



RMU – 12

Integrated Modular

MBBS Curriculum 2026

Isolation to **Beyond Boundaries**

Study Guide

Musculoskeletal Module-I

Department of Medical Education

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First Year MBBS

	Rawalpindi Medical University			
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SECTION – I

RMU – 12 Integrated Modular MBBS Curriculum 2026

Isolation to *Beyond Boundaries*

Preamble

Medical education is undergoing a fundamental transformation globally, shifting from discipline-based, fragmented teaching toward integrated, competency-based, and clinically oriented learning systems that prepare graduates for real-world healthcare practice. In response to these evolving educational paradigms, national regulatory expectations, and the healthcare needs of society, Rawalpindi Medical University has adopted Clinically Oriented Integrated Modular RMU 12 MBBS Curriculum the envisioned under the guiding philosophy of “Isolation to Beyond Boundaries.”. This curriculum represents a structured, longitudinal, and outcome-driven educational continuum, progressing from foundational sciences to advanced clinical practice with a fully embedded internship. It is designed to ensure the gradual and coherent development of knowledge, clinical skills, professional attitudes, and Entrustable Professional Activities (EPAs), enabling graduates to emerge as practice-ready, safe, and competent medical professionals.

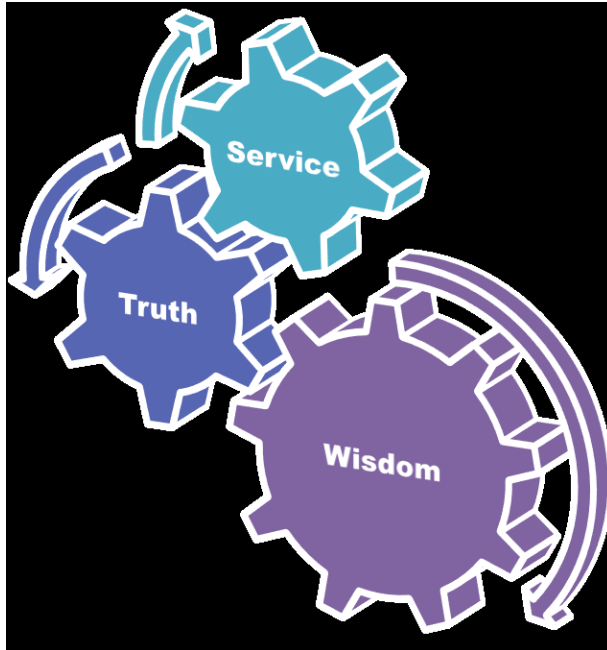
The Clinically Oriented Integrated Modular Curriculum transcends traditional disciplinary silos by promoting horizontal and vertical integration across basic, para-clinical, and clinical sciences. Learning experiences are contextualized around clinical problems and patient-centered care, fostering early clinical exposure, spiral learning, and progressive responsibility. This approach aligns with contemporary integration models, workplace-based assessment strategies, and competency-based medical education principles.

Anchored in national standards and international best practices, the curriculum ensures alignment with PM&DC, WFME and HEC requirements, while addressing local healthcare priorities. By embedding internship within the undergraduate framework and mapping outcomes to clearly defined competencies and Entrustable professional activities (EPAs), the curriculum ensures continuity, accountability, and seamless transition from undergraduate training to independent clinical practice.

Through this clinically oriented and integrated approach, Rawalpindi Medical University aims to produce graduates who are not only clinically proficient but also ethical, reflective, socially accountable, and equipped for lifelong learning moving decisively from isolated learning to integrated, boundary-transcending medical education.

University Moto, Vision, Values & Goals

RMU – 12



Vision and Values

Highly recognized and accredited center of excellence in Medical Education, using evidence-based training techniques for the development of highly competent health professionals, practice-ready for contemporary healthcare, who are critical thinkers, experiential self-directed lifelong learners, and socially accountable.

Mission Statement

To deliver evidence-based, research oriented, and clinically integrated health professional education that produces practice-ready graduates capable of providing safe, effective, patient-centered care, while upholding the values of mutual respect, ethical medical practice, professionalism, and social accountability.

Goals of the Undergraduate Integrated Modular Curriculum

The RMU-12 Model transforms medical education from isolated knowledge acquisition to embedded clinical practice, producing competent, ethical, and practice-ready physicians.

The RMU-12 Undergraduate Medical Program is 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.

RMU – 12 Integrated Modular MBBS Curriculum 2026

Isolation to Beyond Boundaries

Competency Framework

Competency
PMDC



References

- Harden RM. The integration ladder: a tool for curriculum planning and evaluation. *Medical education*. 2000 Jul 1;34(7).
- Ten Cate O. Nuts and bolts of entrustable professional activities. *Journal of graduate medical education*. 2013 Mar 1;5(1):157-8.
- Pakistan Medical & Dental Council Guidelines for Undergraduate Medical Education (MBBS) Curriculum – 2024

Figure 1

RMU – 12 Structured Framework of Integrated Modular MBBS Curriculum 2026
Isolation to Beyond Boundaries

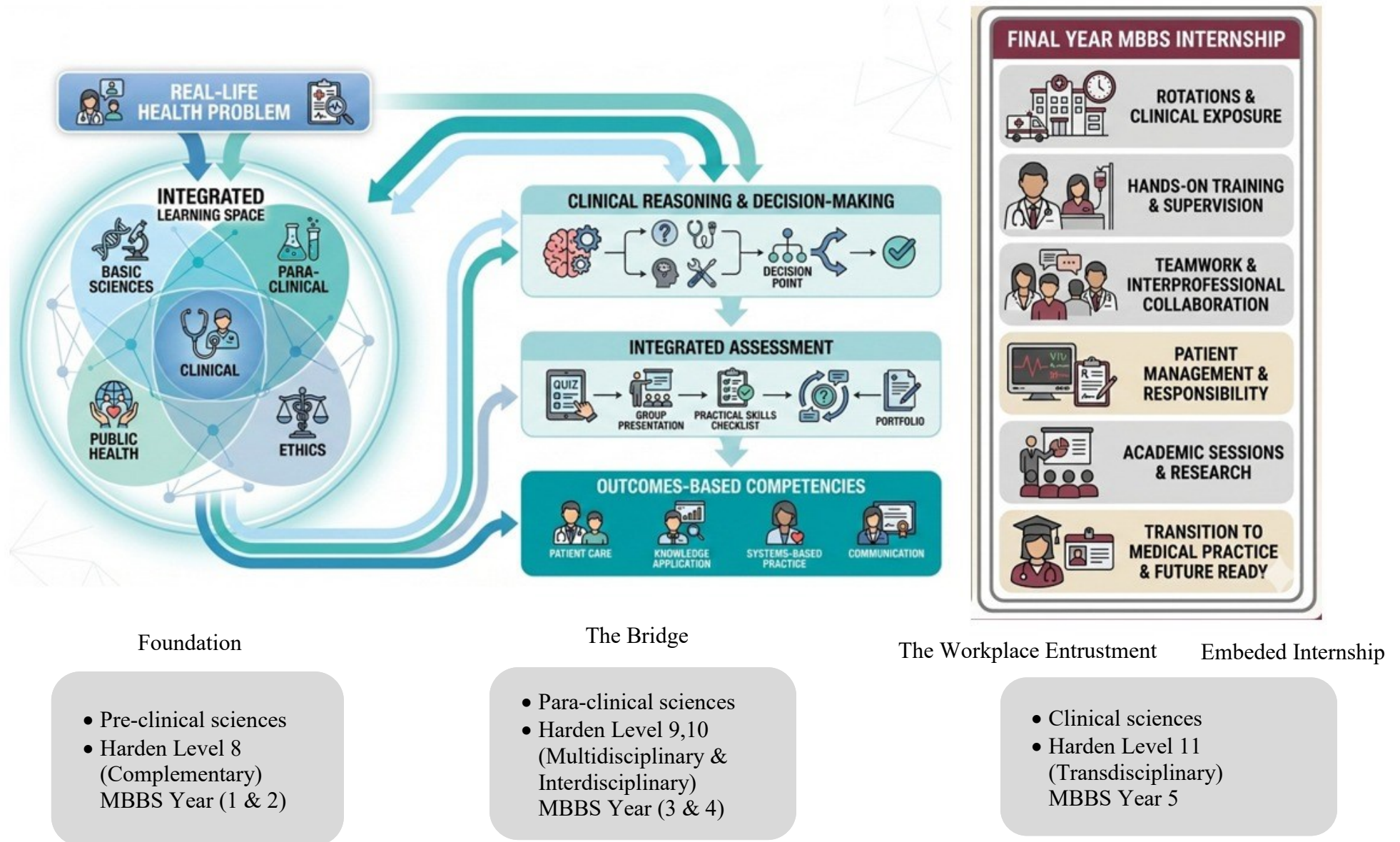


Figure 2

RMU – 12 Structured Framework of Integrated Modular MBBS Curriculum 2026
Isolation to Beyond Boundaries

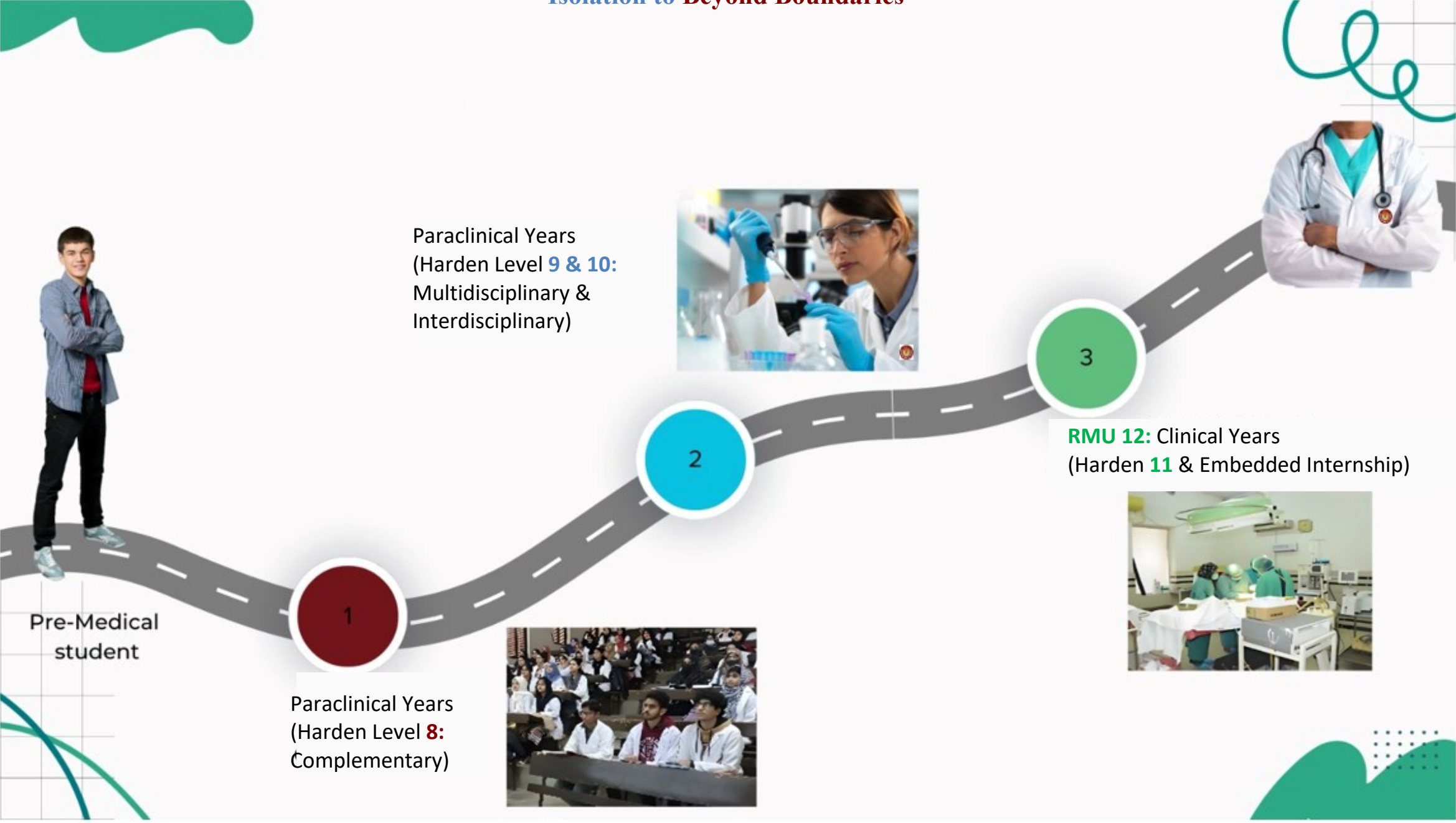


Figure 3

RMU – 12 Assessment Framework of Integrated Modular MBBS Curriculum 2026
Isolation to **Beyond Boundaries**

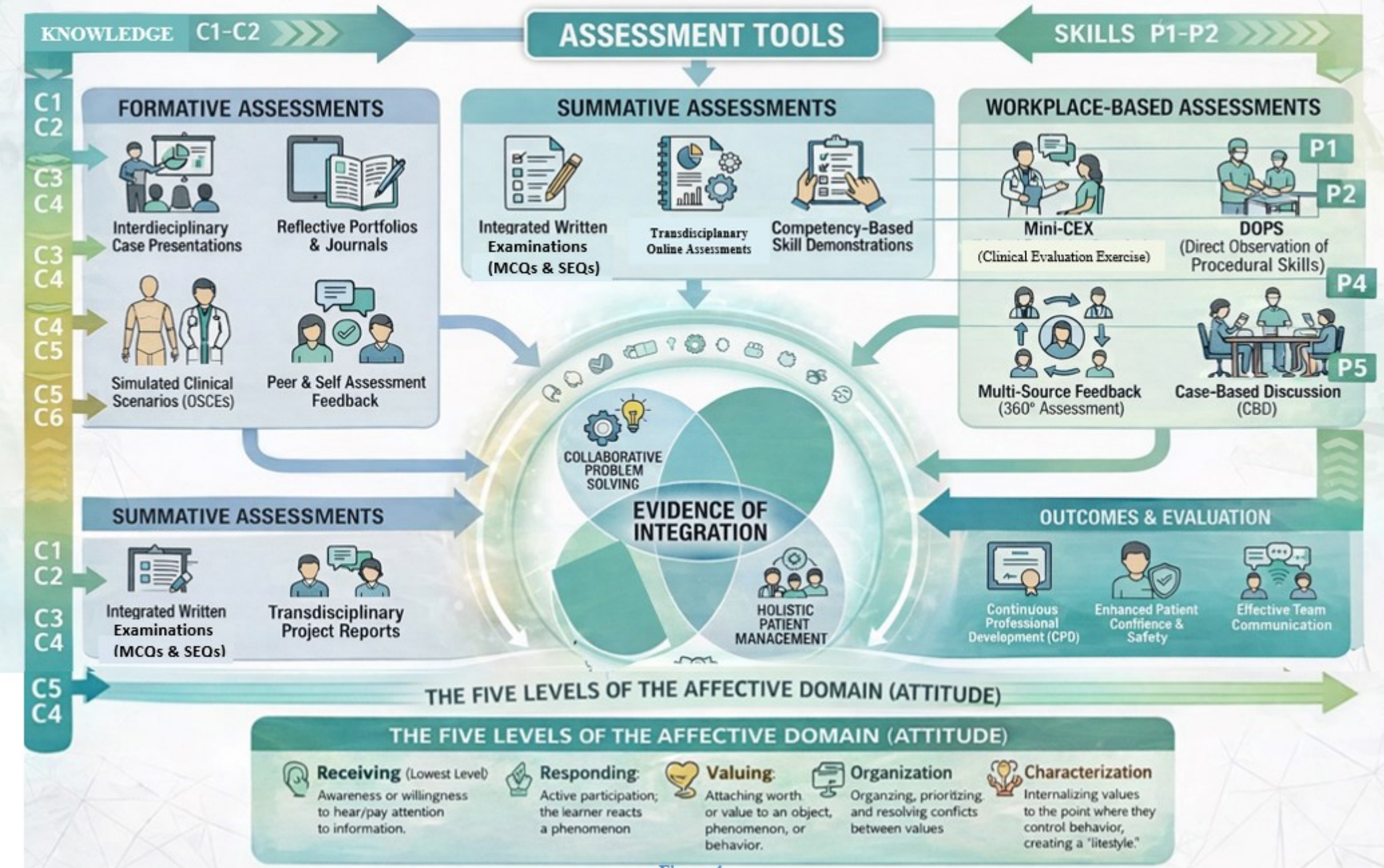


Figure 4

Harden Level 8 Harden Level 9 Harden Level 10 Harden Level 11 RMU 12



MBBS Year 1&2

MBBS Year 3&4

MBBS Year 5

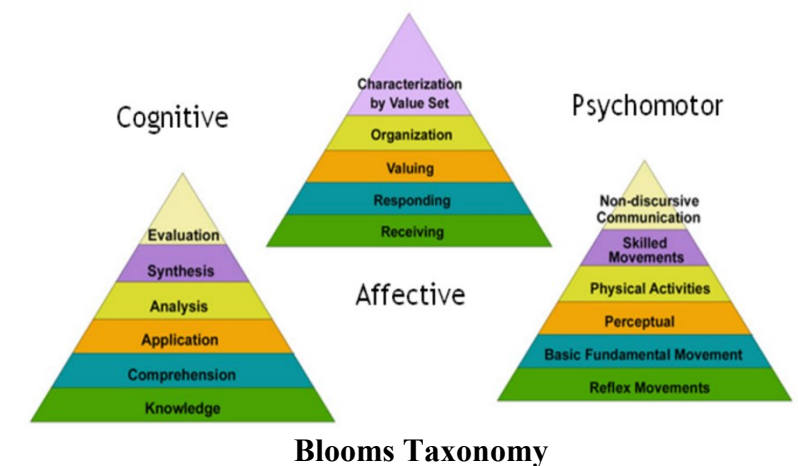
Rawalpindi Medical University has adopted a staged curricular framework that reflects a progressive movement along Harden’s integration ladder, culminating in going beyond the ladder to **RMU 12**. The curriculum is designed to ensure that knowledge acquired in the early years is not isolated or terminal, but is progressively contextualized, applied and transformed into professional competence. This progression is achieved by aligning curricular structure, teaching approaches and assessment strategies so that students move from conceptual understanding to integrated reasoning and finally to authentic clinical performance with graded responsibility.

Phase 1- The Foundation

In the early phase, basic sciences are organised using a complementary approach. The curriculum is structured into system- and theme-based modules rather than isolated subject courses, allowing Anatomy, Physiology, Biochemistry and related disciplines to retain their academic identity while contributing in a coordinated and mutually reinforcing manner. Learning outcomes are written at the module level and are intentionally framed to reflect conceptual understanding of systems rather than discipline-specific factual recall alone. Teaching is primarily discipline-led, but content delivery is carefully sequenced so that related concepts across subjects are taught in close temporal proximity. This sequencing is reinforced through planned integrated **multidisciplinary** activities such as problem-based learning, case-based learning and **clinico concept connect sessions** that require students to draw connections across disciplines. Teaching methods extend beyond lectures to include small-group discussions with structured clinical problem triggers that encourage early application of knowledge. Assessment in this phase is knowledge-focused, but incorporates integrated items and short clinical vignettes to test applied understanding (**C4 level**) across disciplines. These integrated assessment elements are deliberately introduced to prepare students for more complex synthesis (**C6 level**) in later phases, while maintaining the reliability. Regular interdisciplinary planning meetings and module coordination ensure coherence, avoid unnecessary duplication and maintain alignment between teaching and assessment.

Phase 2- The Bridge

As students enter the pre-clinical phase, the curriculum transitions into a multidisciplinary and subsequently interdisciplinary design. At this stage, curricular organisation shifts more clearly towards clinical systems and patient presentations, and learning outcomes emphasise the integration of knowledge, skills and reasoning across disciplines. Rather than subjects contributing independently, departments collaborate in the design and delivery of modules, and students encounter learning experiences that require simultaneous application of concepts from multiple domains. Teaching is increasingly delivered through team-based and co-facilitated sessions, with clinicians and basic scientists jointly guiding learning activities. Case-based learning, integrated practical sessions and simulation-based teaching become central modalities, allowing students to engage with clinically meaningful problems while still grounded in scientific principles.



The curriculum adopts a spiral structure in which key concepts are revisited at increasing levels of complexity, enabling deeper understanding and clinical relevance. In advanced pre-clinical components, the curriculum becomes explicitly task-oriented, focusing on common clinical presentations and professional activities rather than disciplinary content. At this stage, portfolios are introduced to support longitudinal documentation of learning, and early forms of workplace-linked assessment and entrustable activities are incorporated to familiarise students with performance-based expectations. Assessment strategies emphasise synthesis and reasoning, using integrated written examinations, complex case vignettes, OSCEs and structured simulation assessments. Decisions about student progress increasingly rely on aggregated evidence from multiple assessment tools and research projects.

Phase 3- The Workplace Entrustment

In the clinical phase, the curriculum becomes fully transdisciplinary, with learning embedded within authentic patient care and professional practice. Educational activities are organised around real clinical tasks, patient care pathways and **Entrustable Professional Activities** that reflect the core responsibilities of a graduating doctor. Students are integrated into clinical teams and participate in patient care under supervision, progressively assuming greater responsibility as competence is demonstrated. Teaching is predominantly workplace-based, supported by bedside teaching, coaching, reflective practice and targeted simulation for complex or high-risk activities. The distinction between disciplines becomes secondary to the holistic management of patients, as students are expected to integrate biomedical knowledge, clinical skills, communication, professionalism and teamwork in real settings. Assessment is programmatic and centred on performance in the workplace, using tools such as mini-CEX, DOPS, case-based discussions and multisource feedback. Evidence from these assessments is collected longitudinally within portfolios and reviewed by entrustment or competence committees to make informed decisions about progression and readiness for practice. Summative judgment is therefore based on sustained performance over time. Faculty roles evolve from subject teachers to supervisors, assessors and coaches, with explicit responsibility for observation, feedback and entrustment decisions. Diverse clinical exposure in tertiary public sector hospitals and community settings ensure adequate exposure, supervision and assessment opportunities, while quality assurance processes focus on the validity and consistency of entrustment decisions and learning experiences.

Phase 4- The Undergraduate Internship

The Undergraduate Internship is a structured, supervised transition phase designed to consolidate clinical competence and ensure readiness for the statutory house job. It provides learners with protected, workplace-based exposure focused on authentic patient care tasks, guided by clearly defined Entrustable Professional Activities aligned with international standards. Teaching emphasises supervised clinical practice, simulation for high-risk scenarios, and interprofessional teamwork, while assessment uses programmatic



Miller's Pyramid of Clinical Competence

workplace-based tools, portfolios and entrustment decisions to judge safe, consistent performance. This level strengthens patient safety, reduces transition shock, and ensures that graduates enter the house job with demonstrable, documented readiness for independent supervised practice.

Across all phases, the curriculum is underpinned by faculty development and continuous quality assurance. The staged movement from complementary through multidisciplinary and interdisciplinary learning to transdisciplinary clinical practice ensures that graduates are not only knowledgeable, but also capable of applying their learning effectively and safely in real clinical environments. This integrated and progressive design reflects contemporary best practices in medical education and aligns the educational experience with the expectations of modern healthcare systems.

