2025

First Year MBBS

Study Guide

Musculoskeletal Module-I

Department of Medical Education

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Prepared By	Reviewed By	Approved By
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Dr Tehzeeb, Dr Samia Sarwar, Dr Ifra Saeed, Dr. Ayesha Yousaf, Dr Tehmina Qamar, & Dr Sidra Hamid	2019-2020	2nd	Developed for First Year MBBS. Horizontally and vertically integrated Learning objectives updated
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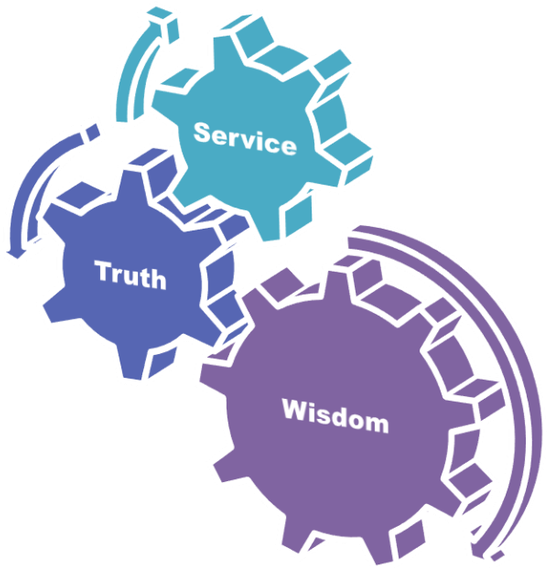
University Moto, Vision, Values & Goals

RMU Motto



Mission Statement

To impart evidence-based research-oriented health professional education in order to provide best possible patient care and inculcate the values of mutual respect, ethical practice of healthcare and social accountability.

Vision and Values

Highly recognized and accredited centre of excellence in Medical Education, using evidence-based training techniques for development of highly competent health professionals, who are lifelong experiential learner and are socially accountable.

Goals of the Undergraduate Integrated Modular Curriculum

The Undergraduate Integrated Learning Program is geared to provide you with quality medical education in an environment designed to:

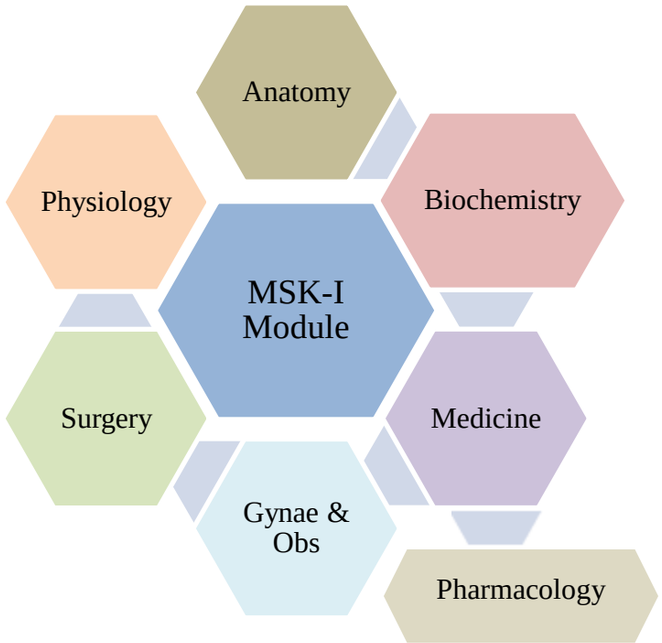
- Provide thorough grounding in the basic theoretical concepts underpinning the practice of medicine.
- Develop and polish the skills required for providing medical services at all levels of the Health care delivery system.
- Help you attain and maintain the highest possible levels of ethical and professional conduct in your future life.
- Kindle a spirit of inquiry and acquisition of knowledge to help you attain personal and professional growth & excellence.

First Year MBBS 2025

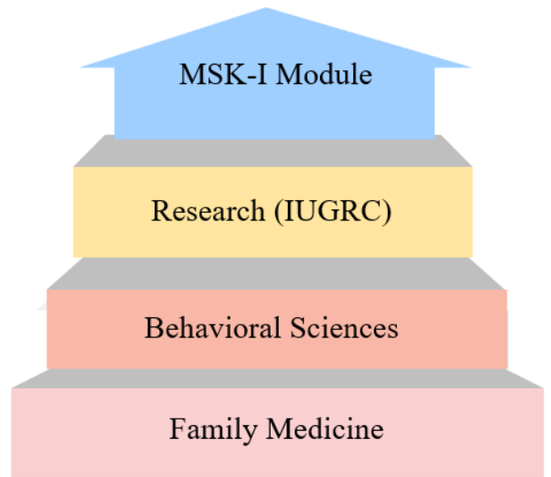
Study Guide

MSK – I Module

Integration



Disciplines in MSK - I Module



Spiral / General Education Cluster Courses

Discipline Wise Details of Modular Content

Integration					
Themes					
Block	**Module**	**General Anatomy**	**Embryology**	**Histology**	**Gross Anatomy**
I	• Anatomy	Skeletal System • Bones • Joints	General Embryology Second Week of Human Development till Placenta & Fetal Membranes	General Histology • Connective Tissue • Cartilage • Bone	Shoulder joint till Hand
	• Biochemistry	• Minerals, Vitamins (A, D, E, ascorbic acid, thiamin and niacin), Introduction & Classification of Amino Acids			
	• Physiology	• NMJ, Introduction Concept of Motor Unit. Neuromuscular Transmission, Synthesis & Fate of Acetylcholine • Drugs Acting On NMJ, Myasthenia Gravis, Lambart Eaton Syndrome • Structure of Neurons. Classification of Neurons & Nerve Fibers • Nernst Potential, RMP • Recording & Propagation of Action Potential & Factors Effecting Nerve Conduction & Hyperpolarized State • Stimulus & Response & Types of Stimuli, Stages of Action Potential			
	Spiral Courses				
	• Research Club Activity (1 – 4)	• Synopsis Writing • Questionnaire Development • Hands on session on Data Analysis • Manuscript Writing Workshop			
	• Family Medicine	• Approach to a patient with Body aches			
	• Behavioral Sciences	• Healthcare models and their clinical application • Relevance of ethics in life of a doctor			
	Vertical Integration				
	• Surgery	• Shoulder Dislocation • Tennis elbow, Fracture of olecranon, Radius and Ulna (Surgery)			
	• Community Medicine	• Musculoskeletal Disorders • Prevention of Accidents			
	• Medicine	• Osteoporosis • Osteomalacia, Rickets & Polyarthritis			
	• Pharmacology	• Drugs Acting On Neuromuscular Junction • Tennis elbow, fracture of olecranon, radius and ulna			
	• Obstetrics & Gynecology	• Bony PELVIS Fetal Skull & Mechanism of Labor			

Table of Content

MSK - I Module Team

Module Name : MSK - I Module
Duration of module : 05 Weeks
Coordinator : Dr. Summiya Bashir
Co-coordinator : Dr. Ali Raza
Reviewed by : Module Committee

Module Committee		
1.	Vice Chancellor RMU	Prof. Dr. Muhammad Umar
2.	Director DME	Prof. Dr. Ifra Saeed
3.	Convener Curriculum	Prof. Dr. Naeem Akhter
4.	Chairperson Anatomy & Dean Basic Sciences	Prof. Dr. Ayesha Yousaf
5.	Additional Director (Assessment) DME	Dr. Arsalan Manzoor Mughal
6.	Chairperson Physiology	Prof. Dr. Samia Sarwar
7.	Chairperson Biochemistry	Dr. Aneela Jamil
8.	Focal Person Anatomy First Year MBBS	Asso. Prof. Dr. Mohtashim Hina
9.	Focal Person Physiology	Dr. Sidra Hamid
10.	Focal Person Biochemistry	Dr. Aneela Jamil
11.	Focal Person Pharmacology	Dr. Zunera Hakim
12.	Focal Person Pathology	Dr. Asiya Niazi
13.	Focal Person Behavioral Sciences	Dr. Saadia Yasir
14.	Focal Person Community Medicine	Dr. Afifa Kulsoom
15.	Focal Person Quran Translation Lectures	Dr. Uzma Zafar
16.	Focal Person Family Medicine	Dr. Sadia Khan

Module Task Force Team		
1.	Coordinator	Dr. Summiya Bashir (Assistant Professor of Anatomy)
2.	DME Focal Person	Dr. Farzana Fatima
3.	Co-coordinator	Dr. Ali Raza (Senior Demonstrator of Anatomy)
4.	Co-Coordinator	Dr. Fahd Anwar (Demonstrator of Physiology)
5.	Co-coordinator	Dr. Romessa Naeem (Demonstrator of Biochemistry)

DME Implementation Team		
1.	Director DME	Prof. Dr. Ifra Saeed
2.	Implementation Incharge 1st & 2nd Year MBBS	Dr. Arsalan Manzoor Mughal Dr. Farzana Fatima
3.	Assistant Director DME	Dr. Farzana Fatima
4.	Editor	Muhammad Arslan Aslam

Module II–MSK - I Module

Rationale: This module deals with locomotor system. This module describes the structural organization, functions, and congenital anomalies of musculoskeletal system. It explains the mechanism of neuromuscular transmission, its biochemical basis and the importance of Ca++ in the body. It depicts structure and function of joints in upper and lower limb. It elaborates identification of common fractures of long bones on radiograph.

Module Outcomes

At the end of this module the student should be able to:

Knowledge

- Explain the development & structure of musculoskeletal system.
- Explain the physiological and biochemical factors affecting Neuro Muscular transmission.
- Apply the knowledge of the basic sciences to understand common fractures.
- Appreciate concepts & importance of
  Artificial Intelligence
  Family Medicine
  Biomedical Ethics
  Research.

Skills

- Dissect limbs to demonstrate regional Anatomy and relationships of various structures to each other.
- Identify histological features of connective tissue and muscles under microscope.
- Perform practicals on estimation of calcium and protein chemistry.

Attitude

- Demonstrate **a professional attitude, team building spirit, good communication skills** and cadaveric handling.

This module will run in 5 weeks duration. Instructional strategies are given in the time table and learning objectives are given in the study guides. Study guides will be uploaded on the university website. Good luck!

SECTION - I

Terms & Abbreviations

Contents

Tables & Figures

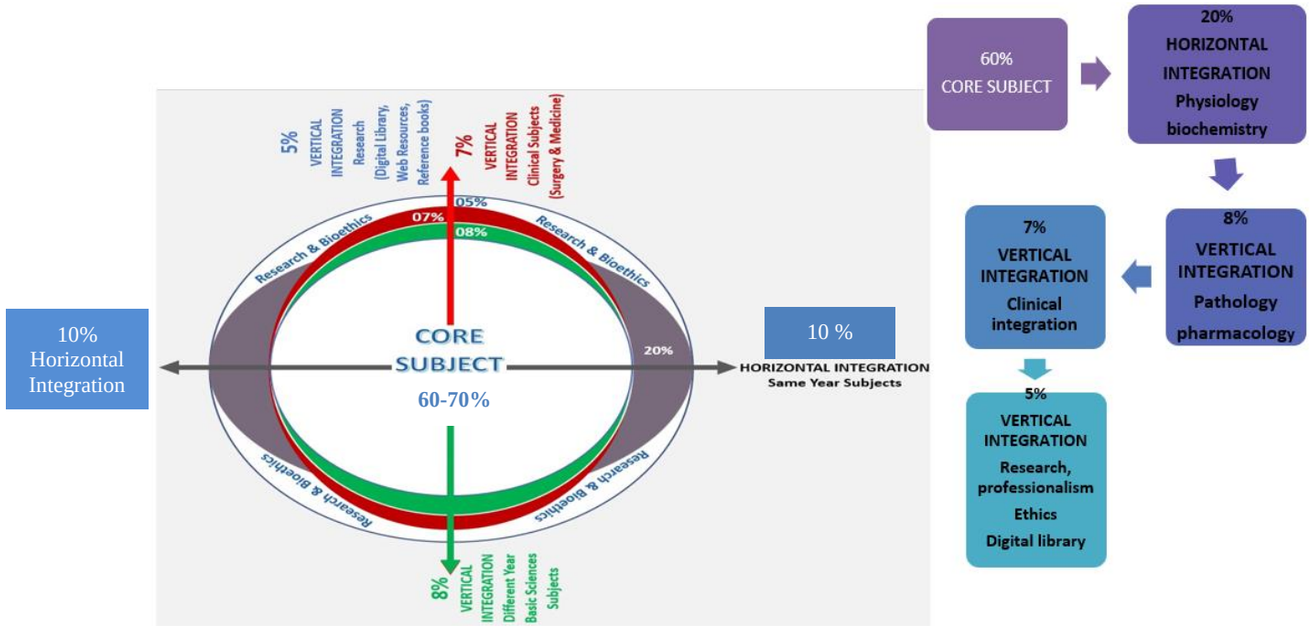
Table1. Domains of Learning According to Blooms Taxonomy

Sr. #	Abbreviation	Domains of learning
1.	C	**Cognitive Domain:** knowledge and mental skills.
	• C1	Remembering
	• C2	Understanding
	• C3	Applying
	• C4	Analyzing
	• C5	Evaluating
	• C6	Creating
2.	P	**Psychomotor Domain:** Motor skills.
	• P1	Imitation
	• P2	Manipulation
	• P3	Precision
	• P4	Articulation
	• P5	Naturalization
3.	A	**Affective Domain:** feelings, values, dispositions, attitudes, etc
	• A1	Receive
	• A2	Respond
	• A3	Value
	• A4	Organize
	• A5	Internalize

Teaching and Learning Methodologies / Strategies

Large Group Interactive Session (LGIS)

The large group interactive session is structured format of Prof Umar Model of Integrated lecture. It will the followed for delivery of all LGIS. The lecturer will introduce a topic or common clinical condition and explains the underlying phenomena through questions, pictures, videos of patients, interviews, and exercises, etc. Students are actively involved in the learning process.



Prof Umar's Model of Integrated Lecture

Small Group Discussion (SGD)

This format helps students to clarify concepts acquire skills and attitudes. Sessions are structured with the help of specific exercises such as patient case, interviews or discussion topics or power point presentations. Students exchange opinions and apply knowledge gained from lectures, SGDs and self-study. The facilitator role is to ask probing questions, summarize and help to clarify the concepts.

Table 2. Standardization of teaching content in Small Group Discussions

S. No	Topics	Approximate %
1	Title Of SGD	
2	Learning Objectives from Study Guides	
3	Horizontal Integration	24%
4	Core Concepts of the topic	60%
5	Vertical Integration	08%
6	Related Advance Research points	08%
7	Related Ethical points	
8	Artificial Intelligence	
9	Family Medicine	

Table 3. Steps of Implementation of Small Group Discussions

Step 1	Sharing of Learning objectives by using students Study guides	First 5 minutes
Step 2	Asking students pre-planned questions from previous teaching session to develop co-relation (these questions will be standardized)	5minutes
Step 3	Students divided into groups of three and allocation of learning objectives	5minutes
Step 4	ACTIVITY: Students will discuss the learning objectives among themselves	15 minutes
Step 5	Each group of students will present its learning objectives	20 min
Step 6	Discussion of learning content in the main group	30min
Step 7	Clarification of concept by the facilitator by asking structured questions from learning content	15 min
Step 8	Questions on core concepts	
Step 9	Questions on horizontal integration	
Step 10	Questions on vertical integration	
Step 11	Questions on related research article	
Step 12	Questions on related ethics content	
Step 13	Students Assessment on online MS teams (5 MCQs)	5 min
Step 14	Summarization of main points by the facilitator	5 min
Step 15	Students feedback on the SGD and entry into log book	5 min
Step 16	Ending remarks	

Self-Directed Learning (SDL)

- Self- directed learning is a process where students take primary charge of planning, continuing, and evaluating their learning experiences.
- Time Home assignment
- Learning objectives will be defined
- Learning resources will be given to students = Textbook (page no), web site
- Assessment:

  i Will be online on LMS (Mid module/ end of Module)

  ii. OSPE station

Case Based Learning (CBL)

- It's a learner centered model which engages students in discussion of specific scenarios that typically resemble real world examples.
- Case scenario will be given to the students
- Will engage students in discussion of specific scenarios that resemble or typically are real-world examples.
- Learning objectives will be given to the students and will be based on
  i. To provide students with a relevant opportunity to see theory in practice
  ii. Require students to analyze data in order to reach a conclusion.
  iii. Develop analytic, communicative, and collaborative skills along with content knowledge.

Problem Based Learning (PBL)

- Problem-based learning (PBL) is a student-centered approach in which students learn about a subject by working in groups to solve an open-ended problem.
- This problem is what drives the motivation and the learning.

The 7- Jump-Format of PBL (Maastricht Medical School)	
Step 7	Syntheise & Report
Step 6	Collect Information from outside
Step 5	Generate learning Issues
Step 4	Discuss and Organise Ideas
Step 3	Brainstorming to Identify Explanations
Step 2	Define the Problem
Step 1	Clarify the Terms and Concepts of the Problem Scenario
Problem- Scenario	

Figure 2. PBL 7 Jumps Model

Practical Sessions / Skill Lab (SKL)

Practical Session/ Skill Lab (SKL)	
Demonstration/ power point presentation 4-5 slide	10-15 minutes
Practical work	25-30 minutes
Write/ draw and get it checked by teacher	20-25 minutes
05 mcqs at the end of the practical	10 minutes
At the end of module practical copy will be signed by head of department	
At the end of block the practical copy will be signed by Head of Department Dean Medical education department QEC	

SECTION – II

Learning Objectives, Teaching Strategies & Assessments

Contents

Horizontally Integrated Basic Sciences (Anatomy, Physiology & Biochemistry)

(Knowledge)
Anatomy Large Group Interactive Session (LGIS)

Theory						
Code	**Topic**	**Learning Objectives At the end of session students should be able to**	**Calgary Gauge**	**C/P/A**	**Teaching Strategy**	**Assessment Tool**
Embryology						
M2-MSK-I-A-001	Formation of Bilaminar Embryonic Disc (2nd week of Human Development)	• Describe formation of Amniotic Cavity, embryonic disc and Umbilical vesicle	Must know	C2	LGIS	SAQs MCQs VIVA VOCE OSPE
		• Discuss development of chorionic sac	Must know	C2		
		• Outline the process of implantation	Must know	C1		
		• Describe changes in Gravid Endometrium	Must know	C2		
		• Understand the Bio-physiological aspects of gravid endometrium	Must know	C2		
		• Corelate with the clinical conditions	Should know	C3		
		• focus on provision of curative and preventive health care measures	Nice to know	C3		
		• Practice principles of bioethics	Nice to know	C3		
		• Apply strategic use of AI in health care	Nice to know	C3		
		• read relevant research article	Nice to know	C3		
M2-MSK-I-A-002	Gastrulation Establishment of Body Axis and Fate Map (3rd week)	• Discuss process of gastrulation with special reference to primitive streak	Must know	C2	LGIS	SAQs MCQs VIVA VOCE OSPE
		• Describe the fate of primitive streak	Must know	C2		
		• Discuss establishment of body axis	Must know	C2		
		• Draw fate map and discuss its importance in future development	Must know	C2		
		• Understand the Biophysiological aspects of gastrulation	Must know	C2		
		• Describe congenital abnormalities associated with gastrulation	Should know	C3		
		• Read a relevant Research article	Should know	C3		
			Nice know	C3		
		• Corelate with the clinical conditions	Nice know	C3		
		• focus on provision of curative and preventive health care measures	Nice to know	C3		

		• Practice principles of bioethics	Nice to know	C3		
		• Apply strategic use of AI in health care	Nice to know	C3		
M2-MSK-I-A-003	Notochord Formation (3rd week)	• Define notochord	Must know	C1	LGIS	SAQs MCQs VIVA VOCE OSPE
		• Delineate different stages of notochord formation	Must know	C1		
		• Discuss the importance of notochord in development of central nervous system	Must know	C2		
		• Describe role of notochord in development of axial Skeleton	Must know	C1		
		• Describe the fate of notochord	Must know	C2		
		• Correlate with clinical conditions of notochord formation	Should know	C3		
		• focus on provision of curative and preventive health care measures	Nice to know	C3		
		• Practice principles of bioethics	Nice to know	C3		
		• Apply strategic use of AI in health care	Nice to know	C3		
		• read relevant research article	Nice to know	C3		
M2-MSK-I-A-004	Neurulation (3rd week)	• Define neurulation	Must know	C1	LGIS	SAQs MCQs VIVA VOCE OSPE
		• Describe formation of neural plate and neural tube	Must know	C2		
		• Discuss neural crest formation	Must know	C2		
		• Enlist derivatives of neural crest cells	Must know	C1		
		• Understand the bio-physiological aspects of Neurulation	Must know	C2		
		• Discuss neural tube defects	Should know	C3		
		• Discuss different types of spina bifida	Should know	C3		
		• Discuss the importance of folic acid in the prevention of spina bifida	Should know	C2		
		• Corelate with the clinical conditions	Should know	C3		
		• focus on provision of curative and preventive health care measures	Nice to know	C3		
		• Practice principles of bioethics	Nice to know	C3		
		• Apply strategic use of AI in health care	Nice to know	C3		
		• read relevant research article	Nice to know	C3		
M2-MSK-I-A-005	Development and Differentiation of Somites	• Enumerate three germ layers and their derivatives	Must know	C1	LGIS	SAQs MCQs VIVA VOCE
		• Describe different divisions of mesoderm	Must know	C2		
		• Describe development of somites and their differentiation	Must know	C2		
		• Explain different stages of somite development	Must know	C2		
		• Understand the Biophysiological aspects of Somite differentiation	Must know	C2		
		• Correlate clinical aspects of somite differentiation	Should know	C3		

		• Focus on provision of curative and preventive health care measures	Nice to know	C3		OSPE
		• Practice principles of bioethics	Nice to know	C3		
		•Apply strategic use of AI in health care	Nice to know	C3		
		• Read relevant research article	Nice to know	C3		
M2-MSK-I-A-006	Early Development of Cardiovascular System & highlights of 4th-8th week	• Describe early development of cardiovascular system and chorionic villi	Must know	C2	LGIS	SAQs MCQs VIVA VOCE OSPE
		• Discuss development of intraembryonic coelom	Must know	C2		
		• Define angiogenesis and vasculogenesis.	Must know	C1		
		• Correlate clinical aspects of angiogenesis	Must know	C3		
		• Summarize the main developmental events and changes in external form of the embryo during the 4th to 8th weeks	Must know	C2		
		• Corelate with the clinical conditions	Should know	C3		
		• focus on provision of curative and preventive health care measures	Nice to know	C3		
		• Practice principles of bioethics	Nice to know	C3		
		• Apply strategic use of AI in health care	Nice to know	C3		
		• read relevant research article	Nice to know	C3		
M2-MSK-I-A-007	Folding of Embryo	• Enlist different phases of embryonic development	Must know	C1	LGIS	SAQs MCQs VIVA VOCE OSPE
		• Describe folding of the embryo in median plane	Must know	C2		
		• Describe folding of the embryo in horizontal plane	Must know	C2		
		• Discuss results of folding	Must know	C2		
		• Discuss Omphalocele and Gastroschisis	Should know	C3		
		• Corelate with the clinical conditions	Should know	C3		
		• focus on provision of curative and preventive health care measures	Nice to know	C3		
		• Practice principles of bioethics	Nice to know	C3		
		• Apply strategic use of AI in health care	Nice to know	C3		
		• read relevant research article	Nice to know	C3		
M2-MSK-I-A-008	Fetal period	• Describe different criteria for fetal age estimation	Must know	C2	LGIS	SAQs MCQs VIVA VOCE OSPE
		• Discuss the trimesters of pregnancy with their importance	Must know	C2		
		• Describe highlights of fetal period	Must know	C2		
		• Differentiate between embryonic and fetal period	Must know	C2		
		• Tabulate growth in length and weight during fetal period	Must know	C2		
		• Enumerate and discuss factors influencing fetal growth	Must know	C2		

		• Define the term perinatology	Must know	C1		
		• Enlist and briefly describe procedures for assessing fetal well-being	Should know	C3		
		• Correlate clinical aspects of fetal period	Should know	C3		
		• focus on provision of curative and preventive health care measures	Nice to know	C3		
		• Practice principles of bioethics	Nice to know	C3		
		• Apply strategic use of AI in health care	Nice to know	C3		
		• read relevant research article	Nice to know	C3		
M2-MSK-I-A-009	Placenta	• Discuss Implantation and establishment of the embryo within the uterus	Must know	C2	LGIS	SAQs MCQs VIVA VOCE OSPE
		• Describe the differentiation of the uterine lining into decidua	Must know	C2		
		• Describe the development of a placenta	Must know	C2		
		• Describe fetal – maternal circulation	Must know	C2		
		• Discuss the bio-physiological aspects of placenta	Should know	C2		
		• Corelate the clinical conditions associated with placenta	Should know	C3		
		• focus on provision of curative and preventive health care measures	Nice to know	C3		
		• Practice principles of bioethics	Nice to know	C3		
		• Apply strategic use of AI in health care	Nice to know	C3		
		• read relevant research article	Nice to know	C3		
M2-MSK-I-A-0010	Fetal Membranes and Multiple Pregnancies	• Enlist membranes developing during pregnancy	Must know	C1	LGIS	SAQs MCQs VIVA VOCE OSPE
		• Discuss origin, composition, location, function and fate of yolk sac	Must know	C2		
		• Explain origin, composition, location, function and fate of Amnion	Must know	C2		
		• Describe formation of umbilical cord and its structure	Must know	C2		
		• Define Allantois along with its importance and function	Must know	C1		
		• Discuss different types of twins	Must know	C2		
		• Correlate clinical aspects of fetal membranes	Must know	C3		
		• Correlate with the clinical conditions of twin pregnancy	Should know	C3		
		• focus on provision of curative and preventive health care measures	Nice to know	C3		
		• Practice principles of bioethics	Nice to know	C3		
		• Apply strategic use of AI in health care	Nice to know	C3		

		• read relevant research article	Nice to know	C3		
Histology						
M2-MSK-I-A-0011	Connective tissue I Cells of connective tissue Embryonic connective tissue / mucoid Connective Tissue	• Define connective tissue	Must know	C1	LGIS	SAQs MCQs VIVA VOCE OSPE
		• Classify connective tissue	Must know	C2		
		• Enlist and explain types of cells in CT	Must know	C2		
		• Enumerate sites and describe the function of each type of cell of connective tissue	Must know	C2		
		• Understand the Biophysiological aspects of connective tissue	Must know	C2		
		• Draw and label histological structure of mucoid CT.	Must know	C2		
		• Describe fibers in mucoid CT	Must know	C2		
		• Correlate clinical conditions of CT	Should know	C3		
		• focus on provision of curative and preventive health care	Nice to know	C3		
		• Practice principles of bioethics	Nice to know	C3		
		• Apply strategic use of AI in health care	Nice to know	C3		
		• read relevant research articles	Nice to know	C3		
M2-MSK-I-A-0012	Connective tissue II Loose aerolar connective tissue & its types Reticular CT	• Enumerate examples and location of reticular, connective tissue	Must know	C1	LGIS	SAQs MCQs VIVA VOCE OSPE
		• Illustrate histological structure of loose and	Must know	C2		
		• Correlate clinical aspects of loose and reticular CT	Should know	C3		
		• focus on provision of curative and preventive	Nice to know	C3		
		• Practice principles of bioethics	Nice to know	C3		
		• Apply strategic use of AI in health care	Nice to know	C3		
		• read relevant research article	Nice to know	C3		
M2-MSK-I-A-0013	Connective tissue III Adipose CT Dense regular and irregular connective	• Enumerate examples and location of adipose and dense CT.	Must know	C1	LGIS	SAQs MCQs VIVA VOCE OSPE
		• Draw, describe and label histological structure of all types of connective tissue.	Must know	C2		
		• Differentiate between dense regular and irregular connective tissue microscopically	Must know	C2		
		• Correlate clinical aspects of loose and reticular	Should know	C3		
		• focus on provision of curative and preventive	Nice to know	C3		
		• Practice principles of bioethics	Nice to know	C3		
		• Apply strategic use of AI in health care	Nice to know	C3		
		• read relevant research article	Nice to know	C3		
M2-MSK-I-A-0014	Cartilage	• Classify cartilage	Must know	C2		

		• Enlist sites of hyaline, fibro and elastic cartilage	Must know	C1	LGIS	SAQs MCQs VIVA VOCE OSPE
		• Appreciate microscopic structure of Hyaline, Elastic and	Must know	C2		
		• Differentiate between three cartilages	Must know	C2		
		• Describe the structure of perichondrium	Must know	C2		
		• Describe the arrangement of layers in articular cartilage	Must know	C2		
		• Understand the Biophysiological aspects of cartilage	Must know	C2		
		• Correlate with clinical conditions	Should know	C3		
		• focus on provision of curative and preventive	Nice to know			
		• Practice principles of bioethics	Nice to know	C3		
		• Apply strategic use of AI in health care	Nice to know	C3		
		• read relevant research article	Nice to know	C3		
M2-MSK-I-A-0015	Bone-I (Cells & Types)	• Describe structure and functions of bone cells	Must know	C2	LGIS	SAQs MCQs VIVA VOCE OSPE
		• Discuss periosteum and endosteum	Must know	C2		
		• Discuss types of bones	Must know	C2		
		• Describe the histological features of spongy and compact	Must know	C2		
		• Describe structure of osteon.	Must know	C2		
		• Understand the Biophysiological aspects of bone	Must know	C2		
		• Correlate clinical aspects of bone	Should know	C3		
		• focus on provision of curative and preventive	Nice to know	C3		
		• Practice principles of bioethics	Nice to know	C3		
		• Apply strategic use of AI in health care	Nice to know	C3		
		• read relevant research article	Nice to know	C3		
M2-MSK-I-A-0016	Bone-II (Ossification)	• Describe osteogenesis	Must know	C2	LGIS	SAQs MCQs VIVA VOCE OSPE
		• Discuss bone growth, remodeling and repair	Must know	C2		
		• Describe histological changes in bones in osteoporosis, rickets, osteomalacia, osteopetrosis and bone tumors	Must know	C3		
		• Correlate with the clinical conditions.	Should know	C3		
		• focus on provision of curative and preventive health care measures	Nice to know	C3		
		• Practice principles of bioethics	Nice to know	C3		
		• Apply strategic use of AI in health care	Nice to know	C3		
		• read relevant research article	Nice to know	C3		
General Anatomy						
M2-MSK-I-A-0017	Bone-I	• Describe the functions of bone and skeleton	Must know	C2		

	(General Features)	• Identify general features of bone	Must know	C2	LGIS	SAQs MCQs VIVA VOCE OSPE
		• Differentiate between maceration and decalcification of	Must know	C2		
		• Correlate with clinical conditions of bone	Should know	C3		
		• focus on provision of curative and preventive	Nice to know	C3		
		• Practice principles of bioethics	Nice to know	C3		
		• Apply strategic use of AI in health care	Nice to know	C3		
		• read relevant research article	Nice to know	C3		
M2-MSK-I-A-0018	Bone-II Classification & Blood supply)	• Classify bones based on different criteria	Must know	C2	LGIS	SAQs MCQs VIVA VOCE OSPE
		• Describe the growing end hypothesis	Must know	C2		
		• Describe blood supply of bones	Must know	C2		
		• Appreciate role of bones in estimation of sex, age and	Must know	C2		
		• Correlate with the clinical conditions.	Should know	C3		
		• focus on provision of curative and preventive health care	Nice to know	C3		
		• Practice principles of bioethics	Nice to know	C3		
		• Apply strategic use of AI in health care	Nice to know	C3		
		• read relevant research article	Nice to know	C3		
M2-MSK-I-A-0019	Joints-I (Types)	• Define joints	Must know	C1	LGIS	SAQs MCQs VIVA VOCE OSPE
		• Classify fibrous joints with examples	Must know	C2		
		• Classify cartilaginous joints with examples	Must know	C2		
		• Classify synovial joints with examples	Must know	C2		
		• Understand the Bio-physiological aspects of joints	Must know	C2		
		• Correlate with the clinical conditions	Should know	C3		
		• focus on provision of curative and preventive health care measures	Nice to know	C3		
		• Practice principles of bioethics	Nice to know	C3		
		• Apply strategic use of AI in health care	Nice to know	C3		
		• read relevant research article	Nice to know	C3		
M2-MSK-I-A-0020	Joints-II (Movements)	• Describe structure of synovial joint	Must know	C2		SAQs MCQs
		• Classify synovial joints	Must know	C2		
		• Explain movements around synovial joints	Must know	C2		
		• Enlist Degenerative joint diseases	Must know	C3		

		• Describe the involvement of anatomical structure of the articular cartilage in Degenerative joint disease	Must know	C3	LGIS	VIVA VOCE OSPE
		• Correlate with the clinical conditions.	Should know	C3		
		• focus on provision of curative and preventive health care	Nice to know	C3		
		• Practice principles of bioethics	Nice to know	C3		
		• Apply strategic use of AI in health care	Nice to know	C3		
		• read relevant research article	Nice to know	C3		

(Knowledge)

Anatomy Small Group Discussion (SGDs)

Code	Topic	Learning Objectives At the end of Session students should be able to	Calgary Gauge	C/P/A	Teaching Strategy	Assessment Tool
M2-MSK-I-A-0021	Shoulder Joint	• Classify the joint (according to type, shape and movement)	Must know	C2	SGD, Skill Lab	MCQs SEQs OSVE OSPE OSCE
		• Discuss the attachments of capsule and ligament	Must know	C2		
		• Enlist the intra-articular structure (tendon of biceps brachii)	Must know	C1		
		• Describe attachment of glenoidal labrum with its significance in relation to synovial membrane	Must know	C2		
		• Discuss the neurovascular supply	Must know	C2		
		• Discuss factors indispensable for stability of joint	Must know	C2		
		• Discuss the movements at shoulder joint	Must know	C2		
		• Enlist related bursae.	Must know	C1		
		• Explain the related clinicals (shoulder dislocation, rotator cuff injuries, Glenoid Labrum tears, Frozen shoulder)	Should know	C3		
		• Correlate with the clinical conditions	Should know	C3		
		• focus on provision of curative and preventive health care measures	Nice to know	C3		
		• Practice principles of bioethics	Nice to know	C3		
		• Apply strategic use of AI in health care	Nice to know	C3		
M2-MSK-I-A-0022	Flexor & Extensor compartment &	• Tabulate muscles of flexor & extensor compartment with their origin, insertion, nerve supply and actions	Must should	C2		
		• Describe Neurovascular organization of arm.	Must should	C2		
		• Map the outline of Brachial artery and Musculo cutaneous	Must know	P		

