15 - 20 stations.
- Each station may assess a variety of diagrammatic identifications and clinical tasks. These tasks may include history taking, physical examination, skills and application of skills and knowledge
- Stations are Interactive, observed, unobserved (static) and rest stations.
  - Interactive Stations:
    - In this station, examiner ask questions related to the task within the allocated time.
  - Observed Stations:
    - In observed stations, internal or external examiner don't interact with candidate and just observe the performance of the skills or procedures.
  - Unobserved (static) Stations:
    - It will be static stations in which there may be models, specimens, multiple identification points, X-ray, Labs reports, flowcharts, pictures, or clinical scenarios (to assess cognitive domain) with related questions for students will be used to answer on the provided answer copy.
  - Rest station
    - It is a station where there is no task given and in this time student can organize his/her thoughts

11.3.4 ASSIGNMENTS

- An online assignment on the Ibn-e-Sina University moodle uploaded according to the topic of the week.
- All assignments should be checked by the teacher who has taken the lecture on the topic during the same week.
- The assignment should cover enough material to include the requirement of the curriculum and syllabus, so the student should be able to answer the annual examination questions by revising these notes (assignments) only.
- The assignments are checked and graded also with comment to guide, motivate and encourage the students to work whole heartedly. Frequent guidance and motivation will go a long way in improving the students' performance.
- Assignments of the whole Professional year MBBS are counted as in Internal Assessment.

11.3.5 WEEKLY TESTS

- The weekly tests are conducted for all classes. The tests are conducted online and are on topics displayed on the portal (Moodle). It consists of 35 MCQs. 5 MCQs will be from the previous weeks (slightly altered to change the answer or the right option). Everyone taking lectures, submit two MCQs to the Chairperson of the department who will check and pass them to the class moderator. MCQs can also be sent directly to the class moderator, who submits the MCQs to IT department for final placement on the moodle.

- The MCQs are not merely simple recall, but test higher level of cognition. As far as possible, they test an important concept related to one of the topics of the week.

- It is different from the summative assessment (Annual or Semester Examinations) in that the goal of summative assessment is to evaluate student's learning at the end of an instructional unit by comparing it against some standard or benchmark, to decide if the student can be promoted or not, whereas the goal of these weekly tests is to check the understanding of the students on the important concepts related to the topics that have been displayed on the portal for the week, the teachers have taught them and the students have made assignments on them.
- Results of weekly tests of the whole Professional year MBBS are counted as in Internal Assessment.

11.3.6 POST-TEST DISCUSSION (PTD)

- Every student has to prepare a special assignment where he/she selects all the questions he/she got wrong. Then he/she makes 3 boxes. In box A he/she writes the questions he/she got wrong in his/her own words, highlighting and underlining the keywords. In box B the student explains why he/she has chosen this answer. In box C the student mentions what he/she has learnt after reading the explanation and how the concept has got clear now.
- The moderator will check, assess and grade PTD
- Next day, the class moderator of the class conducts a class where he/she discusses the mistakes committed and the post-test assignments submitted in detail with the class
- PTD assignments of the whole Professional year MBBS are counted as in Internal Assessment.

12. GRADING POLICY

Marks obtained in Percentage range	Numerical Grade	Alphabetical Grade
80-100	4.0	**A+**
75-79	4.0	**A**
70-74	3.7	**A-**
67-69	3.3	**B+**
63-66	3.0	**B**
60-62	2.7	**B-**
56-59	2.3	**C+**
50-55	2.0	**C**
<50 Non gradable	0	**N**

- A student obtaining GPA less than 2.0 (50%) is declared fail.

13. ASSESMENT BLUEPRINT

BLOOD-I MODULE

Assessment is based on Table of Specification (TOS)

	ASSESMENT	TOOLS	MARKS
MODULE EXAM	THEORY	MCQ's	100
		SEQ's	100
	OSPE	OSPE Static	50
		OSPE Interactive	50
		Total	300

14. RECOMMENDED BOOKS

ANATOMY

- **CLINICALLY ORIENTED ANATOMY**

KEITH.L. MOORE, ARTHUR F. DALLEY, ANNE M.R. AGUR

7TH OR LATEST EDITION

- **GRAY'S ANATOMY FOR STUDENTS**

DRAKE & VOGL & MITCHELL

3RD OR LATEST EDITION

- **CLINICAL ANATOMY BY REGIONS (REFERENCE BOOK)**

RICHARD S. SNELL

9TH EDITION

- **LAST'S ANATOMY: REGIONAL & APPLIED (REFERENCE BOOK)**

CHUMMY S. SINNATAMBY

12TH OR LATEST EDITION

- **ATLAS OF HUMAN ANATOMY**

FRANK H. NETTER

6TH EDITION

EMBRYOLOGY

- **LANGMAN'S MEDICAL EMBRYOLOGY**

T.W. SADLER

13TH EDITION

- **THE DEVELOPING HUMAN CLINICALLY ORIENTED EMBRYOLOGY (REFERENCE BOOK)**

MOORE & PERSAUD & TORCHIA

10TH EDITION

HISTOLOGY

- **MEDICAL HISTOLOGY**

LAIQ HUSSAIN SIDDIQUI
5TH OR LATEST EDITION

- **WHEATERS FUNCTIONAL HISTOLOGY**

BARBARA YOUNG
5TH EDITION

- **BASIC HISTOLOGY (TEXT AND ATLAS) (REFERENCE BOOK)**

LUIZ JUNQUEIRA, JOSE CARNEIRO
11TH OR LATEST EDITION

PHYSIOLOGY

- **GUYTON AND HALL TEXTBOOK OF MEDICAL PHYSIOLOGY**

GUYTON AND HALL
13TH EDITION

BIOCHEMISTRY

- **LIPPINCOTT'S ILLUSTRATED REVIEWS SERIES**

DENISE R. FERRIER
6TH EDITION

- **HARPERS ILLUSTRATED BIOCHEMISTRY (REFERENCE BOOK)**

VICTOR RODWELL, DAVID BENDER, KATHLEEN M. BOTHAM, PETER J. KENNELLY, P. ANTHONY WEIL
28TH EDITION

COMMUNITY MEDCINE

- **PARK'S TEXTBOOK OF PREVENTIVE AND SOCIAL MEDICINE**

K. PARK
26TH EDITION

PATHOLOGY

- **ROBBINS & COTRAN PATHOLOGIC BASIS OF DISEASE**

VINAY KUMAR, ABUL K. ABBAS, JON C. ASTER
10TH EDITION

PHARMACOLOGY

- **LIPPINCOTT ILLUSTRATED REVIEWS: PHARMACOLOGY**
  KAREN WHALEN, CARINDA FEILD, RAJAN RADHAKRISHNAN
  7TH EDITION

IBN-E-SINA UNIVERSITY MIRPURKHAS
FACULTY OF BASIC MEDICAL SCIENCES

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? Yes ☐ No ☐

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!!

IBN-E-SINA UNIVERSITY MIRPURKHAS

STUDENT'S STUDY GUIDE
MUSCULOSKELETAL-I MODULE
FIRST PROFESSIONAL MBBS



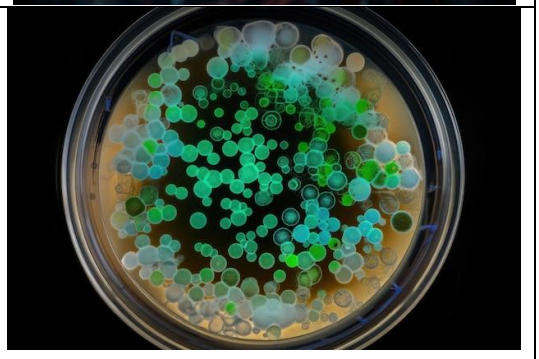




TABLE OF CONTENTS

1. DISCLAIMER

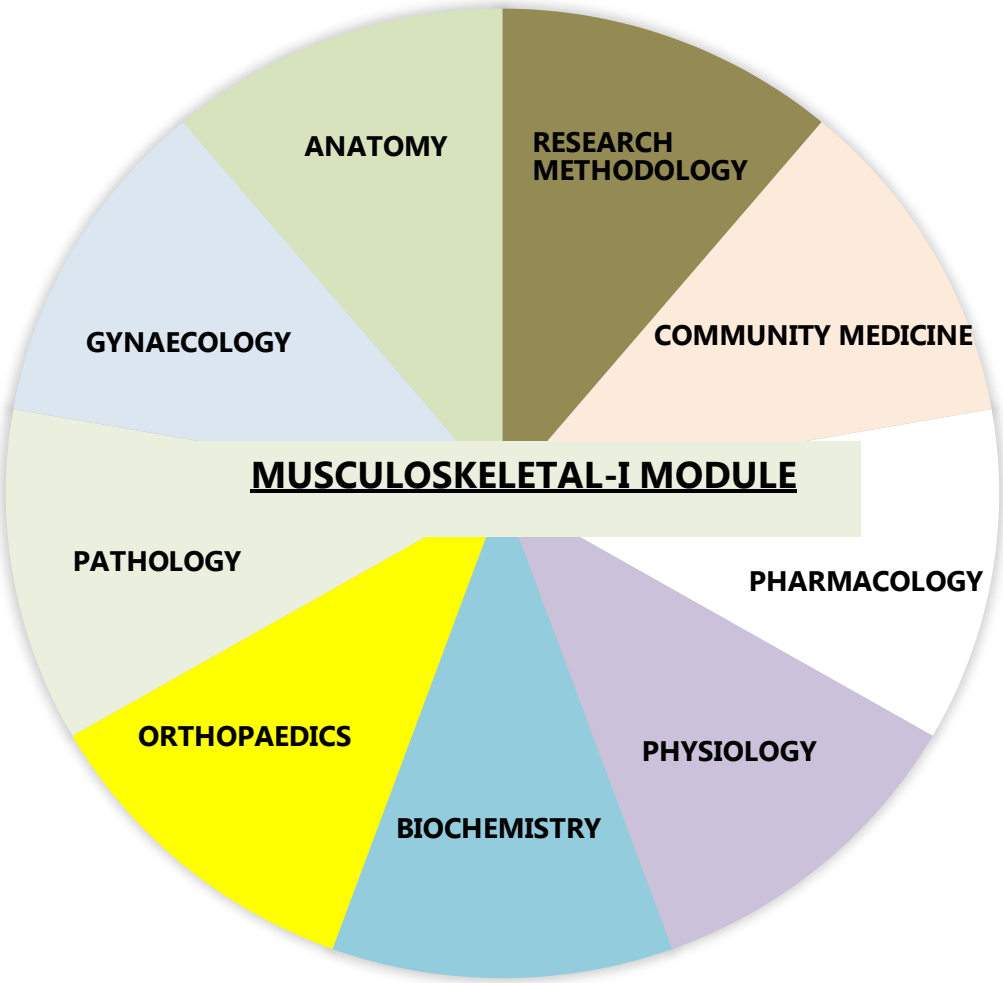
- Developing a study guide is a dynamic process and undergoes iteration according to the needs and priorities.
- This study guide is subjected to the change and modification over the whole academic year.
- However, students are advised to use it as a guide for respective modules.
- The time tables are 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

2. CURRICULUM FRAMEWORK

An educational strategy known as integrated curriculum places a strong emphasis on interdisciplinary learning, in which students gain knowledge by integrating it from several topic areas. By integrating many subjects and disciplines into a cohesive curriculum, this method seeks to give students a more relevant and interesting learning experience. Integrated curriculum means that subjects are presented as a meaningful whole for better understanding of basic sciences in relation to clinical experience and application.

Integrated curriculum comprises of system-based modules such as Foundation-I, Blood-I, CVS-I, Musculoskeletal-I and Respiratory-I Modules which links basic science knowledge to clinical problems.

INTEGRATING DISCIPLINES OF MUSCULOSKELETAL-I MODULE



3. MODULE OVERVIEW

MUSCULOSKELETAL-I MODULE DETAILS

Course	MBBS
Year	First professional
Duration	8 weeks
Learning Outcomes	The competent Medical Practitioner
Competencies covered	To develop medical professionals who are well - versed, adept, and have the right mindset.
Module Assessment	End module formative assessment
Teaching Methods	Interactive Lectures, Demonstrations, Case Based Learning, Practical Lab, Small Group Discussions, Self-Study Sessions, E-Learning, Clinical rotations
Assessment Methods	MCQs, SEQs, OSPE, VIVA

MUSCULOSKELETAL-I MODULE COMMITTEE

Sr. No	Names	Department	Designation
MODULE COORDINATOR			
1.	Dr. Saqib Baloch	Anatomy	Assistant Professor
2.	Dr. Shahab Hanif	Anatomy	Assistant Professor
COMMITTEE MEMBERS			
1.	Prof: Dr. Syed Razi Muhammad	Surgery	Chancellor ISU
2.	Prof: Dr. Shams Ul Arfeen Khan	Biochemistry	Vice Chancellor ISU
3.	Prof: Dr. Aijaz Ahmed Memon	Surgery	Pro Vice Chancellor ISU

4. WHAT IS STUDY GUIDE

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

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.

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.

Achievement of objectives.

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

5. LEARNING METHODOLOGIES

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

- Interactive Lectures
- Small Group Discussion
- Case- Based Learning (CBL)
- Skills session
- Practicals
- Self-Directed Study

- **INTERACTIVE LECTURES:**

  Large group discussions are not the same as traditional lecture formats. When a teacher or instructor uses images, radiographs, patient interaction recordings, etc. to discuss a topic or typical clinical scenario, the lecture becomes interactive. When they are given tiny activities to do that allow them to apply the knowledge they have learned throughout the session and are asked questions, students actively participate in the learning process.

- **SMALL GROUP DISCUSSIONS (SGDS):**

  With the use of SGD, students can take an active role in their education, clarify ideas, develop psychomotor skills, and develop a positive attitude. Discussion themes, patient interviews, and clinical cases are used to design sessions in an organized manner. Pupils are inspired to express their ideas, apply the fundamental knowledge they have learned from lectures and independent study, and are encouraged to share their notions. In small groups, role play is a useful technique for acquainting pupils with real-world scenarios. Probing questions, rephrasing, and summarizing are used by the teacher to assist make the concepts obvious.

- **CASE-BASED LEARNING (CBL):**

  Learning is centered around a sequence of questions based on a clinical scenario in this small group discussion format. Students create new information by discussing and responding to the questions using pertinent prior knowledge from the clinical and fundamental health sciences modules. The relevant department will give the CBL.

- **SKILL SESSIONS:**

  Skills relevant to respective module are observed and practiced where applicable in skills laboratory.

- **PRACTICALS:**

  Basic science practical related to Anatomy, Physiology and Biochemistry have been schedule for student learning.

- **SELF STUDY:**

  Self-directed learning is a process in which students take charge, either on their own or with assistance from others. Students chart their learning objectives and determine their areas of need for learning. They select and employ their own learning methodologies, and they independently assess the learning objectives.

6. INTRODUCTION

This fascinating session will act as a foundation and is crucial to your future practice as physicians. This module includes a number of interactive tasks that are meant to make your learning engaging and fruitful. In life, motility is the most crucial aspect. All living things exhibit some sort of movement. The human locomotor system is exquisitely designed and arranged. The only other mammal with two feet is the human. Our musculoskeletal system is therefore ideally positioned to oppose the pull of gravity. The Holy Quran quotes God as saying that He created man in the finest possible way.

6.1 RATIONALE

The goal of this module is to provide a strong foundation in the anatomy and physiology of different muscles, bones, and joints. Additionally, information about its clinical applications is provided by this. It is believed that musculoskeletal issues account for one out of every four primary care consultations. People are likely to experience musculoskeletal issues at some point in their lives. These issues can range from common conditions like osteoarthritis or back discomfort to more serious conditions like rheumatoid arthritis or profoundly crippling limb damage. Additionally, a lot of musculoskeletal issues are chronic illnesses.

The most prevalent symptoms are pain and disability, which have an effect on people's quality of life as well as, crucially, their capacity for independent living and employment. Students will have the chance to connect their understanding of fundamental science to real-world clinical issues throughout this module. You will be better able to link ideas and remember the material for your subsequent clinical education if you are taught pertinent basic sciences with clinical examples.

6.2 IBN E SINA UNIVERSITY (ISU) VISION:

To become a world-leading organization in rural health and social care research, training, recruitment and best evidence-based practice.

6.3 IBN E SINA UNIVERSITY (ISU) MISSION:

Our Mission is to inspire hope, and contribute to health and well-being by providing the best care to every patient through integrated clinical practice, education and research. To provide a focal point for the development and collation of high-quality research pertinent to rural health and wellbeing. To improve the training, recruitment and retention of a professional workforce within rural communities. To be recognized as an exemplar in rural health and wellbeing on the international stage. To establish a network of individuals and groups that support research, innovation and development in rural health and social care.

7. LEARNING OBJECTIVES

7.1 Knowledge / Cognitive Domain

It involves knowledge and the development of intellectual skills. By the end of this module, the students should be able to:

1. Develop an understanding of the fundamental components of the musculoskeletal system.
2. Explain the structure & function of the musculoskeletal (MSK) components of limbs and back.
3. Describe how injury and disease alter the MSK structure & function.
4. Integrate concepts relating to various metabolic processes, their disorders and relevant lab investigations in the study of human MSK system.
5. Describe the role of the limbs (upper/lower) in musculoskeletal support, stability and movements.
6. Describe the development of the limbs & correlate it with organization and gross congenital anomalies of the limbs.
7. Identify the anatomical features of bones, muscles & neurovascular components of the limbs and correlate them with their functions, injuries and clinical problems.
8. Describe the types, formation, stability, function & clinical significance of joints of the upper and lower limb.
9. Describe the basic histology of muscle fibers including its molecular structure (Sarcomere).
10. Explain the mechanism of excitation and contraction of skeletal and smooth muscles.
11. Describe the basis for the use of therapeutic agents to modulate neuromuscular transmission.
12. Describe the general principles of MSK pain management.
13. Describe ergonomics and its principles. Prevention of different MSK disorders.
14. Interpret the mechanism of post-mortem rigidity. (spiral II)
15. Give an overview of pathology of bones, muscles and joints.
16. Explain the role of different minerals, hormones and specific metabolic products related to the musculoskeletal system and correlate them with their relevant clinical metabolic disorders.
17. Interpret the relevant laboratory investigations for diagnosis of common musculoskeletal disorders. (Spiral two)
18. To develop the critical thinking and analysis in the context of various case scenarios pertaining to locomotors system.

7.2 Skills / Psychomotor Domain:

Includes physical movement, co-ordination and the use of motor skill areas. For this Module, these include:

1. Completing actual tasks in an orderly and secure manner as directed

2. Accurately make and document observations.
3. Describe the basic laboratory techniques and use of microscope.
4. Follow the basic laboratory protocols.
5. Demonstrate the anatomical structures of the limbs in a dissected cadaver/Model/prosecuted specimen & X-ray.
6. Demonstrate the provision of first aid measures in case of a limb fracture.
7. Communicate effectively in a team with colleagues and teachers.