Key Highlights

- Transcends Harden's Level 11 through integration with society, systems, ethics, and lifelong learning
- Fully aligned with PMDC undergraduate medical education standards
- Emphasizes higher-order thinking: Analysis, Evaluation, and Creation (Bloom's Taxonomy)
- Produces socially accountable, adaptive physicians prepared for 21st-century healthcare challenges

1. Foundations of Integration

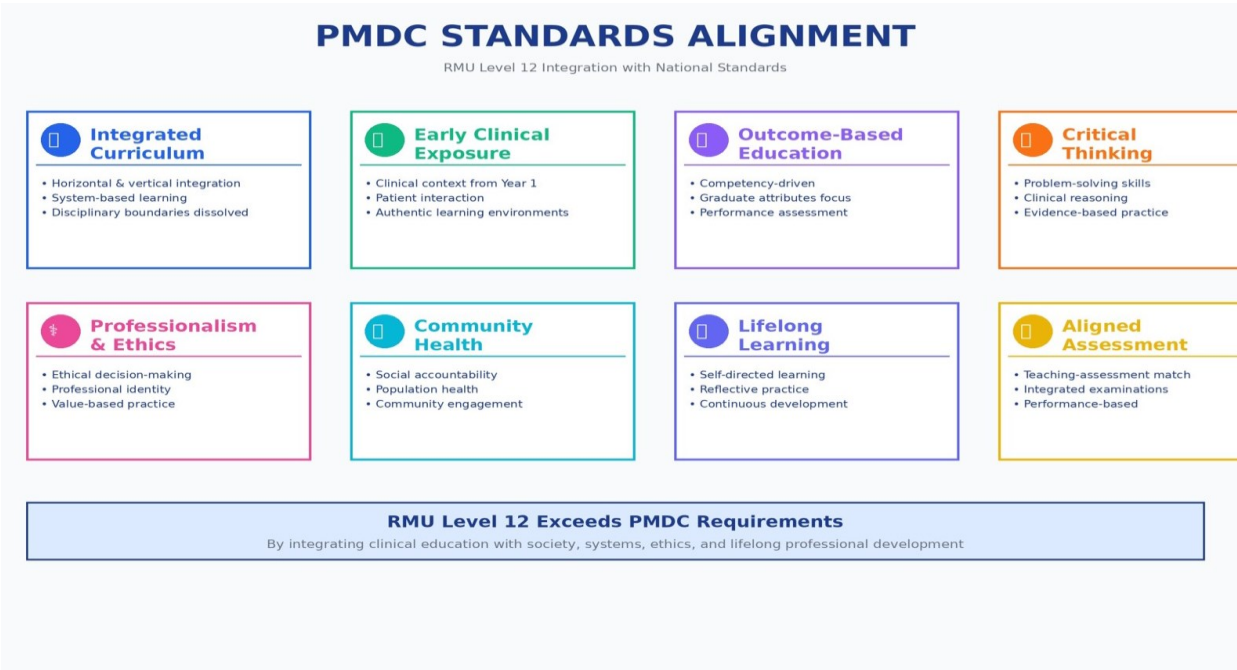
1.1 PMDC Standards for Medical Education

The Pakistan Medical and Dental Council mandates a transformative approach to undergraduate medical education characterized by:

- **Integrated Curriculum:** Horizontal integration (across disciplines) and vertical integration (across years)
- **Early Clinical Relevance:** Clinical context introduced from initial years
- **Outcome-Based Education:** Focus on graduate competencies rather than content coverage
- **Critical Thinking & Problem-Solving:** Development of analytical and evaluative skills
- **Professionalism & Ethics:** Embedded throughout the curriculum, not as isolated modules
- **Alignment of Teaching, Learning, and Assessment:** Constructive alignment with graduate outcomes

1.2 Harden's Integration Ladder: Overview

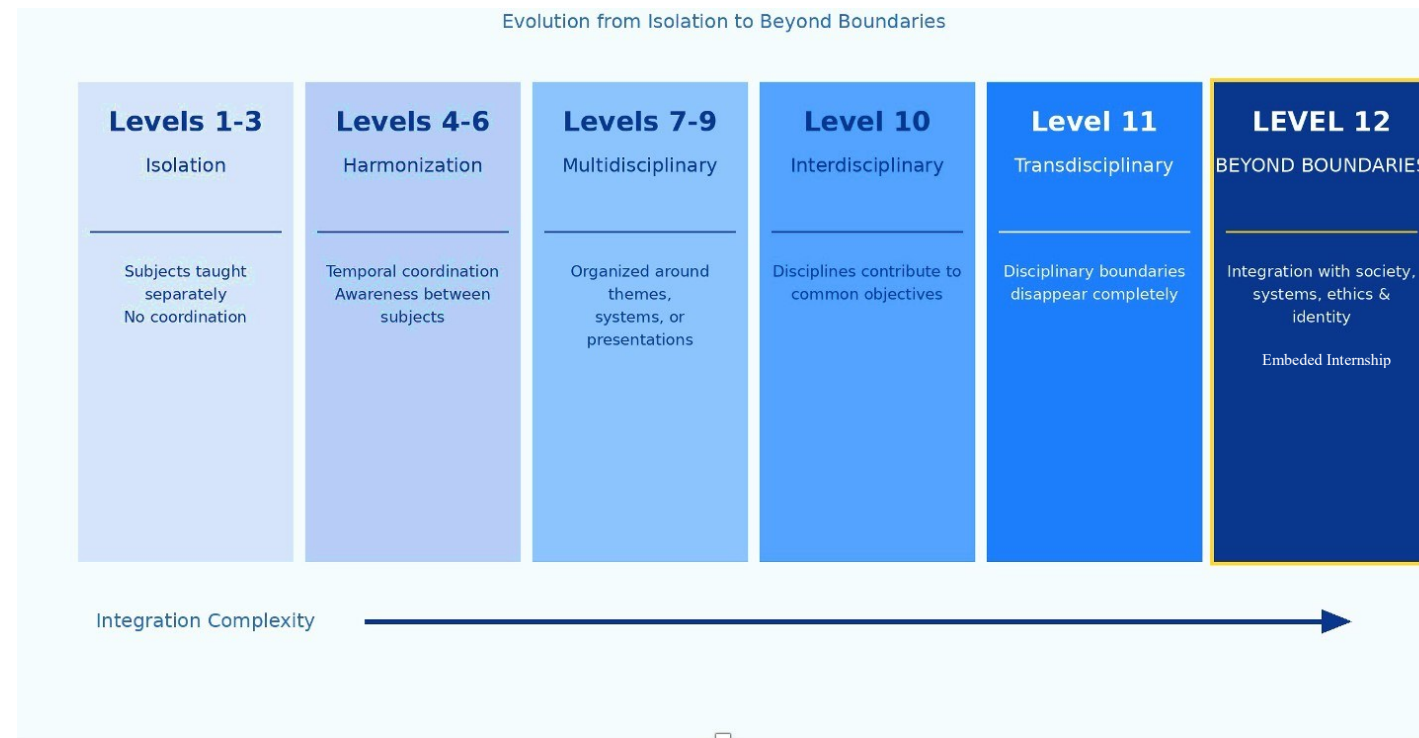
Harden's Integration Ladder provides a systematic framework for evaluating curricular integration, progressing through 11 levels:



Harden's Integration Ladder

RMU

RMU – 12 Beyond Boundaries



2. RMU Level 12 - Beyond Boundaries

2.1 Conceptual Definition

RMU Level 12: Beyond Boundaries Integration

A curriculum in which learning is organized not merely around disciplines or clinical problems, but around real-world health systems, societal needs, ethical complexity, population health challenges, and professional identity formation producing graduates who can adapt, lead, and innovate across contexts.

2.2 Why Level 12 Exists

While Harden's Integration Ladder culminates at Level 11 (Transdisciplinary Integration), contemporary medical education—particularly as mandated by PMDC—requires graduates who can function beyond the clinical encounter. RMU operates beyond transdisciplinary clinical integration by:

- Shifting the unit of integration from the patient alone to the patient embedded within society, systems, ethics, and professional identity
- Addressing health systems, governance, and resource allocation as integral learning domains
- Embedding knowledge creation and research literacy, not just knowledge synthesis
- Structuring lifelong learning and adaptive professionalism as explicit outcomes

2.3 Five Pillars of Level 12 Integration

A. Societal Integration: Patient-in-Society Problems

Level 11: Patient-centered clinical problems

RMU Level 12: Patient-in-society problems

RMU Implementation:

- Community-based medical education

- Analysis of social determinants of health
- Preventive and promotive healthcare strategies
- Health equity considerations in clinical decision-making

Students don't merely diagnose disease they analyze population patterns and design interventions, requiring evaluation and creation (Bloom's highest levels).

B. Value-Based Integration: Contextual Ethics

Level 11: Ethics integrated within cases

RMU Level 12: Ethics embedded longitudinally in real decisions

RMU Implementation:

- Ethical dilemmas arising from real patient encounters, not hypothetical scenarios
- Continuous professional identity formation throughout the curriculum
- Assessment of reflective practice and ethical reasoning

Students must weigh competing values, manage uncertainty, and justify actions—hallmarks of evaluation-level cognition.

C. System-Level Integration: Healthcare Systems & Leadership

Level 11: Focus on individual patient care

RMU Level 12: Focus on healthcare systems and governance

RMU Implementation:

- Exposure to health systems functioning and policy implications
- Understanding resource allocation realities
- Leadership and teamwork competencies



Students evaluate trade-offs between individual benefit and population good something no single discipline or clinical problem can teach.

D. Knowledge Creation: Beyond Synthesis

Level 11: Knowledge synthesis **RMU Level 12:** Knowledge generation

RMU Implementation:

- Research literacy and critical appraisal skills
- Clinical audits and community health projects
- Evidence-based practice and innovation

Students formulate research questions, design solutions, and create outputs—aligning with the creation level of Bloom's Taxonomy.

E. Temporal Integration: Lifelong Professional Identity

Level 11: Competent graduate **RMU Level 12:** Adaptive professional

RMU Implementation:

- Reflective portfolios documenting professional growth
- Self-directed learning plans
- Feedback-driven continuous improvement

Graduates leave with the ability to identify learning needs and adapt to new contexts—temporal integration across undergraduate education and professional life.

LEVEL 11 vs LEVEL 12	
The Evolution Beyond Transdisciplinary Integration	
LEVEL 11 Transdisciplinary	LEVEL 12 Beyond Boundaries
Unit of Integration	Unit of Integration
Patient problem	Patient within society, systems, and ethics
Primary Focus	Primary Focus
Clinical problem-solving	Clinical + population health + systems thinking
Scope	Scope
Individual patient care	Individual care + community + healthcare systems
Ethics Approach	Ethics Approach
Integrated within cases	Longitudinally embedded in real decisions
Knowledge Type	Knowledge Type
Knowledge synthesis	Knowledge creation & generation
Learning Organization	Learning Organization
Around clinical problems	Around health challenges & society
Disciplinary Boundaries	Disciplinary Boundaries
Dissolved in teaching	Extended to societal integration
Graduate Outcome	Graduate Outcome
Competent clinician	Adaptive, socially accountable professional
Bloom's Taxonomy	Bloom's Taxonomy
Primarily Analysis	Analysis → Evaluation → Creation

3. Alignment with PMDC Standards

The following table demonstrates explicit mapping between PMDC graduate competencies, RMU curriculum implementation, and justification for Level 12 integration:

PMDC Competency	RMU Implementation	Level 12 Justification
Medical Knowledge	Integrated system-based modules combining anatomy, physiology, pathology, pharmacology, radiology, and clinical medicine	Knowledge constructed through real patient problems; subject boundaries dissolved
Clinical Skills & Patient Care	Early clinical exposure, bedside teaching, skills labs, OSCEs	Skills and knowledge learned simultaneously in authentic clinical contexts
Clinical Reasoning	Case-based learning, problem-based tutorials, integrated examinations	Learning organized around clinical problems requiring synthesis beyond single disciplines
Communication Skills	Longitudinal communication training embedded in OSCEs and ward teaching	Communication competencies embedded within patient encounters, not isolated modules
Professionalism & Ethics	Longitudinal professionalism themes, ethics discussions during clinical rotations	Ethical reasoning contextualized within patient care—extends to value-based integration
Community & Preventive Health	Community-based medical education, public health projects, outreach programs	Integrates clinical medicine with population health and social determinants— societal integration
Lifelong Learning	Reflective practice, research literacy, self-directed learning tasks	Students identify learning needs from clinical encounters—temporal integration

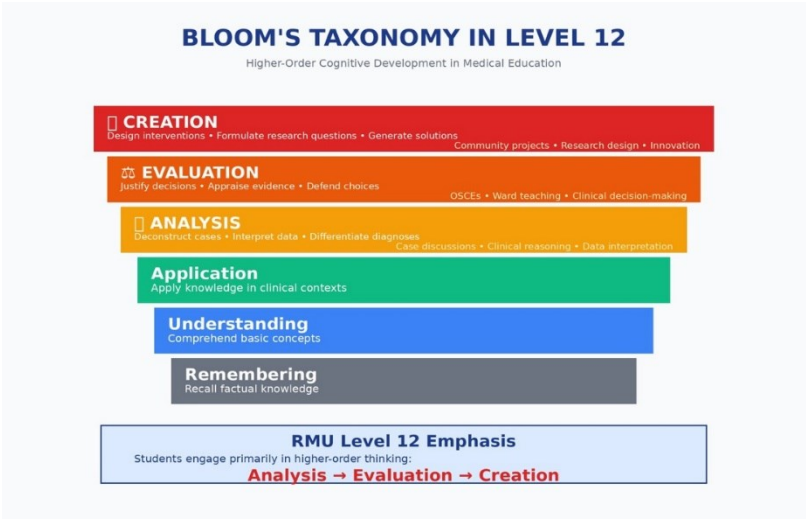
4. Bloom's Taxonomy & Higher-Order Thinking

RMU's curriculum explicitly targets higher-order cognitive domains of Bloom's Taxonomy:

- **Analysis:** Breaking down complex clinical cases, interpreting investigations, differentiating diagnoses
- **Evaluation:** Appraising evidence, justifying management decisions, defending clinical choices
- **Creation:** Designing interventions, formulating research questions, developing solution

4.1 Learning Activities Mapped to Bloom's Levels

Learning Activity	Bloom's Level	Justification
Integrated case-based discussions	Analysis	Students deconstruct complex cases, interpret investigations, differentiate diagnoses
Ward-based clinical teaching	Analysis → Evaluation	Learners appraise patient data and justify management decisions in real time
OSCEs and scenario-based stations	Evaluation	Students defend clinical decisions, prioritize care, demonstrate judgment under pressure
Community health projects	Evaluation → Creation	Learners assess community needs and design context-specific preventive interventions
Research projects & clinical audits	Creation	Students formulate questions, design studies, generate new knowledge



GRADUATE OUTCOMES

Level 12 Integration Produces Adaptive Professionals

CORE COMPETENCIES

✔ Clinical Excellence

Evidence-based practice
Diagnostic reasoning
Patient safety

✔ Professionalism

Ethical decision-making
Patient-centered care
Accountability

✔ Communication

Effective patient interaction
Interprofessional collaboration
Cultural competence

✔ Population Health

Community engagement
Preventive focus
Health promotion

ADAPTIVE CAPABILITIES

📁 Systems Thinking

Health systems understanding
Policy awareness
Resource management

📁 Research Literacy

Critical appraisal
Knowledge generation
Evidence synthesis

📁 Lifelong Learning

Self-directed growth
Reflective practice
Adaptive expertise

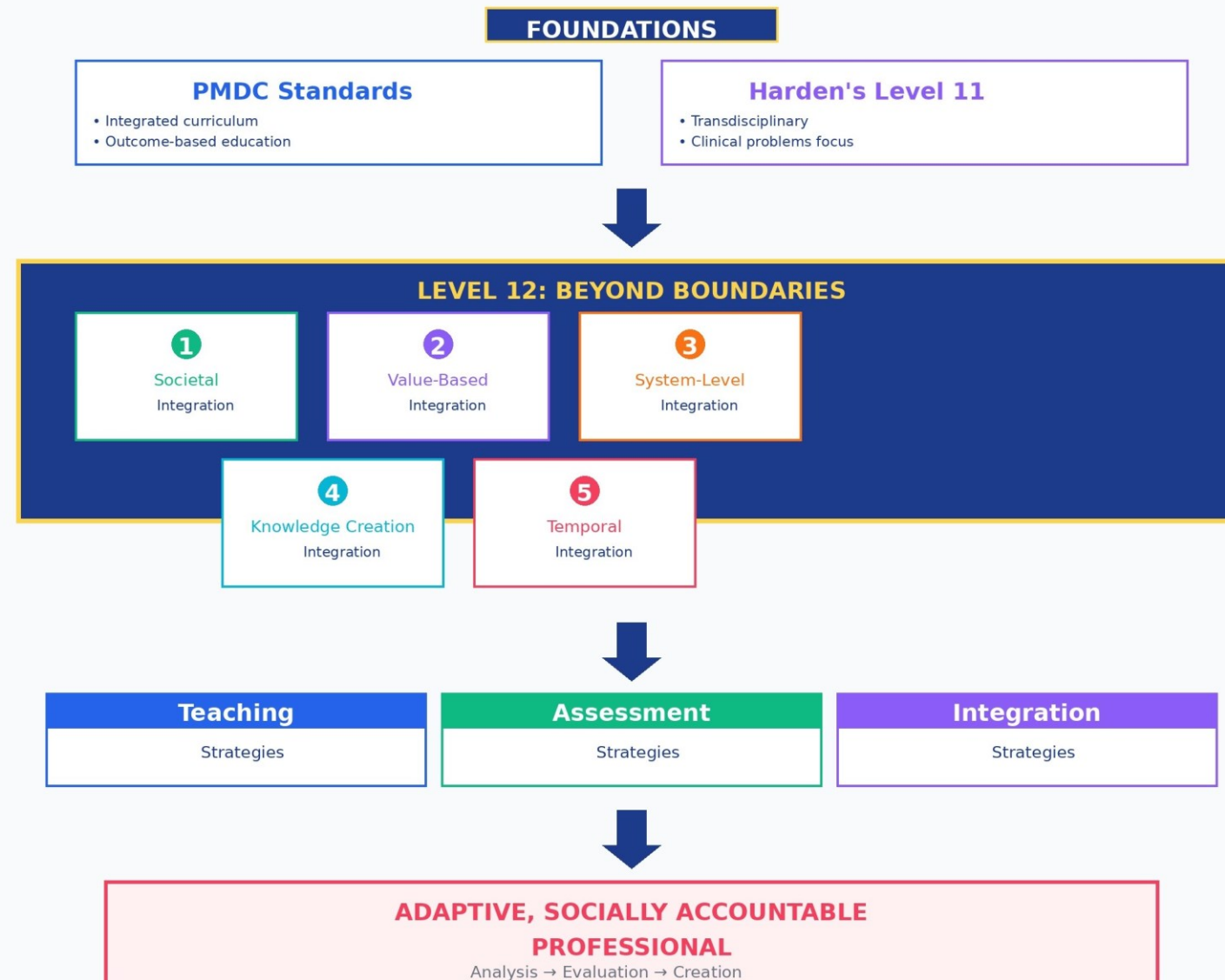
📁 Leadership

Innovation
Change management
Team development

**ADAPTIVE, SOCIALLY ACCOUNTABLE
PROFESSIONAL**

RMU LEVEL 12 FRAMEWORK

Complete Conceptual Flow



Conclusion

Rawalpindi Medical University's curriculum exemplifies a transformational approach to medical education that extends beyond traditional disciplinary integration. By achieving **Level 12: Beyond Boundaries Integration**, RMU demonstrates that modern medical education must prepare graduates not only as competent clinicians but as adaptive, reflective, socially accountable professionals capable of navigating complex health systems, ethical dilemmas, and evolving healthcare landscapes.

This framework, fully aligned with PMDC standards and grounded in Bloom's higher-order cognitive domains, positions RMU as an innovator in outcome-based, student-centered medical education that produces physicians prepared for 21st-century healthcare challenges.

The Five Pillars of Level 12—Societal Integration, Value-Based Integration, System-Level Integration, Knowledge Creation, and Temporal Integration—collectively represent a holistic vision for medical education that transcends disciplinary boundaries and prepares graduates for lifelong professional excellence.

Key Takeaways for Educators

- Level 12 integration is achievable through deliberate curriculum design aligned with regulatory standards
- Higher-order thinking (Analysis, Evaluation, Creation) must be explicitly embedded in learning activities
- Integration extends beyond clinical problems to encompass society, systems, ethics, and professional identity
- Assessment strategies must align with transdisciplinary learning objectives
- The ultimate goal is producing adaptive professionals, not merely competent graduates

Clinico - Concept Connect Session (C³6)

Introduction:

A Clinico -Concept Connect Session is a **case-based, concept-driven educational encounter** in which a carefully designed clinical scenario is used as the central anchor to explore and integrate relevant concepts from basic and clinical sciences. This **Session** is an integrated teaching–learning activity designed to bridge the gap between **foundational biomedical concepts** and their **real-world clinical application**. It serves as a structured platform where students actively connect basic science principles with clinical reasoning, patient presentation, and professional decision-making, thereby promoting deeper understanding and long-term retention of knowledge.

This session moves beyond traditional discipline-based teaching by fostering **conceptual integration**, **contextual learning**, and **early clinical exposure**, enabling students to appreciate the relevance of basic sciences in patient care from the outset of their medical training.

Rather than teaching facts in isolation, the session emphasizes:

- Understanding **why** a concept matters clinically
- Applying **core principles** to explain patient findings
- Developing **clinical reasoning skills** in a guided, safe learning environment

The focus remains on **conceptual clarity**, **clinical correlation**, and **professional competence**, rather than diagnosis-driven or management-heavy discussions.

Structure of the Clinico -Concept Connect Session

The session is structured into clearly defined phases to ensure alignment with learning outcomes and progressive student engagement:

1. Clinical Trigger (Case Introduction)

- A concise, authentic clinical scenario is presented.
- The case is selected to naturally elicit key underlying concepts.
- Information is disclosed in a focused manner to stimulate curiosity and inquiry.

2. Concept Mapping and Exploration

- Relevant foundational concepts (e.g., physiological mechanisms, biochemical pathways, structural–functional relationships) are identified.
- Students are guided to link clinical signs, symptoms, and investigations to these concepts.

C3: Clinico Concept Connect

C6: Bloom's Level C6 (Creation / Synthesis)

Learners integrate knowledge from basic, para-clinical, and clinical sciences to formulate differential diagnoses, management plans, or clinical reasoning pathways, demonstrating higher-order thinking and decision-making.

Reference: Anderson, L. W., & Krathwohl, D. R. (2001). A taxonomy for learning, teaching, and assessing: A revision of Bloom's taxonomy of educational objectives.

- Emphasis is placed on **mechanisms**, not memorization.

3. Integrated Discussion

- Faculty from relevant disciplines facilitate discussion collaboratively.
- Concepts are reinforced through clinical correlation and guided questioning.
- Students actively participate in explaining findings using scientific reasoning.

4. Application and Reflection

- Learners reflect on how conceptual understanding informs clinical thinking.
- Key take-home messages are summarized.
- Opportunities for self-directed learning and further exploration are highlighted.

Implementation Strategy

The Clinico -Concept Connect Session is implemented as a **planned, scheduled activity** within the integrated curriculum and follows these principles:

- **Faculty Collaboration:** Basic science and clinical faculty jointly design and facilitate sessions to ensure coherence and relevance.
- **Curriculum Alignment:** Each session is mapped to predefined learning outcomes, competencies, and entrustable professional activities.
- **Active Learning:** Small-group discussions, guided questioning, and concept linking are emphasized over didactic teaching.
- **Progressive Complexity:** Early sessions focus on core concepts, with increasing clinical depth as students advance.
- **Feedback and Reflection:** Structured feedback is provided to reinforce learning and improve reasoning skills.

Educational Value

Through its integrated design, the Clinico -Concept Connect Session:

- Strengthens **conceptual understanding**
- Enhances **clinical reasoning and analytical skills**
- Encourages **horizontal and vertical integration**
- Promotes **student engagement and ownership of learning**
- Prepares learners to become **practice-ready, concept-driven clinicians**

Example of Clinico - Concept Connect (C³6) Session

Theme Title from Molecules to Medicine: Clinical Applications of Molecular Biology and Genetics

Clinico -Concept Connect (C³6) Session

Clinical Case Scenario: A lady with progressive fatigue

A 22-year-old woman presents to the outpatient clinic with progressive fatigue, muscle weakness, and episodes of dizziness, particularly after prolonged fasting. She reports poor exercise tolerance and occasional nausea. There is no history of infection or chronic illness. A sibling has a similar condition. On examination, she appears thin but alert. Vital signs are stable. Mild proximal muscle weakness is noted. There is no organomegaly.

Laboratory and Molecular Findings

- Fasting blood glucose: Low
- Serum electrolytes: Normal
- Enzyme activity assay: Reduced activity of a glucose-metabolizing enzyme
- Genetic analysis: Point mutation in enzyme-encoding gene
- Family screening: Similar mutation identified

This case exemplifies how a **single molecular defect** leads to systemic clinical manifestations, reinforcing the transition from molecular mechanisms to patient-centered medicine

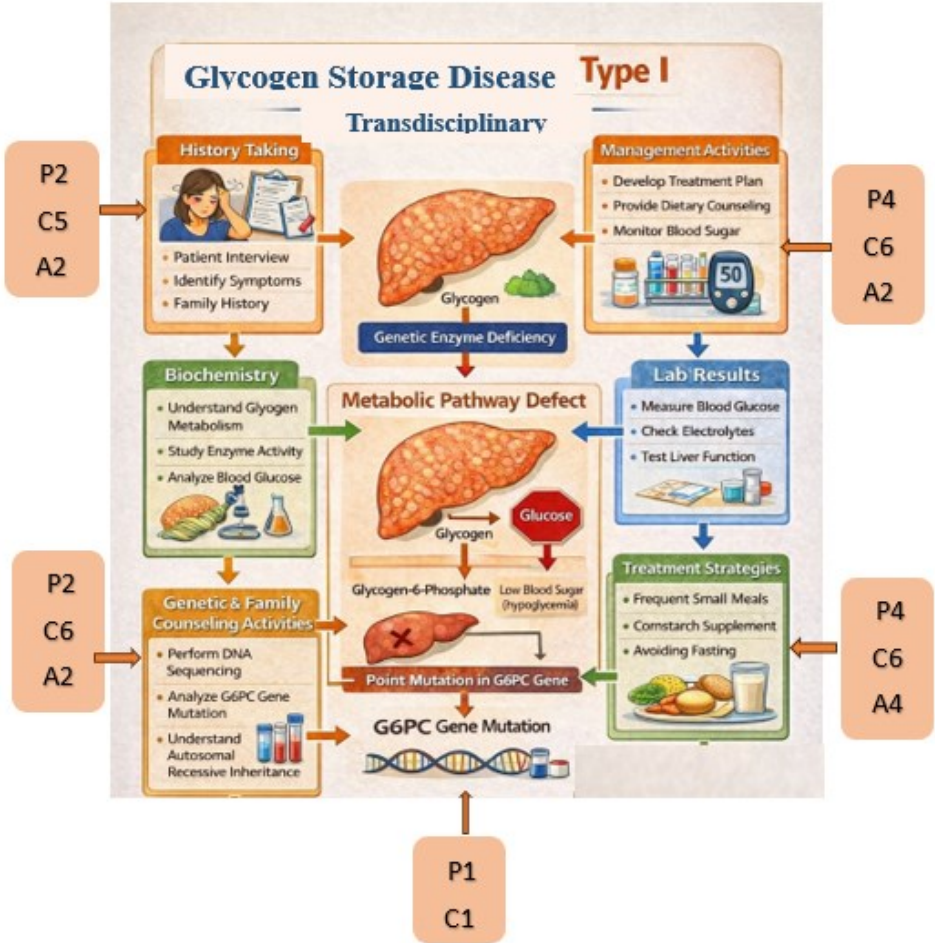
Educational Relevance to Theme

This case allows learners to trace disease progression:

Gene mutation → Altered protein structure → Enzyme dysfunction → Metabolic failure →

Clinical presentation

It reinforces:



Clinico-Concept Connect (C³6) Sessions
Transdisciplinary Integration (Harden Level 11)

Domains of Learning According to Blooms Taxonomy					
Cognitive Domain: knowledge and mental skills. (C)		Psychomotor Domain: Motor skills. (P)		Affective Domain: feelings, values, dispositions, attitudes, etc (A)	
• C1	Remembering	P1	Imitation	A1	Receive
• C2	Understanding	P2	Manipulation	A2	Respond
• C3	Applying	P3	Precision	A3	Value
• C4	Analyzing	P4	Articulation	A4	Organize
• C5	Evaluating	P5	Naturalization	A5	Internalize
• C6	Creating				

- Gene expression and mutation
- Enzyme kinetics and regulation
- Metabolic adaptation during fasting
- Familial inheritance patterns
- Role of molecular diagnostics in clinical practice

Learning Objectives

By the end of this theme, the student will be able to:

- Explain the molecular basis of gene expression, including transcription, translation, and regulation of enzymes.
- Describe the role of enzymes, cofactors, and inhibitors in normal metabolic processes and disease states.
- Correlate molecular and genetic abnormalities with common clinical conditions such as metabolic disorders, infertility, and cancer.
- Understand basic molecular mechanisms underlying inherited and acquired genetic diseases.
- Apply principles of molecular biology and genetics to interpret simple clinical and laboratory scenarios.