	Neurovascular organization of the arm	nerve in a simulated patient or model			SGD, Skill Lab	MCQs SEQs OSVE OSPE OSCE
		• Correlate with the clinical conditions (biceps tendinitis, dislocation of tendon of biceps brachii)	Should know	C3		
		• Discuss consequences of injury to radial nerve (wrist drop), venipuncture in cubital fossa)	Should know	C3		
		• Map the outline of Radial nerve and ulnar nerve on a simulated patient or model	Must know	P		
		• Correlate with the clinical conditions	Should know	C3		
		• focus on provision of curative and preventive health care measures	Should know	C3		
		• Practice principles of bioethics	Nice to know	C3		
		• Apply strategic use of AI in health care	Nice to know	C3		
		• Read a relevant research article	Nice to know	C3		
M2-MSK-I-A-0023	Ulna	• Determine the side	Must know	C1	SGD, Skill Lab	MCQs SEQs OSVE OSPE
		• Demonstrate anatomical position	Must know	P		
		• Discuss general features, attachments and articulations	Must know	C2		
		• Describe ossification	Must know	C2		
		• Elaborate interosseous membrane and its importance	Must know	C2		
		• Correlate with the clinical conditions	Should know	C3		
		• focus on provision of curative and preventive health care measures	Nice to know	C3		
		• Practice principles of bioethics	Nice to know	C3		
		• Apply strategic use of AI in health care	Nice to know	C3		
		• Read a relevant research article	Nice to know	C3		
M2-MSK-I-A-0024	Radius	• Determine the side	Must know	C1	SGD, Skill Lab	MCQs SEQs OSVE OSPE OSCE
		• Demonstrate its anatomical position	Must know	P		
		• Discuss general features, attachments and articulations	Must know	C2		
		• Describe its ossification	Must know	C2		
		• Describe the interosseous membrane and its importance	Must know	C2		
		• Correlate the clinical conditions	Should know	C3		
		• focus on provision of curative and preventive health care measures	Nice to know	C3		
		• Practice principles of bioethics	Nice to know	C3		
		• Apply strategic use of AI in health care	Nice to know	C3		
		• Read a relevant research article	Nice to know	C3		

M2-MSK-I-A-0025	Flexor compartment of the forearm	• Tabulate muscles of flexor compartment with their origin, insertion, nerve supply and actions	Must know	C2	SGD, Skill Lab	MCQs SEQs OSVE OSPE OSCE
		• Correlate with clinical conditions associated with flexor compartment	Should know	C3		
		• Map the outline of Median Nerve , Radial Artery and Ulnar Artery of forearm in a simulated patient or Model	Should know	P		
		• Describe nerves and vessels of forearm (formation, commencement, course, branches and relations)	Must know	C2		
		• Correlate with associated clinical conditions (Median nerve injury, pronator syndrome, cubital tunnel syndrome)	Must know	C3		
		• focus on provision of curative and preventive health care measures	Nice to know	C3		
		• Practice principles of bioethics	Nice to know	C3		
		• Apply strategic use of AI in health care	Nice to know	C3		
		• Read a relevant research article	Nice to know	C3		
M2-MSK-I-A-0026	Extensor compartment of the forearm	• Tabulate muscles of extensor compartment with origin, insertion, nerve supply and actions	Must know	C2	SGD, Skill Lab	MCQs SEQs OSVE OSPE OSCE
		• Correlate with clinical conditions associated with extensor compartment of forearm (Tennis elbow)	Should know	C3		
		• Describe nerves and vessels of forearm (formation, commencement, course, branches and relations)	Must know	C2		
		• Map the outline of Radial Nerve and Ulnar Nerve on a simulated patient or model	Must know	P		
		• Correlate with the clinical conditions	Should know	C3		
		• focus on provision of curative and preventive health care measures	Nice to know	C3		
		• Practice principles of bioethics	Nice to know	C3		
		• Apply strategic use of AI in health care	Nice to know	C3		
		• Read a relevant research article	Nice to know	C3		
M2-MSK-I-A-0027	Elbow joint, Proximal and distal radioulnar joints	• Describe the type of joint with its articular surfaces	Must know	C2	SGD, SKILL LAB	MCQs SEQs OSVE OSPE OSCE
		• Discuss the capsule, synovial membrane and ligaments of the joints	Must know	C2		
		• Enumerate the related bursae,	Must know	C1		
		• Describe axis and plane of movements	Must know	C2		
		• Enumerate muscles producing movements at elbow joint.	Must know	C1		
		• Correlate with the associated clinical conditions (Elbow joint dislocation and student's elbow)	Should know	C3		

		• Describe type of radioulnar joints, articular surfaces, capsular attachments, synovial membrane and ligaments.	Must know	C2		
		• Describe movements of supination and pronation with special reference to axes	Must know	C2		
		• Enumerate the muscles producing these movements	Must know	C1		
		• Correlate clinical aspects of joint	Should know	C3		
		• focus on provision of curative and preventive health care measures	Nice to know	C3		
		• Practice principles of bioethics	Nice to know	C3		
		• Apply strategic use of AI in health care	Nice to know			
		• Read a relevant research article	Nice to know	C3		
M2-MSK-I-A-0028	Hand	• Understand the arrangement of carpal bones	Must know	C1	SGD, SKILL LAB	MCQs SEQs OSVE OSPE OSCE
		• Identify the salient features of carpel bone.	Must know	C2		
		• Discuss the special blood supply of scaphoid bone.	Must know	C3		
		• Describe the mid carpal joint.	Must know	C2		
		• Discuss the 1st carpometacarpal joint including the type of the joint capsule synovial membrane and ligaments with axis of the movement and the muscles producing the movements	Must know	C2		
		• Correlate with the clinical conditions.	Should know	C3		
		• focus on provision of curative and preventive health care measures	Nice to know	C3		
		• Practice principles of bioethics	Nice to know	C3		
		• Apply strategic use of AI in health care	Nice to know	C3		
		• Read relevant research article	Nice to know	C3		
M2-MSK-I-A-0029	Wrist joint	• Describe the type of joint with its articular surfaces	Must know	C2	SGD, SKILL LAB	MCQs SEQs OSVE OSPE OSCE
		• Discuss the capsule, synovial membrane and ligaments of the joint	Must know	C2		
		• Enumerate the related bursae	Must know	C1		
		• Describe axis and plane of movements	Must know	C2		
		• Enumerate muscles producing movements at joint	Must know	C1		
		• Discuss wrist fractures & Dislocations	Must know	C3		
		• Correlate with the clinical conditions	Should know	C3		
		• focus on provision of curative and preventive health care measures	Nice to know	C3		
		• Practice principles of bioethics	Nice to know	C3		
		• Apply strategic use of AI in health care	Nice to know	C3		

		• Read a relevant research article	Nice to know			
M2-MSK-I-A-0030	Anastomosis around wrist joint	• Discuss the blood vessels involved in the formation of anastomosis around the wrist joint	Must know	C2	SGD, SKILL LAB	MCQs SEQs OSVE OSPE OSCE
		• Explain the importance of anastomosis.	Must know	C2		
		• Correlate with the clinical conditions	Should know	C3		
		• focus on provision of curative and preventive health care measures Able to focus on provision of curative and preventive health care measures	Nice to know	C3		
		• Practice principles of bioethics	Nice to know	C3		
		• Apply strategic use of AI in health care	Nice to know	C3		
		• Read a relevant research article	Nice to know			
M2-MSK-I-A-0031	Dorsum of Hand, Flexor retinaculum Extensor retinaculum	• Describe the muscles of dorsum of hand	Must know	C2	SGD, SKILL LAB	MCQs SEQs OSVE OSPE OSCE
		• Discuss the Dorsal digital expansion	Must know	C2		
		• Describe the attachment of flexor retinaculum with structures related to it.	Must know	C2		
		• Map the outline of flexor and extensor retinacula on a simulated patient or a model.	Must know	P		
		• Describe the Guyon's canal.	Must know	C2		
		• Describe the formation of the carpel tunnel and its applied anatomy.	Must know	C3		
		• Describe the attachment of extensor retinaculum and its various compartments with structures passing through it.	Must know	C2		
		• Discuss the De Quervain's disease.	Should know	C3		
		• Correlate with the clinical conditions.	Should know	C3		
		• focus on provision of curative and preventive health care measures	Nice to know	C3		
		• Practice principles of bioethics	Nice to know	C3		
		• Apply strategic use of AI in health care	Nice to know			
		• Read a relevant research article	Nice to know	C3		
M2-MSK-I-A-0032	Palm of hand-I Muscles & Neurovascular organization	• Tabulate the muscles forming the thenar and hypothenar eminence.	Must know	C2	SGD, SKILL LAB	MCQs SEQs OSVE OSPE OSCE
		• Discuss Lumbricals, Palmar and dorsal interossei with their attachments and actions.	Must know	C2		
		• Discuss the formation of superficial and deep arterial arches	Must know	C2		
		• Map the outline of superficial and deep arterial arches on a simulated patient or model.	Must know	P		

		• Correlate with the clinical conditions.	Should know	C3		
		• focus on provision of curative and preventive health care measures	Nice to know	C3		
		• Practice principles of bioethics	Nice to know	C3		
		• Apply strategic use of AI in health care	Nice to know	C3		
		• Read a relevant research article	Nice to know	C3		
M2-MSK-I-A-0033	Palm of hand-II Fascial spaces of hand Grip	• Discuss the formation and attachments of palmar aponeurosis.	Must know	C2	SGD, SKILL LAB	MCQs SEQs OSVE OSPE OSCE
		• Describe the formation of palmar spaces and its divisions	Must know	C2		
		• Describe the thenar and mid palmar spaces.	Must know	C2		
		• Define pulp spaces	Must know	C1		
		• Relate anatomy of pulp space with its common clinical conditions	Must know	C3		
		• Describe dorsal subcutaneous spaces	Must know	C2		
		• Demonstrate surgical incisions.	Must know	C3		
		• Describe different types of grips	Must know	C2		
		• Correlate with the clinical conditions.	Should know	C3		
		• focus on provision of curative and preventive health care measures	Nice to know	C3		
		• Practice principles of bioethics	Nice to know	C3		
		• Apply strategic use of AI in health care	Nice to know	C3		
		• Read a relevant research article	Nice to know	C3		
M2-MSK-I-A-0034	Cross sectional Anatomy of upper limb	• Identify the structures present at different levels of cross section; mid humeral shaft, end of humeral shaft, elbow joint, superior radioulnar joint, mid forearm, wrist joint, proximal shafts of metacarpals.	Must know	C2	SGD, SKILL LAB	MCQs SEQs OSVE OSPE OSCE
		• Correlate with the clinical conditions	Should know	C3		
		• Read a relevant research article	Nice to know	C3		
		• Apply strategic use of AI in health care	Nice to know	C3		

(Knowledge)
Anatomy Self Directed Learning (SDL)

Theory			
Code	**Topic**	**Learning Objectives** **At the end of Session students should be able to**	**Learning Resources**
M2-MSK-I-A-0035	Shoulder Dislocation	• Classify the joint (according to type, shape and movement) • Discuss the attachments of capsule and ligament • Enlist heintra-articular structure (tendon of biceps brachii) • Describe attachment of glenoidal labrum with its significance in relation to synovial membrane • Discuss the neurovascular supply • Discuss factors indispensable for stability of joint • Discuss the movement sat shoulder joint • Enlist related bursae. • Explain the related clinicals (shoulder dislocation, rotator cuff injuries, Glenoid Labrum tears, Frozen shoulder)	• Clinical Oriented Anatomy by Keith L. Moore.8TH Edition. (Chapter 3, Page 266-271,284-285). https://teachmeanatomy.info/upper-limb/joints/shoulder
M2-MSK-I-A-0036	Biceps Tendinitis, Popeye's Arm Anastomosis around the elbow joint	• Tabulate muscles of flexor compartment with the irorigin, insertion, nerve supply and actions • Describe Neurovascular organization of arm, • Explain the related clinicals (biceps tendinitis, Popeye's Arm)	• Clinical Oriented Anatomy by Keith L. Moore.8THEdition. (Chapter 3, Page201-211,211-214). https://teachmeanatomy.info/upper-limb/muscles/anterior-forearm/
M2-MSK-I-A-0037	Wrist Drop	• Tabulate Muscles of extends or compartment with origin insertion, nerve supply and actions • Describe the neurovascular organization • Discuss consequences of injury to radial nerve (wrist drop), venipuncture in cubital fossa) • Read relevant research article • Use Digital Library	• Clinical Oriented Anatomy by Keith L. Moore.8THEdition. (Chapter 3, Page201-211,211-214). https://teachmeanatomy.info/upper-

			limb/muscles/upper-arm/
M2-MSK-I-A-0038	Fracture of Ulna	• Determine the side • Demonstrate anatomical position • Discuss general features, attachment sand articulations • Describe ossification • Elaborate interosseous membrane and its importance • Correlate the clinical aspects	• Clinical Oriented Anatomy by Keith L. Moore.8TH Edition. (Chapter 3, Page147). https://teachmeanatomy.info/upper-limb/bones/ulna/
M2-MSK-I-A-0039	Colle's Fracture/ Smith's Fracture	• Determine the side • Demonstrate it anatomical position • Discuss general features, attachments and articulations • Describe its ossification • Describe the interosseous membrane and its importance • Correlate the clinical aspects	• Clinical Oriented Anatomy by Keith L. Moore.8TH Edition. (Chapter 3, Page148). https://teachmeanatomy.info/upper-limb/bones/radius/
M2-MSK-I-A-0040	Golfer's Elbow	• Tabulate muscles of flexor compartment with their origin, insertion, nerves Supply and actions • Describe clinical conditions associated with flexor compartment (Golfer's Elbow)	• Clinical Oriented Anatomy by Keith L. Moore.8TH Edition. (Chapter 3, Page215-234,236,240) https://teachmeanatomy.info/upper-limb/muscles/anterior-forearm/
M2-MSK-I-A-0041	Tennis Elbow	• Tabulate muscles of extensor compartment with origin, insertion, nerve supply and actions • Describe clinical condition associated with extensor compartment of forearm (Tennis elbow)	• Clinical Oriented Anatomy by Keith L. Moore.8TH Edition. (Chapter 3, Page215-234,236,240). https://teachmeanatomy.info/upper-limb/muscles/posterior-forearm/
M2-MSK-I-A-0042	Cubital Tunnel	• Describe nerves and vessels of forearm (formation, commencement, course, branches and relations)	• Clinical Oriented

	Syndrome	• Describe associated clinical conditions (Median nerve injury, pronator syndrome, cubital tunnel syndrome) • Read relevant research article • Use Digital Library	Anatomy by Keith L. Moore.8TH Edition. (Chapter 3, Page215-234,236,240). https://teachmeanatomy.info/upper-limb/muscles/posterior-forearm/
M2-MSK-I-A-0043	Elbow Dislocation	• Describe the type of joint with its articular surfaces • Discuss the capsule, synovial membrane and ligaments of the joints • Enumerate the related bursae, • Describe axis and plane of movements • Enumerate muscles producing movements at elbow joint. • Describe the associated clinical conditions (Elbow joint dislocation and student's elbow)	• Clinical Oriented Anatomy by Keith L. Moore.8TH Edition (Chapter 3, Page271-274). https://www.kenhub.com/en/library/anatomy/elbow-joint
	Proximal and distal radioulnar dislocation	• Describe type of radioulnar joints, articular surfaces, capsular attachments, synovial membrane and ligaments. • Describe movements of supination and pronation with special reference to axes • Enumerate the muscles producing these movements • Correlate clinical aspects of joint	• Clinical Oriented Anatomy by Keith L. Moore.8TH Edition. (Chapter 3, Page274-277). https://www.kenhub.com/en/library/anatomy/proximal-radioulnar-joint https://www.kenhub.com/en/library/anatomy/distal-radioulnar-joint
M2-MSK-I-A-0044	Avascular Necrosis of Scaphoid Bone	• Understand the arrangement of carpal bones • Identify the salient features of carpel bone. • Discuss the special blood supply of scaphoid bone. • Describe the midcarpal joint. • Discuss the1st carpometacarpal joint including the type of the joint capsules synovial Membrane and ligaments with axis of the movement and the muscles producing the movements • Read relevant research article	• Clinical Oriented Anatomy by Keith L. Moore.8TH Edition. Chapter 3, Page148-151,278-283). https://teachmeanatomy.in

		• Use Digital Library	fo/upper-limb/muscles/hand/
M2-MSK-I-A-0045	Wrist dislocation	• Describe the type of joint with its articular surfaces • Discuss the capsule, synovial membrane and ligaments of the joint • Enumerate the related bursae • Describe axis and plane of movements • Enumerate muscles producing movements at joint • Discuss wrist fractures & Dislocations	• Clinical Oriented Anatomy by Keith L. Moore.8TH Edition. (Chapter 3, Page278). https://www.kenhub.com/en/library/anatomy/the-wrist-joint
M2-MSK-I-A-0046	Vascular insufficiency at wrist joint	• Discuss the blood vessels involved in the formation of anastomosis around the wrist joint • Explain the importance of anastomosis.	• Clinical Oriented Anatomy by Keith L. Moore.8TH Edition. (Chapter 3, Page278). https://www.kenhub.com/en/library/anatomy/arterial-anastomoses-of-the-upper-extremity
M2-MSK-I-A-0047	Carpal Tunnel	• Describe the muscles of dorsum of hand • Discuss the Dorsal digital expansion • Describe the attachment of flexor retinaculum with structures related to it. • Describe the Guyon's canal. • Describe the formation of the carpel tunnel and its applied anatomy. • Describe the attachment of extensor retinaculum and its various compartments with structures passing through it. • Discuss the De Quervain's disease.	• Clinical Oriented Anatomy by Keith L. Moore.8TH Edition. (Chapter 3, Page159,224-226). https://teachmeanatomy.info/upper-limb/muscles/hand/
M2-MSK-I-A-0048	Dupuytren's contracture	• Tabulate the muscles forming the thenar and hypothenar eminence. • Discuss Lumbricals, Palmar and dorsal interossei with their attachments and actions. • Discuss the formation of superficial and deep arterial arches • Discuss the clinicals associated with palm	• Clinical Oriented Anatomy by Keith L. Moore.8TH Edition. (Chapter 3, Pag243-256). https://teachmeanatomy.info/upper-

			limb/muscles/hand/
M2-MSK-I-A-0049	Hand infections	• Discuss the formation and attachments of palmar aponeurosis. • Describe the formation of palmar spaces and its divisions • Describe the thenar and mid palmar spaces. • Define pulp spaces • Relate anatomy of pulp space with its common clinical conditions • Describe dorsal subcutaneous spaces. • Demonstrate surgical incisions. • Describe different types of grips • Read relevant research article • Use Digital Library	• Clinical Oriented Anatomy by Keith L. Moore.8TH Edition. (Chapter 3, Page241-243,258-262). https://boneandspine.com/spaces-of-hand/

(Psychomotor)
Histology Practicals Skill Laboratory (SKL)

Practicals

Code	Topic	At The End Of The Practical The Students Should Be Able To	Calgary Gauge	C/P/A	Teaching Strategy	Assessment Tools
M2-MSK-I-A-0050	Connective Tissue-I • Embryonic connective tissue / mucoid Connective Tissue • Loose areolar connective tissue • Reticular Connective Tissue • Adipose Connective Tissue	• Identify mucoid connective tissue under microscope	Must know	P	Skill Lab	OSPE MCQs
		• Illustrate histological structure of mucoid connective tissue	Should know	C2		
		• Write two points of identification	Should know	C1		
		• Identify reticular and adipose connective tissue under microscope	Should know	C2		
		• Illustrate histological structure of reticular and adipose connective tissue	Should know	C2		
		• Write two points of identification	Should know	C1		
		• Focus the slide	Must know	P		
M2-MSK-I-A-0051	Connective Tissue-II • Dense regular connective tissue • Dense irregular connective tissue	• Identify dense regular and irregular connective tissue under microscope	Must know	P	Skill Lab	OSPE MCQs
		• Illustrate histological structure of dense regular and irregular connective tissue	Should know	C2		
		• Write two points of identification	Should know	C1		
		• Differentiate between dense regular and irregular connective tissue microscopically	Should know	C2		

		• Focus the slide	Must know	P		
M2-MSK-I-A-0052	Cartilage • Hyaline cartilage • Elastic cartilage • Fibrocartilage	• Identify all three types of cartilages under microscope	Must know	P	Skill Lab	OSPE MCQs
		• Illustrate microscopic structure of all three cartilages	Should know	C2		
		• Discuss the structure of perichondrium	Should know	C1		
		• Write wo points of identification	Should know	C1		
		• Enlist sites of hyaline, fibro and elastic cartilage	Should know	C1		
		• Focus the slide	Must know	P		
M2-MSK-I-A-0053	Bone • Compact Bone • Spongy Bone	• Identify compact and spongy bone under microscope	Must know	P	Skill Lab	OSPE MCQs
		• Illustrate microscopic structure of compact bone and spongy bone	Should know	C2		
		• Write two points of identification	Should know	C1		
		• Focus the slide	Must know	P		

Anatomy Syllabus of Learning Management System (LMS)

Code	Topic	Learning Objectives At the end of session students should be able to	Learning Domain	Learning Resources
M2-MSK-I-A-0054	Formation of Bilaminar Embryonic Disc (2nd week of Human Development)	• Describe formation of Amniotic Cavity, embryonic disc and Umbilical vesicle	C2	• **Embryology:**- KLM Embryology Developing Human 11th Edition • **USMLE Q Bank Step 1** (Volume 1) 2023-2034
		• Discuss development of chorionic sac	C2	
		• Outline the process of implantation	C1	
		• Describe changes in Gravid Endometrium	C2	
		• Understand the Bio-physiological aspects of gravid endometrium	C2	
		• Corelate with the clinical conditions	C3	
		• focus on provision of curative and preventive health care measures	C3	
		• Practice principles of bioethics	C3	
		• Apply strategic use of AI in health care	C3	
		• read relevant research article	C3	
M2-MSK-I-A-0055	Gastrulation Establishment of	• Discuss process of gastrulation with special reference to primitive streak	C2	• **Embryology** :- KLM
		• Describe the fate of primitive streak	C2	
		• Discuss establishment of body axis	C2	

	Body Axis and Fate Map (3rd week)	• Draw fate map and discuss its importance in future development	C2	Embryology Developing Human 11th Edition • **USMLE Q Bank Step 1** (Volume 1) 2023-2034
		• Understand the Biophysiological aspects of gastrulation	C2	
		• Describe congenital abnormalities associated with gastrulation	C3	
		• Corelate with the clinical conditions	C3	
		• focus on provision of curative and preventive health care measures	C3	
		• Practice principles of bioethics	C3	
		• Apply strategic use of AI in health care	C3	
		• Read a relevant Research article	C3	
M2-MSK-I-A-0056	Notochord Formation (3rd week)	• Define notochord	C1	• **Embryology** :- KLM Embryology Developing Human 11th Edition • **USMLE Q Bank Step 1** (Volume 1) 2023-2034
		• Delineate different stages of notochord formation	C1	
		• Discuss the importance of notochord in development of central nervous system	C2	
		• Describe role of notochord in development of axial Skeleton	C1	
		• Describe the fate of notochord	C2	
		• Correlate with clinical conditions of notochord formation	C3	
		• focus on provision of curative and preventive health care measures	C3	
		• Practice principles of bioethics	C3	
		• Apply strategic use of AI in health care	C3	
		• read relevant research article	C3	
M2-MSK-I-A-0057	Neurulation (3rd week)	• Define neurulation	C1	• **Embryology** :- KLM Embryology Developing Human 11th Edition • **USMLE Q Bank Step 1** (Volume 1) 2023-2034
		• Describe formation of neural plate and neural tube	C2	
		• Discuss neural crest formation	C2	
		• Enlist derivatives of neural crest cells	C1	
		• Understand the bio-physiological aspects of Neurulation	C2	
		• Discuss neural tube defects	C3	
		• Discuss different types of spina bifida	C3	
		• Discuss the importance of folic acid in the prevention of spina bifida	C2	
		• Corelate with the clinical conditions	C3	
		• focus on provision of curative and preventive health care measures	C3	
		• Practice principles of bioethics	C3	
		• Apply strategic use of AI in health care	C3	
		• read relevant research article	C3	
		• Enumerate three germ layers and their derivatives	C1	

M2-MSK-I-A-0058	Development and Differentiation of Somites	• Describe different divisions of mesoderm	C2	• **Embryology** :- KLM Embryology Developing Human 11th Edition **USMLE Q Bank Step 1** (Volume 1) 2023-2034
		• Describe development of somites and their differentiation	C2	
		• Explain different stages of somite development	C2	
		• Understand the Biophysiological aspects of Somite differentiation	C2	
		• Correlate clinical aspects of somite differentiation	C3	
		• Focus on provision of curative and preventive health care measures	C3	
		• Practice principles of bioethics	C3	
		• Apply strategic use of AI in health care	C3	
		• Read relevant research article	C3	
M2-MSK-I-A-0059	Development and Differentiation of Somites	• Enumerate three germ layers and their derivatives	C1	• **Embryology** :- KLM Embryology Developing Human 11th Edition • **USMLE Q Bank Step 1** (Volume 1) 2023-2034
		• Describe different divisions of mesoderm	C2	
		• Describe development of somites and their differentiation	C2	
		• Explain different stages of somite development	C2	
		• Understand the Biophysiological aspects of Somite differentiation	C2	
		• Correlate clinical aspects of somite differentiation	C3	
		• Focus on provision of curative and preventive health care measures	C3	
		• Practice principles of bioethics	C3	
		• Apply strategic use of AI in health care	C3	
		• Read relevant research article	C3	
M2-MSK-I-A-0060	Early Development of Cardiovascular System & highlights of 4th-8th week	• Describe early development of cardiovascular system and chorionic villi	C2	• **Embryology** :- KLM Embryology Developing Human 11th Edition • **USMLE Q Bank Step 1** (Volume 1) 2023-2034
		• Discuss development of intraembryonic coelom	C2	
		• Define angiogenesis and vasculogenesis.	C1	
		• Correlate clinical aspects of angiogenesis	C3	
		• Summarize the main developmental events and changes in external form of the embryo during the 4th to 8th weeks	C2	
		• Corelate with the clinical conditions	C3	
		• focus on provision of curative and preventive health care measures	C3	
		• Practice principles of bioethics	C3	
		• Apply strategic use of AI in health care	C3	
		• read relevant research article	C3	
	Folding of Embryo	• Enlist different phases of embryonic development	C1	• **Embryology** :- KLM Embryology Developing Human 11th Edition
		• Describe folding of the embryo in median plane	C2	
		• Describe folding of the embryo in horizontal plane	C2	
		• Discuss results of folding	C2	
		• Discuss Omphalocele and Gastroschisis	C3	

M2-MSK-I-A-0061		• Corelate with the clinical conditions	C3	• **USMLE Q Bank Step 1** (Volume 1) 2023-2034
		• focus on provision of curative and preventive health care measures	C3	
		• Practice principles of bioethics	C3	
		• Apply strategic use of AI in health care	C3	
		• read relevant research article	C3	
M2-MSK-I-A-0062	Fetal period	• Describe different criteria for fetal age estimation	C2	• **Embryology** :- KLM Embryology Developing Human 11th Edition • **USMLE Q Bank Step 1** (Volume 1) 2023-2034
		• Discuss the trimesters of pregnancy with their importance	C2	
		• Describe highlights of fetal period	C2	
		• Differentiate between embryonic and fetal period	C2	
		• Tabulate growth in length and weight during fetal period	C2	
		• Enumerate and discuss factors influencing fetal growth	C2	
		• Define the term perinatology	C1	
		• Enlist and briefly describe procedures for assessing fetal well-being	C3	
		• Correlate clinical aspects of fetal period	C3	
		• focus on provision of curative and preventive health care measures	C3	
		• Practice principles of bioethics	C3	
		• Apply strategic use of AI in health care	C3	
		• read relevant research article	C3	
M2-MSK-I-A-0063	Placenta	• Discuss Implantation and establishment of the embryo within the uterus	C2	• **Embryology** :- KLM Embryology Developing Human 11th Edition • **USMLE Q Bank Step 1** (Volume 1) 2023-2034
		• Describe the differentiation of the uterine lining into decidua	C2	
		• Describe the development of a placenta	C2	
		• Describe fetal – maternal circulation	C2	
		• Discuss the bio-physiological aspects of placenta	C2	
		• Corelate the clinical conditions associated with placenta	C3	
		• focus on provision of curative and preventive health care measures	C3	
		• Practice principles of bioethics	C3	
		• Apply strategic use of AI in health care	C3	
		• read relevant research article	C3	
M2-MSK-I-A-0064	Fetal Membranes and Multiple Pregnancies	• Enlist membranes developing during pregnancy	C1	• **Embryology** :- KLM Embryology Developing Human 11th Edition • **USMLE Q Bank Step 1** (Volume 1) 2023-2034
		• Discuss origin, composition, location, function and fate of yolk sac	C2	
		• Explain origin, composition, location, function and fate of Amnion	C2	
		• Describe formation of umbilical cord and its structure	C2	
		• Define Allantois along with its importance and function	C1	
		• Discuss different types of twins	C2	
		• Correlate clinical aspects of fetal membranes	C3	
		• Correlate with the clinical conditions of twin pregnancy	C3	

		• focus on provision of curative and preventive health care measures	C3	
		• Practice principles of bioethics	C3	
		• Apply strategic use of AI in health care	C3	
		• read relevant research article	C3	
Histology LGIS				
M2-MSK-I-A-0065	Connective tissue I Cells of connective tissue Embryonic connective tissue / mucoid Connective Tissue	• Define connective tissue	C1	• **Histology :-**Junqueira's Basic Histology 18th Edition • **USMLE Q Bank Step 1** (Volume 1) 2023-2034
		• Classify connective tissue	C2	
		• Enlist and explain types of cells in CT	C2	
		• Enumerate sites and describe the function of each type of cell of connective tissue	C2	
		• Understand the Biophysiological aspects of connective tissue	C2	
		• Draw and label histological structure of mucoid CT.	C2	
		• Describe fibers in mucoid CT	C2	
		• Correlate clinical conditions of CT	C3	
		• focus on provision of curative and preventive health care measures	C3	
		• Practice principles of bioethics	C3	
		• Apply strategic use of AI in health care	C3	
		• read relevant research articles	C3	
M2-MSK-I-A-0066	Connective tissue II Loose aerolar connective tissue & its types Reticular CT	•		• **Histology :-**Junqueira's Basic Histology 18th Edition • **USMLE Q Bank Step 1** (Volume 1) 2023-2034
		• Enumerate examples and location of reticular, connective tissue	C1	
		• Illustrate histological structure of loose and reticular connective tissue	C2	
		• Correlate clinical aspects of loose and reticular CT	C3	
		• focus on provision of curative and preventive health care measures	C3	
		• Practice principles of bioethics	C3	
		• Apply strategic use of AI in health care	C3	
		• read relevant research article	C3	
M2-MSK-I-A-0067	Connective tissue III Adipose CT Dense regular and irregular connective	• Enumerate examples and location of adipose and dense CT.	C1	• **Histology :-**Junqueira's Basic Histology 18th Edition • **USMLE Q Bank Step 1** (Volume 1) 2023-2034
		• Draw, describe and label histological structure of all types of connective tissue.	C2	
		• Differentiate between dense regular and irregular connective tissue microscopically	C2	
		• Correlate clinical aspects of loose and reticular CT	C3	
		• focus on provision of curative and preventive health care measures	C3	
		• Practice principles of bioethics	C3	
		• Apply strategic use of AI in health care	C3	

		• read relevant research article	C3	
M2-MSK-I-A-0068	Cartilage	• Classify cartilage	C2	• **Histology :**-Junqueira's Basic Histology 18th Edition • **USMLE Q Bank Step 1** (Volume 1) 2023-2034 • **Histology :**-Junqueira's Basic Histology 18th Edition • **USMLE Q Bank Step 1** (Volume 1) 2023-2034
		• Enlist sites of hyaline, fibro and elastic cartilage	C1	
		• Appreciate microscopic structure of Hyaline, Elastic and Fibrocartilage	C2	
		• Differentiate between three cartilages	C2	
		• Describe the structure of perichondrium	C2	
		• Describe the arrangement of layers in articular cartilage	C2	
		• Understand the Biophysiological aspects of cartilage	C2	
		• Correlate with clinical conditions	C3	
		• focus on provision of curative and preventive health care measures		
		• Practice principles of bioethics	C3	
		• Apply strategic use of AI in health care	C3	
		• read relevant research article	C3	
M2-MSK-I-A-0069	Bone-I (Cells & Types)	• Describe structure and functions of bone cells	C2	• **Histology :**-Junqueira's Basic Histology 18th Edition • **USMLE Q Bank Step 1** (Volume 1) 2023-2034
		• Discuss periosteum and endosteum	C2	
		• Discuss types of bones	C2	
		• Describe the histological features of spongy and compact bone	C2	
		• Describe structure of osteon.	C2	
		• Understand the Biophysiological aspects of bone	C2	
		• Correlate clinical aspects of bone	C3	
		• focus on provision of curative and preventive health care measures	C3	
		• Practice principles of bioethics	C3	
		• Apply strategic use of AI in health care	C3	
		• read relevant research article	C3	
M2-MSK-I-A-0070	Bone-II (Ossification)	• Describe osteogenesis	C2	• **Histology :**-Junqueira's Basic Histology 18th Edition • **USMLE Q Bank Step 1** (Volume 1) 2023-2034
		• Discuss bone growth, remodeling and repair	C2	
		• Describe histological changes in bones in osteoporosis, rickets, osteomalacia, osteopetrosis and bone tumors	C3	
		• Correlate with the clinical conditions.	C3	
		• focus on provision of curative and preventive health care measures	C3	
		• Practice principles of bioethics	C3	
		• Apply strategic use of AI in health care	C3	
		• read relevant research article	C3	
General Anatomy LGIS				
	Bone-I	• Describe the functions of bone and skeleton	C2	
		• Identify general features of bone	C2	

M2-MSK-I-A-0071	(General Features)	• Differentiate between maceration and decalcification of bones	C2	• **Gross Anatomy** :- KLM clinically oriented anatomy edition 10 • **USMLE Q Bank Step 1** (Volume 1) 2023-2034
		• Correlate with clinical conditions of bone	C3	
		• focus on provision of curative and preventive health care measures	C3	
		• Practice principles of bioethics •	C3	
		• Apply strategic use of AI in health care	C3	
		• read relevant research article	C3	
M2-MSK-I-A-0072	Bone-II Classification & Blood supply)	• Classify bones based on different criteria	C2	• **Gross Anatomy**:- KLM clinically oriented anatomy edition 10 • **USMLE Q Bank Step 1** (Volume 1) 2023-2034
		• Describe the growing end hypothesis	C2	
		• Describe blood supply of bones	C2	
		• Appreciate role of bones in estimation of sex, age and stature.	C2	
		• Correlate with the clinical conditions.	C3	
		• focus on provision of curative and preventive health care measures	C3	
		• Practice principles of bioethics	C3	
		• Apply strategic use of AI in health care	C3	
		• read relevant research article	C3	
M2-MSK-I-A-0073	Joints-I (Types)	• Define joints	C1	• **Gross Anatomy**:- KLM clinically oriented anatomy edition 10 • **USMLE Q Bank Step 1** (Volume 1) 2023-2034
		• Classify fibrous joints with examples	C2	
		• Classify cartilaginous joints with examples	C2	
		• Classify synovial joints with examples	C2	
		• Understand the Bio-physiological aspects of joints	C2	
		• Correlate with the clinical conditions	C3	
		• focus on provision of curative and preventive health care measures	C3	
		• Practice principles of bioethics	C3	
		• Apply strategic use of AI in health care	C3	
		• read relevant research article	C3	
M2-MSK-I-A-0074	Joints-II (Movements)	• Describe structure of synovial joint	C2	• **Gross Anatomy**: - KLM clinically oriented anatomy edition 10 • **USMLE Q Bank Step 1** (Volume 1) 2023-2034
		• Classify synovial joints	C2	
		• Explain movements around synovial joints	C2	
		• Enlist Degenerative joint diseases	C3	
		• Describe the involvement of anatomical structure of the articular cartilage in Degenerative joint disease	C3	
		• Correlate with the clinical conditions.	C3	
		• focus on provision of curative and preventive health care measures	C3	
		• Practice principles of bioethics	C3	
		• Apply strategic use of AI in health care	C3	
		• read relevant research article	C3	

