



RMU – 12

Integrated Modular

MBBS Curriculum 2026

Isolation to **Beyond Boundaries**

Study Guide

Musculoskeletal Module-II

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

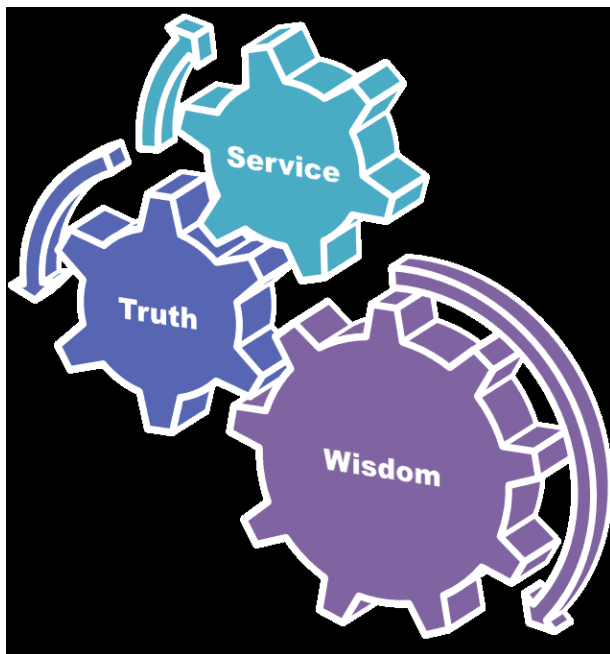
Medical education is undergoing a fundamental transformation globally, shifting from discipline-based, fragmented teaching toward integrated, competency-based, and clinically oriented learning systems that prepare graduates for real-world healthcare practice. In response to these evolving educational 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



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.

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RMU – 12 Integrated Modular MBBS Curriculum 2026

Isolation to Beyond Boundaries

Competency Framework

Competency

PMDC



Figure 1

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

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

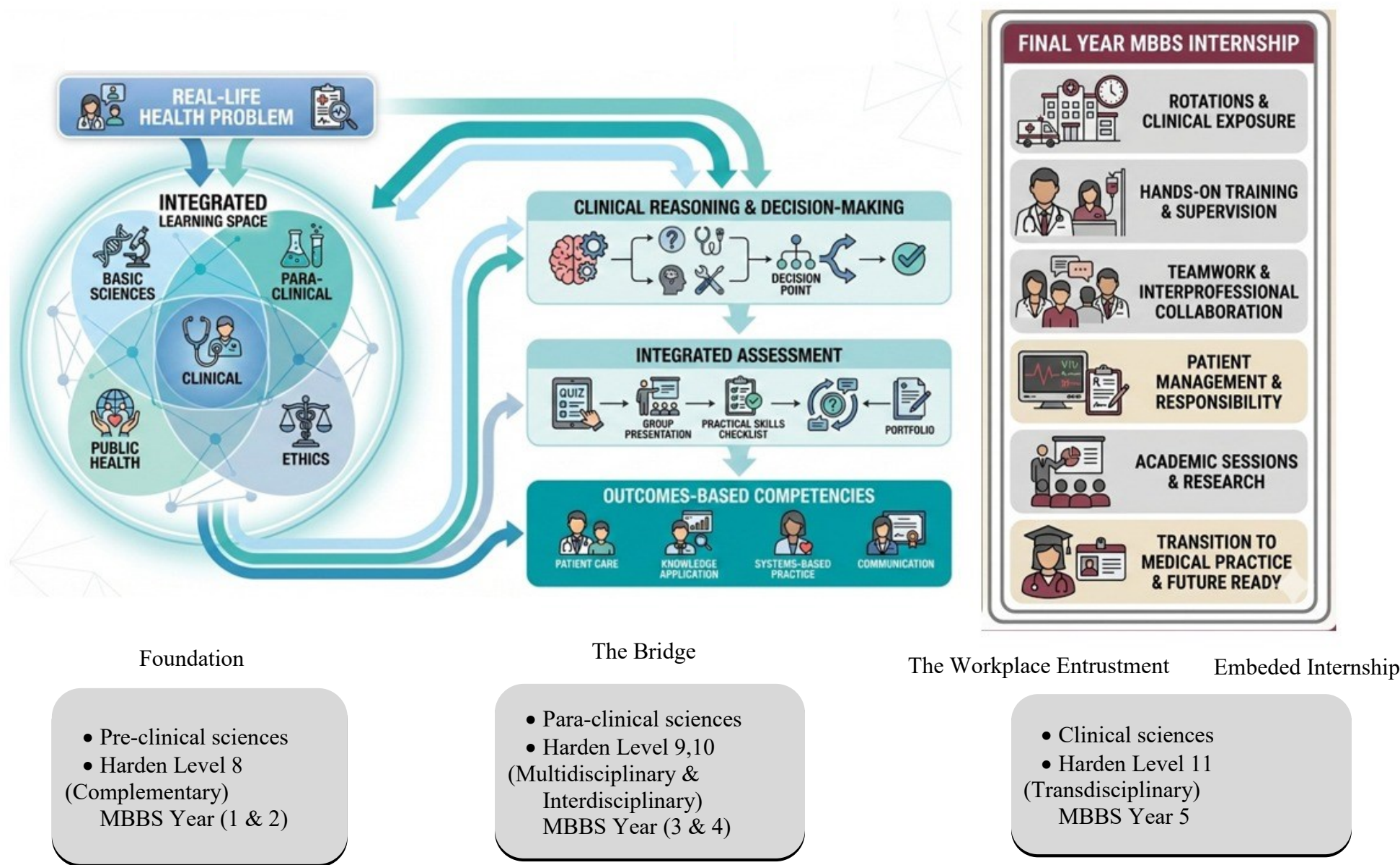


Figure 2

RMU – 12 Structured Framework of Integrated Modular MBBS Curriculum 2026

Isolation to **Beyond Boundaries**

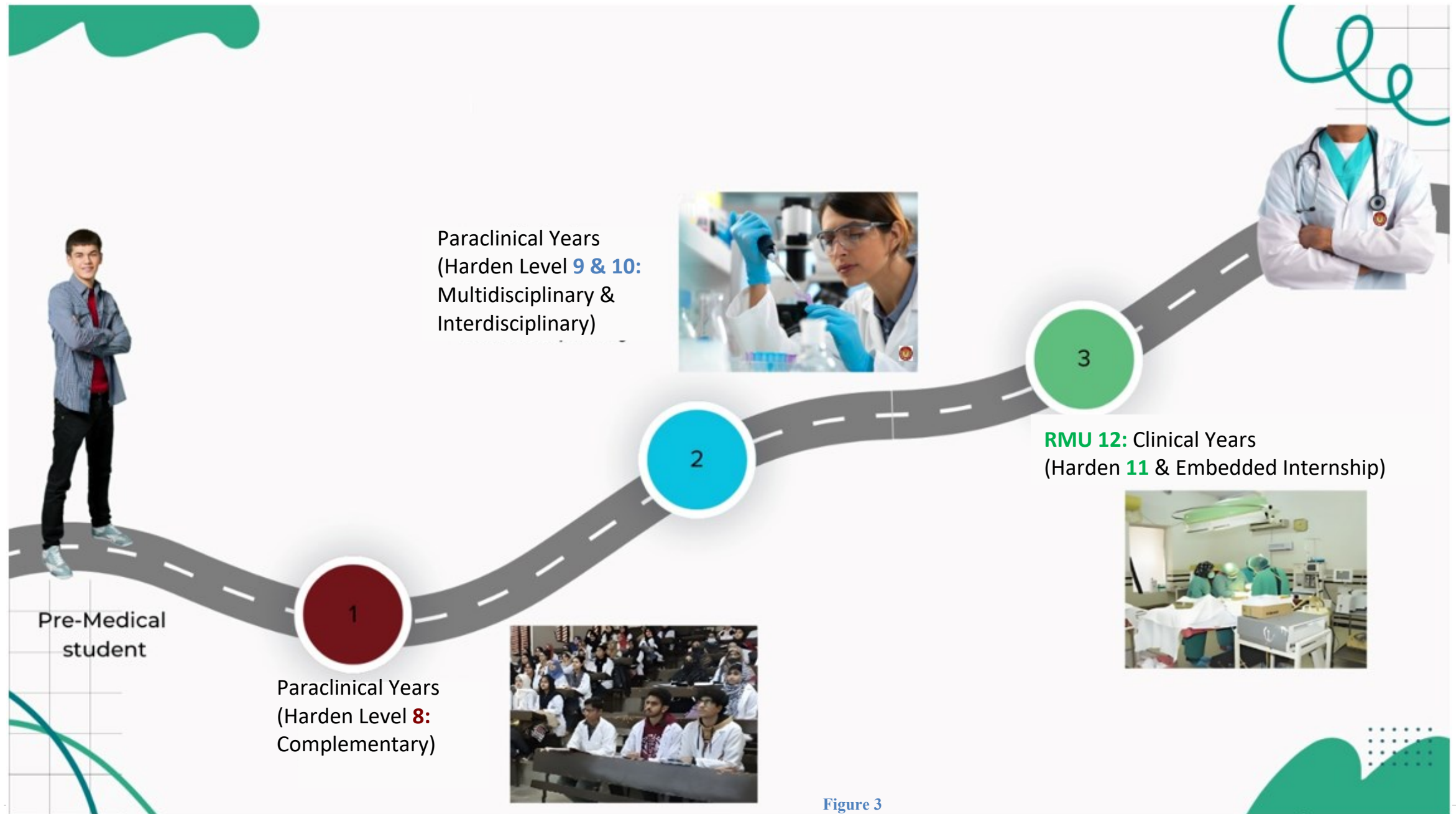


Figure 3

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

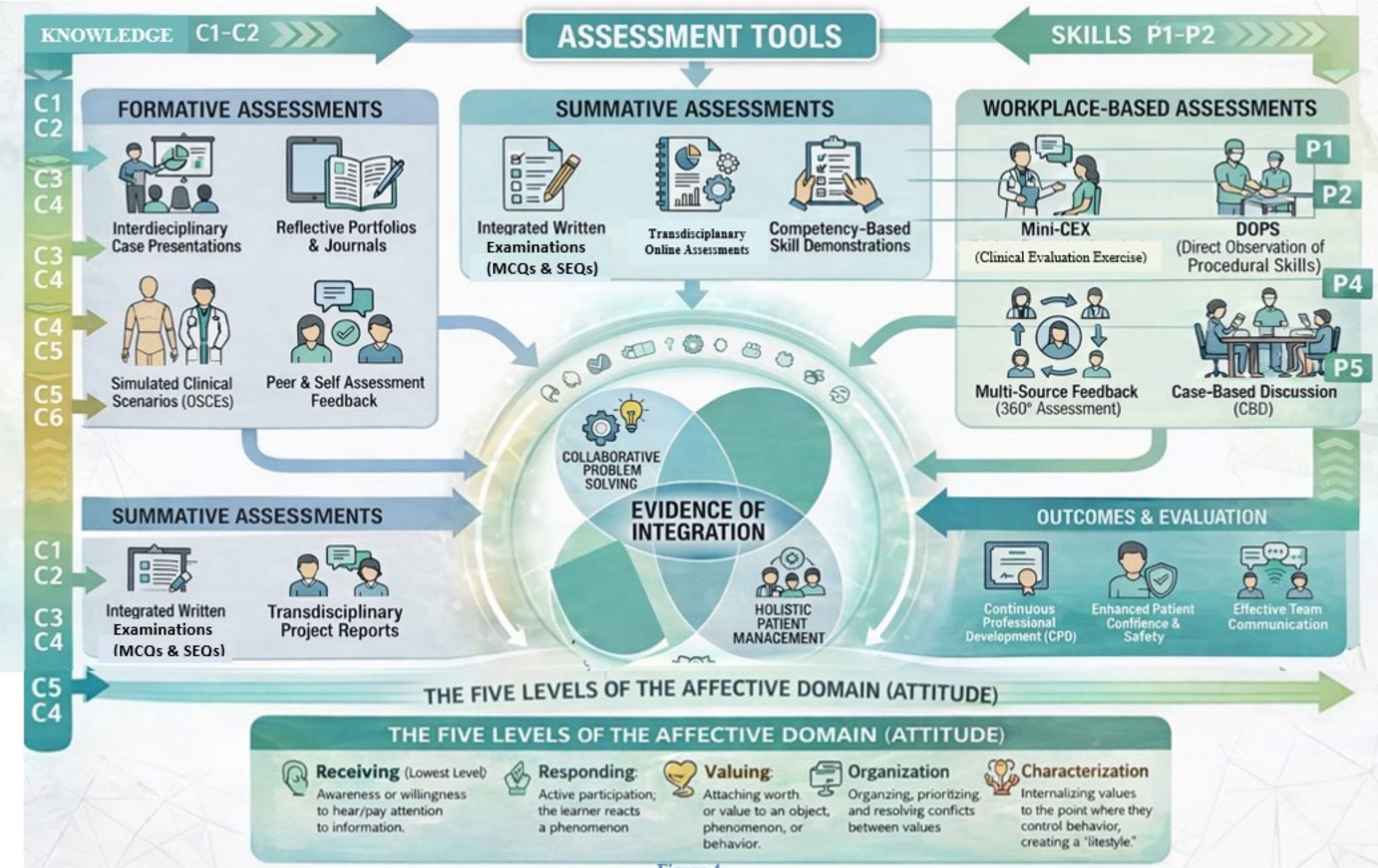


Figure 4

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

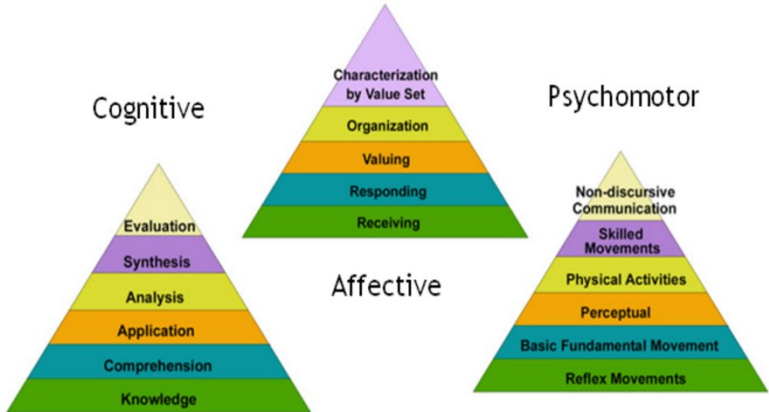
Rawalpindi Medical University has adopted a staged curricular framework that reflects a progressive movement along Harden’s integration ladder, culminating in going beyond the ladder to **RMU 12**. The curriculum is designed to ensure that knowledge acquired in the early years is not isolated or terminal, 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.