7.3 Attitude / Affective Domain:

It Involves our feelings, emotions and attitudes. By the end of this module, the students should be able to:

1. Demonstrate respect and care for the cadaver and prosected parts.
2. Demonstrate humbleness and use socially acceptable language during academic and social interactions with colleagues and teachers.
3. Make ethically competent decisions when confronted with an ethical, social or moral problem related to MSKS in professional or personal life.
4. Discuss ethical issues social and preventive aspect of health care in the context of MSK system.
5. To create awareness about the ethical, social and preventive aspect of health care in the context of locomotor system.

7.4 Outcomes of Musculoskeletal-I Module

1. Knowledgeable
2. Skillful
3. Community Heath Promoter
4. Problem-solver
5. Professional
6. Researcher
7. Leader and Role Model

8. THEMES FOR MUSCULOSKELETAL-I MODULE

SNO	Theme	Duration
1	**Pectoral region and Breast**	1 week
2	**Back, Axilla and Shoulder joint**	1 week
3	**Brachial Plexus and Arm**	1 week
4	**Forearm, hand and carpal tunnel syndrome**	1 week
5	**Anterior thigh and femoral hernia**	1 week
6	**Gluteal region, hip joint and Sciatic nerve**	1 week
7	**Anterior compartment of leg and compartment syndrome**	1 week
8	**Posterior compartment of leg and foot**	1 week

9. SPECIFIC LEARNING OBJECTIVES THEME WISE

THEME 1: PECTORAL REGION AND BREAST

S. NO	LEANING OBJECTIVES	TOPIC	TEACHING STRATEGY	ASSESSMENT
ANATOMY				
01	Define the different regions of the upper limb Identify various compartments of arm, forearm & hand. Define the axial and appendicular skeleton and define the girdle bones. Identify the joints of upper limb.	**LM-S1-ANA-G-1** Introduction to locomotor system & Organization of upper limb	Demonstration	BCQs, SAQs, OSPE, Viva
02	Define the pectoral region. Describe its muscles. Identify the general features and different land marks for side determination and the attachments of various muscles on clavicle.	**LM-S1-ANA-G-2** Pectoral region & the clavicle	Demonstration	BCQs, SAQs, OSPE, Viva
03	Discuss development of Bone Describe the Intramembranous ossification Describe the Endochondral ossification Describe the Ossification of limb bones Describe the development of joints Describe the development of cartilage	**LM-S1-ANA-E-1** Development of skeletal system	Interactive Lecture	BCQs, SAQs, OSPE, Viva

04	Identify the general features and different land marks for side determination and the attachments of various muscles on the Scapula. Define the arrangement, attachments, neurovascular bundle and actions of muscles of back.	**LM-S1-ANA-G-3** Scapular region (scapula bone, muscles & neurovascular Bundle of back)	Demonstration	BCQs, SAQs, OSPE, Viva
05	Name the bony components, type & variety & movements of sternoclavicular, acromioclavicular joints.	**LM-S1-ANA-G-4** Sternoclavicular acromioclavicular Joints	Demonstration	BCQs, SAQs, OSPE, Viva

06	Define the extent and quadrants of the breast Describe the blood supply and lymphatic drainage of breast in the female with its clinical significance.	**LMS-ANA-G-5** Anatomy of the breast	Interactive Lecture	BCQs, SAQs, Viva
07	Describe breast development in puberty & in the adult Describe histology of mammary gland in non-lactating, lactating & during pregnancy. Identify and describe the nipple and areola. Describe the histologic changes in breasts during pregnancy & lactation	**LM-S1-ANA-H-1** Histology of breast	Interactive Practical	BCQs, SAQs, OSPE, Viva
PHYSIOLOGY				
08	Describe the role of muscles, bones, & joints in movements Describe types of movements	**LM-S1-PHY-1** Introduction to Musculoskeletal system (motor system)	Interactive Lecture	BCQs, SAQs, OSPE, Viva

09	Describe the Physiology of mammary gland Describe the Lactation reflex Describe weaning Describe the Hormonal effect	**LM-S1-PHY-2** Physiology of breast and lactation	Interactive Lecture	BCQs, SAQs, OSPE, Viva
10	Identify and name various parts of power lab Describe the functions of various parts of power lab Explain how mechanical events are converted to electrical current Demonstrate Nerve conduction velocity	**LM-S1-Phy-3** Introduction to Power Lab	Interactive Practical	BCQs, SAQs, OSPE, Viva
BIOCHEMISTRY				
11	Heteropolysaccharides, Classification & functions Biochemical significance of Heteropolysaccharides in formation of Extracellular Matrix.	**LM-S1-BIO-01** Role of Heteropolysaccharides (Glycosaminoglycans)	Interactive Lecture	BCQs, SAQs, OSPE, Viva
12	Mucopolysacharridoses: Classification, Deficient Enzymes Clinical Manifestation	**LM-S1-BIO-02** Mucopolysaccharidoses	Interactive Lecture	BCQs, SAQs, OSPE, Viva
13	General introduction and classification of Minerals.	**LM-S1-BIO-03** Classification of Minerals	Interactive Lecture	BCQs, SAQs, OSPE, Viva
	CLINICAL LECTURE			
14	Define bone density and factors which are responsible to maintain bone density Define Pathogenesis and clinical course of change in bone density and conditions associated with lactation. Discuss its complications and management.	**LM-S1-Gyn &Obs-1** Changes in bone density with lactation	Interactive Lecture	BCQs, SAQs, OSPE, Viva
	RESEARCH			

15	Describe the Patho-physiology of mammary gland disorders Describe the Lactation reflex Describe weaning Describe the Hormonal effect Student guide for complete protocol of lactation and weaning	**LM-S1-RES-M-1** Breast feeding guide for medical profession	Interactive Lecture	BCQs, SAQs,
COMMUNITY MEDICINE				
16	To discuss the epidemiology of poliomyelitis. To describe agent, host environment factors and modes of transmission. To identify the risk factors of Poliomyelitis. To discuss the prevention and control of poliomyelitis.	**LM-S1-CM-1** Poliomyelitis	Interactive Lecture	BCQs, SAQs,

THEME 2: BACK, AXILLA AND SHOULDER JOINT

S. NO	LEANING OBJECTIVES	TOPIC	TEACHING STRATEGY	ASSESSMENT
ANATOMY				
17	Describe the attachments, nerve supply and the actions of the muscles of the back. Define the effects of paralysis of these muscles	**LM-S1-ANA-G-6** Muscles of back	Demonstration	BCQs, SAQs, OSPE, Viva
18	Discuss the arterial anastomosis around the scapula. Explain the neurovascular bundle of scapula.	**LMS-ANA-G-7** Anastomosis around scapula & Neurovascular bundle of scapula	Demonstration	BCQs, SAQs, OSPE, Viva
19	Name the bony components, type & variety, the attachment of capsule and ligaments of this joint. Demonstrate various muscles & movements at the joint. Identify the factors stabilizing or weakening the shoulder joint.	**LM-S1-ANA -G-8** The Shoulder Joint	Interactive Lecture	BCQs, SAQs, OSPE, Viva
20	Discuss the developmental stages of skull and its clinicals	**LMS-ANA-E-2** Development of skull	Interactive Lecture	BCQs, SAQs, Viva
21	Define the shape, location boundaries and contents of Axilla. Discuss the formation, course and relations of axillary vessels Describe arrangement of axillary lymph nodes and their area of drainage.	**LM-S1-ANA -G-9** Axilla: Boundaries & Contents	Demonstration	BCQs, SAQs, OSPE, Viva

22	Describe and draw the formation of the brachial plexus. Mention different parts of brachial plexus and their location. Identify different nerves with their root values. Discuss the effects of injury to different sites of brachial plexus.	**LM-S1-ANA -G-10** Brachial Plexus	Interactive Lecture	BCQs, SAQs, OSPE, Viva
23	Identify the skeletal muscle under light microscope	**LM-S1-ANA-H-2** Histology of skeletal muscle	Interactive Practical	BCQs, SAQs, OSPE, Viva

	Describe the structural basis of muscle striations. Recognize the structural elements that produces muscle contraction and brings the movement of a body part.			
PHYSIOLOGY				
24	Describe the daily intake, absorption & excretion of Ca from GIT and kidney Describe the distribution of Ca in the bones Describe the various cells of the bones and their function in Ca homeostasis Describe the mechanism by which Ca is released in blood from Bone	**LM-S1-PHYS-4** Calcium homeostasis	Interactive Lecture	BCQs, SAQs, OSPE, Viva
25	Demonstrate SMT on power lab What is latent period What is the duration of SMT show recruitment in the twitch response as the stimulus strength increases	**LM-S1-PHYS-5** SMT & Summation	Interactive Practical	BCQs, SAQs, OSPE, Viva

BIOCHEMISTRY				
26	Sources, RDA, Absorption, transport, Functions, Clinical Aspects	**LM-S1-Bio-4** Calcium metabolism.	Interactive Lecture	BCQs, SAQs, OSPE, Viva
27	Sources, RDA, Absorption, transport, Functions, Clinical Aspects	**LM-S1-Bio-5** Magnesium & Phosphorus Metabolism	Interactive Lecture	BCQs, SAQs, OSPE, Viva
28	Sources, RDA, Absorption, transport, Functions, Clinical Aspects	**LM-S1-Bio-6** Vitamin D metabolism.	Interactive Lecture	BCQs, SAQs, OSPE, Viva
29	Describe the miscellaneous minerals: Iodine, Floride, Selenium, Cobalt, Zinc, Copper	**LM-S1-Bio-7** Miscellaneous Minerals	Interactive Lecture	BCQs, SAQs, OSPE, Viva
30	Role of Parathyroid, Calcitonin & Vitamin D	**LM-S1-Bio-8** Regulation of Calcium & PO4 Metabolism	Interactive Lecture	BCQs, SAQs, OSPE, Viva
31	Chemical composition of bone. Bone remodeling. Normal composition of synovial fluid.	**LM-S1-Bio-9** Chemical composition of bone	Interactive Lecture	BCQs, SAQs, OSPE, Viva
32	Importance of calcium as macro-mineral. RDA, Absorption, factors influencing absorption. clinical manifestation of excess and deficiency states.	**LM-S1-Bio-10** Estimation of serum calcium	Interactive practical	BCQs, SAQs, OSPE, Viva
PATHOLOGY				
33	Define Vitamin D Explain significance of vitamin D in the body	**LM-S1-PATH-1** Vitamin D deficiency	Interactive Lecture	BCQs, SAQs, OSPE, Viva

	Describe the different deficency states related with vitamin D Discuss the prevention of Vitamin D Deficiency			
PHARMACOLOGY				
34	List various drugs used in hypocalcemia Discuss their clinical uses Explain their adverse effects	**LM-S1-PHARM-1** Drugs used in Hypocalcemia	Interactive Lecture	BCQs, SAQs, OSPE, Viva
COMMUNITY MEDICINE				
35	To define school health services and its importance. To define the essential health components of school health To describe the effect of poor sitting posture on musculoskeletal system To describe the duties of school medical officer and to learn about preventive strategies regarding diseases related to school health	**LM-S1-CM-2** School health services	Interactive Lecture	BCQs, SAQs,

THEME 3: THE ARM AND THE FOREARM

S. NO	LEANING OBJECTIVES	TOPIC	TEACHING STRATEGY	ASSESSMENT
ANATOMY				
36	Explain the arrangement of different functional groups of muscles in the ant compartment of arm & their attachment Demonstrate the actions of above muscles Describe the neurovascular structures and their important relations	**LM-S1-ANA-G-11** Humerus bone Anterior compartment of arm	Demonstration	BCQs, SAQs, OSPE, Viva
37	Define cubital fossa. Discuss its boundaries Clinical correlates	**LM-S1-ANA-G-12** Cubital fossa	Interactive lecture	BCQs, SAQs, OSPE, Viva
38	Explain the arrangement of different functional groups of muscles in the post compartment arm & their attachment Demonstrate the actions of above muscles Describe the neurovascular structures and their important relations	**LM-S1-ANA-G-13** Posterior compartment of arm & Elbow joint	Demonstration	BCQs, SAQs, OSPE, Viva
39	Identify the general features of Radius & ulna. Discuss the attachments of various muscles on the Radius & ulna. Discuss the radioulnar joints.	**LM-S1-ANA-G-14** Radius & Ulna (radioulnar joints)	Demonstration	BCQs, SAQs, OSPE, Viva
40	Explain the arrangement of different functional groups of muscles in the anterior compartment of fore-arm & their attachment. Describe the neurovascular structures and their important relations	**LM-S1-ANA-G-15** Anterior compartment of forearm	Demonstration	BCQs, SAQs, OSPE, Viva

41	Explain the arrangement of different functional groups of muscles in the posterior comp of forearm & their attachment. Describe the neurovascular structures and their important relations	**LM-S1-ANA-G-16** Posterior compartment of forearm	Demonstration	BCQs, SAQs, OSPE, Viva

42	Describe the Ossification of vertibra ribs &sternum and its clinicals	**LM-S1-ANA-E-3** Development of vertebra, ribs, & sternum .	Interactive Lecture	BCQs, SAQs, OSPE, Viva
43	Identify the smooth and cardiac muscles under light microscope Describe the structural basis of muscle striations & differentiate the two muscles. Recognize the function and organization of the connective tissue in muscle.	**LM-S1-ANA-H-3** Histology of smooth and cardiac muscles	Interactive Practical	BCQs, SAQs, OSPE, Viva
PHYSIOLOGY				
44	Briefly describe the structure of Sarcomere & identify various bands and filaments Describe the changes in sarcomere during contraction Describe the sliding theory of contraction Describe the structure of myosin and actin filaments and their arrangements Describe walk along theory – power stroke	**LM-S1-PHYS-6** Properties of skeletal muscle contraction	Interactive Lecture	BCQs, SAQs, OSPE, Viva

45	Define troponin Tropomyosin complex and its function Describe the process of excitation contraction coupling Describe the role of sarcoplasmic reticulum in contraction Describe the role of Ca during contraction	**LM-S1-PHYS-7** Molecular basis of skeletal muscle contraction	Interactive Lecture	BCQs, SAQs, OSPE, Viva
46	List the components of neuromuscular junction Explain the sequence of events during transmission Define end plate potential Describe the mechanism by which acetylcholine cause generation of local potential	**LM-S1-PHYS-8** Neuro Muscular Junction	Interactive Lecture	BCQs, SAQs, OSPE, Viva
47	Describe and demonstrate how velocity of nerve conduction is estimated	**LM-S1-Physio-9** Velocity of nerve conduction	Interactive Practical	BCQs, SAQs, OSPE, Viva

BIOCHEMISTRY				
48	Sources, Daily requirements, intestinal absorption, transport and biochemical role and regulation of Vit-D3	**LM-S1-Bio-11** Estimation of Serum Vit.D3	Interactive Practical	BCQs, SAQs, OSPE, Viva
PHARMACOLOGY				
49	List various drugs used in hypercalcemia Discuss their clinical uses Explain their adverse effects	**LM-S1-PHARM-2** Drugs used in Hypercalcemia	Interactive Lecture	BCQs, SAQs, OSPE, Viva

CLINICAL LECTURE:				
50	Enlist disorders of skeletal muscle disorders and factors which are responsible to it Define Pathogenesis and clinical course of conditions associated with skeletal muscle disorders Discuss it's complications and management	**LM-S1-Ortho-1** Disorders of voluntary muscles	Interactive Lecture	BCQs, SAQs, OSPE, Viva
COMMUNITY MEDICINE				
51	To define the term accidents and injuries To learn about the global, regional and local statistics of accidents To identify the types of accidents To identify the common causes of road traffic accidents To learn about preventive strategies to overcome the causes	**LM-S1-CM-3** Accidents and injuries	Interactive Lecture	BCQs, SAQs, OSPE, Viva

THEME 4: FOREARM, HAND AND CARPAL TUNNEL SYNDROME

S. NO	LEANING OBJECTIVES	TOPIC	TEACHING STRATEGY	ASSESSMENT
ANATOMY				
52	Describe the location, destination, course & relations of arteries & their branches in upper limb. Identify and discuss the deep veins of upper limb. Describe the location, destination, course & relations of nerves & their branches in upper limb.	**LM-S1-ANA-G-17** Neuromuscular bundle of the upper limb	Demonstration	BCQs, SAQs, OSPE, Viva
53	Describe the type, variety, attachment of capsule and ligaments of this joint. demonstrate various movements at this joint. Describe the structural organization of the Flexor & Extensor Retinaculum. Discuss the carpal tunnel syndrome.	**LM-S1-ANA-G-18** Wrist joint	Interactive lecture	BCQs, SAQs, OSPE, Viva
54	Describe the bony arrangement of the hand. Describe the joints of the hand.	**LM-S1-ANA-G-19** Osteology of the hand and the joints of the hand.	Demonstration	BCQs, SAQs, OSPE, Viva
55	Discuss the cutaneous supply, arteries & veins of the palm of the hand. define fibrous flexor sheath. Define the palmer aponeurosis, facial spaces. Describe the small muscles of the hand.	**LM-S1-ANA-G-20** Palm of the hand	Demonstration	BCQs, SAQs, OSPE, Viva
56	Discuss the dorsal venous arch. Describe insertion of the long extensors tendons.	**LM-S1-ANA-G-21** Dorsum of the hand	Demonstration	BCQs, SAQs, OSPE, Viva

57	Describe different regions of lower limb. Identify the various bones forming skeleton of lower limb. Describe general arrangement of superficial & deep fasciae of lower limb Demonstrate the bones of pelvic girdle. Identify different landmarks in different regions of lower limb	**LM-S1-ANA-G-22** Introduction to lower limb / Organization of skeleton of lower limb	Interactive lecture	BCQs, SAQs, OSPE, Viva

58	Identify the superficial arteries of lower limb Name and discuss superficial veins of lower limb Highlight the course of great and small saphenous vein Describe the superficial lymphatic vessels and lymph nodes of lower limb Discuss clinical correlates.	**LM-S1-ANA-G-23** Superficial veins, arteries , lymph nodes & cutaneous supply of the lower limbs	Demonstration	BCQs, SAQs, OSPE, Viva
59	Describe the development of skeletal muscle. Discuss the development of Myotomes List derivatives of Ebaxial and Primaxial divisions of myotomes	**LM-S1-ANA-E-4** Development of skeletal muscles	Interactive lecture	BCQs, SAQs, OSPE, Viva
60	Classify bone on developmental and structural basis. Differentiate between woven bone and lamellar bone. Differentiate between compact bone and spongy bone	**LM-S1-ANA-H-4** Histology of bones	Interactive Practical	BCQs, SAQs, OSPE, Viva
PHYSIOLOGY				
61	Describe various energy systems of muscle, their energy yield and endurance Describe Muscle recovery after exercise Describe 2 debt	**LM-S1-PHYS-10** Role of muscles in exercise	Interactive Lecture	BCQs, SAQs, OSPE, Viva

62	Describe the role of skin in homeostasis Describe the excretory function of skin Describe endocrine function of kidney Describe the role of skin in thermoregulation Describe skin as sense organ Describe the medico-legal importance of skin Describe photo-protection function of skin	**LM-S1-Physio-11** Functions of skin	Interactive Lecture	BCQs, SAQs, OSPE, Viva
63	Note and describe the Electrical graph of muscle activity Apply electrodes at appropriate body muscle Study and describe motor unit recruitment phenomenon	**LM-S1-Physio-12** Electrograph of muscle activity EMG	Interactive Practical	BCQs, SAQs, OSPE, Viva