(Knowledge)
Physiology Large Group Interactive Session (LGIS)

Theory							
Code	**Topic**	**Learning Objectives**	**Calgary Gauge**	**Grade**	**C/P/A**	**Teaching Strategy**	**Assessment Tool**
M2-MSK-I-P-001	Structure of Neuron	• Describe different parts of neuron	Must know	A	C1	LGIS SDL	SAQs MCQs VIVA VOCE
M2-MSK-I-P-002	Classification of Neurons and nerve fibers, NGF	• Describe the classification of neurons and nerve fibers	Must know	A	C1	LGIS SDL	SAQs MCQs VIVA VOCE
		• Describe NGF; given their roles	Should know	B	C1		
M2-MSK-I-P-003	Stimulus and Response & Types of Stimuli	• Define stimulus	Must know	A	C1	LGIS	SAQs MCQs VIVA VOCE
		• Describe various types of stimuli and response	Must know	A	C1		
M2-MSK-I-P-004	Concept of degeneration and regeneration	• Explain degeneration and regeneration of nerve fibers	Must know	A	C2	LGIS	SAQs MCQs VIVA VOCE
M2-MSK-I-P-005	Properties of nerve fibers	• Discuss the properties of nerve fibers	Must know	A	C2	LGIS	SAQs MCQs VIVA VOCE
M2-MSK-I-P-006	Graded Potential, Comparison with action potential	• Define graded Potential with examples	Must know	A	C1	LGIS	SAQs MCQs VIVA VOCE
		• Compare between graded potential and action potential	Must know	A	C2		

M2-MSK-I-P-007	Nernst Potential RMP	• Understand the concept of Nernst potential and equilibrium potential for different ions	Must know	A	C2	LGIS SDL	SAQs MCQs VIVA VOCE
		• Define resting membrane potential of nerves.	Must know	A	C1		
		• Explain the factors which determine the level of RMP	Should know	B	C2		
		• Differences between electrical and chemical synapse	Must know	A	C2		
M2-MSK-I-P-008	RMP: & Measurement & effect of Electrolytes,	• Describe the terms polarized and hyperpolarized	Should know	B	C1	LGIS	SAQs MCQs VIVA VOCE
		• Describe the role of various ions for these states	Should know	B	C1		
M2-MSK-I-P-009	Stages of Action Potential I&II	• Define and draw action potential	Must know	A	C1	LGIS	SAQs MCQs VIVA VOCE
		• Describe different phases of action potential	Must know	A	C1		
M2-MSK-I-P-0010	Recording of Action Potential Propagation of Action Potential & Factors effecting nerve conduction Polarization and hyperpolarization state	• Briefly describe the method of recording resting membrane potential and action potential	Should know	B	C1	LGIS	SAQs MCQs VIVA VOCE
		• Describe the mechanism of propagation of action potential	Must know	A	C1		
		• Describe various factor that effect nerve conduction	Should know	B	C1		
M2-MSK-I-P-0011	Refractory Period, Different types of Action Potentials	• Define refractory period and discuss its types	Must know	A	C1	LGIS SDL	SAQs MCQs VIVA VOCE
		• Describe various types of action potential	Must know	A	C1		
M2-MSK-I-P-0012	Synapse and synaptic transmission	• Describe synapse and its types	Must know	A	C1	LGIS	SAQs MCQs VIVA VOCE

M2-MSK-I-P-0013	EPSP, IPSP, Properties of chemical synapse	• Discuss in detail various properties of chemical synapse	Should know	B	C2	LGIS	SAQs MCQs VIVA VOCE
	Properties of Chemical synaptic	• Discuss in detail various properties of chemical synapse	Must know	A	C2	LGIS	SAQs MCQs VIVA VOCE
M2-MSK-I-P-0014	NMJ, Synthesis and release of Ach Excitation-Contraction coupling	• Describe the physiologic anatomy of neuromuscular junction.	Must know	A	C1	LGIS SDL	SAQs MCQs VIVA VOCE
		• Recall Synthesis and release of Ach	Should know	B	C1		
		• Describe the mechanism of transmission of impulses from nerve endings to skeletal muscle fibers	Should know	B	C1		
		• Describe briefly the biochemistry of acetyl choline	Nice to know	C	C1		
M2-MSK-I-P-0015	Drugs acting on NMJ,Excitation-Contraction coupling	• Enlist drugs that enhance and block transmission at neuromuscular junction	Must know	A	C1	LGIS SDL	SAQs MCQs VIVA VOCE
		• Describe mechanism of excitation contraction coupling	Must know	A	C1		
M2-MSK-I-P-0016	Myasthenia Gravis, Lambert Eaton Syndrome	• Describe the salient features of myasthenia gravis and Lambert Eaton syndrome	Must know	A	C1	LGIS	SAQs MCQs VIVA VOCE

(Knowledge)

Physiology Small Group Discussion (SGDs)

Theory

Code	Topic	Learning Objectives At the End of Session Students Should Be Able To	Calgary Gauge	Grade	C/P/A	Teaching Strategy	Assessment Tool
M2-MSK-I-P-0017	Discussion regarding previous module	• Discuss difficulties regarding questions, MCQs of Foundation Module	Should know		C2	SGD	MCQs SAQs Viva Voce OSPE
M2-MSK-I-P-0018	RMP, measurement & effects, of electrolyte on RMP	• Define resting membrane potential of nerves.	Should know	B	C1	SGD	MCQs SAQs Viva Voce OSPE
		• Explain the factors which determine the level of RMP	Should know	B	C2		
M2-MSK-I-P-0019	Drugs acting on NMJ excitation contraction coupling	• Drugs acting on NMJ	Nice to know	C	C1	SGD	MCQs SEQs SAQs Viva Voce OSPE
		• Excitation contraction coupling	Must know	A	C1		
M2-MSK-I-P-0020	Synapse and synaptic transmission & EBSP,IPSP properties of chemical synapse	• Describe synapse and its types	Must know	A	C1	SGD	MCQs SAQs Viva Voce OSPE
		• Differences between electrical and chemical synapse	Must know	A	C2		
M2-MSK-I-P-0021	Nernst potential	• Concept of Nernst potential	Must know	A	C1	SGD	MCQs SAQs Viva Voce OSPE
		• Equilibrium potential for different ions	Should know	B	C2		
M2-MSK-I-P-0022	Neuro muscular function(NMJ)	• Transmission Across NMJ	Should know	B	C1	SGD	MCQs SAQs Viva Voce OSPE
		• Diseases of NMJ	Must know	A	C2		
		• Describe NGF	Should know	B	C1	SGD	MCQs SAQs
		• Give their role	Should know	B	C1		

M2-MSK-I-P-0023	Nerve growth factor (NGF)	• Explain De-generation and Re-Generation of nerve fibers	Should know	B	C2		Viva Voce OSPE

(Knowledge)
Physiology Self Directed Learning (SDL)

Theory			
Code	**Topics**	**Learning Objective**	**References**
M2-MSK-I-P-0024	Structure of neurons Classification of neurons & nerve fibers	• Structure of neurons • Myelinate Dand unmyelinated nerve fibers. • Neuroglia • Difference between neurons and glial cells	• Ganong's Review of Medical Physiology.25TH Edition physiology Excitable Tissue; Nerve (Chapter 04, Page 85-90) • Textbook of Medical Physiology by Guyton & Hall. 14thEdition. Introduction to Physiology. (Unit2, Chapter 05 Membrane Physiology Page74) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 01. Physiology of Body Fluids. (Chapter 03, Page 37)
M2-MSK-I-P-0025	Nernst potential, RMP	• Basic physics of membrane potential, Nernst equation, • Goldman Equation • Origin of RMP indifferent cell types.	• Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. Chapter no. 05 membrane dynamics Page no.188) • Textbook of Medical Physiology by Guyton & Hall.14th Edition Membrane Potential and action potential. (Unit 2,Chapter 05 Page 63) • Ganong's Review of Medical Physiology. 25TH Edition, Excitable Tissue; Nerve (Chapter 04, Page 90) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 01. Properties and function of cell membrane. (Chapter 02, Page 31,41-43)
M2-MSK-I-P-0026	Properties of nerve fibers	• Rhythmicity of Excitable tissues, • Characteristics of signal transmission, • Types of refract toy period • Concept of excitation	• Textbook of Medical Physiology by Guyton & Hall. 14th Edition. Membrane Potential and action potential (Unit2, Chapter 05, Page 73-76) • Ganong's Review of Medical Physiology.25TH Edition, Over view of cell physiology in medical physiology. Excite able Tissue; Nerve (Chapter04, Page 94) • Physiological Basis of Medical Practice by Best &Taylor's.13th Edition.Section01. Property and function of cell membrane.

			(Chapter03,Page41,55)
M2-MSK-I-P-0027	Measurement of RMP & effect of electrolytes on RMP	• Measurement of RMP • Effect of electrolyte son RMP • Role of Na/K pump	• Textbook of Medical Physiology by Guyton & Hall. 14th Edition. Membrane Potential and action potential (Unit2, Chapter 05, Page 65,67-70) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.Chapter no.05 Membrane dynamics Page no.188-194) • Physiology by Linda S. Costanzo 6th Edition. Cellular Physiology (Chapter01.Page18)
M2-MSK-I-P-0028	Concept of degeneration & regeneration	• Introduction • Axonal Degeneration • Wallerian Degeneration	• Ganong's Review of Medical Physiology.25TH Edition, overview of cell physiology in medical physiology (chapter 6, page 133) • A & P Anatomy and physiology Tortora, Chapter 12 Nervous tissue And Homeostasis Page 447 • Ganong's Review of Medical Physiology.25TH Edition, overview of cell physiology in medical physiology (Chapter 4, page 97)
M2-MSK-I-P-0029	Stimulus & response & types of stimuli, Stages of action potential	• Neuron action potential, • Stages of Propagation of AP • Conduction Rates • ALL-OR-NONE Principle	• Textbook of Medical Physiology by Guyton & Hall.14th Edition.Introduction to Physiology. (Unit 2, Chapter 05 Membrane Potential and action potential Page 71) • Ganong's Review of Medical Physiology.25TH Edition, Excitable Tissue; Nerve (Chapter 04,Page 93) • Physiology by Linda S. Costanzo 6thEdition. cellular Physiology (Chapter 01. Page 25) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 01. Properties and function of cell membrane. (Chapter 03,Page 45,47-51)
M2-MSK-I-P-0030	A, Refractory period, types of action potential. Graded potential comparison with action potential B. Recording & propagation of	• Threshold Potential • Action potential • Types of Action Potential • Propagation of Action Potential • Hyperpolarization • Factors effecting Action potential	• A. • Ganong's Review of Medical Physiology.25TH Edition, General principles and Energy production in Medical Physiology (chapter 04, Page 90, 93) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. Introduction to Physiology. (Chapter 5, page 67). • Ganong's Review of Medical Physiology.25TH Edition, General principles and Energy production in Medical Physiology (chapter 8, page

	action potential & factors effecting nerve conduction & hyperpolarized state		273) • B. • Ganong's Review of Medical Physiology.25TH Editions, Overview of Cellular Physiology in Medical Physiology (chapter 08, Page 276, 278, 281) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. Introduction to Physiology. (Section 1, chapter 04. , page 71,72.73,74) • Ganong's Review of Medical Physiology.25TH Editions, Overview of Cellular Physiology in Medical Physiology (chapter 04, page 93)

(Psychomotor)

Physiology Practicals Skill Laboratory (SKL)

Practicals					
Code	**Topic**	**At the end of practical students should be able to**	**Learning Domain**	**Teaching Strategy**	**Assessment Tool**
M2-MSK-I-P-0031	Estimation of hemoglobin Practical I	• Apparatus identification • Detail procedure • Precautions • Aseptic measures taken during blood sampling	P, A	Skill lab	OSPE
M2-MSK-I-P-0032	Estimation of hematocrit Practical I	• Hct definition • How to measure • Precautions	P,A	Skill lab	OSPE
M2-MSK-I-P-0033	ESR Practical I	• Procedure • Precautions • Clinical importance of ESR, normal values	P,A	Skill lab	OSPE
M2-MSK-I-P-0034	Preparation of DLC	• Preparation of slide – practice • How to make blood film • How to stain it after preparation • Help of teaching aid identification of cells	P,A	Skill lab	OSPE

Physiology Syllabus of Learning Management System (LMS)

Code	Topics	Learning Objectives	Calgary Model	Mode of Assessment	Tool of Assessment
M2-MSK-I-P-0035	Structure of neurons Classification of neurons & nerve fibers	• Structure of neurons • Myelinated and unmyelinated nerve fibers. • Neuroglia • Difference between neurons and glial cells	Nice to know (C)	SDL	MCQs
M2-MSK-I-P-0036	Nernst potential, RMP	• Basic physics of membrane potential, Nernst equation, • Goldman Equation • Origin of RMP in different cell types.	Must Know (A)	LGIS&SDL	MCQs
M2-MSK-I-P-0037	Properties of nerve fibers	• Rhythmicity of Excitable tissues, • Characteristics of signal transmission, • Types of refractory period • Concept of excitation	Nice to know (C)	SDL	MCQs
M2-MSK-I-P-0038	Measurement of RMP &effect of electrolytes on RMP	• Measurement of RMP • Effect of electrolytes on RMP • Role of Na/K pump	Must Know (A)	LGIS&SDL	MCQs
M2-MSK-I-P-0039	Concept of degeneration & regeneration	• Introduction • Axonal Degeneration • Wallerian Degeneration	Nice to know (C)	SDL	MCQs
M2-MSK-I-P-0040	Stimulus & response & types of stimuli, Stages of action potential	• Neuron action potential, • Stages of Propagation of AP • Conduction Rates • ALL-OR-NONE Principle	Nice to know (C)	SDL	MCQs
M2-MSK-I-P-0041	A, Refractory period, types of action potential. Graded potential comparison with action potential B. Recording & propagation of action potential & factors effecting nerve conduction & hyperpolarized state	• Threshold Potential • Action potential • Types of Action Potential • Propagation of Action Potential • Hyperpolarization • Factors effecting Action potential	Must Know (A)	LGIS&SDL	MCQs

(Knowledge)

Biochemistry Large Group Interactive Session (LGIS)

Theory						
Code	**Topic**	**Learning Objectives At the End of Lecture Students Should Be Able To**	**Learning Domain**	**Calgary Gauge**	**Teaching Strategy**	**Assessment Tool**
Minerals & Vitamins						
M2-MSK-I-B-001	Minerals classification and Introduction. Calcium Phosphate	• Classify Minerals • State Daily Requirements of Calcium in different conditions	C1 C2	Should Know	LGIS MCQs, SAQs & Viva	
		• Discuss Types & Sources of Calcium phosphate	C2	Should Know		
		• Apply the strategic use of artificial intelligence in healthcare • Use HEC digital library • Practice principles of bioethics • Understand the curative and preventive health care measures	C3	Nice to know		
M2-MSK-I-B-002	Biochemical Role of Calcium & Phosphate	• Discuss causes of Hypercalcemia & Hypocalcemia • Describe effects of Hypercalcemia & Hypocalcemia • State Daily Requirements of Phosphate • Discuss Biochemical functions of Phosphate	C2 C2	Must Know Should Know	LGIS MCQs, SAQs & Viva	
		• Apply the strategic use of artificial intelligence in healthcare • Use HEC digital library • Practice principles of bioethics • Understand the curative and preventive health care measures	C3	Nice to know		
M2-MSK-I-B-003	Fluoride, Magnesium, Sulphur	• Elaborate Biochemical functions of Fluoride, Sulphur & Magnesium • Describe Deficiency Effects	C2 C1	Should Know Must Know	LGIS MCQs, SAQs & Viva	
		• Apply the strategic use of artificial intelligence in healthcare • Use HEC digital library • Practice principles of bioethics Understand the curative and preventive health care measures	C3	Nice to know		
M2-MSK-I-B-004	Iodine, Copper, Zinc, Selenium, Manganese	• Recall sources & daily requirements • Discuss their biochemical functions • Describe Deficiency Effects	C1 C2	Should Know Must know	LGIS MCQs, SAQs & Viva	

		• Apply the strategic use of artificial intelligence in healthcare • Use HEC digital library • Practice principles of bioethics • Understand the curative and preventive health care measures	C3	Nice to know	
M2-MSK-I-B-005	Vitamins & Their Classification Vitamin A and E	• Classify Vitamins & Water-Soluble Vitamins • Enlist Sources of Vitamin A & E • Describe Biochemical functions of Vitamin A & E • Describe Deficiency Effects of Vitamin A & E • Explain Toxic Effects of Vitamin A	C2 C1	Should Know Should Know Must Know	LGIS MCQs, SAQs & Viva
		• Apply the strategic use of artificial intelligence in healthcare • Use HEC digital library • Practice principles of bioethics • Understand the curative and preventive health care measures	C3	Nice to know	
M2-MSK-I-B-006	Vitamin D	• Enlist Sources of Vit.D • Explain Steps of activation of Vit.D in the body • Describe Biochemical functions of Vit.D • • Explain Deficiency effects of Vit.D • Explain Toxic effects of Vit.D	C1 C2	Should Know Must Know	LGIS MCQs, SAQs & Viva
		• Apply the strategic use of artificial intelligence in healthcare • Use HEC digital library • Practice principles of bioethics • Understand the curative and preventive health care measures	C3	Nice to know	
M2-MSK-I-B-007	Vitamin C	• Enlist Sources of Vit.C • Describe Biochemical functions of Vit.C • Explain Deficiency effects of Vit.C • Explain Toxic effects of Vit.C	C1 C2 C2	Should Know Must know Nice Know	LGIS MCQs, SAQs & Viva

		• Apply the strategic use of artificial intelligence in healthcare • Use HEC digital library • Practice principles of bioethics • Understand the curative and preventive health care measures	C3	Nice to know	
M2-MSK-I-B-008	Niacin & Thiamine	• Enlist Sources • Describe Biochemical functions • Explain Deficiency effects	C1 C2	Should Know Must Know	LGIS MCQs, SAQs & Viva
		• Apply the strategic use of artificial intelligence in healthcare • Use HEC digital library • Practice principles of bioethics • Understand the curative and preventive health care measures	C3	Nice to know	
M2-MSK-I-B-009	Classification & Structure of Amino Acids	• Classification & Structure of Amino Acids & Isomerism of Amino Acids	C2	Should Know	LGIS MCQs, SAQs & Viva
		• Apply the strategic use of artificial intelligence in healthcare • Use HEC digital library • Practice principles of bioethics • Understand the curative and preventive health care measures	C3	Nice to know	

(Knowledge)

Biochemistry Small Group Discussion (SGDs)

Theory						
Code	**Topic**	**Learning Objectives**	**Learning Domain**	**Calgary Gauge**	**Teaching Strategy**	**Assessment Tools**
M2-MSK-I-B-0010	Introduction and Classification of Vitamins & Vitamin E	• Define Vitamins	C1	Should Know	SGD	MCQ SAQ VIVA
		• Introduction & Classification of Vitamins • Discuss sources, functions	C1 C2	Should Know Should Know		
		• clinical significance of vitamin E.	C2			

				Must Know		
		• Apply the strategic use of artificial intelligence in healthcare • Use HEC digital library • Practice principles of bioethics • Understand the curative and preventive health care measures	C3	Nice to know		
M2-MSK-I-B-0011	Minerals				SGD	MCQ SAQ VIVA
		• Discuss Sources, Functions of Phosphate, Iodine, Fluoride, Copper, Zinc, Selenium, Magnesium, Sulphur And Cobalt. • Related clinical significance	C2 C3	Should Know Must Know		
		• Apply the strategic use of artificial intelligence in healthcare • Use HEC digital library • Practice principles of bioethics • Understand the curative and preventive health care measures	C3	Nice to know		

(Knowledge)
Biochemistry Self Directed Learning (SDL)

Code	Topics	Learning Objective	Calgary Gauge	References
Minerals & Vitamins				
M2-MSK-I-B-0012	Hypercalcemia	• Discuss causes of Hypercalcemia • Explain Biochemical Basis • Describe effects of Hypercalcemia	Must Know	• Textbook of Lippincott 8th Edition Chapter # 29 page#466-467 • Textbook of Harper 32nd Edition Chapter # 44 page# 540 • https://www.ncbi.nlm.nih.gov/books/NBK218735 • https://youtu.be/34FTvJZCrt4
M2-MSK-I-B-0013	Hypocalcemia	• Discuss causes of Hypocalcemia • Describe effects of Hypocalcemia	Must Know	• Textbook of Lippincott 8th Edition Chapter # 29 page #466-467 • https://www.ncbi.nlm.nih.gov/books/NBK279023/ • https://youtu.be/qAeWKCXDniw

		• State Daily Requirements of Phosphate Discuss Biochemical functions of Calcium		
M2-MSK-I-B-0014	Clinical Role of Fluoride, Magnesium, Sulphur	• Elaborate Biochemical Basis • Enlist Sources of Fluoride, Sulphur. • Describe causes of deficiency	Must Know	• Textbook of Lippincott 8th Edition Chapter # 29 page #468 • https://www.ncbi.nlm.nih.gov/ • https://youtu.be/PTOJNdtuXro
M2-MSK-I-B-0015	Wilson's Disease	• Recall sources & daily requirements of Copper • Discuss their biochemical functions of Copper • Describe Deficiency Effects	Should Know Must Know	• Textbook of Lippincott 8th Edition Chapter # 29 page #449-454 • https://youtu.be/1i9fSQSvYI0 • https://pubmed.ncbi.nlm.nih.gov/
M2-MSK-I-B-0016	Applied Biochemistry of Vitamin A and E	• Classify Fat- & Water-Soluble Vitamins • Enlist Sources of Vitamin A & E • Describe Deficiency Effects of Vitamin A & E • Explain Toxic Effects of Vitamin A	Should Know Must Know	• Textbook of Lippincott 8th Edition Chapter # 28 page #423,432-436,441,444 • Textbook of Harper 32nd Edition Chapter # 44 page# 528-529 • https://byjus.com/chemistry • https://youtu.be/7ZFr9xiAt94
M2-MSK-I-B-0017	Rickets	• Enlist Sources of Vit.D • Describe Biochemical functions of Vit.D • Explain Deficiency effects of Vit.D • Explain Toxic effects of Vit.D	Should Know Must Know	• Textbook of Lippincott 8th Edition Chapter # 28 page # 437-440 • Textbook of Harper 32nd Edition Chapter # 44 page# 530-532 • https://byjus.com/chemistry • https://youtu.be/6xhE5e16X0c
M2-MSK-I-B-0018	Deficiency Manifestation of Vitamin A	• Explain Deficiency effects of vitamin A	Must Know	• Textbook of Lippincott 8th Edition Chapter # 28 Page #435,439 • Textbook of Harper 32nd Edition Chapter # 44 page# 530-532 • https://www.ncbi.nlm.nih.gov/ • shttps://youtu.be/ZCINiQX-mxU

M2-MSK-I-B-0019	Deficiency manifestation of Thiamine	• Explain Deficiency effects	Must Know	• Textbook of Lippincott 8th Edition Chapter # 28 Page #429,430 • Textbook of Harper 32nd Edition Chapter # 44 page# 534 • https://www.ncbi.nlm.nih.gov/ • https://youtu.be/WAkXS8lgoA0
M2-MSK-I-B-0020	Deficiency manifestation of Niacin	• Describe Biochemical functions Niacin a • Explain deficiency effects of Niacin	Should Know Must Know	• Textbook of Lippincott 8th Edition Chapter # 28and 1 Page #1-5 &429-431 • Textbook of Harper 32nd Edition Chapter # 44 page# 534-535 • https://microbenotes.com/ • https://youtu.be/9pwBUTIcxHk

(Psychomotor)
Biochemistry Practicals Skill Laboratory (SKL)

Practicals					
Code	**Topic**	**At the End of Practical Students Should Be Able To**	**Learning Domain**	**Teaching Strategy**	**Assessment Tool**
M2-MSK-I-B-0021	Color test for detection of amino acids	• Biuret test • Ninhydrin Test	P	Skill Lab	OSPE
M2-MSK-I-B-0022	Color test for detection of amino acids	• Xanthoprotic Test • Million- Nasse's Test	P	Skill Lab	OSPE
M2-MSK-I-B-0023	Color test for detection of amino acids	• Arginine by Sakaguchi's Test • Tryptophan by Aldehyde Test	P	Skill Lab	OSPE
M2-MSK-I-B-0024	Quantitative Analysis	• Serum calcium • Serum Ascorbic Acid	P	Skill Lab	OSPE

Biochemistry Syllabus of Learning Management System (LMS)

Code	Topic	Learning Objectives At the End of Lecture Students Should Be Able To	Learning Domain	Calgary Gauge	Learning Resources
Minerals & Vitamins					
M2-MSK-I-B-0025	Minerals classification and Introduction. Calcium Phosphate	• Classify Minerals • State Daily Requirements of Calcium in different conditions	C1 C2	Should Know	• Textbook of Lippincott 8th Edition
		• Discuss Types & Sources of Calcium phosphate	C2	Should Know	
		• Apply the strategic use of artificial intelligence in healthcare • Use HEC digital library • Practice principles of bioethics • Understand the curative and preventive health care measures	C3	Nice to know	
M2-MSK-I-B-0026	Biochemical Role of Calcium & Phosphate	• Discuss causes of Hypercalcemia & Hypocalcemia • Describe effects of Hypercalcemia & Hypocalcemia • State Daily Requirements of Phosphate • Discuss Biochemical functions of Phosphate	C2 C2	Must Know Should Know	• Textbook of Lippincott 8th Edition
		• Apply the strategic use of artificial intelligence in healthcare • Use HEC digital library • Practice principles of bioethics • Understand the curative and preventive health care measures	C3	Nice to know	
M2-MSK-I-B-0027	Fluoride, Magnesium, Sulphur	• Elaborate Biochemical functions of Fluoride, Sulphur & Magnesium • Describe Deficiency Effects	C2 C1	Should Know Must Know	• Textbook of Lippincott 8th Edition
		• Apply the strategic use of artificial intelligence in healthcare • Use HEC digital library • Practice principles of bioethics	C3	Nice to know	

		Understand the curative and preventive health care measures			
M2-MSK-I-B-0028	Iodine, Copper, Zinc, Selenium, Manganese	• Recall sources & daily requirements • Discuss their biochemical functions • Describe Deficiency Effects	C1 C2	Should Know Must know	• Textbook of Lippincott 8th Edition
		• Apply the strategic use of artificial intelligence in healthcare • Use HEC digital library • Practice principles of bioethics • Understand the curative and preventive health care measures	C3	Nice to know	
M2-MSK-I-B-0029	Vitamins & Their Classification Vitamin A and E	• Classify Vitamins & Water-Soluble Vitamins • Enlist Sources of Vitamin A & E • Describe Biochemical functions of Vitamin A & E • Describe Deficiency Effects of Vitamin A & E • Explain Toxic Effects of Vitamin A	C2 C1	Should Know Should Know Must Know	• Textbook of Lippincott 8th Edition Textbook of Harper 32nd Edition
		• Apply the strategic use of artificial intelligence in healthcare • Use HEC digital library • Practice principles of bioethics • Understand the curative and preventive health care measures	C3	Nice to know	
M2-MSK-I-B-0030	Vitamin D	• Enlist Sources of Vit.D • Explain Steps of activation of Vit.D in the body • Describe Biochemical functions of Vit.D • • Explain Deficiency effects of Vit.D • Explain Toxic effects of Vit.D	C1 C2	Should Know Must Know	Textbook of Harper 32nd Edition
		• Apply the strategic use of artificial intelligence in healthcare • Use HEC digital library • Practice principles of bioethics • Understand the curative and preventive health care measures	C3	Nice to know	
	Vitamin C	• Enlist Sources of Vit.C • Describe Biochemical functions of Vit.C	C1 C2	Should Know Must know	Textbook of Harper 32nd Edition

M2-MSK-I-B-0031		• Explain Deficiency effects of Vit.C • Explain Toxic effects of Vit.C	C2		
		• Apply the strategic use of artificial intelligence in healthcare • Use HEC digital library • Practice principles of bioethics • Understand the curative and preventive health care measures	C3	Nice to know	
M2-MSK-I-B-0032	Niacin & Thiamine	• Enlist Sources • Describe Biochemical functions • Explain Deficiency effects	C1 C2	Should Know Must Know	Textbook of Harper 32nd Edition
		• Apply the strategic use of artificial intelligence in healthcare • Use HEC digital library • Practice principles of bioethics • Understand the curative and preventive health care measures	C3	Nice to know	
M2-MSK-I-B-0033	Classification & Structure of Amino Acids	• Classification & Structure of Amino Acids & Isomerism of Amino Acids	C2	Should Know	Textbook of Lippincott 8th Edition
		• Apply the strategic use of artificial intelligence in healthcare • Use HEC digital library • Practice principles of bioethics • Understand the curative and preventive health care measures	C3	Nice to know	
M2-MSK-I-B-0034	Hypercalcemia	• Discuss causes of Hypercalcemia • Explain Biochemical Basis • Describe effects of Hypercalcemia	C3	Must Know	• Textbook of Lippincott 8th Edition Chapter # 29 page#466-467 • Textbook of Harper 32nd Edition Chapter # 44 page# 540 • https://www.ncbi.nlm.nih.gov/books/NBK218735 • https://youtu.be/34FTvJZCrt4
M2-MSK-I-B-0035	Hypocalcemia	• Discuss causes of Hypocalcemia • Describe effects of Hypocalcemia • State Daily Requirements of Phosphate Discuss Biochemical	C3	Must Know	• Textbook of Lippincott 8th Edition Chapter # 29 page #466-467 • https://www.ncbi.nlm.nih.gov/books/NBK279023/ • https://youtu.be/qAeWKCXDniw

		functions of Calcium			
M2-MSK-I-B-0036	Clinical Role of Fluoride, Magnesium, Sulphur	• Elaborate Biochemical Basis • Enlist Sources of Fluoride, Sulphur. • Describe causes of deficiency	C2	Must Know	• Textbook of Lippincott 8th Edition Chapter # 29 page #468 • https://www.ncbi.nlm.nih.gov/ • https://youtu.be/PTOJNdtuXro
M2-MSK-I-B-0037	Wilson's Disease	• Recall sources & daily requirements of Copper • Discuss their biochemical functions of Copper • Describe Deficiency Effects	C2	Should Know Must Know	• Textbook of Lippincott 8th Edition Chapter # 29 page #449-454 • https://youtu.be/1i9fSQSvYI0 • https://pubmed.ncbi.nlm.nih.gov/
M2-MSK-I-B-0038	Applied Biochemistry of Vitamin A and E	• Classify Fat- & Water-Soluble Vitamins • Enlist Sources of Vitamin A & E • Describe Deficiency Effects of Vitamin A & E • Explain Toxic Effects of Vitamin A	C3	Should Know Must Know	• Textbook of Lippincott 8th Edition Chapter # 28 page #423,432-436,441,444 • Textbook of Harper 32nd Edition Chapter # 44 page# 528-529 • https://byjus.com/chemistry • https://youtu.be/7ZFr9xiAt94
M2-MSK-I-B-0039	Rickets	• Enlist Sources of Vit.D • Describe Biochemical functions of Vit.D • Explain Deficiency effects of Vit.D • Explain Toxic effects of Vit.D	C3	Should Know Must Know	• Textbook of Lippincott 8th Edition Chapter # 28 page # 437-440 • Textbook of Harper 32nd Edition Chapter # 44 page# 530-532 • https://byjus.com/chemistry • https://youtu.be/6xhE5e16X0c
M2-MSK-I-B-0040	Deficiency Manifestation of Vitamin A	• Explain Deficiency effects of vitamin A	C3	Must Know	• Textbook of Lippincott 8th Edition Chapter # 28 Page #435,439 • Textbook of Harper 32nd Edition Chapter # 44 page# 530-532 • https://www.ncbi.nlm.nih.gov/ • shttps://youtu.be/ZCINiQX-mxU
		• Explain Deficiency effects	C3	Must Know	• Textbook of Lippincott 8th Edition Chapter # 28 Page #429,430

M2-MSK-I-B-0041	Deficiency manifestation of Thiamine				• Textbook of Harper 32nd Edition Chapter # 44 page# 534 • https://www.ncbi.nlm.nih.gov/ • https://youtu.be/WAkXS8lgoA0
M2-MSK-I-B-0042	Deficiency manifestation of Niacin	• Describe Biochemical functions Niacin a • Explain deficiency effects of Niacin	C3	Should Know Must Know	• Textbook of Lippincott 8th Edition Chapter # 28and 1 Page #1-5 &429-431 • Textbook of Harper 32nd Edition Chapter # 44 page# 534-535 • https://microbenotes.com/ • https://youtu.be/9pwBUTIcxHk

SECTION - III

Basic and Clinical Sciences (Vertical Integration)

Content

- **Case Base Learning (CBLs)**
- **Vertically Integrated LGIS**

Basic and Clinical Sciences (Vertical Integration)

Case Based Learning (CBL)

Subject	Topic	Learning Objectives At the end of the lecture the student should be able to	Learning Domain
Anatomy	• Shoulder Dislocation	Apply basic knowledge of subject to study clinical case.	C1
	• Wrist Drop	Apply basic knowledge of subject to study clinical case.	C3
Physiology	• Paresthesia	Apply basic knowledge of subject to study clinical case.	C3
	• Insecticide poisoning	Apply basic knowledge of subject to study clinical case.	C3
Biochemistry	• Night Blindness	Apply basic knowledge of subject to study clinical case.	C3
	• Rickets	Apply basic knowledge of subject to study clinical case.	C3

Large Group Interactive Sessions (LGIS)

Community Medicine

Theory					
Code	**Topic**	**Learning Objectives**	**Cognitive Domain**	**Teaching Strategy**	**Mode of Assessment**
M2-MSK-I-VI(CM)-001	Musculoskeletal Disorders	• Explain causes of low back pain • Describe prevention of low back pain • Describe work related musculoskeletal disorders addition with its burden/epidemiology • Identify risk factors of Musculoskeletal disorders MSD at workplace • Identify risk factors related to MSD due to excessive mobile usage. • Describe prevention of exposure to risk factors related to workplace • Describe the application of ergonomics in MSD related to the above disorders.	C2 C2 C2 C1 C1 C1 C1	LGIS	MCQs
M2-MSK-I-VI(CM)-002	Prevention of Accidents	• Categorize different types of accidents • Describe risk factors involved in accidents • Describe steps involved in prevention of different types of accidents.	C1 C2 C2	LGIS	MCQs

Medicine

Theory					
Code	**Topic**	**Learning Objectives** **At the end of the lecture the student should be able to**	**Learning Domain**	**Teaching Strategy**	**Assessment Tool**
M2-MSK-I-VI(M)-001	Osteoporosis	• Enlist causes Osteoporosis	C2	LGIS	MCQs
		• Discuss changes in bones in Osteoporosis	C2		
		• Describe clinical features	C2		
		• Enlist investigation	C3		
		• Discuss management	C2		
M2-MSK-I-VI(M)-002	Polyarthritis	• Differentiate different causes of polyarthritis • on basis of clinical features	C2	LGIS	MCQs
		• Discuss the diagnostic criteria of rheumatoid arthritis	C2		
		• Discuss the diagnostic criteria of SLE	C2		
		• Plan investigations of a patient with polyarthritis to find out etiology	C3		
		• Discuss general and specific management of a patient with polyarthritis	C2		
M2-MSK-I-VI(M)-003	Osteomalacia /rickets	• Enlist causes of rickets	C1	LGIS	MCQs
		• Discuss changes in bones in osteomalacia	C2		
		• Describe clinical features of osteomalacia& rickets	C2		
		• Enlist investigations for of osteomalacia& rickets	C1		
		• Discuss management of osteomalacia& rickets	C2		

Surgery

Theory					
Code	**Topic**	**Learning Objectives** **At the end of the lecture the student should be able to**	**Learning Domain**	**Teaching Strategy**	**Assessment Tool**
M2-MSK-I-VI(S)-001	Shoulder Dislocation	• Discuss the possible sites of shoulder dislocation	C2	LGIS	MCQs
		• Discuss the consequences of dislocation	C2		
		• Management concepts	C2		
M2-MSK-I-VI(S)-002	Tennis elbow, fracture of	• Describe: • Tennis elbow	C2	LGIS	MCQs

	olecranon, radius and ulna	• Discuss fractures of radius and ulna	C2		
		• Describe the common sites of fracture	C2		
		• Management concepts	C2		

Pharmacology

Theory

Code	Topic	Learning Objectives At the end of the lecture the student should be able to	Learning Domain	Teaching Strategy	Assessment Tool
M2-MSK-I-VI(Pharm)-001	Drugs Acting On Neuromuscular Junction	• Give the stepwise mechanism of neuromuscular transmission	C1	LGIS	MCQs
		• Classify drugs acting on neuromuscular junction	C1		
		• Explain the mechanism of action, clinical uses, adverse drug affects and contraindications of neuromuscular stimulants	C2		
		• Describe the mechanism of action, clinical uses, adverse effects and contraindications of neuromuscular blockers	C2	LGIS	MCQs
M2-MSK-I-VI(Pharm)-002	Tennis elbow, fracture of olecranon, radius and ulna	• Outline the pathophysiology of myasthenia gravis	C1	LGIS	MCQs
		• Describe the mechanism of action of cholinesterase inhibitors	C2	LGIS	MCQs
		• Classify drugs used in myasthenia gravis	C1	LGIS	MCQs
		• Recognize the adverse effects and contraindications of drugs used in myasthenia gravis	C2	LGIS	MCQs

Obstetrics & Gynecology

Theory

Code	Topic	Learning Objectives At the end of the lecture the student should be able to	Learning Domain	Teaching Strategy	Assessment Tool
M1-MSK-II-VI(OBG)-001	Bony PELVIS Fetal Skull & Mechanism of Labor	• Understand the structure, functions, and anatomical components of the bony pelvis, and its role in supporting the weight of the body and facilitating childbirth	C2	LGIS	MCQs
		• Understand the anatomy and features of the fetal skull, including fontanelles and sutures, and their significance in labor and delivery.	C2		
		• Describe the stages and the physiological mechanisms of labor, including the movements of the fetus through the birth canal.	C2		

SECTION – IV

Spiral Courses

Content

- **Longitudinal Themes**
    - **The Holy Quran Translation**
    - **Seerat Mubarak**
    - **Biomedical Ethics & Professionalism**
    - **Family Medicine**
    - **Artificial Intelligence (Innovation)**
    - **Integrated Undergraduate Research Curriculum (IUGRC)**
    - **Early Clinical Exposure (ECE)**

Introduction to Spiral Courses

The Holy Quran Translation

A course of Islamic Studies provides students with a comprehensive overview of the fundamental aspects of Islam, its history, beliefs, practices, and influence on society and familiarize students with a solid foundation in understanding the religion of Islam from an academic and cultural perspective. Ethics, in integrated form will shape the core of the course to foster among students the universal ethical values promoted by Islam.