Miller's Pyramid of Clinical Competence

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 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

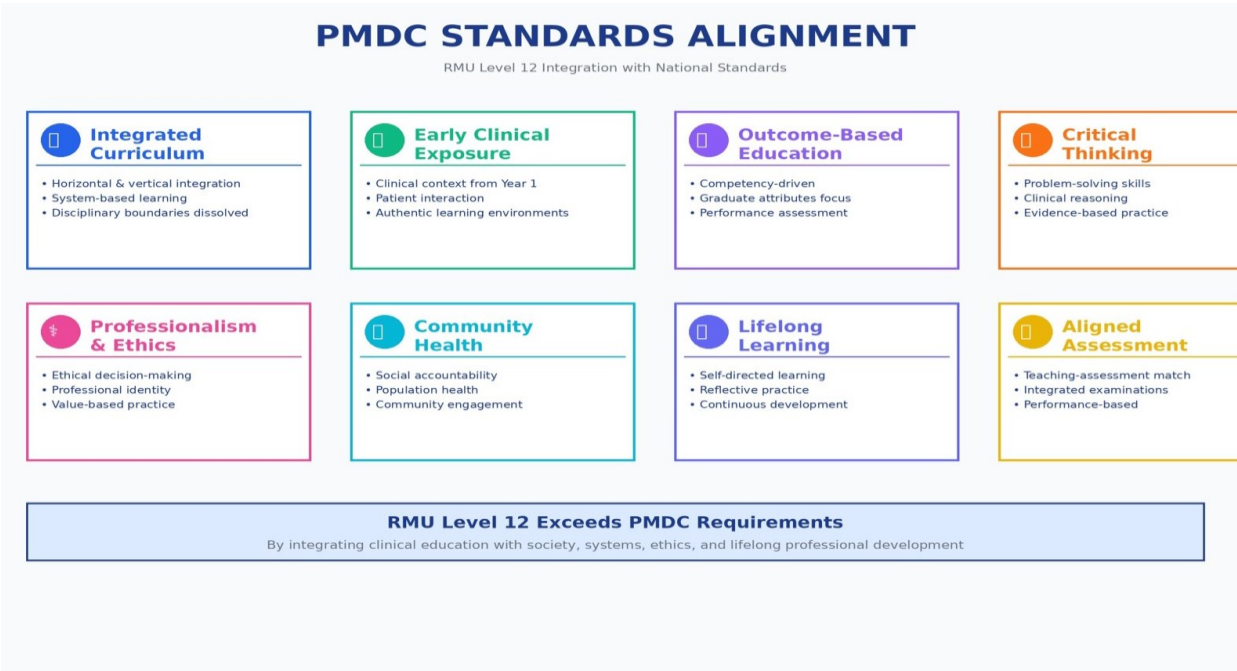
1.1 PMDC Standards for Medical Education

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

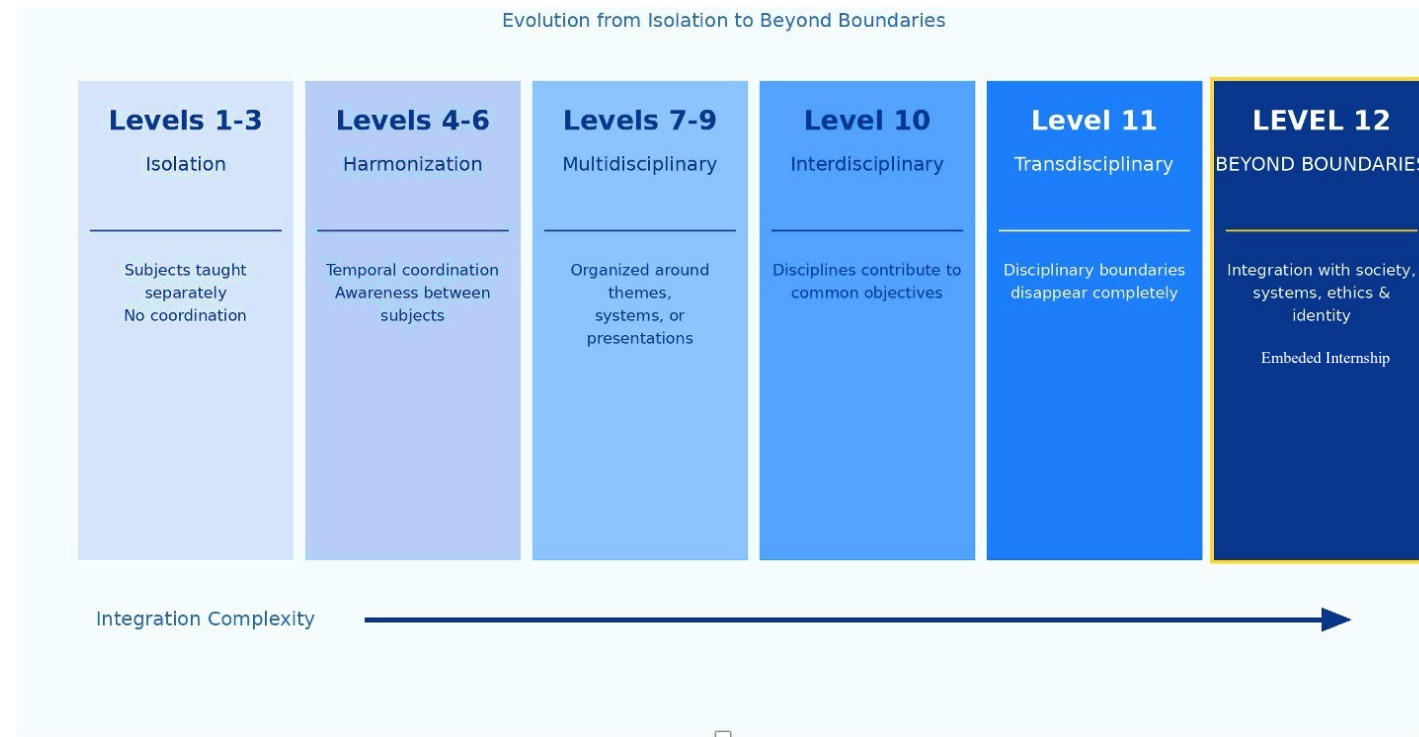
Harden's Integration Ladder provides a systematic framework for evaluating curricular integration, progressing through 11 levels:



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.

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

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.

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

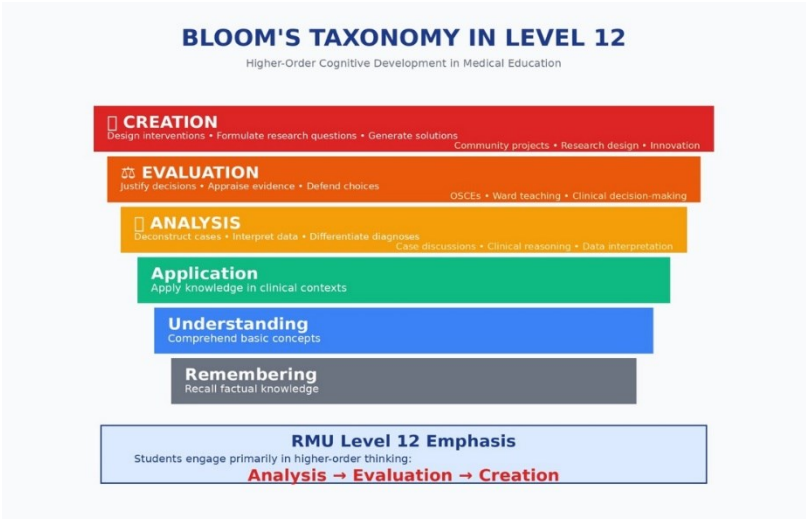
4. Bloom's Taxonomy & Higher-Order Thinking

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

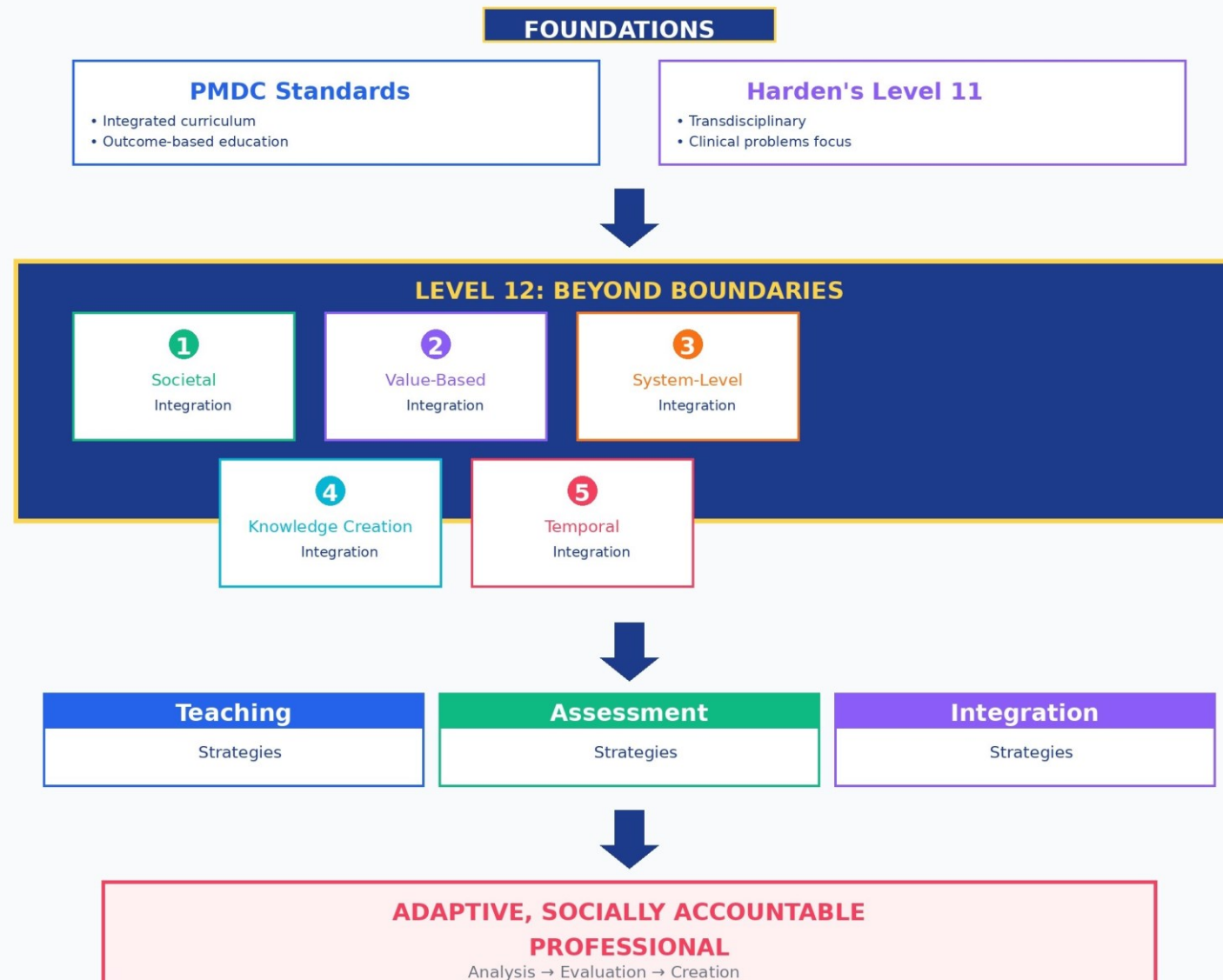
📁 Leadership

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

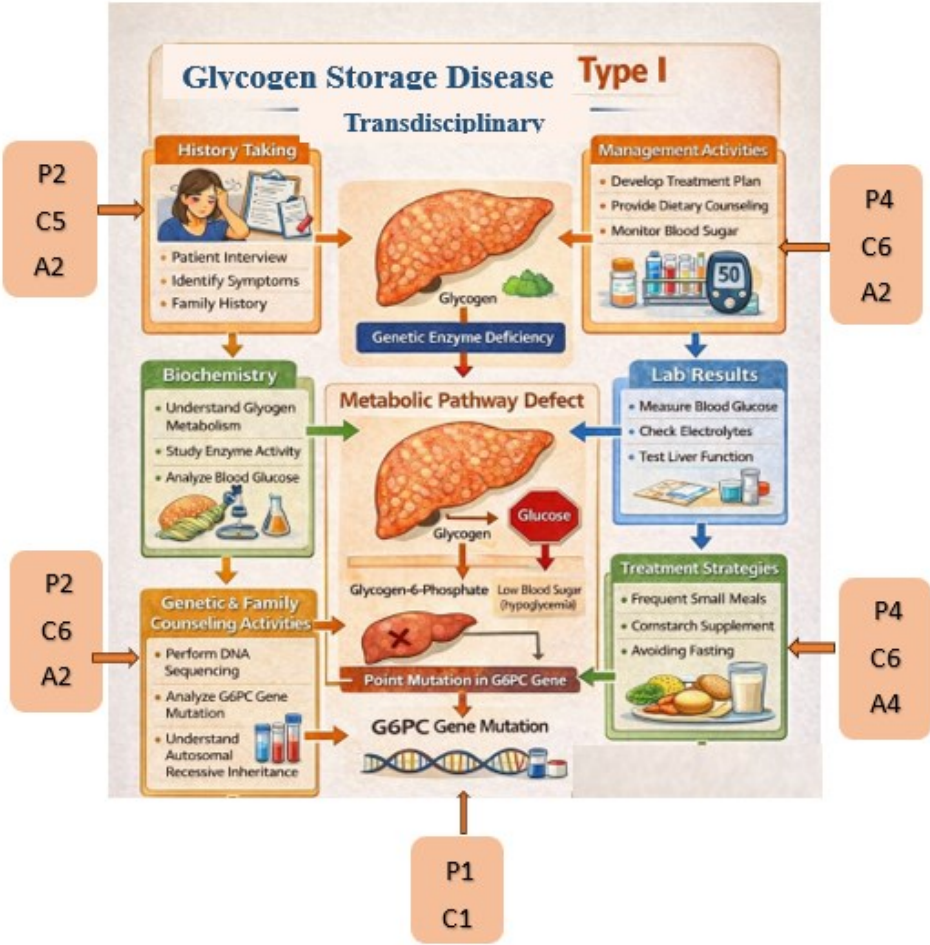
Educational Relevance to Theme

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.