Appreciate the relevance of molecular medicine in diagnosis, prognosis, and therapeutic decision-making.

Integration Framework

Harden Level 9 – Multidisciplinary Integration

This C³6 session operates at **Harden Level 9**, where multiple disciplines address the *same clinical problem* in parallel, maintaining disciplinary identity while reinforcing conceptual alignment.

Disciplines Involved

- **Anatomy**
 - Liver and skeletal muscle structure involved in glucose metabolism
 - Anatomical basis of muscle weakness and exercise intolerance
- **Biochemistry**
 - Enzyme kinetics, regulation, and metabolic pathways

- Impact of genetic mutations on enzyme activity
- **Medicine**
 - Clinical evaluation of fasting hypoglycemia
 - Diagnostic reasoning in inherited metabolic disorders
- **Surgery**
 - Peri-procedural metabolic considerations
 - Role in diagnostic evaluation where indicated

Each discipline contributes **complementary insights** without content fusion, fulfilling the criteria of multidisciplinary integration

Explicit EPA Mapping

EPA-1: Interpret Clinical and Laboratory Data

Entrustment Level: 1–2

Students interpret fasting glucose levels and enzyme assays under supervision.

EPA-2: Apply Basic Science to Clinical Reasoning

Entrustment Level: 1

Students explain how molecular mutations produce clinical disease.

EPA-3: Communicate Findings in a Structured Manner

Entrustment Level: 1–2

Students present the case during group discussions.

EPA-4: Demonstrate Professionalism and Teamwork

Entrustment Level: 1

Students engage respectfully in multidisciplinary learning.

Mapping to Harden Levels

- **Level 8 (Complementary):**
Coordinated teaching of genetics, biochemistry, and anatomy around a shared theme

- **Level 9 (Multidisciplinary):**

Parallel disciplinary analysis of the same clinical case

- **Level 10 (Interdisciplinary):**

Early synthesis of molecular, biochemical, and clinical data into a unified explanation

Teaching–Learning Strategy

- Case-based discussion
- Facilitated multidisciplinary dialogue
- Guided molecular-to-clinical reasoning
- Early clinical exposure emphasis

Assessment Alignment

- MCQs (conceptual and application-based)
- SAQs focusing on molecular–clinical correlation
- OSPE/OSVE elements where applicable

Summary Statement

Theme Five exemplifies RMU-12’s philosophy of “From Isolation to Beyond Boundaries” by translating molecular biology and genetics into meaningful clinical understanding through a structured Clinico -Concept Connect session. Operating at Harden Level 9 and aligned with early EPAs, this theme prepares students for progressive entrustment, clinical reasoning, and future practice-ready learning in molecular and precision medicine.

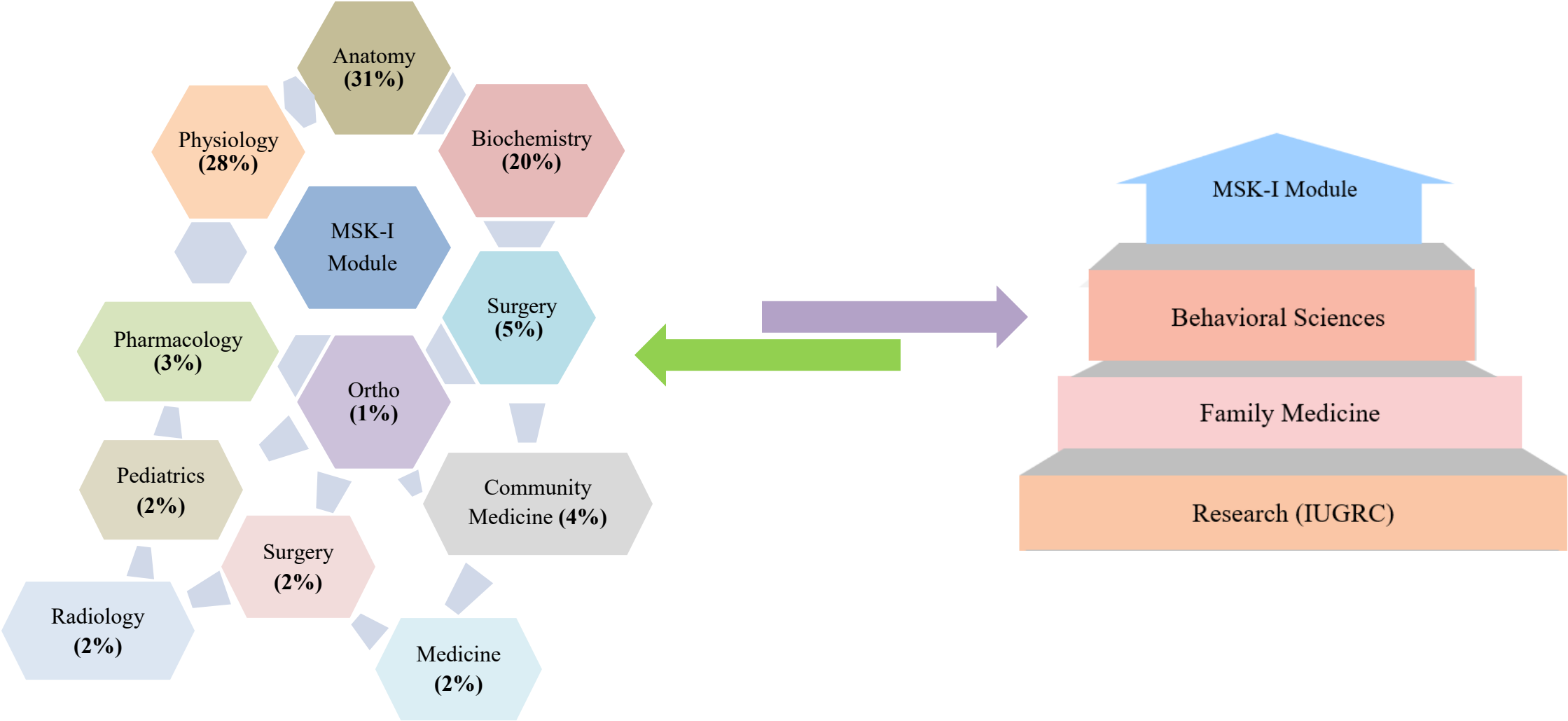
RMU – 12 Integrated Modular MBBS Curriculum 2026

Isolation to *Beyond Boundaries*

Study Guide

MSK-I Module

Multi-Disciplinary Integration



Disciplines in MSK-I Module

Spiral / General Education Cluster Courses (5%)

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 – 3)	- Synopsis Writing - Questionnaire Development - 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/ Ortho	- 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 - Analgesics			
	Pediatrics	Poliomyelitis			

MSK - I Module Team

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

Module Committee			Module Task Force Team		
1.	Vice Chancellor RMU	Prof. Dr. Muhammad Umar	1.	Coordinator	Dr. Summyia Bashir (Assistant Professor of Anatomy)
2.	Director DME & Dean Basic Sciences	Prof. Dr. Ifra Saeed	2.	DME Focal Person	Dr. Farzana Fatima
3.	Additional Director (Assessment) DME	Dr. Arsalan Manzoor Mughal	3.	Co-coordinator	Dr. Nida Fatima (Demonstrator of Anatomy)
4.	Chairperson Physiology	Prof. Dr. Samia Sarwar	4.	Co-Coordinator	Dr. Fahd Anwar (Demonstrator of Physiology)
5.	Chairperson Anatomy	Prof. Dr. Ayesha Yousaf	5.	Co-coordinator	Dr. Romessa Naeem (Demonstrator of Biochemistry)
6.	Chairperson Biochemistry	Dr. Aneela Jamil			
7.	Focal Person Anatomy 1 st Year MBBS	Asso. Prof. Dr. Mohtashim Hina			
8.	Focal Person Physiology	Dr. Sidra Hamid	DME Implementation Team		
9.	Focal Person Pharmacology	Dr. Zunera Hakim	1.	Director DME	Prof. Dr. Ifra Saeed
10.	Focal Person Pathology	Dr. Syeda Aisha	2.	Implementation Incharge 1st & 2 nd Year MBBS	Dr. Arsalan Manzoor Mughal
11.	Focal Person Behavioral Sciences	Dr. Zona Tahir			Dr. Farzana Fatima
12.	Focal Person Community Medicine	Dr. Afifa Kulsoom	3.	Assistant Director DME	Dr. Farzana Fatima
13.	Focal Person Quran Translation Lectures	Dr. Fahd Anwar	4.	Editor	Muhammad Arslan Aslam
14.	Focal Person Family Medicine	Dr. Sadia Khan			

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 - II

Teaching and Learning Methodologies / Strategies

Terms & Abbreviations

Contents

- Domains of Learning
- Teaching and Learning Methodologies/Strategies
 - Clinico Concept Connect Session (C³6)
 - Large Group Interactive Session (LGIS)
 - Small Group Discussion (SGD)
 - Self-Directed Learning (SDL)
 - Case Based Learning (CBL)
 - Problem- Based Learning (PBL)
 - Skill Labs/Practicals (SKL)

Tables & Figures

- Table1. Domains of learning according to Blooms Taxonomy
- Figure 1. Prof Umar's Model of Integrated Lecture
- Table2. Standardization of teaching content in Small Group Discussions
- Table 3. Steps of taking Small Group Discussions
- Figure 2. PBL 7 Jumps Model

Table 1. Domains of Learning According to Blooms Taxonomy

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	• C2	Understanding
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	• C5	Evaluating
	• C6	Creating
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Teaching and Learning Methodologies / Strategies

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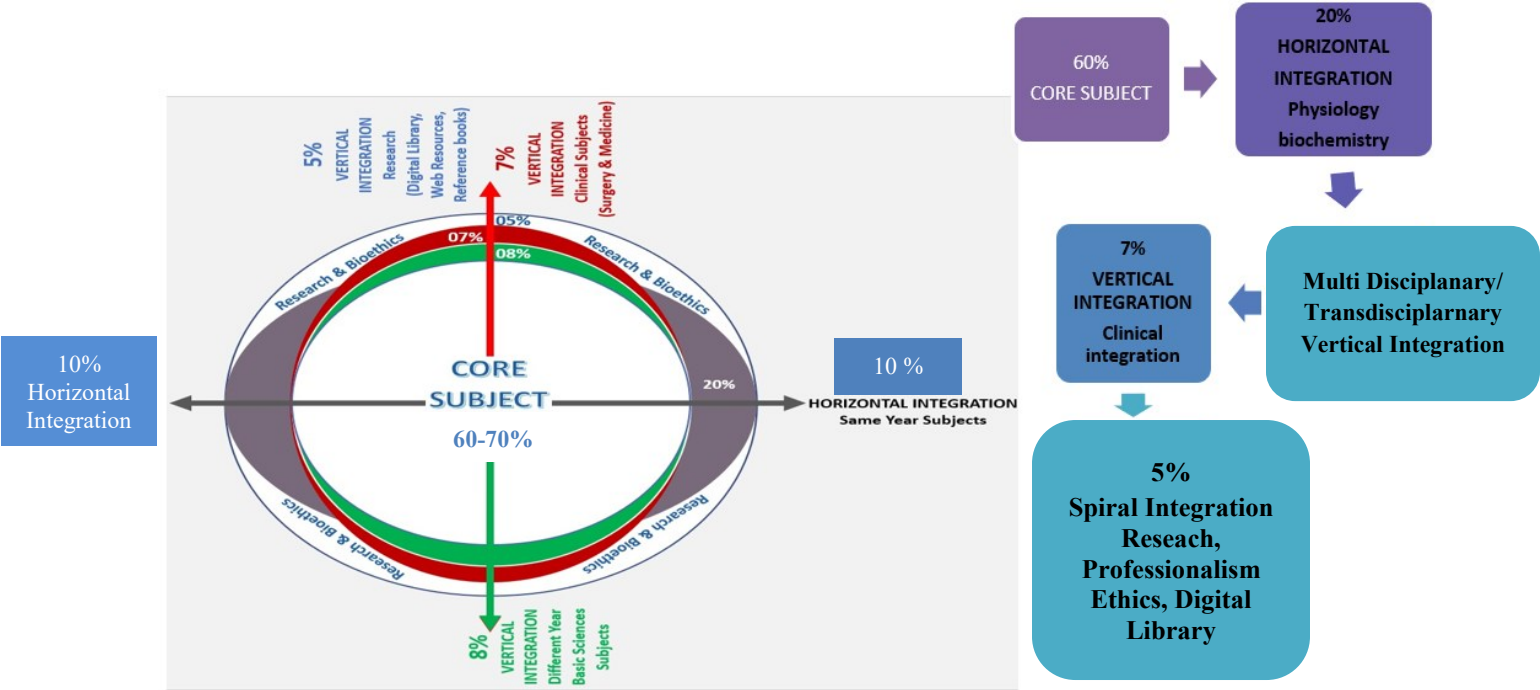
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- Prepares learners to become **practice-ready, concept-driven clinicians**

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	Core Concepts of the topic	60%
4	Horizontal Integration	24%
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	Case presentation and 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 multi-disciplinary/transdisciplinary and interdisciplinary.
- 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 case scenarios that typically resemble real world examples.
- Case Scenarios must be multi-disciplinary/transdisciplinary and interdisciplinary
- 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)		Learning Domain
Step 7	Synthese & Report	C6
Step 6	Collect Information from outside	C6
Step 5	Generate learning Issues	C6
Step 4	Discuss and Organise Ideas	C4
Step 3	Brainstorming to Identify Explanations	C3
Step 2	Define the Problem	C1
Step 1	Clarify the Terms and Concepts of the Problem Scenario	C1
Problem- Scenario		

Figure 2. PBL 7 Jumps Model

Self-Directed Learning (SDL) at Rawalpindi Medical University (RMU)

What is Self-Directed Learning (SDL)?

Self-Directed Learning (SDL) is a learning approach in which students take responsibility for their own learning. In SDL, students are expected to:

- Identify what they need to learn
- Set learning goals
- Use appropriate learning resources
- Study independently
- Evaluate their own understanding

Faculty members act as facilitators and guides, helping students stay on track and achieve the learning outcomes.

Why is SDL Important in Medical Education?

SDL is a key part of modern medical education because it helps students develop skills needed for **lifelong learning**. SDL is important because it:

- Encourages independent and active learning
- Builds critical thinking and problem-solving skills
- Improves the ability to search and use evidence-based medical information
- Helps students become responsible and reflective learners
- Prepares future doctors to keep learning throughout their careers

Medical knowledge is constantly changing, so SDL helps students stay updated even after graduation.

SDL at RMU (How It is Conducted)

Rawalpindi Medical University (RMU) has formally incorporated SDL into the MBBS curriculum from Second Year to Final Year.

RMU has developed structured curricula of Self-Directed Learning (SDL) across all professional years. These SDL curricula include:

- Approved SDL topics aligned with each module
- Clearly stated learning objectives for every topic
- A wide range of learning resources, including:
 - Textbook chapters
 - Research articles
 - Clinical guidelines
 - Online videos and interactive learning content
 - Resource links shared through official platforms

SDL at RMU is therefore a planned, organized, and curriculum-based learning activity, not just additional reading.

SDL Hours in the MBBS Program

SDL at RMU is implemented longitudinally across all professional years.



- The total SDL contribution is more than 500 hours
- These hours are distributed from Second Year to Final Year MBBS
- The purpose is to gradually develop independent learning skills throughout the program

Assessment of SDL at RMU

At RMU, SDL is not only a learning strategy but also an assessed component of the curriculum.

- Students are provided SDL topics with objectives and learning resources.
- Students study these topics independently.
- To ensure regular engagement, RMU conducts weekly online LMS-based assessments
- These assessments help students:
 - Stay consistent in learning
 - Test their understanding
 - Receive feedback for improvement

Thus, SDL learning progress is continuously monitored through the institutional LMS system.

. Alignment with PM&DC and WFME Standards

SDL at RMU is aligned with national and international standards of medical education.

PM&DC

Pakistan Medical & Dental Council (PM&DC) emphasizes structured teaching, learning strategies, and internal assessment systems within undergraduate medical education.

WFME

World Federation for Medical Education (WFME) standards highlight the importance of:

- Student-centered learning
- Independent learning skills
- Use of diverse learning resources
- Continuous assessment and quality assurance

RMU's structured SDL program supports these global standards.

Practical Sessions/Skill Lab (SKL)

Practical Session/ Skill Lab (SKL)	
Demonstration/ power point presentation 4-5 slide and relevant clinical videos where required	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 – III

Themes, Learning Objectives, Teaching Strategies & Tool of Assessments

Contents

- **Horizontally Integrated Basic Sciences (Anatomy, Physiology & Biochemistry)**
- **Large Group Interactive Session:**
 - Anatomy (LGIS)
 - Physiology (LGIS)
 - Biochemistry (LGIS)
- **Small Group Discussions**
 - Anatomy (SGD)
 - Physiology (SGD)
 - Biochemistry (SGD)
- **Self-Directed Topic, Learning Objectives & References**
 - Anatomy (SDL)
 - Physiology (SDL)
 - Biochemistry (SDL)
- **Skill Laboratory**
 - Anatomy
 - Physiology
 - Biochemistry
- **Learning Management System (LMS)**
 - Anatomy (LMS)
 - Physiology (LMS)
 - Biochemistry (LMS)

MSK-I Module – First Year MBBS

Duration of Module (Four Weeks)

Sr No.	Themes	Duration
1.	A Patient with Shoulder/Arm Pain with Weakness	1 st Week
2.	Elbow & Forearm Pain After Trauma/Overuse.	2 nd Week
3.	A Patient Hand Pain, Swelling & Instability	3 rd Week
4.	Hand Numbness/Tingling with Grip Dysfunction	4 th Week

Theme 1: A Patient with Shoulder/Arm Pain with Weakness (1st Week)

Theme	Rationale	General Learning Objectives
A Patient with Shoulder/Arm Pain with Weakness	Shoulder pain with weakness is a common musculoskeletal presentation encountered in outpatient and emergency settings. Understanding this symptom requires integration of shoulder joint anatomy, biomechanics, nerve supply, and neuromuscular physiology. This theme links gross anatomy of the shoulder region, physiology of neuromuscular transmission, and biochemical aspects of bone and mineral metabolism with clinical conditions such as shoulder dislocation, rotator cuff injury, and nerve lesions, enabling students to correlate structural abnormalities with clinical presentation and early management.	At the end of this theme, students should be able to: •Describe the anatomy and applied anatomy of the shoulder joint, rotator cuff muscles, and axillary nerve. •Explain the basic physiology of muscle contraction and neuromuscular transmission. •Discuss the role of calcium, phosphate, and vitamin D in bone strength and musculoskeletal health. •Correlate clinical findings of shoulder pain and weakness with underlying anatomical injury. •Interpret basic investigations such as shoulder X-ray for dislocation. •Appreciate the multidisciplinary approach involving orthopedics, medicine, and rehabilitation.
CASE 1: Shoulder/Arm Pain with Weakness A 26-year-old male presented to the Orthopedic OPD with severe pain in the right shoulder for the last two days and difficulty lifting his arm. The pain started suddenly after lifting a heavy object, followed by a popping sensation and immediate restriction of movement. Since then, he has been unable to abduct the arm properly and finds difficulty in routine activities such as combing hair or wearing clothes. There is no history of fever or trauma elsewhere. He has no previous history of shoulder dislocation, diabetes, or any chronic illness. Family history is non-contributory. He works as a manual laborer with poor dietary calcium intake and has no history of smoking or alcohol use. He has taken occasional analgesics for pain but is not on any long-term medication. Examination GPE: Young male in pain, conscious and oriented. Pulse 88/min, BP 118/76 mmHg, Temp 98.6°F, RR 16/min. No pallor or jaundice. Local Examination: Shoulder contour appears flattened with anterior tenderness. Abduction and external rotation are painful and restricted. Sensation over the lateral shoulder is reduced, and deltoid muscle power is weak, suggesting axillary nerve involvement. Systemic Examination: CVS, Respiratory, Abdomen and CNS unremarkable.		

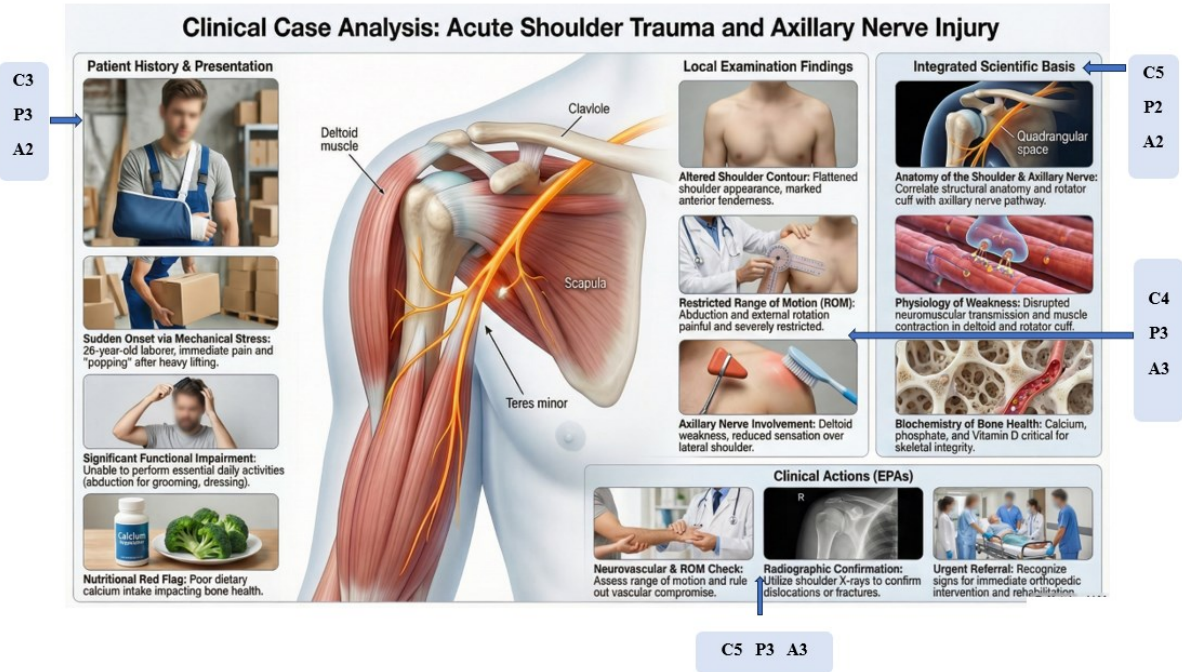
Entrustable Professional Activities (EPAs)

- EPA-1: Obtain a focused musculoskeletal history in shoulder pain
- EPA-2: Perform basic shoulder examination (ROM + neurovascular check)
- EPA-3: Explain anatomical basis of weakness and sensory loss
- EPA-4: Recognize dislocation requiring urgent referral
- EPA-5: Identify role of X-ray in confirming diagnosis

Justification

This theme integrates Anatomy, Physiology, Biochemistry, Pharmacology, Orthopedics, and Medicine around a single clinical presentation (shoulder pain with weakness), promoting early clinical reasoning.