Bioethics

Biomedical ethics, also known as bioethics, is a field of study that addresses the ethical, social, and legal issues arising from medicine and the life sciences. It applies moral principles and decision-making frameworks to the practice of clinical medicine, biomedical research, and health policy. Biomedical ethics seeks to navigate the complex ethical dilemmas posed by advances in medical technology, research methodologies, and healthcare practices. Key areas of focus include patient rights and autonomy, confidentiality, informed consent, end-of-life care, resource allocation, and the ethics of genetic engineering, among others.

Biomedical ethics within medical universities plays a pivotal role in shaping the moral framework through which future healthcare professionals navigate the complex and often challenging decisions they will face in their careers. This critical discipline integrates ethical theories and principles with clinical practice, research, and healthcare policy, fostering a deep understanding of the ethical dimensions of medicine. By embedding biomedical ethics into the curriculum, Rawalpindi medical university equips students with the tools to critically analyze and address ethical dilemmas, ranging from patient confidentiality and informed consent to end-of-life care and the equitable distribution of healthcare resources.

This education goes beyond theoretical knowledge, encouraging students to apply ethical reasoning in practical scenarios, thus preparing them for the moral complexities of the medical field. Biomedical ethics also promotes a culture of empathy, respect, and integrity, ensuring that future medical practitioners not only excel in their technical skills but also uphold the highest ethical standards in patient care and research. Through seminars, case studies, and interdisciplinary collaborations, students are encouraged to engage in ethical discourse, reflecting on the societal impact of medical advancements and the responsibility of medical professionals to society. This foundational aspect of medical education cultivates a generation of healthcare professionals committed to ethical excellence, patient advocacy, and the pursuit of equitable healthcare for all.

Professionalism

Professionalism in medicine refers to the set of values, behaviors, and relationships that underpin the trust the public has in doctors and other healthcare professionals. It encompasses a commitment to competence, integrity, ethical conduct, accountability, and putting the interests of patients above one's own. Professionalism involves adhering to high standards of practice, including maintaining patient confidentiality, communicating effectively and respectfully with patients and colleagues, and continually engaging in self-improvement and professional development. It also includes a responsibility to improve access to high-quality healthcare and to contribute to the welfare of the community and the betterment of public health. In essence, professionalism in medicine is foundational to the quality of care provided to patients and is critical for maintaining the trust that is essential for the doctor-patient relationship.

Rawalpindi Medical University emphasizes the importance of professionalism in medicine, integrating it throughout its curriculum to ensure that students embody the core values of respect, accountability, and compassion in their interactions with patients, colleagues, and the community. This focus on professionalism is designed to prepare students for the complexities of the healthcare environment, instilling in them a deep sense of responsibility to their patients, adherence to ethical principles, and a commitment to continuous learning and improvement. Through a combination of theoretical learning, practical training, and mentorship, RMU encourages its students to exemplify professionalism in every aspect of their medical practice. Workshops, seminars, and clinical rotations further reinforce these values, providing students with real-world experiences that highlight the importance of maintaining professional conduct in challenging situations. RMU's approach to professionalism not only shapes competent and ethical medical professionals but also contributes to the broader mission of improving healthcare standards and patient outcomes. By prioritizing professionalism, Rawalpindi Medical University plays a crucial role in advancing the medical profession and ensuring that its graduates are well-equipped to meet the demands of a rapidly evolving healthcare landscape with honor and integrity.

Communication Skills

Communication skill for health professionals involves the ability to effectively convey and receive information, thoughts, and feelings with patients, their families, and other healthcare professionals. It encompasses a range of competencies including active listening, clear and compassionate verbal and non-verbal expression, empathy, the ability to explain medical conditions and treatments in an understandable way, and the skill to negotiate and resolve conflicts. Effective communication is essential for establishing trust, ensuring patient understanding and compliance with treatment plans, making informed decisions, and providing holistic care. It directly impacts patient satisfaction, health outcomes, and the overall efficiency of healthcare delivery.

At Rawalpindi Medical University (RMU), the development of communication skills is regarded as a fundamental aspect of medical education, recognizing its critical importance in enhancing patient care, teamwork, and interdisciplinary collaboration. RMU is dedicated to equipping its students with exceptional communication abilities, enabling them to effectively interact with patients, their families, and healthcare colleagues. The curriculum is thoughtfully designed to incorporate various interactive and experiential learning opportunities, such as role-playing, patient interviews, and group discussions, which allow students to practice and refine their communication skills in a supportive environment.

By integrating communication skills training throughout its programs, RMU not only enhances the interpersonal competencies of its future healthcare professionals but also contributes to improving the overall quality of healthcare delivery. Graduates from RMU are distinguished not just by their clinical expertise but also by their ability to connect with patients and colleagues, making them highly effective and compassionate practitioners.

Behavioral Sceinces

Behavioral sciences in medicine focus on understanding and addressing the psychological and social aspects of health and illness. This interdisciplinary field combines insights from psychology, sociology, anthropology, and other disciplines to enhance medical care and patient outcomes. It explores how behavior, emotions, and social factors influence health, disease, and medical treatment. By incorporating behavioral science principles into medical practice, healthcare professionals can better understand patients' perspectives, improve communication, and promote positive health behaviors, ultimately contributing to more comprehensive and effective patient care.

Family Medicine

Family medicine is a medical specialty dedicated to providing comprehensive health care for people of all ages and genders. It is characterized by a long-term, patient-centered approach, building sustained relationships with patients and offering continuous care across all stages of life. It focuses on treating the whole person within the context of the family and the community, emphasizing preventive care, disease management, and health promotion.

The Family Medicine Curriculum at Rawalpindi Medical University (RMU) marks a significant stride towards holistic healthcare education, aiming to prepare medical graduates for the comprehensive and evolving needs of family practice. This curriculum is designed to offer a broad perspective on healthcare, focusing on preventive care, chronic disease management, community health, and the treatment of acute conditions across all ages, genders, and diseases. Emphasizing a patient-centered approach, the curriculum ensures that students develop a deep understanding of the importance of continuity of care, patient advocacy, and the ability to work within diverse community settings.

RMU's Family Medicine Curriculum integrates theoretical knowledge with practical experience. Students are exposed to a variety of learning environments, including community health centers, outpatient clinics, and inpatient settings, providing them with a well-rounded understanding of the different facets of family medicine. This hands-on approach is complemented by interactive sessions, workshops, and seminars that cover a wide range of topics from behavioral health to geriatric care, ensuring students are well-equipped to address the comprehensive health needs of individuals and families.

Artificial Intelligence

To realize the dreams and impact of AI requires autonomous systems that learn to make good decisions. Reinforcement learning is one powerful paradigm for doing so, and it is relevant to an enormous range of tasks, including robotics, game playing, consumer modeling and healthcare. This class will provide a solid introduction to the field of reinforcement learning and students will learn about the core challenges and approaches, including generalization and exploration. Through a combination of lectures, and written and coding assignments, students will become well versed in key ideas and techniques for RL. Assignments will include the basics of reinforcement learning as well as deep reinforcement learning — an extremely promising new area that combines deep learning techniques with reinforcement learning. In addition, students will advance their understanding and the field of RL through a final project.

Integrated Undergraduate Research Curriculum

The integrated undergraduate research curriculum (IUGRC) of RMU occupies a definite space in schedule of each of the five years in rational and incremental way. It has horizontal harmonization as well as multidisciplinary research work potentials. In the first-year teachings are more introductory & inspirational rather than instructional. The teachings explain what & why of research and what capacities are minimally required to comprehend research & undertake research. Some research dignitaries' lecture are specifically arranged for sharing their experiences and inspiring the students. Students are specifically assessed through their individual compulsory written feedback (reflection) after the scheduled teachings end.

Entrepreneurship

Entrepreneurship is the process of designing, launching, and running a new business, which typically starts as a small enterprise offering a product, process, or service for sale or hire. It involves identifying a market opportunity, gathering resources, developing a business plan, and managing the business's operations, growth, and development.

Entrepreneurship in medical universities represents a burgeoning field where the innovative spirit intersects with healthcare to forge advancements that can transform patient care, medical education, and healthcare delivery. This unique amalgamation of medical expertise and entrepreneurial acumen empowers students, faculty, and alumni to develop groundbreaking medical technologies, healthcare solutions, and startups that address critical challenges in the health sector. By integrating entrepreneurship into the curriculum, Rawalpindi Medical university is not only expanding the traditional scope of medical education but also fostering a culture of innovation and problem-solving. This enables future healthcare professionals to not only excel in clinical skills but also in business strategies, leadership, and innovation management.

Such initiatives often lead to the creation of medical devices, digital health platforms, and therapeutic solutions that can significantly improve patient outcomes and make healthcare more accessible and efficient. Through incubators, accelerators, and partnerships with the industry, medical universities are becoming hotbeds for healthcare innovation, driving economic growth, and contributing to the broader ecosystem of medical research and entrepreneurial success.

Digital Literacy Module

Digital literacy means having the skills one needs to live, learn, and work in a society where communication and access to information is increasingly through digital technologies like internet platforms, social media, and mobile devices.

Early Clinical Exposure (ECE)

Early clinical exposure helps students understand the relevance of their preclinical studies by providing real-world contexts. This can enhance motivation and engagement by showing students the practical application of their theoretical knowledge. Early exposure allows students to begin developing essential clinical skills from the start of their education. This includes not only technical skills but also crucial soft skills such as communication, empathy, and professionalism. Direct interaction with patients early in their education helps students appreciate the complexities of patient care, including the psychological and social aspects of illness. Early exposure to various specialties can aid students in making informed decisions about their future career paths within medicine.

Early clinical experiences contribute to the development of a professional identity, helping students see themselves as future physicians and understand the responsibilities and ethics associated with the profession. This can help reduce the anxiety associated with clinical work by familiarizing students with the clinical environment. It can build confidence in their abilities to interact with patients and healthcare professionals. Engaging with real-life clinical situations early on encourages the development of critical thinking and problem-solving skills, which are essential for medical practice. It helps bridge the gap between theoretical knowledge and practical application, leading to a more integrated and holistic approach to medical education. It allows students to observe and understand how healthcare systems operate, including the challenges and limitations faced in different settings.: Early patient interaction emphasizes the importance of patient-centered care from the outset, underscoring the importance of treating patients as individuals with unique needs and backgrounds. Practical experiences can enhance long-term retention of knowledge as students are able to connect theoretical learning with clinical experiences.: Early clinical experiences often involve working in multidisciplinary teams, which fosters a sense of collaboration and understanding of different roles within healthcare.

In summary, early clinical exposure in medical education is pivotal for the holistic development of medical students, providing them with a strong foundation of practical skills, professional attitudes, and a deep understanding of patient-centered care.

The Family Medicine

Theory					
Code	**Topic**	**Learning Objectives** **At the end of the lecture the student should be able to**	**Learning Domain**	**Teaching Strategy**	**Assessment Tool**
MSK-I-SI(FM)-001	Approach to a Patient with body aches	• Describe presenting complains of patients with body aches	C3	LGIS	MCQs
		• Discus complications of body aches			
		• Describe initial treatment of patients with body aches			
		• Know when to refer patient to consultant/ Hospital			

Behavioral Sciences

Theory					
Code	**Topic**	**Learning Objectives** **At the end of the lecture the student should be able to**	**Learning Domain**	**Teaching Strategy**	**Assessment Tool**
MSK-I-SI(BS)-001	Healthcare models and their clinical application • Bio-psychosocial model • Integrated health care Model • Publica health care model	• To define bio-psychosocial model of health care	C1	LGIS	MCQs
		• To describe Integrated model of healthcare	C2	LGIS	MCQs
		• To describe Public health care model	C2	LGIS	MCQs
		• To describe Holistic and Traditional Allopathic medicine.	C2	LGIS	MCQs
		• To obtain information from the patient according to bio-psychosocial model	C1	LGIS	MCQs
		• Elaborate the importance of health belief model in clinical setting	C1	LGIS	MCQs
MSK-I-SI(BS)-002	Relevance of ethics in life of a doctor	• Relevance of ethics in life of a doctor	C3	LGIS	MCQs
		• Guiding principles of medical ethics	C3	LGIS	MCQs
		• To address the common ethical issues	C3	LGIS	MCQs
		• To address the common ethical dilemmas in health professional life	C3	LGIS	MCQs

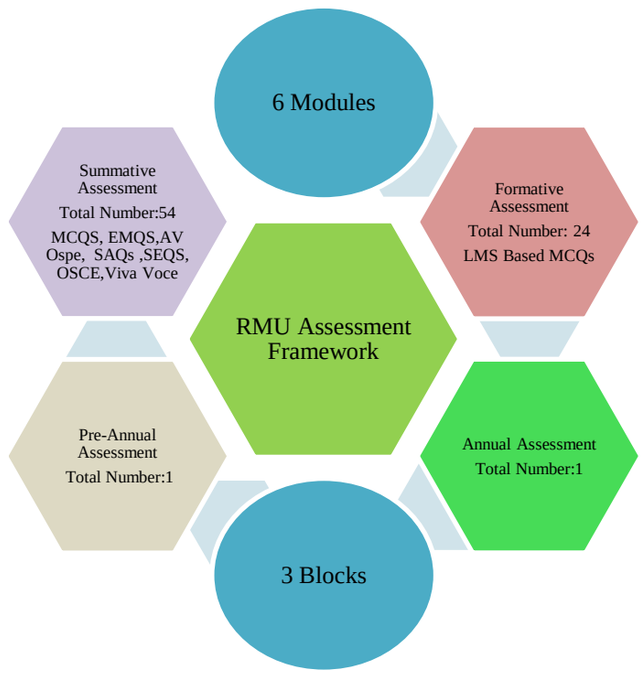
Integrated Undergraduate Research Curriculum (IUGRC)

Theory					
Code	**Topic**	**Learning Objectives**	**Cognitive Domain**	**Teaching Strategy**	**Mode of Assessment**
M2-MSK-I-SI(IUGRC)-001	**Research Club Activity 1** Synopsis Writing	• Organize research idea or general thought into a topic that can be configured into research problem • Formulating a research question according to FINER Criteria • Formulate appropriate research questioning using PEO/PICO/PICOT format • Understand the concept of literature review • Cognizant with concept of publication ethics Outline steps of synopsis writing according to SJRMC Guidelines	C3 C3 C2 C2 C3 C2	Research Club Activity Teaching strategy (LGIS on campus) (SDL/PAL off campus)	Manuscript submission at SJRMC
M2-MSK-I-SI(IUGRC)-002	**Research Club Activity 2** Questionnaire Development	• Understand about questionnaires used in research • Categorize types of questions used in research their advantages and disadvantages • Identify Designs and stages of development of questionnaire • Interpret Simple rules for writing a good questionnaire • Appraise Parts and Layout of questionnaire	C2 C C3 C2 C3	Research Club Activity Teaching strategy (LGIS on campus) (SDL/PAL off campus)	Manuscript submission at SJRMC
M2-MSK-I-SI(IUGRC)-003	**Research Club Activity 3** Hands on session on Data Analysis	• Make variables on computer • Feed data under variables on computers • Summarize data on computer including text, tabulations & graphics	C2 C3 C2 C3	Research Club Activity Teaching strategy	Manuscript submission at SJRMC

		• Perform Descriptive analysis of data on computer • Organize, and save data in a suitable way. • Calculate/recode variables and prepare data for analysis. • Conduct descriptive and basic inferential statistics. • Be familiar with SPSS presentation of statistical output. • Create and edit graphical displays of data.	C3 C2 C2 C3 C2	(LGIS on campus) (SDL/PAL off campus)	
M2-MSK-I-SI(IUGRC)-004	**Research Club Activity 4** Manuscript Writing Workshop	At the end of session students will be able to: • Interpret & apply basic principles of manuscript writing of research report • Perceive authorships requirements or rules of drafting manuscript of a research report for publication in indexed journal • Write discussion section of draft • Explain conclusion, recommendation and acknowledge part of research report • clarify types of citations included in discussion section	C3 C2 C2 C2 C2	Research Club Activity Teaching strategy (LGIS on campus) **(**SDL/PAL off campus**)**	Manuscript submission at SJRMC

SECTION-V

Assessment



Assessment

Assessment is the systematic basis for making inferences about the learning and development of students. It is the process of defining, selecting, designing, collecting, analyzing, interpreting, and using information to increase students' learning and development.

Assessment Policy

Scope

This policy is applicable to all the students of the MBBS program of RMU for all modes of teaching (on campus/online/any other) from the date of approval by the RMU Academic Council.

1. **Guiding principles**

- RMU has the responsibility to ensure to all the stakeholders that students have achieved the identified outcomes of the medical degree course.
- Assessment requires a variety of methods; no single method can completely ensure that the requisite competence level has been achieved. Hence each assessmentinstrument must be selected based on its utility index.
- Feedback, ensuring that the feedback loop is closed, should be provided to students following all assessments to ensure that students identify gaps in their learning andfaculty can review future curricular and assessment content.
- The quality of the entire assessment including confidentiality of the assessment process must be ensured.
- The assessment process should be clear and transparent so that students know in advance the expectations (from students) and consequences of the assessment.
- Details of the conduct of examinations are available in the Examination policy document.

2. **Purposes of Assessment**.

- To ensure appropriate competence has been achieved.
- Feedback to students regarding their readiness and deficiencies
- Feedback to faculty to evaluate the effectiveness of the teaching program.

3. Forms of assessments

3.1 Formative Assessment

A formative assessment refers to a low-stakes assessment that does not normally contribute towards a student's final grade. Assessment for learning is carried out throughout modules and clerkships using various strategies (at the discretion of module coordinators and clerkship directors' feedback. Weekly assessment of Large Group Interactive Session (LGIS) and Self-Directed Learning (SDL) Sessions will be conducted on LMS (learning management system). The LMS result will be shared by module coordinator and DME through vice chancellor on weekly basis

3.2 Summative Assessment

A summative assessment is performed at the end of a unit that allows a teacher to measure a student's understanding, typically against a standardized criterion. These Assessment includes End of Module Assessment (EMA), End of Block Assessment (EBA), Pre- Annual Assessment (PAA) and Annual Professional Assessment (APA). Each Assessment comprises of theory component and a practical component.

3.2.1 Components of Assessment

- Cognitive competence is tested in the theory component using the following tool of assessment
  - USMLE/ PLAB Type / Multiple Choice Questions (MCQs)
  - USMLE/ PLAB Type / Extended Match Questions (EMQ)
  - Short Answer Questions (SAQs)
  - Short Essay Questions (SEQs)
- Competence in psychomotor and affect domains is tested in practical component using the following tools of assessment
  - Audio Visual OSPE (AVOSPE): This comprises of stations using PowerPoint slides with images animations and videos
  - Laboratory OSPE (Lab OSPE): This comprises of stations focused on practical (hands on performance) components from core subject areas
  - Integrated OSPE (I OSPE): This comprises of stations, from each core subject, emphasizing horizontal and vertical integration
  - Objective Structured Clinical Examinations (OSCE): This comprises of stations, dedicated to Early Clinical Exposure (ECE), Simulated Patients (SP), models, ALPHA and clinical component of core subjects
  - Objective Structured Viva Examinations (OSVE): This comprises of table viva for each core subject. Students will be evaluated by internal and

external examiner using a structured marking rubric, with each viva

3.2.2 End of Module Assessment (EMA)

- End of module assessments will be conducted at the end of each module.
- The module teams will be responsible for the assessment plan including assessment strategies, timings, and other essentials

3.2.3 End of Block Assessment (EBA)

- End of block assessments will be conducted at the end of each block.
- The block teams will be responsible for the assessment plan including assessment strategies, timings, and other essentials
- 80% attendance in each subject will be mandatory
- Student must pass in all LMS, mid module assessments to appear in EBA
- There will be no remedial classes for attendance compensation
- There will be no remedial of assessment in case of poor academic performance

Table of Specification (TOS) For Module Examination for First Year MBBS

Domains: C-Core Subject (70%) Levels C1-C2, HV- Horizontal & Vertical Integration (20%) Levels C2-C3, S- Spiral Integration (10%) Levels C2-C3																																					
End of Module Assessment	Subject	Theory (Cognitive) Assessment																					Practical (Skill & Attitude) Assessment														Grand Total	Total Time of Module Assessment
		MCQs					EMQs			SAQs					SEQs				Marks	Total Marks Theory	Total Time	AV OSPE					Time	AED Reflective Writing	OSVE			Total Practical Marks						
		C	HV	S	Total	Marks	C	Total	Marks	C	HV	S	Total	Marks	C	HV	S	Total				C	HV	S	Total	Marks			Viva	Copy	Total							
First Module	Anatomy	19	4	2	25	25	1	1	5	3	1	1	5	25	3	1	1	5	45	100	2 HRS	7	2	1	10	50	50 min	15 min	45	5	50	100	200	6 HRS				
	Physiology	19	4	2	25	25	1	1	5	3	1	1	5	25	3	1	1	5	45	100	2 HRS	7	2	1	10	50	50 min	15 min	45	5	50	100	200	6 HRS				
	Biochemistry	19	4	2	25	25	1	1	5	3	1	1	5	25	3	1	1	5	45	100	2 HRS	7	2	1	10	50	50 min	15 min	45	5	50	100	200	6 HRS				
Formative- Weekly LMS Based Assessment of 30 MCQs (10 MCQs per Subject)																																					
End of Module Assessment	Subject	Theory (Cognitive) Assessment																					Practical (Skill & Attitude) Assessment														Grand Total	Total Time of Module Assessment
		MCQs					EMQs			SAQs					SEQs				Marks	Total Marks Theory	Total Time	AV OSPE					Time	AED Reflective Writing	OSVE			Total Practical Marks						
		C	HV	S	Total	Marks	C	Total	Marks	C	HV	S	Total	Marks	C	HV	S	Total				C	HV	S	Total	Marks			Viva	Copy	Total							
Second Module	Anatomy	19	4	2	25	25	1	1	5	3	1	1	5	25	3	1	1	5	45	100	2 HRS	7	2	1	10	50	50 min	15 min	45	5	50	100	200	6 HRS				
	Physiology	19	4	2	25	25	1	1	5	3	1	1	5	25	3	1	1	5	45	100	2 HRS	7	2	1	10	50	50 min	15 min	45	5	50	100	200	6 HRS				
	Biochemistry	19	4	2	25	25	1	1	5	3	1	1	5	25	3	1	1	5	45	100	2 HRS	7	2	1	10	50	50 min	15 min	45	5	50	100	200	6 HRS				
Formative- Weekly LMS Based Assessmen tof 30 MCQs (10 MCQs per Subject)																																					

Block	Subjects	LMS Based Assessment					OSPE						Grand Total	Total Block Time
		MCQs					LabOSPE	IOSPE	COSPE	Total	Marks	Time		
		C	HV	S	Total	Time	C	HV	S					
BLOCK	Anatomy	21	6	3	30	30 min	14	4	2	20	60	6 HRS	90	10 HRS
	Physiology	21	6	3	30	30 min	14	4	2	20	60	6 HRS	90	10 HRS
	Biochemistry	21	6	3	30	30 min	14	4	2	20	60	6 HRS	90	10 HRS
50% Questions/OSPE Stations/Viva Stations will be from Foundation Module and 50% Questions will be from MSK-1 Module														
For Each assessment student will have to individually pass Theory and Practical components														

Weekly LMS Assessment			
Subjects	Anatomy	Physiology	Biochemist
No of MCQs*	30	30	30
Marks/MCQ	30	30	30
*MCQ=1 Mark each, 1 min each			

Marks per Item

MCQ=1	EMQ= 5	SAQ= 5	SEQ= 9	AVOSPE= 5		OSPE= 3
OSPE Time=1 Round of 40 Students =80 min						
3 Round of 40 Students =240 min						
OSVE=Time per student=5mins						

3.2.4 Continuous Internal Assessment (CIA)

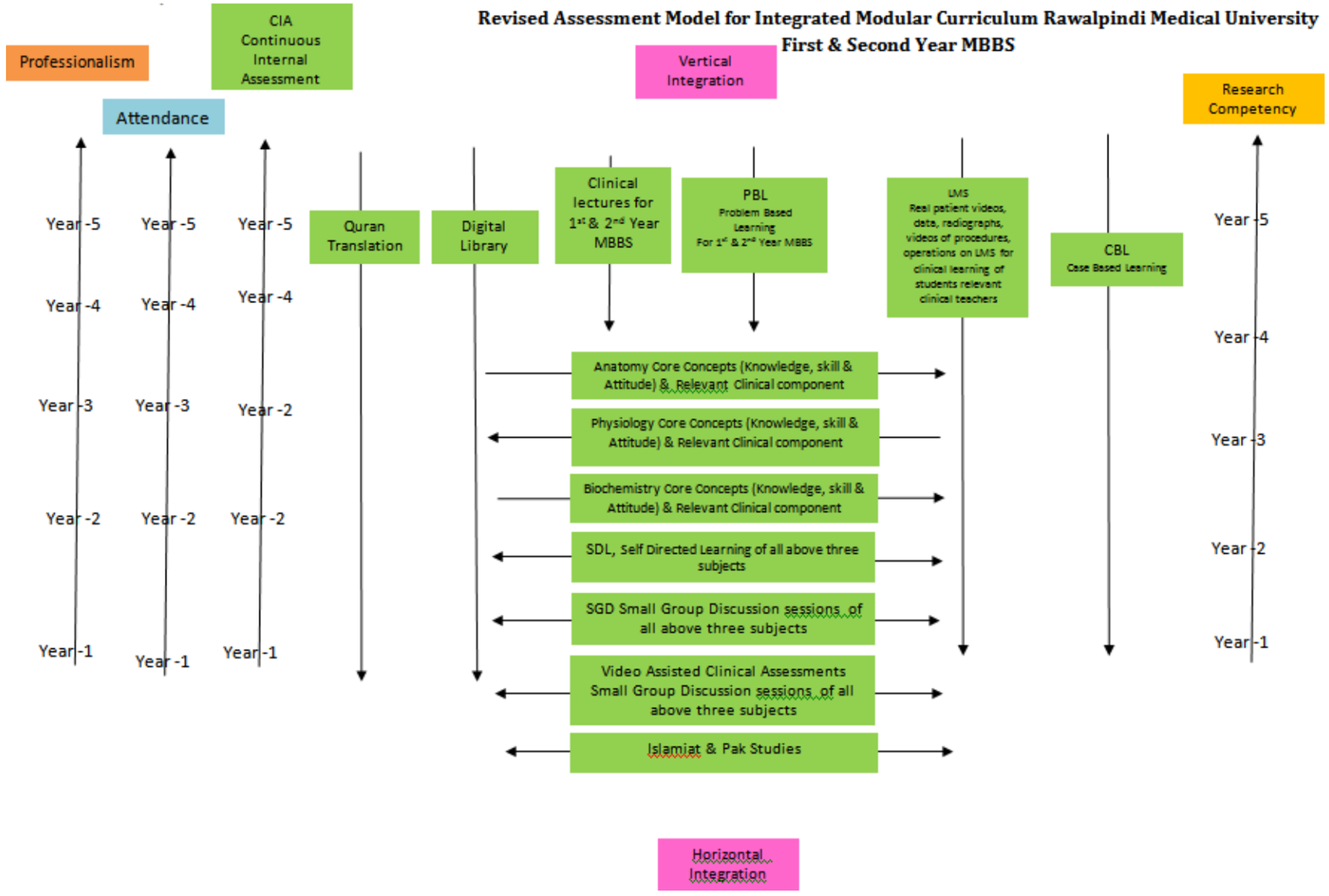
Continuous Internal Assessment means the assessment based on tests and assignments given to the students during an academic period.

Break up of internal assessment is as follows:

Blocks	Subjects	Total marks	Module 1	Module 2	Total marks
Block 1 90 Marks	Anatomy	30 marks	15 marks	15 marks	90 Marks
	Physiology	30 marks	15 marks	15 marks	
	Biochemistry	30 marks	15 marks	15 marks	
Block 2 90 Marks	Anatomy	30 marks	15 marks	15 marks	90 Marks
	Physiology	30 marks	15 marks	15 marks	
	Biochemistry	30 marks	15 marks	15 marks	
Block 3 90 Marks	Anatomy	30 marks	15 marks	15 marks	90 Marks
	Physiology	30 marks	15 marks	15 marks	
	Biochemistry	30 marks	15 marks	15 marks	
				Total marks	270 Marks

Once internal assessment is compiled it CANNOT be altered under ANY circumstance unless a clerical/ human error is detected. He will repeat classes and skillsThere will be no change in calculated internal assessment scores for supplementary University examination.