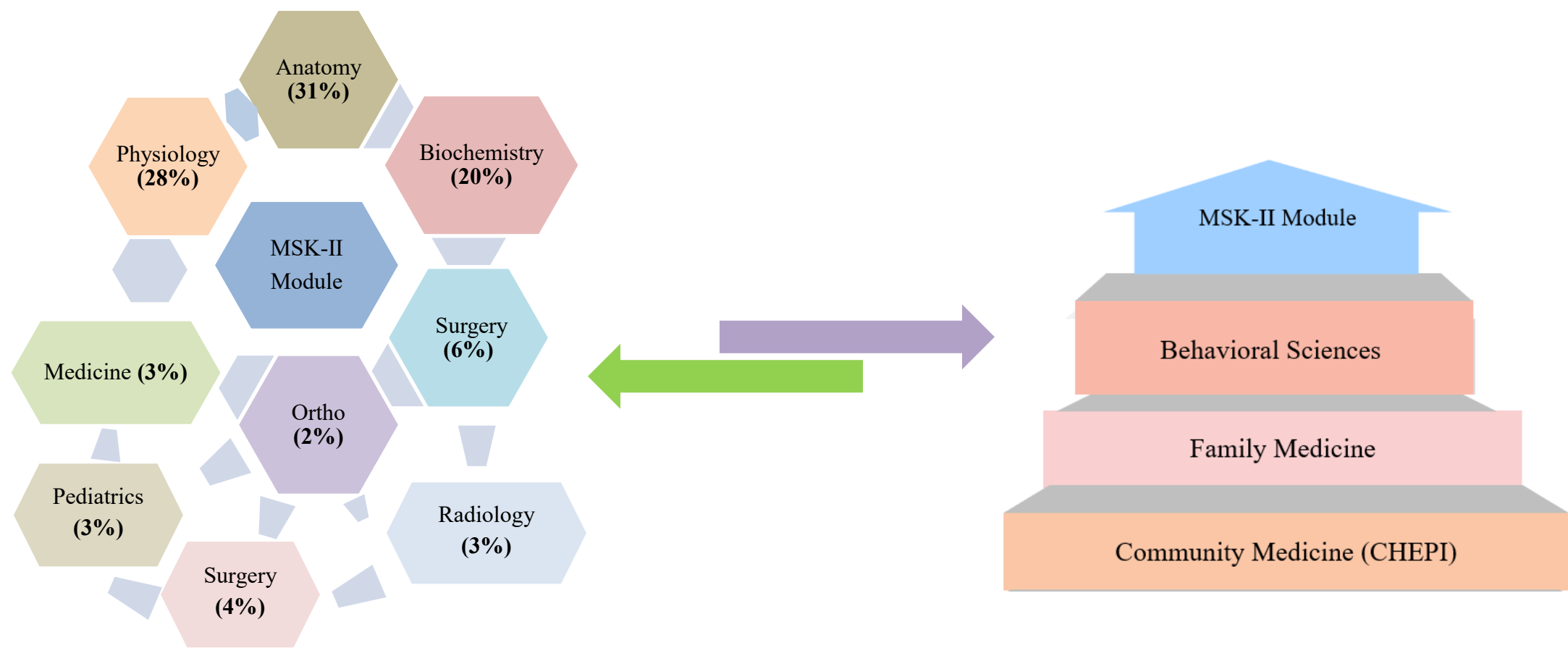
RMU – 12 Integrated Modular MBBS Curriculum 2026

Isolation to Beyond Boundaries

Study Guide

MSK-II Module

Multi-Disciplinary Integration



Disciplines in MSK-II Module

Spiral / General Education Cluster Courses (5%)

Discipline Wise Details of Modular Content

Integration					
Theory					
Block	Module	General Anatomy	Embryology	Histology	Gross Anatomy
II	Anatomy	- Muscles - Skin	- Development of Axial Skeleton - Development of limbs - Development of muscles	General Histology - Muscles - Skin - Skin appendages	Gluteal Region to Lateral compartment of leg
	Biochemistry	Protein chemistry, Protein separation techniques, Collagen and Elastin			
	Physiology	- Sarcotubular system, excitation contraction coupling mechanism in skeletal muscle. - Molecular Mechanism of skeletal muscle contraction, Rigormortis, Muscular dystrophies - Introduction to muscle physiology, Structure of sarcomere - Energetics, efficiency and types of contraction, heat production in muscle - Physiologic anatomy, types and properties of Smooth Muscle - Mechanism of smooth muscle contraction & its control - Introduction to pericardium Properties of myocardium & endocardium,myocardial action potential - Regulation of myocardial activity - Comparison of 3 types of Muscle - Introduction to CVS - Excitatory & Conducting system of heart			
	Spiral Courses				
	Community Medicine (CHEPI)	- Life style medicine (Practical Activity 1) - Smoking - Smoking (Practical Activity 2) - Prevention and control of tuberculosis - Prevention and control of tuberculosis (Practical Activity 3) - Non-Communicable Diseases & Coronary Heart - Non-Communicable Diseases & Coronary Heart (Practical Activity 4)			
	Family Medicine	- Communication and consultation skills in Family Medicine Practice - Approach to a Patient of Muscular dystrophy			
	Behavioral Scineces	- Rights and responsibilities of patients and doctors - Psychological relation in Doctor-patient relationship			
	Vertical Integration				

	• Pediatrics	• Juvenile Idiopathic Arthritis (JIA)
	• Orthopedics	• Femur Fracture
	• Radiology	• X-rays of Hip Bone
	• Surgery	• Bone Tumors

MSK-II Module Team

Module Name : MSK- II Module
 Duration of module : 05 Weeks
 Coordinator : Dr. Fahd Anwar
 Co- Coordinator : Dr. Sajjad Hussain
 Reviewed by : Module Committee

Module Committee			Module Task Force Team		
1.	Vice Chancellor RMU	Prof. Dr. Muhammad Umar	1.	Coordinator	Dr. Fahd Anwar (Demonstrator of Physiology)
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. Sajjad Hussain (Demonstrator of Anatomy)
4.	Chairperson Physiology	Prof. Dr. Samia Sarwar	4.	Co-Coordinator	Dr. Fareed Ullah (Senior Demonstrator of Physiology)
5.	Chairperson Anatomy	Prof. Dr. Ayesha Yousaf	5.	Co-coordinator	Dr. Almas (Demonstrator of Biochemistry)
6.	Chairperson Biochemistry	Dr. Aneela Jamil			
7.	Focal Person Anatomy 1 st Year MBBS	Asso. Prof. Dr. Mohtasham 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 III – MSK-II Module

Rationale: This module describes the structural organization, functions, and congenital anomalies of musculoskeletal system. It explains the mechanism of neuromuscular transmission, comparison of three types of muscle and physiology of smooth and cardiac muscle, its biochemical basis and the importance of Ca^{++} in the body. This module covers cardiac muscle physiology including conducting system of heart. 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:

1. Explain the development & structure of musculoskeletal system.
2. Explain the physiological and biochemical factors affecting neuromuscular transmission.
3. Explain physiology of smooth and cardiac muscle.
4. Apply the knowledge of the basic sciences to understand common fractures.
5. Use technology based medical education including.
 - **Artificial Intelligence.**
6. Appreciate concepts & importance of
 - **Family Medicine**
 - **Biomedical Ethics**
 - **Research**

Skill:

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

Attitude:

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

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

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	• C5	Evaluating
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Teaching and Learning Methodologies / Strategies

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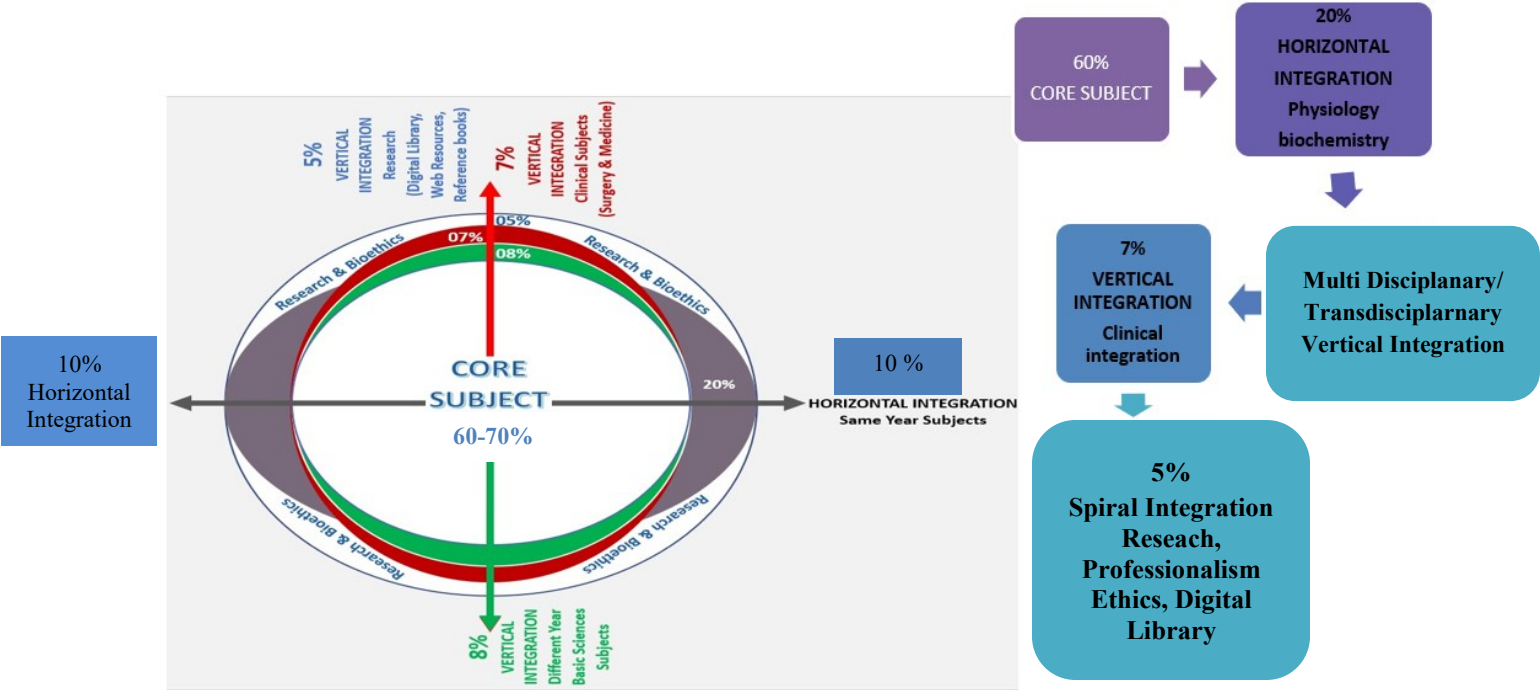
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- Prepares learners to become **practice-ready, concept-driven clinicians**

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-II Module – First Year MBBS

Duration of Module (Four Weeks)

Sr No.	Themes	Duration
1.	Hip Pain, Limp & Deformity after Trauma or Congenital Hip/Foot Disorders	1 st Week
2.	Groin/Thigh Pain with Weakness: Hernia, Nerve Injury & Compartment Dysfunction	2 nd Week
3.	Radiating Hip-to-Leg Pain: Sciatica vs Hip Pathology (with Functional Limitation)	3 rd Week
4.	Knee Pain & Swelling with Instability: From Popliteal Fossa to Inflammatory Arthritis	4 th Week

Theme 1: Hip Pain, Limp & Deformity after Trauma or Congenital Hip/Foot Disorders (1st Week)

Theme	Rationale	Learning objectives
Hip Pain, Limp & Deformity after Trauma or Congenital Hip/Foot Disorders.	Builds around hip bone/femur, fractures/AVN and DDH/CTEV with X-ray correlation, linking biomechanics + muscle physiology + collagen disorders to clinical limping gait and deformity.	By the end of this theme, students should be able to: • Understand the clinical presentation of hip trauma and identify the key symptoms and signs suggestive of fracture or dislocation of the hip. • Integrate relevant anatomical, biomechanical, and radiological knowledge to explain limb deformity, pain, restricted movement, and difficulty in weight bearing. • Develop a structured approach to assessment and initial management of a patient presenting with suspected hip fracture, including neurovascular evaluation and urgent referral. • Recognize important risk factors, complications, and preventive strategies related to hip fractures, including osteoporosis, falls, avascular necrosis, and functional disability.
Case 1: Clinical Scenario: Hip Trauma with Limp and Deformity A 62-year-old female presented to the Emergency Department with severe right hip pain and inability to walk following a fall at home one day earlier. The patient reported that she slipped on the floor and fell directly onto her right side, immediately experiencing intense pain in the right hip region. Since the incident, she has been unable to bear weight on the affected limb and is unable to stand or walk without assistance. The pain is described as deep, severe, and localized mainly in the groin area, and it significantly worsens with any attempt at movement of the hip joint, including trying to sit, stand, or rotate the leg. She also reports difficulty moving the affected limb due to pain and stiffness, which has resulted in marked functional limitation. There is no history of head injury, loss of consciousness, dizziness, or preceding symptoms such as chest pain or weakness prior to the fall. The patient denies any previous similar episodes of hip trauma but reports that the current pain is persistent and severe enough to prevent any weight-bearing activity since the fall. Past Medical History • Hypertension for 5 years • No diabetes mellitus Drug History • Amlodipine • Occasional NSAIDs Family History • Mother had hip fracture in old age Social History • Limited sun exposure • Poor calcium intake Examination		

General Physical Examination

Elderly female lying still due to pain.
Pulse 96/min, BP 138/84 mmHg, Temp 98.6°F.

Local Hip Examination

- **Inspection:** Right limb shortened and externally rotated
- **Palpation:** Tenderness over groin/hip region
- **Movements:** ROM severely restricted
- **Neurovascular:** Distal pulses intact, sensation preserved

Systemic Examination

CVS, Respiratory, CNS: Normal

Educational Relevance (Discipline-wise Integration)

Discipline	Relevance
Anatomy	Hip joint, femoral neck, blood supply to femoral head (AVN risk)
Physiology/Biomechanics	Gait cycle, hip abductors, Trendelenburg mechanism
Radiology	Interpretation of pelvis/hip X-ray for fracture/dislocation
Orthopedics	Emergency immobilization, referral pathways
Community Medicine	Osteoporosis prevention, fall risk reduction

Entrustable Professional Activities (EPAs)

1. Obtain focused trauma history and identify key clinical features suggestive of hip fracture or dislocation.
2. Perform a structured examination of the hip with neurovascular (NV) assessment to detect signs of fracture or dislocation.
3. Recognize the need for urgent management, initiate appropriate referral, and counsel the patient.