BIOCHEMISTRY				
64	Describe the Collagen Structure and synthesis, Types, Role of vitamin C in synthesis of Collagen	**LM-S1-BIO-12** Collagen Structure and synthesis	Interactive Lecture	BCQs, SAQs, OSPE, Viva
65	Brief overview of inherited Collagen Disorders and their clinical manifestation	**LM-S1-BIO-13** Overview of inherited Collagen disorders	Interactive Lecture	BCQs, SAQs, OSPE, Viva
66	Estimation, RDA, Effects, regulation and clinical manifestation of excess and deficiencies.	**LM-S1-BIO-14** Estimation of serum phosphorus	Interactive Practical	BCQs, SAQs, OSPE, Viva
PHARMACOLOGY				
67	List the drugs used in the treatment of osteoporosis Explain their mode of action Explain their pharmacokinetics State the side effects of these drug	**LM-S1-PHARM-3** Drugs used in Osteoporosis	Interactive Lecture	BCQs, SAQs, OSPE, Viva

68	Classify different muscle relaxants. Discuss mechanism of their action Explain clinical uses and their adverse effects	**LM-S1-PHARM-4** Drugs used as Skeletal muscle relaxant	Interactive Lecture	BCQs, SAQs, OSPE, Viva
CLINICAL LECTURE				
69	Define of osteoporosis Describe generalized and localized osteoporosis List the primary and secondary causes of generalized osteoporosis Define Pathogenesis and clinical course Discuss it's complications and management	**LM-S1-Ortho-2** Clinical manifestation of Osteoporosis	Interactive Lecture	BCQs, SAQs, OSPE, Viva
RADIOLOGY				
70	Interpretate the normal AP and Lateral view of upper limb radiographs (shoulder, arm, elbow, forearm, wrist and hand) Identify the bones, soft shadows and artifacts (if any) in upper limb radiographs	**LM-S1-Radio-1** Radiographs of Upper Limb	Interactive Lecture	BCQs, OSPE, Viva

THEME 5: ANTERIOR THIGH AND FEMORAL HERNIA

THEME 6: GLUTEAL REGION, HIP JOINT AND SCIATIC NERVE

S. NO	LEANING OBJECTIVES	TOPIC	TEACHING STRATEGY	ASSESSMENT
ANATOMY				
70	Identify the parts of hip bone. Determine the side of the bone. Describe general features of each part of hip bone. Identify the bone. Determine the side of the bone. Describe the anatomical position of the bone.	**LM-S1-ANA-G-24** Hip bone + Femur	Demonstration	BCQs, SAQs, OSPE, Viva
71	Discuss the division of thigh into compartments Enumerate the muscles of anterior compartment of thigh and their respective actions. Describe the innervation and blood supply of muscles of anterior compartment.	**LM-S1-ANA-G-25** Anterior compartment of thigh	Demonstration	BCQs, SAQs, OSPE, Viva
72	Describe the Femoral triangle, its boundaries and contents. Discuss femoral sheath and its contents and the clinical conditions associated.	**LM-S1-ANA-G-26** Femoral triangle	Demonstration	BCQ, SAQ, OSPE, VIVA
73	Describe the development of smooth and cardiac muscle. Discuss the development of Myotomes List derivatives of epaxial and hypaxial divisions of myotomes	**LM-S1-ANA-E-5** Development of smooth & cardiac muscles	Interactive lecture	BCQs, SAQs, OSPE, Viva
74	Discuss the muscles of medial compartment of the thigh. Discuss the blood & nerve supply of these muscles.	**LM-S1-ANA-G-27** Medial compartment of thigh	Demonstration	BCQs, SAQs, OSPE, Viva

	Describe the actions of the muscles of medial compartment of thigh.			
75	Describe the location of gluteal region. Discuss about bones and ligaments of gluteal region. Discuss the muscles of the gluteal region and their respective actions. Discuss the nerves and blood vessels	**LM-S1-ANA-G-28** The Gluteal region	Demonstration	BCQs, SAQs, OSPE, Viva

	of the gluteal region.			
76	Describe the articular surfaces of hip joint along with capsular attachment Enumerate the ligaments of hip joint & describe their attachments. Discuss the clinical correlates	**LM-S1-ANA-G-29** Hip joint	Interactive lecture	BCQs, SAQs, OSPE, Viva
77	Identify different types of cartilage under light Microscope. Define distinctive microscopic features of each type.	**LM-S1-ANA-H-5** Histology of Hyaline Cartilage	Interactive practical	BCQs, SAQs, OSPE, Viva
PHYSIOLOGY				
78	Differentiate among tetanization, tetanus and tetany Describe briefly the staircase phenomenon (treppe)	**LM-S1-Physio-13** Tone and power of muscle effect of tetanus & staircase phenomenon	Interactive practical	BCQs, SAQs, OSPE, Viva
BIOCHEMISTRY				
79	Describe the Metabolic pathway for synthesis of purines and pyrimidines	**LM-S1-BIO-15** Metabolic pathway for synthesis of purines and pyrimidines	Interactive Lecture	BCQs, SAQs, OSPE, Viva

80	Discuss in detail: Metabolic pathways for nucleic acids degradation. Inherited associated disorders. Uric acid metabolic disorders.	**LM-S1-BIO-16** Metabolic pathways for nucleic acids degradation And related disorders.	Interactive Lecture	BCQs, SAQs, OSPE, Viva
81	Demonstrate the methods to estimate the serum uric acid.	**LM-S1-BIO-17** Estimation of serum uric acid	Interactive Practical	BCQs, SAQs, OSPE, Viva
PHARMACOLOGY				
82	Classify the drugs Describe their general properties. Explain the mechanism of action. State their actions in general.	**LM-S1-PHARM-5** Drugs used in Osteoporosis	Interactive Lecture	BCQs, SAQs, OSPE, Viva
PATHOLOGY				
83	Mention types of arthritis Define Osteoarthritis? & Rheumatoid arthritis Describe their clinical features	**LM-S1-PATH-2** Arthritis	Interactive Lecture	BCQs, SAQs, OSPE, Viva
CLINICAL LECTURE				
84	Classify the drugs Describe their general properties. Explain the mechanism of action. State their actions in general.	**LM-S1-Ortho-3** Clinical manifestation of Arthritis	Interactive Lecture	BCQs, SAQs, OSPE, Viva

THEME 7: ANTERIOR COMPARTMENT OF LEG AND COMPARTMENT SYNDROME

S. NO	LEANING OBJECTIVES	TOPIC	TEACHING STRATEGY	ASSESSMENT
ANATOMY				
85	Describe the muscles of posterior compartment of thigh. Describe the arterial supply of posterior compartment of thigh. Discuss the trochanteric and cruciate anastomosis at the back of thigh. Describe the venous drainage of this region.	**LM-S1-ANA-G-30** Post: compartment of thigh + popliteal fossa	Demonstration	BCQs, SAQs, OSPE, Viva
86	Identify the bone. Determine the side of the bone. Describe the anatomical position of the bone. Identify the bone and its side determination. Mark the attachment of muscles and ligaments. Describe the nerve injuries related to it.	**LM-S1-ANA-G-31** Tibia & fibula	Demonstration	BCQs, SAQs, OSPE, Viva
87	Discuss the site and time of appearance of upper and lower limb buds Define the source of mesoderm forming the limb muscles	**LM-S1-ANA-E-6** Development of Limbs & its clinical 1	Interactive lecture	BCQs, SAQs, OSPE, Viva
88	Discuss formation of different compartments of leg Explain arrangement of the muscles in the anterior compartments of leg and their actions. Describe the neurovasculature of these compartments of leg Identify the bones forming the architecture of foot. Discuss the joints formed by these bones.	**LM-S1-ANA-G-32** Anterior compartment of leg & dorsum of foot	Demonstration	BCQs, SAQs, OSPE, Viva

89	Explain arrangement of the muscles in the lateral compartments of leg and their actions. Describe the neurovasculature of these compartments of leg Discuss clinical correlates like compartment syndrome of leg.	**LM-S1-ANA-G-33** Lateral compartment of leg & tibiofibular joint	Demonstration	BCQs, SAQs, OSPE, Viva
90	Describe the articular surfaces of the knee joint along with capsular attachment. Describe the ligaments & bursa of the knee joint and discuss their attachments. Describe the movements of the knee joint.(locking & unlocking mechanism)	**LM-S1-ANA-G-34** Knee joint	Interactive Lecture	BCQs, SAQs, OSPE, Viva
91	Define general properties of cartilage. Differentiate different types of cartilage. Explain process of growth of cartilage. Identify different types of cartilage under light Microscope. Define distinctive microscopic features of each type.	**LM-S1-histo-6** Histology of elastic and fibrous cartilage	Interactive practical	BCQs, SAQs, OSPE, Viva
PHYSIOLOGY				
92	Describe the role of skin in homeostasis Describe the excretory function of skin Describe endocrine function of kidney Describe the role of skin in thermoregulation Describe skin as sense organ Describe the medico-legal importance of skin Describe photo-protection function of skin	**LM-S1-PHYS-14** Physiology of Skin	Interactive Lecture	BCQs, SAQs, OSPE, Viva

93	Define Body Temperature Different site of taking temperature Normal physiology of maintaining temperature	**LM-S1-PHYS-15** Body temperature before and after exercise	Interactive practical	BCQs, SAQs, OSPE, Viva
BIOCHEMISTRY				
94	Demonstrate the principals and types of chromatography. Interpretation of clinical conditions	**LM-S1-Bio-18** Chromatography	Interactive practical	BCQs, SAQs, OSPE, Viva
	and investigations related to use in chromatography.			
PHARMACOLOGY				
95	Classify the drugs Describe their general properties. Explain the mechanism of action. State their actions in general.	**LM-S1-PHARM-6** Drugs used in Rheumatoid Arthritis	Interactive Lecture	BCQs, SAQs, OSPE, Viva
96	Classify the drugs Describe their general properties. Explain the mechanism of action. State their actions in general.	**LM-S1-PHARM-7** Drugs used in Gout	Interactive Lecture	BCQs, SAQs, OSPE, Viva

THEME 8: POSTERIOR COMPARTMENT OF LEG AND FOOT

S. NO	LEANING OBJECTIVES	TOPIC	TEACHING STRATEGY	ASSESSMENT
ANATOMY				
97	Explain the arrangement of the muscles in the posterior compartment of leg. Describe nerve supply of these muscles. Explain the actions of the muscles of posterior compartment. Discuss clinical correlates.	**LM-S1-ANA-G-35** Posterior compartment of leg	Demonstration	BCQs, SAQs, OSPE, Viva
98	Describe the architecture of arches of foot and the factors responsible for their maintenance. Identify the bones forming these arches. Describe the function of the arches of foot.	**LM-S1-ANA-G-36** Skeleton of foot & arches of foot	Demonstration	BCQs, SAQs, OSPE, Viva
99	Discuss the hand plate and formation of digital rays resulting into digits Describe the muscles involved in and process of rotation of limb Explain the congenital anomalies of the limbs	**LM-S1-ANA-E-7** Development of Limbs & its clinical 2	Interactive Lecture	BCQs, SAQs, OSPE, Viva
100	Describe the Ankle Joint. Describe the Superior and Inferior Tibio-Fibular Joints.	**LM-S1-ANA-G-37** Ankle ,subtalar & small joints of foot	Demonstration	BCQs, SAQs, OSPE, Viva

101	Identify the bones forming the architecture of sole of foot. Discuss the joints formed by these bones. Describe clinical correlates like flat foot and club foot.	**LM-S1-ANA-G-38** Sole of foot	Demonstration	BCQs, SAQs, OSPE, Viva
102	Explain the different nerve of lower limb and their root value. Discuss the causes of injuries. Enumerate the common sites	**LM-S1-ANA-G-39** Neurovascular bundle of lower limb	Demonstration	BCQs, SAQs, OSPE, Viva
	of these nerve injuries Discuss the symptoms caused by these nerve injuries.			
103	Discuss the blood supply and nerve supply of sole of foot. Describe vascular and nervous supply of dorsum of foot.	**LM-S1-ANA-G-40** Neurovascular bundle of foot	Demonstration	BCQs, SAQs, OSPE, Viva
104	Describe the development of musculo-skeletal system. Discuss the development of Myotomes List derivatives of epaxial and hypaxial divisions of myotomes Describe the development of bones, joints & cartilage	**LM-S1-ANA-E-8** Overview of Embryological development of musculoskeletal system	Interactive Lecture	BCQs, SAQs, OSPE, Viva
105	Describe the layers of the skin. Discuss the layers of the Epidermis. Describe the appendages of the skin. Briefly discuss the functions of the skin.	**LM-S1-ANA-H-7** Microscopic anatomy of the Skin	Interactive Lecture	BCQs, SAQs, OSPE, Viva

106	Identify three layers of skin under light microscope Describe the structural basis & elements of skin. Recognize the function and organization of the connective tissue in skin	**LM-S1-ANA-H-8** Histology of skin	Interactive practical	BCQs, SAQs, OSPE, Viva
107	Identify three layers of skin under light microscope Describe the structural basis & elements of skin. Recognize the function and organization of the connective tissue in skin	**LM-S1-ANA-H-9** Histology of skin appendages	Interactive practical	BCQs, SAQs, OSPE, Viva
PHARMACOLOGY				
108	Classify different Nicotinic blocking agents Discuss mechanism of their action Explain clinical uses and adverse effects	**LM-S1-PHARM-8** Nicotinic receptor agonists	Interactive Lecture	BCQs, SAQs, OSPE, Viva

109	Classify different Nicotinic blocking agents Discuss mechanism of their action Explain clinical uses and adverse effects	**LMS-PHARM-9** Nicotinic receptor antagonists	Interactive Lecture	BCQs, SAQs, OSPE, Viva
CLINICAL LECTURE				
110	Define terms related to fracture: Stress Fracture, Incomplete fracture, Closed (simple fracture), Open (complicated) fracture, multi-fragmented fractures, complex fracture, Pathologic fractures Describe mechanism of bone healing Enlist complications of fracture Describe etiology & Pathogenesis of Pathologic fractures.	**LM-S1-Ortho-4** Fractures/Dislocations	Interactive Lecture	BCQs, SAQs, OSPE, Viva
PATHOLOGY				
111	Classify different types of osteomyelitis List factors leading to their etiology Explain its pathogenesis	**LM-S1-PATH-3** Osteomyelitis	Interactive Lecture	BCQs, SAQs, OSPE, Viva
RADIOLOGY				
112	Interpretate the normal AP and Lateral view of Lower limb radiographs (hip joint, thigh, knee, leg, ankle and foot) Identify the bones, soft shadows and artifacts (if any) in lower limb radiographs	**LM-S1-Radio-2** Radiographs of Lower Limb	Interactive Lecture	BCQs, OSPE, Viva

9.1 TAGGED SUBJECTS

Topic	Contents	Learning Objectives	Teaching Method	Module	Hours	Assessment
BEHAVIORAL SCIENCES						
Affective Domain	Personality	Define personality. Describe factor affect personality development	Lecture/ Group Discussion	MSK1	1	MCQ,
	Motivation	Define motivation and describe the types of motivation	Lecture/ Group Discussion	MSK 1	1	MCQ
Stress	Stress and its management	Define and classify stress and stressors. Describe relationship of stress and stressor with illness. Describe the concept of life events and their relationship with stress and illness.	Lecture/ Group Discussion	MSK 1	1	MCQ and Formative
	Coping skills and Defense mechanism	Describe the concepts of adjustment and maladjustment? explain coping skills and describe the psychological defense mechanisms	Lecture/ Group Discussion	MSK 1	1	MCQ and Formative

PROFESSIONALISM						
Attributes of professionalism	Differences between empathy and sympathy	Discriminate between empathy and sympathy	Lecture/ Group discussion/ Role play	MSK 1	2	MCQ, SEQ
Personal Development Plan (PDP)	Peer feedback session on PDP	Analyze critically his personal development plan (PDP)	Group Discussion among peers	MSK 1	2	MCQ
COMMUNICATION SKILLS						
Communicate as a peer-teacher	Recognizing the limits of one's knowledge and skills; and to ensure the accuracy of teaching content delivered to others	Knowing limitations	Lecture / Group Discussion,	MSK 1	2	MCQ
Communicate with media and press	Use of Social media/blogs for communication Communicating with Media and Press	Understanding of who should give information to the media and press and what form it should take, including the need to maintain confidentiality where individual patients are concerned	Lecture/Group Discussion, Role Play	MSK 1	2	Continuous Formative

9.2 CLINICAL SCIENCES SUBJECTS

MSK				
S. No	**Clinical Sciences Subjects**	**Learning Objectives**	**Hours**	**Learning Strategy**
1.	**ISLAMIC STUDY** How to make my profession Ibadah - The perspective of the Muslim doctors	Describe concept of Ibadah? How can our daily routine practice of our profession be made Ibadah? Identify the strategy to make routine professional practice Ibadah and apply it in their own life.	1 1	Lecture Lecture
2.	**PAKISTAN STUDY**	Tertiary care hospitals-composition & functions Medical teaching institutions	1 1	Lecture Lecture
3.	**ANAESTHESIA** General Anesthesia Management	Describe induction method Discuss maintenance of Anesthesia Explain recovery phases after Anesthesia	1 1 1	Lecture Lecture Lecture
4.	**CRITICAL CARE** Trauma	Trauma Systems Acute Limb Ischaemia	1 1	Lecture Lecture
5.	**ORTHOPAEDICS & TRAUMA** Fractures, wounds and Dislocation	Fracture healing terminologies Principles of Fracture Treatment Treatment by Fracture Location Treatment by fracture region Suture Techniques Close treatment of Dislocation of Upper Limb joints (shoulder, elbow and small hand joints) Close treatment of Dislocation of Lower Limb joints (hip, and foot joints) Close treatment of fractures of humerus, tibia, fibula, radius and ulna External fixation of fractures of the limbs	1 1 1 1 1 1 1 1 1	Lecture Lecture Lecture Lecture Lecture Lecture Lecture Lecture
6.	**FAMILY MEDICINE** Core concept	Values based Medicine International Health Care systems	1 1	Lecture Lecture

10. TEACHING HOURS ALLOCATION

S. No	Subject	Teaching Hours	Practical Hours
1	Anatomy	80	18
2	Biochemistry	18	10
3	Physiology	15	12
4	Pharmacology	9	-
5	Pathology	3	-
6	Community Medicine	3	-
7	Gynaecology	1	-
8	Research Methodology	1	-
9	CBL 4 (Anatomy)*	8	-
10	CBL 7 (Physiology)*	14	-
11	Radiology	2	-
12	Islamic Study	2	-
13	Pakistan Study	2	-
14	Anesthesia	3	-
15	Critical Care	2	-
16	Orthopaedics and Trauma	13	-
17	Family Medicine	2	-
	Total hours	**178**	**40**

*Minimum 2 hours are allotted for each CBL session per Module

S. No	Tagged Subject	Teaching Hours
1	Behavioral Sciences	4
2	Professionalism	4
3	Communication Skills	4
	Total hours	**12**

11. EXAMINATION AND METHODS OF ASSESSMENT

11.1 EXAMINATION RULES AND REGULATIONS

- Student must report to examination hall/venue, in time for smooth conduction of the exams.
- No student will be allowed to enter the examination hall after 10 minutes of scheduled examination time.
- No students will be allowed to sit in exam without College ID Card, and Lab Coat
- Students must sit according to their roll numbers mentioned on the seats.
- Student must bring their own stationary items (Pen, Pencil, Eraser, and Sharpener) –Sharing is prohibited
- Any disturbance or Indiscipline in the exam hall/venue is not acceptable.
- Students must not possess any written material or communicate with their fellow students
- Cell phones are strictly not allowed in examination hall. If any student is found with cell phone in any mode (silent, switched off or on) he/she will be **not be allowed to continue their exam.**
- **No student is allowed to leave the examination hall before half the time is over, paper is handed over to the examiner and properly marking the attendance.**

11.2 ASSESSMENT

11.2.1 Internal: Total 10% (20 marks)

- Students will be assessed comprehensively through multiple methods to determine achievement of module objectives through two methods: Module examination and Graded assessment by Individual department
    - **Module Examination**: It will be scheduled on completion of each module. The method of examination comprises theory exam (which includes SEQs and MCQs) and OSPE / OSCE exam (which includes static and interactive stations).
    - **Graded Assessment by individual department**: It includes weekly MCQs tests on Survive online LMS program, viva, practical, weekly theme based assignments, post-test discussion sessions, peer assessments, presentations, small group activities such as CBL, ward activities, examinations and log books, all of which have specific marks allocation.
- Marks of both modular examination and graded assessment will constitute 10% weightage.
- 10% marks of internal evaluation will be added to the ISU annual professional exam.
- The marks distribution is based on Formative Assessment done individually by all the concerned departments. It may include:

- NOTE: **at least 75% attendance is mandatory** to appear in the annual universityexamination.
- Exam branch is responsible to maintain the attendance record for Main Campus in coordination with all the concerned departments.