Theme 1: Clinico – concept connect (C³6) Sessions



Harden Level 9 Multidisciplinary

Specific Learning Objectives

Theory							
Subject	Code	Topic	Learning Objectives At the end of session students should be able to	Calgary Gauge	Learning Domain	Teaching Strategy	Assessment Tool
Embryology							
Anatomy (Embryology)	M2-MSK-I-A-001	Formation of Bilaminar Embryonic Disc (2 nd 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		
			• 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-002	Gastrulation Establishment of Body Axis and Fate Map (3 rd 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		
			• Evaluate establishment of body axis	Must know	C4		
			• Draw fate map and discuss its importance in future development	Must know	C2		
			• Connect the Biophysiological aspects of gastrulation	Must know	C4		
			• Describe congenital abnormalities associated with gastrulation	Should know	C3		
			• Read a relevant Research article	Should 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		
		Connective	• Define connective tissue	Must know	C1		

Anatomy (Histology)	M2-MSK-I-A-0011	tissue I Cells of connective tissue Embryonic connective tissue / mucoid Connective Tissue	• Classify connective tissue	Must know	C4	LGIS	SAQs MCQs VIVA VOCE OSPE
			• Enlist and explain types of cells in CT	Must know	C2		
			• Enumerate sites and connect the function of each type of cell of connective tissue	Must know	C4		
			• 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 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 articles	Nice to know	C3		
	M2-MSK-I-A-0012	Connective tissue II Loose areolar 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 reticular connective tissue	Must know	C2		
			• Analyze clinical aspects of loose and reticular CT	Should know	C4		
			• 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		
Anatomy (Gross SGD)	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		
			• Defend the related clinicals (shoulder	Should know	C4		

			dislocation, rotator cuff injuries, Glenoid Labrum tears, Frozen shoulder)								
			• Analyze the clinical conditions	Should know	C4						
			• 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 & Neurovascular organization of the arm	• Tabulate muscles of flexor & extensor compartment with their origin, insertion, nerve supply and actions	Must should	C2	SGD, Skill Lab	MCQs SEQs OSVE OSPE OSCE				
			• Describe Neurovascular organization of arm.	Must should	C2						
			• Synthesize the outline of Brachial artery and Musculo cutaneous nerve in a simulated patient or model	Must know	C6						
			• Correlate with the clinical conditions (biceps tendinitis, dislocation of tendon of biceps brachii)	Should know	C3						
			• Analyze consequences of injury to radial nerve (wrist drop), venipuncture in cubital fossa)	Should know	C4						
			• Synthesize the outline of Radial nerve and ulnar nerve on a simulated patient or model	Must know	C6						
			• Analyze the clinical conditions	Should know	C4						
			• 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						
			Anatomy (SDL)	M2-MSK-I-A-0035	Shoulder Dislocation			• Classify the joint (according to type, shape and movement)	• Clinical Oriented Anatomy by Keith L. Moore.8 TH Edition. (Chapter 3, Page 266- 271,284-285). https://teachmeanatomy.info/upper-limb/joints/shoulder		
								• Discuss the attachments of capsule and ligament			
								• Enlist he intra-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 at shoulder joint											
• Enlist related bursae.											
• Explain the related clinicals (shoulder dislocation, rotator cuff injuries, Glenoid Labrum tears, Frozen shoulder)											
		• Tabulate muscles of flexor compartment with the origin,									

	M2-MSK-I-A-0036	Biceps Tendinitis, Popeye’s Arm	insertion, nerve supply and actions		• Clinical Oriented Anatomy by Keith L. Moore.8 TH Edition. (Chapter 3, Page201-211,211-214). https://teachmeanatomy.info/upper-limb/muscles/anterior-forearm/			
			• Describe Neurovascular organization of arm,					
			• Explain the related clinicals (biceps tendinitis, Popeye’s Arm)					
Anatomy (SKL)	M2-MSK-I-A-0050	<u>Connective Tissue-I</u> • 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			
Physiology (LGIS)	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		
Physiology (SGD)	M2-MSK-I-P-0017	Discussion regarding	• Discuss difficulties regarding questions, MCQs of Foundation Module	Should know	B	C2	LGIS SDL	SAQs MCQs

		previous module						VIVA VOCE
	M2-MSK-I-P-0018	RMP, measurement & effects, of electrolyte on RMP	Define resting membrane potential of nerves.	Should know	B	C1	LGIS SDL	SAQs MCQs VIVA VOCE
Physiology (SDL)	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)				
Physiology (SKL)	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	
Biochemistry			Classify Minerals	Must know	C1	LGIS		MCQ

(LGIS)	M2-MSK-I-B-001	Introduction & Classification of Minerals / Calcium and Phosphate	State Daily Requirements of Calcium & Phosphate in different conditions	Should know	C2		SAQ SEQ VIVA
			Discuss Sources & Biochemical functions of Calcium & Phosphate	Must know	C2		
			Apply knowledge of calcium and phosphate requirements to identify individuals at risk of deficiency or excess.	Should know	C3		
			- Analyze the biochemical and physiological causes of: - Hypercalcemia and hypocalcemia - Hyperphosphatemia and hypophosphatemia - Differentiate between clinical features of hypercalcemia and hypocalcemia based on underlying mechanisms	Nice to know	C4		
			- 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	Nice to know	C3		
	M2-MSK-I-B-003	Vitamins & Their Classification/ Vitamin D	- Define vitamins - Classify Vitamins	Must know	C1	LGIS	MCQ SAQ SEQ VIVA
			Describe the general characteristics of water-soluble and fat-soluble vitamins.	Should Know	C2		
			Enlist dietary sources of vitamin D	Should Know	C1		
			Describe the biochemical functions of vitamin D	Must know	C2		
			Analyze the biochemical basis and clinical manifestations of vitamin D	Should Know	C4		
			- 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	Nice to know	C3		

Biochemistry (SDL)	M2-MSK-I-B-0010	Hypercalcemia	- Discuss causes of Hypercalcemia - Explain Biochemical Basis - Describe effects of Hypercalcemia	Should Know	- Textbook of Lippincott 8th Edition Chapter # 29 page#447 https://www.ncbi.nlm.nih.gov/books/NBK218735 https://youtu.be/34FTvJZCrt4 https://youtu.be/nko-JXU-c28?si=tYUj8dpbh381Gavk		
	M2-MSK-I-B-011	Hypocalcemia	- Discuss Biochemical functions of Calcium - Discuss causes of Hypocalcemia - Describe effects of Hypocalcemia	Should Know	- Textbook of Lippincott 8th Edition Chapter # 29 page #447 https://www.ncbi.nlm.nih.gov/books/NBK279023/ https://youtu.be/qAeWKCXDniw https://youtu.be/t4dfHSTLInM?si=gdlUFOcFvq8FHIPB		
Biochemistry (SKL)	M2-MSK-I-B-0018	Quantitative Analysis (Serum calcium & Serum Ascorbic Acid)	Perform quantitative estimation of serum calcium and serum ascorbic acid using standard laboratory procedures.	Should Know	P	Skill Lab	OSPE
Pharmacology	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			
Surgery/Ortho	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			

Spiral Courses (1st Week)

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	C3	Research Club Activity Teaching strategy (LGIS on campus) (SDL/PAL off campus)	Manuscript submission at SJRMC
		Formulating a research question according to FINER Criteria	C3		
		Formulate appropriate research questioning using PEO/PICO/PICOT format	C2		
		Understand the concept of literature review	C2		
		Cognizant with concept of publication ethics	C3		
		Outline steps of synopsis writing according to SJRMC Guidelines	C2		

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
M2-MSK-I -SI(BS)-001	Healthcare models and their clinical application - Bio-psychosocial model - Integrated health care Model - Public 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

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
M2-MSK-I-SI(FM)-001	Breaking Down Barriers: Effective Pain Management Strategies in Family Medicine	• Understand the importance of effective pain management in family medicine	C3	LGIS	MCQs
		• Identify common barriers to effective pain management			
		• Learn evidence-based pain management strategies for common conditions.			

Multidisciplinary (Hardens Level 9) Clinico-Concept Connect (C³6) Sessions for 1st Week

Session	Topic	Department	Educational Relevance	At the End of The Demonstration Student Should Be Able To	Learning Domain	Assessment Tool
\Clinico-Concept Connect (C ³ 6) Sessions – I	A Patient with Shoulder and Arm Pain with Weakness	Anatomy	Understanding shoulder anatomy helps students explain injury mechanisms and recognize nerve damage, enabling accurate clinical assessment of shoulder trauma.	• Analyze shoulder joint anatomy and axillary nerve course to explain dislocation and deltoid weakness.	C4	MCQs
				• Correlate axillary nerve injury with loss of shoulder contour, impaired abduction, and sensory deficit.	C5	MCQs
		Physiology	Knowledge of shoulder biomechanics allows students to interpret movement loss and understand functional impairment resulting from nerve or muscle injury.	• Analyze the biomechanics of shoulder abduction involving supraspinatus and deltoid.	C4	MCQs
				• Evaluate effects of nerve injury on muscle tone and motor control.	C5	MCQs
		Biochemistry	Recognizing the role of calcium and vitamin D highlights the importance of nutrition in musculoskeletal health and recovery after injury.	• Analyze the role of calcium and vitamin D in neuromuscular function and bone strength.	C4	MCQs
				• Design a nutrition plan to support bone and muscle recovery.	C5	MCQs
		Pharmacology	Understanding analgesic mechanisms supports safe and rational pain management in acute musculoskeletal conditions.	• Analyze NSAID mechanisms in pain and inflammation control	C4	MCQs
				• Formulate a rational drug plan for acute shoulder injury.	C5	MCQs
		Orthopedics	Developing diagnostic and management skills prepares students to identify shoulder dislocation and	• Differentiate anterior shoulder dislocation from rotator cuff tear using clinical signs.	C5	MCQs
				• Recognize cases requiring referral and imaging.	C5	MCQs

			initiate timely treatment to prevent complications.	• Counsel regarding physiotherapy and ergonomic prevention.	C4	MCQs
		Medicine	Integrating neurological findings with clinical care fosters holistic patient management and promotes functional recovery through multidisciplinary approaches.	• Localize axillary nerve injury and differentiate from cervical radiculopathy.	C5	MCQs
				• Formulate a multidisciplinary rehabilitation approach.	C6	MCQs

Theme 2: Elbow & Forearm Pain After Trauma/Overuse (2nd Week)

Theme	Rationale	General Learning Objectives
Elbow & Forearm Pain After Trauma/Overuse.	Elbow and forearm pain are frequently seen in outpatient practice, particularly due to repetitive strain injuries and minor trauma. This theme integrates anatomy of the elbow joint, forearm compartments, physiology of nerve conduction, and biochemical support of connective tissue and bone. Clinical conditions such as tennis elbow, fractures, and nerve entrapment provide early clinical relevance for first-year students.	At the end of this theme, students should be able to: • Describe the gross anatomy of the elbow joint and forearm compartments. • Explain the physiology of action potential propagation and nerve conduction. • Discuss the role of minerals and vitamin D in skeletal integrity. • Correlate overuse injuries with anatomical structures involved. • Understand the role of basic investigations such as X-ray in trauma. • Appreciate preventive strategies and ergonomics in musculoskeletal disorders.
CASE 2: Elbow & Forearm Pain after Trauma/Overuse A 35-year-old female school teacher presented to the OPD with gradually progressive pain over the outer side of her right elbow for the past three weeks. The pain worsens with repetitive activities such as writing on the board, lifting a cup, and shaking hands. She denies swelling, numbness, or any major trauma. She has no history of diabetes, arthritis, or chronic illness. Family history is non-contributory. She is a non-smoker and her work involves repetitive strain of the forearm muscles. She has taken occasional NSAIDs for pain relief but is not on any regular medication. Examination GPE: Average-built female, alert and oriented. Pulse 78/min, BP 120/80 mmHg, Temp 98.4°F, RR 14/min. Local Examination: Elbow appears normal on inspection. Localized tenderness is present over the lateral epicondyle. Pain is reproduced on resisted wrist extension and grip strength is mildly reduced. Systemic Examination: CVS, Respiratory, Abdomen and CNS normal.		

Entrustable Professional Activities (EPAs)

EPA-1: Take focused history of trauma vs overuse elbow pain

EPA-2: Perform basic elbow examination and identify tenderness

EPA-3: Correlate pain with involved muscle attachments

EPA-4: Recognize when imaging is needed in trauma

EPA-5: Counsel patient on rest and ergonomic prevention

Justification

This theme integrates Anatomy, Physiology, Biochemistry and Orthopedics through elbow pain as a clinical presentation.

Theme 2: Clinico – concept connect (C³6) Sessions

C5
P3
A3

Patient Profile & History



Patient Demographics:
A 35-year-old female school teacher presenting with a 3-week history of gradually progressive right elbow pain.

Aggravating Factors:
Pain is triggered by repetitive daily activities, specifically writing on a board, lifting a cup, and shaking hands.

Unknown Factors:
Divorced of procarat by repetitive daily active hands.

Occupation-Related Strain:
As a teacher, her work involves significant repetitive strain of the forearm muscles without a history of acute trauma.

Clinical Case Analysis: Lateral Elbow Pain and Repetitive Strain



Clinical Examination Findings



Localized Tenderness:
Physical inspection appears normal, but significant tenderness is found specifically over the lateral epicondyle.

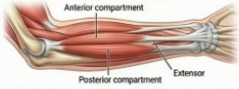


Positive Provocative Testing:
Pain is reproduced during resisted wrist extension, a classic sign of involvement of the extensor muscle attachments.



Functional Impact:
The patient demonstrates a mild reduction in grip strength compared to the unaffected side.

Integrated Medical Concepts (Theme 2)



Anatomical Focus: Mastery of the elbow joint anatomy and the specific compartments of the forearm is required to diagnose overuse injuries.



Physiological & Biochemical Basis: Understanding action potential propagation in nerves and the role of Vitamin D/minerals in skeletal integrity is vital for holistic care.



Preventive Strategy:
Counseling focuses on ergonomic adjustments and rest to manage repetitive strain and prevent recurrence.

Entrustable Professional Activities (EPAs) relevant to this specific elbow case.

EPA Code	Description fo Case 2
EPA-1	Take a focused history distinguishing trauma from overuse.
EPA-2	Perform an elbow exam to idetify specific points of tenderness.
EPA-3	Correlate the site of pain with secific muscle attachments.
EPA-6	Counsel the patient on rest an ergonomic prevention strategies.

C4 P4 A3

Harden Level 10 Interdisciplinary

Specific Learning Objectives

Theory							
Subject	Code	Topic	Learning Objectives At the end of session students should be able to	Calgary Gauge	Learning Domain	Teaching Strategy	Assessment Tool
Anatomy (Embryology)	M2-MSK-I-A-003	Notochord Formation (3 rd 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		
			• Analyze clinical conditions of notochord formation	Should know	C4		
			• 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 (3 rd 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		
			• Compare & contrast different types of spina bifida	Should know	C4		
			• Discuss the importance of folic acid in the prevention of spina bifida	Should know	C2		
			• Analyze the clinical conditions	Should know	C4		
			• 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 OSPE
			• 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		
			• Evaluate clinical aspects of somite differentiation	Should know	C4		
			• 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-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		
			• Analyze 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		
			• Evaluate the clinical conditions	Should know	C5		
			• 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		
Anatomy (Histology)	M2-MSK-I-A-0013	Connective tissue III Adipose CT	• Enumerate examples and location of adipose and dense CT.	Must know	C1		
			• Draw, describe and label histological structure of all types of connective tissue	Must know	C2		

		Dense regular and irregular connective	• Compare & contrast between dense regular and irregular connective tissue microscopically	Must know	C4	LGIS	SAQs MCQs VIVA VOCE OSPE
			• Defend clinical aspects of loose and reticular CT	Should know	C5		
			• 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-0014	Cartilage	• Classify cartilage	Must know	C2	LGIS	SAQs MCQs VIVA VOCE OSPE
			• Enlist sites of hyaline, fibro and elastic cartilage	Must know	C1		
			• Appreciate microscopic structure of Hyaline, Elastic &	Must know	C2		
			• Debate about the histological features of three cartilages	Must know	C5		
			• 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		
			• Analyze with clinical conditions	Should know	C4		
			• 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		
Anatomy (General Anatomy)	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		
			• Analyze role of bones in estimation of sex, age and stature.	Must know	C4		
			• Evaluate the clinical conditions.	Should know	C4		
			• 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		
Anatomy (Gross Anatomy)	M2-MSK-I-A-0023	Ulna	• Determine the side	Must know	C1	SGD, Skill Lab	MCQs SEQs OSVE
			• Demonstrate anatomical position	Must know	P		
			• Discuss general features, attachments and articulations	Must know	C2		

			• Describe ossification	Must know	C2		OSPE
			• Elaborate interosseous membrane and its importance	Must know	C2		
			• Analyze the clinical conditions	Should know	C4		
			• 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		
			• Analyze the clinical conditions	Should know	C4		
			• 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		
			• Synthesize the outline of Median Nerve, Radial Artery and Ulnar Artery of forearm in a simulated patient or Model	Should know	C6		
			• Describe nerves and vessels of forearm (formation, commencement, course, branches and relations)	Must know	C2		
			• Evaluate associated clinical conditions (Median nerve injury, pronator syndrome, cubital tunnel syndrome)	Must know	C5		
			• 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
			• Connect clinical conditions associated with extensor compartment of forearm (Tennis elbow)	Should know	C4		
			• Describe nerves and vessels of forearm (formation, commencement, course, branches and relations)	Must know	C2		
			• Synthesize the outline of Radial Nerve and Ulnar Nerve on a simulated patient or model	Must know	C6		
			• Analyze the clinical conditions	Should know	C4		
			• 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		
			• Connect with the associated clinical conditions (Elbow joint dislocation and student’s elbow)	Should know	C4		
			• 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		
			• Analyze clinical aspects of joint	Should know	C4		
			• 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		
Anatomy (SDL)	M2-MSK-I-A-0039	Colle’s Fracture/ Smith’s Fracture	• Determine the side	• Clinical Oriented Anatomy by Keith L. Moore.8TH Edition. (Chapter 3, Page148).			
			• Demonstrate it anatomical position				

			• Discuss general features, attachments and articulations • Describe its ossification • Describe the interosseous membrane and its importance • Correlate the clinical aspects • Tabulate muscles of flexor compartment with their origin, insertion, nerves Supply and actions	• https://teachmeanatomy.info/upper-limb/bones/radius/				
	M2-MSK-I-A-0040	Golfer's Elbow	• 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	• Clinical Oriented Anatomy by Keith L. Moore.8TH Edition. (Chapter 3, Page215-234,236,240). • https://teachmeanatomy.info/upper-limb/muscles/posterior-forearm/				
Anatomy (SDL)	M2-MSK-I-A-0051	<u>Connective Tissue-II</u> • 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			
Physiology (LGIS)	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 - Compare between graded potential and action potential		Must know	A	C1	LGIS	SAQs MCQs VIVA VOCE	
Physiology (SGD)	M2-MSK-I-P-0019	Drugs acting on NMJ excitation contraction coupling	- Drugs acting on NMJ - Excitation contraction coupling		Nice to know	C	C1		SGD	MCQs SEQs SAQs Viva Voce OSPE
	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 SEQs SAQs Viva Voce OSPE
	Physiology (SDL)	M2-MSK-I-P-0025	- 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)					
Physiology (SKL)	M2-MSK-I-P-0032	Estimation of hematocrit Practical I	- Hct definition - How to measure - Precautions		P, A		Skill lab		OSPE	
Biochemistry (LGIS)	M2-MSK-I-B-002	Fluoride, Magnesium & Sulphur Copper, Zinc, Selenium, Iodine, Manganese	List the dietary sources of fluoride, magnesium, sulphur, copper, zinc, selenium, iodine, and manganese		Must know		C1		LGIS	MCQ SAQ SEQ VIVA
			Explain the biochemical functions of each mineral in the human body.		Must Know		C2			
			Apply knowledge of trace elements to explain clinical features resulting from their deficiency or excess.		Nice to Know		C3			
			Analyze the impact of iodine deficiency on thyroid hormone levels and metabolic rate.		Nice to Know		C4			

			Critically assess the risks and benefits of fluoride supplementation in community water supplies.	Nice to Know	C5		
			- 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	Nice to know	C3		
	M2-MSK-I-B-004	Vitamin A & E	Enlist dietary sources of vitamin A& E	Should Know	C1	LGIS	MCQ SAQ SEQ VIVA
			Describe the biochemical functions of vitamin A& E	Must know	C2		
			Analyze the biochemical basis and clinical manifestations of vitamin A &E	Should Know	C4		
			Evaluate the toxic effects of hypervitaminosis A and relate them to excessive intake.	Nice to know	C5		
	M2-MSK-I-B-0008	Introduction and Classification of Vitamins & Vitamin E	- Define vitamins - Classify Vitamins	Must know	C1	SGD	MCQ SAQ SEQ VIVA
			Discuss sources, functions & clinical significance of vitamin E	Must Know	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	Nice to know	C3		
	Biochemistry (SDL)	M2-MSK-I-B-012	Wilson’s Disease	Recall sources & daily requirements of Copper	Must know	- Textbook of Lippincott 8th Edition Chapter # 29 page #449 https://pubmed.ncbi.nlm.nih.gov/ https://youtu.be/dChD9BlofQY?si=26JyEk-2Rats4m2H	
Discuss their biochemical functions of Copper				Must Know			
Correlate abnormal copper accumulation with the clinical manifestations of Wilson’s disease.				Should Know			
M2-MSK-I-B-013		Clinical Role of Fluoride, Magnesium & Sulphur , Zinc, Selenium, Iodine, Manganese	Enlist Sources of these minerals	Must Know	- Textbook of Lippincott 8th Edition Chapter # 29 page #448-454 https://www.ncbi.nlm.nih.gov/ https://youtu.be/09orKVRxiPo?si=y_kMAN02QB3LQe09		
			Discuss Biochemical functions of these minerals.	Must Know			
			Correlate deficiency or excess of fluoride, magnesium, sulphur, zinc, selenium, iodine, and manganese with common clinical conditions	Nice to Know			
Biochemistry (SKL)	M2-MSK-I-B-019		Perform the Biuret and Ninhydrin tests on given samples	Should Know	P	Skill	OSPE

		Color test for detection of amino acids (Biuret test & Ninhydrin Test)	Use test results to identify the presence of proteins or free amino acids.	Should Know	P		
Surgery/Ortho	M2-MSK-I-VI(S)-002	Tennis elbow, Fracture of Olecranon, radius, ulna	- Describe: - Tennis elbow	C2		LGIS	MCQs
			Discuss fractures of radius and ulna	C2			
			Describe the common sites of fracture	C2			
			Management concepts	C2			
			- Describe: - Tennis elbow	C2			
Community Medicine	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

Interdisciplinary (Hardens Level 10) Clinico-Concept Connect (C³6) Sessions for 2nd Week

Session	Topic	Department	Educational Relevance	At the End of The Demonstration Student Should Be Able To	Learning Domain	Assessment Tool
\Clinico-Concept Connect (C ³ 6) Sessions – II	Elbow & Forearm Pain after Trauma/Overuse	Anatomy	Elbow pain involves forearm extensor muscle attachments at the lateral epicondyle.	• Describe the anatomy of the elbow joint and lateral epicondyle.	C2	MCQs
				• Identify muscles attached to the lateral epicondyle.	C2	MCQs
				• Explain the anatomical basis of pain during wrist extension.	C3	MCQs
		Physiology	Pain perception and muscle fatigue contribute to functional limitation.	• Explain nerve conduction and pain transmission pathways.	C2	MCQs
				• Correlate repetitive muscle activity with fatigue and pain.	C4	MCQs
		Biochemistry	Tendon integrity depends on collagen and mineral metabolism.	• Discuss the role of vitamin D and calcium in musculoskeletal support.	C4	MCQs
				• Explain biochemical basis of connective tissue repair.	C3	MCQs
		Orthopedics	Tennis elbow is a common outpatient orthopedic condition.	• Outline conservative management strategies.	C5	MCQs
				• Recognize cases requiring referral and imaging.	C5	MCQs
				• Counsel regarding physiotherapy and ergonomic prevention.	C6	MCQs

Theme 3: A Patient Hand Pain, Swelling & Instability (3rd Week)

Theme	Rationale	General Learning Objectives
A Patient Hand Pain, Swelling & Instability	Hand and wrist injuries are common after falls and trauma, and early recognition is essential to prevent long-term disability. This theme integrates anatomy of carpal bones, physiology of nerve and muscle function, and biochemical basis of bone health with clinical conditions such as scaphoid fractures, wrist dislocations, and inflammatory swelling.	At the end of this theme, students should be able to: • Describe the anatomy of wrist joint and carpal bones with applied importance. • Explain the basic physiology of nerve conduction and motor function in the hand. • Discuss vitamin D deficiency and its relationship with bone fragility. • Correlate clinical tenderness and swelling with underlying fracture risk. • Appreciate the role of early imaging and orthopedic referral.
CASE 3: Hand Pain, Swelling & Instability A 22-year-old female presented to the Emergency OPD after falling on an outstretched hand. She complained of severe pain and swelling around the wrist with inability to grip objects properly. The pain persisted despite analgesics and she felt instability when attempting wrist movement. There is no history of fever or previous joint disease. She has no chronic illness and family history is non-contributory. She is a university student with no smoking or drug use. She has taken only over-the-counter painkillers since the injury. Examination GPE: Young female in discomfort, conscious and oriented. Pulse 90/min, BP 110/70 mmHg, Temp 98.2°F. Local Examination: Wrist is swollen with marked tenderness in the anatomical snuffbox. Wrist extension is painful and restricted, raising suspicion of scaphoid fracture. Systemic Examination: CVS, Respiratory and CNS normal.		

Entrustable Professional Activities (EPAs)

- EPA-1: Obtain focused history after fall/trauma
- EPA-2: Perform basic elbow examination and identify tenderness
- EPA-3: Correlate pain with involved muscle attachments
- EPA-4: Recognize when imaging is needed in trauma
- EPA-5: Counsel patient on rest and ergonomic prevention

Justification

This theme integrates Anatomy, Physiology, Biochemistry and Orthopedics through elbow pain as a clinical presentation.