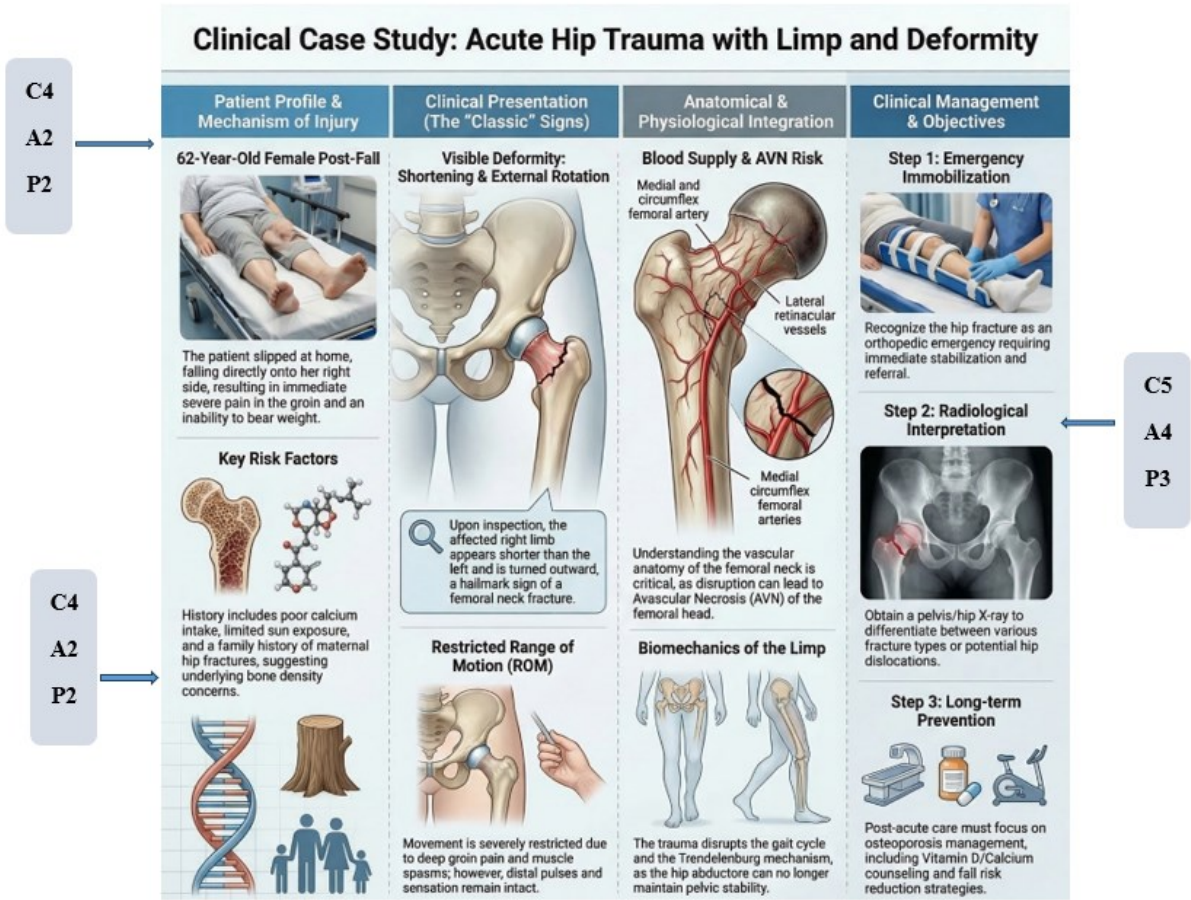
EPAs Detail Annexure-II

Justification

Harden Level 11 Justification

This case represents an authentic emergency patient-care task requiring integrated application of anatomy, biomechanics, radiology interpretation, and clinical decision-making simultaneously, reflecting professional practice-based learning (Harden Level 11).

Theme 1 Clinico-Concept Connect (C³6)



Harden Level 11 Transdisciplinary

Specific Learning Objectives

Theroy							
Subject	Code	Topic	Learning Objectives At the End of Lecture Students Should Be Able To:	Calgary Gauge	Learning Domain	Teaching Strategy	Assessment Tools
Anatomy (LGIS)	M3-MSK-II-A-001	General Anatomy (Muscle I)	- Classify muscles with examples according to i) Shape` ii) Histology iii) Development iv) Contraction - Describe the general features of skeletal muscle. - Differentiate between Red white and intermediate fibers. - Describe blood supply and nerve supply of skeletal muscles. - Correlate the clinical conditions - Understand the preventive and curative health care measures - Practice the principles of Bioethics - Apply strategic use of AI in health care - Read relevant research article	Should know Should know Should know Should know Must know Must know Nice to know Nice to know Nice to know	C1 C3 C3 C3 C3 C3 C3 C3	LGIS	MCQ SAQ VIVA
	M3-MSK-II-A-002	Histology (Skeletal Muscle)	- Classify muscle on histological basis. - Describe histological structure of skeletal muscles - Discuss ultrastructure of skeletal muscles - Understand the contraction mechanisim - Correlate the clinical conditions - Understand the preventive and curative health care measures - Practice the principles of Bioethics - Apply strategic use of AI in health care - Read relevant research article	Should know Should know Should know Must know Must know Nice to know Nice to know Nice to know Nice to know	C1 C2 C2 C2 C3 C3 C3 C3 C3	LGIS	MCQ SAQ VIVA
	M3-MSK-II-A-003	General Anatomy (Muscle II)	- Discuss connective tissue associated with skeletal muscle. - Discuss parts of skeletal muscles. - Give classification of skeletal muscles. - Explain the actions of a prime mover or agonist Fixators - Synergist and antagonist with examples. - Correlate the clinical conditions - Understand the preventive and curative health care measures - Practice the principles of Bioethics - Apply strategic use of AI in health care	Should know Should know Should know Should know Should know Must know Must know Nice to know Nice to know Nice to know	C2 C2 C1 C2 C3 C3 C3 C3 C3 C3	LGIS	MCQ SAQ VIVA

			• Read relevant research article				
	M3-MSK-II-A-004	Histology (Cardiac & Smooth Muscles)	• Describe histological structure of cardiac and smooth muscles • Describe ultrastructure of smooth and cardiac muscles. • Differentiate between skeletal smooth and cardiac muscles. • Discuss regeneration of muscle fibers • Correlate the clinical conditions • Understand the preventive and curative health care measures • Practice the principles of Bioethics • Apply strategic use of AI in health care • Read relevant research article	Should know Should know Should know Should know Must know Must know Nice to know Nice to know Nice to know	C2 C2 C2 C2 C3 C3 C3 C3 C3	LGIS	MCQ SAQ VIVA
Anatomy (SGD/SKL)	M3-MSK-II-A-0011	Hip Bone-I	• Demonstrate the anatomical position • Identify bony features of ilium. • Describe the muscular, ligamentous, and capsular attachments. • Discuss the ventral and dorsal auricular surfaces, ossification. • Correlate the clinical conditions • Understand the preventive and curative health care measures • Practice the principles of Bioethics • Apply strategic use of AI in health care • Read relevant research article	Should know Should know Should know Should know Must know Must know Nice to know Nice to know Nice to know	P C1 C2 C2 C3 C3 C3 C3 C3	SGD/SKL	MCQ SEQ VIVA OSPE
	M3-MSK-II-A-0012	Hip Bone-II	• Demonstrate the anatomical position • Identify bony features of pubis and ischium. • Describe the muscular, ligamentous, and capsular attachments. • Discuss the ventral and dorsal auricular surfaces, ossification. • Correlate the clinical conditions • Understand the preventive and curative health care measures • Practice the principles of Bioethics • Apply strategic use of AI in health care • Read relevant research article	Should know Should know Should know Should know Must know Must know Nice to know Nice to know Nice to know	P C1 C2 C2 C3 C3 C3 C3 C3	SGD/SKL	MCQ SEQ VIVA OSPE
			• Evaluate the relationship between structural variations of skin and their implications in disease progression and treatment.	Nice to know	C5		

	M3-MSK-II-A-0013	Femur	• Demonstrate the anatomical position of bone • Demonstrate different parts • Describe proximal and distal articulations • State angle of femoral torsion. • Correlate the clinical conditions • Understand the preventive and curative health care measures • Practice the principles of Bioethics • Apply strategic use of AI in health care • Read relevant research article	Should know Should know Should know Must know Must know Must know Nice to know Nice to know Nice to know	P C1 C2 C1 C3 C3 C3 C3 C3	SGD/SKL	MCQ SEQ VIVA OSPE
	M3-MSK-II-A-0014	Femur and Patella	• Demonstrate the anatomical position of bones • Describe muscle attachment and ossification • Discuss fractures with special reference to the fracture of neck of femur in old age. • Describe anatomy of patella and factors responsible for its stability. • Enumerate different bursae related to patella • Correlate the clinical conditions • Understand the preventive and curative health care measures • Practice the principles of Bioethics • Apply strategic use of AI in health care • Read relevant research article	Should know Should know Must know Should know Should know Should know Must know Must know Nice to know Nice to know Nice to know	P C2 C2 C2 C1 C3 C3 C3 C3 C3 C3	SGD/SKL	MCQ SEQ VIVA OSPE
	M3-MSK-II-A-0038	Skeletal muscle	• Evaluate the anatomical features of femur, and patella in relation to their clinical conditions (e.g., fractures, dislocations) and justify appropriate preventive and management strategies. • Identify muscle under microscope • Illustrate microscopic structure of muscle • Write two points of identification • Focus the slide	Nice to know Should know Should know Should know Must know	C5 C2 C1 P	SKL	OSPE
Anatomy (SDL)	M3-MSK-II-A-0029	Pelvic Fractures Developmental Dysplasia of the Hip (DDH)	• Demonstrate the anatomical position • Identify bony features of ilium. • Describe the muscular, ligamentous, and capsular attachments. • Discuss the ventral and dorsal auricular surfaces, ossification. • Demonstrate the anatomical position • Identify bony features of pubis and ischium. • Describe the muscular, ligamentous, and capsular attachments. • Correlate the clinical aspects • Read relevant research article	Clinical Oriented Anatomy by Keith L. Moore.5TH Edition. (Page 510-516,526,328,329). https://www.youtube.com/watch?v=AeuLBN5ouwo https://link.springer.com/referenceworkentry/10.1007/978-3-030-43240-9_2			

			• Use digital library						
	M3-MSK-II-A-0030	Fracture of Neck of Femur Avascular Necrosis of Femoral Head Coxa Vara and Coxa Valga Deformities	• Demonstrate the anatomical position of bone • Demonstrate different parts • Describe proximal and distal articulations • State angle of femoral torsion. • Demonstrate the anatomical position of bone • Describe muscle attachment and ossification • Discuss fractures with special reference to the fracture of neck of femur in old age. • Correlate the clinical aspects • Read relevant research article • Use digital library					Clinical Oriented Anatomy by Keith L. Moore.5TH Edition. (Page 20,435,510,516-518,527,659-660). https://www.youtube.com/watch?v=AeuLBN5ouwo https://link.springer.com/chapter/10.1007/978-981-13-8468-4_10	
Physiology (LGIS)	M3-MSK-II-P-001	Introduction to muscle physiology, Structure of Sarcomere	Explain the physiological anatomy of skeletal muscle Draw and label the sarcomere	Must Know	A	C2	MCQ SAQ VIVA	Ganong’sReview of Medical Physiology. 25THEdition.Section01, Excitable tissue: Muscle (Chapter 05, Page99) Physiology by Linda S. Costanzo 6 th Edition.CellularPhysiology(Chapter 1.Page34) Human Physiology by Dee Unglaub Silverthorn. 8 TH Edition.Muscle (Chapter12,Page411) Textbook of Medical Physiology byGuyton&Hall.14 th Edition.Contracti onofSkeletalmuscle.Section02.(Chapte r06,Page79)	https://youtu.be/8iklTDlra5Q https://www.sciencedirect.com/science/article/abs/pii/0197018687901070 https://teachmephysiology.com/histology/tissue-structure/muscle-histology/skeletal-muscle/
	M3-MSK-II-P-002	Sarcotubular system, excitation contraction coupling mechanism in skeletal muscle	Discuss the sliding filament model of muscle contraction. Describe the structure of sarcotubular system and its importance in muscle contraction	Must Know	A	C2 C2	MCQ SAQ VIVA	Ganong’sReview of MedicalPhysiology. 25THEdition.Section01, Excitabletissue: Muscle(Chapter05,Page103) Physiology by Linda S. Costanzo 6 th Edition. Cellular Physiology (Chapter1. Page36) Human Physiology by Dee Unglaub	https://www.sciencedirect.com/science/article/abs/pii/0197018687901070 https://youtu.be/8iklTDlra5Q https://link.springer.com/article/10.1007/s12551-013-0135-x

								Silver thorn. 8TH Edition.Muscle (Chapter 12, Page 413,421) Physiological Basis of Medical Practice by Best & Taylor's.13th Edition.Section 01, Excitation and Contraction of Skeletal muscle, (Chapter 04,page 68) Textbook of Medical Physiology by Guyton & Hall.14th Edition.Contraction of Skeletal muscle.Section 02. (Chapter 06, Page 81) (Chapter 07, Page 93,97)	
	M3-MSK-II-P-003	Molecular Mechanism of skeletal muscle contraction, Rigor mortis, Muscular dystrophies	Define motor unit Discuss recruitment and its effect on force of contraction Discuss Molecular Mechanism of skeletal muscle contraction	Must Know	A	C1 C2	MCQ SAQ VIVA	Physiology by Linda S. Costanzo 6th Edition.Cellular Physiology (Chapter 1. Page 36) Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.Muscle (Chapter 12,Page 413,421) Physiological Basis of Medical Practice by Best & Taylor's.13th Edition.Section 01, Excitation and Contraction of Skeletal muscle, , (Chapter 04,page 70) Textbook of Medical Physiology by Guyton & Hall.14th Edition.Contraction of Skeletal muscle.Section 02. (Chapter 06, Page 82,88)	https://youtu.be/RTnKBt2sDf0 https://youtu.be/NvV2xTrShvg
	M3-MSK-II-P-004	Length tension curve, Load and velocity of contraction, diseases of muscle	Draw and describe Length duration curve Load and velocity of contraction	Nice to Know	C	C2	MCQ SAQ VIVA	Physiology by Linda S. Costanzo 6th Edition.Cellular Physiology (Chapter 1. Page 39) Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. Muscle (Chapter 12,Page 431,435)	https://www.urmc.rochester.edu/encyclopedia/content.aspx?ContentTypeID=85&ContentID=P00792 2. https://www.scienced