11.2.2 University Annual Exam: Total 90%

- Annual Exam has 90% marks in total
- It includes theory and OSPE / OSCE.
- Each written paper consists of 100 MCQs and 10 SEQs and internal assessment marks will be added tothe final marks.

11.3 METHODS OF ASSESSMENT

11.3.1 Multiple Choice Questions

- Single best type MCQs having five options with one correct answer and four distractors are part of assessment.
- Total 100 MCQs are included which are formulated through the table of specification from learning objectives of Module interactive lectures.
- Time duration for MCQs will be 1 and half hour.
- MCQs are used to assess objectives covered in each module.
- Students after reading the statement / scenarios select one appropriate response from the given options.
- Correct answer carries one mark, and incorrect will be marked zero. Rule of negative marking is not applicable.
- Students attempt the MCQs exam on Computer screen on Moodle / LMS program in IT Lab.

11.3.2 Short Essay Questions (SEQs):

- Short-answer questions are structured way of asking open-ended questions that require students to create their answers based on their knowledge.
- Commonly used in examinations to assess the depth of knowledge and understanding.
- Includes 10 questions each carrying 10 marks.
- Time Duration for Essay type paper is 2 hours.
- Questions are selected from the specific learning objectives of the specific ongoing module.

11.3.3 OSPE / OSCE

- Each student will be assessed on the same content and have same time to complete the task.
- Time allocated for each station is five minutes as per Examination rules of Ibn e Sina University, Mirpurkhas
- All students are rotated through the same stations.

- OSPE / OSCE Comprises of 15 - 20 stations.
- Each station may assess a variety of diagrammatic identifications and clinical tasks. These tasks may include history taking, physical examination, skills and application of skills and knowledge
- Stations are Interactive, observed, unobserved (static) and rest stations.
  - Interactive Stations:
    - In this station, examiner ask questions related to the task within the allocated time.
  - Observed Stations:
    - In observed stations, internal or external examiner don't interact with candidate and just observe the performance of the skills or procedures.
  - Unobserved (static) Stations:
    - It will be static stations in which there may be models, specimens, multiple identification points, X-ray, Labs reports, flowcharts, pictures, or clinical scenarios (to assess cognitive domain) with related questions for students will be used to answer on the provided answer copy.
  - Rest station
    - It is a station where there is no task given and in this time student can organize his/her thoughts

11.3.4 ASSIGNMENTS

- An online assignment on the Ibn-e-Sina University moodle uploaded according to the topic of the week.
- All assignments should be checked by the teacher who has taken the lecture on the topic during the same week.
- The assignment should cover enough material to include the requirement of the curriculum and syllabus, so the student should be able to answer the annual examination questions by revising these notes (assignments) only.
- The assignments are checked and graded also with comment to guide, motivate and encourage the students to work whole heartedly. Frequent guidance and motivation will go a long way in improving the students' performance.
- Assignments of the whole Professional year MBBS are counted as in Internal Assessment.

11.3.5 WEEKLY TESTS

- The weekly tests are conducted for all classes. The tests are conducted online and are on topics displayed on the portal (Moodle). It consists of 35 MCQs. 5 MCQs will be from the previous weeks (slightly altered to change the answer or the right option). Everyone taking lectures, submit two MCQs to the Chairperson of the department who will check and pass them to the class moderator. MCQs can also be sent directly to the class moderator, who submits the MCQs to IT department for final placement on the moodle.

- The MCQs are not merely simple recall, but test higher level of cognition. As far as possible, they test an important concept related to one of the topics of the week.

- It is different from the summative assessment (Annual or Semester Examinations) in that the goal of summative assessment is to evaluate student's learning at the end of an instructional unit by comparing it against some standard or benchmark, to decide if the student can be promoted or not, whereas the goal of these weekly tests is to check the understanding of the students on the important concepts related to the topics that have been displayed on the portal for the week, the teachers have taught them and the students have made assignments on them.
- Results of weekly tests of the whole Professional year MBBS are counted as in Internal Assessment.

11.3.6 POST-TEST DISCUSSION (PTD)

- Every student has to prepare a special assignment where he/she selects all the questions he/she got wrong. Then he/she makes 3 boxes. In box A he/she writes the questions he/she got wrong in his/her own words, highlighting and underlining the keywords. In box B the student explains why he/she has chosen this answer. In box C the student mentions what he/she has learnt after reading the explanation and how the concept has got clear now.
- The moderator will check, assess and grade PTD
- Next day, the class moderator of the class conducts a class where he/she discusses the mistakes committed and the post-test assignments submitted in detail with the class
- PTD assignments of the whole Professional year MBBS are counted as in Internal Assessment.

12. GRADING POLICY

Marks obtained in Percentage range	Numerical Grade	Alphabetical Grade
80-100	4.0	**A+**
75-79	4.0	**A**
70-74	3.7	**A-**
67-69	3.3	**B+**
63-66	3.0	**B**
60-62	2.7	**B-**
56-59	2.3	**C+**
50-55	2.0	**C**
<50 Non gradable	0	**N**

- A student obtaining GPA less than 2.0 (50%) is declared fail.

13. ASSESMENT BLUEPRINT

MUSCULOSKELETAL-I MODULE

Assessment is based on Table of Specification (TOS)

	ASSESMENT	TOOLS	MARKS
MODULE EXAM	THEORY	MCQ's	100
		SEQ's	100
	OSPE	OSPE Static	50
		OSPE Interactive	50
		Total	300

14. RECOMMENDED BOOKS

ANATOMY

- **CLINICALLY ORIENTED ANATOMY**

KEITH.L. MOORE, ARTHUR F. DALLEY, ANNE M.R. AGUR

7TH OR LATEST EDITION

- **GRAY'S ANATOMY FOR STUDENTS**

DRAKE & VOGL & MITCHELL

3RD OR LATEST EDITION

- **CLINICAL ANATOMY BY REGIONS (REFERENCE BOOK)**

RICHARD S. SNELL

9TH EDITION

- **LAST'S ANATOMY: REGIONAL & APPLIED (REFERENCE BOOK)**

CHUMMY S. SINNATAMBY

12TH OR LATEST EDITION

- **ATLAS OF HUMAN ANATOMY**

FRANK H. NETTER

6TH EDITION

EMBRYOLOGY

- **LANGMAN'S MEDICAL EMBRYOLOGY**

T.W. SADLER

13TH EDITION

- **THE DEVELOPING HUMAN CLINICALLY ORIENTED EMBRYOLOGY (REFERENCE BOOK)**

MOORE & PERSAUD & TORCHIA

10TH EDITION

HISTOLOGY

- **MEDICAL HISTOLOGY**

LAIQ HUSSAIN SIDDIQUI
5TH OR LATEST EDITION

- **WHEATERS FUNCTIONAL HISTOLOGY**

BARBARA YOUNG
5TH EDITION

- **BASIC HISTOLOGY (TEXT AND ATLAS) (REFERENCE BOOK)**

LUIZ JUNQUEIRA, JOSE CARNEIRO
11TH OR LATEST EDITION

PHYSIOLOGY

- **GUYTON AND HALL TEXTBOOK OF MEDICAL PHYSIOLOGY**

GUYTON AND HALL
13TH EDITION

BIOCHEMISTRY

- **LIPPINCOTT'S ILLUSTRATED REVIEWS SERIES**

DENISE R. FERRIER
6TH EDITION

- **HARPERS ILLUSTRATED BIOCHEMISTRY (REFERENCE BOOK)**

VICTOR RODWELL, DAVID BENDER, KATHLEEN M. BOTHAM, PETER J. KENNELLY, P. ANTHONY WEIL
28TH EDITION

COMMUNITY MEDCINE

- **PARK'S TEXTBOOK OF PREVENTIVE AND SOCIAL MEDICINE**

K. PARK
26TH EDITION

PATHOLOGY

- **ROBBINS & COTRAN PATHOLOGIC BASIS OF DISEASE**

VINAY KUMAR, ABUL K. ABBAS, JON C. ASTER
10TH EDITION

PHARMACOLOGY

- **LIPPINCOTT ILLUSTRATED REVIEWS: PHARMACOLOGY**
  KAREN WHALEN, CARINDA FEILD, RAJAN RADHAKRISHNAN
  7TH EDITION

IBN-E-SINA UNIVERSITY MIRPURKHAS
FACULTY OF BASIC MEDICAL SCIENCES

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? Yes ☐ No ☐

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!!

IBN-E-SINA UNIVERSITY MIRPURKHAS

STUDENT'S STUDY GUIDE
CVS-I MODULE
FIRST PROFESSIONAL MBBS

TABLE OF CONTENTS

1. DISCLAIMER

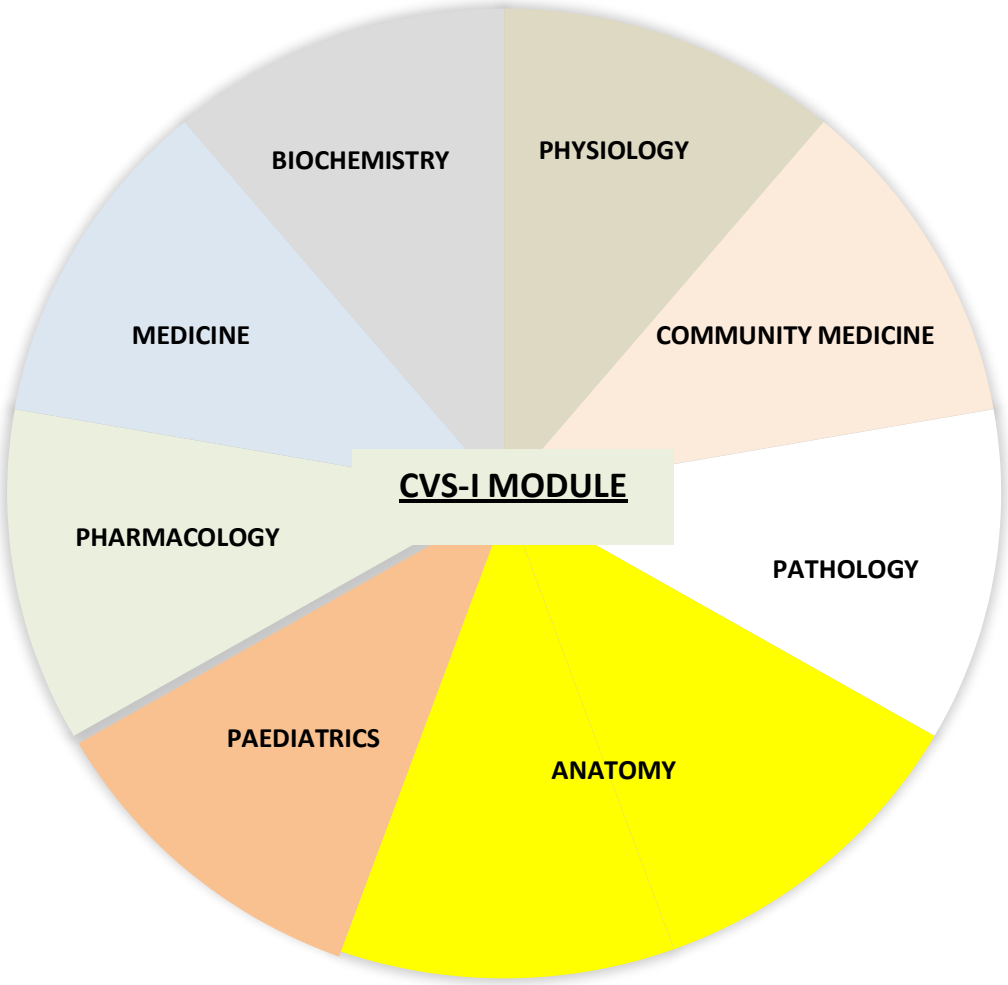
- Developing a study guide is a dynamic process and undergoes iteration according to the needs and priorities.
- This study guide is subjected to the change and modification over the whole academic year.
- However, students are advised to use it as a guide for respective modules.
- The time tables are 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

2. CURRICULUM FRAMEWORK

An educational strategy known as integrated curriculum places a strong emphasis on interdisciplinary learning, in which students gain knowledge by integrating it from several topic areas. By integrating many subjects and disciplines into a cohesive curriculum, this method seeks to give students a more relevant and interesting learning experience. Integrated curriculum means that subjects are presented as a meaningful whole for better understanding of basic sciences in relation to clinical experience and application.

Integrated curriculum comprises of system-based modules such as Foundation-I, Blood-I, CVS-I, Musculoskeletal-I and Respiratory-I Modules which links basic science knowledge to clinical problems.

INTEGRATING DISCIPLINES OF CVS-I MODULE



3. MODULE OVERVIEW

CVS MODULE-I DETAILS

Course	MBBS
Year	First professional
Duration	4 weeks
Learning Outcomes	The competent Medical Practitioner
Competencies covered	To develop medical professionals who are well - versed, adept, and have the right mindset.
Module Assessment	End module formative assessment
Teaching Methods	Interactive Lectures, Demonstrations, Case Based Learning, Practical Lab, Small Group Discussions, Self-Study Sessions, E-Learning, Clinical rotations
Assessment Methods	MCQs, SEQs, OSPE, VIVA

CVS MODULE-I COMMITTEE

Sr. No	Names	Department	Designation
MODULE COORDINATOR			
1.	Dr. Saqib Baloch	Anatomy	Assistant Professor
2.	Dr. Shahab Hanif	Anatomy	Assistant Professor
COMMITTEE MEMBERS			
1.	Prof: Dr. Syed Razi Muhammad	Surgery	Chancellor ISU
2.	Prof: Dr. Shams Ul Arfeen Khan	Biochemistry	Vice Chancellor ISU
3.	Prof: Dr. Aijaz Ahmed Memon	Surgery	Pro Vice Chancellor ISU

4. WHAT IS STUDY GUIDE

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

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.

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.

Achievement of objectives.

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

5. LEARNING METHODOLOGIES

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

- Interactive Lectures
- Small Group Discussion
- Case- Based Learning (CBL)
- Skills session
- Practicals
- Self-Directed Study

- **INTERACTIVE LECTURES:**
  Large group discussions are not the same as traditional lecture formats. When a teacher or instructor uses images, radiographs, patient interaction recordings, etc. to discuss a topic or typical clinical scenario, the lecture becomes interactive. When they are given tiny activities to do that allow them to apply the knowledge they have learned throughout the session and are asked questions, students actively participate in the learning process.

- **SMALL GROUP DISCUSSIONS (SGDS):**
  With the use of SGD, students can take an active role in their education, clarify ideas, develop psychomotor skills, and develop a positive attitude. Discussion themes, patient interviews, and clinical cases are used to design sessions in an organized manner. Pupils are inspired to express their ideas, apply the fundamental knowledge they have learned from lectures and independent study, and are encouraged to share their notions. In small groups, role play is a useful technique for acquainting pupils with real-world scenarios. Probing questions, rephrasing, and summarizing are used by the teacher to assist make the concepts obvious.

- **CASE-BASED LEARNING (CBL):**
  Learning is centered around a sequence of questions based on a clinical scenario in this small group discussion format. Students create new information by discussing and responding to the questions using pertinent prior knowledge from the clinical and fundamental health sciences modules. The relevant department will give the CBL.

- **SKILL SESSIONS:**
  Skills relevant to respective module are observed and practiced where applicable in skills laboratory.

- **PRACTICALS:**
  Basic science practical related to Anatomy, Physiology and Biochemistry have been schedule for student learning.

- **SELF STUDY:**
  Self-directed learning is a process in which students take charge, either on their own or with assistance from others. Students chart their learning objectives and determine their areas of need for learning. They select and employ their own learning methodologies, and they independently assess the learning objectives.

6. INTRODUCTION

This fascinating session will act as a foundation and is crucial to your future practice as physicians. This module includes a number of interactive tasks that are meant to make your learning engaging and fruitful. In order to promote horizontal integration, students will be taught and evaluated on topics including anatomy, physiology, and biochemistry in tandem with the structure and operation of the cardiovascular system during this module. Additionally, we'll assist you in learning the fundamental sciences in a manner that makes sense for their clinical applications (Vertical Integration). We are better preparing you for your future work as a doctor by using this technique, since patients will come to you with issues that are not labeled according to a specific discipline.

6.1 RATIONALE

This module's main goal is to assist you in developing a cognitive foundation for comprehending the pathophysiology of cardiovascular illnesses, which are a leading source of morbidity and mortality. (third-year cardiovascular diseases module) and cardiovascular medicine practice (final-year clinical rotation). This module will help you get ready for your next work in the medical course, where you will study about managing a variety of cardiovascular diseases as well as assessing and promoting cardiovascular health.

6.2 IBN E SINA UNIVERSITY (ISU) VISION:

To become a world-leading organization in rural health and social care research, training, recruitment and best evidence-based practice.

6.3 IBN E SINA UNIVERSITY (ISU) MISSION:

Our Mission is to inspire hope, and contribute to health and well-being by providing the best care to every patient through integrated clinical practice, education and research. To provide a focal point for the development and collation of high-quality research pertinent to rural health and wellbeing. To improve the training, recruitment and retention of a professional workforce within rural communities. To be recognized as an exemplar in rural health and wellbeing on the international stage. To establish a network of individuals and groups that support research, innovation and development in rural health and social care.

7. LEARNING OBJECTIVES

7.1 General learning Objectives:

At the end of this module, the students will be able to;

1. Recognize the clinical presentations of common cardiovascular diseases in community.
2. Diagnose these diseases on the basis of history, examination and investigations.
3. Explain pathological findings identified in cardiovascular pathology
4. Identify roll of pharmaceutical agents used for diseases involving cardiovascular system.
5. Enlist clinical features of common cardiovascular pathologies
6. Interpret radiological investigations in relation to cvs.
7. Understand preventive measures for counseling their patients.
8. Practice basic principles of management of common diseases and make appropriate referral
9. Aware of the prognosis to counsel their patients.