I. Diagrammatic Presentation of Various Components of Clinically Oriented Integrated Modular Curriculum of Rawalpindi Medical University



Reference: The Integrated & Clinically Oriented Assessment Model For Under Graduates Rawalpindi Medical University "Mumtahin""ممتحن"(The Examiner)

No. of Assessments of Anatomy for First Year MBBS (Block- I):

Block	Sr. #	Module – 1 Foundation Module - I Components	Type of Assessments	Total Assessments Time			No. of Assessments	
				Assessment Time	Summative Assessment Time	Formative Assessment Time		
Block – I	1	End Module Examinations (SEQs, SAQs, EMQs, MCQs AvOSPE Based)	Summative	2 Hours 25 minutes	2 Hours & 35 minutes	30 Minutes	1 Formative	2 Summative
	2	Structured & Clinically oriented Viva voce	Summative	10 Minutes				
	3	Weekly LMS based Assessment (MCQs based)	Formative	30 Minutes				
	Total			**3 Hours & 05 Minutes**			**3 Assessments**	
	Sr. #	**Module – 2 MSK-I Module Components**	**Type of Assessments**	**Total Assessments Time**			**No. of Assessments**	
				Assessment Time	Summative Assessment Time	Formative Assessment Time		
	1	End Module Examinations (SEQs, SAQs, EMQs, MCQs Av OSPE Based)	Summative	2 Hours 25 minutes	2 Hours & 35 minutes	60 Minutes	2 Formative	2 Summative
	2	Structured & Clinically oriented Viva voce	Summative	10 Minutes				
	3	2 Weekly LMS based Assessment (MCQs based)	Formative	2 x 30 Minutes				
	Total			**3 Hours & 35 Minutes**			**4 Assessments**	
	Sr. #	**Block – I Assessment**	**Type of Assessments**	**Total Assessments Time**			**No. of Assessments**	
				Assessment Time	Summative Assessment Time	Formative Assessment Time		
	1	Objectively Structured Practical Examination (OSPE)	Summative	5 Hours	5 Hours & 30 minutes			2 Summative
	2	LMS Based Block Assessment (MCQs based)	Summative	30 Minutes				
		Total		**5 Hours & 30 Minutes**			**2 Assessments**	

No. of Assessments of Anatomy for First Year MBBS (Block- II):

Block	Sr. #	Module – 3 MSK-II Module Components	Type of Assessments	Total Assessments Time			No. of Assessments	
				Assessment Time	Summative Assessment Time	Formative Assessment Time		
Block – II	1	End Module Examinations (SEQs, SAQs, EMQs, MCQs Av OSPE Based)	Summative	2 Hours 25 minutes	2 Hours & 35 minutes	30 Minutes	1 Formative	2 Summative
	2	Structured & Clinically oriented Viva voce	Summative	10 Minutes				
	3	Weekly LMS based Assessment (MCQs based)	Formative	30 Minutes				
	Total			**3 Hours & 05 Minutes**			**3 Assessments**	
	Sr. #	**Module – 4 Haematology & Immunology Module-I Components**	**Type of Assessments**	**Total Assessments Time**			**No. of Assessments**	
				Assessment Time	Summative Assessment Time	Formative Assessment Time		
	1	End Module Examinations (SEQs, SAQs, EMQs, MCQs Av OSPE Based)	Summative	2 Hours 25 minutes	2 Hours & 35 minutes	60 Minutes	2 Formative	2 Summative
	2	Structured & Clinically oriented Viva voce	Summative	10 Minutes				
	3	2 Weekly LMS based Assessment (MCQs based)	Formative	2 x 30 Minutes				
	Total			**3 Hours & 35 Minutes**			**4 Assessments**	
	Sr. #	**Block – II Assessment**	**Type of Assessments**	**Total Assessments Time**			**No. of Assessments**	
				Assessment Time	Summative Assessment Time	Formative Assessment Time		
	1	Objectively Structured Practical Examination (OSPE)	Summative	5 Hours	5 Hours & 30 minutes			2 Summative
	2	LMS Based Block Assessment (MCQs based)	Summative	30 Minutes				
		Total		**5 Hours & 30 Minutes**			**2 Assessments**	

No. of Assessments of Anatomy for First Year MBBS (Block- III):

Block	Sr. #	Module – 5 CVS Module-I Components	Type of Assessments	Total Assessments Time			No. of Assessments	
				Assessment Time	Summative Assessment Time	Formative Assessment Time		
Block – II	1	End Module Examinations (SEQs, SAQs, EMQs, MCQs Av OSPE Based)	Summative	2 Hours 25 minutes	2 Hours & 35 minutes	30 Minutes	1 Formative	2 Summative
	2	Structured & Clinically oriented Viva voce	Summative	10 Minutes				
	3	Weekly LMS based Assessment (MCQs based)	Formative	30 Minutes				
	Total			**3 Hours & 05 Minutes**			**3 Assessments**	
	Sr. #	**Module – 6 Respiration Module-I Components**	**Type of Assessments**	**Total Assessments Time**			**No. of Assessments**	
				Assessment Time	Summative Assessment Time	Formative Assessment Time		
	1	End Module Examinations (SEQs, SAQs, EMQs, MCQs Av OSPE Based)	Summative	2 Hours 25 minutes	2 Hours & 35 minutes	60 Minutes	2 Formative	2 Summative
	2	Structured & Clinically oriented Viva voce	Summative	10 Minutes				
	3	2 Weekly LMS based Assessment (MCQs based)	Formative	2 x 30 Minutes				
	Total			**3 Hours & 35 Minutes**			**4 Assessments**	
	Sr. #	**Block – III Assessment**	**Type of Assessments**	**Total Assessments Time**			**No. of Assessments**	
				Assessment Time	Summative Assessment Time	Formative Assessment Time		
	1	Objectively Structured Practical Examination (OSPE)	Summative	5 Hours	5 Hours & 30 minutes			2 Summative
	2	LMS Based Block Assessment (MCQs based)	Summative	30 Minutes				
		Total		**5 Hours & 30 Minutes**			**2 Assessments**	

Total Time of Anatomy Assessments for First Year MBBS:

Module	Summative Assessment Time	Formative Assessment Time	Total Assessments Time
Foundation Module - I	2 Hours & 35 minutes	30 Minutes	**3 Hours & 05 Minutes**
MSK-I Module	2 Hours & 35 minutes	60 Minutes	**3 Hours & 35 Minutes**
Block -I	**5 Hours & 30 Minutes**		**5 Hours & 30 Minutes**
MSK-II Module	2 Hours & 35 minutes	30 Minutes	**3 Hours & 05 Minutes**
Haematology & Immunology Module-I	2 Hours & 35 minutes	60 Minutes	**3 Hours & 35 Minutes**
Block -II	**5 Hours & 30 Minutes**		**5 Hours & 30 Minutes**
CVS Module-I	2 Hours & 35 minutes	30 Minutes	**3 Hours & 05 Minutes**
Respiration Module-I	2 Hours & 35 minutes	60 Minutes	**3 Hours & 35 Minutes**
Block -III	**5 Hours & 30 Minutes**		**5 Hours & 30 Minutes**
Pre-Annual Examination		……	7 Hours & 45 Minutes
First Professional		……	3 Hours & 45 Minutes
Grand Total	**31 Hours & 30 Minutes**	**4 hours and 30 minutes**	**48 Hours**

Total Teaching Hours vs Total Assessment Hours

Ratio of Teaching Hours to Assessments Hours	Grand Total Teaching Hours 250 Hours:	Grand Total Assessment Hours **48 Hours**
	5:1	

No. of Assessments of Physiology for First Year MBBS (Block- I):

Block	Sr. #	Module – 1 Foundation Module - I Components	Type of Assessments	Total Assessments Time			No. of Assessments	
				Assessment Time	Summative Assessment Time	Formative Assessment Time		
Block – I	1	End Module Examinations (SEQs, SAQs, EMQs, MCQs Av OSPE Based)	Summative	2 Hours 25 minutes	2 Hours & 35 minutes	30 Minutes	1 Formative	2 Summative
	2	Structured & Clinically oriented Viva voce	Summative	10 Minutes				
	3	Weekly LMS based Assessment (MCQs based)	Formative	30 Minutes				
	Total			**3 Hours & 05 Minutes**			**3 Assessments**	
	Sr. #	**Module – 2 MSK-I Module Components**	**Type of Assessments**	**Total Assessments Time**			**No. of Assessments**	
				Assessment Time	Summative Assessment Time	Formative Assessment Time		
	1	End Module Examinations (SEQs, SAQs, EMQs, MCQs Av OSPE Based)	Summative	2 Hours 25 minutes	2 Hours & 35 minutes	60 Minutes	2 Formative	2 Summative
	2	Structured & Clinically oriented Viva voce	Summative	10 Minutes				
	3	2 Weekly LMS based Assessment (MCQs based)	Formative	2 x 30 Minutes				
	Total			**3 Hours & 35 Minutes**			**4 Assessments**	
	Sr. #	**Block – I Assessment**	**Type of Assessments**	**Total Assessments Time**			**No. of Assessments**	
				Assessment Time	Summative Assessment Time	Formative Assessment Time		
	1	Objectively Structured Practical Examination (OSPE)	Summative	5 Hours	5 Hours & 30 minutes			2 Summative
	2	LMS Based Block Assessment (MCQs based)	Summative	30 Minutes				
		Total		**5 Hours & 30 Minutes**			**2 Assessments**	

No. of Assessments of Physiology for First Year MBBS (Block- II)

Block	Sr. #	Module – 3 MSK-II Module Components	Type of Assessments	Total Assessments Time			No. of Assessments	
				Assessment Time	Summative Assessment Time	Formative Assessment Time		
Block – II	1	End Module Examinations (SEQs, SAQs, EMQs, MCQs Av OSPE Based)	Summative	2 Hours 25 minutes	2 Hours & 35 minutes	30 Minutes	1 Formative	2 Summative
	2	Structured & Clinically oriented Viva voce	Summative	10 Minutes				
	3	Weekly LMS based Assessment (MCQs based)	Formative	30 Minutes				
	Total			**3 Hours & 05 Minutes**			**3 Assessments**	
	Sr. #	**Module – 4 Haematology & Immunology Module-I Components**	**Type of Assessments**	**Total Assessments Time**			**No. of Assessments**	
				Assessment Time	Summative Assessment Time	Formative Assessment Time		
	1	End Module Examinations (SEQs, SAQs, EMQs, MCQs Av OSPE Based)	Summative	2 Hours 25 minutes	2 Hours & 35 minutes	60 Minutes	2 Formative	2 Summative
	2	Structured & Clinically oriented Viva voce	Summative	10 Minutes				
	3	2 Weekly LMS based Assessment (MCQs based)	Formative	2 x 30 Minutes				
	Total			**3 Hours & 35 Minutes**			**4 Assessments**	
	Sr. #	**Block – II Assessment**	**Type of Assessments**	**Total Assessments Time**			**No. of Assessments**	
				Assessment Time	Summative Assessment Time	Formative Assessment Time		
	1	Objectively Structured Practical Examination (OSPE)	Summative	5 Hours	5 Hours & 30 minutes			2 Summative
	2	LMS Based Block Assessment (MCQs based)	Summative	30 Minutes				
		Total		**5 Hours & 30 Minutes**			**2 Assessments**	

No. of Assessments of Physiology for First Year MBBS (Block- III):

Block	Sr. #	Module – 5 CVS Module-I Components	Type of Assessments	Total Assessments Time			No. of Assessments	
				Assessment Time	Summative Assessment Time	Formative Assessment Time		
Block – II	1	End Module Examinations (SEQs, SAQs, EMQs, MCQs Av OSPE Based)	Summative	2 Hours 25 minutes	2 Hours & 35 minutes	30 Minutes	1 Formative	2 Summative
	2	Structured & Clinically oriented Viva voce	Summative	10 Minutes				
	3	Weekly LMS based Assessment (MCQs based)	Formative	30 Minutes				
	Total			**3 Hours & 05 Minutes**			**3 Assessments**	
	Sr. #	**Module – 6 Respiration Module-I Components**	**Type of Assessments**	**Total Assessments Time**			**No. of Assessments**	
				Assessment Time	Summative Assessment Time	Formative Assessment Time		
	1	End Module Examinations (SEQs, SAQs, EMQs, MCQs Av OSPE Based)	Summative	2 Hours 25 minutes	2 Hours & 35 minutes	60 Minutes	2 Formative	2 Summative
	2	Structured & Clinically oriented Viva voce	Summative	10 Minutes				
	3	2 Weekly LMS based Assessment (MCQs based)	Formative	2 x 30 Minutes				
	Total			**3 Hours & 35 Minutes**			**4 Assessments**	
	Sr. #	**Block – III Assessment**	**Type of Assessments**	**Total Assessments Time**			**No. of Assessments**	
				Assessment Time	Summative Assessment Time	Formative Assessment Time		
	1	Objectively Structured Practical Examination (OSPE)	Summative	5 Hours	5 Hours & 30 minutes			2 Summative
	2	LMS Based Block Assessment (MCQs based)	Summative	30 Minutes				
		Total		**5 Hours & 30 Minutes**			**2 Assessments**	

Total Time of Physiology Assessments for First Year MBBS:

Module	Summative Assessment Time	Formative Assessment Time	Total Assessments Time
Foundation Module - I	2 Hours & 35 minutes	30 Minutes	**3 Hours & 05 Minutes**
MSK-I Module	2 Hours & 35 minutes	60 Minutes	**3 Hours & 35 Minutes**
Block -I	**5 Hours & 30 Minutes**		**5 Hours & 30 Minutes**
MSK-II Module	2 Hours & 35 minutes	30 Minutes	**3 Hours & 05 Minutes**
Haematology & Immunology Module-I	2 Hours & 35 minutes	60 Minutes	**3 Hours & 35 Minutes**
Block -II	**5 Hours & 30 Minutes**		**5 Hours & 30 Minutes**
CVS Module-I	2 Hours & 35 minutes	30 Minutes	**3 Hours & 05 Minutes**
Respiration Module-I	2 Hours & 35 minutes	60 Minutes	**3 Hours & 35 Minutes**
Block -III	**5 Hours & 30 Minutes**		**5 Hours & 30 Minutes**
Pre-Annual Examination		……	7 Hours & 45 Minutes
First Professional		……	3 Hours & 45 Minutes
Grand Total	**31 Hours & 30 Minutes**	**4 hours and 30 minutes**	**48 Hours**

Total Teaching Hours vs Total Assessment Hours

Ratio of Teaching Hours to Assessments Hours	Grand Total Teaching Hours 225 hours:	Grand Total Assessment Hours 48 Hours
	9:2	

No. of Assessments of Biochemistry for First Year MBBS (Block- I):

Block	Sr. #	Module – 1 Foundation Module - I Components	Type of Assessments	Total Assessments Time			No. of Assessments	
				Assessment Time	Summative Assessment Time	Formative Assessment Time		
Block – I	1	End Module Examinations (SEQs, SAQs, EMQs, MCQs Av OSPE Based)	Summative	2 Hours 25 minutes	2 Hours & 35 minutes	30 Minutes	1 Formative	2 Summative
	2	Structured & Clinically oriented Viva voce	Summative	10 Minutes				
	3	Weekly LMS based Assessment (MCQs based)	Formative	30 Minutes				
	Total			**3 Hours & 05 Minutes**			**3 Assessments**	
	Sr. #	**Module – 2 MSK-I Module Components**	**Type of Assessments**	**Total Assessments Time**			**No. of Assessments**	
				Assessment Time	Summative Assessment Time	Formative Assessment Time		
	1	End Module Examinations (SEQs, SAQs, EMQs, MCQs Av OSPE Based)	Summative	2 Hours 25 minutes	2 Hours & 35 minutes	60 Minutes	2 Formative	2 Summative
	2	Structured & Clinically oriented Viva voce	Summative	10 Minutes				
	3	2 Weekly LMS based Assessment (MCQs based)	Formative	2 x 30 Minutes				
	Total			**3 Hours & 35 Minutes**			**4 Assessments**	
	Sr. #	**Block – I Assessment**	**Type of Assessments**	**Total Assessments Time**			**No. of Assessments**	
				Assessment Time	Summative Assessment Time	Formative Assessment Time		
	1	Objectively Structured Practical Examination (OSPE)	Summative	5 Hours	5 Hours & 30 minutes			2 Summative
	2	LMS Based Block Assessment (MCQs based)	Summative	30 Minutes				
		Total		**5 Hours & 30 Minutes**			**2 Assessments**	

No. of Assessments of Biochemistry for First Year MBBS (Block- II):

Block	Sr. #	Module – 3 MSK-II Module Components	Type of Assessments	Total Assessments Time			No. of Assessments	
				Assessment Time	Summative Assessment Time	Formative Assessment Time		
Block – II	1	End Module Examinations (SEQs, SAQs, EMQs, MCQs Av OSPE Based)	Summative	2 Hours 25 minutes	2 Hours & 35 minutes	30 Minutes	1 Formative	2 Summative
	2	Structured & Clinically oriented Viva voce	Summative	10 Minutes				
	3	Weekly LMS based Assessment (MCQs based)	Formative	30 Minutes				
	Total			**3 Hours & 05 Minutes**			**3 Assessments**	
	Sr. #	**Module – 4 Haematology & Immunology Module-I Components**	**Type of Assessments**	**Total Assessments Time**			**No. of Assessments**	
				Assessment Time	Summative Assessment Time	Formative Assessment Time		
	1	End Module Examinations (SEQs, SAQs, EMQs, MCQs Av OSPE Based)	Summative	2 Hours 25 minutes	2 Hours & 35 minutes	60 Minutes	2 Formative	2 Summative
	2	Structured & Clinically oriented Viva voce	Summative	10 Minutes				
	3	2 Weekly LMS based Assessment (MCQs based)	Formative	2 x 30 Minutes				
	Total			**3 Hours & 35 Minutes**			**4 Assessments**	
	Sr. #	**Block – II Assessment**	**Type of Assessments**	**Total Assessments Time**			**No. of Assessments**	
				Assessment Time	Summative Assessment Time	Formative Assessment Time		
	1	Objectively Structured Practical Examination (OSPE)	Summative	5 Hours	5 Hours & 30 minutes			2 Summative
	2	LMS Based Block Assessment (MCQs based)	Summative	30 Minutes				
		Total		**5 Hours & 30 Minutes**			**2 Assessments**	

No. of Assessments of Biochemistry for First Year MBBS (Block- III):

Block	Sr. #	Module – 5 CVS Module-I Components	Type of Assessments	Total Assessments Time			No. of Assessments	
				Assessment Time	Summative Assessment Time	Formative Assessment Time		
Block – II	1	End Module Examinations (SEQs, SAQs, EMQs, MCQs Av OSPE Based)	Summative	2 Hours 25 minutes	2 Hours & 35 minutes	30 Minutes	1 Formative	2 Summative
	2	Structured & Clinically oriented Viva voce	Summative	10 Minutes				
	3	Weekly LMS based Assessment (MCQs based)	Formative	30 Minutes				
	Total			**3 Hours & 05 Minutes**			**3 Assessments**	
	Sr. #	**Module – 6 Respiration Module-I Components**	**Type of Assessments**	**Total Assessments Time**			**No. of Assessments**	
				Assessment Time	Summative Assessment Time	Formative Assessment Time		
	1	End Module Examinations (SEQs, SAQs, EMQs, MCQs Av OSPE Based)	Summative	2 Hours 25 minutes	2 Hours & 35 minutes	60 Minutes	2 Formative	2 Summative
	2	Structured & Clinically oriented Viva voce	Summative	10 Minutes				
	3	2 Weekly LMS based Assessment (MCQs based)	Formative	2 x 30 Minutes				
	Total			**3 Hours & 35 Minutes**			**4 Assessments**	
	Sr. #	**Block – III Assessment**	**Type of Assessments**	**Total Assessments Time**			**No. of Assessments**	
				Assessment Time	Summative Assessment Time	Formative Assessment Time		
	1	Objectively Structured Practical Examination (OSPE)	Summative	5 Hours	5 Hours & 30 minutes			2 Summative
	2	LMS Based Block Assessment (MCQs based)	Summative	30 Minutes				
		Total		**5 Hours & 30 Minutes**			**2 Assessments**	

Total Time of Biochemistry Assessments for First Year MBBS:

Module	Summative Assessment Time	Formative Assessment Time	Total Assessments Time
Foundation Module - I	2 Hours & 35 minutes	30 Minutes	3 Hours & 05 Minutes
MSK-I Module	2 Hours & 35 minutes	60 Minutes	3 Hours & 35 Minutes
Block -I	5 Hours & 30 Minutes		5 Hours & 30 Minutes
MSK-II Module	2 Hours & 35 minutes	30 Minutes	3 Hours & 05 Minutes
Haematology & Immunology Module-I	2 Hours & 35 minutes	60 Minutes	3 Hours & 35 Minutes
Block -II	5 Hours & 30 Minutes		5 Hours & 30 Minutes
CVS Module-I	2 Hours & 35 minutes	30 Minutes	3 Hours & 05 Minutes
Respiration Module-I	2 Hours & 35 minutes	60 Minutes	3 Hours & 35 Minutes
Block -III	5 Hours & 30 Minutes		5 Hours & 30 Minutes
Pre-Annual Examination		……	7 Hours & 45 Minutes
First Professional		……	3 Hours & 45 Minutes
Grand Total	**31 Hours & 30 Minutes**	**4 hours and 30 minutes**	**48 Hours**

Total Teaching Hours vs Total Assessment Hours

Ratio of Teaching Hours to Assessments Hours	Grand Total Teaching Hours 125 Hours:	Grand Total Assessment Hours 48 Hours
	5:2	

No. of Assessments of Clinical Component (Vertical and Horizontal Integration) for First Year MBBS (Block- I):

Block	Sr. #	Module – 1 Foundation Module - I Components	Type of Assessments	Total Assessments Time		No. of Assessments
				Assessment Time	Formative Assessment Time	
Block – I	1	Mid Module Examination (MCQs Based)	Formative	15 Minutes	45 Minutes	2 Formative
	2	End Module Examination (MCQs Based)	Formative	30 Minutes		
	Total			**45 Minutes**		**2 Assessments**
	Sr. #	**Module – 2 MSK-I Module Components**	**Type of Assessments**	**Total Assessments Time**		**No. of Assessments**
				Assessment Time	Formative Assessment Time	
	1	Mid Module Examination (MCQs Based)	Formative	15 Minutes	45 Minutes	2 Formative
	2	End Module Examination (MCQs Based)	Formative	30 Minutes		
	Total			**45 Minutes**		**2 Assessments**

No. of Assessments of Clinical Component (Vertical and Horizontal Integration) for First Year MBBS (Block- II):

Block	Sr. #	Module – 3 MSK-II Module Components	Type of Assessments	Total Assessments Time		No. of Assessments
				Assessment Time	Formative Assessment Time	
Block – II	1	Mid Module Examination (MCQs Based)	Formative	15 Minutes	45 Minutes	2 Formative
	2	End Module Examination (MCQs Based)	Formative	30 Minutes		
	Total			**45 Minutes**		**2 Assessments**
	Sr. #	**Module – 4 Haematology & Immunology Module-I Components**	**Type of Assessments**	**Total Assessments Time**		**No. of Assessments**
				Assessment Time	Formative Assessment Time	
	1	Mid Module Examination (MCQs Based)	Formative	15 Minutes	45 Minutes	2 Formative
	2	End Module Examination (MCQs Based)	Formative	30 Minutes		
	Total			**45 Minutes**		**2 Assessments**

No. of Assessments of Clinical Component (Vertical and Horizontal Integration) for First Year MBBS (Block- III):

Block	Sr. #	Module – 5 CVS Module-I Components	Type of Assessments	Total Assessments Time		No. of Assessments
				Assessment Time	Formative Assessment Time	
Block – III	1	Mid Module Examination (MCQs Based)	Formative	15 Minutes	45 Minutes	2 Formative
	2	End Module Examination (MCQs Based)	Formative	30 Minutes		
	Total			**45 Minutes**		**2 Assessments**
	Sr. #	**Module – 6 Respiration Module-I Components**	**Type of Assessments**	**Total Assessments Time**		**No. of Assessments**
				Assessment Time	Formative Assessment Time	
	1	Mid Module Examination (MCQs Based)	Formative	15 Minutes	45 Minutes	2 Formative
	2	End Module Examination (MCQs Based)	Formative	30 Minutes		
	Total			**45 Minutes**		**2 Assessments**

Total Time of Clinical Component (Vertical and Horizontal Integration) Assessments for First Year MBBS:

Module	Formative Assessment Time	Total Assessments Time
Foundation Module - I	45 Minutes	45 Minutes
MSK-I Module	45 Minutes	45 Minutes
Block -I		
MSK-II Module	45 Minutes	45 Minutes
Haematology & Immunology Module-I	45 Minutes	45 Minutes
Block -II		
CVS Module-I	45 Minutes	45 Minutes
Respiration Module-I	45 Minutes	45 Minutes
Block -III		
Pre-Annual Examination	……	35 Minutes
First Professional	……	60 Minutes
Grand Total	**4 hours and 30 minutes**	**6 hours and 5 minutes**

Total Teaching Hours vs Total Assessment Hours

Ratio of Teaching Hours to Assessments Hours	Grand Total Teaching Hours 97 Hours:	Grand Total Assessment Hours 6 Hours
	19:1	

3.2.4 Pre- Annual Assessment (PAA)

- It is mandatory to appear in all EBA to appear in PAA
- Transcript / good character certificate from head of departments will be needed to appear in pre-annual assessment.

Proposed Table of Specifications for 1st Pre-Annual Examination 2025

- Total Marks: 845

Total marks =800 Marks			
Subjects		% Weightage of subjects	Marks distribution as per weightage
	Anatomy	28%	240 Marks
	Physiology	28%	240 Marks
	Biochemistry	28%	240 Marks
	Integrated Subjects Community Medicine & Public Health/Research Behavioral Sciences Pathology Pharmacology Radiology Family Medicine Surgery Medicine Gynae & Obs Orthopedics Pediatrics Surgery Ophthalmology Otorhinolaryngology	14 %	115 Marks
	Early Clinical Exposure (ECE)	1%	5 Marks
	ALPHA(Artificial Intelligence, Leadership, Professionalism, Humanities & Arts) GEC (General Education Cluster)	1%	5 Marks
	Total Marks		845 Marks

Notes:

- The total marks for final Annual Assessment (Professional examination) are 900 as per UHS
- The total marks for Pre-Annual Assessment are 800 as OSVE is not being used as assessment tool.
- As per analysis of Module/Block results throughout the academic year, the passing percentage of students is generally higher in OSVE than in other assessment tools. For comprehensive assessment this tool will not be used in Pre- Annual Assessment.as per decision of assessment committee OSVE is not included.

A - Blockwise Distribution of Marks

Total Marks	BLOCK I Marks	BLOCK II Marks	BLOCK III Marks	Total Marks
845 Marks	285 Marks	285 Marks	275 Marks	845 Marks

B - Subject wise marks breakup in Blocks

Subjects	Block I	Block II	Block III	Total Marks
Anatomy	80 Marks	80 Marks	80 Marks	240 Marks (28%)
Physiology	80 Marks	80 Marks	80 Marks	240 Marks (28%)
Biochemistry	80 Marks	80 Marks	80 Marks	240 Marks (28%)
Integrated Subjects	45 Marks	45 Marks	35 Marks	125 Marks (16%)

C - Subject wise Break up of Marks for First year MBBS - Block -I

Block	**Subjects**	**Theory (Knowledge)**	**Practical (Skill/attitude)**	**Total marks**	**Total marks (Core subjects + Integrated Subjects)**
Block I (Core subjects + Integrated Subjects) 285 Marks	Anatomy	50	30	80 marks	240+ 45 = 285 marks
	Physiology	50	30	80 marks	
	Biochemistry	50	30	80 marks	
	Total			240 marks	
	Integrated Subjects			45 Marks	
	Community Medicine /Research	6 Marks			
	Behavioral Sciences	3 Marks			
	Pathology	2 Marks			
	Pharmacology	3 Marks			
	Radiology	2 Marks			
	Gynae & Obs	4 Marks			
	Medicine	2 Marks			
	Family Medicine	2 Marks			
	Pediatrics	4 Marks			
	Surgery	2 Marks			
	ECE		5 Marks		
	ALPHA and GEC		5 Marks		
Total marks		240+ 45 = 285 marks			

D - Subject wise Break up of Marks for First year MBBS - Block -II

Block	**Subjects**	**Theory (Knowledge)**	**Practical (Skill/attitude)**	**Total marks**	**Total marks (Core subjects + Integrated Subjects)**
Block II (Core subjects + Integrated Subjects) 285 Marks	Anatomy	50	30	80 marks	240+ 45 = 285 marks
	Physiology	50	30	80 marks	
	Biochemistry	50	30	80 marks	
	Total			240 marks	
	Integrated Subjects			45 Marks	
	Community Medicine /Research	4 Marks			
	Family Medicine	3 Marks			
	Orthopedics	3 Marks			
	Radiology	3 Marks			
	Medicine	3 Marks			
	Gynae & Obs	3 Marks			
	Behavioral Sciences	4 Marks			
	Pathology	2 Marks			
	ECE		5 Marks		
	ALPHA and GEC		5 Marks		
Total marks		240+ 45 = 285 marks			

E - Subject wise Break up of Marks for First year MBBS - Block -III

Block	Subjects	Theory (Knowledge)	Practical (Skill/attitude)	Total marks	Total marks (Core subjects + Integrated Subjects)
Block III Total marks (Core subjects + Integrated Subjects) 275 Marks	Anatomy	50	30	80 marks	240+35 = 275 marks
	Physiology	50	30	80 marks	
	Biochemistry	50	30	80 marks	
	Total			240 marks	
	Integrated Subjects			35 Marks	
	Community Medicine	2 Marks			
	Behavioral Sciences	2Marks			
	Medicine	3 Marks			
	Family medicine	3 Marks			
	Gynae & Obs	2 Marks			
	Radiology	2 Marks			
	Pediatrics	2 Marks			
	Otorhinolaryngology	3 Marks			
	Ophthalmology	2 Marks			
	Pathology	2Marks			
	Pharmacology	2 Marks			
	ECE		5 Marks		
	ALPHA and GEC		5 Marks		
Total marks		240+35 = 275 marks			
GRAND TOTAL MARKS		800			

F - Modular distribution of Marks for Module 1(Foundation Module - I) & Module 2(MSK-I Module) - Block -I

Block -I Theory Component (Knowledge)

Subjects	MCQs			EMQ			SAQ			SEQ			Total marks
	Module -1	Module-2	Marks	Module -1	Module-2	Marks	Module -1	Module-2	Marks	Module -1	Module-2	Marks	
Anatomy	13	12	25	-	01	5	01	01	10	0.5	0.5	10	50
Physiology	12	13	25		01	5	01	01	10		01	10	50
Biochemistry	15	10	25	-	01	5	01	01	10	01	-	10	50
Vertically & Spirally Integrated Subjects			35	-		-	-		-	-		-	35
Total	**110**		**110**	**3**		**15**	**6**		**30**	**3**		**30**	**185**

Block -I Practical Component (Skill & Attitude)

Subjects	Lab OSPE			Iospe			OSCE			Total stations	Total marks
	Number of Stations of Module -1	Number of Stations of Module -2	Marks	Number of Stations of Module -1	Number of Stations of Module -2	Marks	Number of Stations of Module -1	Number of Stations of Module -2	Marks		
Anatomy	01	02	15	01		5	01	01	10	6	30
Physiology	01	02	15		01	5	01	01	10	6	30
Biochemistry	01	02	15	-	01	5	01	01	10	6	30
ECE	-		-	-		-		01	5	1	5
ALPHA- Research	-		-	-		-		01	5	1	5
Total	9		45	3		15	8		40	20	100

G- Modular distribution of Marks for Module 3 (MSK-II Module) & Module 4(Haematology & Immunology Module-I) - Block -II

Block -II Theory Component (Knowledge)

Subjects	MCQs			EMQ			SAQ			SEQ			Total marks
	Module -1	Module-2	Marks	Module -1	Module-2	Marks	Module -1	Module-2	Marks	Module -1	Module-2	Marks	
Anatomy	12	13	25		01	5	01	01	10	0.5	0.5	10	50
Physiology	12	13	25		01	5	01	01	10		01	10	50
Biochemistry	10	15	25		01	5	01	01	10		01	10	50
Vertically & Spirally Integrated Subjects			35	-		-	-		-	-		-	35
Total	110		110	3		15	6		30	3		30	185

Block -II Practical Component (Skill & Attitude)

Subjects	Lab OSPE			I ospe			OSCE			Total stations	Total marks
	Number of Stations of Module -1	Number of Stations of Module -2	Marks	Number of Stations of Module -1	Number of Stations of Module -2	Marks	Number of Stations of Module -1	Number of Stations of Module -2	Marks		
Anatomy	02	01	15	-	01	5	01	01	10	6	30
Physiology	01	02	15		01	5	01	01	10	6	30
Biochemistry	01	02	15	01	-	5	01	01	10	6	30
ECE	-		-	-		-		01	5	1	5
ALPHA-Research	-		-	-		-		01	5	1	5
Total	9		45	3		15	8		40	20	100

H - Modular distribution of Marks for Module 5 (CVS Module-I) &Module 6 (Respiration Module-I) - Block -III

Block -III Theory Component (Knowledge)

Subjects	MCQs			EMQ			SAQ			SEQ			Total marks
	Module -1	Module-2	Marks	Module -1	Module-2	Marks	Module -1	Module-2	Marks	Module -1	Module-2	Marks	
Anatomy	13	12	25	01	-	5	01	01	10	0.5	0.5	10	50
Physiology	13	12	25	01		5	01	01	10	01		10	50
Biochemistry	13	12	25	01	-	5	01	01	10	01	-	10	50
Vertically & Spirally Integrated Subjects			25	-		-	-		-	-		-	25
Total	100		100	3		15	6		30	3		30	175

Block -III Practical Component (Skill & Attitude)

Subjects	Lab OSPE			I OSPE			OSCE			Total stations	Total marks
	Number of Stations of Module -1	Number of Stations of Module -2	Marks	Number of Stations of Module -1	Number of Stations of Module -2	Marks	Number of Stations of Module -1	Number of Stations of Module -2	Marks		
Anatomy	02	01	15	-	01	5	01	01	10	6	30
Physiology	02	01	15	01	-	5	01	01	10	6	30
Biochemistry	02	01	15	-	01	5	01	01	10	6	30
ECE	-		-	-		-		01	5	1	5
ALPHA-Research	-		-	-		-		01	5	1	5
Total	9		45	3		15	8		40	20	100

Calculation for Pre-Annual Assessment Implementation for First Year MBBS 2025

Block -I	Theory component (Knowledge)				Practical component (Skill & Attitude)			Total time required for Block – I pre annual assessment is 8 hrs and 25 minutes
	MCQs	SAQs	SEQs	EMQs	Lab OSPE	I OSPE	OSCE	
Total number of questions	110	6	3	3	9	3	8	
Time required for each component	110 x 1 min	6 x 10 min	3 x 10 min	3 x 5 min	9 x2.5 min	3 x 2.5 min	8 x 2.5 min	
	110 mins	60 mins	30 mins	25 mins	22.5 mins	7.5 mins	20 mins	
Total time	110+60+30+25 = 225 mins (4hrs and 25 mins)				22.5+7.5+20 = 50 mins/ round of 20 students 4 hrs			
					If the OSPE is conducted simultaneously at 4 venues: In 50 minutes, 20 students can complete the OSPE at each venue, totaling 80 students across all venues. With 5 rounds at 4 venues, the entire class can complete the OSPE within 4 hours.			
Block -II	Theory component (Knowledge)				Practical component (Skill & Attitude)			Total time required for Block – II pre annual assessment is 8 hrs and 25 minutes
	MCQs	SAQs	SEQs	EMQs	Lab OSPE	I OSPE	OSCE	
Total number of questions	110	6	3	3	9	3	8	
Time required for each component	110 x 1 min	6 x 10 min	3 x 10 min	3 x 5 min	9 x2.5 min	3 x 2.5 min	8 x 2.5 min	
	110 mins	60 mins	30 mins	25 mins	22.5 mins	7.5 mins	20 mins	
Total time	110+60+30+25 = 225 mins (4hrs and 25 mins)				22.5+7.5+20 = 50 mins/ round of 20 students 4 hrs			
					If the OSPE is conducted simultaneously at 4 venues: In 50 minutes, 20 students can complete the OSPE at each venue, totaling 80 students across all venues. With 5 rounds at 4 venues, the entire class can complete the OSPE within 4 hours.			
Block -III	Theory component (Knowledge)				Practical component (Skill & Attitude)			Total time required for Block – III pre annual assessment is 8 hrs and 15 minutes
	MCQs	SAQs	SEQs	EMQs	Lab OSPE	I OSPE	OSCE	
Total number of questions	100	6	3	3	9	3	8	
Time required for each component	100 x 1 min	6 x 10 min	3 x 10 min	3 x 5 min	9 x2.5 min	3 x 2.5 min	8 x 2.5 min	
	100 mins	60 mins	30 mins	25 mins	22.5 mins	7.5 mins	20 mins	
Total time	100+60+30+25 = 225 mins (4hrs and 15 mins)				22.5+7.5+20 = 50 mins/ round of 20 students 4 hrs			
					If the OSPE is conducted simultaneously at 4 venues: In 50 minutes, 20 students can complete the OSPE at each venue, totaling 80 students across all venues. With 5 rounds at 4 venues, the entire class can complete the OSPE within 4 hours.			