Theme 3: Clinico – concept connect (C³6) Sessions



Harden Level 9 Multidisciplinary

Specific Learning Objectives

Theory							
Subject	Code	Topic	Learning Objectives At the end of session students should be able to	Calgary Gauge	Learning Domain	Teaching Strategy	Assessment Tool
Anatomy (Embryology)	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		
			• Compare & contrast Omphalocele and Gastroschisis	Should know	C4		
			• Analyze the clinical conditions	Should know	C4		
			• 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		
			• Analyze procedures for assessing fetal well-being	Should know	C4		
			• Evaluate clinical aspects of fetal period	Should know	C4		
			• 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	LGIS	SAQs MCQs VIVA VOCE OSPE
			• 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		
			• 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		
			• Analyze the clinical conditions associated with placenta	Should know	C4		
			• 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		
Anatomy (Histology)	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		
			• Compare & contrast the histological features of spongy and compact bone	Must know	C4		
			• Describe structure of osteon.	Must know	C2		
			• Understand the Biophysiological aspects of bone	Must know	C2		
			• Analyze clinical aspects of bone	Should know	C4		
			• 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-0016	Bone-II	• Describe osteogenesis	Must know	C2	LGIS	SAQs MCQs
			• Discuss bone growth, remodeling and repair	Must know	C2		

		(Ossification)	• Evaluate histological changes in bones in osteoporosis, rickets, osteomalacia, osteopetrosis and bone tumors	Must know	C4		VIVA VOCE OSPE
			• Analyze the clinical conditions.	Should know	C4		
			• 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		
Anatomy (General Anatomy)	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		
			• Analyze the clinical conditions	Should know	C4		
			• 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		
Gross Anatomy SGD	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 carpal 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		
			• Analyze with the clinical conditions.	Should know	C4		
			• 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		
			• Evaluate wrist fractures & Dislocations	Must know	C4		
			• Analyze the clinical conditions	Should know	C4		
			• 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		
			• Analyze the clinical conditions	Should know	C4		
			• 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,	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		
			• Synthesize the outline of flexor and extensor retinacula on a simulated patient or a model.	Must know	C6		

			• Describe the Guyon’s canal.	Must know	C2	Skill Lab	
			• Describe the formation of the carpal tunnel and evaluate applied anatomy.	Must know	C4		
			• Describe the attachment of extensor retinaculum and its various compartments with structures passing through it.	Must know	C2		
			• Evaluate the De Quervain’s disease.	Should know	C4		
			• Analyze the clinical conditions.	Should know	C4		
			• 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		
Anatomy (SDL)	M2-MSK-I-A-0044	Avascular Necrosis of Scaphoid Bone	• Understand the arrangement of carpal bones	• Clinical Oriented Anatomy by Keith L. Moore.8TH Edition. Chapter 3, Page148-151,278-283). • https://teachmeanatomy.info/upper-limb/muscles/hand/			
			• Identify the salient features of carpal bone.				
			• Discuss the special blood supply of scaphoid bone.				
			• Describe the midcarpal joint.				
			• Discuss the 1st 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				
			• Use Digital Library				
	M2-MSK-I-A-0045	Wrist dislocation	• Describe the type of joint with its articular surfaces	• Clinical Oriented Anatomy by Keith L. Moore.8TH Edition. (Chapter 3, Page278). • https://www.kenhub.com/en/library/anatomy/the-wrist-joint			
	Anatomy (SKL)	M2-MSK-I-A-0052	<u>Cartilage</u> • 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 two points of identification				Should know	C1		
• Enlist sites of hyaline, fibro and elastic cartilage				Should know	C1		
• Focus the slide				Must know	P		
• Identify all three types of cartilages under microscope				Must know	P		

Physiology (LGIS)	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		
Physiology (SGD)	M2-MSK-I-P-0020	Synapse and synaptic transmission & EBSP, IPSP	• Describe synapse and its types	Must know	A	C1	SGD	SAQs MCQs VIVA VOCE
			• Differences between electrical and chemical synapse	Must know	A	C2		

		properties of chemical synapse						
	M2-MSK-I-P-0021	Nernst potential	• Concept of Nernst potential • Equilibrium Potential for different types	Must know	A	C1	SGD	SAQs MCQs VIVA VOCE
Physiology (SDL)	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-0033	ESR Practical I	• Procedure • Precautions • Clinical importance of ESR, normal values	P,A	Skill lab		OSPE	
Biochemistry (LGIS)	M2-MSK-I-B-002	Fluoride, Magnesium & Sulphur	• List the dietary sources of fluoride, magnesium, Sulphur, copper, zinc, selenium, iodine, and manganese	Must know	C1	LGIS		MCQ SAQ
			• Explain the biochemical functions of each mineral in	Must Know	C2			

		Copper, Zinc, Selenium, Iodine, Manganese	the human body.				SEQ VIVA
			• Apply knowledge of trace elements to explain clinical features resulting from their deficiency or excess.	Nice to Know	C3		
			• Analyze the impact of iodine deficiency on thyroid hormone levels and metabolic rate.	Nice to Know	C4		
			• Critically assess the risks and benefits of fluoride supplementation in community water supplies.	Nice to Know	C5		
			• 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	Nice to know	C3		
	M2-MSK-I-B-004	Vitamin A & E	• Enlist dietary sources of vitamin A& E	Should Know	C1	LGIS	MCQ SAQ SEQ VIVA
			• Describe the biochemical functions of vitamin A& E	Must know	C2		
			• Analyze the biochemical basis and clinical manifestations of vitamin A &E	Should Know	C4		
			• Evaluate the toxic effects of hypervitaminosis A and relate them to excessive intake.	Nice to know	C5		
			• 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	Nice to know	C3		
Biochemistry (SDL)	M2-MSK-I-B-014	Rickets	• Describe the role of vitamin D in calcium and phosphate homeostasis and bone mineralization.	Must Know	• Textbook of Lippincott 8 th Edition Chapter # 28 page #423,432-436,441,444 • Textbook of Harper 32 nd Edition Chapter # 44 page# 538-540 • https://byjus.com/chemistry • https://youtu.be/00_7cr8WVHU?si=ZcipynU8qHcMsAit		
			• Apply knowledge of calcium–phosphate–vitamin D metabolism to explain clinical features of rickets such as bone deformities and delayed growth.	Should Know			
			• Interpret basic laboratory findings associated with rickets	Should Know			
	M2-MSK-I-B-015	Applied Biochemistry of	• Enlist Sources of Vitamin A & E	Must Know	• Textbook of Lippincott 8 th Edition Chapter # 28 page #432-436,		

		Vitamin A and E	Describe Deficiency Effects of Vitamin A & E	Should Know	441,444 - Textbook of Harper 32nd Edition Chapter # 44 page# 537-538 & 540 https://youtu.be/7ZFr9xiAt94 https://youtu.be/AJV8qBUvbkc?si=bs8i69MhNFb40Rmm https://youtu.be/AKR1g4aHNb4?si=kZzoOBJxQLUBdo3f		
			Explain Toxic Effects of Vitamin A	Nice to Know			
Biochemistry (SKL)	M2-MSK-I-B-020	Color test for detection of amino acids - Xanthoproteic Test - Million-Nasse’s Test	Perform the Xanthoproteic and Millon–Nasse’s tests on given samples.	Should Know	P	Skill	OSPE
			Use the results to identify the presence of aromatic amino acids and tyrosine-containing proteins	Should Know	P		
Medicine	M2-MSK-I-VI(M)-003	Osteomalacia, rickets Polyarthrits	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			
Community Medicine	M2-MSK-I-VI(CM)-001	Musculoskeletal Disorders	Explain causes of low back pain	C2	LGIS		MCQs
			Describe prevention of low back pain	C2			
			Describe work related musculoskeletal disorders addition with its burden/epidemiology	C2			
			Identify risk factors of Musculoskeletal disorders MSD at workplace	C1			
			Identify risk factors related to MSD due to excessive mobile usage.	C1			
			Describe prevention of exposure to risk factors related to workplace	C1			
Describe the application of ergonomics in MSD related to the above disorders.	C1						
Pharmacology	M2-MSK-I-VI(Pharm)-003	Analgesics	Define and classify analgesics into opioid and non-opioid groups with examples.	C1	LGIS		MCQs
			List the mechanisms of action, therapeutic uses, and common adverse effects of major analgesic drugs.	C1			

			Explain the mechanism of action of opioids and NSAIDs in pain relief.	C2		
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Spiral Courses (3rd Week)
Integrated Undergraduate Research Curriculum (IUGRC)

Theory					
Code	Topic	Learning Objectives	Cognitive Domain	Teaching Strategy	Mode of Assessment
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 C2 C3 C2 C3	Research Club Activity Teaching strategy (LGIS on campus) (SDL/PAL off campus)	Manuscript submission at SJRMC

Multidisciplinary (Hardens Level 9) Clinico-Concept Connect (C³6) Sessions for 3rd Week

Session	Topic	Department	Educational Relevance	At the End of The Demonstration Student Should Be Able To	Learning Domain	Assessment Tool
\Clinico-Concept Connect (C ³ 6) Sessions – III	Hand Pain, Swelling & Instability	Anatomy	Wise Educational Relevance with Specific Learning Objectives	• Describe carpal bones with emphasis on scaphoid.	C2	MCQs
				• Identify anatomical snuffbox boundaries.	C2	MCQs
				• Explain blood supply of scaphoid bone.	C3	MCQs
		Physiology	Pain and restricted movement affect hand function.	• Explain physiology of pain perception after injury.	C2	MCQs
				• Correlate wrist instability with impaired grip.	C4	MCQs
		Biochemistry	Bone fragility may be influenced by vitamin D deficiency.	• Discuss role of calcium and vitamin D in bone strength.	C4	MCQs
				• Explain biochemical basis of fracture risk.	C3	MCQs
		Orthopedics	Early recognition prevents long-term disability.	• Recognize need for urgent immobilization.	C5	MCQs
				• Interpret imaging findings in wrist fractures.	C5	MCQs
		Radiology	Radiology objectives help students understand when imaging is useful, prevent unnecessary investigations, and support cost-effective, evidence-based diagnosis of elbow pain.	• Analyze the role of X-ray and ultrasound in assessing lateral elbow pain and excluding other pathologies.	C4	MCQs
				• Propose an appropriate imaging pathway, identifying when imaging is unnecessary and when USG or MRI is indicated.	C5	MCQs

Theme 4: A Patient Hand Pain, Swelling & Instability (4th Week)

Theme	Rationale	General Learning Objectives
Hand Numbness/Tingling with Grip Dysfunction	Numbness and tingling in the hand are common complaints in primary care, often due to nerve compression syndromes. This theme integrates anatomy of carpal tunnel, physiology of nerve impulse transmission, and biochemical contribution of B vitamins with clinical relevance of carpal tunnel syndrome and neuropathies.	At the end of this theme, students should be able to: • Describe the anatomy of carpal tunnel and median nerve distribution. • Explain the physiology of sensory and motor nerve function. • Discuss the biochemical basis of neuropathy due to vitamin deficiency. • Correlate tingling and grip weakness with nerve compression. • Appreciate early referral and ergonomic prevention.
CASE 4: Hand Numbness/Tingling with Grip Dysfunction A 40-year-old office worker presented to the Family Medicine OPD with tingling and numbness in the thumb, index and middle fingers for the last two months. The symptoms worsen at night and often wake her from sleep. She also reports weak grip and dropping objects while performing daily tasks. She has no history of trauma, diabetes or arthritis. Family history is non-contributory. She works long hours on a computer with repetitive wrist movements. She has taken occasional analgesics but no regular medication. Examination GPE: Middle-aged female, stable vitals, conscious and oriented. Local Examination: Sensation is reduced in median nerve distribution, and wrist flexion reproduces tingling. Mild thenar wasting is noted, suggesting chronic median nerve compression. Systemic Examination: CVS, Respiratory and CNS normal. Entrustable Professional Activities (EPAs) EPA-1: Perform basic sensory and motor hand exam EPA-2: Explain nerve compression in simple language		

EPA-3: Counsel on ergonomic prevention

EPA-4: Recognize progressive weakness needing referral

Justification

This theme integrates Anatomy, Physiology, Biochemistry and Orthopedics through elbow pain as a clinical presentation.

Theme 4: Clinico – concept connect (C³6) Sessions



Harden Level 9 Multidisciplinary

Specific Learning Objectives

Theory							
Subject	Code	Topic	Learning Objectives At the end of session students should be able to	Calgary Gauge	C/P/A	Teaching Strategy	Assessment Tool
Anatomy (Embryology)	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		
			• Compare & contrast different types of twins	Must know	C4		
			• Analyze clinical aspects of fetal membranes	Must know	C4		
			• Evaluate the clinical conditions of twin pregnancy	Should know	C4		
			• 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-0011	Teratogenesis	• Define Teratology	Must know	C1	LGIS	SAQs MCQs VIVA VOCE OSPE
			• Discuss the important principles of teratogenesis.	Must know	C2		
			• Describe diseases associated with chromosomal behaviour during cell division	Must know	C2		
			• List common teratogens and the birth defects caused by them.	Must know	C2		
			• Analyze the clinical conditions	Should know	C4		
			• Discuss key research articles & role of AI	Nice to know	C3		
			• focus on provision of curative and preventive health care measures	Nice to know	C3		
			• Describe the core bioethical principles	Nice to know	C3		
Anatomy (General Anatomy)	M2-MSK-I-A-0020	Joints-II (Movements)	• Describe structure of synovial joint	Nice to know	C2	LGIS	SAQs MCQs VIVA VOCE OSPE
			• Classify synovial joints	Nice to know	C2		
			• Explain movements around synovial joints	Must know	C2		
			• Evaluate Degenerative joint diseases	Must know	C4		

			Describe the involvement of anatomical structure of the articular cartilage in Degenerative joint disease	Must know	C3		
			Analyze the clinical conditions.	Must know	C4		
			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 relevant research article	Nice to know	C3		
			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		
			Synthesize the outline of superficial and deep arterial arches on a simulated patient or model.	Must know	C6		
			Analyze the clinical conditions.	Should know	C4		
			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		
Anatomy (Gross SGD)	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		
			• Evaluate anatomy of pulp space with its common clinical conditions	Must know	C4		
			• Describe dorsal subcutaneous spaces	Must know	C2		
			• Demonstrate surgical incisions.	Must know	C3		
			• Describe different types of grips	Must know	C2		
			• Analyze the clinical conditions.	Should know	C4		
			• 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-0034	Cutaneous Innervation & Dermatomes of upper limb, Force & weight transmission	• Discuss the cutaneous innervation & dermatomes of upper limb.			Must know	C2	SGD, Skill Lab	MCQs SEQs OSVE OSPE OSCE
	• 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		
	• Discuss the surface anatomy of axioappendicular region.	Must know			C2		
	• Create videos of marking of clinically important landmarks on the simulated patient/ models	Must know			C6		
	• Interpret the normal radiologic appearance of bones in axioappendicular region.	Must know			C3		
	• Correlate with the clinical conditions	Should know			C3		
	• Read a relevant research article	Nice to know			C3		
Anatomy (SDL)	M2-MSK-I-A-0047	Carpal Tunnel	• Describe the muscles of dorsum of hand	• Clinical Oriented Anatomy by Keith L. Moore.8TH Edition. (Chapter 3, Page159,224-226). https://teachmeanatomy.info/upper-limb/muscles/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 carpal 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.					
	M2-MSK-I-A-0048	Dupuytren's contracture	Tabulate the muscles forming the thenar and hypothenar eminence.	- Clinical Oriented Anatomy by Keith L. Moore. 8TH Edition. (Chapter 3, Page 243-256). https://teachmeanatomy.info/upper-limb/muscles/hand/				
			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					
Anatomy (SKL)	M2-MSK-I-A-0053	<u>Bone</u> - 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	Must know	C2			
			Write two points of identification	Must know	C1			
			Focus the slide	Must know	P			
Physiology (LGIS)	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 Properties of Chemical synaptic	Discuss in detail various properties of chemical synapse	Should know	B	C2	LGIS	SAQs MCQs VIVA VOCE
			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
Physiology (SGD)	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		
	M2-MSK-I-P-0023	Nerve growth factor (NGF)	Describe NGF	Should know	B	C1	SGD	MCQs SAQs Viva Voce OSPE
			Give their role	Should know	B	C1		
			Explain De-generation and Re-Generation of nerve fibers	Should know	B	C2		
Physiology (SDL)	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)				
Physiology (SKL)	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
Biochemistry (LGIS)	M2-MSK-I-B-005	Niacin & Thiamine	Enlist dietary sources of Niacin & Thiamine	Should Know	C1		LGIS	MCQ SAQ SEQ VIVA
			Explain the biochemical functions of niacin and thiamine in energy metabolism	Must know	C2			
			Apply knowledge of niacin and thiamine metabolism to explain clinical features of pellagra and beriberi.	Should Know	C3			

			Analyze the impact of chronic alcoholism on thiamine deficiency and related neurological complications.	Nice to Know	C4		
			Assess the biochemical and clinical rationale for thiamine administration before glucose infusion in malnourished patients.	Nice to Know	C5		
			- 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	Nice to know	C3		
	M2-MSK-I-B-006	Vitamin C	Enlist dietary sources of Vitamin C	Should Know	C1	LGIS	MCQ SAQ SEQ VIVA
			Explain the biochemical functions of vitamin C	Must know	C2		
			Apply knowledge of vitamin C functions to explain clinical features of scurvy.	Should Know	C3		
			Analyze the relationship between vitamin C deficiency and connective tissue abnormalities.	Nice to Know	C4		
			- 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	Nice to know	C3		
	M2-MSK-I-B-007	Classification & Structure of Amino Acids	Describe the general structure of amino acids	Must Know	C2	LGIS	MCQ SAQ SEQ VIVA
			Classify amino acids based on polarity, nutritional importance and glucogenic/ketogenic properties.	Must Know	C2		
			Explain isomerism of amino acids with examples (D- and L-forms).	Must know	C2		
			Differentiate amino acids based on side-chain properties and their impact on protein structure and behavior.	Nice to Know	C4		
			Apply the strategic use of artificial intelligence in	Nice to know	C3		

			healthcare • Use HEC digital library • Practice principles of bioethics • Understand the curative and preventive health care measures				
	M2-MSK-I-B-009	Minerals	• Discuss Sources, Functions of Phosphate, Iodine, Fluoride, Copper, Zinc, Selenium, Magnesium, Sulphur and Cobalt.	Should Know	C2	SGD	MCQ SAQ SEQ VIVA
			• Apply knowledge of mineral functions to explain clinical features arising from their deficiency or excess	Nice to know	C3		
			• 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	Nice to know	C3		
Biochemistry (SDL)	M2-MSK-I-B-016	Deficiency manifestation of Thiamine	• Describe Biochemical functions of Thiamine • Explain deficiency effects of Thiamine	Must Know Must Know	• Textbook of Lippincott 8th Edition Chapter # 28 Page #429,430 • Textbook of Harper 32nd Edition Chapter # 44 page# 541-542 • https://www.ncbi.nlm.nih.gov/ • https://youtu.be/WAkXS8lgoA0		
	M2-MSK-I-B-017	Deficiency manifestation of Niacin	• Describe Biochemical functions Niacin • Explain deficiency effects of Niacin	Must Know Must Know	• Textbook of Lippincott 8th Edition Chapter # 28and 1 Page #1-5 &429-431 • Textbook of Harper 32nd Edition Chapter # 44 page# 542-543 • https://microbenotes.com/ • https://youtu.be/JICqOf30Fqg?si=zqDOyYsIA28RUI4N		
Biochemistry (SKL)	M2-MSK-I-B-021	Color test for detection of amino acids Arginine by Sakaguchi's Test	• Perform Sakaguchi's test and the Aldehyde test on given samples to detect the presence of arginine and tryptophan, respectively.	Should Know	P	Skill	OSPE

		Tryptophan by Aldehyde Test					
Medicine	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			
Pediatrics	M2-MSK-I-VI(Peads)-001	Poliomyelitis	• Define poliomyelitis and describe the morphology, classification, and types of Poliovirus.	C1	LGIS	MCQs	
			• Explain the pathogenesis and transmission of poliomyelitis, including the mechanism of viral spread to the central nervous system and development of paralysis.	C2			
			• Describe the laboratory diagnosis, prevention, and vaccines used for poliomyelitis, including differences between Oral Polio Vaccine and Inactivated Polio Vaccine	C2			

Spiral Courses (4th Week)

Integrated Undergraduate Research Curriculum (IUGRC)

Theory					
Code	Topic	Learning Objectives	Cognitive Domain	Teaching Strategy	Mode of Assessment
M2-MSK-I-SI(IUGRC)-004	Research Club Activity 3 Manuscript Writing Workshop	At the end of session students will be able to:			
		• Interpret & apply basic principles of manuscript writing of research report	C3	Research Club Activity Teaching strategy (LGIS on campus) (SDL/PAL off campus)	Manuscript submission at SJRMC
		• Perceive authorships requirements or rules of drafting manuscript of a research report for publication in indexed journal	C2		
		• Write discussion section of draft	C2		
		• Explain conclusion, recommendation and acknowledge part of research report	C2		
		• clarify types of citations included in discussion section	C2		

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
M2-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

Multidisciplinary (Hardens Level 9) **Clinico-Concept Connect (C³6) Sessions** for 4th Week

Session	Topic	Department	Educational Relevance	At the End of The Demonstration Student Should Be Able To	Learning Domain	Assessment Tool
\Clinico-Concept Connect (C ³ 6) Sessions – IV	Hand Numbness/Tingling with Grip Dysfunction	Anatomy	Carpal tunnel syndrome results from compression of the median nerve within the anatomical boundaries of the wrist.	- Describe the anatomical boundaries of the carpal tunnel: - Carpal bones - Flexor retinaculum	C2	MCQs
				Identify the structures passing through the carpal tunnel, especially the median nerve.	C2	MCQs
				- Explain the anatomical basis of sensory loss in: - Thumb - Index finger - Middle finger	C3	MCQs
				Correlate thenar muscle wasting with median nerve motor involvement.	C4	MCQs
		Physiology	Tingling and numbness reflect disruption of normal sensory impulse transmission due to nerve compression.	Explain the physiology of sensory nerve conduction and impulse propagation.	C2	MCQs
				Differentiate between sensory and motor nerve dysfunction.	C3	MCQs
				Correlate chronic nerve compression with weakness and loss of fine movements.	C4	MCQs
				Describe the mechanism of nocturnal worsening of symptoms.	C2	MCQs
		Biochemistry	Nutritional deficiencies, particularly vitamin B complex deficiency, can worsen neuropathic symptoms.	Discuss the biochemical role of vitamin B12 and other B vitamins in nerve health.	C4	MCQs
				Explain metabolic causes of peripheral neuropathy.	C2	MCQs
				Relate nutritional imbalance to impaired nerve regeneration.	C3	MCQs
		Family Medicine	Family Medicine objectives emphasize early recognition of occupational disorders, preventive counseling, and comprehensive primary care management to reduce disability and improve quality of life.	Analyze occupational risks, symptoms, and signs to diagnose carpal tunnel syndrome and distinguish it from other neuropathies.	C5	MCQs
				Develop a primary care management plan including ergonomics, splinting, medications, patient education, and referral criteria.	C5	MCQs
		Surgery	Carpal tunnel syndrome	Recognize classic clinical features of carpal tunnel syndrome.	C4	MCQs

			is a common outpatient condition requiring early diagnosis, ergonomic counseling, and referral when severe.	• Outline stepwise management: • Wrist splinting • Ergonomic modification • Surgical decompression in advanced case	C4	MCQs
				• Identify red flag signs such as progressive weakness and muscle wasting.	C4	MCQs

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 (2 nd 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 Body Axis and Fate Map (3 rd week)	• Discuss process of gastrulation with special reference to primitive streak	C2	• Embryology :- KLM Embryology Developing Human 11th Edition • USMLE Q Bank Step 1 (Volume 1) 2023-2034
		• Describe the fate of primitive streak	C2	
		• Discuss establishment of body axis	C2	
		• Draw fate map and discuss its importance in future development	C2	
		• 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	
M2-MSK-I-A-0056	Notochord Formation (3 rd week)	• Define notochord	C1	• Embryology :- KLM Embryology Developing Human 11th Edition • USMLE Q Bank Step 1
		• 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	(Volume 1) 2023-2034
		• 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 (3 rd 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	
M2-MSK-I-A-0058	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-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 • Read relevant research article	C3	
		• Describe early development of cardiovascular system and chorionic villi • Discuss development of intraembryonic coelom • Define angiogenesis and vasculogenesis. • Correlate clinical aspects of angiogenesis • Summarize the main developmental events and changes in external form of the embryo during the 4th to 8th weeks • Corelate with the clinical conditions • focus on provision of curative and preventive health care measures • Practice principles of bioethics • Apply strategic use of AI in health care • read relevant research article	C2	• Embryology :- KLM Embryology Developing Human 11th Edition • USMLE Q Bank Step 1 (Volume 1) 2023-2034
M2-MSK-I-A-0060	Early Development of Cardiovascular System & highlights of 4th-8th week			
		• Enlist different phases of embryonic development • Describe folding of the embryo in median plane • Describe folding of the embryo in horizontal plane • Discuss results of folding • Discuss Omphalocele and Gastroschisis • Corelate with the clinical conditions • focus on provision of curative and preventive health care measures • Practice principles of bioethics • Apply strategic use of AI in health care • read relevant research article	C1	• Embryology :- KLM Embryology Developing Human 11th Edition • USMLE Q Bank Step 1 (Volume 1) 2023-2034
M2-MSK-I-A-0061	Folding of Embryo			
		• Describe different criteria for fetal age estimation • Discuss the trimesters of pregnancy with their importance • Describe highlights of fetal period • Differentiate between embryonic and fetal period • Tabulate growth in length and weight during fetal period • Enumerate and discuss factors influencing fetal growth • Define the term perinatology • Enlist and briefly describe procedures for assessing fetal well-being • Correlate clinical aspects of fetal period • focus on provision of curative and preventive health care measures • Practice principles of bioethics • Apply strategic use of AI in health care • read relevant research article	C2	• Embryology :- KLM Embryology Developing Human 11th Edition • USMLE Q Bank Step 1 (Volume 1) 2023-2034
M2-MSK-I-A-0062	Fetal period			
		• Discuss Implantation and establishment of the embryo within the	C2	