7.2 Knowledge / Cognitive Domain

It involves knowledge and the development of intellectual skills. By the end of this module, the students should be able to:

1. Describe the structure and surface markings of the heart, valves and great vessels
2. Describe the steps of development of the heart
3. Describe the steps of development of arterial, venous and lymphatic system
4. Describe the conduction system of the heart
5. Describe the anatomy of valves of the heart
6. Describe the microscopic structure of myocardium, and blood vessels
7. Describe the cardiac cycle
8. Discuss cardiac output, and venous return
9. Discuss blood pressure and its regulation
10. Discuss coronary circulation and diseases associated with it
11. Describe the mechanisms and types of circulatory shock and associated compensatory mechanisms
12. Describe the anatomy and common pericardial diseases
13. Describe the cardiac enzymes
14. Discuss the hyperlipidemias and the roles lipoproteins and cholesterol in the development of atherogenesis
15. Describe the mechanisms of impulse generation, conduction and excitation of myocardium
16. Discuss normal ECG and common ECG abnormalities
17. Enlist the drugs used in ischemic heart disease and hyperlipidemias
18. Describe preventive strategies of cardiovascular diseases

7.3 Skills / Psychomotor Domain:

Includes physical movement, co-ordination and the use of motor skill areas. For this Module, these include:

1. Using a sphygmomanometer to measure blood pressure correctly, interpreting the results, and calculating the mean arterial pressure.
2. Locating specific regions of the chest to auscultate the heart sounds.
3. Setting up electrodes, getting an ECG, and analyzing the fundamental results of the ECG.
4. The use of points of identification to identify cardiac tissues and blood arteries under a microscope. (In their histology journals, students must sketch and label microscopic sections of cardiovascular components). The journal will be evaluated at the end-of-module test.
5. Conduct a clinical assessment of the circulatory system.

7.4 Attitude / Affective Domain:

It Involves our feelings, emotions and attitudes. By the end of this module, the students should be able to:

1. Follow the basic laboratory protocols.
2. Participate in class and practical work efficiently.
3. Maintain discipline of the college.
4. Follow the norms of the college properly.
5. Communicate effectively in a team with colleagues and teachers.
6. Demonstrate professionalism and ethical values in dealing with patients, cadavers, colleagues and teachers.
7. Communicate effectively in a team with colleagues and teachers.
8. Demonstrate the ability to reflect on the performance.

7.5 Outcomes of CVS-I Module

1. Knowledgeable
2. Skillful
3. Community Heath Promoter
4. Problem-solver
5. Professional
6. Researcher
7. Leader and Role Model

8. THEMES FOR CVS-I MODULE

SNO	Theme	Duration
1	**Arrhythmias and Myocardial Infarction**	1 week
2	**Congenital anomalies of Cardiovascular System**	1 week
3	**Hypertension**	1 week
4	**Heart Failure**	1 week

9. SPECIFIC LEARNING OBJECTIVES THEME WISE

THEME 1: ARRHYTHMIAS AND MYOCARDIAL INFARCTION

S. NO	LEARNING OBJECTIVES	TOPIC	TEACHING STRATEGY	ASSESSMENT
ANATOMY				
01	Define the middle mediastinum. Location and contents of the middle mediastinum. Discuss the fibrous and serous parts of the pericardium. Define pericardial sinuses and nerve supply of the pericardium. Discuss the related clinical conditions.	**CVS-1-ANA- G-1** Middle Mediastinum and The Pericardium	Interactive lecture	BCQs, SAQs, OSPE, Viva
02	Define Anatomical position of the heart. Identify and name structures constituting the borders and surfaces of the heart. Define the external features of the Chambers of the heart.	**CVS-1-ANA- G-2** Anatomy of the Heart-1	Demonstration	
03	Describe Internal features of each chamber of heart. Discuss the related clinical conditions.	**CVS-1-ANA- G-3** Anatomy of the Heart-2	Demonstration	
04	Describe development of cardiogenic field and heart tube. Name the derivatives of heart tube? Define formation of cardiac looping and dextrocardia? How sinus venous and cardiac septa formed.	**CVS-1-ANA-E-1** Development of the heart tube	Interactive Lecture	
05	How atria and interatrial septum develops? How ventricles and Inter-ventricular septum develops? What are the common congenital anomalies of heart chambers?	**CVS-1-ANA-E-2** Development of the heart chambers and their septa -1	Interactive Lecture	
06	Describe/Identify the histological features of heart; endocardium, myocardium, epicardium on light microscope.	**CVS-1-ANA-H-1** Histology of the Heart	Interactive Practical	
PHYSIOLOGY				
07	Describe the Overview of Cardiovascular system Describe the parts of CVS Describe the functions of CVS	**CVS-1-PHYS-1** Overview of CVS	Interactive Lecture	

08	Describe the properties of muscles of heart. Describe the auto rhythmic cells and contractile cells of heart and mention the components of conductive tissue of the heart.	**CVS-1-PHYS-2** Properties of cardiac muscle	Interactive Lecture	BCQs, SAQs, OSPE, Viva
09	Discuss the properties of heart (automaticity, rhythmicity, conductivity, long refractory period	**CVS-1-PHYS-3** Properties of cardiac muscle	Interactive Lecture	

10	Describe the various parts of conducting system of heart and their functions Describe the origin and spread of the electrical impulse from the SA node to the ventricular muscle. Explain the role of the conducting system.	**CVS-1-PHYS-4** Conducting system of heart	Interactive Lecture	
11	Describe two types of action potential in the heart muscle. Explain the genesis of pacemaker potential at the SA node Describe the effects of vagal and sympathetic stimulations on the pacemaker potential.	**CVS-1-PHYS-5** Electrical activity of heart	Interactive Lecture	
12	To record the heart rate during sitting & standing & effect on exercise of young adult on power lab.	**CVS-1-PHYS-P1** Heart rate during standing, sitting and during exercise on power lab	Interactive Practical	
BIOCHEMISTRY				
13	Introduction of isoenzymes Diagnostic significance of isoenzymes	**CVS-1-BIO -1** Diagnostic significance of Isoenzymes in cardiovascular disorders	Interactive Lecture	BCQs, SAQs, OSPE, Viva
PATHOLOGY				
14	Define ischemic heart diseases? Classify different types of ischemic heart diseases? Discuss causes and clinical manifestation of ischemic heart diseases	**CVS-1--PATHO-1** Ischemic heart disease	Interactive Lecture	BCQs, SAQs, OSPE, Viva
COMMUNITY MEDICINE				
15	To define and classify obesity. To describe the causes of obesity. To understand the concept of BMI and its calculation To discuss the epidemiology and control measures of obesity.	**CVS-1-CM-1** Epidemiology and control measures of obesity	Interactive Lecture	BCQs, SAQs, OSPE, Viva
MEDICINE (CARDIOLOGY)				

16	Define Arrhythmias Recognize the common abnormalities in the rate and rhythm of the heart (tachycardia, bradycardia, flutter, fibrillations, heart blocks and extra-systole failure. Describe the hemodynamic, neuroendocrine and cellular changes that occur in heart failure. Describe the physiological basis of the treatment principles in heart failure.	**CVS-1-CARDIO-1** Arrhythmias	Interactive Lecture	BCQs, SAQs, OSPE, Viva

THEME 2: CONGENITAL ANOMALIES OF CARDIOVASCULAR SYSTEM

S. NO	LEARNING OBJECTIVES	TOPIC	TEACHING STRATEGY	ASSESSMENT
ANATOMY				
17	Describe the composition of the walls and the skeleton of the heart. Describe the conducting system of the heart. Discuss the related clinical conditions.	**CVS-1-ANA- G-4** Structure of the heart and The Conducting system of the Heart	Demonstration	BCQs, SAQs, OSPE, Viva
18	How atria and interatrial septum develops? How ventricles and Inter-ventricular septum develops? What are the common congenital anomalies of heart chambers?	**CVS-1-ANA-E-3** Development of the heart chambers and their septa -2	Interactive Lecture	
19	Describe septa formation in bulbus cordis and truncus arterious. Enlist congenital heart defects; transposition of great vessels, PDA, PTA	**CVS-1-ANA-E-4** Development of septa in truncus arteriosus , valves and conducting system	Interactive Lecture	
20	Describe the microscopic features of the arteries Identify the different types of arteries	**CVS-1-ANA-H-2** Histology of the Arteries	Interactive Practical	
PHYSIOLOGY				
21	Describe the sequence of events that occur in the heart during the cardiac cycle. Illustrate the pressure changes that occur in a single cardiac cycle.	**CVS-1-PHYS-6** Mechanical Events of Cardiac cycle	Interactive Lecture	
22	Relate the genesis of arterial and jugular venous pulses to underlying cardiac events Describe the JVP and the value of CVP measurement	**CVS-1-PHYS-7** JVP and CVP in cardiac events and thier measurements	Interactive Lecture	

23	Explain the production of the heart sounds and state their significance. Describe the function of the heart valves and genesis of the murmurs. State the timing of the murmur produced by valvular defects and congenital heart disease Describe the Hemodynamic changes in various valvular heart diseases. Define the terms electrocardiogram (ECG) and electrocardiography. Describe the electrical events occurring within the heart	**CVS-1-PHYS-8** Heart sounds & murmurs ECG	Interactive Lecture	BCQs, SAQs, OSPE, Viva

24	Describe the structural features, innervation and blood flow of the capillary system. Explain the role of capillaries as exchange vessels. Name and give the approximate values of the Starling's forces. Explain the state of near equilibrium at the arteriolar and Venus end of capillaries.	**CVS-1-PHYS-9** Capillary Circulation	Interactive Lecture	
25	Describe the lymph capillary and list the factors that determine the lymph flow. List the function of lymphatics Describe the role of lymphatic circulation in maintaining normal starling forces across the capillary wall. Explain the pathophysiological basis for edema that is increased capillary hydrostatic pressure, hypo albuminemia, lymphatic obstruction and increased capillary permeability	**CVS-1-PHYS-10** lymphatic flow	Interactive Lecture	BCQs, SAQs, OSPE, Viva
26	Auscultation of heart sounds and murmurs Recognize the heart sounds and differentiate those from murmurs.	**CVS-1-PHY-P2** Normal and abnormal heart sounds	Interactive Practical	
BIOCHEMISTRY				
27	Describe different aspects related to fatty acids and their clinical significance in the CVS diseases..	**CVS-1-BIO-2** Fatty acids	Interactive Lecture	BCQs, SAQs, OSPE, Viva
PATHOLOGY				
28	Define aneurysm Classification of aneurysm What are the true and false aneurysms with their examples Pathogenesis of aneurysm	**CVS-1--PATHO-2** Congenital anomalies of blood vessels	Interactive Lecture	BCQs, SAQs, OSPE, Viva
29	Define congenital heart disease. Describe etio-pathogenesis. Discuss clinical features	**CVS-1--PATHO-3** Congenital heart disease.	Interactive Lecture	
COMMUNITY MEDICINE				

30	To discuss the epidemiology of coronary heart disease. To identify the risk factors of coronary heart disease. To discuss the prevention of coronary heart disease.	**CVS-1-CM-2** Epidemiology and control measures of coronary heart disease	Interactive Lecture	BCQs, SAQs, OSPE, Viva
PAEDIATRICS				
31	Describe the Hemodynamic changes in various congenital heart diseases including; Mitral Stenosis Mitral regurgitation Stenosis Aortic regurgitation	**CVS-1-PAEDS-I** Congenital heart diseases	Interactive Lecture	BCQs, SAQs, OSPE, Viva

THEME 3: HYPERTENSION

S. NO	LEARNING OBJECTIVES	TOPIC	TEACHING STRATEGY	ASSESSMENT
ANATOMY				
32	Describe the arterial supply and venous drainage of heart. Describe the branches of major arteries and their distribution. Define the nerve supply of the heart. Describe the cardiac plexus.	**CVS-1-ANA-G-5** Blood and nerve supply of the Heart	Interactive Lecture	BCQs, SAQs, OSPE, Viva
33	Discuss development of arterial system; aortic arches, umbilical, vitelline and coronary arteries Name the common congenital anomalies of arteries?	**CVS-1-ANA-E-5** Development of arterial system of heart	Interactive Lecture	
34	Discuss development of venous system; cardinal veins, umbilical and vitelline. Name the common congenital anomalies of venous system?	**CVS-1-ANA-E-6** Development of venous system of heart	Interactive Lecture	
35	Describe the microscopic structure of the veins	**CVS-1-ANA-H-3** Histology of veins	Interactive Practical	
PHYSIOLOGY				
36	Define cardiac output and state its relationship to stroke volume and heart rate. List and explain the factors that regulate cardiac output. Explain the principles of measuring the cardiac output. State the changes in cardiac output in selected conditions.	**CVS-1-PHYS-11** Cardiac output	Interactive Lecture	BCQs, SAQs, OSPE, Viva
37	Define the central venous pressure and its importance in venous return. Mention the factors that affect and regulate venous return	**CVS-1-PHYS-12** Venous return	Interactive Lecture	
38	Define systolic blood pressure, diastolic blood pressure and mean arterial pressure. List the methods available to measure the blood pressure. Describe the factors affecting on regulation of blood pressure	**CVS-1-PHYS-13** Blood pressure & its regulation-I	Interactive Lecture	BCQs, SAQs, OSPE, Viva
39	Define circulation time and state the conditions altering circulation time Explain the auto regulation mechanism of blood flow	**CVS-1-PHYS-14** Blood pressure & its regulation-II	Interactive Lecture	

40	Explain the clinical significance of P-R interval and S-T segment. Describe the basis of ECG recording in context of Einthoven's triangle and law Explain the clinical significance of P-R interval and S-T segment. (both prolongation and reduction).	**CVS-1-PHY-15** ECG	Interactive Lecture	
41	Demonstrate the location of different ECG leads. Perform ECG on a standardized patient. Calculate the heart rate & measure the P-R interval Interpret the ECG for common abnormalities. List the locations of different ECG leads and draw the shape of ECG waves in each lead.	**CVS-1-PHY-P3** ECG	Interactive Practical	

BIOCHEMISTRY				
42	Explain the metabolism and function of cholesterol and its clinical significance in CVS diseases	**CVS-1-BIO-3** Cholesterol	Interactive Lecture	BCQs, SAQs, OSPE, Viva
43	Describe the prostaglandins & leukotriens , their synthesis and general functions.	**CVS-1-BIO-4** Prostaglandins and Leukotriens	Interactive Lecture	
44	Demonstrate the estimation of the serum cholesterol	**CVS-1-BIO-P1** Serum Cholesterol estimation	Interactive practical	
PHARMACOLOGY				
45	To describe the physiological targets of drugs used in systemic hypertension.	**CVS-1-PHARM-1** Introduction to targets of drugs used in hypertension	Interactive Lecture	BCQs, SAQs, OSPE, Viva
COMMUNITY MEDICINE				
46	To define hypertension and its types. To discuss current status of hypertension To discuss the rule of half in hypertension To discuss the preventive level of hypertension	**CVS-1-CM-3** Epidemiology and control measures of hypertension	Interactive Lecture	BCQs, SAQs, OSPE, Viva
MEDICINE (CARDIOLOGY)				
47	Define hypertension. List the causes of hypertension. Describe the pathogenesis of hypertension. Explain the compensatory measures that maintain the blood pressure on rising from supine positions. Explain the physiological basis of the treatment principles in hypertension	**CVS-1-CARDIO-2** Hypertension	Interactive Lecture	BCQs, SAQs, OSPE, Viva
ANESTHESIA				
48		**CVS-1-ANESTH-1**	Interactive Lecture	BCQs, OSPE, Viva

THEME 4: HEART ATTACK

S. NO	LEARNING OBJECTIVES	TOPIC	TEACHING STRATEGY	ASSESSMENT
ANATOMY				
48	Identify different chambers/structures of the heart.	**CVS-1-ANA-G-6** Model study of the heart	Demonstration	BCQs, SAQs, OSPE, Viva
49	Identify different chambers/structures of the heart.	**CVS-1-ANA-G-7** Model study of the heart	Demonstration	
50	Describe circulatory changes before and after birth. Name the adult derivatives of embryonic structures?	**CVS-1-ANA-E-7** Circulation before and after birth	Interactive Lecture	
51	Identify the capillaries with the help of light microscope.	**CVS-1-ANA-H-4** Histology of capillaries	Interactive Practical	
PHYSIOLOGY				
52	Define shock Describe the four major causes of shock and explain giving examples Describe the pathophysiology of circulatory shock. Describe the physiological basis of treatment of circulatory shock. List the factors that make shock refractory. Explain the physiological basis of signs and symptoms of different types of shock. Explain the short and long-term physiological compensation of shock.	**CVS-1-PHYS-16** Circulatory Shock	Interactive Lecture	BCQs, SAQs, OSPE, Viva
53	Identify different parts of the stethoscope & sphygmomanometer Differentiate the auscultatory and palpatory methods of the blood pressure measurement. Demonstrate the correct technique for auscultatory and palpatory methods of blood pressure measurement, Hear the Korotkoff's sound during auscultation.	**CVS-1-PHY-P4** Record of blood pressure by palpatory and auscultatory methods	Interactive Practical	
BIOCHEMISTRY				
54	Discuss lipoproteins' metabolism and their clinical significance in CVS diseases	**CVS-1-BIO-5** Lipoproteins	Interactive lecture	

55	Interpretation of lipid profile and their significance	**CVS-1-BIO-P2** Lipid Profile	Interactive Practical	BCQs, SAQs, OSPE, Viva
PATHOLOGY				
56	Define shock Enlist types of shock Describe causes, pathophysiology, signs and symptoms of shock	**CVS-1-PATHO-4** Shock	Interactive Lecture	BCQs, SAQs, OSPE, Viva
MEDICINE (CARDIOLOGY)				
57	Define heart failure. Explain the physiological basis of the common clinical manifestations of heart failure. Describe the different types of heart failure. Describe the hemodynamic, neuroendocrine and cellular changes that occur in heart failure. Describe the physiological basis of the treatment principles in heart failure.	**CVS-1-CARDIO-3** Heart failure	Interactive Lecture	BCQs, SAQs, OSPE, Viva
RADIOLOGY				
58	Interpretate Chest radiographs Identify and mention normal heart shadows, cardio thoracic and cardiophrenic angles, aortic knuckle, great vessels locations and borders of heart Identify the heart shadow both in AP and PA views.	**CVS-1-RADIO-1** Chest Radiograph	Interactive Lecture	BCQs, OSPE, Viva

9.1 TAGGED SUBJECTS

Topic	Contents	Learning Objectives	Teaching Method	Module	Hours	Assessment
PROFESSIONALISM						
Attributes	Accept errors and mistakes in responsible manner	Accept errors and mistakes in responsible manner	Lecture	CVS1	2	MCQ,

9.2 CLINICAL SCIENCES SUBJECTS

CVS MODULE				
S. No	**Clinical Sciences Subjects**	**Learning Objectives**	**Hours**	**Learning Strategy**
1.	**ISLAMIC STUDY** A prologue on Essential Communication Skills	Gain insight into the physical, moral, spiritual and emotional aspects of communication. Define effective communication, draw a checklist for effective communication and identify barriers for communicating effectively.	1 1	Lecture Lecture
2.	**PAKISTAN STUDY**	District health information systems Millennium development goals – goals and achievements	1 1	Lecture Lecture
3.	**ANAESTHESIA** **Anesthesia Comlications**	Describe Hypoxia and its clinical features during and after anesthesia Explain C02 disturbance related to Anesthesia Brielfy describe the anesthesia related causes of cardiac arrest	1 1 1	Lecture Lecture Lecture
4.	**CRITICAL CARE** Circulation	Ventricular Tachycardias Supraventricular Tachyarrhythmias Bradyarrhythmias Management of advanced heart failure	1 1 1 1	Lecture Lecture Lecture Lecture
5.	FAMILY MEDICINE Health Promotion and Disease Prevention	Periodic Health Examination – Children and Adults CVD Risk Assessment & Prevention	1 1	Lecture Lecture

10. TEACHING HOURS ALLOCATION

S. No	Subject	Teaching Hours	Practical Hours
1	Anatomy	14	8
2	Biochemistry	12	4
3	Physiology	16	8
4	Pharmacology	1	-
5	Pathology	4	-
6	Community Medicine	3	-
7	Pediatrics	1	-
8	Medicine	3	-
9	CBL 4 (Anatomy)*	8	-
10	CBL 4 (Physiology)*	8	-
11	Radiology	1	-
12	Islamic Study	2	-
13	Pakistan Study	2	-
14	Anesthesia	3	-
15	Critical Care	4	-
16	Family Medicine	2	-
	Total hours	**84**	**20**

*Minimum 2 hours are allotted for each CBL session per Module

S. No	Tagged Subject	Teaching Hours
1	Professionalism	2
	Total hours	**2**

11. EXAMINATION AND METHODS OF ASSESSMENT

11.1 EXAMINATION RULES AND REGULATIONS

- Student must report to examination hall/venue, in time for smooth conduction of the exams.
- No student will be allowed to enter the examination hall after 10 minutes of scheduled examination time.
- No students will be allowed to sit in exam without College ID Card, and Lab Coat
- Students must sit according to their roll numbers mentioned on the seats.
- Student must bring their own stationary items (Pen, Pencil, Eraser, and Sharpener) –Sharing is prohibited
- Any disturbance or Indiscipline in the exam hall/venue is not acceptable.
- Students must not possess any written material or communicate with their fellowstudents
- Cell phones are strictly not allowed in examination hall. If any student is found withcell phone in any mode (silent, switched off or on) he/she will be **not be allowed tocontinue their exam.**
- **No student is allowed to leave the examination hall before half the time is over, paper is handed over to the examiner and properly marking the attendance**.