3.2.5 Annual Professional Assessment (APA)

- Minimum 50% score in pre-annual assessment is required to appear in annual professional examination.
- Annual professional exam weightage will be 70%
- Continuous internal assessment weightage will be 30%
- 60% marks will be needed to pass annual professional examination.
- Written and practical /OSPE/OSCE should be passed separately.

Regulations

- Final Annual Assessment shall be open to any student who:
  - Has been enrolled/registered and completed one academic year preceding the concerned Final Annual Assessment in Rawalpindi Medical University.
  - Has his/her name submitted to the Controller of Examinations for assessment purposes by the Principal of the College and meets all prerequisites for the assessment.
  - Has his/her internal assessment marks for all Blocks submitted to the Controller of Examinations by the Principal of the College along with the admission form.
  - Produces good character certificate the following certificates duly verified by the Principal:
- Candidates not meeting the above requirements shall not be allowed to appear in the Final Annual Assessment but may sit for the supplementary examination if they fulfill all remaining requirements and stay enrolled as regular students up to the next examination.
- To pass the Final Annual Assessment, students must achieve at least 50% in both the Written and Oral/Practical/Clinical assessments, as well as a 50% aggregate score
  simultaneously.
- Candidates scoring 85% or above in any paper will be awarded a "distinction" in that Block, provided they achieve at least 80% in the Written component. Candidates must pass all papers in the Final Annual Assessment concurrently to receive any distinctions.
- A candidate who fails one or more papers in the Final Annual Assessment may temporarily join the next professional class until the supplementary examination but will not be promoted permanently without passing all papers.

- Students taking the supplementary examination for the first time due to an absence in the annual examination, if failing any paper, will be retained in their current class.
- Any student failing to clear the First or Second Final Annual Assessment MBBS within four attempts will be ineligible to continue or reapply for MBBS or BDS admission.
- Examination applications must be submitted to the Controller of Examination via the College Principal, with the required fee and documentation.
- College must submit question papers, internal assessment marks, and attendance records for each block to the Examinations Department of Rawalpindi Medical University.
- Revised internal assessments are only permissible for detained students. Continuous assessment records must be maintained by college departments.
- Examination fees are to be paid through the Principal, using a bank draft, pay order, or crossed cheque made out to the Treasurer, Rawalpindi Medical University.
- One annual and one supplementary examination for First and Second Final Annual Assessment MBBS are allowed per academic session. Under exceptional circumstances, such as national emergencies, a special examination may be arranged with the Syndicate and Board of Governors' approval.
  Reference: UHS INTEGRATED CURRICULUM VERSION 2

Statutes:

- **Scheduling:** The First Professional MBBS will be held at the end of First year whereas the Second Professional MBBS shall be held at the end of Second year.
- **Subjects:** Every candidate is required to appear in the following subjects in each Block

  a. **Core subjects-** Integrated Anatomy, Integrated Physiology, Integrated Biochemistry

  b. **Vertically integrated Subjects-** Community Medicine C Public Health,

  Behavioral Sciences, Pathology, Pharmacology, associated Clinical Subjects

  c. **Spirally Integrated subjects-** General Education Cluster (GEC),ALPHA (Artificial Intelligence, Leadership, Professionalism, Humanities and Arts), Early Clinical Exposure (ECE) and Research.

- **Assessments:** There will be three papers in First Annual Professional Examination and four papers in the Second Annual professional Examination.

Paper	First year MBBS	Second year MBBS
Paper-1	Block -I	Block -I
Paper-2	Block- II	Block- II
Paper-3	Block-III	Block-III
Paper-4	-------	GEC (Islamic Studies C Pakistan Studies)

a. **First Professional Examination Total Marks = G00***

1. Block I Assessment Total Marks = 300
2. Block II Assessment Total Marks = 300
3. Block III Assessment Total Marks = 300

b. **Second Professional Examination- 1000 Marks***

1. Block I Assessment Total Marks = 300
2. Block II Assessment Total Marks = 300
3. Block III Assessment Total Marks = 300
4. GEC Assessment (Islamic Studies C Pakistan Studies)Total Marks = 100

***Marks Adopted from University of Health Sciences (UHS)
Reference: **https://www.uhs.edu.pk/downloads/2k23mbbscurriculum.pdf**

- **Continuous Internal Assessment (CIA):**

Continuous Internal Assessment shall carry total marks = 270 (30% of the total allocated marks= 900) for first and second year MBBS .CIA for each block is 90 marks and this score will be equally distributed to the written Assessment (45marks) and practical assessment(45 marks).

- **Block Assessment Components**: the components of Block Assessment shall be as follows:
  a. **One theory Paper (K)** having two sections

1. **Section:1** One best type Multiple choice questions of 75 Marks (1 mark for each MCQ) and time allocated will be 90 Minutes. The integration ratio in MCQs will be 70% core content, 10% horizontal integration, and 20% vertical integration. There will be no negative marking
2. **Section:2** will have Structured Essay Questions of 5 marks each and time allocated for 1 SEQ will be 10 minutes**.**

First year MBBS	**Number of MCQs**	**Number of SEQs**
Block -I	75	6
Block -II	75	6
Block -III	75	6
Second Year MBBS	**Number of MCQs**	**Number of SEQs**
Block -I	70	7
Block -II	75	6
Block -III	80	5

b. **Practical Component (Skill and Attitude):** The assessment will include an Objective Structured Practical Examination (OSPE) with a total of 15 stations, time allocated for each station will be 4 minutes.

i. **Laboratory OSPE (Lab OSPE):** This section will consist of stations focused on practical (hands on performance) components from core subject areas, each station carries 5 marks.

ii. **Integrated OSPE (I OSPE):** This section will include stations, from each core subject, emphasizing horizontal and vertical integration, each station carries 5 marks

i. **Objective Structured Clinical Examinations (OSCE):** This section comprises of stations, dedicated to Early Clinical Exposure (ECE) , Simulated Patients (SP), models, ALPHA and clinical component of core subjects each station carries 5 marks.

ii. **Objective Structured Viva Examinations (OSVE):** This section will consist of table viva for each core subject. Students will be evaluated by internal and external examiner using a structured marking rubric, with each viva carries15 marks.

First year MBBS	**Number of Lab OSPE Stations**	**Number of iOSPE Stations**	**Number of OSCE Stations**	**Number of table VIVA**
Block -I	5	3	4	3
Block -II	5	3	4	3
Block -III	4	3	5	3

Second Year MBBS	Number of Lab OSPE Stations	Number of iOSPE Stations	Number of OSCE Stations	Numbe r of tables VIVA
Block -I	4	3	5	3
Block -II	5	3	4	3
Block -III	5	3	4	3

- **Annual Examination Eligibility Criteria:** Eligibility to appear in Annual Professional will be as per RMU Assessment Policy approved by the Academic Council and Syndicate.
- **Passing Criteria:** A student will be declared pass in a block assessment if he/she scores 50% and above marks in each block assessment component (Theory and Practical) and 50% and above marks in each Core Subject (Anatomy, Physiology C Biochemistry).
- **Supplementary Examination Criteria:** The student who fails in any component of a block assessment will have to appear in the supplementary examination of the entire block.

Table of Abbreviation

CIA	Continuous Internal Assessment
I-OSPE	Integrated OSPE
Lab OSPE	Laboratory Objective Structured Practical Examination
OSCE	Objective Structured Clinical Examinations
OSVE	Objective Structured Viva Examinations
ECE	Early Clinical Exposure
ALPHA	(Artificial Intelligence, Leadership, Professionalism, Humanities C Arts
GEC	General Education Cluster
K	Knowledge

Annual Assessment Plan of First Year MBBS 2025 (Batch 52)

- Total First Professional Marks: 900
- Continuous Internal Assessment (30%) =270 Marks
- Annual Marks: (70%) =630 Marks

A: Original Distribution of CIA (Continuous Internal Assessment) Marks (270 Marks)

Blocks	Subjects	Total marks	Module 1	Module 2	Total marks
Block 1 90 Marks	Anatomy	30 marks	15 marks	15 marks	90 Marks
	Physiology	30 marks	15 marks	15 marks	
	Biochemistry	30 marks	15 marks	15 marks	
Block 2 90 Marks	Anatomy	30 marks	15 marks	15 marks	90 Marks
	Physiology	30 marks	15 marks	15 marks	
	Biochemistry	30 marks	15 marks	15 marks	
Block 3 90 Marks	Anatomy	30 marks	15 marks	15 marks	90 Marks
	Physiology	30 marks	15 marks	15 marks	
	Biochemistry	30 marks	15 marks	15 marks	
				Total marks	**270 Marks**

B: Extrapolated marks to be calculated from Summative assessments throughout the Academic Year 2025

Blocks	Modules	Anatomy	Physiology	Biochemistry	Total
Block 1 1470 Marks	Module 1	200	200	200	600
	Module 2	200	200	200	600
	Block Exam	90	90	90	270
	Total	**490**	**490**	**490**	**1470**
Block 2	Module 1	200	200	200	600
	Module 2	200	200	200	600

1470 Marks	Block Exam	90	90	90	270
	Total	**490**	**490**	**490**	**1470**
Block 3 1470 Marks	Module 1	200	200	200	600
	Module 2	200	200	200	600
	Block Exam	90	90	90	270
	Total	**490**	**490**	**490**	**1470**
Total Marks		**1470**	**1470**	**1470**	**4410**

Note:

- Total Operational marks =4410 converted to 270 marks and per block 1470 marks will be converted to 90 marks for Annual professional marks calculation.
- The CIA should be submitted to Examination cell in round off values.
- Evidence of CIA Marks along with papers should be retained in the department that can be reproduced on request by examination cell if required.

Reference: https://www.uhs.edu.pk/downloads/2k23mbbscurriculumv20.pdf

Annual First professional Examinations 2025

- Total First Professional Marks: 900
- Continuous Internal Assessment (30%) =270 Marks
- Annual Marks: (70%) =630 Marks

A: First Professional Examination (70%)

A: First Professional Examination (70%) Total marks = 630 Marks		
Subjects	**% Weightage of subjects**	**Marks distribution as per weightage**
Anatomy	35%	218 Marks
Physiology	30%	192 Marks
Biochemistry	23%	137 Marks
Integrated Subjects • Community Medicine C Public Health/Research • Behavioural Sciences • Pathology • Pharmacology • Radiology • Family Medicine • Surgery • Medicine • Gynae C Obs • Orthopedics • Pediatrics • Surgery • Ophthalmology • Otorhinolaryngology	11%	73 Marks

• Early Clinical Exposure • ALPHA and General Education Cluster (GEC)	2%	10 Marks
Total Marks		**630 Marks**

B: Blockwise Distribution of Marks

Total Annual Professional Marks (70%)	**BLOCK 1 Marks**	**BLOCK 2 Marks**	**BLOCK 3 Marks**	**Total Marks**
630 Marks	210 Marks	210 Marks	210 Marks	630 Marks

- Reference: https://www.uhs.edu.pk/downloads/2k23mbbscurriculumv20.pdf

C: Subject Wise Marks Breakup In Blocks

Subjects	**Block 1**	**Block 2**	**Block 3**	**Total Marks**
Anatomy	85 Marks	78 Marks	55 Marks	218 Marks (35%)
Physiology	45 Marks	64 Marks	83 Marks	192 Marks (30%)
Biochemistry	53 Marks	39 Marks	45 Marks	137 Marks (23%)
Integrated Subjects	27 Marks	29 Marks	27 Marks	83 Marks (13%)

D: Subject Wise Distribution of Marks for First Year MBBS

Block	Subjects	Theory	Practical	Total marks	Total marks Core Subject + Integrated Subjects
Block 1 210 Marks	Anatomy	45 marks	40 marks	85 marks	183+27 = 210 marks
	Physiology	20 marks	25 marks	45 marks	
	Biochemistry	23 marks	30 marks	53 marks	
	Total	88	95	**183 marks**	
	Integrated Subjects			27 Marks	
	• Community Medicine /Research	4 Marks			
	• Behavioral Sciences	2 Marks			
	• Pathology	2 Marks			
	• Pharmacology	3 Marks			
	• Radiology	1 Marks			
	• Gynae C Obs	1 Marks			
	• Medicine	1 Marks			
	• Family Medicine	1 Marks			
	• Pediatrics	1 Marks			
	• Surgery	1 Marks			
	• ECE		5 Marks		
	• ALPHA and GEC		5 Marks		
Total marks		**183+27 = 210 marks**			

Block	Subjects	Theory	Practical	Total marks	Total marks Core Subject + Integrated Subjects
Block 2	Anatomy	38 marks	40 marks	78 marks	181+29 = 210 marks
	Physiology	34 marks	30 marks	64 marks	
	Biochemistry	14 marks	25 marks	39 marks	
	Total	86	95	**181 Marks**	
	Integrated Subjects				

210 Marks	• Community Medicine /Research	4 Marks		**29 Marks**	
	• Family Medicine	1 Marks			
	• Orthopedics	2 Marks			
	• Radiology	2 Marks			
	• Medicine	3 Marks			

	• Gynae C Obs	1 Marks			
	• Behavioral Sciences	4 Marks			
	• Pathology	2 Marks			
	• ECE		5 Marks		
	• ALPHA and GEC		5 Marks		
Total marks		**181+29 = 210 marks**			

Block	**Subjects**	**Theory**	**Practical**	**Total marks**	**Total marks Core Subject + Integrated Subjects**
Block 3 **210 Marks**	Anatomy	25 marks	30 marks	55 marks	**183+27 = 210 marks**
	Physiology	48 marks	35 marks	83 marks	
	Biochemistry	15 marks	30 marks	45 marks	
	Total	88	95	**183 marks**	
	Integrated Subjects			**27 Marks**	
	• Community Medicine	3 Marks			
	• Behavioral Sciences	2 Marks			
	• Medicine	2 Marks			
	• Family medicine	1 Marks			
	• Gynae C Obs	1 Marks			
	• Radiology	1 Marks			
	• Pediatrics	1 Marks			
	• Otorhinolaryngology	1 Marks			
	• Ophthalmology	1 Marks			
	• Pathology	2 Marks			

	• Pharmacology	2 Marks	
	• ECE		5 Marks
	• ALPHA and GEC		5 Marks
Total marks	**183+27 = 210 marks**		
GRAND TOTAL MARKS	**630 Marks**		

E: Block Wise Distribution of Marks for First Year MBBS (Batch 52) (Annual Professional Marks + CIA)

Subject	**Theory**			**Practical**			**Total Marks**
	Component	**No of Items**	**Marks**	**Component**	**No of Items**	**Marks**	
Block 1 **(Foundation s MSK-1)** **Total Annual marks=210**	Section I- MCQ Section II- SEQ 6	75	75 30	LabOSPE iOSPE OSCE OSVE	5 3 4 3	25 15 20 45	210
CIA = 90 Marks	Continuous Internal Assessment (30%)		45	Continuous Internal Assessment (30%)		45	90
Total Annual marks+ **CIA =210+90= 300**	**Total Marks**		**150**	**Total Marks**		**150**	**300**
Block 2 **(MSK-2 Blood and Immunity** **Total Annual marks=210**	Section I- MCQ Section II- SEQ	75 6	75 30	LabOSPE iOSPE OSCE OSVE	5 3 4 3	25 15 20 45	210
CIA = 90 Marks	Continuous Internal Assessment (30%)		45	Continuous Internal Assessment (30%)		45	90
Total Annual marks+ **CIA =210+90= 300**	**Total Marks**		**150**	**Total Marks**		**150**	**300**
Block 3 **(CVS Respiration)** **Total Annual**	Section I- MCQ Section II-	75 6	75 30	LabOSPE iOSPE OSCE	4 3 5	20 15 25	210

marks=210	SEQ			OSVE	3	45	
CIA = G0 Marks	Continuous Internal Assessment (30%)		45	Continuous Internal Assessment (30%)		45	90
Total Annual marks + CIA =210+G0= 300	**Total Marks**		**150**	**Total Marks**		**150**	300
						Grand Total Marks	**G00**

F: 1st Professional Examination 2025 (Batch 52)

Block 1 Assessment Breakup
(Foundation & MSK-1 Modules)

Themes	Discipline	Theory				Practical (OSPE)			OSVE	Marks	%	Total Marks per subject	
		No of MCQs (1 marks each)	No of SEQs (5 marks each)	Marks	%	No of Stations of LabOSPE (5 marks each)	No of Stations of iOSPE (5 marks each)	No of Stations of OSCE (5 marks each)	OSVE (15 Marks)			Marks	%
Core s Horizontally Integrated Subjects	Anatomy C Applied /Clinical	30	3	45	30	3	1	1	1	40	32	85	40
	Physiology C Applied/Clinical	10	2	20	26	1	1	-	1	25	29	45	21
	Biochemistry C Applied/clinical	18	1	23	26	1	1	1	1	30	29	53	25
Vertically Integrated Subjects	Community Medicine C Public Health/Research	4	-	3	4	-	-	-	-	-	-	4	14
	Behavioural Sciences	2	-	1	2	-	-	-	-	-	-	2	
	Pathology	2	-	2	2	-	-	-	-	-	-	2	
	Radiology	1		1								1	
	Gynae C Obs	1		1								1	
	Medicine	1		1								1	
	Family Medicine	1		1								1	
	Paediatrics	1		1								1	
	Surgery	1		1								1	

	Pharmacology	3	-	3	3	-	-		-	-	-	3	
Spirally Integrated Subjects	ECE	-	-	-		-	-	1	-	5	5	5	
	ALPHA and GEC	-	-	-		-	-	1	-	5	5	5	
Total		75	6x5=30	105	100	5x5=25	3x5=15	4x5=20	3x15=45	105	100	210	100
Total		105				105					105+105=210		

G: 1st Professional Examination 2025 (Batch 52)

Block 2 Assessment

MSK-2 & Blood/Immunity Modules

Theme	Subject	Theory			Practical			OSVE		Total Marks per subject	
		No of MCQs (1 marks each)	No of SEQs (5 marks each)	Marks	No of Stations of LabOSPE (5 marks each)	No of Stations of iOSPE (5 marks each)	No of Stations of OSCE (5 marks each)	OSVE (15 Marks)	Marks	Total Marks	%
Cores Horizontally Integrated Subjects	Anatomy C Applied /Clinical	23	3	38	3	1	1	1	40	78	37
	Physiology C Applied/Clinical	24	2	29	1	1	1	1	30	64	30
	Biochemistry C Applied/clinical	9	1	14	1	1	-	1	25	39	18
Vertically Integrated Subjects	Community Medicine C Public Health	4	-	4	-	-	-	-	-	4	15
	Behavioural Sciences	4	-	4	-	-	-	-	-	4	
	Pathology	2	-	2	-	-	-	-	-	2	
	Family Medicine	1								1	
	Orthopedics	2								2	

	Radiology	2								2	
	Medicine	3								3	
	Gynae C Obs	1								1	
Spirally Integrated Subjects	ECE	-	-	-	-	-	1	-	5	5	
	ALPHA and GEC	-	-	-	-	-	1	-	5	5	
Total		**75**	**6x5=30**	**105**	**5x5=25**	**3x5=15**	**4x5=20**	**3x15=45**	**105**	**210**	**100**
Total		**105**			**105**					**105+105=210**	

H: 1st Professional Examination 2025 (Batch 52)
Block 3 Assessment
CVS & Respiratory Modules

Themes	**Discipline**	**Theory**			**Practical**			**OSVE**		**Total Marks per subject**	
		No of MCQs (1 marks each)	**No of SEQs (5 marks each)**	**Marks**	**No of Stations of LabOSPE (5 marks each)**	**No of Stations of iOSPE (5 marks each)**	**No of Stations of OSCE (5 marks each)**	**OSVE (15 Marks)**	**Marks**	**Marks**	**%**
Cores Horizontally Integrated Subjects	Anatomy C Applied /Clinical	15	2	25	1	1	1	1	30	55	26
	Physiology C Applied/Clinical	33	3	48	2	1	1	1	35	83	40
	Biochemistry C Applied/clinical	10	1	15	1	1	1	1	30	45	21
Vertically Integrated Subjects	Community Medicine C Public Health	2	-	2	-	-	-	-	-	2	
	Behavioural Sciences	2	-	2	-	-	-	-	-	2	
	Pathology	2	-	2	-	-	-	-	-	2	
	Medicine	2		2						2	
	Family medicine	1		1						1	
	Gynae C Obs	1		1						1	
	Radiology	1		1						1	
	Pediatrics	1		1						1	

	Otorhinolaryngology	1		1						1	13
	Opthalmology	1		1						1	
	Pathology	2		2						2	
	Pharmacology	1	-	1	-	-	-	-		1	
Spirally Integrated Subjects	ECE	-	-	-	-	-	1	-	5	5	
	ALPHA and GEC	-	-	-	-	-	1	-	5	5	
Total		**75**	**6x5=30**	**105**	**4x5=20**	**3x5=15**	**5x5=25**	**3x15=45**	**105**	**210**	**100**
Total		**105**			**105**					**105+105=210**	

SECTION – VI

Time Table

Integrated Clinically Oriented Modular Curriculum for First Year MBBS

MSK-I Module Time Table

First Year MBBS

Session 2024 – 2025

Batch- 52

MSK - I Module Team

Module Name : MSK - I Module
Duration of module : 05 Weeks
Coordinator : Dr. Summiya Bashir
Co-coordinator : Dr. Ali Raza
Reviewed by : Module Committee

Module Committee		
1.	Vice Chancellor RMU	Prof. Dr. Muhammad Umar
2.	Director DME	Prof. Dr. Ifra Saeed
3.	Convener Curriculum	Prof. Dr. Naeem Akhter
4.	Chairperson Anatomy & Dean Basic Sciences	Prof. Dr. Ayesha Yousaf
5.	Additional Director (Assessment) DME	Dr. Arsalan Manzoor Mughal
6.	Chairperson Physiology	Prof. Dr. Samia Sarwar
7.	Chairperson Biochemistry	Dr. Aneela Jamil
8.	Focal Person Anatomy First Year MBBS	Asso. Prof. Dr. Mohtashim Hina
9.	Focal Person Physiology	Dr. Sidra Hamid
10.	Focal Person Biochemistry	Dr. Aneela Jamil
11.	Focal Person Pharmacology	Dr. Zunera Hakim
12.	Focal Person Pathology	Dr. Asiya Niazi
13.	Focal Person Behavioral Sciences	Dr. Saadia Yasir
14.	Focal Person Community Medicine	Dr. Afifa Kulsoom
15.	Focal Person Quran Translation Lectures	Dr. Uzma Zafar
16.	Focal Person Family Medicine	Dr. Sadia Khan

Module Task Force Team		
1.	Coordinator	Dr. Summiya Bashir (Assistant Professor of Anatomy)
2.	DME Focal Person	Dr. Farzana Fatima
3.	Co-coordinator	Dr. Ali Raza (Senior Demonstrator of Anatomy)
4.	Co-Coordinator	Dr. Fahd Anwar (Demonstrator of Physiology)
5.	Co-coordinator	Dr. Romessa Naeem (Demonstrator of Biochemistry)

DME Implementation Team		
1.	Director DME	Prof. Dr. Ifra Saeed
2.	Implementation Incharge 1st & 2nd Year MBBS	Dr. Arsalan Manzoor Mughal Dr. Farzana Fatima
3.	Assistant Director DME	Dr. Farzana Fatima
4.	Editor	Muhammad Arslan Aslam

Discipline Wise Details of Modular Content

Integration					
Themes					
Block	**Module**	**General Anatomy**	**Embryology**	**Histology**	**Gross Anatomy**
I	• Anatomy	Skeletal System • Bones • Joints	General Embryology Second Week of Human Development till Placenta & Fetal Membranes	General Histology • Connective Tissue • Cartilage • Bone	Shoulder joint till Hand
	• Biochemistry	• Minerals, Vitamins (A, D, E, ascorbic acid, thiamin and niacin), Introduction & Classification of Amino Acids			
	• Physiology	• NMJ, Introduction Concept of Motor Unit. Neuromuscular Transmission, Synthesis & Fate of Acetylcholine • Drugs Acting On NMJ, Myasthenia Gravis, Lambart Eaton Syndrome • Structure of Neurons. Classification of Neurons & Nerve Fibers • Nernst Potential, RMP • Recording & Propagation of Action Potential & Factors Effecting Nerve Conduction & Hyperpolarized State • Stimulus & Response & Types of Stimuli, Stages of Action Potential			
	Spiral Courses				
	• Research Club Activity (1 – 4)	• Synopsis Writing • Questionnaire Development • Hands on session on Data Analysis • Manuscript Writing Workshop			
	• Family Medicine	• Approach to a patient with Body aches			
	• Behavioral Sciences	• Healthcare models and their clinical application • Relevance of ethics in life of a doctor			
	Vertical Integration				
	• Surgery	• Shoulder Dislocation • Tennis elbow, Fracture of olecranon, Radius and Ulna (Surgery)			
	• Community Medicine	• Musculoskeletal Disorders • Prevention of Accidents			
	• Medicine	• Osteoporosis • Osteomalacia, Rickets & Polyarthritis			
	• Pharmacology	• Drugs Acting On Neuromuscular Junction • Tennis elbow, fracture of olecranon, radius and ulna			
	• Obstetrics & Gynecology	• Bony PELVIS Fetal Skull & Mechanism of Labor			

Categorization of Modular Content of Anatomy:

Category A*	Category B**		Category C				
General Embryology	**General Histology**	**General Anatomy**	**Demonstrations / SGD**	**CBL**	**Practical's**	**SDL**	**SSDL**
• Second week of Human Development • Gastrulation (3rd week) • Notochord Formation (3rd week) • Neurulation & differentiation of Somites (3rd week) • Early development of CVS & highlights of 4th-8th week • Folding of Embryo • Fetal period • Placenta • Fetal Membranes & Multiple pregnancy	• Connective Tissue I • Connective Tissue II • Connective Tissue III • Cartilage • Bones	• Bone I • Bone II • Joint I • Joint II	• **Gross Anatomy:** • Shoulder joint • -Flexor Compartment & Neurovascular organization of Arm • Extensor compartment & Neurovascular organization of Arm • Bones of Forearm • Flexor compartment of forearm • Extensor compartment of forearm • Neurovascular organization of Forearm • Elbow joint • Proximal & Distal radioulnar joints • Bones of Hand • Wrist joint • Dorsum of Hand, Flexor & Extensor retinaculum • Palm of Hand & Facial spaces • Neurovascular organization of Hand • Surface Marking	• Shoulder Dislocation • Wrist Drop	• Histology of connective Tissue I • Connective tissue II • Cartilage • Bone	• Shoulder Dislocation • Biceps Tendinitis, Popeye's Arm • Wrist Drop • Fracture of Ulna • Colle's Fracture/ Smith's Fracture • Golfer's Elbow • Tennis Elbow • Cubital Tunnel Syndrome • Elbow Dislocation • Proximal and distal radioulnar dislocation • Avascular Necrosis of Scaphoid Bone • Wrist dislocation • Vascular insufficiency at wrist joint • Carpal Tunnel • Dupuytren's Contracture • Hand infections	• Proximal & distal radioulnar joint • Bones of hand

Category A*: By Professors

Category B:** By Associate & Assistant Professors

Category C*:** By Senior Demonstrators & Demonstrators

Teaching Staff / Human Resource of Anatomy

Sr. #	Designation of Teaching Staff / Human Resource	Total number of teaching staff
1.	Professor of Anatomy department	01
2.	Associate professor of Anatomy department	02
3.	Assistant professor of Anatomy department (AP)	02
4.	Demonstrators of Anatomy department	04

Contact Hours (Faculty)

Sr. #	Hours Calculation for Various Type of Teaching Strategies	Total Hours
1.	Large Group Interactive Session (LGIS)	2 * 19= 38 hours
2.	Small Group Discussions (SGD)	1 * 2 + 2*12=26 hours
3.	Case Based Learning (CBL)	2* 2 = 4 hours
5.	Practical / Skill Lab	1.5 * 20 = 30 hours

Contact Hours (Students)

Sr. #	Hours Calculation for Various Type of Teaching Strategies	Total Hours
1.	Large Group Interactive Session (LGIS)	1 * 19 = 19 hours
2.	Small Group Discussions (SGD)	1.5 * 18 + 2*1=29 hours
3.	Case Based Learning (CBL)	2* 2 = 4 hours
4.	SSDL	3*2 = 6 hours
5.	Practical / Skill Lab	1.5 * 4 = 6 hours
6.	Self-Directed Learning (SDL)	1 * 7= 7 hours

Categorization of Modular Content of Physiology:

Category A*	Category B**	Category C***				
LGIS	**LGIS**	**PBL**	**CBL**	**Practical's**	**SGD**	**SDL**
NMJ, Introduction concept of motor unit. Neuromuscular transmission, synthesis & fateo facety lcholine (**Prof. Dr. Samia Sarwar /Dr Aneela)**	Structure of neurons. Classification of neurons & nerve fibers **(By Dr Sheena Tariq)**		**1.** Paresthesia, Paresis **2.** Insecticide poisoning	**1.** Determination of Hemoglobin concentration **2.** Determination of Hematocrit (HCT) **3.** Determination of Erythrocyte Sedimentation Rate (ESR) **4.** Determination of Differential leukocyte Count (DLC)	**1.** Nernst potential **2.** NMJ, Transmission across NMJ, Diseases of NMJ	1. Structure of neurons. Classification of neurons & nerve fibers 2. Nernst potential, RMP 3. Properties of nerve fibers 4. Measuret of RMP & effect of electrolytes on RMP 5. Concept of degeneration & regeneration 6. Stimulus & response & types of stimuli, Stages of action potential 7.A Refractory period, types of action potential. Graded potential comparison with action potential B. Recording & propagation of action potential & factors effecting nerve conduction & hyperpolarized state **SDL:(On Campus)** 1. Nernst potential, RMP Action Potential
Drugsactingon NMJ, Myasthenia Gravis, Lambart Eaton Syndrome (**Prof. Dr. Samia Sarwar / Dr Aneela)**	Nernst potential, RMP **(By Dr Shazia)**					
	Properties of nerve fibers **(By Dr Sheena)**					
	Measurement of RMP& effect of electrolytes on RMP **(By Dr. Shazia)**					
	Concept of degeneration & re generation **(By Dr Kamil)**					
	Stimulus & response & types of stimuli, Stages of action potential **(By Dr Fareed)**					

	Refractory period, types of action potential. Graded potential comparison With action potential **(By Dr Shazia)**					
	Recording & propagation of action potential & factors effect ingnerve Conduction & hyper polarized state **(By Dr Fareed)**					

Category A*: By Professors

Category B:** By Associate & Assistant Professors

Category C*:** By Senior Demonstrators & Demonstrators

Teaching Staff / Human Resource of Physiology

Sr.#	Designation of Teaching Staff / Human Resource	Total number of teaching staff
1.	Professor of physiology department	01
2.	Associate professor of physiology department	01
3.	Assistant professor of physiology department (AP)	01 (DME)
4.	Demonstrators of physiology department	07
5.	Residents of physiology department (PGTs)	06

Contact Hours (Faculty) & Contact Hours (Students)

Sr.#	Hours Calculation for Various Type of Teaching Strategies	Total Hours
1.	Large Group Interactive Session (Lectures)	10X 2 = 20 Hours
2.	Small Group Discussions (SGD)/ Case based learning (CBL)	18x 2 hours = 36hours + 2hours (4th week) +1 hour (1st week) =39 hours
3.	Problem Based Learning (PBL)	---
4.	Practical / Skill Lab	18x 2 hours= 36hours + 2 hours (4th week) = 38 hours
5.	Self-Directed Learning (SDL)	7x 1hour= 7 hours (Off Campus) 4x 1hour= 4hours (On Campus) (Third week)

Categorization of Modular Content of Biochemistry:

<table>
<tr><th>Category A*</th><th>Category B**</th><th colspan="4">Category C***</th></tr>
<tr><th>LGIS</th><th>LGIS</th><th>PBL</th><th>CBL</th><th>Practical’s</th><th>SGD</th></tr>
<tr><td rowspan="2">Minerals: Introduction & Classification.
Calcium & Phosphate</td><td rowspan="2">Vitamins: Introduction & Classification.
Vitamin A &Vitamin E</td><td rowspan="4"></td><td rowspan="4">• Night Blindness
• Rickets</td><td>• 7 Colour Tests for Proteins</td><td rowspan="2">Introduction & Classification of Vitamins.
Vitamin E</td></tr>
<tr><td rowspan="3">• Serum Calcium & Ascorbic Acid</td></tr>
<tr><td>Vitamin C</td><td rowspan="3">•Minerals</td></tr>
<tr><td>Vitamin D</td><td>Niacin & Thiamine
Magnesium, Sulphur, Fluoride
Minerals: Copper, Zinc, Selenium, Iodine, Magnesia
Classification & Structure of Amino Acids& Isomerism</td></tr>
<tr><td colspan="6">Category A*: Assistant Professor& Senior Demonstrator with post graduate Qualification</td></tr>
<tr><td colspan="6">Category B**: Senior Demonstrators</td></tr>
<tr><td colspan="6">Category C***: By All Demonstrators</td></tr>
</table>

Teaching Staff / Human Resource of Biochemistry

Sr. #	Designation of Teaching Staff / Human Resource	Total number of teaching staff
1	Assistant professor of biochemistry department (AP)	01
2	Demonstrators of biochemistry department	06

Contact Hours (Faculty) & Contact Hours (Students)

Sr. #	Hours Calculation for Various Type of Teaching Strategies	Total Hours (Faculty)	Total Hours (student)
1.	Large Group Interactive Session (Lectures)	12	6
2.	Small Group Discussions (SGD)	6 * 5 = 30 hours	1.5*4=6
3.	Problem Based Learning (PBL)	2 * 1 = 2 hours	02
4.	Practical / Skill Lab	30 hours	6
5.	Self-Directed Learning (SDL)	1 * 7= 7hours	07

Time Table for Musculoskeletal-I Module (First Week)
(14-04-2025 To 19-04-2025)