M2-MSK-I-A-0063	Placenta	uterus		• 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	• Enumerate examples and location of reticular, connective tissue	C1	• Histology :-Junqueira's Basic Histology 18th Edition • USMLE Q Bank Step 1 (Volume 1) 2023-2034
		• 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	
M2-MSK-I-A-0068	Cartilage	• read relevant research article	C3	• 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
		• Classify cartilage	C2	
		• 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	
M2-MSK-I-A-0069	Bone-I (Cells & Types)	• read relevant research article	C3	• Histology :-Junqueira's Basic Histology 18th Edition • USMLE Q Bank Step 1 (Volume 1) 2023-2034
		• Describe structure and functions of bone cells	C2	
		• 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	C3	

		measures		
		• 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				
M2-MSK-I-A-0071	Bone-I (General Features)	• Describe the functions of bone and skeleton	C2	• Gross Anatomy :- KLM clinically oriented anatomy edition 10 • USMLE Q Bank Step 1 (Volume 1) 2023-2034
		• Identify general features of bone	C2	
		• Differentiate between maceration and decalcification of bones	C2	
		• 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
		• 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	• 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-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	

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

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 8 th 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 8 th 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 8 th 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-0028	Iodine, Copper, Zinc, Selenium, Manganese	- Recall sources & daily requirements - Discuss their biochemical functions	C1	Should Know	• Textbook of Lippincott 8 th Edition
		Describe Deficiency Effects	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-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	Should 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	C1	Should Know Must Know	
M2-MSK-I-B-0030	Vitamin D	• 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	
		• 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	Should Know	• Textbook of Harper 32nd Edition
M2-MSK-I-B-0031	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	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	C2	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-0032	Niacin & Thiamine	• Enlist Sources • Describe Biochemical functions • Explain Deficiency effects	C1	Should Know Must Know	Textbook of Harper 32 nd 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	C2 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 8 th 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 functions of Calcium	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
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	C2	Should Know	• Textbook of Lippincott 8th Edition Chapter # 29

		requirements of Copper • Discuss their biochemical functions of Copper • Describe Deficiency Effects		Must Know	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 8 th Edition Chapter # 28 page #423,432-436,441,444 • Textbook of Harper 32 nd 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 8 th Edition Chapter # 28 page # 437-440 • Textbook of Harper 32 nd 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 8 th Edition Chapter # 28 Page #435,439 • Textbook of Harper 32 nd Edition Chapter # 44 page# 530-532 • https://www.ncbi.nlm.nih.gov/ • https://youtu.be/ZCINiQX-mxU
M2-MSK-I-B-0041	Deficiency manifestation of Thiamine	• Explain Deficiency effects	C3	Must Know	• Textbook of Lippincott 8 th Edition Chapter # 28 Page #429,430 • Textbook of Harper 32 nd 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 8 th Edition Chapter # 28 and 1 Page #1-5 & 429-431 • Textbook of Harper 32 nd Edition Chapter # 44 page# 534-535 • https://microbenotes.com/ • https://youtu.be/9pwBUTlcxHk

Transdisciplinary, Interdisciplinary & Multidisciplinary 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

SECTION – IV

RMU – 12 Integrated Modular MBBS Curriculum 2026 **Isolation to Beyond Boundaries**

Assessment

RMU – 12 Assessment Framework of Integrated Modular MBBS Curriculum 2026
Isolation to **Beyond Boundaries**

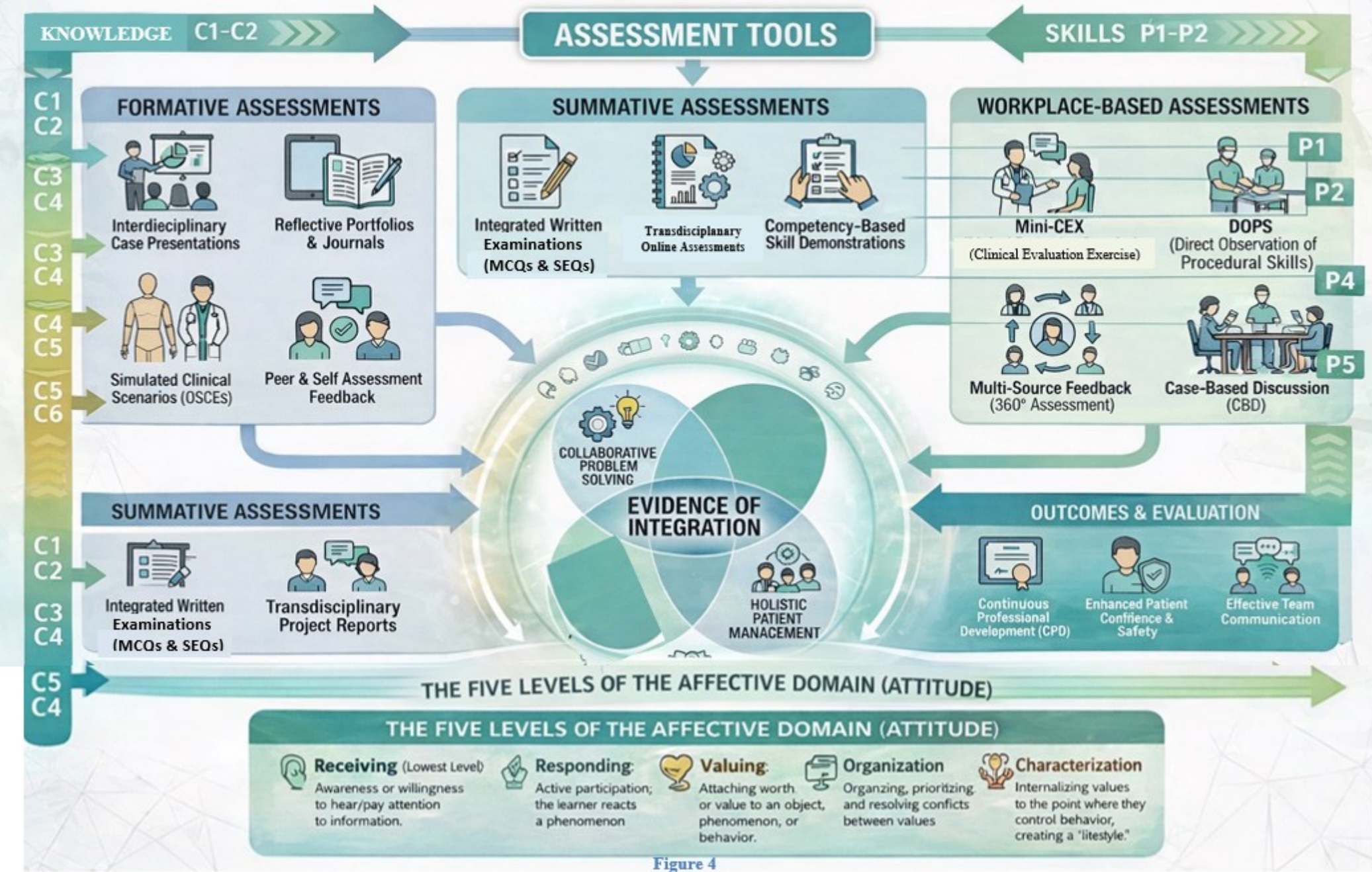


Figure 4

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 assessment instrument 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 and faculty 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. Formative assessment is conducted at both mid-module and end-module stages for clinical lectures and joint multidisciplinary sessions. These assessments are carried out through an on-campus online assessment platform to monitor students' ongoing learning and progress.

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
- 85% 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

3.2.4 Weekly LMS Based Online Assessment

- 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

Table of Specification (TOS) For Module & Block 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 Assesmen 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

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							

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

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.

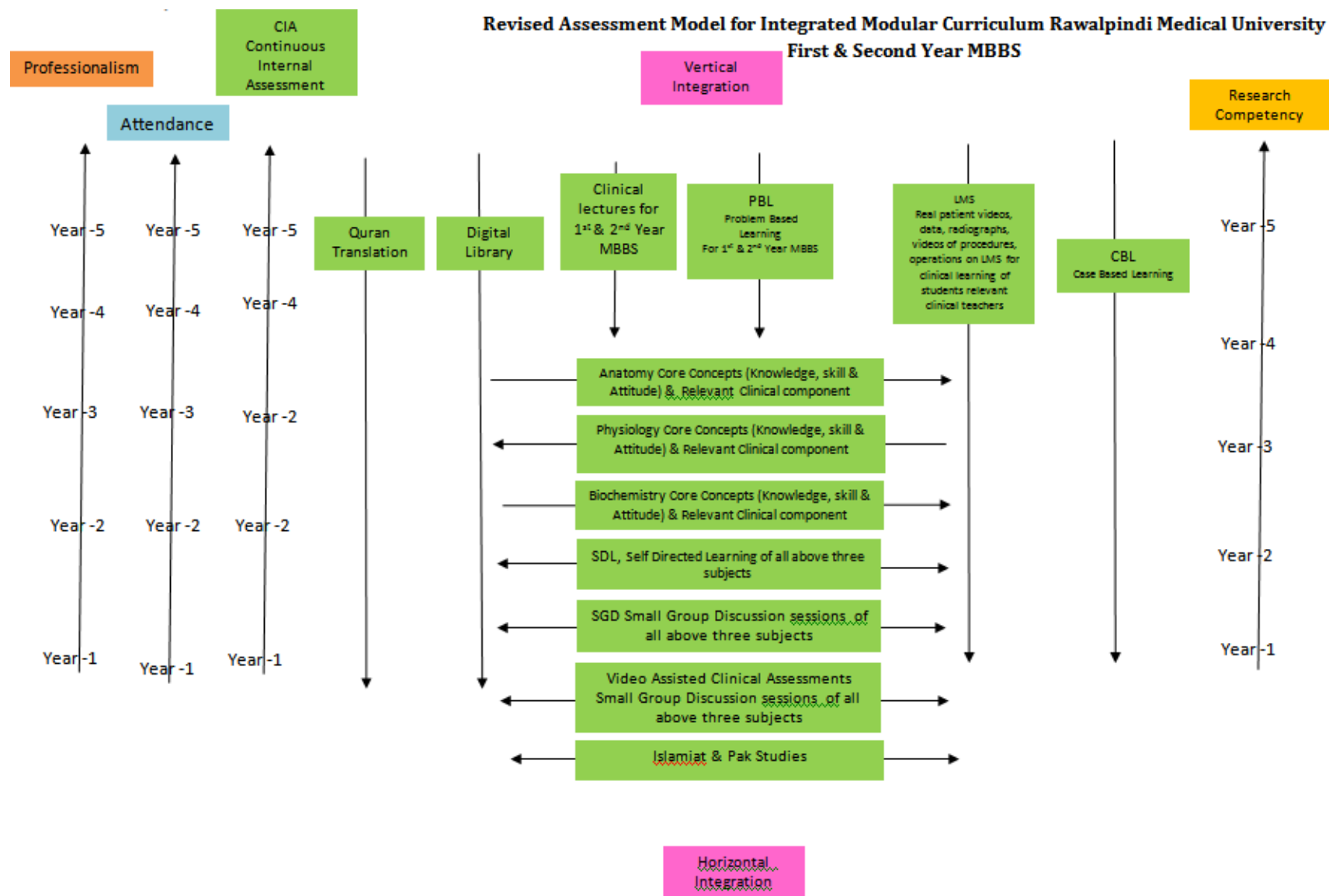
Break up of internal assessment is as follows:

Table 4: Block wise and subject wise distribution of CIA marks = 360Marks (40%)

Subjects	Block-I			Block-II			Block-III			Total CIA (40%)
	On campus assessments (30%)	Online LMS based Summative assessments (10%)	Total (40%)	On campus assessments (30%)	Online LMS based Summative assessments (10%)	Total (40%)	On campus assessments (30%)	Online LMS based Summative assessments (10%)	Total (40%)	
Anatomy	30	10	40	30	10	40	30	10	40	40+40+40=120
Physiology	30	10	40	30	10	40	30	10	40	40+40+40=120
Biochemistry	30	10	40	30	10	40	30	10	40	40+40+40=120
Total Marks of CIA	90	30	120	90	30	120	90	30	120	120+120+120= 360

Once internal assessment is compiled it CANNOT be altered under ANY circumstance unless a clerical/ human error is detected. He will repeat classes and skills There 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 “Mumtahn”“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)	Summative	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 AvOSPE 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)	Summative	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 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)	Summative	30 Minutes				
	Total			3 Hours & 05 Minutes			3 Assessments	
	Sr. #	Module – 4 Hematology & 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 AvOSPE 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)	Summative	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 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)	Summative	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 AvOSPE 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)	Summative	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
Hematology & 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 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)	Summative	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 AvOSPE 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)	Summative	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)	Summative	30 Minutes				
	Total			3 Hours & 05 Minutes			3 Assessments	
	Sr. #	Module – 4 Hematology & 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 AvOSPE 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)	Summative	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 Assessment s	Total Assessments Time			No. of Assessments		
				Assessment Time	Summative Assessment Time	Formative Assessment Time			
Block – II	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)	Summative	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 AvOSPE 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)	Summative	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
Hematology & 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 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)	Summative	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 AvOSPE 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)	Summative	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 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)	Summative	30 Minutes				
	Total			3 Hours & 05 Minutes			3 Assessments	
	Sr. #	Module – 4 Hematology & 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 AvOSPE 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)	Summative	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 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)	Summative	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 AvOSPE 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)	Summative	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
Hematology & 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 Hematology & 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
Hematology & 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.

Table of Specifications for Pre-Annual Examination

- 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
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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		240+ 45 = 285 marks			
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		240+ 45 = 285 marks			
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	Anatomy	50	30	80 marks	240+35 = 275 marks		
	Physiology	50	30	80 marks			
	Biochemistry	50	30	80 marks			
	Total			240 marks			
Total marks (Core subjects + Integrated Subjects)	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		240+35 = 275 marks				
	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.				

Table of Specification: First and Second year Final Annual Assessment (Professional)

Statutes:

1. **Scheduling:** 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.
2. **Subjects:** Every candidate is required to appear in the following subjects in Each Block
 - a. **Core subjects**
Integrated Anatomy, Integrated Physiology and Integrated Biochemistry
 - b. **Vertically integrated Subjects**
Community Medicine & Public Health, Behavioural Sciences, Pathology, Pharmacology and 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.
3. **Assessments:** There will be three papers in First Annual Professional Examination and four papers in the Second Annual professional Examination.

Table: 1 Number of Papers/Blocks in First & 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	Nil	GEC (Islamic Studies & Pakistan Studies)

- a. **First Professional Examination Total Marks = 900***
 - i. Block I Assessment Total Marks = 300
 - ii. Block II Assessment Total Marks = 300
 - iii. Block III Assessment Total Marks = 300

b. Second Professional Examination Total Marks = 1000 *

- i. Block I Assessment Total Marks = 300
- ii. Block II Assessment Total Marks = 300
- iii. Block III Assessment Total Marks = 300
- iv. GEC Assessment (Islamic Studies & Pakistan Studies) Total Marks = 100

4. Continuous Internal Assessment (CIA):

Continuous Internal Assessment shall carry total marks = 360 (40% of the total allocated marks= 900) for first and second year MBBS .CIA will have two components for each block

A: On Campus assessments (30%) = 270 Marks

B: Online LMS Based Summative Assessments (10%) = 90 Marks

Total marks for each block per subject will be 120 marks.

5. Block Assessment Components: The components of Block Assessment shall be as follows:

A. One Theory Paper (Knowledge(K) having two sections

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

Table: 2 Block wise Number of MCQs and SEQs in First & Second Annual professional Examination

First year MBBS	Number of MCQs	Number of SEQs
Block -I	60	6
Block -II	60	6
Block -III	60	6
Second Year MBBS	Number of MCQs	Number of SEQs
Block -I	60	6
Block -II	60	6
Block -III	60	6

B. Skill Assessment Component (Practical(P) and Attitude(A)):

The assessment will include an Objective Structured Practical Examination (OSPE) with a total of 18 stations, time allocated for each station will be 3 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.

iii. 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.

iv. 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 total marks 10.

Table: 3 Block wise Number of OSPE and OSVE Stations in First & Second Annual professional Examination

First year MBBS	Number of LabOSPE Stations	Number of iOSPE Stations	Number of OSCE Stations	Number of table VIVA /OSPE Station
Block -I	5	3	4	6
Block -II	5	3	4	6
Block -III	4	3	5	6
Second Year MBBS	Number of LabOSPE Stations	Number of iOSPE Stations	Number of OSCE Stations	Number of table VIVA /OSPE Station
Block -I	4	3	5	6
Block -II	5	3	4	6
Block -III	5	3	4	6

Table: 4 Block wise Total Number of MCQs, SEQs OSPE and OSVE Stations in First & Second Annual Professional Examination

First year MBBS	Number of MCQs	Number of SEQs	Number of OSPE Stations + OSVE
Block -I	60	6	18
Block -II	60	6	18
Block -III	60	6	18
Total	180 MCQs	18 SEQs	54 OSPE Stations
Second Year MBBS	Number of MCQs	Number of SEQs	Number of OSPE Stations + OSVE
Block -I	60	6	18
Block -II	60	6	18
Block -III	60	6	18
Total	180 MCQs	18 SEQs	54 OSPE Stations

- 5 **Annual Examination Eligibility Criteria:** Eligibility to appear in Annual Professional will be as per RMU Assessment Policy approved by the Academic Council and Syndicate.
- 6 **Passing Criteria:** The students of First & Second year MBBS must secure at least 50% marks separately in theory and practical exams of all core subjects (Anatomy, Physiology & Biochemistry), with an overall aggregate of 50% to pass in a Block Assessment. *
- 7 **Supplementary Examination Criteria:** If a student fails in any component (subject) within a Block, they shall appear in relevant block **only in that failed subject (s)** during the Supplementary Examination.

Table: 5 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 & Arts)

Blocks	Subjects	Total marks	Module 1	Module 2	Total marks
Block 1 (90 Marks)	Anatomy	30	15 marks	15 marks	90
	Physiology	30	15 marks	15 marks	
	Biochemistry	30	15 marks	15 marks	
Block 2 (90 Marks)	Anatomy	30	15 marks	15 marks	90
	Physiology	30	15 marks	15 marks	
	Biochemistry	30	15 marks	15 marks	
Block 3 (90 Marks)	Anatomy	30	15 marks	15 marks	90
	Physiology	30	15 marks	15 marks	
	Biochemistry	30	15 marks	15 marks	
Total marks					270 Marks
GEC	General Education Cluster				
K	Knowledge				

*Reference: University of Health Sciences Lahore (87th meeting of syndicate) Annexure 1

Previous Model with 30% CIA
Annual Assessment Plan of First Year MBBS 2024 (Batch 51)

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

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

B: Extrapolated marks to be calculated from Summative assessments throughout the Academic Year 2024

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

1470 Marks	Module 2	200	200	200	600
	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 .

Continuous Internal Assessment (CIA) Plan of First Year MBBS 2025 With CIA 40%

- Total First Professional Marks: 900
- Annual Marks: (60%) =540 Marks
- Continuous Internal Assessment (40%)

Components of CIA

- **A:** CIA calculated from on campus assessments including LMS (on campus) =30%=270 Marks
- **B:** CIA calculated from Online LMS Assessments =10%=90 Marks

Table1: CIA calculated from on campus assessments =30%= 270 Marks

Total Block Marks	Subjects	Block wise subject Marks	Module 1 Marks	Module 2 Marks	Block Marks	Total Block Marks
Block – I 90 Marks	Anatomy	30 (Theory-15 Practical-15)	10 marks (Theory-6 Practical-4)	10 marks (Theory-6 Practical-4)	10 Marks (Theory-3 Practical-7)	Block – I 90 Marks
	Physiology	30 (Theory-15 Practical-15)	10 marks (Theory-6 Practical-4)	10 marks (Theory-6 Practical-4)	10 Marks (Theory-3 Practical-7)	
	Biochemistry	30 (Theory-15 Practical-15)	10 marks (Theory-6 Practical-4)	10 marks (Theory-6 Practical-4)	10 Marks (Theory-3 Practical-7)	
	Anatomy	30	10 marks	10 marks	10 Marks	

Block – II 90 Marks		(Theory-15 Practical-15)	(Theory-6 Practical-4)	(Theory-6 Practical-4)	(Theory-3 Practical-7)	Block – II 90 Marks
	Physiology	30 (Theory-15 Practical-15)	10 marks (Theory-6 Practical-4)	10 marks (Theory-6 Practical-4)	10 Marks (Theory-3 Practical-7)	
	Biochemistry	30 (Theory-15 Practical-15)	10 marks (Theory-6 Practical-4)	10 marks (Theory-6 Practical-4)	10 Marks (Theory-3 Practical-7)	
Block – III 90 Marks	Anatomy	30 (Theory-15 Practical-15)	10 marks (Theory-6 Practical-4)	10 marks (Theory-6 Practical-4)	10 Marks (Theory-3 Practical-7)	Block – III 90 Marks
	Physiology	30 (Theory-15 Practical-15)	10 marks (Theory-6 Practical-4)	10 marks (Theory-6 Practical-4)	10 Marks (Theory-3 Practical-7)	
	Biochemistry	30 (Theory-15 Practical-15)	10 marks (Theory-6 Practical-4)	10 marks (Theory-6 Practical-4)	10 Marks (Theory-3 Practical-7)	
Total Marks of CIA						270 Marks

Table 2 : CIA calculated from Online LMS Summative Assessments = 10% = 90 Marks

Total Block Marks	Subjects	Block wise subject Marks	Module 1 Marks	Module 2 Marks	Total Block Marks
Block – I 30 Marks	Anatomy	10 (Theory-5 Practical-5)	5 marks (Theory-2.5 Practical-2.5)	5 marks (Theory-2.5 Practical-2.5)	Block – I 30 Marks
	Physiology	10 (Theory-5 Practical-5)	5 marks (Theory-2.5 Practical-2.5)	5 marks (Theory-2.5 Practical-2.5)	
	Biochemistry	10 (Theory-5 Practical-5)	5 marks (Theory-2.5 Practical-2.5)	5 marks (Theory-2.5 Practical-2.5)	
Block – II 30 Marks	Anatomy	10 (Theory-5 Practical-5)	5 marks (Theory-2.5 Practical-2.5)	5 marks (Theory-2.5 Practical-2.5)	Block – II 30 Marks
	Physiology	10 (Theory-5 Practical-5)	5 marks (Theory-2.5 Practical-2.5)	5 marks (Theory-2.5 Practical-2.5)	

		Practical-5)	Practical-2.5)	Practical-2.5)	
	Biochemistry	10 (Theory-5 Practical-5)	5 marks (Theory-2.5 Practical-2.5)	5 marks (Theory-2.5 Practical-2.5)	
Block – III 30 Marks	Anatomy	10 (Theory-5 Practical-5)	5 marks (Theory-2.5 Practical-2.5)	5 marks (Theory-2.5 Practical-2.5)	Block – III 30 Marks
	Physiology	10 (Theory-5 Practical-5)	5 marks (Theory-2.5 Practical-2.5)	5 marks (Theory-2.5 Practical-2.5)	
	Biochemistry	10 (Theory-5 Practical-5)	5 marks (Theory-2.5 Practical-2.5)	5 marks (Theory-2.5 Practical-2.5)	

Table 3 : Extrapolated marks to be calculated from on campus 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 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 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.

Table 4: Block wise and subject wise distribution of CIA marks = 360Marks (40%)

Subjects	Block-I			Block-II			Block-III			Total CIA (40%)
	On campus assessments (30%)	Online LMS based Summative assessments (10%)	Total (40%)	On campus assessments (30%)	Online LMS based Summative assessments (10%)	Total (40%)	On campus assessments (30%)	Online LMS based Summative assessments (10%)	Total (40%)	
Anatomy	30	10	40	30	10	40	30	10	40	40+40+40=120
Physiology	30	10	40	30	10	40	30	10	40	40+40+40=120
Biochemistry	30	10	40	30	10	40	30	10	40	40+40+40=120
Total Marks of CIA	90	30	120	90	30	120	90	30	120	120+120+120= 360

Table: 5 Module wise No of MCQs per subject per LMS Based Summative Assessment (10% CIA)

	No of MCQs per subject per LMS Based Summative Assessment	Module :1 (Number of MCQs x Number of LMS)	Module :2 (Number of MCQs x Number of LMS)	Module :3 (Number of MCQs x Number of LMS)	Module :4 (Number of MCQs x Number of LMS)	Module :5 (Number of MCQs x Number of LMS)	Module :6 (Number of MCQs x Number of LMS)	TOTAL Number of MCQs
Anatomy	40 MCQs	40 x2= 80 MCQs	40 x2= 80 MCQs	40 x2= 80 MCQs	40 x2= 80 MCQs	40 x2= 80 MCQs	40 MCQs	440
Physiology	40 MCQs	40 x2= 80 MCQs	40 x2= 80 MCQs	40 x2= 80 MCQs	40 x2= 80 MCQs	40 x2= 80 MCQs	40 MCQs	440
Biochemistry	40 MCQs	40 x2= 80 MCQs	40 x2= 80 MCQs	40 x2= 80 MCQs	40 x2= 80 MCQs	40 x2= 80 MCQs	40 MCQs	440
Total Number of MCQs		240	240	240	240	240	120	1320

Table:6 Table of specification of Continuous Internal Assessment (CIA) for LMS Based Summative Assessment

Subjects	Total No of MCQs Per LMS	Knowledge (K) +Practical (SKL)								Total time per LMS Assessment
		LGIS ,SGDs& Skill lab (50%)					SDL (50%)			
		Number of MCQs	Cognitive Domain			SKL	Number of MCQs	Cognitive Domain		
			C1	C2	C3			C1	C2	C3
Anatomy	40	20	2	3	10	5	20	5	5	10
Physiology	40	20	2	3	10	5	20	5	5	10
Biochemistry	40	20	2	3	10	5	20	5	5	10

Note: An LMS-based assessment conducted during the block is regarded as part of the on-campus assessment, with the resulting CIA contributing to the 30% weightage.