11.2 ASSESSMENT

11.2.1 Internal: Total 10% (20 marks)

- Students will be assessed comprehensively through multiple methods to determine achievement of module objectives through two methods: Module examination and Graded assessment by Individual department
- **Module Examination**: It will be scheduled on completion of each module. The method of examination comprises theory exam (which includes SEQs and MCQs) and OSPE / OSCE exam (which includes static and interactive stations).
- **Graded Assessment by individual department**: It includes weekly MCQs tests on Survive online LMS program, viva, practical, weekly theme based assignments, post-test discussion sessions, peer assessments, presentations, small group activities such as CBL, ward activities, examinations and log books, all of which have specific marks allocation.
    - Marks of both modular examination and graded assessment will constitute 10% weightage.
    - 10% marks of internal evaluation will be added to the ISU annual professional exam.
- The marks distribution is based on Formative Assessment done individually by all the

concerned departments. It may include:

- NOTE: **at least 75% attendance is mandatory** to appear in the annual university examination.
- Exam branch is responsible to maintain the attendance record for Main Campus in coordination with all the concerned departments.

11.2.2 University Annual Exam: Total 90%

- Annual Exam has 90% marks in total
- It includes theory and OSPE / OSCE.
- Each written paper consists of 100 MCQs and 10 SEQs and internal assessment marks will be added to the final marks.

11.3 METHODS OF ASSESSMENT

11.3.1 Multiple Choice Questions

- Single best type MCQs having five options with one correct answer and four distractors are part of assessment.
- Total 100 MCQs are included which are formulated through the table of specification from learning objectives of Module interactive lectures.
- Time duration for MCQs will be 1 and half hour.
- MCQs are used to assess objectives covered in each module.
- Students after reading the statement / scenarios select one appropriate response from the given options.
- Correct answer carries one mark, and incorrect will be marked zero. Rule of negative marking is not applicable.
- Students attempt the MCQs exam on Computer screen on Moodle / LMS program in IT Lab.

11.3.2 Short Essay Questions (SEQs):

- Short-answer questions are structured way of asking open-ended questions that require students to create their answers based on their knowledge.
- Commonly used in examinations to assess the depth of knowledge and understanding.
- Includes 10 questions each carrying 10 marks.
- Time Duration for Essay type paper is 2 hours.
- Questions are selected from the specific learning objectives of the specific ongoing module.

11.3.3 OSPE / OSCE

- Each student will be assessed on the same content and have same time to complete the task.
- Time allocated for each station is five minutes as per Examination rules of Ibn e Sina University, Mirpurkhas
- All students are rotated through the same stations.
- OSPE / OSCE Comprises of 15 - 20 stations.
- Each station may assess a variety of diagrammatic identifications and clinical tasks. These tasks may include history taking, physical examination, skills and application of skills and knowledge
- Stations are Interactive, observed, unobserved (static) and rest stations.
  - Interactive Stations:
    - In this station, examiner ask questions related to the task within the allocated time.
  - Observed Stations:
    - In observed stations, internal or external examiner don't interact with candidate and just observe the performance of the skills or procedures.
  - Unobserved (static) Stations:
    - It will be static stations in which there may be models, specimens, multiple identification points, X-ray, Labs reports, flowcharts, pictures, or clinical scenarios (to assess cognitive domain) with related questions for students will be used to answer on the provided answer copy.
  - Rest station
    - It is a station where there is no task given and in this time student can organize his/her thoughts

11.3.4 ASSIGNMENTS

- An online assignment on the Ibn-e-Sina University moodle uploaded according to the topic of the week.
- All assignments should be checked by the teacher who has taken the lecture on the topic during the same week.
- The assignment should cover enough material to include the requirement of the curriculum and syllabus, so the student should be able to answer the annual examination questions by revising these notes (assignments) only.
- The assignments are checked and graded also with comment to guide, motivate and encourage the students to work whole heartedly. Frequent guidance and motivation will go a long way in improving the students' performance.
- Assignments of the whole Professional year MBBS are counted as in Internal Assessment.

11.3.5 WEEKLY TESTS

- The weekly tests are conducted for all classes. The tests are conducted online and are on topics displayed on the portal (Moodle). It consists of 35 MCQs. 5 MCQs will be from the

previous weeks (slightly altered to change the answer or the right option). Everyone taking lectures, submit two MCQs to the Chairperson of the department who will check and pass them to the class moderator. MCQs can also be sent directly to the class moderator, who submits the MCQs to IT department for final placement on the moodle.

- The MCQs are not merely simple recall, but test higher level of cognition. As far as possible, they test an important concept related to one of the topics of the week.
- It is different from the summative assessment (Annual or Semester Examinations) in that the goal of summative assessment is to evaluate student's learning at the end of an instructional unit by comparing it against some standard or benchmark, to decide if the student can be promoted or not, whereas the goal of these weekly tests is to check the understanding of the students on the important concepts related to the topics that have been displayed on the portal for the week, the teachers have taught them and the students have made assignments on them.
- Results of weekly tests of the whole Professional year MBBS are counted as in Internal Assessment.

11.3.6 POST-TEST DISCUSSION (PTD)

- Every student has to prepare a special assignment where he/she selects all the questions he/she got wrong. Then he/she makes 3 boxes. In box A he/she writes the questions he/she got wrong in his/her own words, highlighting and underlining the keywords. In box B the student explains why he/she has chosen this answer. In box C the student mentions what he/she has learnt after reading the explanation and how the concept has got clear now.

- The moderator will check, assess and grade PTD

- Next day, the class moderator of the class conducts a class where he/she discusses the mistakes committed and the post-test assignments submitted in detail with the class

- PTD assignments of the whole Professional year MBBS are counted as in Internal Assessment.

12. GRADING POLICY

Marks obtained in Percentage range	Numerical Grade	Alphabetical Grade
80-100	4.0	**A+**
75-79	4.0	**A**
70-74	3.7	**A-**
67-69	3.3	**B+**
63-66	3.0	**B**
60-62	2.7	**B-**
56-59	2.3	**C+**
50-55	2.0	**C**
<50 Non gradable	0	**U**

- A student obtaining GPA less than 2.0 (50%) is declared fail.

13. ASSESMENT BLUEPRINT

CVS-I MODULE

Assessment is based on Table of Specification (TOS)

	ASSESMENT	TOOLS	MARKS
MODULE EXAM	THEORY	MCQ's	100
		SEQ's	100
	OSPE	OSPE Static	50
		OSPE Interactive	50
		Total	300

14. RECOMMENDED BOOKS

ANATOMY

- **CLINICALLY ORIENTED ANATOMY**
  KEITH.L.MOORE, ARTHUR F. DALLEY, ANNE M.R. AGUR
  7TH OR LATEST EDITION

- **GRAY'S ANATOMY FOR STUDENTS**
  DRAKE & VOGL & MITCHELL
  3RD OR LATEST EDITION

- **CLINICAL ANATOMY BY REGIONS (REFERENCE BOOK)**
  RICHARD S. SNELL
  9TH EDITION

- **LAST'S ANATOMY: REGIONAL & APPLIED (REFERENCE BOOK)**
  CHUMMY S. SINNATAMBY
  12TH OR LATEST EDITION

- **ATLAS OF HUMAN ANATOMY**
  FRANK H.NETTER
  6TH EDITION

EMBRYOLOGY

- **LANGMAN'S MEDICAL EMBRYOLOGY**
  T.W.SADLER
  13TH EDITION

- **THE DEVELOPING HUMAN CLINICALLY ORIENTED EMBRYOLOGY (REFERENCE BOOK)**
  MOORE & PERSAUD & TORCHIA
  10TH EDITION

HISTOLOGY

- **MEDICAL HISTOLOGY LAIQ HUSSAIN SIDDIQUI5TH OR LATEST EDITION**

- **WHEATERS FUNCTIONAL HISTOLOGY BARBARA YOUNG 5TH EDITION**

- **BASIC HISTOLOGY (TEXT AND ATLAS) (REFERENCE BOOK) LUIZ JUNQUEIRA, JOSE CARNEIRO 11TH OR LATEST EDITION**

PHYSIOLOGY

- **GUYTON AND HALL TEXTBOOK OF MEDICAL PHYSIOLOGY GUYTON AND HALL 13TH EDITION**

BIOCHEMISTRY

- **LIPPINCOTT'S ILLUSTRATED REVIEWS SERIES DENISE R. FERRIER 6TH EDITION**

- **HARPERS ILLUSTRATED BIOCHEMISTRY (REFERENCE BOOK) VICTOR RODWELL, DAVID BENDER, KATHLEEN M. BOTHAM, PETER J. KENNELLY, P. ANTHONY WEIL 28TH EDITION**

COMMUNITY MEDCINE

- **PARK'S TEXTBOOK OF PREVENTIVE AND SOCIAL MEDICINE K. PARK 26TH EDITION**

PATHOLOGY

- **ROBBINS & COTRAN PATHOLOGIC BASIS OF DISEASE**
  VINAY KUMAR, ABUL K. ABBAS, JON C. ASTER
  10TH EDITION

PHARMACOLOGY

- **LIPPINCOTT ILLUSTRATED REVIEWS: PHARMACOLOGY**
  KAREN WHALEN, CARINDA FEILD, RAJAN RADHAKRISHNAN
  7TH EDITION

PAEDIATRICS

- **BASIS OF PEDIATRICS**
  PERVEZ AKBAR
  10TH EDITION

IBN-E-SINA UNIVERSITY MIRPURKHAS
FACULTY OF BASIC MEDICAL SCIENCES

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
1. Strongly disagree 5. Strongly agree ☐

C. The lecture sequence was well-planned
1. Strongly disagree 5. Strongly agree ☐

D. The contents were illustrated with
1. Too few examples 5. Adequate examples ☐

E. The level of the course was
1. Too low 5. Too high ☐

F. The course contents compared with your expectations
1. Too theoretical 5. Too empirical ☐

G. The course exposed you to new knowledge and practices
1. Strongly disagree 5. Strongly agree ☐

H. Will you recommend this course to your colleagues?
1. Not at all 5. Very strongly ☐

THE CONDUCT OF THE MODLUE

A. The lectures were clear and easy to understand
1. Strongly disagree 5. Strongly agree ☐

B. The teaching aids were effectively used
1. Strongly disagree 5. Strongly agree ☐

C. The course material handed out was adequate
1. Strongly disagree 5. Strongly agree ☐

D. The instructors encouraged interaction and were helpful
1. Strongly disagree 5. Strongly agree ☐

E. Were objectives of the course realized? Yes ☐ No ☐

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.

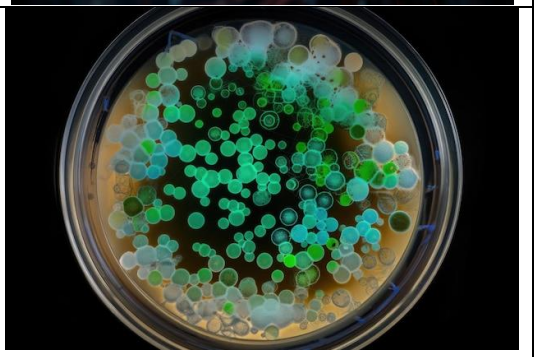
Optional - Your name and contact address:

Thank you!!

IBN-E-SINA UNIVERSITY MIRPURKHAS

STUDENT'S STUDY GUIDE
RESPIRATORY-I MODULE
FIRST PROFESSIONAL MBBS

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1. DISCLAIMER

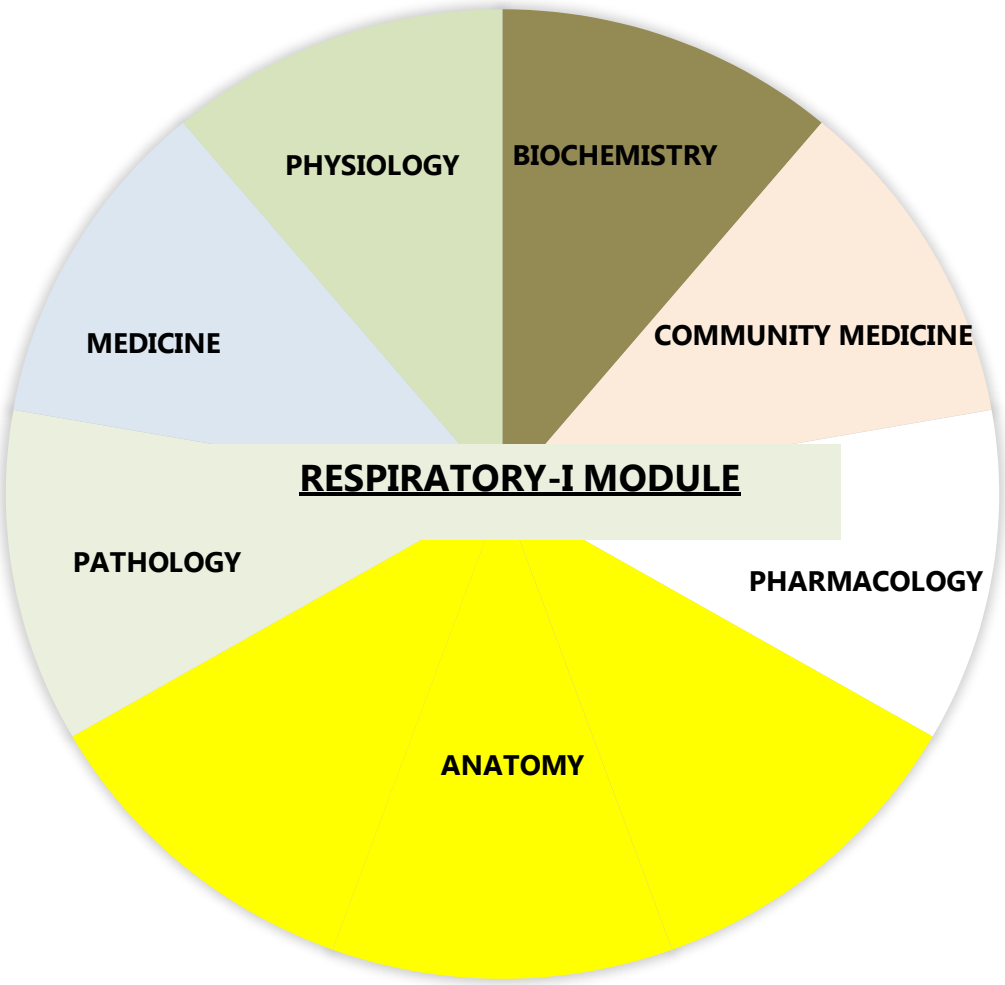
- Developing a study guide is a dynamic process and undergoes iteration according to the needs and priorities.
- This study guide is subjected to the change and modification over the whole academic year.
- However, students are advised to use it as a guide for respective modules.
- The time tables are 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

2. CURRICULUM FRAMEWORK

An educational strategy known as integrated curriculum places a strong emphasis on interdisciplinary learning, in which students gain knowledge by integrating it from several topic areas. By integrating many subjects and disciplines into a cohesive curriculum, this method seeks to give students a more relevant and interesting learning experience. Integrated curriculum means that subjects are presented as a meaningful whole for better understanding of basic sciences in relation to clinical experience and application.

Integrated curriculum comprises of system-based modules such as Foundation-I, Blood-I, CVS-I, Musculoskeletal-I and Respiratory-I Modules which links basic science knowledge to clinical problems.

INTEGRATING DISCIPLINES OF RESPIRATORY-I MODULE



3. MODULE OVERVIEW

RESPIRATORY-I MODULE DETAILS

Course	MBBS
Year	First professional
Duration	4 weeks
Learning Outcomes	The competent Medical Practitioner
Competencies covered	To develop medical professionals who are well - versed, adept, and have the right mindset.
Module Assessment	End module formative assessment
Teaching Methods	Interactive Lectures, Demonstrations, Case Based Learning, Practical Lab, Small Group Discussions, Self-Study Sessions, E-Learning, Clinical rotations
Assessment Methods	MCQs, SEQs, OSPE, VIVA

RESPIRATORY-I MODULE COMMITTEE

Sr. No	Names	Department	Designation
MODULE COORDINATOR			
1.	Dr. Saqib Baloch	Anatomy	Assistant Professor
2.	Dr. Shahab Hanif	Anatomy	Assistant Professor
COMMITTEE MEMBERS			
1.	Prof: Dr. Syed Razi Muhammad	Surgery	Chancellor ISU
2.	Prof: Dr. Shams Ul Arfeen Khan	Biochemistry	Vice Chancellor ISU
3.	Prof: Dr. Aijaz Ahmed Memon	Surgery	Pro Vice Chancellor ISU

4. WHAT IS STUDY GUIDE

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

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.