								Physiological Basis of Medical Practice by Best & Taylor’s.13th Edition. Section 01, Excitation and Contraction of Skeletal muscle, , (Chapter 04,page 74) Textbook of Medical Physiology by Guyton & Hall.14th Edition. Contraction of Skeletal muscle.Section 02. (Chapter 06, Page 91)	irect.com/topics/engineering/length-tension-curve
	M3-MSK-II-P-005	Energetics, efficiency and types of contraction, heat production in muscle	Elaborate Energetic and efficiency of contraction. Discuss heat production in nerve and muscle	Should Know	B	C3	MCQ SAQ VIVA	Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.Muscle (Chapter 12,Page 431) Physiological Basis of Medical Practice by Best & Taylor’s.13th Edition.Section 01, Excitation and Contraction of Skeletal muscle, , (Chapter 04,page 77,84) Textbook of Medical Physiology by Guyton & Hall.14th Edition.Contraction of Skeletal muscle.Section 02. (Chapter 06, Page 85,87)	1. https://www.sciencedirect.com/topics/engineering/length-tension-curve - 2. https://youtu.be/3ntulKD4kvY
Physiology (SGD)	M3-MSK-II-P-0014	Sliding filaments of skeletal muscle, sarcotubular system	Discuss the sliding filament model of muscle contraction	Should Know	C2	SGD			MCQ SAQ VIVA
			Describe the structure sarcotubular system and its importance in muscle contraction	Should Know	C1				
Physiology (SDL)	M3-MSK-II-P-0018	SDL (On Campus): Sarcotubular system, excitation contraction coupling	Discuss the sliding filament model of muscle contraction Describe the structure sarcotubular system and its importance in muscle contraction			- Ganong’s Review of Medical Physiology.25TH Edition.Section 01,Excitable tissue:Muscle (Chapter 05,Page 103) - Physiology by Linda S. Costanzo 6th Edition.Cellular Physiology (Chapter 1.Page 36) - Human Physiology by Dee Unglaub Silverthorn. 8TH Edition.Muscle (Chapter 12,Page 413,421)			https://www.sciencedirect.com/science/article/abs/pii/S0197018687901070 https://youtu.be/8ikITDlra5Q https://link.springer.c

		mechanism in skeletal muscle		- Physiological Basis of Medical Practice by Best & Taylor's. 13th Edition. Section 01, Excitation and Contraction of Skeletal muscle, (Chapter 04, page 68) - Textbook of Medical Physiology by Guyton & Hall. 14th Edition. Contraction of Skeletal muscle. Section 02. (Chapter 06, Page 81) (Chapter 07, Page 93, 97)	om/article/10.1007/s12551-013-0135-x
	M3-MSK-II-P-0019	Molecular Mechanism of skeletal muscle contraction, Rigor	Define motor unit Discuss recruitment and its effect on force of contraction	- Physiology by Linda S. Costanzo 6th Edition. Cellular Physiology (Chapter 1. Page 36) - Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. Muscle (Chapter 12, Page 413, 421) - Physiological Basis of Medical Practice by Best & Taylor's. 13th Edition. Section 01, Excitation and Contraction of Skeletal muscle, (Chapter 04, page 68) - Textbook of Medical Physiology by Guyton & Hall. 14th Edition. Contraction of Skeletal muscle. Section 02. (Chapter 06, Page 81) (Chapter 07, Page 93, 97)	https://youtu.be/RTnKBt2sDf0 https://youtu.be/NvV2xTrShvg
	M3-MSK-II-P-0020	Molecular Mechanism of skeletal muscle contraction, Rigor mortis, Muscular dystrophies	Define motor unit Discuss recruitment and its effect on force of contraction Discuss Molecular Mechanism of skeletal muscle contraction	- Physiology by Linda S. Costanzo 6th Edition. Cellular Physiology (Chapter 1. Page 36) - Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. Muscle (Chapter 12, Page 413, 421) - Physiological Basis of Medical Practice by Best & Taylor's. 13th Edition. Section 01, Excitation and Contraction of Skeletal muscle, , (Chapter 04, page 70) - Textbook of Medical Physiology by Guyton & Hall. 14th Edition. Contraction of Skeletal muscle. Section 02. (Chapter 06, Page 82, 88)	https://youtu.be/RTnKBt2sDf0 https://youtu.be/NvV2xTrShvg
	M3-MSK-II-P-0021	Length tension curve, Load and velocity of contraction, diseases of muscle	Draw and describe Length duration curve Load and velocity of contraction	- Physiology by Linda S. Costanzo 6th Edition. Cellular Physiology (Chapter 1. Page 39) - Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. Muscle (Chapter 12, Page 431, 435) - Physiological Basis of Medical Practice by Best & Taylor's. 13th Edition. Section 01, Excitation and	https://www.urmc.rochester.edu/encyclopedia/content.aspx?ContentTypeID=85&ContentID=P00792 https://www.sciencedirect.com/topics/engineering/length-

				Contraction of Skeletal muscle, ,(Chapter 04,page 74) • Textbook of Medical Physiology by Guyton & Hall.14th Edition.Contraction of Skeletal muscle.Section 02. (Chapter 06, Page 91)			tension-curve
Physiology (SKL)	M3-MSK-II-P-0031	Determination of RBC count	• Apparatus identification	P	Skill Lab	OSPE	Practical Notebook of Physiology Second year MBBS by Dr Saqib Sohail
			• Principle	C1			
			• Procedure	C1			
			• Recall composition of Diluents	C1			
			• Comprehend				
			• Calculation on hemocytometer	C3			
Biochemistry (LGIS)	M3-MSK-II-B-001	Properties of amino acids& Important peptides	• Recall important biologically active peptides.	Must know	C1	LGIS	MCQ SAQ SEQ VIVA
			• Describe the functions of important peptides	Should Know	C2		
			• Explain the physical & chemical properties of amino acids and their biomedical importance	Must Know	C2		
			• Predict the net charge of an amino acid at a given pH	Nice to Know	C3		
			• Differentiate amino acids based on structure, polarity, and metabolic roles.	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		
	M3-MSK-II-B-002	Collagen structure, synthesis and related disorders	• List types of collagens	Should Know	C1	LGIS	MCQ SAQ SEQ VIVA
			• Describe structure and synthesis of collagen	Must Know	C2		
			• Interpret the role of vitamin C in collagen synthesis to predict the biochemical and clinical consequences of its deficiency	Nice to know	C3		
			• Analyze abnormalities in collagen structure and post-translational modifications to differentiate between collagen-related disorders	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		
Biochemistry (SGD)	M3-MSK-II-B-011	Collagen	• Discuss structure of collagen	Must Know	C2	SGD	MCQ SAQ SEQ VIVA
			• Describe synthesis of collagen	Should Know	C2		
			• Interpret related clinical disorders	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)	M3-MSK-II-B-013	Acidic and Basic properties of amino acids	• Describe amphoteric properties of amino acids	Should Know	Lippincott biochemistry 8th edition, Chapter No. 1, Pages 1-12 Lehninger Principle of Biochemistry 5th edition, Chapter No. 3, Pages 71-84 https://youtu.be/WATac1CmHyM?si=AxzVuVtRjLEAV0fo https://youtu.be/YyFXsHF7jPo?si=HdrP2Ygvf7H_xkFu		
			• Explain the zwitterionic nature of amino acids	Must Know			
			• Apply knowledge of amino acid properties to buffer systems in the body	Nice to Know			
			• Critique laboratory methods used to separate amino acids (e.g., electrophoresis)	Nice to Know			
			• Construct a clinical scenario (USMLE-style) involving amino acid or peptide dysfunction	Nice to Know			
	M3-MSK-II-B-014	Collagenopathies	• Apply knowledge of collagen structure and synthesis to predict clinical manifestations in common collagenopathies (e.g., osteogenesis imperfecta, Ehlers-Danlos syndrome, scurvy).	Nice to Know	Lippincott biochemistry 8th edition, Chapter No. 4, Pages 45-52 Harper’s Illustrated Biochemistry 32 nd edition, Chapter No. 50, Pages 599-603 https://youtu.be/H3oAFvYsuq8?si=6--4kcmxp8xFX5pw https://youtu.be/_r2tm5idW2Y?si=eB7yapWfvL3RuC6I		
			• Evaluate clinical, biochemical, and genetic findings to determine the underlying cause and severity of collagenopathies.	Nice to Know			
			• Design a flowchart of collagen synthesis highlighting defect sites	Nice to Know			

Biochemistry (SKL)	M3-MSK-II-B-021	Color tests for detection of proteins	Perform the color tests for detection of proteins.	Must know	P	Skill Lab	OSPE
Radiology	M3-MSK-II-VI(R)-001	X rays of Hip Bone	Interpret normal x-rays of Hip bone & Lower Limb	C2		LGIS	MCQs
			Discuss features of different Fractures of Hip Bone & Lower Limb	C2			

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	Hip Pain, Limp & Deformity after Trauma or Congenital Hip/Foot Disorders	Anatomy	Hip joint, femoral neck, blood supply to femoral head (AVN risk)	Describe the anatomy of the hip joint, femoral head, neck, and acetabulum.	C3	MCQs SAQ
				Explain the blood supply of the femoral head and its relevance to avascular necrosis.	C3	
				Identify anatomical causes of limb shortening and external rotation in hip fractures	C2	
				Explain the biomechanics of gait and weight bearing at the hip joint.	C3	
				Describe the role of hip abductors in pelvic stability and limp development	C4	
		Physiology	Gait cycle, hip abductors, Trendelenburg mechanism	Relate pain and muscle spasm to functional immobility after trauma.	C5	
		Radiology	Interpretation of pelvis/hip X-ray for fracture/dislocation	Interpret a basic pelvis/hip X-ray for neck of femur fracture.	C4	
				Identify radiological signs of hip dislocation or fracture displacement.	C3	
				Correlate imaging findings with clinical deformity.	C4	
		Orthopedics	Emergency immobilization, referral pathways	Recognize hip fracture as an orthopedic emergency requiring urgent referral.	C3	
				Outline immediate immobilization and early management principles.	C4	
				Identify complications such as AVN and non-union.	C3	
		Community Medicine / Prevention	Osteoporosis prevention, fall risk reduction	Discuss osteoporosis risk factors and fall prevention strategies.	C5	
				Counsel patients regarding calcium/vitamin D and healthy aging.	C5	

Theme 2: Groin/Thigh Pain with Weakness: Hernia, Nerve Injury & Compartment Dysfunction (2nd Week)

Theme	Rationale	Learning objectives
Groin/Thigh Pain with Weakness: Hernia, Nerve Injury & Compartment Dysfunction	Integrates anterolateral/medial thigh + gluteal region anatomy with femoral hernia, femoral/obturator nerve involvement and adductor tendinopathy clinically presenting as groin pain, gait difficulty, and focal weakness/numbness.	By the end of this theme, students should be able to: • Understand the clinical presentation of groin swelling and medial thigh weakness and identify features suggestive of femoral hernia or associated nerve involvement. • Integrate anatomical, neurological, and clinical knowledge to differentiate femoral hernia from inguinal hernia and other causes of groin pain. • Develop a systematic approach to examination and assessment of a patient with groin pain, swelling, and lower limb sensory or motor deficits. • Recognize red-flag features, complications, and the need for timely referral in patients with suspected femoral hernia or nerve compression.
Case 2: Groin Pain with Medial Thigh Weakness A 48-year-old female presented to the outpatient department with a three-week history of groin pain radiating to the medial aspect of the thigh. The pain is described as a dull, aching discomfort localized in the groin region, which gradually extends along the inner thigh. The patient reports that the pain worsens with walking, climbing stairs, prolonged standing, and movements involving thigh adduction, making routine daily activities increasingly difficult. She particularly experiences difficulty climbing stairs and lifting her leg, which has affected her mobility. Over the past few weeks, she has also noticed a small swelling in the upper inner thigh/groin region, which becomes more prominent during coughing, straining, or prolonged standing and may reduce slightly when she lies down. The patient denies any recent trauma, fever, or systemic symptoms, but states that the discomfort has been progressively interfering with her daily activities. The symptoms suggest a possible groin pathology such as a hernia or nerve involvement affecting the medial thigh, requiring careful clinical evaluation. Past History: The patient reports a history of chronic constipation for several years, characterized by infrequent bowel movements, straining during defecation, and occasional abdominal discomfort. She often needs to exert significant effort during bowel movements, which increases intra-abdominal pressure and may contribute to the development or worsening of groin swelling. Additionally, the patient has a history of multiparity, having delivered multiple children through vaginal births. Repeated pregnancies and deliveries may lead to weakening of the abdominal wall and pelvic support structures, which can predispose individuals to conditions such as groin or femoral hernias. She denies any previous surgeries or similar groin swellings in the past Drug History Occasional NSAIDs Examination General Examination Vitals stable. Local Examination • Swelling below and lateral to pubic tubercle • Cough impulse present • Weakness of thigh adduction		

- Sensory change over medial thigh

Educational Relevance (Discipline-wise Integration)

Discipline	Relevance
Anatomy	Femoral canal, obturator nerve, femoral triangle
Physiology	Motor function of adductors and gait stability
Surgery	Femoral hernia recognition and urgency
Radiology	Role of ultrasound in groin swelling
Clinical Skills	Differentiating femoral vs inguinal hernia

Entrustable Professional Activities (EPAs)

1. Perform a focused clinical examination of groin swelling to identify features suggestive of hernia or other groin pathology.
2. Conduct a motor and sensory neurological assessment of the lower limb to evaluate possible nerve involvement affecting the medial thigh.
3. Recognize clinical red-flag features suggestive of complications such as strangulation and initiate appropriate referral or urgent management.

EPAs Detail Annexure-II

Justification

Harden Level Justification

Integrated clinical reasoning across anatomy, neurology, and surgical relevance demonstrates transdisciplinary learning approaching Harden Level 11.

Theme 2 Clinico-Concept Connect (C³6)



Harden Level 11 Transdisciplinary

Specific Learning Objectives

Subject	Code	Topic	Learning Objectives Students Should Be Able To	Calgary Gauge	Learning Domain	Teaching Strategy	Assessment Tools
Anatomy (LGIS)	M3-MSK-II-A-006	Embryology (Development of Axial Skeleton)	• Discuss the cartilaginous stage of vertebral column • Discuss the bony stage of vertebral column • Describe development of ribs and sternum. • Correlate the clinical conditions • Understand the preventive and curative health care measures • Practice the principles of Bioethics • Apply strategic use of AI in health care • Read relevant research article	Should know	C2	LGIS	MCQ SAQ VIVA
			• Evaluate the role of the notochordal process and notochordal canal formation in establishing the embryonic midline and its impact on axial development.	Nice to know	C5		
	M3-MSK-II-A-005	Histology (Skin)	• Enlist components of integumentary system • Describe histological structure of skin with special reference to cells residing in epidermis. • Describe histological features of thick and thin skin • Differentiate between thick and thin skin • Correlate the clinical conditions • Understand the preventive and curative health care measures • Practice the principles of Bioethics • Apply strategic use of AI in health care • Read relevant research article	Should know	C1	LGIS	MCQ SAQ VIVA
				Should know	C2		
				Should know	C2		
				Should know	C2		
	M3-MSK-II-A-007	Histology (Skin Appendages)	• Describe appendages of skin • Discuss histological structure of hair • Discuss histological structure of nail • Discuss histological structure of glands of skin • Correlate the clinical conditions • Understand the preventive and curative health care	Must know	C3	LGIS	MCQ SAQ VIVA
				Must know	C3		
				Nice to know	C3		
				Nice to know	C3		
	M3-MSK-II-A-007	Histology (Skin Appendages)	• Describe appendages of skin • Discuss histological structure of hair • Discuss histological structure of nail • Discuss histological structure of glands of skin • Correlate the clinical conditions • Understand the preventive and curative health care	Nice to know	C3	LGIS	MCQ SAQ VIVA
				Nice to know	C3		
				Nice to know	C3		
				Nice to know	C3		