The time allocated for LMS Based Summative assessment (off Campus) will be 30 minutes for 40 Mcqs (0.75 seconds for 1 MCQ)

Table: 7 Table of specification of Continuous Internal Assessment (CIA) for First and Second year MBBS (On Campus assessments (30%))

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				
		C	HV	S	Total	Time	C	HV	S	Total	Marks	Time			
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														

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											

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			

Final Annual Assessment (First professional Examinations) 2025(Batch 52)

- Total First Professional Marks: 900
- Continuous Internal Assessment (40%) =360 Marks
- Annual Marks: (60%) =540 Marks

A: First Professional Examination (60%)

A: First Professional Examination (60%) Total marks = 540 Marks		
Subjects	% Weightage of subjects	Marks distribution as per weightage
Anatomy	35%	188 Marks
Physiology	31%	166 Marks
Biochemistry	21%	114 Marks
Integrated Subjects Community Medicine & Public Health/Research Behavioural Sciences Pathology Pharmacology Radiology Family Medicine Surgery Medicine Gynae & Obs Orthopedics Pediatrics Surgery Ophthalmology Otorhinolaryngology	7 %	42Marks
Early Clinical Exposure ALPHA and General Education Cluster (GEC)	6 %	30 Marks
Total Marks		540 Marks

B: Block wise Distribution of Marks

Total Annual Professional Marks (60%)	BLOCK 1 Marks	BLOCK 2 Marks	BLOCK 3 Marks	Total Marks
540Marks	180 Marks	180 Marks	180 Marks	540 Marks

C: Subject wise marks breakup in Blocks

Subjects	Block 1	Block 2	Block 3	Total Marks
Anatomy	72 Marks	68 Marks	48 Marks	188 Marks (35%)
Physiology	40 Marks	54 Marks	72 Marks	166 Marks (31%)
Biochemistry	42 Marks	34 Marks	38 Marks	114 Marks (21%)
Integrated Subjects	26 Marks	24 Marks	22 Marks	72 Marks (13%)

D: Subject wise distribution of Marks for First year MBBS (Batch 52)

Block	Subjects	Theory	Practical	Total marks	Total marks
Block 1 (Core subjects + Integrated Subjects)	Anatomy	37 marks	35 marks	72 marks	(Core subjects + Integrated Subjects)
	Physiology	20 marks	20 marks	40 marks	
	Biochemistry	17 marks	25 marks	42 marks	
	Total	74	80	154 marks	
	Integrated Subjects			26Marks	

180 Marks	Community Medicine /Research	3Marks			154+26 = 180 marks
	Behavioural Sciences	2 Marks			
	Pathology	2 Marks			
	Pharmacology	3 Marks			
	Radiology	1 Mark			
	Gynae & Obs	1 Mark			
	Medicine	1 Mark			
	Family Medicine	1 Mark			
	Paediatrics	1 Mark			
	Surgery	1 Mark			
	ECE		5 Marks		
	ALPHA and GEC		5 Marks		
	Total marks		154+26 = 180 marks		
Block	Subjects	Theory	Practical	Total marks	Total marks
Block 2 (Core subjects + Integrated Subjects) 210 Marks	Anatomy	33 marks	35 marks	68 marks	(Core subjects + Integrated Subjects) 156 +24 = 180 marks
	Physiology	29 marks	25 marks	54 marks	
	Biochemistry	14 marks	20 marks	34 marks	
	Total	76	80	156 Marks	
	Integrated Subjects			24 Marks	
	Community Medicine /Research	2 Marks			
	Family Medicine	1 Mark			
	Orthopedics	2 Marks			
	Radiology	2 Marks			
	Medicine	2 Marks			
	Gynae & Obs	1 Mark			
	Behavioural Sciences	2 Marks			
	Pathology	2 Marks			
	ECE		5 Marks		
	ALPHA and GEC		5 Marks		
	Total marks		156+24 = 180 marks		
Block	Subjects	Theory	Practical	Total marks	Total marks
Block 3	Anatomy	23 marks	25 marks	48marks	

210 Marks	Physiology	42 marks	30 marks	72 marks	(Core subjects + Integrated Subjects) 158+22 = 180 marks
	Biochemistry	13 marks	25 marks	38 marks	
	Total	78	80	158 marks	
	Integrated Subjects			22 Marks	
	Community Medicine	1 Marks			
	Behavioural Sciences	1 Marks			
	Medicine	1 Marks			
	Family medicine	1 Mark			
	Gynae & Obs	1 Mark			
	Radiology	1 Mark			
	Pediatrics	1 Mark			
	Otorhinolaryngology	1 Mark			
	Ophthalmology	1 Mark			
	Pathology	1 Marks			
	Pharmacology	1 Marks			
	ECE		5 Marks		
	ALPHA and GEC		5 Marks		
	Total marks		158+22 = 180 marks		
GRAND TOTAL MARKS		540 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 Stations	Marks	
Block I Total Annual marks=180	Section I- MCQ	60x1	60	LabOSPE	5 X 5	25	180
	Section II- SEQ	6x5	30	iOSPE	3 X 5	15	
				OSCE	4 X 5	20	
				OSVE	6 x 5	30	
	Total		90	Total		90	
CIA = 120 Marks	Continuous Internal Assessment (40%)		60	Continuous Internal Assessment (40%)		60	120

Total Annual marks+ CIA =180+120= 300	Total Marks		150	Total Marks		150	300
Block II Total Annual marks=180	Section I- MCQ	60x1	60	LabOSPE	5 X 5	25	180
	Section II- SEQ Total	6x5	30	iOSPE	3 X 5	15	
			30	OSCE	4 X 5	20	
			30	OSVE	6 x 5	30	
			90	Total		90	
CIA = 120 Marks	Continuous Internal Assessment (40%)		60	Continuous Internal Assessment (40%)		60	120
Total Annual marks+ CIA =180+120= 300	Total Marks		150	Total Marks		150	300
Block III Total Annual marks=180	Section I- MCQ	60x1	60	LabOSPE	5 X 5	25	180
	Section II- SEQ Total	6x5	30	iOSPE	3 X 5	15	
			30	OSCE	4 X 5	20	
			30	OSVE	6 x 5	30	
			90	Total		90	
CIA = 120 Marks	Continuous Internal Assessment (40%)		60	Continuous Internal Assessment (40%)		60	120
Total Annual marks + CIA =180+120= 300	Total Marks		150	Total Marks		150	300
Grand Total Marks							900

F: 1st Professional Examination 2025(Batch 52)

Block 1 Assessment Breakup

(Foundation & MSK-1 Module)

Themes	Discipline	Theory			Practical (OSPE)			OSVE	Marks	Total Marks per subject	
		No of MCQs (1 mark each)	No of SEQs (5 mark each)	Marks	No of LabOSPE Stations (5 marks each)	No of iOSPE Stations (5 marks each)	No of OSCE Stations (5 marks each)	OSVE (5 Marks each) (1Internal+1External)		Marks	%
Core & Horizontally Integrated Subjects	Anatomy & Applied /Clinical	22	3	37	3	1	1	2	35	72	40
	Physiology & Applied/Clinical	10	2	20	1	1	-	2	20	40	22
	Biochemistry & Applied/clinical	11	1	16	1	1	1	2	25	41	23
Vertically Integrated Subjects	Community Medicine & Public Health/Research	4	-	4	-	-	-	-	-	4	15
	Behavioural Sciences	2	-	2	-	-	-	-	-	2	
	Pathology	2	-	2	-	-	-	-	-	2	
	Radiology	1		1						1	
	Gynae & 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	
Spirally Integrated Subjects	ECE	-	-	-	-	-	1	-	5	5	
	ALPHA and GEC	-	-	-	-	-	1	-	5	5	
Total		75	6x5=30	90	5x5=25	3x5=15	4x5=20	6 x5=30	90	180	100
Total		90			90					90+90=180	

G: 1st Professional Examination 2025 (Batch 52)

Block 2 Assessment

(MSK-2 & Blood/Immunity Module)

Theme	Subject	Theory			Practical			OSVE		Total Marks per subject	
		No of MCQs (1 mark each)	No of SEQs (5 mark each)	Marks	No of LabOSPE Stations (5 marks each)	No of iOSPE Stations (5 marks each)	No of OSCE Stations (5 marks each)	OSVE (5 Marks each)	Marks	Total Marks	%
Core & Horizontally Integrated Subjects	Anatomy & Applied /Clinical	18	3	33	3	1	1	2	35	68	37
	Physiology & Applied/Clinical	19	2	29	1	1	1	2	25	54	30
	Biochemistry & Applied/clinical	9	1	14	1	1	-	2	20	34	18
Vertically Integrated Subjects	Community Medicine & Public Health	2	-	2	-	-	-	-	-	2	13
	Behavioural Sciences	2	-	2	-	-	-	-	-	2	
	Pathology	2	-	2	-	-	-	-	-	2	
	Family Medicine	1		1						1	
	Orthopedics	2		2						2	
	Radiology	2		2						2	
	Medicine	2		2						2	
	Gynae & Obs	1		1						1	
Spirally Integrated Subjects	ECE	-	-	-	-	-	1	-	5	5	
	ALPHA and GEC	-	-	-	-	-	1	-	5	5	
Total		60	6x5=30	90	5x5=25	3x5=15	4x5=20	6x5=30	90	180	100
Total		90			90				90+90=180		

H: 1st Professional Examination 2025 (Batch 52)

**Block 3 Assessment
(CVS & Respiratory Module)**

Themes	Discipline	Theory			Practical			OSVE	Marks	Total Marks per subject	
		No of MCQs (1 mark each)	No of SEQs (5 mark each)	Marks	No of LabOSPE Stations (5 marks each)	No of iOSPE Stations (5 marks each)	No of OSCE Stations (5 marks each)	OSVE (5 Marks each)		Marks	%
Core & Horizontally Integrated Subjects	Anatomy & Applied /Clinical	13	2	23	1	1	1	2	25	48	27
	Physiology & Applied/Clinical	27	3	42	2	1	1	2	30	72	40
	Biochemistry & Applied/clinical	8	1	13	1	1	1	2	25	38	21
Vertically Integrated Subjects	Community Medicine & Public Health	1	-	1	-	-	-	-	-	1	12
	Behavioural Sciences	1	-	1	-	-	-	-	-	1	
	Pathology	1	-	1	-	-	-	-	-	1	
	Medicine	1		1						1	
	Family medicine	1		1						1	
	Gynae & Obs	1		1						1	
	Radiology	1		1						1	
	Pediatrics	1		1						1	
	Otorhinolaryngology	1		1						1	
	Ophthalmology	1		1						1	
	Pathology	1		1						1	
	Pharmacology	1	-	1	-	-	-	-		1	
Spirally Integrated Subjects	ECE	-	-	-	-	-	1	-	5	5	
	ALPHA and GEC	-	-	-	-	-	1	-	5	5	
Total		60	6x5=30	105	4x5=20	3x5=15	5x5=25	3x5=30	90	180	100
Total		90			90				90+90=180		

SECTION – V

Time Table

RMU – 12 Integrated Modular MBBS Curriculum 2026

Isolation to *Beyond Boundaries*

MSK-I Module Time Table

First Year MBBS

Session 2025 – 2026

Batch - 53

MSK - I Module Team

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

Module Committee			Module Task Force Team		
1.	Vice Chancellor RMU	Prof. Dr. Muhammad Umar	1.	Coordinator	Dr. Summiya Bashir (Assistant Professor of Anatomy)
2.	Director DME & Dean Basic Sciences	Prof. Dr. Ifra Saeed	2.	DME Focal Person	Dr. Farzana Fatima
3.	Additional Director (Assessment) DME	Dr. Arsalan Manzoor Mughal	3.	Co-coordinator	Dr. Nida Fatima (Demonstrator of Anatomy)
4.	Chairperson Physiology	Prof. Dr. Samia Sarwar	4.	Co-Coordinator	Dr. Fahd Anwar (Senior Demonstrator of Physiology)
5.	Chairperson Anatomy	Prof. Dr. Ayesha Yousaf	5.	Co-coordinator	Dr. Romessa Naeem (Demonstrator of Biochemistry)
6.	Chairperson Biochemistry	Dr. Aneela Jamil			
7.	Focal Person Anatomy 1 st Year MBBS	Asso. Prof. Dr. Mohtashim Hina			
8.	Focal Person Physiology	Dr. Sidra Hamid	DME Implementation Team		
9.	Focal Person Pharmacology	Dr. Zunera Hakim	1.	Director DME	Prof. Dr. Ifra Saeed
10.	Focal Person Pathology	Dr. Syeda Aisha	2.	Implementation Incharge 1st & 2 nd Year MBBS	Dr. Arsalan Manzoor Mughal
11.	Focal Person Behavioral Sciences	Dr. Zona Tahir			Dr. Farzana Fatima
12.	Focal Person Community Medicine	Dr. Afifa Kulsoom	3.	Assistant Director DME	Dr. Farzana Fatima
13.	Focal Person Quran Translation Lectures	Dr. Fahd Anwar	4.	Editor	Muhammad Arslan Aslam
14.	Focal Person Family Medicine	Dr. Sadia Khan			

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 – 3)	- Synopsis Writing - Questionnaire Development - 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/ Ortho	- 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 - Analgesics			
	Pediatrics	Poliomyelitis			

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)	19 hours
2.	Small Group Discussions (SGD)	$1 * 7 + 2*6=20$ 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)	9.5 hours
2.	Small Group Discussions (SGD)	20 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)					
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- 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 (1 st 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:

Category A*	Category B**	Category C***			
LGIS	LGIS	PBL	CBL	Practical's	SGD
Introduction and classification of vitamins & vitamin D	Minerals: Introduction & Classification. Calcium & Phosphate		- Night Blindness - Rickets	7 Colour Tests for Proteins	Introduction & Classification of Vitamins. Vitamin E
	Vitamin C			Serum Calcium & Ascorbic Acid	
	Niacin & Thiamine Magnesium, Sulphur, Fluoride Minerals: Copper, Zinc, Selenium, Iodine, Magnesia Classification & Structure of Amino Acids& Isomerism					•Minerals

Category A*: Associate Professor & Assistant Professor

Category B:** Senior Demonstrators & APWMO

Category C*:** By All Demonstrators

Teaching Staff / Human Resource of Biochemistry

Sr. #	Designation of Teaching Staff / Human Resource	Total number of teaching staff
1.	Associate professor of biochemistry department	01
2.	Assistant professor of biochemistry department (AP)	02
3.	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)	$1 * 7 = 7$ hours	07

Time Table for Musculoskeletal-I Module (First Week)

(16-03-2026 to 01-04-2026)

Date/Day	Theme	8:00am-9:20am		9:20am – 10:10am	10:10am – 10:30am	10:30am-11:10am		11:10am-11:50am		11:50am – 01:00pm	Home Assignments (2hrs)			
16-03-2026 Monday	A Patient with Shoulder/Arm Pain with Weakness	BIOCHEMISTRY (LGIS)		PHARMACOLOGY	B r e a k	ANATOMY (LGIS)		PHYSIOLOGY(LGIS)		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 D	Drugs Acting On Neuromuscular Junction		Embryology	Histology	Structure of neurons Classification of neurons and nerve fibers	Nernst Potential & RMP					
		2nd Week of Development	Connective tissue (CT) – I (Cells of CT)											
		Dr. Aneela / Dr. Uzma (Even)	Dr. Kanwal (Odd)	Dt. Uzma Umer		Prof. Dr. Ayesha (Even)	Asso. Prof. Dr. Mohtasham (Odd)	Dr. Sheena (Even)	Dr. Shazia (Odd)					
17-03-2026 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					
		SGD/ DISSECTION				Dr. Rizwana Shahid (Even)	Dr. Farah Pervaiz (Odd)	Dr. Shazia (Even)	Dr. Sheena (Odd)					
18-03-2026 Wednesday						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							
												Asso. Prof. Dr. Mohtasham(Even)	Prof. Dr. Ayesha (Odd)	Dr. Zona Tahir (Odd)	Dr. Zarnain Umer (Even)
19-03-2026 Thursday						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)
Eid-al-Fitr & Spring Vacations (20 th March – 28 th March 2026)														
Date/Day	Theme	8:00am-9:20am		9:20am – 10:10am	10:10am-10:30am	10:30am-11:20am		11:20am-12:10pm	12:10pm-12:30pm	12:30pm – 2:00pm	Home Assignments(2hrs)			
30-03-2026 Monday	A Patient with Shoulder/Arm Pain with Weakness	ANATOMY (LGIS)		FEHM E QURAN – II		FEHM E QURAN – III		SDL	B r e a k	PAPER DISCUSSION				
		Histology	General Anatomy	Two kinds of plural Concept of (و) “And” Common Noun		Demonstrative Noun (This & That for Masculine (هذه - هذا) Demonstrative Noun (This & That for Feminine) (تلك - تلك)				Anatomy				
		Connective tissue-II (Extracellular Matrix & Types of CT)	Bone-I (General Features)							Physiology				
		Asso. Prof. Dr. Mohtasham (Even)	Assit. Prof. Dr. Sumyyia (Odd)							Biochemistry				
		SURGERY/ORTHO		BIOCHEMISTRY (LGIS)		ANATOMY (LGIS)		FAMILY MEDICINE		Practical & Tutorial Venue & topic mentioned at the end (Referred to table no. 1)	SDL Anatomy Shoulder Dislocation			
31-03-2026 Tuesday		Shoulder Dislocation		Definition and classification of vitamins vitamin D	Mineral introduction/ classification/ calcium & Phosphate	Histology	Embryology	Breaking Down Barriers: Effective Pain Management Strategies in Family Medicine						
		Dr. Abdul Wahab (Even)	Dr. Saad Riaz (Odd)	Dr. Kanwal (Even)	Dr. Aneela / Dr. Uzma (Odd)	Connective Tissue – II (Extracellular Matrix & Types of CT)	3 rd week of development (Gastrulation)	Asso. Prof. Dr. Mohtasham (Even)				Prof. Dr. Ayesha (Odd)	Dr Sidra Hamid (Even)	Dr. Sana Latif (Odd)
01-04-2026 Wednesday		SGD/ DISSECTION		CLINICO-CONCEPT CONNECT (C ³ 6) SESSION - I		ANATOMY (LGIS)		PHYSIOLOGY(LGIS)		Practical & Tutorial Venue & topic mentioned at the end (Referred to table no. 1)	SDL Anatomy Biceps Tendinitis, Popeye’s Arm			
		Dissection & Spotting		A Patient with Shoulder/Arm Pain with Weakness		Embryology	General Anatomy	Measurement & effect of electrolytes on RMP	Properties of nerve Fibers					
				Anatomy	Dr. Sajjad Hussain	3 rd week of development (Gastrulation)	Bone-I (General Features)							
				Physiology	Dr. Uzma Kiyani		Prof. Dr. Ayesha (Even)	Assit. Prof. Dr. Sumyyia (Odd)						
				Biochemistry	Dr. Kanwal									
				Pharmacology	Dr. Uzma									
				Orthopedics	Dr. Rehman Rasool									
		Medicine		Dr. Sheryar										

Table No. 1 (Time: 12:20pm – 02:00pm)

Batch Distribution for Practical Skills (all subjects) CBL / Small Group Discussion (Biochemistry and Physiology)			Topics for Skill Lab with Venue	Schedule for Practical																														
<table><tr><td>Sr. No</td><td>Batch</td><td>Roll No.</td></tr><tr><td>1.</td><td>A</td><td>01-70</td></tr><tr><td>2.</td><td>B</td><td>71-140</td></tr><tr><td>3.</td><td>C</td><td>141-210</td></tr><tr><td>4.</td><td>D</td><td>211-280</td></tr><tr><td>5.</td><td>E</td><td>281-onwards</td></tr></table>			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	- Connective Tissue I (Anatomy Histology Practical) Venue- Histology Laboratory-Dr Kashif - Estimation of Calcium and Ascorbic Acid (Biochemistry Practical) Venue- Biochemistry Laboratory - Determination of Hemoglobin concentration (Physiology- Practical)	Day	Histology Practical		Biochemistry Practical			Physiology Practical		Supervised by HOD	Physiology SGD		Biochemistry SGD	
			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																													
	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	A	Dr. Sheena	D	Dr. Uzma Zafar																							
Tuesday	D		C	Dr. Nayab		A	Dr. Sheena	B	Dr. Uzma/Dr. Afsheen	E	Dr. Rahat																							
Wednesday	E		D	Dr. Uzma		B	Dr. Uzma/Dr. Afsheen	C	Dr. Farah	A	Dr. Almas																							
Thursday	B		A	Dr. Almas		D	Dr. Ayesha	E	Dr. Ali	C	Dr. Nayab																							
Saturday	A		E	Dr. Romessa		C	Dr. Farah	D	Dr. Ayesha	B	Dr. Romessa																							
Topics for SGDs / CBL with Venue																																		
- Physiology SGD: Nernst potential (Physiology Lecture Hall 05) - Biochemistry CBL: Rickets (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. Raja Khalid (Demonstrator Biochemistry)	6.	C2	(176-210)	New Lecture Hall Complex Lecture Theater # 03	Dr. Ali Zain (PGT 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 of Anatomy)
4.	B2	(106-140)	Lecture Hall no.03 (First Floor)	Dr. Qurat Ul Ain (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					Table No. 5 Batch Distribution and Venues for Physiology & Biochemistry Small Group Discussion SGDs						
Batches	Roll No	Subgroup	Anatomy Teacher	Venue	Batches	Roll No	Subgroup	Physiology Teacher	Physiology Venue	Biochemistry Teacher	Biochemistry 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. Sumyyia / Dr. Tayyaba (Assistant Professor)	New Lecture Hall Complex 02	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 – 87) B2: Roll No (88 – 104) B3: Roll No (105 – 121) B4: Roll No (122 – 140)	Dr. Zeneara (Demonstrator)	Anatomy Lecture Hall 03	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 – 157) C2: Roll No (158 – 174) C3: Roll No (175 – 191) C4: Roll No (192 – 210)	Dr. Nafeesa Umar (Assistant Professor)	New Lecture Hall Complex 03	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 – 227) D2: Roll No (228 - 244) D3: Roll No (245 – 261) D4: Roll No (262 – 280)	Dr. Nida (Demonstrator)	Anatomy Lecture Hall 04	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. Aisha / Dr. Maria (Demonstrator)	Physiology Lecture Hall 5	Dr. Sana Latif (Senior Demonstrator)	Basement Lecture Hall No. 2
E	281- onwards	E1: Roll No (281 – 297) E2: Roll No (298 – 314) E3: Roll No (315 – 331) E4: Roll No (332 – onwards)	Dr. Sajjad Hussain (Senior. Demonstrator)	Anatomy Museum	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. Ayesha Yousaf					Supervised by Prof. Dr. Samia Sarwar					Supervised by. Dr. Aneela Jamil	

Time Table for Musculoskeletal-I Module Second Week (02-04-2026 to 08-04-2026)

Date/ Day	Theme	8:00am – 10:10am	10:10am-10:30am	10:30am-11:20am	11:20am-12:10pm	12:10pm-12:30pm	12:30pm – 2:00pm	Home Assignments(2hrs)			
02-04-2026 Thursday	Elbow & Forearm Pain After Trauma/Overuse.	SGD / DISSECTION	Break	ANATOMY (LGIS)		SURGERY/ORTHO		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					Tennis elbow, Fracture of Olecranon, radius, ulna
				Bone-II (Classification & Blood Supply)	3 rd week (Notochord formation & Differentiation of Somites)						
				Assit. Prof. Dr. Sumyyia (Even)	Prof. Dr. Ayesha (Odd)	Dr. Mobashir (Even)	Dr. Yasir Hidayat (Odd)				
Date/ Day		8:00 AM – 9:00 AM	9:00 AM – 10:00 AM	10:00 – 11:00AM	11:00AM – 12:00PM	Home Assignments(2hrs)					
03-04-2026 Friday		SGD / DISSECTION	COMMUNITY MEDICINE	ANATOMY (LGIS)		PHYSIOLOGY(LGIS)		SDL Physiology Action Potential			
		Flexor compartment & Neurovascular organization of forearm Batches, Teachers & Venue	Prevention of Accidents	Embryology	General Anatomy	Concept of Degeneration and regeneration	Stimulus & Response &Type of stimuli. Stages of action potential				
				3 rd week (Notochord formation & Differentiation of Somites)	Bone-II (Classification & Blood Supply)						
		Dr Rizwana Shahid (Odd)	Dr. Farah Pervaiz (Even)	Prof. Dr. Ayesha (Even)	Assit. Prof. Dr. Sumyyia Odd)	Dr. Fahd (Even)	Dr. Fareed (Odd)				
Date/ Day		8:00am – 10:10am	10:10am-10:30am	10:30am-11:20am	11:20am-12:10pm	12:10pm-12:30pm	12:30pm – 2:00pm	Home Assignments(2hrs)			
04-04-2026 Saturday		SGD / DISSECTION	Break	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)	3 rd week (Neurulation)						
				Ass. Prof. Dr. Mohtasham (Even)	Prof. Dr. Ayesha (Odd)	Dr. Fareed (Even)	Dr. Fahd (Odd)				
06-04-2026 Monday		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 A & E				
				3 rd week (Neurulation)	Connective Tissue-III (Types of CT)						
				Prof. Dr. Ayesha (Even)	Ass. Prof. Dr. Mohtasham (Odd)	Dr. Uzma / Dr. Aneela (Even)	Dr. Almas (Odd)				
07-04-2026 Tuesday		SGD / DISSECTION		ANATOMY (LGIS)		PBL 1 (SESSION – I)		Practical & Tutorial Venue & topic mentioned at the end (Referred to table no. 1)	SDL Anatomy Colle’s Fracture/ Smith’s Fracture		
		Proximal & Distal Radioulnar Joints		Embryology	Histology	PBL Team					
				4 th -8 th week of development & Early development of CVS	Cartilage						
				Asso. Prof. Dr. Mohtasham (Even)	Asso. Prof. Dr. Arsalan Manzoor Mughal (Even)						
08-04-2026 Wednesday		CLINICO-CONCEPT CONNECT (C ³ 6) SESSIONS		ANATOMY (LGIS)		PHYSIOLOGY (LGIS)		Practical & Tutorial Venue & topic mentioned at the end (Referred to table no. 1)	SDL Anatomy Golfer’s Elbow & Tennis Elbow		
		Elbow & Forearm Pain After Trauma/Overuse		Histology	Embryology	Recording & propagation of action potential & factors effecting nerve conduction &	Refractory period, types of action potential. Graded potential comparison with action potential				
		Anatomy	Dr. Nida Fatima	Cartilage	4 th -8 th week of development & Early development of CVS						
		Physiology	Dr. Ali Zain								
		Biochemistry	Dr. Tayyaba	Asso. Prof. Dr. Arsalan Manzoor Mughal (Even)		Dr. Fareed (Even)	Dr Shazia (Odd)				
		Orthopedics	Dr. M. Hassan								