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.

Achievement of objectives.

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

5. LEARNING METHODOLOGIES

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

- Interactive Lectures
- Small Group Discussion
- Case- Based Learning (CBL)
- Skills session
- Practicals
- Self-Directed Study

- **INTERACTIVE LECTURES:**

  Large group discussions are not the same as traditional lecture formats. When a teacher or instructor uses images, radiographs, patient interaction recordings, etc. to discuss a topic or typical clinical scenario, the lecture becomes interactive. When they are given tiny activities to do that allow them to apply the knowledge they have learned throughout the session and are asked questions, students actively participate in the learning process.

- **SMALL GROUP DISCUSSIONS (SGDS):**

  With the use of SGD, students can take an active role in their education, clarify ideas, develop psychomotor skills, and develop a positive attitude. Discussion themes, patient interviews, and clinical cases are used to design sessions in an organized manner. Pupils are inspired to express their ideas, apply the fundamental knowledge they have learned from lectures and independent study, and are encouraged to share their notions. In small groups, role play is a useful technique for acquainting pupils with real-world scenarios. Probing questions, rephrasing, and summarizing are used by the teacher to assist make the concepts obvious.

- **CASE-BASED LEARNING (CBL):**

  Learning is centered around a sequence of questions based on a clinical scenario in this small group discussion format. Students create new information by discussing and responding to the questions using pertinent prior knowledge from the clinical and fundamental health sciences modules. The relevant department will give the CBL.

- **SKILL SESSIONS:**

  Skills relevant to respective module are observed and practiced where applicable in skills laboratory.

- **PRACTICALS:**

  Basic science practical related to Anatomy, Physiology and Biochemistry have been schedule for student learning.

- **SELF STUDY:**

  Self-directed learning is a process in which students take charge, either on their own or with assistance from others. Students chart their learning objectives and determine their areas of need for learning. They select and employ their own learning methodologies, and they independently assess the learning objectives.

6. INTRODUCTION

This fascinating session will act as a foundation and is crucial to your future practice as physicians. This module includes a number of interactive tasks that are meant to make your learning engaging and fruitful. To comprehend the typical movements of the chest wall, one must have a thorough understanding of the anatomy of the diaphragm and the chest wall. The vital organs that support life, including the heart, lungs, and major blood vessels, are housed inside the protective thoracic cage. Despite the strength of the chest wall, the soft organs can be hurt by sharp or piercing cuts.
A very painful injury, flail chest (also known as stove-in chest) reduces ventilation, which in turn affects blood oxygenation. All of the associated conditions' pathophysiology will be covered in this module

6.1 RATIONALE

In our community, respiratory illnesses are very common, which may raise morbidity and death rates. Only after gaining a foundational understanding of the anatomy and physiology of the respiratory system can a practitioner effectively treat patients with respiratory illnesses. Acute respiratory infections, such as pneumonia, are particularly dangerous for young individuals, the elderly, and those with compromised immune systems. It is best to explain oxygen administration and artificial ventilation to kids in earlier years of school as these are necessary for the management of some respiratory disorders. Since smoking increases the chance of developing lung cancer and COPD, it is crucial to understand the pathophysiology of smoking. The respiratory module is structured so that students can comprehend its components, pathophysiology, prescriptions, including those for drugs, and can inform the public about illness prevention and health promotion.

6.2 IBN E SINA UNIVERSITY (ISU) VISION:

To become a world-leading organization in rural health and social care research, training, recruitment and best evidence-based practice.

6.3 IBN E SINA UNIVERSITY (ISU) MISSION:

Our Mission is to inspire hope, and contribute to health and well-being by providing the best care to every patient through integrated clinical practice, education and research. To provide a focal point for the development and collation of high-quality research pertinent to rural health and wellbeing. To improve the training, recruitment and retention of a professional workforce within rural communities. To be recognized as an exemplar in rural health and wellbeing on the international stage. To establish a network of individuals and groups that support research, innovation and development in rural health and social care.

7. LEARNING OBJECTIVES

7.1 Knowledge / Cognitive Domain

It involves knowledge and the development of intellectual skills. By the end of this module, the students should be able to:

1. Describe the anatomy and abnormalities of thoracic cage
2. Describe the development and gross anatomy of the diaphragm
3. Describe the contents of mediastinum and their relations
4. Describe the anatomy of pleura and its reflections
5. Describe the gross and microscopic structure, development, nerve supply and blood supply of trachea, bronchi and lungs
6. Describe the epithelia and connective tissues lining the respiratory passageways.
7. Describe pulmonary ventilation
8. Discuss the mechanisms of gaseous exchange between alveoli, and blood and blood and tissues
9. Elaborate the transport of gases in the blood
10. Describe the mechanisms of regulation of respiration
11. Define hypoxia, and cyanosis
12. Describe the effect of aging on respiratory system
13. Describe the biochemical structure and functions of enzymes
14. Describe the mechanisms of O2 and CO2 transport in the blood
15. Classify anti-asthmatic and anti-tuberculous drugs
16. Describe the types and signs of asphyxia
17. Enlist the causes and signs of pneumonias, bronchial asthma, tuberculosis, Acute Respiratory Distress Syndrome (ARDS), and pulmonary edema
18. Describe the parameters of Pulmonary Function Tests (PFTs)

7.2 Skills / Psychomotor Domain:

Includes physical movement, co-ordination and the use of motor skill areas. For this Module, these include:

1. Identification of the various respiratory system components under a microscope.
2. Analyze overall lipid characteristics.
3. Conduct cardiopulmonary.
4. Perform spirometry and construct a lung volume graph.
5. Using a pH meter
6. Interpreting Pulmonary Function tests (PFTs) and Arterial Blood Gases (ABGs)
7. Doing a clinical evaluation of the respiratory system

7.3 Attitude / Affective Domain:

It Involves our feelings, emotions and attitudes. By the end of this module, the students should be able to:

1. Comply with standard laboratory procedures
2. Engage in professional classroom and practical work.
3. Work as a team to effectively communicate with instructors, staff, and pears.
4. Act with professionalism and moral principles when interacting with teachers, personnel, cadavers, and patients.
5. Work well as a team to communicate with instructors and pears.
6. Show that you have the capacity to evaluate your performance.

7.4 Outcomes of Respiratory-I Module

1. Knowledgeable
2. Skillful
3. Community Heath Promoter
4. Problem-solver
5. Professional
6. Researcher
7. Leader and Role Model

8. THEMES FOR RESPIRATORY-I MODULE

SNO	Theme	Duration
1	**The Chest / Thoracic wall and trauma**	1 week
2	**Airways and their conditions or diseases**	1 week
3	**Lung parenchyma & interstitium and the related diseases**	2 week

9. SPECIFIC LEARNING OBJECTIVES THEME WISE

THEME 1: THE CHEST / THORACIC WALL AND TRAUMA

S. NO	LEARNING OBJECTIVES	TOPIC	TEACHING STRATEGY	ASSESS MENT
	ANATOMY			
1	Define the anatomical classification of the Respiratory system. Define the structure of the thoracic cage & wall. Define the thoracic inlet & thoracic outlet. Discuss the thoracic outlet syndrome.	**RESP-1-ANA-G-1** General introduction of the Respiratory system and Anatomy of the thorax	Interactive Lecture	BCQs, SAQs, OSPE, Viva
2	Define the general features of the sternum. Define the general features of the ribs. Differentiate typical and atypical ribs. Define the costal cartilages. Discuss the attachment of various muscles.	**RESP-ANA-G-2** Osteology of the Ribs andthe Sternum	Demonstration	BCQs, SAQs, OSPE, Viva
3	Define the general features of the thoracic vertebra. Differentiate typical and atypical thoracic vertebrae. Discuss the joints of the thoracic walls. Differentiate the	**RESP-1-ANA-G-3** Osteology of the thoracicvertebrae	Demonstration	BCQs, SAQs, OSPE, Viva
4	Define the three morphological layers of the muscles of the thoracic wall. Define the intercostal spaces. Define the endothoracic fascia. Discuss the supra-pleural membrane.	**RESP1-ANA-G-4** Muscles of the thoracic wall and intercostal spaces	Demonstration	BCQs, SAQs, OSPE, Viva
5	Define the intraembryonic mesoderm and its parts. Discuss the divisions of lateral plate mesoderm into visceral and parietal layers. Define the extent of intraembryonic coelom and its divisions. Discuss the formation of the pleuro-pericardial and pleuro-peritoneal membranes.	**RESP-1-ANA-E-1** Formation of the intraembryonic cavity , Serous membranes and thoracic cavity	Interactive Lecture	BCQs, SAQs, OSPE, Viva
6	Discuss the steps of development of diaphragm from its composite embryonic derivatives. Discuss anomalies related with its development.	**RESP-1-ANA-E-2** Development of the diaphragm	Interactive Lecture	BCQs, SAQs, OSPE, Viva
7	Describe the histological features of different layers of Trachea. Identify the tracheal epithelium and other microscopic features of the trachea with the help of light microscope.	**RESP-1-ANA-H-1** The Histology of the Trachea	Interactive Practical	BCQs, SAQs, OSPE, Viva
	PHYSIOLOGY			
8	Describe the Overview of respiration Describe the parts of respiratory tract Role of respiratory tract Describe the functions respiration	**RESP-1-PHY-1** Introduction of respiratory tract and functions	Interactive Lecture	BCQs, SAQs, OSPE, Viva

9	Describe the mechanics of pulmonary ventilation and muscles of respiration Briefly describe the function of respiratory passages.	**RESP-1-PHY-2** The mechanics of breathing-I	Interactive Lecture	BCQs, SAQs, OSPE, Viva
10	Define alveolar pressure & pleural pressure, alveolar ventilation. Discuss trans pulmonary pressure and its changes during respiration. Define dead space	**RESP-1-PHY-3** The mechanics of breathing-II	Interactive Lecture	BCQs, SAQs, OSPE, Viva
11	Describe the compliance of lungs and work of breathing with special reference tovarious pressure, role of surfactant, ribs, and respiratory muscles Enlist factors affecting lung compliance Describe the role of surfactant in maintaining lung compliance. Differentiate compliance work, tissue resistance work & airway resistance work.	**RESP-1-PHYS-4** The Lung compliance & work of breathing	Interactive Lecture	BCQs, SAQs, OSPE, Viva
12	List the pulmonary volume & capacity with their normal values & significance in pulmonary function test. Describe the all pulmonary volumes & capacities Differentiate compliance work, tissue resistance work & airway resistance work Discuss alveolar ventilation & dead space	**RESP-1-PHYS-5** Lung volumes & capacities & their importance -I	Interactive Lecture	BCQs, SAQs, OSPE, Viva
13	Differentiate compliance work, tissue resistance work & airway resistance work Discuss alveolar ventilation & dead space	**RESP-1-PHYS-6** Lung volumes & capacities & their importance-II	Interactive Lecture	BCQs, SAQs, OSPE, Viva
14	To record the effect of respiration during sitting & standing of young adult on power lab & plot a graph To record the effect of swallowing & deglutition on respiration in healthy adult on power lab & plot a graph	**RESP-1-PHY-5** Respiratory adaptations during standing, sitting and swallowing on power lab	Interactive Practical	OSPE, Viva
BIOCHEMISTRY				
15	Concept of pH, Buffers & their mechanism of action, Types of Buffers in humans	**RESP-1-BIO -1** Concept of pH, Buffers & their mechanism of action, Types of Buffers in humans	Interactive Lecture	BCQs, SAQs, OSPE, Viva
16	Describe the acid base balance. Explain the respiratory and metabolic acidosis & alkalosis with causes and compensatory mechanisms.	**RESP-1-BIO -2** Acid Base Balance/ Metabolic & Respiratory Acidosis & Alkalosis	Interactive Lecture	BCQs, SAQs, OSPE, Viva
17	Description & Biomedical significance of Compound Lipids	**RESP-1-BIO-3** Biomedical significance of Compound Lipids	Interactive Lecture	BCQs, SAQs, OSPE,

18	Describe the Synthesis & Functions of Phospholipids. Discuss the Role of Lecithin in Respiration	**RESP-1-BIO-4** Synthesis of Phospho-lipids & Role of Lecithin in Respiration	Interactive Lecture	BCQs, SAQs, OSPE, Viva
19	Demonstrate the pH Meter, Significance, interpretation	**RESP-1-BIO-5** Introduction to pH Meter, Significance, interpretation	Interactive Practical	BCQs, SAQs, OSPE, Viva
PATHOLOGY				
20	Identify congenital anomalies of lungs. Define acute lung injury Describe the causes ARDS Discuss the characteristic features,	**RESP-1--PATHO-1** Congenital anomalies, acute lung injury and ARDS	Interactive Practical	BCQs, SAQs, OSPE, Viva

	morphology and pathogenesis of ARDS Describe its consequences and clinical course.			
COMMUNITY MEDICINE				
21	To describe the sources of air pollution To describe the health hazards of in-door and out-door air pollution To explain the control measures of air pollution	**RESP-1-CM-1** Environmental health (Air pollution) Sources of air pollution Health hazards of air pollution	Interactive Lecture	BCQs, SAQs, OSPE, Viva
CLINICAL				
22	Define Chyne-stokes breathing and effects on body Define COPD and RLD Differentiate b/w RLD & COLD & effects on body (obstructive & restrictive lung disease) Is COVID-19 RLD or COLD type of disease Define emphysema, chronic bronchitis Define Bronchiectasis Define interstitial lung diseases	**RESP-1-MED-1** Obstructive and Restrictive Lung Diseases	Interactive Lecture	BCQs, SAQs, OSPE, Viva

THEME 2: AIRWAYS AND THEIR CONDITIONS OR DISEASES

	LEARNING OBJECTIVES	TOPICS	TEACHING STRATEGY	ASSESSMENT
23	Discuss the attachments of the diaphragm. Define the blood and nerve supply of the diaphragm. Identify the openings in the diaphragm with levels. Define the structures passing through these openings. Define the functions of the diaphragm.	**RESP-1-ANA-G-5** The Diaphragm and its Openings	Demonstration	BCQs, SAQs, OSPE, Viva
24	Describe mediastinum Describe boundaries, divisions and structures present in the mediastinum	**RESP-1-ANA-G-6** Mediastinum	Interactive Lecture	BCQs, SAQs, OSPE,
25	Define the anatomy of the trachea. Discuss the clinical conditions related withtrachea.	**RESP-1-ANA-G-7** Anatomy of the trachea	Interactive lecture	BCQs, SAQs, OSPE,
26	Define the anatomy of the principal bronchi. Discuss the clinical conditions related with bronchi.	**RESP-1-ANA-G-8** Anatomy of the bronchi	Demonstration	BCQs, SAQs, OSPE,
27	Describe the development of the larynx, trachea and bronchi. Discuss anomalies related with the development of these structures.	**RESP-1-ANA-E-3** Formation of the Larynx, Trachea and Bronchi	Interactive Lecture	BCQs, SAQs, OSPE, Viva
28	Describe the microscopic features of the bronchi. Differentiate the primary bronchioles from the tertiary bronchioles. Identify the general histological features of bronchi and bronchioles with the help of light microscope.	**RESP-1-ANA-H-2** The Histology of the Bronchi: Primary and Tertiary Bronchioles	Interactive Practical	BCQs, SAQs, OSPE, Viva

PHYSIOLOGY				
29	Describe the pulmonary circulation & blood flow three various zones of lung (1,2,3). Explain pulmonary capillary dynamics.	**RESP-1-PHYS-7** Pulmonary Circulation & V/Q relationships-I	Interactive Lecture	BCQs, SAQs, OSPE, Viva
30	Explain mechanism of development of pulmonary edema, pleural effusion understands importance of ventilation /perfusion Ratio & effects of mismatching of this ratio	**RESP-1-PHYS-8** Pulmonary Circulation & V/Q relationships-II	Interactive Lecture	BCQs, SAQs, OSPE, Viva
31	Composition of air & Gas pressures Respiratory membrane & functions Gasses exchange across cell membrane Factors affecting exchange Water vapor pressure Effect of gravity	**RESP-1-PHYS-9** Exchange of Gasses	Demonstration	BCQs, SAQs, OSPE, Viva
32	Explain the diffusion of respiratory gases via respiratory membrane and factors that affect it Explain the mechanism of transport ofCO_2 in blood	**RESP-1-PHYS-10** Transport of CO_2 & O_2-I	Interactive Lecture	BCQs, SAQs, OSPE, Viva
33	the transport of CO_2 in the blood & gases exchange between blood & body cells.	**RESP-1-PHYS-11** Transport of CO_2 & O_2-II	Interactive Lecture	BCQs, SAQs, OSPE, Viva
34	Explain the sigmoid shape of curve in terms of its flat and steep portions. Describe right and left shift of Hb-O_2 dissociation curve changes in different conditions. Explain Hb-O_2 curve changes at lung and tissue level Bohar's Effect and Helden's Effect.	**RESP-1-PHYS-12** Helden and Bohar Effect Oxygen-Hb dissociation curve	Demonstration	BCQs, SAQs, OSPE, Viva
35	To record the lung volumes & capacities in healthy adult on power lab & plot a graph Interpretation of Pulmonary Function Tests	**RESP-1-PHY-10** Record the lung volumes and capacities on power lab & plot a graph & Interpretation of Pulmonary Function Tests	Interactive Practical	OSPE, Viva
BIOCHEMISTRY				
36	Describe the Glycosis in detail.	**RESP-1-BIO-6** Glycosis	Interactive Lecture	

37	Describe the Role of TCA Cycle in cellular respiration	**RESP-1-BIO-7** Role of TCA Cycle in cellular respiration	Interactive Lecture	BCQs, SAQs, OSPE, Viva
38	Demonstrate the Arterial blood gases significance Describe the ABG's interpretation with various respiratory disorders	**RESP-1-BIO-8** Arterial blood gases (ABGs) interpretation	Interactive Practical	
PATHOLOGY				
39	Define chronic obstructive lung disease (COPD) Classify the types of COPD Describe its pathogenesis & clinical features.	**RESP-1-PATH-2** Chronic obstructive lung diseases (COPD)	Interactive Lecture	BCQs, SAQs, OSPE, Viva

PHARMACOLOGY				
40	Classify drugs used to treat dry and productive cough according to their mechanism of action. Describe the adverse effects , contraindications and drug interactions of the drugs used to treat various types of cough.	**RESP-1-PHARM-1** The treatment of the dry and productive cough	Interactive Lecture	BCQs, SAQs, OSPE, Viva
COMMUNITY MEDICINE				
41	To define global warming and climate change To discuss greenhouse effect To describe the effects of climate change and global warming on human health and economy.	**RESP-1-CM-2** Global warming	Interactive Lecture	BCQs, SAQs, OSPE, Viva
CLINICAL				
42	Define hypoxia and its types. What are the effects of hypoxia? Explain psychogenic dyspnea & causes of psychogenic dyspnea Define cyanosis How can you prevent cyanosis? What are three principal reasons of cyanosis Define CO2 poisoning What are the effects of CO2 poisoning? How can CO2 poisoning be prevented	**RESP-1-MED-2** Hypoxia Cyanosis CO2 poisoning	Interactive Lecture	BCQs, SAQs, OSPE, Viva