			measures • Practice the principles of Bioethics • Apply strategic use of AI in health care • Read relevant research article	Nice to know Nice to know Nice to know	C3 C3 C3		
	M3-MSK-II-A-008	Embryology (Development of limbs)	• Enlist different stages of limb development • Discuss early and late stage of limb development • Correlate congenital anomalies of limb development • Correlate the clinical conditions • Understand the preventive and curative health care measures • Practice the principles of Bioethics • Apply strategic use of AI in health care • Read relevant research article	Should know Should know Must know Must know Must know Nice to know Nice to know Nice to know	C1 C2 C3 C3 C3 C3 C3 C3	LGIS	MCQ SAQ VIVA
Anatomy (SGD/SKL)	M3-MSK-II-A-0015	Anterolateral Compartment of Thigh (Muscles)	• Describe the origin and insertion of muscles in anterior compartment of thigh. • Describe the origin and insertion of muscles in lateral compartment of thigh. • Discuss the femoral triangle and adductor canal with contents • Identify these muscles. • Correlate the clinical conditions • Understand the preventive and curative health care measures • Practice the principles of Bioethics • Apply strategic use of AI in health care • Read relevant research article	Should know Should know Should know Should know Must know Must know Nice to know Nice to know Nice to know	C2 C2 C2 C1 C3 C3 C3 C3 C3	Skill Lab	MCQ SEQ VIVA OSPE
	M3-MSK-II-A-0016	Anterolateral compartment of thigh (Neurovascular organization)	• Describe the nerves and vessels of anterolateral compartment of thigh • Discuss various relation of vessels and nerves in anterolateral compartment of thigh • Identify these structures • Map the outline of femoral artery in a simulated patient / model • Correlate the clinical conditions • Understand the preventive and curative health care	Should know Should know Should know Should know Must know Must know	C2 C2 C1 P C3 C3	Skill Lab	MCQ SEQ VIVA OSPE

			measures • Practice the principles of Bioethics • Apply strategic use of AI in health care • Read relevant research article	Nice to know Nice to know Nice to know	C3 C3 C3		
	M3-MSK-II-A-0017	Medial Compartment of thigh	• Describe the muscles of medial compartment of thigh • Discuss origin, insertion and nerve supply of medial compartment of thigh • Describe the course relations and branches of obturator nerve. • Correlate the clinical conditions • Understand the preventive and curative health care measures • Practice the principles of Bioethics • Apply strategic use of AI in health care • Read relevant research article	Should know Should know Should know Must know Must know Nice to know Nice to know Nice to know	C2 C2 C2 C3 C3 C3 C3 C3	Skill Lab	MCQ SEQ VIVA OSPE
	M3-MSK-II-A-0018	Gluteal Region (Muscles)	• Tabulate the he various muscles of gluteal region with origin, insertion, action nerve supply. • Enlist various structures undercover of gluteal maximus i.e. muscles, vessels, nerves, bones and joints, ligaments, bursae. • Understand the preventive and curative health care measures • Practice the principles of Bioethics • Apply strategic use of AI in health care • Read relevant research article	Should know Should know Must know Nice to know Nice to know Nice to know	C2 C1 C3 C3 C3 C3	Skill Lab	MCQ SEQ VIVA OSPE
	M3-MSK-II-A-0019	Gluteal Region (Neurovascular organization)	• Describe trochanteric anastomosis and cruciate anastomosis. • Enumerate the structures passing through greater sciatic foraman. • Discuss the formation course relations, branches, distribution of sciatic nerve with applied anatomy.. • Correlate the clinical conditions • Understand the preventive and curative health care measures • Practice the principles of Bioethics	Should know Should know Should know Must know Must know Nice to know	C2 C1 C2 C3 C3 C3	Skill Lab	MCQ SEQ VIVA OSPE

			• Apply strategic use of AI in health care • Read relevant research article				Nice to know	C3		
	M3-MSK-II-A-0039	Cardiac muscle Smooth muscle	• Identify muscles under microscope • Illustrate microscopic structure of muscles • Write two points of identification • Focus the slide				Nice to know Nice to know Nice to know Nice to know	P C2 C1 P	Skill Lab	OSPE
Anatomy (SDL)	M3-MSK-II-A-0031	Femoral Hernia injury to Femoral Nerve	• Describe the origin and insertion of muscles in anteriorlateral compartment of thigh. • Describe the nerves and vessels of anterolateral compartment of thigh • Discuss the femoral triangle and adductor canal with contents • Identify these muscles. • Correlate the clinical aspects • Read relevant research article • Use digital library				Clinical Oriented Anatomy by Keith L. Moore.5TH Edition. (Page 510, 545-548,557-558). https://www.youtube.com/watch?v=AeuLBN5ouwo https://link.springer.com/article/10.1186/s10195-023-00691-w			
	M3-MSK-II-A-0032	Adductor Tendinopathy Obturator Nerve Entrapment Syndrome	• Describe the muscles of medial compartment of thigh • Discuss origin, insertion and nerve supply of medial compartment of thigh • Describe the course relations and branches of obturator nerve. • Correlate the clinical aspects • Read relevant research article • Use digital library				Clinical Oriented Anatomy by Keith L. Moore.5TH Edition. (Page 548-551). https://www.youtube.com/watch?v=AeuLBN5ouwo https://link.springer.com/article/10.1186/s10195-023-00691-w			
Physiology (LGIS)	M3-MSK-II-P-006	Properties of skeletal muscles, Tetanus & Fatigue	• Discuss various properties of skeletal muscle in detail Tetanus and fatigue	Must Know	A	C2	MCQ SAQ VIVA	Ganong’s Review of Medical Physiology 25thEdition Section 01, Excitable tissue:Muscle (Chapter 05, Page 110) Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.Muscle (Chapter 12,Page 422,424,428) Physiological Basis of Medical Practice by Best &	https://youtu.be/v5Nm_LaAQVo https://www.sciencedirect.com/science/article/abs/pii/S2387020622003485	

								Taylor's.13th Edition.Section 01, Excitation and Contraction of Skeletal muscle, (Chapter 04,page 74,86)		
	M3-MSK-II-P-007	Introduction to CVS	• Introduction to Cardiovascular system. Classify blood vessels	Must Know	A	C1	MCQ SAQ VIVA	Ganong's Review of Medical Physiology.25TH Edition.Section05,Cardioascular physiology (Chapter 29, Page 519) Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. Cardioascular physiology (Chapter 14,Page 469) Physiological Basis of Medical Practice by Best & Taylor's.13th Edition.Section 02, Introduction to Cardiovascular system.(Chapter 05,page 101)	https://youtu.be/28CYhgjrBLA https://litfl.com/cardiocvascular-physiology-overview/	
	M3-MSK-II-P-009	Introduction to pericardium Properties of myocardium & endocardium, myocardial action potential	• Describe the physiologic anatomy of myocardium Discuss properties of myocardium • Discuss in detail various properties of myocardium Describe the mechanism of production of action potential and its propagation • Describe excitation contraction coupling in detail • Discuss propagation of electrical activity in cardiac muscle	Must know	A	C1 C2 C1 C2	MCQ SAQ VIVA	Physiology by Linda S. Costanzo 6th Edition.Cardiovascular Physiology (Chapter 14. Page 131) Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.Muscle (Chapter 12,Page 482) Textbook of Medical Physiology by Guyton & Hall.14th Edition. (Chapter 09, Page 114)	https://litfl.com/cardiocvascular-physiology-overview/	
Physiology	M3-MSK-II-P-0015	Physiology of	• Enlist type of smooth muscles and explain their characteristics					C1	SGD	MCQ SAQ

(SGD)		smooth muscle, mechanism of smooth muscle contraction	• Discuss the properties of smooth muscle	C2		VIVA
Physiology (SDL)	M3-MSK-II-P-0022	Energetics, efficiency and types of contraction, heat production in muscle	• Elaborate Energetic and efficiency of contraction. Discuss heat production in nerve and muscle	• Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.Muscle (Chapter 12,Page 431) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition.Section 01, Excitation and Contraction of Skeletal muscle, , (Chapter 04,page 77,84) • Textbook of Medical Physiology by Guyton & Hall.14th Edition.Contraction of Skeletal muscle.Section 02. (Chapter 06, Page 85,87)	• https://www.sciencedirect.com/topics/engineering/length-tension-curve • https://youtu.be/3ntulKD4kvY	
	M3-MSK-II-P-0023	Properties of skeletal muscles, Tetanus & Fatigue	• Discuss various properties of skeletal muscle in detail Tetanus and fatigue	• Ganong's Review of Medical Physiology.25TH Edition.Section 01,Excitable tissue:Muscle (Chapter 05, Page 110) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.Muscle (Chapter 12,Page 422,424,428) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition.Section 01, Excitation and Contraction of Skeletal muscle, (Chapter 04,page 74,86)	• https://youtu.be/v5Nm_LaAQVo • https://www.sciencedirect.com/science/article/abs/pii/S2387020622003485	
	M3-MSK-II-P-0024	Introduction to CVS	• Introduction to Cardiovascular system. Classify blood vessels	• Ganong's Review of Medical Physiology.25TH Edition.Section	• https://youtu.be/28CYhgjrBLA • https://litfl.com/cardiovascular	

				05,Cardioascular physiology (Chapter 29, Page 519)	physiology-overview/			
				- Human Physiology by Dee Unglaub - Silver thorn. 8TH Edition. Cardioascular physiology (Chapter 14,Page 469) - Physiological Basis of Medical Practice by Best & Taylor's.13th Edition.Section 02, Introduction to Cardiovascular system.(Chapter 05,page 101)				
	M3-MSK-II-P-0025	Physiologic anatomy, types and properties of Smooth Muscle	- Enlist type of smooth muscles and explain their characteristics - Explain the properties of smooth muscle	- Physiology by Linda S. Costanzo 6th Edition.Cellular Physiology (Chapter 1. Page 40) - Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.Muscle (Chapter 12,Page 436) - Textbook of Medical Physiology by Guyton & Hall.14th Edition.Excitation and Contraction of Smooth muscle.Section 02. (Chapter 08, Page 101)	https://www.kenhub.com/en/library/anatomy/smooth-musculature https://youtu.be/qEVRoKuo4U			
Physiology (SKL)	M3-MSK-II-P-0032	Determination of TLC	Apparatus identification	P	Skill Lab	OSPE	Practical Notebook of Physiology Second year MBBS by Dr Saqib Sohail	
			Principle	C1				
			Procedure	C1				
			Recall composition of Diluents	C1				
			- Comprehend Calculation on hemocytometer - Recall Normal values	C2 C1				
Biochemistry (LGIS)	M3-MSK-II-B-003	Classification and functions of	Classify proteins based on their functions, solubility, and physicochemical properties with relevant examples, and	Should Know	C2	LGIS	MCQ	

		proteins	explain their biomedical importance.				SAQ SEQ VIVA
			• Apply knowledge of the biomedical importance of proteins to explain their role in disease states and clinical scenarios. •	Nice to Know	C3		
			• Differentiate between various classes of proteins based on their biochemical properties and roles.	Nice to Know	C4		
			• Assess the impact of dysfunction in specific protein types (e.g., enzymes, structural proteins) on human health.	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		
	M3-MSK-II-B-004	Elastin structure and related disorders	• Explain the structure of elastin and its role in providing elasticity to tissues.	Should Know	C2	LGIS	MCQ SAQ SEQ VIVA
			• Apply knowledge of elastin structure to predict the clinical manifestations of elastin-related disorders in different organs (e.g., lungs, blood vessels, skin)	Nice to Know	C3		
			• Analyze defects in elastin and associated proteins (e.g., fibrillin) to differentiate between various elastin-related disorders based on their clinical and biochemical features.	Nice to Know	C4		
			• Design a flowchart or concept map linking elastin structure, function, and associated disorders with their clinical manifestations.	Nice to Know	C6		
			• 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)	M3-MSK-II-B-015	Classification of proteins	• List the major classes of proteins based on structure and function.	Must Know	Lehninger Principle of Biochemistry 5th edition, Chapter No. 3, Pages 82-84		

			Describe the physiological roles of different classes of proteins in the human body.	Must Know	https://youtu.be/63VlrK6xiPY?si=XvHZYtaAkK_M98ub		
			Apply knowledge of protein classification to categorize given proteins based on their structure or function.	Nice to Know			
	M3-MSK-II-B-016	Disorders of Elastin	List the components of elastic fibers	Must Know	Lippincott biochemistry 8th edition, Chapter No. 4, Pages 52-54 Harper’s Illustrated Biochemistry 32 nd edition, Chapter No. 50, Pages: 603-604 https://youtu.be/C3SZ6aMQwN4?si=yB4Pt9Fs-HwQyiKc https://youtu.be/pXR0RpMMrfk?si=tvnw4mjFNj7jw0gf		
			Explain the role of elastin in maintaining lung elasticity and connective tissue integrity.	Must Know			
			Apply knowledge of elastin function to interpret clinical features of emphysema and Marfan syndrome.	Should Know			
Analyze the differences in pathogenesis between smoking-related emphysema and α1-antitrypsin deficiency	Should Know						
Biochemistry (SKL)	M3-MSK-II-B-022	Detection of proteins by Isoelectric pH	Perform protein separation using isoelectric focusing to separate proteins based on their isoelectric pH.	Must Know	P	Skill	OSPE
Orthopedics	M3-MSK-II-VI(Ortho)-001	Femur Fracture	Understand the anatomy of the femur and the common mechanisms, types, and clinical features of femur fractures.	C2		LGIS	MCQs
			Learn the basic principles of diagnosis, initial management, and possible complications associated with femur fractures	C2			

Spiral Courses (2nd Week)

Community Health Education and Promotion Initiative (CHEPI) RMU

Code	Topic	Time Allocated	Learning Objectives	Learning Domain
M3-MSK-II-SI(CHEPI)-001	Life style medicine (2 hours)	1 hour Theory (already covered in foundation module) 1-hour practical	Theory Appreciate the role of Lifestyle Factors in Health Assess Lifestyle-related Health Risks Describe Lifestyle Interventions for Disease Prevention and Management Appreciate the Multidisciplinary Approach in Lifestyle Medicine Practical Recap concepts of life style medicine Group activity on Implementation of Lifestyle Interventions for Disease Prevention and Management	C2 C3 C2 C3 C2 P2
M3-MSK-II-SI(CHEPI)-002	Smoking (2 hours)	1-hour theory 1-hour practical	Theory Enlist types and causes of tobacco smoking Describe composition of tobacco Elaborate health hazards of tobacco smoking Discuss effects of secondhand smoking Describe measures for prevention of smoking in the community Practical Conduct group activity on counseling session using the 5 A's model (Ask, Advise, Assess, Assist, Arrange) to encourage smoking cessation. Conduct group activity to Demonstrate the short-term and long-term health consequences of smoking through peer presentations or case discussions. Conduct group activity to analyze social, cultural, and environmental factors that contribute to tobacco use and relapse. Conduct group activity to highlight the role of various health professionals (e.g., doctor, nurse, psychologist, social worker) in tobacco cessation support.	C1 C2 C2 C2 C2 P3 P3 P3 P3

M3-MSK-II-SI(CHEPI)-004	Non-Communicable Diseases & Coronary Heart Disease Risk Factors and Prevention (2 hours)	hour Theory 1-hour practical	Theory	C2
			Differentiate between communicable and non-communicable diseases	C2
			Describe the risk factors and their importance in causation of NCDs, especially cardiovascular diseases	
			Appraise about the burden of cardiovascular diseases in Pakistan	C3
			Impart health education and advise to the people about the role of risk factors in prevention and control of cardiovascular diseases	C3
			Practical	
M3-MSK-II-SI(CHEPI)-005	Prevention of accidents	1hour theory	Conduct group activity (role playing)on identification of modifiable and non modifiable risk factors for cardiovascular diseases	P3
			Conduct group activity (role playing) in prevention and control of cardiovascular diseases	P3
			Theory:	C2
			Categorize different types of accidents	C2
			Describe risk factors involved in accidents	C2
			Describe steps involved in prevention of different types of accidents.	