Day & Date	8:00am – 09:00am		09:00am – 10:00am		10:00am – 10:20am	10:20am-11:20am		11:20am-12:10pm		12:10pm-12:30pm	12:30pm – 2:00pm	Home Assignment
14-04-2025 Monday	**BIOCHEMISTRY (LGIS)**		**PHARMACOLOGY**		Break	**ANATOMY (LGIS)**		**PHYSIOLOGY(LGIS)**		Break	Practical & Tutorial Venue & topic mentioned at the end (Referred to table no. 1)	SDL Physiology Structure of Neurons & Classification of Neurons
	Mineral introduction/ classification/ calcium & Phosphate	Definition and classification of vitamins vitamin A & E	Drugs Acting On Neuromuscular Junction			**Embryology**	**Histology**	Structure of neurons Classification of neurons and nerve fibers	Nernst Potential & RMP			
	Dr. Aneela / Dr. Uzma (Even)	Dr. Almas (Odd)				2nd Week of Development	Connective tissue (CT) – I (Cells of CT)	Dr. Sheena (Even)	Dr. Shazia (Odd)			
						Prof. Dr. Ayesha/Asso. Prof. Dr. Arsalan (Even)	Asso. Prof. Dr. Mohtasham (Odd)					
15-04-2025 Tuesday	**CBL**					**RESEARCH CLUB ACTIVITY 1**		**PHYSIOLOGY (LGIS)**			Practical & Tutorial Venue & topic mentioned at the end (Referred to table no. 1)	SDL Physiology Nernst Potential & RMP
	Shoulder Joint (Shoulder Dislocation)					Synopsis Writing		Nernst Potential & RMP	Structure of neurons Classification of neurons and nerve fibers			
						Dr. Rizwana Shahid (Even)	Dr. Asif (Odd)	Dr. Shazia (Even)	Dr. Sheena (Odd)			
16-04-2025 Wednesday	**SGD/ DISSECTION**					**ANATOMY (LGIS)**		**BEHAVIORAL SCIENCES**			Practical & Tutorial Venue & topic mentioned at the end (Referred to table no. 1)	SDL Biochemistry Hypercalcemia
	Flexor compartment & Neurovascular organization of arm					**Histology**	**Embryology**	Healthcare models and their clinical application				
						Connective tissue-I (Cells of CT)	2nd Week of Human Development	Dr. Azeem Rao (Odd)	Dr. Sadia Yasir (Even)			
						Asso. Prof. Dr. Mohtasham (Even)	Prof. Dr. Ayesha/Asso. Prof. Dr. Arsalan (Odd)					
17-04-2025 Thursday	CBL					**ANATOMY (LGIS)**		**PHYSIOLOGY (LGIS)**			Practical & Tutorial Venue & topic mentioned at the end (Referred to table no. 1)	SDL Biochemistry Hypocalcemia
	Extensor compartment & Neurovascular organization of arm (Wrist Drop)					General Anatomy	Histology	Properties of nerve Fibers	Measurement & effect of electrolytes on RMP			
						Bone-I (General Features)	Connective tissue-II (Extracellular Matrix & Types of CT)					
						Assit. Prof. Dr. Sumyyia (Even)	Asso. Prof. Dr. Mohtasham (Odd)	Dr. Fahd Anwar (Even)	Dr. Shazia (Odd)			

Day & Date	8:00am – 09:00am		09:00am – 10:00am		10:00am – 11:00am		11:00am – 12:00pm			
18-04-2025 Friday	**MEDICINE**		**BIOCHEMISTRY (LGIS)**		**ANATOMY (LGIS)**		**FAMILY MEDICINE**		SDL Anatomy Shoulder Dislocation	
	Osteoporosis		Definition & classification of vitamins, Vitamin A, Vitamin E	Mineral introduction/ classification/ calcium & Phosphate	**Histology**	**Embryology**	Approach to a patient with Body Pains			
					Connective Tissue – II (Extracellular Matrix & Types of CT)	3rd week of development (Gastrulation)				
	Dr Saima (Even)	Dr Javaria Malik (odd)	Dr. Almas (Even)	Dr. Aneela / Dr. Uzma (Odd)	Asso. Prof. Dr. Mohtasham (Even)	Prof. Dr. Ayesha/Asso. Prof. Dr. Arsalan (Odd)	Dr Sadia (Even)	Dr. Sidra Hamid (Odd)		

Day & Date	8:00am – 09:00am		09:00am – 10:00am		10:00am – 10:20am	10:20am-11:20am		11:20am-12:10pm		12:10pm-12:30pm	12:30pm – 2:00pm	Home Assignment
19-04-2025 Saturday	**SGD/ DISSECTION**				Break	**ANATOMY (LGIS)**		**PHYSIOLOGY(LGIS)**		Break	Practical & Tutorial Venue & topic mentioned at the end (Referred to table no. 1)	SDL Anatomy Biceps Tendinitis, Popeye's Arm
	Dissection & Spotting					**Embryology**	**General Anatomy**	Measurement & effect of electrolytes on RMP	Properties of nerve Fibers			
						3rd week of development (Gastrulation)	Bone-I (General Features)					
						Prof. Dr. Ayesha/Asso. Prof. Dr. Arsalan (Even)	Assit. Prof. Dr. Sumyyia (Odd)	Dr. Shazia (Even)	Dr. Fahd Anwar (Odd)			

Table No. 1 (Time: 12:20pm – 02:00pm)

Batch Distribution for Practical Skills (all subjects)
CBL / Small Group Discussion (Biochemistry and Physiology)

Sr. No	Batch	Roll No.
1.	**A**	01-70
2.	**B**	71-140
3.	**C**	141-210
4.	**D**	211-280
5.	**E**	281-onwards

Topics for Skill Lab with Venue

- Connective Tissue I (Anatomy Histology Practical) Venue- Histology Laboratory-Dr Kashif
- Biuret, Ninhydrin Test (Biochemistry Practical) Venue- Biochemistry Laboratory
- Determination of Hemoglobin concentration (Physiology-Practical)

Schedule for Practical

Day	Histology Practical		Biochemistry Practical			Physiology Practical			Physiology SGD		Biochemistry SGD	
	Batch	Teacher Name	Batch	Teacher Name		Batch	Teacher Name		Batch	Teacher Name	Batch	Teacher Name
Monday	**C**	Supervised by HOD	**B**	Dr. Rahat	Supervised by HOD	**E**	Dr. Ali /Dr. Afsheen	Supervised by HOD	**A**	Dr. Sheena	**D**	Dr. Uzma Zafar
Tuesday	**D**		**C**	Dr. Sana Latif		**A**	Dr. Sheena		**B**	Dr. Uzma	**E**	Dr. Rahat
Wednesday	**E**		**D**	Dr. Uzma		**B**	Dr. Uzma		**C**	Dr. Farah	**A**	Dr. Almas
Thursday	**B**		**A**	Dr. Almas		**D**	Dr. Nazia		**E**	Dr. Ali/Dr. Afsheen	**C**	Dr. Sana Latif
Saturday	**A**		**E**	Dr. Romessa		**C**	Dr. Farah		**D**	Dr. Nazia	**B**	Dr. Romessa

Topics for SGDs / CBL with Venue

- Physiology SGD: Nernst potential (Physiology Lecture Hall 05)
- Biochemistry SGD: Introduction and Classification of Vitamins &Vitamin E (Venue: Lecture Hall No 2)
- Anatomy CBL: Shoulder Dislocation, Wrist drop

Table No. 2 Batch Distribution with Venues and Teachers Name for Problem Based Learning (PBL) Sessions

Sr No.	Batches	Roll No	Venue	Teachers	Sr No.	Batches	Roll No	Venue	Teachers
1.	**A1**	(01-35)	Lecture Hall no.05 Physiology	Dr. Sana Latif (Senior Demonstrator Biochemistry)	6.	**C2**	(176-210)	New Lecture Hall Complex Lecture Theater # 03	Dr. Nazia (Demonstrator Physiology)
2.	**A2**	(36-70)	Lecture Hall #.04 (1st Floor Anatomy)	Dr. Farah Ali Shah (Demonstrator of Physiology)	7.	**D1**	(210-245)	New Lecture Hall Complex Lecture Theater # 02	Dr. Jawad (Demonstrator Physiology)
3.	**B1**	(71-105)	Anatomy Museum (First Floor Anatomy)	Dr. Nayab Ramzan (APWMO Biochemistry)	8.	**D2**	(246-280)	New Lecture Hall Complex Lecture Theater # 02	Dr. Kashif Ashraf (Demonstrator Anatomy)
4.	**B2**	(106-140)	Lecture Hall no.03 (First Floor)	Dr. Zeneara Saqib (Senior Demonstrator of Anatomy)	9.	**E1**	(281-315)	Anatomy Museum (First Floor Anatomy)	Dr. Uzma Zafar (APWMO Biochemistry)
5.	**C1**	(141-175)	Anatomy Museum (First Floor Anatomy)	Dr. Farhat (PGT Physiology)	10	**E2**	(315 onwards)	Lecture Hall no.04	Dr. Najam (PGT Physiology)

Table No. 3 Venues for Large Group Interactive Session (LGIS)

Odd Roll Numbers	New Lecture Hall Complex Lecture Theater # 03
Even Roll Number	New Lecture Hall Complex Lecture Theater # 02

Table No. 4 Batch Distribution and Venues for Anatomy Small Group Discussion SGDs / Dissections

Batches	Roll No	Subgroup	Anatomy Teacher	Venue
A	01- 70	A1: Roll No (1 – 17) A2: Roll No (18 – 34) A3: Roll No (35 – 51) A4: Roll No (52 – 70)	Dr. Ali Raza (Senior. Demonstrator)	Anatomy Lecture Hall 03
B	71-140	B1: Roll No (71 – 87) B2: Roll No (88 – 104) B3: Roll No (105 – 121) B4: Roll No (122 – 140)	Dr. Sajjad Hussain (Senior. Demonstrator)	Anatomy Lecture Hall 04
C	141-210	C1: Roll No (141 – 157) C2: Roll No (158 – 174) C3: Roll No (175 – 191) C4: Roll No (192 – 210)	Dr. Tayyaba Qureshi (Assistant Professor)	New Lecture Hall Complex 02
D	211- 280	D1: Roll No (211 – 227) D2: Roll No (228 - 244) D3: Roll No (245 – 261) D4: Roll No (262 – 280)	Dr. Sumyyia Bashir (Assistant Professor)	New Lecture Hall Complex 3
E	281- onwards	E1: Roll No (281 – 297) E2: Roll No (298 – 314) E3: Roll No (315 – 331) E4: Roll No (332 – onwards)	Dr. Zeneara Saqib (Demonstrator)	New Lecture Hall Complex 01 / Anatomy Museum
Supervised by Prof. Dr. Ayesha Yousaf				

Table No. 5 Batch Distribution and Venues for Physiology & Biochemistry Small Group Discussion SGDs

Batches	Roll No	Subgroup	Physiology Teacher	Physiology Venue	Biochemistry Teacher	Biochemistry Venue
A	01-70	A1: Roll No (1 – 14) A2: Roll No (15 – 28) A3: Roll No (29 – 42) A4: Roll No (43 – 56) A5: Roll No (57 – 70)	Dr. Sheena Tariq (APWMO)	Physiology Lecture Hall 5	Dr. Uzma Zafar (APWMO)	Basement Lecture Hall No. 2
B	71-140	B1: Roll No (71 – 84) B2: Roll No (85 – 98) B3: Roll No (99 – 112) B4: Roll No (113 – 126) B5: Roll No (127 – 140)	Dr. Uzma Kiyani (Senior Demonstrator)	Physiology Lecture Hall 5	Dr. Rahat (APWMO)	Basement Lecture Hall No. 2
C	141-210	C1: Roll No (141 – 154) C2: Roll No (155 – 168) C3: Roll No (169 – 182) C4: Roll No (183 – 196) C5: Roll No (197 – 210)	Dr. Farah Shah (Demonstrator)	Physiology Lecture Hall 5	Dr. Almas (APWMO)	Basement Lecture Hall No. 2
D	211-280	D1: Roll No (211 – 224) D2: Roll No (225 – 238) D3: Roll No (239 – 252) D4: Roll No (253 – 266) D5: Roll No (267 – 280)	Dr. Nazia (Demonstrator)	Physiology Lecture Hall 5	Dr. Sana Latif (Senior Demonstrator)	Basement Lecture Hall No. 2
E	281- onwards	E1: Roll No (281 – 294) E2: Roll No (295 – 308) E3: Roll No (309 – 322) E4: Roll No (323 – 336) E5: Roll No (337 – onwards)	Dr. Ali Zain / Dr. Afsheen (P. G Trainee)	Physiology Lecture Hall 5	Dr. Romessa (Demonstrator)	Basement Lecture Hall No. 2
Supervised by Prof. Dr. Samia Sarwar					Supervised by. Dr. Aneela Jamil	

Time Table for Musculoskeletal-I Module Second Week
(21-04-2025 to 26-04-2025)

Date/ Day	8:00am – 10:00am	10:00am – 10:20am	10:20am-11:20am		11:20am-12:10pm		12:10pm-12:30pm	12:30pm – 2:00pm	Home Assignment
21-04-2025 Monday	**SGD / DISSECTION**	Break	**ANATOMY (LGIS)**		**RESEARCH CLUB ACTIVITY 2**		Break	Practical & Tutorial Venue & topic mentioned at the end (Referred to table no. 1)	SDL Physiology Resting Membrane Potential
	Bones of forearm (Ulna & Radius) Batches, Teachers & Venue		**General Anatomy**	**Embryology**	Questionnaire Development				
			Bone-II (Classification & Blood Supply)	3rd week (Notochord formation & Differentiation of Somites)					
			Assit. Prof. Dr. Sumyyia (Even)	Prof. Dr. Ayesha/Asso. Prof. Dr. Arsalan (Odd)					
22-04-2025 Tuesday	**SGD / DISSECTION**		**ANATOMY (LGIS)**		**PHYSIOLOGY(LGIS)**			Practical & Tutorial Venue & topic mentioned at the end (Referred to table no. 1)	SDL Physiology Action Potential
	Flexor compartment & Neurovascular organization of forearm Batches, Teachers & Venue		Embryology	General Anatomy	Concept of Degeneration and regeneration	Stimulus & Response &Type of stimuli. Stages of action potential			
			3rd week (Notochord formation & Differentiation of Somites)	Bone-II (Classification & Blood Supply)					
			Prof. Dr. Ayesha/Asso. Prof. Dr. Arsalan (Even)	Assit. Prof. Dr. Sumyyia Odd)	Dr. Fahd (Even)	Dr. Fareed (Odd)			
23-04-2025 Wednesday	**SGD / DISSECTION**		**ANATOMY (LGIS)**		**PHYSIOLOGY(LGIS)**			Practical & Tutorial Venue & topic mentioned at the end (Referred to table no. 1)	SDL Biochemistry Wilson's Disease
	Extensor compartment & Neurovascular organization of forearm		Histology	Embryology	Stimulus & Response &Type of stimuli. Stages of action potential	Concept of Degeneration and regeneration			
			Connective Tissue-III (Types of CT)	3rd week (Neurulation)					
			Ass. Prof. Dr. Mohtasham (Even)	Prof. Dr. Ayesha/Asso. Prof. Dr. Arsalan (Odd)	Dr. Fareed (Even)	Dr. Fahd (Odd)			
24-04-2025 Thursday	**SGD / DISSECTION**		**ANATOMY (LGIS)**		**BIOCHEMISTRY LGIS**			Practical & Tutorial Venue & topic mentioned at the end (Referred to table no. 1)	SDL Biochemistry Clinical Role of Fluoride, Magnesium & Sulphur , Zinc, Selenium, Iodine, Manganese
	Elbow joint Batches, Teachers & Venue		Embryology	Histology	Fluoride, Magnesium & Sulphur Copper, Zinc, Selenium, Iodine, Manganese	Vitamin D			
			3rd week (Neurulation)	Connective Tissue-III (Types of CT)					
			Prof. Dr. Ayesha/Asso. Prof. Dr. Arsalan (Even)	Ass. Prof. Dr. Mohtasham (Odd)	Dr. Uzma (Even)	Dr. Aneela (Odd)			

Date/ Day	8:00am – 10:00am		10:00am – 11:00am		11:00am – 12:00pm		12:10pm-12:30pm	12:30pm – 2:00pm	Home Assignment
25-04-2025 Friday	**BEHAVIORAL SCIENCES**		**ANATOMY (LGIS)**		**PBL 1 (SESSION – I)**		SDL Anatomy Colle's Fracture/ Smith's Fracture		
	Relevance of ethics in life of a doctor		**Embryology**	**Histology**	PBL Team				
			4th-8th week of development & Early development of CVS	Cartilage					
	Dr. Azeem Rao (Odd)	Dr. Sadia Yasir (Even)	Prof. Dr. Ayesha/Asso. Prof. Dr. Arsalan (Even)	Asso. Prof. Dr. Mohtasham (Odd)					

Date/ Day	8:00am – 10:00am	10:00am – 10:20am	10:20am-11:20am		11:20am-12:10pm		12:10pm-12:30pm	12:30pm – 2:00pm	Home Assignment
26-04-2025 Saturday	**SGD/ DISSECTION**	Break	**ANATOMY (LGIS)**		**PHYSIOLOGY (LGIS)**		Break	Practical & Tutorial Venue & topic mentioned at the end (Referred to table no. 1)	SDL Anatomy Golfer's Elbow & Tennis Elbow **Online SDL Evaluation)**
	Proximal & Distal Radioulnar joints		**Histology**	**Embryology**	Recording & propagation of action potential & factors effecting nerve conduction & hyperpolarized state	Refractory period, types of action potential. Graded potential comparison with action potential			
			Cartilage	4th-8th week of development & Early development of CVS					
			Asso. Prof. Dr. Mohtasham (Even)	Prof. Dr. Ayesha/Asso. Prof. Dr. Arsalan (Odd)	Dr. Fareed (Even)	Dr Shazia (Odd)			

Table No. 1 (Time: 12:20pm – 02:00pm)

Batch Distribution for Practical Skills (all subjects)
CBL / Small Group Discussion (Biochemistry and Physiology)

Sr. No	Batch	Roll No.
1.	**A**	01-70
2.	**B**	71-140
3.	**C**	141-210
4.	**D**	211-280
5.	**E**	281-onwards

Topics for Skill Lab with Venue

- Connective Tissue II (Anatomy Histology Practical) Venue- Histology Laboratory-Dr Kashif
- Xanthoproteic Test, Millon's Test (Biochemistry Practical) Venue- Biochemistry Laboratory
- Determination of Hematocrit (HCT)(Physiology-Practical)

Schedule for Practical

Day	Histology Practical		Biochemistry Practical			Physiology Practical			Physiology SGD		Biochemistry SGD	
	Batch	Teacher Name	Batch	Teacher Name		Batch	Teacher Name		Batch	Teacher Name	Batch	Teacher Name
Monday	**C**	Supervised by HOD	**B**	Dr. Rahat	Supervised by HOD	**E**	Dr. Ali /Dr. Afsheen	Supervised by HOD	**A**	Dr. Sheena	**D**	Dr. Uzma Zafar
Tuesday	**D**		**C**	Dr. Sana Latif		**A**	Dr. Sheena		**B**	Dr. Uzma	**E**	Dr. Rahat
Wednesday	**E**		**D**	Dr. Uzma		**B**	Dr. Uzma		**C**	Dr. Farah	**A**	Dr. Almas
Thursday	**B**		**A**	Dr. Almas		**D**	Dr. Nazia		**E**	Dr. Ali/Dr. Afsheen	**C**	Dr. Sana Latif
Saturday	**A**		**E**	Dr. Romessa		**C**	Dr. Farah		**D**	Dr. Nazia	**B**	Dr. Romessa

Topics for SGDs / CBL with Venue

- Physiology CBL: Paresthesia's paresis (Physiology Lecture Hall 05)
- Biochemistry CBL: Night Blindness (Venue: Lecture Hall No 2)

Table No. 2 Batch Distribution with Venues and Teachers Name for Problem Based Learning (PBL) Sessions

Sr No.	Batches	Roll No	Venue	Teachers	Sr No.	Batches	Roll No	Venue	Teachers
1.	**A1**	(01-35)	Lecture Hall no.05 Physiology	Dr. Sana Latif (Senior Demonstrator Biochemistry)	6.	**C2**	(176-210)	New Lecture Hall Complex Lecture Theater # 03	Dr. Nazia (Demonstrator Physiology)
2.	**A2**	(36-70)	Lecture Hall #.04 (1st Floor Anatomy)	Dr. Farah Ali Shah (Demonstrator of Physiology)	7.	**D1**	(210-245)	New Lecture Hall Complex Lecture Theater # 02	Dr. Jawad (Demonstrator Physiology)
3.	**B1**	(71-105)	Anatomy Museum (First Floor Anatomy)	Dr. Nayab Ramzan (APWMO Biochemistry)	8.	**D2**	(246-280)	New Lecture Hall Complex Lecture Theater # 02	Dr. Kashif Ashraf (Demonstrator Anatomy)
4.	**B2**	(106-140)	Lecture Hall no.03 (First Floor)	Dr. Zeneara Saqib (Senior Demonstrator of Anatomy)	9.	**E1**	(281-315)	Anatomy Museum (First Floor Anatomy)	Dr. Uzma Zafar (APWMO Biochemistry)
5.	**C1**	(141-175)	Anatomy Museum (First Floor Anatomy)	Dr. Farhat (PGT Physiology)	10	**E2**	(315 onwards)	Lecture Hall no.04	Dr. Najam (PGT Physiology)

Table No. 3 Venues for Large Group Interactive Session (LGIS)

Odd Roll Numbers	New Lecture Hall Complex Lecture Theater # 03
Even Roll Number	New Lecture Hall Complex Lecture Theater # 02

Table No. 4 Batch Distribution and Venues for Anatomy Small Group Discussion SGDs / Dissections

Batches	Roll No	Subgroup	Anatomy Teacher	Venue
A	01- 70	A1: Roll No (1 – 17) A2: Roll No (18 – 34) A3: Roll No (35 – 51) A4: Roll No (52 – 70)	Dr. Ali Raza (Senior. Demonstrator)	Anatomy Lecture Hall 03
B	71-140	B1: Roll No (71 – 87) B2: Roll No (88 – 104) B3: Roll No (105 – 121) B4: Roll No (122 – 140)	Dr. Sajjad Hussain (Senior. Demonstrator)	Anatomy Lecture Hall 04
C	141-210	C1: Roll No (141 – 157) C2: Roll No (158 – 174) C3: Roll No (175 – 191) C4: Roll No (192 – 210)	Dr. Tayyaba Qureshi (Assistant Professor)	New Lecture Hall Complex 02
D	211- 280	D1: Roll No (211 – 227) D2: Roll No (228 - 244) D3: Roll No (245 – 261) D4: Roll No (262 – 280)	Dr. Sumyyia Bashir (Assistant Professor)	New Lecture Hall Complex 3
E	281- onwards	E1: Roll No (281 – 297) E2: Roll No (298 – 314) E3: Roll No (315 – 331) E4: Roll No (332 – onwards)	Dr. Zeneara Saqib (Demonstrator)	New Lecture Hall Complex 01 / Anatomy Museum
Supervised by Prof. Dr. Ayesha Yousaf				

Table No. 5 Batch Distribution and Venues for Physiology & Biochemistry Small Group Discussion SGDs

Batches	Roll No	Subgroup	Physiology Teacher	Physiology Venue	Biochemistry Teacher	Biochemistry Venue
A	01-70	A1: Roll No (1 – 14) A2: Roll No (15 – 28) A3: Roll No (29 – 42) A4: Roll No (43 – 56) A5: Roll No (57 – 70)	Dr. Sheena Tariq (APWMO)	Physiology Lecture Hall 5	Dr. Uzma Zafar (APWMO)	Basement Lecture Hall No. 2
B	71-140	B1: Roll No (71 – 84) B2: Roll No (85 – 98) B3: Roll No (99 – 112) B4: Roll No (113 – 126) B5: Roll No (127 – 140)	Dr. Uzma Kiyani (Senior Demonstrator)	Physiology Lecture Hall 5	Dr. Rahat (APWMO)	Basement Lecture Hall No. 2
C	141-210	C1: Roll No (141 – 154) C2: Roll No (155 – 168) C3: Roll No (169 – 182) C4: Roll No (183 – 196) C5: Roll No (197 – 210)	Dr. Farah Shah (Demonstrator)	Physiology Lecture Hall 5	Dr. Almas (APWMO)	Basement Lecture Hall No. 2
D	211-280	D1: Roll No (211 – 224) D2: Roll No (225 – 238) D3: Roll No (239 – 252) D4: Roll No (253 – 266) D5: Roll No (267 – 280)	Dr. Nazia (Demonstrator)	Physiology Lecture Hall 5	Dr. Sana Latif (Senior Demonstrator)	Basement Lecture Hall No. 2
E	281- onwards	E1: Roll No (281 – 294) E2: Roll No (295 – 308) E3: Roll No (309 – 322) E4: Roll No (323 – 336) E5: Roll No (337 – onwards)	Dr. Ali Zain / Dr. Afsheen (P. G Trainee)	Physiology Lecture Hall 5	Dr. Romessa (Demonstrator)	Basement Lecture Hall No. 2
Supervised by Prof. Dr. Samia Sarwar					Supervised by. Dr. Aneela Jamil	

Student Sports Week	**28th April – 03rd May 2025**

Time Table for Musculoskeletal-I Module Third Week
(05-05-2025 to 10-05-2025)

Day & Date	8:00am – 09:00am	09:00am – 10:00am	10:00am – 10:20am	10:20am-11:20am	11:20am-12:10pm	12:10pm-12:30pm	12:30pm – 2:00pm	Home Assignment
05-05-2025 Monday	**RESEARCH CLUB ACTIVITY 3** Manuscript Writing Workshop	**PBL 1 (SESSION-II)** PBL Team	**B r e a k**	**ANATOMY (LGIS)** Histology: Bone I (Cells & types) — Asso. Prof. Dr. Mohtasham (Even) Embryology: Folding of Embryo — Prof. Dr. Ayesha/Asso. Prof. Dr. Arsalan (Odd)	**PHYSIOLOGY (LGIS)** Refractory period, types of action potential. Graded potential comparison with action potential — Dr Shazia (Even) NMJ, Introduction concept of motor unit. Neuro muscular transmission, synthesis & fate of acetylcholine — Prof. Dr. Samia Sarwar/ Dr Aneela (Odd)	**B r e a k**	Practical & Tutorial Venue & topic mentioned at the end (Referred to table no. 1)	SDL Physiology Concept of Degeneration and regeneration
06-05-2025 Tuesday	**PHARMACOLOGY** Drugs used in Myasthenia Gravis	**RESEARCH CLUB ACTIVITY 4** Manuscript Writing Workshop		**ANATOMY (LGIS)** Embryology: Folding of Embryo — Prof. Dr. Ayesha/Asso. Prof. Dr. Arsalan (Even) Histology: Bone I (Cells & types) — Asso. Prof. Dr. Mohtasham (Odd)	**PHYSIOLOGY(LGIS)** NMJ, Introduction concept of motor unit. Neuro muscular transmission, synthesis & fate of acetylcholine — Prof. Dr. Samia Sarwar/ Dr Aneela (Even) Recording & propagation of action potential & factors effecting nerve conduction & Hyperpolarized state — Dr. Fareed (Odd)		Practical & Tutorial Venue & topic mentioned at the end (Referred to table no. 1)	SDL Physiology Nernst Potential & RMP & Action Potential
07-05-2025 Wednesday	**SGD/ DISSECTION** Dissection & Spotting	**JOINT SESSION** Poliomyelitis Anatomy, Physiology, Peads, Family Medicine & Community Meidicine		**ANATOMY (LGIS)** Embryology: Fetal period — Prof. Dr. Ayesha/Asso. Prof. Dr. Arsalan (Even) Histology: Bone II (Ossification) — Asso. Prof. Dr. Mohtasham (Even)	**COMMUNITY MEDICINE** Musculoskeletal Disorders		Practical & Tutorial Venue & topic mentioned at the end (Referred to table no. 1)	SDL Biochemistry Rickets
08-05-2025 Thursday	**SGD/ DISSECTION** Bones of Hand			**ANATOMY (LGIS)** Histology: Bone II (Ossification) — Asso. Prof. Dr. Mohtasham (Even) Embryology: Fetal period — Prof. Dr. Ayesha/Asso. Prof. Dr. Arsalan (Odd)	**PBL 2 (SESSION – I)** Muscle Weakness PBL Team		Practical & Tutorial Venue & topic mentioned at the end (Referred to table no. 1)	SDL Biochemistry Deficiency manifestation of Vit A &

Day & Date	8:00am – 09:00am	09:00am – 10:00am	10:00am – 11:00am	11:00am – 12:00pm	
09-05-2025 Friday	**SGD / DISSECTION** Wrist joint	**BIOCHEMISTRY (LGIS)** Vitamin D — Dr. Aneela (Even) Fluoride, Magnesium & SulphurCopper, Zinc, Selenium, Iodine, Manganese — Dr. Uzma (Odd)	**ANATOMY LGIS** Embryology: Placenta — Prof. Dr. Ayesha/Asso. Prof. Dr. Arsalan (Odd) General Anatomy: Joints 1(types) — Assit. Prof. Dr. Tayyaba (Even)	**PHYSIOLOGY (LGIS)** SDL: Nernst Potential & RMP & Action Potential — Dr Shazia (Even) Drugs acting on NMJ, Myasthenia Gravis, Lambart Eaton Syndrome — Prof. Dr. Samia Sarwar/Dr Aneela (Odd)	SDL Anatomy Avascular Necrosis of Scaphoid Bone

Date/ Day	8:00am – 10:00am	10:00am – 10:20am	10:20am-11:20am	11:20am-12:10pm	12:10pm-12:30pm	12:30pm – 2:00pm	Home Assignment
10-05-2025 Friday	**SGD/ DISSECTION** Dorsum of Hand, Flexor & Extensor Retinacula	**B r e a k**	**ANATOMY LGIS** General Anatomy: Joints I (Types) — Assit. Prof. Dr. Tayyaba (Even) Embryology: Placenta — Prof. Dr. Ayesha/Asso. Prof. Dr. Arsalan (Odd)	**PHYSIOLOGY LGIS** Drugs acting on NMJ, Myasthenia Gravis, Lambart Eaton Syndrome — Prof. Dr. Samia Sarwar /Dr Aneela (Even) SDL: Nernst Potential & RMP & Action Potential — Dr Shazia (Odd)	**B r e a k**	Practical & Tutorial Venue & topic mentioned at the end (Referred to table no. 1)	SDL Anatomy Wrist Dislocation **Mid Module Online Clinical Evaluation**

Table No. 1 (Time: 12:20pm – 02:00pm)

Batch Distribution for Practical Skills (all subjects)
CBL / Small Group Discussion (Biochemistry and Physiology)

Sr. No	Batch	Roll No.
1.	**A**	01-70
2.	**B**	71-140
3.	**C**	141-210
4.	**D**	211-280
5.	**E**	281-onwards

Topics for Skill Lab with Venue

- Cartilage (Anatomy Histology Practical) Venue-Histology Laboratory-Dr Kashif Ashraf
- Tryptophan Test, Sakaguchi's Test (Biochemistry Practical) Venue- Biochemistry Laboratory
- Determination of Erythrocyte Sedimentation Rate (ESR)(Physiology-Practical)

Schedule for Practical

Day	Histology Practical		Biochemistry Practical			Physiology Practical			Physiology SGD		Biochemistry SGD	
	Batch	Teacher Name	Batch	Teacher Name		Batch	Teacher Name		Batch	Teacher Name	Batch	Teacher Name
Monday	**C**	Supervised by HOD	**B**	Dr. Rahat	Supervised by HOD	**E**	Dr. Ali /Dr. Afsheen	Supervised by HOD	**A**	Dr. Sheena	**D**	Dr. Uzma Zafar
Tuesday	**D**		**C**	Dr. Sana Latif		**A**	Dr. Sheena		**B**	Dr. Uzma	**E**	Dr. Rahat
Wednesday	**E**		**D**	Dr. Uzma		**B**	Dr. Uzma		**C**	Dr. Farah	**A**	Dr. Almas
Thursday	**B**		**A**	Dr. Almas		**D**	Dr. Nazia		**E**	Dr. Ali/Dr. Afsheen	**C**	Dr. Sana Latif
Saturday	**A**		**E**	Dr. Romessa		**C**	Dr. Farah		**D**	Dr. Nazia	**B**	Dr. Romessa

Topics for SGDs / CBL with Venue

- Physiology CBL: Insecticide poisoning (Physiology Lecture Hall 05)
- Biochemistry SGD: Minerals (Venue: Lecture Hall No 2)

Table No. 2 Batch Distribution with Venues and Teachers Name for Problem Based Learning (PBL) Sessions

Sr No.	Batches	Roll No	Venue	Teachers	Sr No.	Batches	Roll No	Venue	Teachers
1.	**A1**	(01-35)	Lecture Hall no.05 Physiology	Dr. Sana Latif (Senior Demonstrator Biochemistry)	6.	**C2**	(176-210)	New Lecture Hall Complex Lecture Theater # 03	Dr. Nazia (Demonstrator Physiology)
2.	**A2**	(36-70)	Lecture Hall #.04 (1st Floor Anatomy)	Dr. Farah Ali Shah (Demonstrator of Physiology)	7.	**D1**	(210-245)	New Lecture Hall Complex Lecture Theater # 02	Dr. Jawad (Demonstrator Physiology)
3.	**B1**	(71-105)	Anatomy Museum (First Floor Anatomy)	Dr. Nayab Ramzan (APWMO Biochemistry)	8.	**D2**	(246-280)	New Lecture Hall Complex Lecture Theater # 02	Dr. Kashif Ashraf (Demonstrator Anatomy)
4.	**B2**	(106-140)	Lecture Hall no.03 (First Floor)	Dr. Zeneara Saqib (Senior Demonstrator of Anatomy)	9.	**E1**	(281-315)	Anatomy Museum (First Floor Anatomy)	Dr. Uzma Zafar (APWMO Biochemistry)
5.	**C1**	(141-175)	Anatomy Museum (First Floor Anatomy)	Dr. Farhat (PGT Physiology)	10	**E2**	(315 onwards)	Lecture Hall no.04	Dr. Najam (PGT Physiology)

Table No. 3 Venues for Large Group Interactive Session (LGIS)

Odd Roll Numbers	New Lecture Hall Complex Lecture Theater # 03
Even Roll Number	New Lecture Hall Complex Lecture Theater # 02

Table No. 4 Batch Distribution and Venues for Anatomy Small Group Discussion SGDs / Dissections