THEME 3: LUNG PARENCHYMA AND INTERSTITIUM AND THEIR CONDITIONS OR DISEASES

S#	LEARNING OBJECTIVES	TOPIC	TEACHING STRATEGY	ASSESSMENT
43	Define the anatomy of the pleura What is the nerve supply of the pleura	**RESP-1-ANA-G-9** Anatomy of the pleurae	Interactive Lecture	BCQs, SAQs,
44	Describe the anatomy of the lungs. The lobes and fissures of the lungs Discuss the phases of the respiration	**RESP-1-ANA-G-10** Anatomy of the lungs Mechanism of the respiration-1	Demonstration	BCQs, SAQs, OSPE, Viva
45	Define the bronchopulmonary segments. Define the types of the respiration. Discuss the clinical conditions related with lungs.	**RESP-1-ANA-G-11** Anatomy of the lungs Mechanism of the respiration-2 (bronchopulmonary segment)	Demonstration	BCQs, SAQs, OSPE, Viva
46	Define the blood and nerve supply of the lungs. Discuss the clinical conditions related with lungs	**RESP-1-ANA-G-12** Anatomy of the lungs-3 (Blood supply)	Interactive Lecture	BCQs, SAQs, OSPE,
47	Define the significance of chest X-ray in respiratory diseases. Diagnose the different clinical conditions on the basis of chest X-ray	**RESP-1-ANA-G-13** Radiology: Basics of chestX-ray	Interactive Lecture	BCQs, SAQs, OSPE, Viva
48	Discuss the formation of laryngo-tracheal groove & respiratory diverticulum or lung buds. Define the anomalies related with the	**RESP-1-ANA-E-4** Formation of the lung buds The maturation of the	Interactive Lecture	BCQs, SAQs, OSPE, Viva

	development of the lung buds. Discuss the stages of development / maturation of the lungs. Discuss the anomalies related with the lung maturation	Lungs		
49	Describe the structure of the alveoli and interalveolar septum. Relate the functions of different types of cells, forming the alveolar wall. Describe the structure and function of the blood air barrier. Identify the alveoli with the help of light microscope.	**RESP-1-ANA-H-3** The Histology of the Lungs: Alveoli	Interactive Practical	BCQs, SAQs, OSPE, Viva
PHYSIOLOGY				
50	Describe mechanisms of nervous regulation of respiration Describe the respiratory centers & factor effecting on respiratory centers	**RESP-1-PHYS-13** Nervous regulation of respiration Respiratory reflexes-I	Interactive Lecture	BCQs, SAQs, OSPE, Viva
51	Describe reflexes involve in nervous regulation Describe cough, deglutition & sneeze reflexes	**RESP-1-PHYS-14** Nervous regulation of respiration Respiratory reflexes-I	Interactive Lecture	BCQs, SAQs, OSPE, Viva
52	Explain chemoreceptor involved in chemical respiration Describe the regulation of respiration during exercise Explain Periodic breathing	**RESP-1-PHYS-15** Chemical regulation of respiration Regulation during exercise	Interactive Lecture	BCQs, SAQs, OSPE, Viva
53	Define Aviation Physiology Effects of low oxygen pressure on body Define space, physiological effects of space travel Explain the effect of CO2 & H2O vapor decrease the alveolar oxygen on body What is acclimatization; define respiratory changes associated with high altitude Acute & chronic mountain sickness Effects of acceleratory forces on the body in aviation & space	**RESP-1-PHYS-16** Aviation, spacePhysiology	Demonstration	BCQs, SAQs, OSPE, Viva
54	Explain deep sea diving physiology Explain effects of high partial pressure Nitrogen necrosis Acute & Chronic oxygen poising Describe SCUBA gear & its function	**RESP-1-PHYS-17** Deep sea Diving physiology	Interactive Lecture	BCQs, SAQs, OSPE, Viva

55	To record the effect of exercise on respiration in healthy adult on power lab & plot a graph Demonstrate the effects of hyperventilation & hypoventilation on power lab	**RESP-1-PHY-15** Record the effect of exercise on respiration on Power lab & plot a graph	Interactive Practical	BCQs, SAQs, OSPE, Viva
56	To record the effect of stress on respiration in healthy adult on power lab& plot a graph	**RESP-1-PHY-16** Record the effect of stress on respiration Power lab & plot a graph	Interactive Practical	BCQs, SAQs OSPE, Viva

BIOCHEMISTRY				
57	Describe the organization of the Electron Transport Chain	**RESP-1-BIO-9** Organization of Electron Transport Chain	Interactive lecture	BCQs, SAQs OSPE, Viva
58	Describe the Oxidative phosphorylation & ATP Synthesis	**RESP-1-BIO-10** Oxidative phosphorylation & ATP Synthesis	Interactive lecture	BCQs, SAQs OSPE, Viva
59	Demonstrate the Role of Emulsification in respiration and digestion.	**RESP-1-BIO-11** Role of Emulsification in respiration and digestion	Interactive Practical	BCQs, SAQs OSPE, Viva
PATHOLOGY				
60	Define pneumonia Discuss the etiological classification of pneumonia Discuss its clinical presentation Describe the diagnostic tools for pneumonia.	**RESP-1-PATHO-3** Pneumonia	Interactive lecture	BCQs, SAQs, OSPE, Viva
COMMUNITY MEDICINE				
61	To describe the chemical composition of tobacco To describe habits of tobacco smoking Discuss the situation of tobacco in Pakistan To discuss the health effects of smoking and second hand smoking of tobacco To explain the tobacco control program/control measure of tobacco To discuss tobacco free initiative	**RESP-1-CM-3** Tobacco and health: Effects of tobacco smoking on health of community	Interactive Lecture	BCQs, SAQs OSPE, Viva
62	To learn about disease burden of Tuberculosis To discuss the etiological Agent, source of infection, mode of transmission. To describe Environmental Factors as risk factor of developing the Tuberculosis To describe Post Primary Tuberculosis To discuss the diagnostic method of T.B.To describe the Control measures of Tuberculosis In Pakistan and its Prevention.	**RESP-1-CM-4** Communicable Disease		
CLINICAL				

63	What is RDS Define the sign and symptoms of the Respiratory distress syndrome What are the causes of the respiratory distress syndrome? Discuss the management	**RESP-1-MED-3** Respiratory distress syndrome	Interactive Lecture	BCQs, SAQs OSPE, Viva
RADIOLOGY				
64	Interpretate the normal landmarks, artifacts and soft and bony shadows of chest xray. Identify normal lung shadows, pulmonary recesses, posterior ribs number in lung fields and position of Mediastinum	**RESP-1-RADIO-1** Chest Radiograph	Interactive Lecture	BCQs, OSPE, Viva

9.1 TAGGED SUBJECTS

Topic	Contents	Learning Objectives	Teaching Method	Module	Hours	Assessment
PROFESSIONALISM						
Social accountability	Describe social accountability	Definition, types, components, theoretical background	Lecture	Respiration 1	2	MCQ
LEADERSHIP AND MANAGEMENT						
Self-management skills	Attributes and style of leadership	Describe different attributes and styles of leader in their own cultural context	Lecture/ Group Discussion	Respiratory 1	2	MCQs

9.2 CLINICAL SCIENCES SUBJECTS

S. No	Clinical Sciences Subjects	Learning Objectives	Hours	Learning Strategy
1.	**ISLAMIC STUDY** Etiquettes of visiting the Patient	Discuss Protocols and etiquettes of visiting the patients in hospital or in outpatient settings Describe briefly the importance of empathy	1 1	Lecture Lecture
2.	**PAKISTAN STUDY**	National surgical obstetric and anaesthetic plan – vision 2025 Sustainable development goals - universal health coverage	1 1	Lecture Lecture
3.	**ANAESTHESIA** Principles of Anesthesia	Preoperative assessment of patients Pre-medications for anesthesia Discuss the common, age-related changes in airway management	1 1 1	Lecture Lecture Lecture
4.	**CRITICAL CARE** Respiratory	Airway management Acute asthma and COPD in the ICU Acute Respiratory Distress Syndrome Extrapulmonary causes of respiratory failure	1 1 1 1	Lecture Lecture Lecture Lecture
5.	**FAMILY MEDICINE** Diverse Health Issues	Irrational Use of Medications ECGs not to Miss	1 1	Lecture Lecture

10. TEACHING HOURS ALLOCATION

S. No	Subject	Teaching Hours	Practical Hours
1	Anatomy	24	6
2	Biochemistry	11	4
3	Physiology	20	8
4	Medicine	1	-
5	Pathology	3	2
6	Community Medicine	4	-
7	Pharmacology	3	-
8	CBL 4 (Anatomy)*	8	-
9	CBL 4 (Physiology)*	8	-
10	Radiology	1	-
11	Islamic Study	2	-
12	Pakistan Study	2	-
13	Anesthesia	3	-
14	Critical Care	4	-
15	Family Medicine	2	-
	Total hours	**96**	**20**

*Minimum 2 hours are allotted for each CBL session per Module

S. No	Tagged Subject	Teaching Hours
1	Professionalism	2
2	Leadership and Management	2
	Total hours	**4**

11. EXAMINATION AND METHODS OF ASSESSMENT

11.1 EXAMINATION RULES AND REGULATIONS

- Student must report to examination hall/venue, in time for smooth conduction of the exams.
- No student will be allowed to enter the examination hall after 10 minutes of scheduled examination time.
- No students will be allowed to sit in exam without College ID Card, and Lab Coat
- Students must sit according to their roll numbers mentioned on the seats.
- Student must bring their own stationary items (Pen, Pencil, Eraser, and Sharpener) – Sharing is prohibited
- Any disturbance or Indiscipline in the exam hall/venue is not acceptable.
- Students must not possess any written material or communicate with their fellow students
- Cell phones are strictly not allowed in examination hall. If any student is found with cell phone in any mode (silent, switched off or on) he/she will be **not be allowed to continue their exam.**
- **No student is allowed to leave the examination hall before half the time is over, paper is handed over to the examiner and properly marking the attendance.**

11.2 ASSESSMENT

11.2.1 Internal: Total 10% (20 marks)

- Students will be assessed comprehensively through multiple methods to determine achievement of module objectives through two methods: Module examination and Graded assessment by Individual department
    - **Module Examination**: It will be scheduled on completion of each module. The method of examination comprises theory exam (which includes SEQs and MCQs) and OSPE / OSCE exam (which includes static and interactive stations).
    - **Graded Assessment by individual department**: It includes weekly MCQs tests on Survive online LMS program, viva, practical, weekly theme based assignments, post-test discussion sessions, peer assessments, presentations, small group activities such as CBL, ward activities, examinations and log books, all of which have specific marks allocation.
- Marks of both modular examination and graded assessment will constitute 10% weightage.
- 10% marks of internal evaluation will be added to the ISU annual professional exam.
- The marks distribution is based on Formative Assessment done individually by all the concerned departments. It may include:

- NOTE: **at least 75% attendance is mandatory** to appear in the annual university examination.
- Exam branch is responsible to maintain the attendance record for Main Campus in coordination with all the concerned departments.

11.2.2 University Annual Exam: Total 90%

- Annual Exam has 90% marks in total
- It includes theory and OSPE / OSCE.
- Each written paper consists of 100 MCQs and 10 SEQs and internal assessment marks will be added to the final marks.

11.3 METHODS OF ASSESSMENT

11.3.1 Multiple Choice Questions

- Single best type MCQs having five options with one correct answer and four distractors are part of assessment.
- Total 100 MCQs are included which are formulated through the table of specification from learning objectives of Module interactive lectures.
- Time duration for MCQs will be 1 and half hour.
- MCQs are used to assess objectives covered in each module.
- Students after reading the statement / scenarios select one appropriate response from the given options.
- Correct answer carries one mark, and incorrect will be marked zero. Rule of negative marking is not applicable.
- Students attempt the MCQs exam on Computer screen on Moodle / LMS program in IT Lab.

11.3.2 Short Essay Questions (SEQs):

- Short-answer questions are structured way of asking open-ended questions that require students to create their answers based on their knowledge.
- Commonly used in examinations to assess the depth of knowledge and understanding.
- Includes 10 questions each carrying 10 marks.
- Time Duration for Essay type paper is 2 hours.
- Questions are selected from the specific learning objectives of the specific ongoing module.

11.3.3 OSPE / OSCE

- Each student will be assessed on the same content and have same time to complete the task.
- Time allocated for each station is five minutes as per Examination rules of Ibn e Sina University, Mirpurkhas
- All students are rotated through the same stations.

- OSPE / OSCE Comprises of 15 - 20 stations.
- Each station may assess a variety of diagrammatic identifications and clinical tasks. These tasks may include history taking, physical examination, skills and application of skills and knowledge
- Stations are Interactive, observed, unobserved (static) and rest stations.
  - Interactive Stations:
    - In this station, examiner ask questions related to the task within the allocated time.
  - Observed Stations:
    - In observed stations, internal or external examiner don't interact with candidate and just observe the performance of the skills or procedures.
  - Unobserved (static) Stations:
    - It will be static stations in which there may be models, specimens, multiple identification points, X-ray, Labs reports, flowcharts, pictures, or clinical scenarios (to assess cognitive domain) with related questions for students will be used to answer on the provided answer copy.
  - Rest station
    - It is a station where there is no task given and in this time student can organize his/her thoughts

11.3.4 ASSIGNMENTS

- An online assignment on the Ibn-e-Sina University moodle uploaded according to the topic of the week.
- All assignments should be checked by the teacher who has taken the lecture on the topic during the same week.
- The assignment should cover enough material to include the requirement of the curriculum and syllabus, so the student should be able to answer the annual examination questions by revising these notes (assignments) only.
- The assignments are checked and graded also with comment to guide, motivate and encourage the students to work whole heartedly. Frequent guidance and motivation will go a long way in improving the students' performance.
- Assignments of the whole Professional year MBBS are counted as in Internal Assessment.

11.3.5 WEEKLY TESTS

- The weekly tests are conducted for all classes. The tests are conducted online and are on topics displayed on the portal (Moodle). It consists of 35 MCQs. 5 MCQs will be from the previous weeks (slightly altered to change the answer or the right option). Everyone taking lectures, submit two MCQs to the Chairperson of the department who will check and pass them to the class moderator. MCQs can also be sent directly to the class moderator, who submits the MCQs to IT department for final placement on the moodle.

- The MCQs are not merely simple recall, but test higher level of cognition. As far as possible, they test an important concept related to one of the topics of the week.

- It is different from the summative assessment (Annual or Semester Examinations) in that the goal of summative assessment is to evaluate student's learning at the end of an instructional unit by comparing it against some standard or benchmark, to decide if the student can be promoted or not, whereas the goal of these weekly tests is to check the understanding of the students on the important concepts related to the topics that have been displayed on the portal for the week, the teachers have taught them and the students have made assignments on them.
- Results of weekly tests of the whole Professional year MBBS are counted as in Internal Assessment.

11.3.6 POST-TEST DISCUSSION (PTD)

- Every student has to prepare a special assignment where he/she selects all the questions he/she got wrong. Then he/she makes 3 boxes. In box A he/she writes the questions he/she got wrong in his/her own words, highlighting and underlining the keywords. In box B the student explains why he/she has chosen this answer. In box C the student mentions what he/she has learnt after reading the explanation and how the concept has got clear now.
- The moderator will check, assess and grade PTD
- Next day, the class moderator of the class conducts a class where he/she discusses the mistakes committed and the post-test assignments submitted in detail with the class
- PTD assignments of the whole Professional year MBBS are counted as in Internal Assessment.

12. GRADING POLICY

Marks obtained in Percentage range	Numerical Grade	Alphabetical Grade
80-100	4.0	**A+**
75-79	4.0	**A**
70-74	3.7	**A-**
67-69	3.3	**B+**
63-66	3.0	**B**
60-62	2.7	**B-**
56-59	2.3	**C+**
50-55	2.0	**C**
<50 Non gradable	0	**N**

- A student obtaining GPA less than 2.0 (50%) is declared fail.

13. ASSESMENT BLUEPRINT

RESPIRATORY-I MODULE

Assessment is based on Table of Specification (TOS)

	ASSESMENT	TOOLS	MARKS
MODULE EXAM	THEORY	MCQ's	100
		SEQ's	100
	OSPE	OSPE Static	50
		OSPE Interactive	50
		Total	300

14. RECOMMENDED BOOKS

ANATOMY

- **CLINICALLY ORIENTED ANATOMY**

KEITH.L. MOORE, ARTHUR F. DALLEY, ANNE M.R. AGUR
7TH OR LATEST EDITION

- **GRAY'S ANATOMY FOR STUDENTS**

DRAKE & VOGL & MITCHELL
3RD OR LATEST EDITION

- **CLINICAL ANATOMY BY REGIONS (REFERENCE BOOK)**

RICHARD S. SNELL
9TH EDITION

- **LAST'S ANATOMY: REGIONAL & APPLIED (REFERENCE BOOK)**

CHUMMY S. SINNATAMBY
12TH OR LATEST EDITION

- **ATLAS OF HUMAN ANATOMY**

FRANK H. NETTER
6TH EDITION

EMBRYOLOGY

- **LANGMAN'S MEDICAL EMBRYOLOGY**

T.W. SADLER
13TH EDITION

- **THE DEVELOPING HUMAN CLINICALLY ORIENTED EMBRYOLOGY (REFERENCE BOOK)**

MOORE & PERSAUD & TORCHIA
10TH EDITION

HISTOLOGY

- **MEDICAL HISTOLOGY**

LAIQ HUSSAIN SIDDIQUI
5TH OR LATEST EDITION

- **WHEATERS FUNCTIONAL HISTOLOGY**

BARBARA YOUNG
5TH EDITION

- **BASIC HISTOLOGY (TEXT AND ATLAS) (REFERENCE BOOK)**

LUIZ JUNQUEIRA, JOSE CARNEIRO
11TH OR LATEST EDITION

PHYSIOLOGY

- **GUYTON AND HALL TEXTBOOK OF MEDICAL PHYSIOLOGY**

GUYTON AND HALL
13TH EDITION

BIOCHEMISTRY

- **LIPPINCOTT'S ILLUSTRATED REVIEWS SERIES**

DENISE R. FERRIER
6TH EDITION

- **HARPERS ILLUSTRATED BIOCHEMISTRY (REFERENCE BOOK)**

VICTOR RODWELL, DAVID BENDER, KATHLEEN M. BOTHAM, PETER J. KENNELLY, P. ANTHONY WEIL
28TH EDITION

COMMUNITY MEDCINE

- **PARK'S TEXTBOOK OF PREVENTIVE AND SOCIAL MEDICINE**

K. PARK
26TH EDITION

PATHOLOGY

- **ROBBINS & COTRAN PATHOLOGIC BASIS OF DISEASE**
  VINAY KUMAR, ABUL K. ABBAS, JON C. ASTER
  10TH EDITION

PHARMACOLOGY

- **LIPPINCOTT ILLUSTRATED REVIEWS: PHARMACOLOGY**
  KAREN WHALEN, CARINDA FEILD, RAJAN RADHAKRISHNAN
  7TH EDITION

IBN-E-SINA UNIVERSITY MIRPURKHAS
FACULTY OF BASIC MEDICAL SCIENCES

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? Yes ☐ No ☐

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!!