Multidisciplinary (Hardens Level 9) **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	Groin/Thigh Pain with Weakness: Hernia, Nerve Injury & Compartment Dysfunction	Anatomy	Femoral canal, obturator nerve, femoral triangle	• Describe the femoral canal, femoral triangle, and obturator canal anatomy.	C3	MCQs SAQ
				• Differentiate femoral hernia from inguinal hernia anatomically.	C3	
				• Identify sensory and motor distribution of femoral and obturator nerves.	C2	
		Physiology	Motor function of adductors and gait stability	• Explain motor control of thigh adductors and quadriceps muscles.	C3	
				• Relate nerve injury to gait difficulty and weakness.	C4	
		Radiology	Femoral hernia recognition and urgency	• Recognize the role of ultrasound in diagnosing groin hernias.	C3	
				• Correlate imaging with anatomical location of swelling.	C3	
		Surgery	Role of ultrasound in groin swelling	• Identify femoral hernia as high risk for strangulation.	C4	
				• Recognize clinical signs requiring urgent surgical referral.	C4	
				• Differentiate nerve-related pain from hernia-related pain.	C4	
		Professionalism / Communication	Differentiating femoral vs inguinal hernia	• Counsel patients regarding early evaluation of groin swellings.	C5	
				• Communicate red flag symptoms clearly.	C5	

Theme 3: Radiating Hip-to-Leg Pain: Sciatica vs Hip Pathology (with Functional Limitation). (3rd Week)

Theme	Rationale	Learning objectives
Radiating Hip-to-Leg Pain: Sciatica vs Hip Pathology (with Functional Limitation)	Theme anchors on posterior thigh + hip joint concepts and common clinical differentials—sciatica, bursitis, hip dislocation/OA integrating anatomy (nerve roots/hip joint), movement mechanics, and clinical decision-making for “pain radiating down the leg.”	By the end of this theme, students should be able to: • Understand the clinical presentation of low back pain radiating to the lower limb and identify features suggestive of lumbar radiculopathy. • Integrate anatomical, physiological, and biomechanical knowledge to explain the pattern of pain, sensory symptoms, motor weakness, and reflex changes in sciatica. • Develop a structured approach to history taking and clinical examination for differentiating lumbar radiculopathy from hip joint pathology and other causes of radiating leg pain. • Recognize red-flag symptoms, indications for referral, and preventive strategies related to lumbar disc disease, occupational posture, and recurrence prevention.
Case 3: Sciatica Presentation (Lumbar Radiculopathy) A patient presented to the outpatient department (OPD) with complaints of low back pain radiating down the right leg for the past six weeks, associated with tingling and numbness in the right foot and increasing difficulty sitting for prolonged periods. The patient is a 40-year-old male driver who reports that the pain began gradually as a dull ache in the lower lumbar region but progressively worsened over time and started radiating along the posterior aspect of the right thigh and leg, eventually reaching the lateral border of the foot. He describes the pain as sharp, shooting, and electric-like in nature, and notes that it is accompanied by tingling and numbness in the right foot, suggesting possible nerve involvement. The pain becomes worse with prolonged sitting, particularly during long hours of driving as part of his occupation. He also reports that the symptoms are aggravated during coughing, sneezing, and forward bending, while lying down and rest provide partial relief. Due to the persistent discomfort and radiating pain, he occasionally experiences difficulty walking long distances and performing routine activities comfortably. There is no history of trauma, recent fall, or heavy lifting prior to the onset of symptoms. The patient denies systemic symptoms such as fever or unexplained weight loss, and also reports no bladder or bowel incontinence, no weakness in both legs, and no night pain that awakens him from sleep. Past Medical History His past medical history is unremarkable, with no history of diabetes mellitus, no previous spinal surgery, and no known history of tuberculosis or malignancy. The overall clinical picture suggests irritation or compression of a lumbar nerve root, most likely related to a lumbar disc pathology, and requires further clinical examination and evaluation. Drug History • Taking over-the-counter analgesics intermittently with temporary relief Family History • Non-contributory Social History • Works as a long-distance driver with prolonged sitting • Smokes occasionally • Sedentary lifestyle with minimal exercise		

Examination

General Physical Examination (GPE)

Patient is alert, oriented, and appears uncomfortable while sitting.

Vitals:

- Pulse: 82/min
- BP: 124/78 mmHg
- Temp: 98.4°F
- RR: 16/min

Spine Examination

Inspection

- Mild flattening of lumbar lordosis
- Patient adopts a slightly tilted posture to avoid pain

Palpation

- Tenderness over lower lumbar paraspinal muscles
- Muscle spasm present

Range of Motion

- Forward flexion of spine is restricted and painful

Neurological Examination (Lower Limb)

Straight Leg Raise Test (SLR)

- Positive on the right side at 40 degrees
- Pain radiates below the knee to the foot

Motor Examination

- Mild weakness of ankle dorsiflexion (L5 involvement)

Sensory Examination

- Decreased sensation over lateral leg and dorsum of foot

Reflexes

- Ankle jerk slightly reduced (S1 involvement)

Hip Examination (To Differentiate Hip Pathology)

- Hip joint movements are largely preserved
- No groin pain on internal rotation
- No limb shortening or deformity

This helps differentiate sciatica from primary hip disease.

Systemic Examination

Cardiovascular, respiratory, and abdominal examination are unremarkable.

Educational Relevance (Discipline-wise Integration)

Discipline	Educational Importance
Anatomy	Course of sciatic nerve, lumbosacral plexus, dermatomes (L5/S1)
Physiology	Nerve conduction, pain pathways, sensory-motor function

Biomechanics	Effect of posture and prolonged sitting on disc pressure
Clinical Medicine	Differentiating radiculopathy vs hip joint pathology
Orthopedics	Disc prolapse, referral indications, conservative management
Radiology	MRI lumbar spine role in persistent or red-flag cases
Community Medicine	Occupational prevention, posture correction, lifestyle advice

Entrustable Professional Activities (EPAs)

1. Obtain a focused history of radiating low back pain, identify red-flag symptoms, and differentiate possible causes such as spinal radiculopathy and hip joint pathology.
2. Perform a structured examination of the lumbar spine and lower limb, including a neurological assessment and correct demonstration of the Straight Leg Raise test.
3. Recognize findings suggestive of nerve root involvement, counsel the patient regarding posture and activity modification, and initiate appropriate referral when indicated.

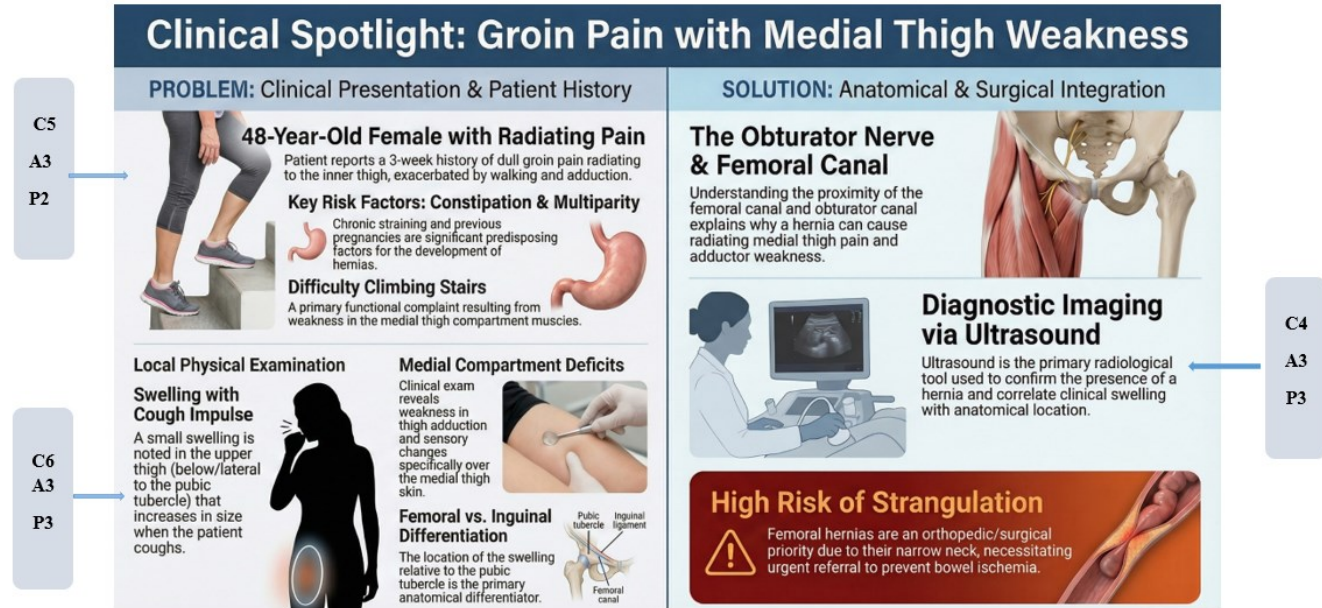
EPAs Detail Annexure-II

Justification

Harden Level of Integration: Level 11 (Practice-Based Integration)

This case represents an authentic OPD-based clinical problem where students must integrate anatomy, physiology, biomechanics, clinical examination maneuvers, and decision-making simultaneously. The learning occurs as a unified professional task rather than separate disciplines, fulfilling the criteria of Harden Level 11 integration into clinical performance.

Theme 3 Clinico-Concept Connect (C³6)



Harden Level 11 Transdisciplinary

Specific Learning Objectives

Subject	Code	Topic	Learning Objectives Students Should Be Able To	Calgary Gauge	Learning Domain	Teaching Strategy	Assessment Tools
Anatomy (LGIS)	M3-MSK-II-A-0049	Development Of Muscles	- Discuss development of skeletal muscle with special reference to myotomes, pharyngeal arch muscles and limb muscle along with limb skeleton. - Describe development of smooth and cardiac muscles with anomalies. - Correlate the clinical conditions - Understand the preventive and curative health care measures - Practice the principles of Bioethics - Apply strategic use of AI in health care	Must know	C2	LGIS	MCQ SAQ VIVA
				Must know	C2		
				Should know	C3		
				Should know Nice to know	C3 C3		
Anatomy (LGIS)	M3-MSK-II-A-0010	General Anatomy (Skin)	Evaluate the impact of embryological muscle development abnormalities on clinical outcomes and management strategies.	Nice to know	C5	LGIS	MCQ SAQ VIVA
			- Enlist functions of skin - Discuss types of skin - Compare between thick and thin skin - Classify skin lines - Describe the significance of skin lines - Discuss burns of skin - Correlate the clinical conditions - Understand the preventive and curative health care measures - Practice the principles of Bioethics - Apply strategic use of AI in health care - Read relevant research article	Should know Should know Should know Should know Should know Should know Must know Must know Nice to know	C1 C2 C2 C1 C2 C3 C3 C3 C3		
				Nice to know Nice to know Nice to Know	C3 C3 C3		
			Develop an integrated clinical protocol for assessment and management of burn injuries based on skin anatomy.	Nice to Know	C6		
Anatomy (SGD/SKL)	M3-MSK-II-A-0061	Posterior Compartment of	Describe the nerves and vessels of posterior compartment of thigh	Must know	C2	Skill Lab	MCQ

		thigh (Neurovascular Organization)	- Discuss course, relations, distribution and branches of neurovascular structures of posterior compartment - Identify these structures - Correlate the clinical conditions - Understand the preventive and curative health care measures - Practice the principles of Bioethics - Apply strategic use of AI in health care - Read relevant research article	Must know	C2		SEQ VIVA OSPE
			Evaluate the functional and clinical significance of neurovascular structures in the posterior compartment of the thigh.	Must know Should know Should know Nice to know Nice to know Nice to know	C1 C3 C3 C3 C3 C3		
				Nice to know	C5		
	M3-MSK-II-A-0062	Hip Joint	- Describe the type of joint - Describe articular surfaces, - Describe capsular attachments. - Discuss synovial membrane and its folding. - Enlist ligaments and their attachments - Discuss movements possible at hip joint and muscles producing them - Describe blood supply and nerve supply. - Correlate the clinical conditions - Understand the preventive and curative health care measures - Practice the principles of Bioethics - Apply strategic use of AI in health care - Read relevant research article	Must know Must know Must know Must know Must know Must know Must know Should know Should know Nice to know Nice to know Nice to know	C2 C2 C2 C2 C1 C2 C2 C3 C3 C3 C3 C3	Skill Lab	MCQ SEQ VIVA OSPE
	M3-MSK-II-A-0063	Tibia	- Identify bone - Demonstrate its side. - Demonstrate its normal anatomical position. - Describe bony features. - Discuss attachment of muscle and ligament - Describe articular surfaces - Identify nutrient foramen - Describe its ossification - Correlate the clinical conditions	Must know Must know Must know Must know Must know Must know Must know Must know Should know Should know	C1 P P C2 C2 C2 C1 C2 C3 C3	Skill Lab	MCQ SEQ VIVA OSPE

			• Understand the preventive and curative health care measures • Practice the principles of Bioethics • Apply strategic use of AI in health care	Nice to know Nice to know Nice to know	C3 C3 C3		
	M3-MSK-II-A-0040	Thick skin	• Identify thick skin under microscope • Illustrate microscopic structure of thick skin • Write two points of identification • Focus the slide	P C2 C1 P		Skill Lab	OSPE
Anatomy (SDL)	M3-MSK-II-A-0033	Sciatica Trochanteric Bursitis Hip Dislocations	• Tabulate the he various muscles of gluteal region with origin, insertion, action nerve supply. • List various structures undercover of gluteal maximus i.e. muscles, vessels, nerves, bones and joints, ligaments, bursae. • Describe trochanteric anastomosis and cruciate anastomosis. • Enumerate the structures passing through greater sciatic foraman. • Discuss the formation course relations, branches, distribution of sciatic nerve with applied anatomy.. • Correlate the clinical aspects • Read relevant research article • Use digital library	Clinical Oriented Anatomy by Keith L. Moore.5TH Edition. (Page 510, 562-563,575-583). https://www.youtube.com/watch?v=AeuLBN5ouwo https://link.springer.com/chapter/10.1007/978-3-030-11033-8_5			
	M3-MSK-II-A-0034	Hamstring Muscle Tear/Strain Deep Vein Thrombosis (DVT)	• Tabulate the Hamstring muscles • Discuss origin insertion, nerve supply and action • Describe the nerves and vessels of posterior compartment of thigh • Discuss course relations distribution and branches of neurovascular structures of posterior compartment • Identify these structures • Correlate the clinical aspects • Read relevant research article - Use digital library	Clinical Oriented Anatomy by Keith L. Moore.5TH Edition. (Page 569-572). https://www.youtube.com/watch?v=AeuLBN5ouwo https://link.springer.com/article/10.1186/s10195-023-00691-w			