Batches	Roll No	Subgroup	Anatomy Teacher	Venue
A	01- 70	A1: Roll No (1 – 17) A2: Roll No (18 – 34) A3: Roll No (35 – 51) A4: Roll No (52 – 70)	Dr. Ali Raza (Senior. Demonstrator)	Anatomy Lecture Hall 03
B	71-140	B1: Roll No (71 – 87) B2: Roll No (88 – 104) B3: Roll No (105 – 121) B4: Roll No (122 – 140)	Dr. Sajjad Hussain (Senior. Demonstrator)	Anatomy Lecture Hall 04
C	141-210	C1: Roll No (141 – 157) C2: Roll No (158 – 174) C3: Roll No (175 – 191) C4: Roll No (192 – 210)	Dr. Tayyaba Qureshi (Assistant Professor)	New Lecture Hall Complex 02
D	211- 280	D1: Roll No (211 – 227) D2: Roll No (228 - 244) D3: Roll No (245 – 261) D4: Roll No (262 – 280)	Dr. Sumyyia Bashir (Assistant Professor)	New Lecture Hall Complex 3
E	281- onwards	E1: Roll No (281 – 297) E2: Roll No (298 – 314) E3: Roll No (315 – 331) E4: Roll No (332 – onwards)	Dr. Zeneara Saqib (Demonstrator)	New Lecture Hall Complex 01 / Anatomy Museum
Supervised by Prof. Dr. Ayesha Yousaf				

Table No. 5 Batch Distribution and Venues for Physiology & Biochemistry Small Group Discussion SGDs

Batches	Roll No	Subgroup	Physiology Teacher	Physiology Venue	Biochemistry Teacher	Biochemistry Venue
A	01-70	A1: Roll No (1 – 14) A2: Roll No (15 – 28) A3: Roll No (29 – 42) A4: Roll No (43 – 56) A5: Roll No (57 – 70)	Dr. Sheena Tariq (APWMO)	Physiology Lecture Hall 5	Dr. Uzma Zafar (APWMO)	Basement Lecture Hall No. 2
B	71-140	B1: Roll No (71 – 84) B2: Roll No (85 – 98) B3: Roll No (99 – 112) B4: Roll No (113 – 126) B5: Roll No (127 – 140)	Dr. Uzma Kiyani (Senior Demonstrator)	Physiology Lecture Hall 5	Dr. Rahat (APWMO)	Basement Lecture Hall No. 2
C	141-210	C1: Roll No (141 – 154) C2: Roll No (155 – 168) C3: Roll No (169 – 182) C4: Roll No (183 – 196) C5: Roll No (197 – 210)	Dr. Farah Shah (Demonstrator)	Physiology Lecture Hall 5	Dr. Almas (APWMO)	Basement Lecture Hall No. 2
D	211-280	D1: Roll No (211 – 224) D2: Roll No (225 – 238) D3: Roll No (239 – 252) D4: Roll No (253 – 266) D5: Roll No (267 – 280)	Dr. Nazia (Demonstrator)	Physiology Lecture Hall 5	Dr. Sana Latif (Senior Demonstrator)	Basement Lecture Hall No. 2
E	281- onwards	E1: Roll No (281 – 294) E2: Roll No (295 – 308) E3: Roll No (309 – 322) E4: Roll No (323 – 336) E5: Roll No (337 – onwards)	Dr. Ali Zain / Dr. Afsheen (P. G Trainee)	Physiology Lecture Hall 5	Dr. Romessa (Demonstrator)	Basement Lecture Hall No. 2
Supervised by Prof. Dr. Samia Sarwar					Supervised by. Dr. Aneela Jamil	

Time Table for Musculoskeletal-I Module Fourth Week
(12-05-2025 to 17-05-2025)

Day & Date	8:00am – 09:00am	09:00am – 10:00am	10:00am – 10:20am	10:20am-11:20am		11:20am-12:10pm		12:10pm-12:30pm	12:30pm – 2:00pm	Home Assignment
12-05-2025 Monday	**DISSECTION**		Break	**BIOCHEMISTRY LGIS**		**PBL 2 (SESSION-II)**		Break	Practical & Tutorial Venue & topic mentioned at the end (Referred to table no. 1)	SDL Physiology Properties of nerve fibers
	Dissection & Spotting			Classification & Structure of Amino Acids Isomerism	Vitamin C, Niacin & Thiamine	PBL Team				
				Dr. Rahat (Even)	Dr. Almas/ Dr Aneela (Odd)					
13-05-2025 Tuesday	**MEDICINE**	**SGD/ DISSECTION**		**ANATOMY LGIS**		**COMMUNITY MEDICINE**			Practical & Tutorial Venue & topic mentioned at the end (Referred to table no. 1)	SDL Physiology Drugs acting on NMJ
	Osteomalacia, rickets Polyarthritis	Cross Sectional Anatomy		Embryology	General Anatomy	Prevention of Accidents				
	Dr. Umer Daraz (Even) / Dr Iqra Ashraf (Odd)			Fetal membranes & multiple pregnancy	Joints II					
				Prof. Dr. Ayesha (Even)	Assit. Prof. Dr. Tayyaba (Odd)	Dr Abdul Qudoos (Odd)	Dr. Maimoona (Even)			
14-05-2025 Wednesday	**SGD / DISSECTION**			**GYNAE & OBS**		**BIOCHEMISTRY (LGIS)**			Practical & Tutorial Venue & topic mentioned at the end (Referred to table no. 1)	SDL Biochemistry Deficiency manifestation of Thiamin
	Palm of Hand & Facial spaces			Bony PELVIS Fetal Skull & Mechanism of Labor		Vitamin C, Niacin & Thiamine	Classification & Structure of Amino Acids Isomerism			
				Dr. Saima Shoaib (Even)	Dr Sadia Bano (Odd)	Dr. Almas/Dr Aneela (Even)	Dr. Rahat (Odd)			
15-05-2025 Thursday	**SGD/ DISSECTION**			**SURGERY**		**ANATOMY LGIS**			Practical & Tutorial Venue & topic mentioned at the end (Referred to table no. 1)	SDL Biochemistry Deficiency manifestation of Niacin
	Neurovascular Organization of Hand			Tennis elbow, Fracture of Olecranon, radius, ulna		General Anatomy	Embryology			
						Joints II	Fetal membranes & Multiple Pregnancy			
				Dr. Junaid Khan	Dr. Rana Adnan	Prof. Dr. Ayesha (Odd)	Assit. Prof. Dr. Tayyaba (Even)			
16-05-2025 Friday	Early Clinical Exposure (ECE)									SDL Anatomy Carpal Tunnel Syndrome
17-05-2025 Saturday	**SGD / DISSECTION**		Break	**ANATOMY LGIS**		**SURGERY**		Break	Practical & Tutorial Venue & topic mentioned at the end (Referred to table no. 1)	SDL Anatomy Dupuytren's Contracture End of Module Online Clinical Evaluation
	Cutaneous Innervation & Dermatomes of upper limb, Force & weight transmission			Embryology	Embryology	Shoulder Dislocation				
				Teratogenesis	Teratogenesis					
				Prof. Dr. Ayesha (Even)	Prof. Dr. Saima (Odd)	Dr. Asad Amir (Even)	Dr. Hira (Odd)			

Table No. 1 (Time: 12:20pm – 02:00pm)

Batch Distribution for Practical Skills (all subjects)
CBL / Small Group Discussion (Biochemistry and Physiology)

Sr. No	Batch	Roll No.
1.	**A**	01-70
2.	**B**	71-140
3.	**C**	141-210
4.	**D**	211-280
5.	**E**	281-onwards

Topics for Skill Lab with Venue

- Bone (Anatomy Histology Practical) Venue-Histology Laboratory-Dr. Kashif
- Calcium &Ascorbic Acid Estimation (Biochemistry Practical) Venue- Biochemistry Laboratory
- Determination of Differential leukocyte Count (DLC)(Physiology-Practical)

Schedule for Practical

Day	Histology Practical		Supervised by HOD	Biochemistry Practical		Supervised by HOD	Physiology Practical		Supervised by HOD	Physiology SGD		Biochemistry SGD	
	Batch	Teacher Name		Batch	Teacher Name		Batch	Teacher Name		Batch	Teacher Name	Batch	Teacher Name
Monday	**C**			**B**	Dr. Rahat		**E**	Dr. Ali /Dr. Afsheen		**A**	Dr. Sheena	**D**	Dr. Uzma Zafar
Tuesday	**D**			**C**	Dr. Sana Latif		**A**	Dr. Sheena		**B**	Dr. Uzma	**E**	Dr. Rahat
Wednesday	**E**			**D**	Dr. Uzma		**B**	Dr. Uzma		**C**	Dr. Farah	**A**	Dr. Almas
Thursday	**B**			**A**	Dr. Almas		**D**	Dr. Nazia		**E**	Dr. Ali/Dr. Afsheen	**C**	Dr. Sana Latif
Saturday	**A**			**E**	Dr. Romessa		**C**	Dr. Farah		**D**	Dr. Nazia	**B**	Dr. Romessa

Topics for SGDs / CBL with Venue

- Physiology: NMJ, Transmission across NMJ, Diseases of NMJ (Physiology Lecture Hall 05)
- Biochemistry CBL: Rickets (Venue: Lecture Hall No 2)

Table No. 2 Batch Distribution with Venues and Teachers Name for Problem Based Learning (PBL) Sessions

Sr No.	Batches	Roll No	Venue	Teachers	Sr No.	Batches	Roll No	Venue	Teachers
1.	**A1**	(01-35)	Lecture Hall no.05 Physiology	Dr. Sana Latif (Senior Demonstrator Biochemistry)	6.	**C2**	(176-210)	New Lecture Hall Complex Lecture Theater # 03	Dr. Nazia (Demonstrator Physiology)
2.	**A2**	(36-70)	Lecture Hall #.04 (1st Floor Anatomy)	Dr. Farah Ali Shah (Demonstrator of Physiology)	7.	**D1**	(210-245)	New Lecture Hall Complex Lecture Theater # 02	Dr. Jawad (Demonstrator Physiology)
3.	**B1**	(71-105)	Anatomy Museum (First Floor Anatomy)	Dr. Nayab Ramzan (APWMO Biochemistry)	8.	**D2**	(246-280)	New Lecture Hall Complex Lecture Theater # 02	Dr. Kashif Ashraf (Demonstrator Anatomy)
4.	**B2**	(106-140)	Lecture Hall no.03 (First Floor)	Dr. Zeneara Saqib (Senior Demonstrator of Anatomy)	9.	**E1**	(281-315)	Anatomy Museum (First Floor Anatomy)	Dr. Uzma Zafar (APWMO Biochemistry)
5.	**C1**	(141-175)	Anatomy Museum (First Floor Anatomy)	Dr. Farhat (PGT Physiology)	10	**E2**	(315 onwards)	Lecture Hall no.04	Dr. Najam (PGT Physiology)

Table No. 3 Venues for Large Group Interactive Session (LGIS)

Odd Roll Numbers	New Lecture Hall Complex Lecture Theater # 03
Even Roll Number	New Lecture Hall Complex Lecture Theater # 02

Table No. 4 Batch Distribution and Venues for Anatomy Small Group Discussion SGDs / Dissections

Batches	Roll No	Subgroup	Anatomy Teacher	Venue
A	01- 70	A1: Roll No (1 – 17) A2: Roll No (18 – 34) A3: Roll No (35 – 51) A4: Roll No (52 – 70)	Dr. Ali Raza (Senior. Demonstrator)	Anatomy Lecture Hall 03
B	71-140	B1: Roll No (71 – 87) B2: Roll No (88 – 104) B3: Roll No (105 – 121) B4: Roll No (122 – 140)	Dr. Sajjad Hussain (Senior. Demonstrator)	Anatomy Lecture Hall 04
C	141-210	C1: Roll No (141 – 157) C2: Roll No (158 – 174) C3: Roll No (175 – 191) C4: Roll No (192 – 210)	Dr. Tayyaba Qureshi (Assistant Professor)	New Lecture Hall Complex 02
D	211- 280	D1: Roll No (211 – 227) D2: Roll No (228 - 244) D3: Roll No (245 – 261) D4: Roll No (262 – 280)	Dr. Sumyyia Bashir (Assistant Professor)	New Lecture Hall Complex 3
E	281- onwards	E1: Roll No (281 – 297) E2: Roll No (298 – 314) E3: Roll No (315 – 331) E4: Roll No (332 – onwards)	Dr. Zeneara Saqib (Demonstrator)	New Lecture Hall Complex 01 / Anatomy Museum
Supervised by Prof. Dr. Ayesha Yousaf				

Table No. 5 Batch Distribution and Venues for Physiology & Biochemistry Small Group Discussion SGDs

Batches	Roll No	Subgroup	Physiology Teacher	Physiology Venue	Biochemistry Teacher	Biochemistry Venue
A	01-70	A1: Roll No (1 – 14) A2: Roll No (15 – 28) A3: Roll No (29 – 42) A4: Roll No (43 – 56) A5: Roll No (57 – 70)	Dr. Sheena Tariq (APWMO)	Physiology Lecture Hall 5	Dr. Uzma Zafar (APWMO)	Basement Lecture Hall No. 2
B	71-140	B1: Roll No (71 – 84) B2: Roll No (85 – 98) B3: Roll No (99 – 112) B4: Roll No (113 – 126) B5: Roll No (127 – 140)	Dr. Uzma Kiyani (Senior Demonstrator)	Physiology Lecture Hall 5	Dr. Rahat (APWMO)	Basement Lecture Hall No. 2
C	141-210	C1: Roll No (141 – 154) C2: Roll No (155 – 168) C3: Roll No (169 – 182) C4: Roll No (183 – 196) C5: Roll No (197 – 210)	Dr. Farah Shah (Demonstrator)	Physiology Lecture Hall 5	Dr. Almas (APWMO)	Basement Lecture Hall No. 2
D	211-280	D1: Roll No (211 – 224) D2: Roll No (225 – 238) D3: Roll No (239 – 252) D4: Roll No (253 – 266) D5: Roll No (267 – 280)	Dr. Nazia (Demonstrator)	Physiology Lecture Hall 5	Dr. Sana Latif (Senior Demonstrator)	Basement Lecture Hall No. 2
E	281- onwards	E1: Roll No (281 – 294) E2: Roll No (295 – 308) E3: Roll No (309 – 322) E4: Roll No (323 – 336) E5: Roll No (337 – onwards)	Dr. Ali Zain / Dr. Afsheen (P. G Trainee)	Physiology Lecture Hall 5	Dr. Romessa (Demonstrator)	Basement Lecture Hall No. 2
Supervised by Prof. Dr. Samia Sarwar					Supervised by. Dr. Aneela Jamil	

Tentative Schedule for LMS Based Weekly Online Assessments for First Year MBBS (MSK-I Module - I) Batch 52

The Online Assessment for MSK-I Module for Second Year MBBS will be as per following schedule:

Class	Module	Day & Date	Time of Assessment	Focal person	Department Responsible
Second Year MBBS	GIT Module - I	Monday 21st March, 2025	7:00 pm - 7:30pm	Prof. Dr. Ayesha Yousaf	Anatomy
		Tuesday 22nd March, 2025	7:00 pm - 7:30pm	Prof. Dr. Samia Sarwar	Physiology
		Wednesday 23rd March, 2025	7:00 pm - 7:30pm	Dr. Aneela Jamil	Biochemistry
		Monday 05th March, 2025	7:00 pm- 7:30pm	Prof. Dr. Ayesha Yousaf	Anatomy
		Tuesday 06th March, 2025	7:00 pm- 7:30pm	Prof. Dr. Samia Sarwar	Physiology
		Wednesday 07th March, 2025	7:00 pm - 7:30pm	Dr. Aneela Jamil	Biochemistry

*Note: All dates are subject to change.

Time Table for Musculoskeletal-I Module Fifth Week

(19-05-2025 to 28-05-2025)

Date & Day	Tentative Schedule
19-05-2025 Monday	Assessment Week
20-05-2025 Tuesday	
21-05-2025 Wednesday	
22-05-2025 Thursday	
23-05-2025 Friday	
24-05-2025 Saturday	
26-05-2025 Monday	
27-05-2025 Tuesday	
28-05-2025 Wednesday	

***Note: All dates are subject to change.**

SECTION VII

Table of Specification (TOS) For MSK - I Module Examination for First Year MBBS

Domains: C-Core Subject (70%) Levels C1-C2, HV- Horizontal & Vertical Integration (20%) Levels C2-C3, S- Spiral Integration (10%) Levels C2-C3

End of Module Assessment	Subject	Theory (Cognitive) Assessment																			Practical (Skill & Attitude) Assessment												
		MCQs					EMQs			SAQs					SEQs				Marks	Total Marks Theory	Total Time	AV OSPE					Time	AED Reflective Writing	OSVE			Total Practical Marks	Grand Total	Total Time of Module Assessment
		C	HV	S	Total	Marks	C	Total	Marks	C	HV	S	Total	Marks	C	HV	S	Total				C	HV	S	Total	Marks			Viva	Copy	Total			
First Module	Anatomy	19	4	2	25	25	1	1	5	3	1	1	5	25	3	1	1	5	45	100	2 HRS	7	2	1	10	50	50 min	15 min	45	5	50	100	200	6 HRS
	Physiology	19	4	2	25	25	1	1	5	3	1	1	5	25	3	1	1	5	45	100	2 HRS	7	2	1	10	50	50 min	15 min	45	5	50	100	200	6 HRS
	Biochemistry	19	4	2	25	25	1	1	5	3	1	1	5	25	3	1	1	5	45	100	2 HRS	7	2	1	10	50	50 min	15 min	45	5	50	100	200	6 HRS
Formative- Weekly LMS Based Assessment of 30 MCQs (10 MCQs per Subject)																																	

End of Module Assessment	Subject	Theory (Cognitive) Assessment																			Practical (Skill & Attitude) Assessment												
		MCQs					EMQs			SAQs					SEQs				Marks	Total Marks Theory	Total Time	AV OSPE					Time	AED Reflective Writing	OSVE			Total Practical Marks	Grand Total	Total Time of Module Assessment
		C	HV	S	Total	Marks	C	Total	Marks	C	HV	S	Total	Marks	C	HV	S	Total				C	HV	S	Total	Marks			Viva	Copy	Total			
Second Module	Anatomy	19	4	2	25	25	1	1	5	3	1	1	5	25	3	1	1	5	45	100	2 HRS	7	2	1	10	50	50 min	15 min	45	5	50	100	200	6 HRS
	Physiology	19	4	2	25	25	1	1	5	3	1	1	5	25	3	1	1	5	45	100	2 HRS	7	2	1	10	50	50 min	15 min	45	5	50	100	200	6 HRS
	Biochemistry	19	4	2	25	25	1	1	5	3	1	1	5	25	3	1	1	5	45	100	2 HRS	7	2	1	10	50	50 min	15 min	45	5	50	100	200	6 HRS
Formative- Weekly LMS Based Assessmen tof 30 MCQs (10 MCQs per Subject)																																	

Block	Subjects	LMS Based Assessment					OSPE						Grand Total	Total Block Time
		MCQs					LabOSPE	IOSPE	COSPE	Total	Marks	Time		
		C	HV	S	Total	Time	C	HV	S					
BLOCK	Anatomy	21	6	3	30	30 min	14	4	2	20	60	6 HRS	90	10 HRS
	Physiology	21	6	3	30	30 min	14	4	2	20	60	6 HRS	90	10 HRS
	Biochemistry	21	6	3	30	30 min	14	4	2	20	60	6 HRS	90	10 HRS

50% Questions/OSPE Stations/Viva Stations will be from Foundation Module and 50% Questions will be from MSK-1 Module

For Each assessment student will have to individually pass Theory and Practical components

Weekly LMS Assessment			
Subjects	Anatomy	Physiology	Biochemist
No of MCQs*	30	30	30
Marks/MCQ	30	30	30
*MCQ=1 Mark each, 1 min each			

Marks per Item

MCQ=1	EMQ= 5	SAQ= 5	SEQ= 9	AVOSPE= 5		OSPE= 3

OSPE Time=1 Round of 40 Students =80 min

3 Round of 40 Students =240 min

OSVE=Time per student=5mins

Annexure I

Templates for Theory Paper

- **MCQ, SEQ Paper, & EMQ**

Templates for AV OSPE

Templates for Structured Viva

Rawalpindi Medical University Rawalpindi
Department of Anatomy, Physiology & Biochemistry
MCQs & EMQ Paper for _____ Module, First Year MBBS Batch 52
Date: 00-00-0000

Total Marks: 30 (MCQs: 25, EMQ: 5) Roll No. _____
Total Time: 30 Minutes Name. _____
Each MCQ carries 1 mark and EMQ carries 5 marks

Encircle the single best response

Q.#	Integrated & Clinically Oriented Assessment of the Subject Anatomy, Physiology & Biochemistry Section A: Core Knowledge of Anatomy / Physiology / Biochemistry (70%)	Level of Cognition
1.	Question …… a. …… b. …… c. …… d. …… e. …… USMLE: Type Question Reference: Ganong 25th Edition Page No. 101	C1
	Section – B: Integrations (30%)	
	Horizontal Integration Anatomy / Physiology / Biochemistry (5%)	
2.	**Horizontal Integration with Anatomy (2.5%)** Questions …… a. …….. b. …….. c. …….. d. …….. e. …….. USMLE: Type Question Reference: Ganong 25th Edition Page No. 101	C1
	Vertical Integration with Medicine / Surgery / Gynae Obs etc (15%)	
3.	Question …… a. …… b. …… c. …… d. …… e. ……	C3

	USMLE: Type Question Reference: Ganong 25th Edition Page No. 101	
Spiral Integration (10%)		
Medical Bioethics		
4.	Question …… a. ……. b. ……. c. ……. d. ……. e. ……. USMLE: Type Question Reference: Ganong 25th Edition Page No. 101	C2
Family Medicine		
5.	Question …… a. ……. b. ……. c. ……. d. ……. e. ……. USMLE: Type Question Reference: Ganong 25th Edition Page No. 101	

Rawalpindi Medical University Rawalpindi
Department of Anatomy, Physiology & Biochemistry
SEQ & SAQ Paper for _____ Module, _____ Year MBBS Batch _____
Date: 00-00-0000

Total Marks: 70
Each SAQ carries 5 marks
Each SEQ carries 9 marks

Time allowed: 1 hour & 30 minutes
Each SAQ: 5 minutes, SEQ: 10 minutes

Attempt all Questions

Integrated & Clinically Oriented Assessment of the Subject of Anatomy, Physiology & Biochemistry					
Domain		**Percentage**			
• **Core Knowledge (CK) of Anatomy/Physiology Biochemistry**		**(70%)**			
• **Integration**		**(30%)**			
○ **Horizontal Integration (HI)**		**(05%)**			
○ **Vertical Integration (VI)**		**(15%)**			
○ **Spiral Integration (SI)**		**(10%)**			
Q.#	**Construct your Answers according to the given Scenarios and Questions**	**Domain**	**Marks**	**% Weightage**	**Level of Cognition**
Short Answer Questions (SAQs) Total Marks: 25 (Each SAQ carries marks)					
SAQ 1	A 55 years Male, known case of Coronary Artery Disease, presented to…… …….. …….. ……..	CK & VI	……..	…….	……
	a. ……. …….	CK	2	8%	C2
	b. ……. …….	CK	2	12%	C2
	c. ……. ……	CK	2	8%	C2

	d. …… ……	CK	2	12%	C2
	e. …… …… USMLE Question. References: Part a: Guyton & Hall 14th Edition page # 114 Part b: Guyton & Hall 14th Edition Page # 116	CK	1	8%	C2

Q.#	**Construct your Answers according to the given Scenarios and Questions**	**Domain**	**Marks**	**% Weightage**	**Level of Cognition**
Short Essay Question (SEQs) Total Marks: 45					
SEQ 1	A 55 years Male, known case of Coronary Artery Disease, presented to…… …….. …….. ……..	CK & VI	……..	…….	……
	a. …… …….	HI with Anatomy	2	6.66%	C2
	b. …… …….	CK	3	6.66%	C2
	c. …… …….	CK	2	6.66%	C2
	d. …… ……	CK	1	6.66%	C2
	e. …… …… USMLE Style Question. References: • Part a: Guyton & Hall 14th Edition page # 101 • Part b: Guyton & Hall 14th Edition Page # 103 • Part c: Guyton & Hall 14th Edition Page # 103	CK	1	6.66%	C2

Rawalpindi Medical University Rawalpindi
Department of Anatomy / Physiology / Biochemistry
Clinically Oriented Audio Visal Objective Structured Practical Examination (OSPE)
_____ Module 2025

_____ Year MBBS (Batch _____)

Day: _____

Date: _____

10 AV OSPE Slides

Time Allowed: 50 minutes

05 minutes for each slide

Chairperson
Department of _____
Rawalpindi Medical University, Rawalpindi

Additional Director Assessment
Rawalpindi Medical University
Rawalpindi

Director DME
Rawalpindi Medical University
Rawalpindi

Vice Chancellor
Rawalpindi Medical University
Rawalpindi

Slide 1

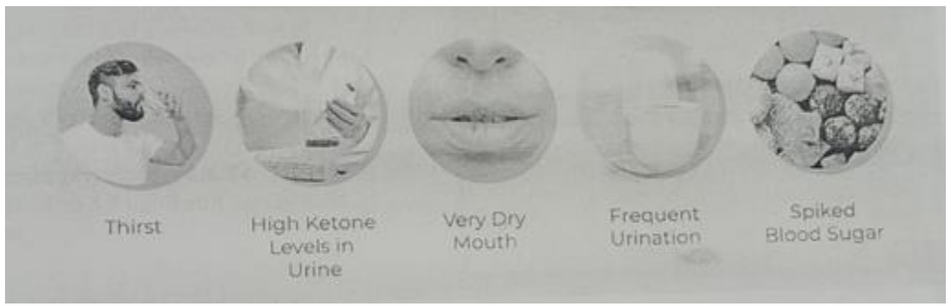
Core Knowledge with Horizontal / Vertical / Spiral Integration

Topic:

Teaching Strategy:

Requirements: Answer sheet, Pen

Objective: _____



1. ……. (01)
2. ……. (01)
3. ……. (01)
4. ……. (01)
5. ……. (01)

Slide 1

Key for Examiner

1. ……
2. …….
3. …….
4. ……..
5. ……..

Department of Anatomy

MSK-I Module (Structured Viva)

Date: Time: 8:00-2:00pm Roll no: 181 onwards

Roll no.	Osteology of upper limb (radius, ulna,bones of hand) and clinicals (10)	Arthrology of upper limb (shoulder, elbow,radioulnar and small joints of hand) with clinicals (05)	Flexor and extensor compartments of arm with clinicals (C1-C3) (10)	Flexor and extensor compartments of forearm with clinicals (C1-C3) (05)	Palm and dorsum of hand with retinuclae and clinicals (C1-C3) (5)	Surface marking (skill) (05)	Soft tissue spotting (skill) (05)	Gross sketch copy (skill) (02)	Professionalism (PCD) (03)	Total marks (50)

Examiner _____

Sign _____

Stamp _____

***Objective Structured Practical Examination (OSPE) will be held in end of block assessment.**

Department of Physiology

MSK-I Module (Structured Viva)

MODULE: _____ **DATE:** _____ **TEACHER NAME:** _____ **SIGNATURE**_____

Sr. No.	Roll No.	Students Name	Definition/ Enlist/Enumerate Q=1 C1 (5Marks)	Physiological/ Pathophysiological Mechanism Q=2 C2 (8 Marks)	Related Diseases/ Diagnostic Parameters/ Management / Treatment Guidelines Q=3 C3 (6 Marks)	Additional Domains of knowledge to be Assessed • Family Medicine /Preventive Medicine • Artificial Intelligence) • Counseling • Prevention • Social Impact • Psychosocial impact • Community Implication • Prevalence / algorithms C1/C2/C3 (2 Marks)	Professionalism & Behavior Components; • Appropriate dressing & white coat • College ID cardwith picture • Behavior • Level of Confidence/ Non verbal Body language • Communication Skills • Language of Communication • Volume of voice • Clarity & fluency of speech • Understanding of questions • Prioritizing the answers A3 (4 Marks)	Total marks obtained out of 25

***Objective Structured Practical Examination (OSPE) will be held in end of block assessment.**

Department of Biochemistry

MSK-I Module (Structured Viva)

Date: Time: Teacher's Name

Roll No.	Classification/ Definition/ Enumerate **(C1)** **(05 Marks)**	Metabolic role/ Mechanism of action/ Physiological mechanism **(C2)** **(08 Marks)**	Related clinical disorders/ Pathogenesis **(C3)** **(06 Marks)**	Additional domains of Knowledge to be assessed Family Medicine, Artificial Intelligence, Ethics and Research **(C1, C2, C3)** **(02 Marks)**	Professionalism & Behavior **(A3)** **(04 Marks)**	Total marks **(25)**

***Objective Structured Practical Examination (OSPE) will be held in end of block assessment.**

Rawalpindi Medical University
1st Year MBBS Model MCQS (USMLE Format)

1. 30-year-old Female secretary presents with wrist pain and a sensation of numbness and burning in her palm and the first, second, and third fingers of her right hand. The pain worsens at night and is relieved by loose shaking of the hand. There is sensory loss in the same fingers. Exam reveals a positive Tinel's sign. What could be the likely diagnosis? A) Carpel Tunnel syndrome B) Cubital Tunnel Syndrome C) Saturday night palsy D) Pronator syndrome E) Klumpke's paralysis	Anatomy
2. A 35-year-old lady presented with sudden onset of extreme muscle weakness. She could not talk or see. After administration of a drug called neostigmine, her symptoms improved because the drug a. Activates acetylcholine: A) Activates acetylcholine esterase permanently B) Activates acetylcholine temporarily C) Inhibits acetylcholine permanently: D) Inhibits acetylcholine esterase temporarily E) Releases acetylcholine at the nerve termina	Physiology
3. A 60-year-old male presents to the clinic with complaints of easy bruising and prolonged bleeding after minor cuts. He reports a recent history of increased bleeding during his dental procedure and noticed excessive bruising on his arms after a fall. Upon examination, his medical history reveals that he has been on long-term anticoagulant therapy for atrial fibrillation. Blood tests show a prolonged prothrombin time (PT). Which of the following vitamins is most likely playing a critical role in this patient's blood clotting ability? A) Riboflavin B) Vitamin C C) Pyridoxine D) Folic acid E) Vitamin K	Biochemistry

Rawalpindi Medical University
1st Year MBBS Model SEQs & SAQs (USMLE Format)

Q1. A 12-year-old male football player presented to the emergency department with a painful right elbow after a tackle during a game. He reported that he landed on his right arm and felt a sudden, sharp pain in his elbow. He was diagnosed with a fracture of the medial epicondyle of the humerus. 1. Which nerve and artery is affected in this case? (1) 2. Enlist the muscles supplied by this nerve. (1) 3. What would be the position of hand in this case? (1) 4. What is the most common complication of a medial epicondyle fracture in children? (1) 5. What would be an appropriate management option for a displaced medial epicondyle fracture? (1)	Anatomy
Q2. A 35-year-old lady presented in emergency department with sudden onset of shortness of breath, dropping of eyelids and slurring of speech. Her serum auto-antibody titer was much raised. These antibodies were directed against ligand- gated-channels at the neuromuscular junction. The symptoms reversed after the administration of a drug prescribed by the duty doctor. 1. Name the drug. Give its mechanism of action. (1) 2. Name the disorder she is suffering from. (1) 3. What is the pathophysiological basis of this disorder? (3) 4. What other common symptom is associated with Myasthenia Gravis that may help in diagnosis? 5. What is the most commonly affected muscle group in Myasthenia Gravis?	Physiology
Q3. A 40-year-old woman with minimal sunlight exposure, a poor diet, and symptoms of fatigue, bone pain, muscle weakness, and low light vision difficulty presents to the clinic. Blood tests reveal low serum calcium and low vitamin D levels. 1. What is the most likely diagnosis? 2. What is the biological function of Vitamin D? 3. What is the appropriate treatment for Vitamin D deficiency? 4. What is the role of Vitamin A in the visual cycle? 5. What is the most likely cause of her night blindness?	Biochemistry

Sample EMQ

A 60-year-old man presents to the clinic with complaints of progressive weakness in his legs over the past six months. He reports difficulty climbing stairs and standing from a seated position. On examination, there is noticeable wasting (atrophy) of the muscles in his thighs and calves bilaterally. Neurological examination reveals normal reflexes and sensation. He denies any recent trauma or prolonged immobilization.

Match the following types and causes of muscle atrophy with their corresponding descriptions:

Types and Causes of Muscle Atrophy:

A. Disuse atrophy
B. Neurogenic atrophy
C. Cachexia
D. Sarcopenia
E. Endocrine-related atrophy
F. Denervation atrophy
G. Malnutrition-related atrophy

Descriptions:

Atrophy due to reduced physical activity or immobilization, leading to loss of muscle mass and strength.

Muscle wasting secondary to damage or disease affecting the nerves that supply the muscles.

Severe muscle wasting associated with chronic illness such as cancer, characterized by involuntary weight loss and systemic inflammation.

Age-related loss of muscle mass and strength, often seen in elderly individuals.

Muscle wasting due to hormonal imbalances or deficiencies affecting muscle protein synthesis.

Atrophy resulting from inadequate intake of essential nutrients, leading to muscle weakness and wasting.

Matching:

Type A:
Type B:
Type C:
Type D:
Type E:
Type F:
Type G:

Rawalpindi Medical University
1st Year MBBS Model AV OSPE

Slide 1 / Video

Core Knowledge with Horizontal / Vertical / Spiral Integration

Topic: Dinner Fork Deformity

Teaching Strategy: Small Group Discussion

Requirements: Answer sheet, Pen

Objective: To Assess the Knowledge of Students Regarding Injuries of Upper Limb

1. Name the clinical condition shown in video / slide? (01)
2. What is the primary cause of this clinical condition? (01)
3. Which muscles are most commonly affected? (01)
4. Discuss the radiological findings seen in this condition? (01)
5. What are the management options for this patient? (01)

Rawalpindi Medical University
1st Year MBBS OSPE (Block-I)

Observed Station ___

Marks: 05 Time Allowed: 03 Minutes

Subject: Biochemistry
Topic assessed: Plasma Protein
Requirements: Urine sample from the patient, Burette, Dilute acetic acid solution, Ethanol (95%), Test tube and rack Pipette White paper for background contrast
Objective: To Perform Burette Test

For Candidate:	**Learning domain**	**Marks**
You are in a clinical laboratory setting, and a 45-year-old female patient has been admitted with suspected nephrotic syndrome. The attending physician has requested a quick screening test to check for the presence of albumin in her urine. Perform the Burette Test on a urine sample to detect albumin.	**Psychomotor (C1)**	**5 Marks**

Key Station ____

Requirements: Urine sample from the patient, Burette, Dilute acetic acid solution, Ethanol (95%), Test tube and rack Pipette White paper for background contrast

Q1	Answer	Marks
1	Transfer 5 mL of the urine sample into a clean test tube.	1
2	Add 2-3 drops of dilute acetic acid to acidify the sample.	1
3	Slowly add ethanol (95%) dropwise along the side of the test tube.	1
4	Observe the interface for the formation of a milky white precipitate.	1
5	Interpret a positive result as the presence of albumin if precipitate forms.	1