Table No. 4 Batch Distribution and Venues for Anatomy Small Group Discussion SGDs / Dissections					Table No. 5 Batch Distribution and Venues for Physiology & Biochemistry Small Group Discussion SGDs						
Batches	Roll No	Subgroup	Anatomy Teacher	Venue	Batches	Roll No	Subgroup	Physiology Teacher	Physiology Venue	Biochemistry Teacher	Biochemistry 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. Sumyyia / Dr. Tayyaba (Assistant Professor)	New Lecture Hall Complex 02	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 – 87) B2: Roll No (88 – 104) B3: Roll No (105 – 121) B4: Roll No (122 – 140)	Dr. Zeneera (Demonstrator)	Anatomy Lecture Hall 03	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 – 157) C2: Roll No (158 – 174) C3: Roll No (175 – 191) C4: Roll No (192 – 210)	Dr. Nafeesa Umar (Assistant Professor)	New Lecture Hall Complex 03	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 – 227) D2: Roll No (228 - 244) D3: Roll No (245 – 261) D4: Roll No (262 – 280)	Dr. Nida (Demonstrator)	Anatomy Lecture Hall 04	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. Aisha / Dr. Maria (Demonstrator)	Physiology Lecture Hall 5	Dr. Sana Latif (Senior Demonstrator)	Basement Lecture Hall No. 2
E	281- onwards	E1: Roll No (281 – 297) E2: Roll No (298 – 314) E3: Roll No (315 – 331) E4: Roll No (332 – onwards)	Dr. Sajjad Hussain (Senior. Demonstrator)	Anatomy Museum	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. Ayesha Yousaf					Supervised by Prof. Dr. Samia Sarwar					Supervised by. Dr. Aneela Jamil	

Time Table for Musculoskeletal-I Module Third Week
(09-04-2026 to 15-04-2026)

Date/Day	Theme	8:00am – 09:10am		09:10am – 10:10am		10:10am-10:30am	10:30am-11:20am		11:20am-12:10pm		12:10pm-12:30pm	12:30pm – 2:00pm	Home Assignments(2hrs)
09-04-2026 Thursday	A Patient Hand Pain, Swelling & Instability	RESEARCH CLUB ACTIVITY 2		PBL 1 (SESSION-II)		Break	ANATOMY (LGIS)		PHYSIOLOGY (LGIS)		Break	Practical & Tutorial Venue & topic mentioned at the end (Referred to table no. 1)	SDL Physiology Concept of Degeneration and regeneration
		Questionnaire Development		PBL Team			Histology	Embryology	Refractory period, types of action potential. Graded potential comparison with action potential	NMJ, Introduction concept of motor unit. Neuro muscular transmission, synthesis & fate of acetylcholine			
							Bone I (Cells & types)	Folding of Embryo					
Dr. Farah Pervaiz (Odd)		Dr. Farah Pervaiz (Even)			Asso. Prof. Dr. Mohtasham (Even)	Prof. Dr. Ayesha (Odd)	Dr Shazia (Even)	Prof. Dr. Samia Sarwar/ Dr Aneela(Odd)					
Date/Day		8:00 AM – 9:00 AM		9:00 AM – 10:00 AM		10:00 – 11:00AM		11:00AM – 12:00PM		Home Assignments(2hrs)			
10-04-2026 Friday		BIOCHEMISTRY (LGIS)		MEDICINE		ANATOMY (LGIS)		PHYSIOLOGY(LGIS)		SDL Physiology Nernst Potential & RMP & Action Potential			
		Vitamin A & E	Fluoride, Magnesium & SulphurCopper, Zinc, Selenium, Iodine, Manganese	Osteomalacia, rickets Polyarthritis		Embryology	Histology	NMJ, Introduction concept of motor unit. Neuro muscular transmission, synthesis & fate of acetylcholine	Recording & propagation of action potential & factors effecting nerve conduction & Hyperpolarized state				
						Folding of Embryo	Bone I (Cells & types)						
Dr. Almas (Even)		Dr. Uzma/ Dr. Aneela (Odd)	Dr. Sheryar (Even)	Dr Umer Daraz (Odd)	Prof. Dr. Ayesha (Even)	Asso. Prof. Dr. Mohtasham (Odd)	Prof. Dr. Samia Sarwar/ Dr Aneela (Even)	Dr. Fareed (Odd)					
Date/Day		8:00am – 09:10am		09:10am – 10:10am		10:10am-10:30am	10:30am-11:20am		11:20am-12:10pm		12:10pm-12:30pm	12:30pm – 2:00pm	Home Assignments(2hrs)
11-04-2026 Saturday		SGD/ DISSECTION		PBL 2 (SESSION – I)		Break	ANATOMY (LGIS)		COMMUNITY MEDICINE		Break	Practical & Tutorial Venue & topic mentioned at the end (Referred to table no. 1)	SDL Biochemistry Rickets
		Bones of Hand & Wrist joint		PBL Team			Embryology	Histology	Musculoskeletal Disorders				
							Fetal period	Bone II (Ossification)					
Asso. Prof. Dr. Mohtasham (Even)							Asso. Prof. Dr. Arsalan Manzoor Mughal (Even)	Dr. Farah Pervaiz (Odd)	Dr. Rizwana Shahid (Even)				
13-04-2026 Monday		ANATOMY (LGIS)		PHARMACOLOGY			FEHME QURAN – IV		PHYSIOLOGY (LGIS)			Practical & Tutorial Venue & topic mentioned at the end (Referred to table no. 1)	SDL Biochemistry Deficiency manifestation of Vit A & E
		Histology	Embryology	Analgesics	Laam for emphasis (التأكيد لام) Superlative Degree like أكبر Revision of all Quranic Sentences		SDL: Nernst Potential & RMP & Action Potential	Drugs acting on NMJ, Myasthenia Gravis, Lambert Eaton Syndrome					
		Bone II (Ossification)	Fetal period										
Asso. Prof. Dr. Arsalan Manzoor Mughal (Even)		Asso. Prof. Dr. Mohtasham (Odd)			Qari Abdul Wahid		Dr Jawad (Even)	Prof. Dr. Samia Sarwar/Dr Aneela (Odd)					
14-04-2026 Tuesday		SGD/ DISSECTION					ANATOMY LGIS		PHYSIOLOGY LGIS			Practical & Tutorial Venue & topic mentioned at the end (Referred to table no. 1)	
		Dorsum of Hand, Flexor & Extensor Retinacula					Embryology	General Anatomy	Drugs acting on NMJ, Myasthenia Gravis, Lambert Eaton Syndrome	SDL: Nernst Potential & RMP & Action Potential			
							Placenta	Joints 1(types)					
Prof. Dr. Ayesha (Odd)		Assit. Prof. Dr. Tayyaba (Even)	Prof. Dr. Samia Sarwar /Dr Aneela (Even)	Dr Jawad (Odd)									
15-04-2026 Wednesday		CLINICO-CONCEPT CONNECT (C ³ 6) SESSION-III		PBL 2 (SESSION-II)			ANATOMY LGIS		FEHM E QURAN – V			Practical & Tutorial Venue & topic mentioned at the end (Referred to table no. 1)	SDL Anatomy Wrist Dislocation Mid Clinico-Concept Connect (C36) Session Evaluation
		A Patient Hand Pain, Swelling & Instability		PBL Team			General Anatomy	Embryology	Emphatic Particle إن Preposition “For” ((اللام) Preposition (في)				
		Anatomy	Dr. Nafeesa Kiran				Joints I (Types)	Placenta					
		Physiology	Dr. Fahd Anwar				Assit. Prof. Dr. Tayyaba (Even)	Prof. Dr. Ayesha (Odd)	Qari Abdul Wahid				
		Biochemistry	Dr. Khalid										
		Orthopedics	Dr. Shehzad Anjum										
	Radiology	Dr. Sadia											

Table No. 1 (Time: 12:20pm – 02:00pm)

Batch Distribution for Practical Skills (all subjects) CBL / Small Group Discussion (Biochemistry and Physiology)			Topics for Skill Lab with Venue		Schedule for Practical												
Sr. No			Day		Histology Practical		Biochemistry Practical			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	Supervised by HOD	B	Dr. Rahat		Supervised by HOD	E	Dr. Ali	Supervised by HOD	A	Dr. Sheena	D	Dr. Uzma Zafar	
1.			Tuesday	D		C	Dr. Nayab			A	Dr. Sheena		B	Dr. Uzma/Dr. Afsheen	E	Dr. Rahat	
2.			Wednesday	E		D	Dr. Uzma			B	Dr. Uzma/Dr. Afsheen		C	Dr. Farah	A	Dr. Almas	
3.			Thursday	B		A	Dr. Almas			D	Dr. Ayesha		E	Dr. Ali	C	Dr. Nayab	
4.			Saturday	A		E	Dr. Romessa			C	Dr. Farah		D	Dr. Ayesha	B	Dr. Romessa	
5.			E	281-onwards													
			Topics for SGDs / CBL with Venue														
			• Physiology CBL: Insecticide poisoning (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. Raja Khalid (Demonstrator Biochemistry)	6.	C2	(176-210)	New Lecture Hall Complex Lecture Theater # 03	Dr. Ali Zain (PGT 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 of Anatomy)
4.	B2	(106-140)	Lecture Hall no.03 (First Floor)	Dr. Qurat Ul Ain (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					Table No. 5 Batch Distribution and Venues for Physiology & Biochemistry Small Group Discussion SGDs						
Batches	Roll No	Subgroup	Anatomy Teacher	Venue	Batches	Roll No	Subgroup	Physiology Teacher	Physiology Venue	Biochemistry Teacher	Biochemistry 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. Sumyyia / Dr. Tayyaba (Assistant Professor)	New Lecture Hall Complex 02	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 – 87) B2: Roll No (88 – 104) B3: Roll No (105 – 121) B4: Roll No (122 – 140)	Dr. Zeneera (Demonstrator)	Anatomy Lecture Hall 03	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 – 157) C2: Roll No (158 – 174) C3: Roll No (175 – 191) C4: Roll No (192 – 210)	Dr. Nafeesa Umar (Assistant Professor)	New Lecture Hall Complex 03	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 – 227) D2: Roll No (228 - 244) D3: Roll No (245 – 261) D4: Roll No (262 – 280)	Dr. Nida (Demonstrator)	Anatomy Lecture Hall 04	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. Aisha / Dr. Maria (Demonstrator)	Physiology Lecture Hall 5	Dr. Sana Latif (Senior Demonstrator)	Basement Lecture Hall No. 2
E	281- onwards	E1: Roll No (281 – 297) E2: Roll No (298 – 314) E3: Roll No (315 – 331) E4: Roll No (332 – onwards)	Dr. Sajjad Hussain (Senior. Demonstrator)	Anatomy Museum	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. Ayesha Yousaf					Supervised by Prof. Dr. Samia Sarwar					Supervised by. Dr. Aneela Jamil	

Time Table for Musculoskeletal-I Module Fourth Week (16-04-2026 to 22-04-2026)

Date/Day	Theme	8:00am – 09:10am	09:10am – 10:10am	10:10am-10:30am	10:30am-11:20am	11:20am-12:10pm	12:10pm-12:30pm	12:30pm – 2:00pm	Home Assignments(2hrs)			
16-04-2026 Thursday	Hand Numbness/Tingling with Grip Dysfunction	DISSECTION		Break	BIOCHEMISTRY LGIS		MEDICINE		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	Osteoporosis					
					Dr. Rahat (Even)	Dr. Almas/ Dr Aneela (Odd)	Dr Saima (Even)	Dr Javeria (Odd)				
17-04-2026 Friday		Early Clinical Exposure (ECE)										SDL Physiology Drugs acting on NMJ
Date/Day			8:00am – 09:10am	09:10am – 10:10am	10:10am-10:30am	10:30am-11:20am	11:20am-12:10pm	12:10pm-12:30pm	12:30pm – 2:00pm	Home Assignments(2hrs)		
18-04-2026 Saturday		PEDIATRICS	SGD / DISSECTION		Break	ANATOMY LGIS		GYNAE & OBS		Break	Practical & Tutorial Venue & topic mentioned at the end (Referred to table no. 1)	SDL Biochemistry Deficiency manifestation of Thiamin
		Poliomyelitis	Cross Sectional Anatomy	Embryology		General Anatomy	Bony PELVIS Fetal Skull & Mechanism of Labor					
		Dr. Kaneez Fatima (Odd)		Dr. Naila Iqra (Even)		Fetal membranes & multiple pregnancy			Joints II			
		Dr. Kaneez Fatima (Odd)	Dr. Naila Iqra (Even)	Prof. Dr. Ayesha (Even)		Assit. Prof. Dr. Tayyaba (Odd)	Dr. Aqsa Ikraam (Even)	Dr. Masooda Rasheed (Odd)				
20-04-2026 Monday		SGD/ DISSECTION		RESEARCH CLUB ACTIVITY 3		BIOCHEMISTRY (LGIS)		Practical & Tutorial Venue & topic mentioned at the end (Referred to table no. 1)	SDL Biochemistry Deficiency manifestation of Niacin			
	Palm of hand-I Muscles & Neurovascular organization		Manuscript Writing Workshop			Vitamin C, Niacin & Thiamine	Classification & Structure of Amino Acids Isomerism					
			Dr. Farah Pervaiz (Even)	Dr. Rizwana Shahid (Odd)		Dr. Almas/Dr Aneela (Even)	Dr. Rahat (Odd)					
21-04-2026 Tuesday	SGD/ DISSECTION		ANATOMY LGIS			BEHAVIORAL SCIENCES		Practical & Tutorial Venue & topic mentioned at the end (Referred to table no. 1)	SDL Anatomy Carpal Tunnel Syndrome			
	Palm of hand-II Fascial spaces of hand Grip		General Anatomy	Embryology		Relevance of ethics in life of a doctor						
			Joints II	Fetal membranes & Multiple Pregnancy								
22-04-2026 Wednesday	SGD / DISSECTION		ANATOMY LGIS		CLINICO-CONCEPT CONNECT (C ³ 6) SESSION - IV		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	Hand Numbness/Tingling with Grip Dysfunction							
			Teratogenesis	Teratogenesis	Anatomy	Dr. Zenera						
					Physiology	Dr. Shazia Nousheen						
					Biochemistry	Dr. Rahat						
					Family Medicine	Dr. Sidra Hamid						
					Plastic Surgery	Dr Huraira Yaseen.						

Table No. 1 (Time: 12:20pm – 02:00pm)

Batch Distribution for Practical Skills (all subjects) CBL / Small Group Discussion (Biochemistry and Physiology)			Topics for Skill Lab with Venue	Schedule for Practical											
				Day	Histology Practical		Biochemistry Practical			Physiology Practical		Supervised by HOD	Physiology SGD		Biochemistry SGD
Sr. No	Batch	Roll No.			Batch	Teacher Name	Batch	Teacher Name		Batch	Teacher Name		Batch	Teacher Name	Batch	Teacher Name
			- Bone (Anatomy Histology Practical) Venue-Histology Laboratory-Dr. Kashif - Sakguchi & Tryptophan Test (Biochemistry Practical) Venue-Biochemistry Laboratory - Determination of Differential leukocyte Count (DLC)(Physiology-Practical)	Monday	C	Supervised by HOD	B	Dr. Rahat	Supervised by HOD	E	Dr. Ali	A	Dr. Sheena	D	Dr. Uzma Zafar
1.	A	01-70		Tuesday	D		C	Dr. Nayab		A	Dr. Sheena	B	Dr. Uzma/Dr. Afsheen	E	Dr. Rahat
2.	B	71-140		Wednesday	E		D	Dr. Uzma		B	Dr. Uzma/Dr. Afsheen	C	Dr. Farah	A	Dr. Almas
3.	C	141-210		Thursday	B		A	Dr. Almas		D	Dr. Ayesha	E	Dr. Ali	C	Dr. Nayab
4.	D	211-280		Saturday	A		E	Dr. Romessa		C	Dr. Farah	D	Dr. Ayesha	B	Dr. Romessa
5.	E	281-onwards													
			Topics for SGDs / CBL with Venue												
			- Physiology: NMJ, Transmission across NMJ, Diseases of NMJ (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. Raja Khalid (Demonstrator Biochemistry)	6.	C2	(176-210)	New Lecture Hall Complex Lecture Theater # 03	Dr. Ali Zain (PGT 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 of Anatomy)
4.	B2	(106-140)	Lecture Hall no.03 (First Floor)	Dr. Qurat Ul Ain (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					Table No. 5 Batch Distribution and Venues for Physiology & Biochemistry Small Group Discussion SGDs						
Batches	Roll No	Subgroup	Anatomy Teacher	Venue	Batches	Roll No	Subgroup	Physiology Teacher	Physiology Venue	Biochemistry Teacher	Biochemistry 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. Sumyyia / Dr. Tayyaba (Assistant Professor)	New Lecture Hall Complex 02	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 – 87) B2: Roll No (88 – 104) B3: Roll No (105 – 121) B4: Roll No (122 – 140)	Dr. Zeneara (Demonstrator)	Anatomy Lecture Hall 03	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 – 157) C2: Roll No (158 – 174) C3: Roll No (175 – 191) C4: Roll No (192 – 210)	Dr. Nafeesa Umar (Assistant Professor)	New Lecture Hall Complex 03	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 – 227) D2: Roll No (228 - 244) D3: Roll No (245 – 261) D4: Roll No (262 – 280)	Dr. Nida (Demonstrator)	Anatomy Lecture Hall 04	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. Aisha / Dr. Maria (Demonstrator)	Physiology Lecture Hall 5	Dr. Sana Latif (Senior Demonstrator)	Basement Lecture Hall No. 2
E	281- onwards	E1: Roll No (281 – 297) E2: Roll No (298 – 314) E3: Roll No (315 – 331) E4: Roll No (332 – onwards)	Dr. Sajjad Hussain (Senior. Demonstrator)	Anatomy Museum	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. Ayesha Yousaf					Supervised by Prof. Dr. Samia Sarwar					Supervised by. Dr. Aneela Jamil	

Make-Up Classes Will Be Arranged for Lectures Missed Due to Local Holidays
Time Table for Musculoskeletal-I Module Fourth Week
(23-04-2026 to 25-04-2026)

Date/Day	Theme	8:00am – 09:10am		09:10am – 10:10am		10:10am-10:30am	10:30am-11:20am		11:20am-12:10pm		12:10pm-12:30pm	12:30pm – 2:00pm		Home Assignments(2hrs)
23-04-2026 Thursday	A Patient Hand Pain, Swelling & Instability	ANATOMY (LGIS)		PHYSIOLOGY (LGIS)		Break	Lecture by Department of Anti Narcotic Force (ANF, Punjab) Venue: Lecture Hall No. 2				Break	Practical & Tutorial Venue & topic mentioned at the end (Referred to table no. 1)	SDL Physiology Concept of Degeneration and regeneration	
		Histology	Embryology	Refractory period, types of action potential. Graded potential comparison with action potential	NMJ, Introduction concept of motor unit. Neuro muscular transmission, synthesis & fate of acetylcholine									
		Bone I (Cells & types)	Folding of Embryo											
		Asso. Prof. Dr. Mohtasham (Even)	Prof. Dr. Ayesha (Odd)											Dr Shazia (Even)	Prof. Dr. Samia Sarwar/ Dr Aneela(Odd)
Date/Day		8:00 AM – 9:00 AM		9:00 AM – 10:00 AM		10:00 – 11:00AM		11:00AM – 12:00PM		Home Assignments(2hrs)				
24-04-2026 Friday		BIOCHEMISTRY (LGIS)		MEDICINE		ANATOMY (LGIS)		PHYSIOLOGY(LGIS)		SDL Physiology Nernst Potential & RMP & Action Potential				
		Vitamin A & E	Fluoride, Magnesium & SulphurCopper, Zinc, Selenium, Iodine, Manganese	Osteomalacia, rickets Polyarthritits		Embryology	Histology	NMJ, Introduction concept of motor unit. Neuro muscular transmission, synthesis & fate of acetylcholine	Recording & propagation of action potential & factors effecting nerve conduction & Hyperpolarized state					
						Folding of Embryo								Bone I (Cells & types)
						Dr. Almas (Even)	Dr. Uzma/ Dr. Aneela (Odd)							Dr. Sheryar (Even)	Dr Umer Daraz (Odd)	Prof. Dr. Ayesha (Even)	Asso. Prof. Dr. Mohtasham (Odd)	Prof. Dr. Samia Sarwar/ Dr Aneela (Even)	Dr. Fareed (Odd)
Date/Day		8:00am – 09:10am		09:10am – 10:10am		10:10am-10:30am	10:30am-11:20am		11:20am-12:10pm		12:10pm-12:30pm	12:30pm – 2:00pm		Home Assignments(2hrs)
25-04-2026 Saturday	RESEARCH CLUB ACTIVITY 2		PBL 1 (SESSION-II)			FEHM E QURAN – VI		FEHM E QURAN – VII		SDL				
	Questionnaire Development		PBL Team		Break	Preposition (إلى من -على)		Preposition (الباء) Absolute Negation Particle Exceptive Particle (النافية لا(إلا) (ما النافية)للجنس						
	Dr. Farah Pervaiz (Odd)	Dr. Farah Pervaiz (Even)				Qari Abdul Wahid								

Tentative Schedule for LMS Based Weekly Online Assessments for First Year MBBS (MSK-I Module) Batch 53

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

Class	Module	Day & Date	Time of Assessment	Focal person	Department Responsible
First Year MBBS	MSK-I Module - I	06-04-2026 Monday	7:00 pm - 7:30pm	Prof. Dr. Ayesha Yousaf	Anatomy
		07-04-2026 Tuesday	7:00 pm - 7:30pm	Prof. Dr. Samia Sarwar	Physiology
		08-04-2026 Wednesday	7:00 pm - 7:30pm	Dr. Aneela Jamil	Biochemistry
		13-04-2026 Monday	7:00 pm- 7:30pm	Prof. Dr. Ayesha Yousaf	Anatomy
		14-04-2026 Tuesday	7:00 pm- 7:30pm	Prof. Dr. Samia Sarwar	Physiology
		15-04-2026 Wednesday	7:00 pm - 7:30pm	Dr. Aneela Jamil	Biochemistry

*Note: All dates are subject to change.

**Time Table for Musculoskeletal-I Module Fifth Week
(27-04-2026 to 06-05-2026)**

Date & Day	Tentative Schedule
27-04-2026 Monday	Module Assessment
28-04-2026 Tuesday	
29-04-2026 Wednesday	
30-04-2026 Thursday	Block Assessment
01-05-2026 Friday	
02-05-2026 Saturday	
03-05-2026 Monday	
04-05-2026 Tuesday	
05-05-2026 Wednesday	

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

SECTION – VI

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 53
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 25 th 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 25 th Edition Page No. 101	C1
Vertical Integration with Medicine / Surgery / Gynae Obs etc (15%)		
3.	Question a. b.	C3

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

Time allowed: 1 hour & 30 minutes

Each SAQ carries 5 marks

Each SAQ: 5 minutes, SEQ: 10 minutes

Each SEQ carries 9 marks

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 14 th Edition page # 114 Part b: Guyton & Hall 14 th 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 14 th Edition page # 101 • Part b: Guyton & Hall 14 th Edition Page # 103 • Part c: Guyton & Hall 14 th Edition Page # 103	CK	1	6.66%	C2

Rawalpindi Medical University Rawalpindi
Department of Anatomy / Physiology / Biochemistry
Clinically Oriented Audio Visual Objective Structured Practical Examination (OSPE)
_____ Module 2026

_____ 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

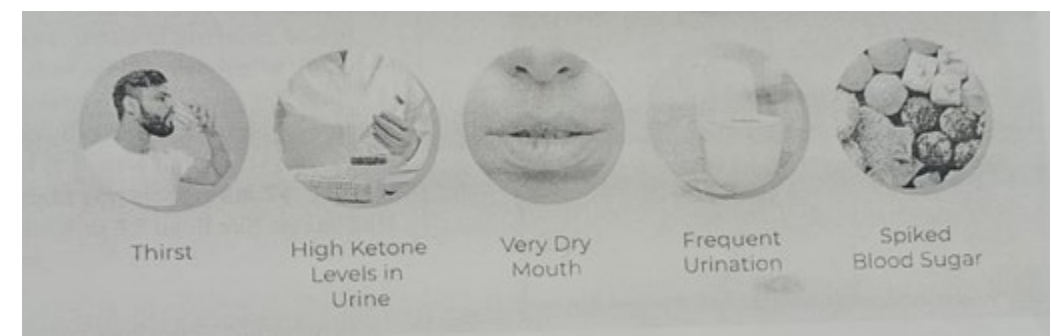
Core Knowledge with Horizontal / Vertical / Spiral Integration

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

[illegible]

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 _____

[illegible]

***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