Physiology (LGIS)	M3-MSK-II-P-0010	Mechanism of smooth muscle contraction & its control	Explain the chemical and physical basis of smooth muscle contraction	Must Know	A	C2	MCQ SAQ VIVA	Ganong's Review of Medical Physiology by Linda S. Costanzo 6th Edition. Cellular Physiology (Chapter 1. Page 42) Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. Muscle (Chapter 12, Page 439, 443) Textbook of Medical Physiology by Guyton & Hall. 14th Edition. Excitation and Contraction of Smooth muscle. Section 02. (Chapter 08, Page 103, 105)	https://www.kenhub.com/en/library/anatomy/smooth-musculature https://youtu.be/qEVRoKuo4U
	M3-MSK-II-P-0011	Regulation of myocardial activity	Describe the regulation of pumping activity of heart	Must Know	A	C1	MCQ SAQ VIVA	Textbook of Medical Physiology by Guyton & Hall. 14th Edition. Excitation and Contraction of Smooth muscle. Section 02. (Chapter 09, Page 123)	https://pubmed.ncbi.nlm.nih.gov/1661829/ https://www.sciencedirect.com/topics/medicine-and-dentistry/cardiac-action-potential
Physiology (SGD)	M3-MSK-II-P-0016	Properties of myocardium, myocardial action potential, Excitatory and conduction system of heart	Describe the physiologic anatomy of myocardium Discuss properties of myocardium.				C1	SGD	MCQ SAQ VIVA
			Discuss in detail various properties of myocardium Describe the mechanism of production of action potential and its propagation.				C2		
			Describe excitation contraction coupling in detail				C1		
			Discuss propagation of electrical activity in cardiac muscle				C2		
Physiology (SDL)	M3-MSK-II-P-0026	Introduction to pericardium Properties of myocardium & endocardium, myocardial action potential	- Describe the physiologic anatomy of myocardium Discuss properties of myocardium - Discuss in detail various properties of myocardium Describe the mechanism of production of action potential and its propagation - Describe excitation contraction coupling in detail				- Physiology by Linda S. Costanzo 6th Edition. Cardiovascular Physiology (Chapter 14. Page 131) - Human Physiology by Dee Unglaub Silver thorn. 8TH	https://youtu.be/L2Gf9cj7jBw https://www.sciencedirect.com/topics/medicine-and-dentistry/cardiac-action-potential	

			Discuss propagation of electrical activity in cardiac muscle	Edition.Muscle (Chapter 12,Page 482) Textbook of Medical Physiology by Guyton & Hall.14th Edition. (Chapter 09, Page 114)			
	M3-MSK-II-P-0027	Mechanism of smooth muscle contraction & its control	Explain the chemical and physical basis of smooth muscle contraction	- Ganong's Review of Medica Physiology by Linda S. Costanzo 6th Edition.Cellular Physiology (Chapter 1. Page 42) - Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.Muscle (Chapter 12,Page 439,443) - Textbook of Medical Physiology by Guyton & Hall.14th Edition. Excitation and Contraction of Smooth muscle.Section 02. (Chapter 08, Page 103,105)			https://www.kenhub.com/en/library/anatomy/smooth-musculature https://youtu.be/qEVRoKuo4U
	M3-MSK-II-P-0028	Regulation of myocardial activity	Describe the regulation of pumping activity of heart	Textbook of Medical Physiology by Guyton & Hall.14th Edition. Excitation and Contraction of Smooth muscle.Section 02. (Chapter 09, Page 123)			https://pubmed.ncbi.nlm.nih.gov/1661829/ https://www.sciencedirect.com/topics/medicine-and-dentistry/cardiac-action-potential
Physiology (SKL)	M3-MSK-II-P-0033	Determination of PlateletCount	- Apparatus identification - Principle	P C1	Skill	OSPE	Practical Notebook of Physiology Second year

			• Procedure	C1	Lab		MBBS by Dr Saqib Sohail	
			• Recall composition of Diluents	C1				
			• Comprehend, Calculation on hemocytometer	C2				
			• Recall Normal values	C1				
Biochemistry (LGIS)	M3-MSK-II-B-005	Primary structure of proteins	• Define primary structure of proteins		Must Know	C1	LGIS	MCQ SAQ SEQ VIVA
			• Explain the characteristics of peptide bonds		Must Know	C2		
			• Describe how amino acid composition determines protein properties.		Should Know	C2		
			• Explain how DNA sequence predicts protein structure.		Should Know	C2		
			• Apply knowledge of amino acid sequences to predict the effect of specific mutations on protein function.		Should Know	C3		
			• Interpret sequencing data to identify the amino acid order in a peptide		Nice to Know	C4		
			• Assess how sequence alterations lead to disease (e.g., sickle cell anemia, cystic fibrosis).		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		
	M3-MSK-II-B-006	Protein folding And misfolding	• List the levels of protein structure involved in folding		Must Know	C1	LGIS	MCQ SAQ SEQ VIVA
			• Describe the role of molecular chaperones in protein folding		Must Know	C2		
			• Summarize the mechanisms leading to protein misfolding and aggregation		Must Know	C2		
			• Differentiate between various protein misfolding disorders based on their molecular mechanisms (e.g., amyloid formation vs prion propagation).		Should Know	C4		
			• Assess the role of protein misfolding in disease pathogenesis (e.g., neurodegenerative		Nice to Know	C5		

			disorders).				
			• 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)	M3-MSK-II-B-017	Importance of Protein Primary Structure in Disease	• Explain why the amino acid sequence is important for normal protein function.	Should Know	Lippincott biochemistry 8th edition, Chapter No. 2, Pages 14-16 https://youtu.be/PPJ7C3hcnPw?si=BRahE-9qlZNCkfoD		
			• Relate changes in primary structure (mutations) to disease with examples (e.g., sickle cell anemia).	Should Know			
	M3-MSK-II-B-018	Protein misfolding Disorders	• Describe the role of molecular chaperones and proteostasis systems in preventing misfolding	Should Know	Lippincott biochemistry 8th edition, Chapter No. 2, Pages 21-24 Harper's Illustrated Biochemistry 32 nd edition, Chapter No. 5, Pages: 42-43 https://youtu.be/ESC3CSApNnk?si=Tg7IN5AAL49a7d72 https://youtu.be/v5gdH_Hydes?si=yThWFOW_FRd3mMZH		
			• Apply knowledge of protein misfolding to interpret clinical manifestations of diseases such as Alzheimer's, Parkinson's, and prion disorders.	Should Know			
			• Differentiating between various protein misfolding disorders based on their underlying mechanisms and affected proteins	Should Know			
Biochemistry (SKL)	M3-MSK-II-B-023	Fractional precipitation of proteins	• Perform fractional precipitation of proteins using graded salt concentrations (e.g., ammonium sulfate) to selectively separate proteins based on solubility	Must Know	P	Skill	OSPE

Spiral Courses (3rd Week)

Community Health Education and Promotion Initiative (CHEPI) RMU

Code	Topic	Time Allocated	Learning Objectives	Learning Domain
M3-MSK-II-SI(CHEPI)-003	Prevention and control of tuberculosis 2 hours	Theory 1 hour Practical 1 hour	Theory Describe the public health importance of Tuberculosis in global and local context. Describe the epidemiology of Tuberculosis. Describe the mode of transmission and incubation period of Tuberculosis. Explain significance, procedure and interpretation of Mantoux. Test Differentiate between primary and secondary drug resistance with reference to Tuberculosis. Differentiate between Multi Drug Resistant Tuberculosis (MDR-TB) and Extensive Drug-Resistant Tuberculosis (XDR-TB). Describe prevention and control of Tuberculosis in community. Enumerate components of DOTS, Stop TB Strategy and End TB Strategy. Practical Group activity on educating a patient (role-play) about TB treatment regimens (e.g., DOTS strategy, first-line drugs, treatment duration). Group activity on Counselling of patients and families on TB prevention, treatment adherence, and stigma reduction. Group activity on identifying and discussing stigma and social barriers faced by TB patients through case-based group discussions	C2 C2 C2 C2 C2 C2 C2 C2 C1 P3 A3 P3

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	Radiating Hip-to-Leg Pain: Sciatica vs Hip Pathology (with Functional Limitation)	Anatomy	Course of sciatic nerve, lumbosacral plexus, dermatomes (L5/S1)	• Describe the origin, course, and branches of the sciatic nerve.	C4	MCQs SAQ
				• Identify lumbosacral nerve roots responsible for radicular pain.	C5	
				• Correlate dermatomal sensory loss with root involvement.	C5	
		Physiology	Nerve conduction, pain pathways, sensory-motor function	• Explain the mechanism of nerve compression producing pain and paresthesia.	C4	
				• Relate motor weakness and reflex changes to nerve root dysfunction.	C5	
		Medicine	Differentiating radiculopathy vs hip joint pathology	• Demonstrate Straight Leg Raise test and interpret findings.	C4	
				• Perform focused neurological examination of the lower limb.	C5	
		Orhtopedics	Disc prolapse, referral indications, conservative management	• Differentiate sciatica from hip osteoarthritis or bursitis.	C4	
				• Recognize red flag signs requiring urgent referral (cauda equina syndrome).	C5	
		Community Medicine	Occupational prevention, posture correction, lifestyle advice	• Discuss ergonomic measures and posture correction in occupational workers.	C5	
				• Outline basic preventive strategies to reduce recurrence.	C6	

Theme 4: Knee Pain & Swelling with Instability: From Popliteal Fossa to Inflammatory Arthritis. (4th Week)

Theme	Rationale	Learning objectives
Knee Pain & Swelling with Instability: From Popliteal Fossa to Inflammatory Arthritis	Links knee/popliteal fossa anatomy + tibia/fibula pathology (fractures/stress injury) with RA/JIA and clinical evaluation presenting as painful swollen knee, reduced ROM, and functional instability.	By the end of this theme, students should be able to: • Understand the clinical presentation of a painful swollen knee with morning stiffness and identify features suggestive of an inflammatory joint disorder. • Integrate anatomical, physiological, pathological, and clinical knowledge to explain knee swelling, effusion, restricted movement, and functional limitation. • Develop a systematic approach to history taking, examination, and basic investigation of a patient presenting with chronic knee pain and swelling. • Recognize important differential diagnoses, red-flag features, and the need for timely referral and counseling in conditions such as inflammatory arthritis and septic arthritis.
Case 4: A patient with Painful Swollen Knee with Morning Stiffness A 16-year-old female presented to the outpatient department with complaints of progressively worsening pain and swelling in the right knee for the past two months. The patient reports that the symptoms began gradually and have steadily increased in severity, leading to difficulty in walking and climbing stairs. The pain is described as dull and aching in nature and is associated with noticeable swelling of the knee joint. She reports significant morning stiffness lasting approximately one to two hours after waking, during which it is difficult for her to move the joint or walk comfortably. The stiffness tends to improve slightly with movement and activity as the day progresses, although the discomfort persists. Over the past few weeks, the knee has become increasingly swollen, warm, and painful, and she occasionally experiences a sensation of instability in the joint while walking, although she denies any history of significant trauma or injury preceding the onset of symptoms. The patient denies systemic symptoms such as fever, chills, unexplained weight loss, or night sweats. She also reports no history of skin rash, eye redness, recent infection, or contact with tuberculosis. In addition to the joint symptoms, she complains of mild fatigue and has reduced her participation in school and daily physical activities due to persistent joint discomfort. The overall clinical presentation suggests a chronic inflammatory process affecting the knee joint and warrants further clinical evaluation Past Medical History • No previous history of joint disease • No known diabetes mellitus • No history of recurrent infections Drug History • Occasional use of NSAIDs with partial relief • Not on any long-term medication Family History • Mother has a history of autoimmune thyroid disease		

- No known family history of rheumatoid arthritis

Social History

- Student with limited physical activity due to pain
- No smoking or substance use

Examination

General Physical Examination (GPE)

The patient appears mildly uncomfortable while walking.

Vitals:

- Pulse: 88/min
- BP: 110/70 mmHg
- Temperature: 98.6°F
- Respiratory rate: 16/min

General findings:

- Mild pallor present
- No lymphadenopathy
- No generalized edema

Local Knee Examination

Inspection

- Right knee joint appears swollen
- Mild flexed posture of the knee
- Overlying skin appears slightly stretched
- No obvious trauma marks

Palpation

- Knee joint is warm to touch
- Diffuse tenderness along joint margins
- **Positive patellar tap test**, indicating joint effusion
- Mild fullness in the popliteal fossa suggestive of a Baker cyst

Range of Motion

- Flexion and extension are restricted due to pain
- Movement is more painful at extremes

Stability Assessment

- No gross ligament tear signs
- Instability appears functional due to pain and swelling rather than trauma

Neurovascular Examination

- Distal pulses intact
- Sensation normal in the leg and foot

Systemic Examination

- CVS, Respiratory, Abdomen: Normal
- Small joint screening shows mild tenderness in wrists (early inflammatory pattern)

Investigations (For Integrated Teaching)

- CBC: Mild anemia of chronic disease
- ESR: Raised
- CRP: Elevated
- Rheumatoid factor / ANA: To be discussed as screening markers
- X-ray Knee: Soft tissue swelling, no fracture
- Ultrasound Knee: Effusion confirmed
- Joint aspiration: Mentioned as essential if septic arthritis suspected

Educational Relevance (Discipline-wise Integration)

Discipline	Educational Importance
Anatomy	Knee joint capsule, synovium, ligaments, menisci, popliteal fossa contents
Physiology	Synovial fluid production, inflammatory mediators causing effusion and stiffness
Pathology/Immunology	Autoimmune synovitis in RA/JIA, pannus formation, cartilage destruction
Clinical Medicine	Knee examination, effusion tests, distinguishing inflammatory vs traumatic swelling
Emergency Medicine	Recognizing septic arthritis as a limb-threatening emergency
Radiology	Role of ultrasound and X-ray in joint swelling evaluation
Professional Skills	Counseling for chronic disease follow-up and urgency communication

Entrustable Professional Activities (EPAs)

1. Obtain a focused history of knee pain and swelling and identifying red-flag symptoms.
2. Perform a structured clinical examination of the knee joint, including assessment of range of motion and demonstration of tests for joint effusion.
3. Recognize features suggestive of serious conditions such as septic arthritis, counsel the patient regarding warning signs and follow-up, and initiate appropriate referral when indicated.

EPAs Detail Annexure-II

Justification

Harden Level of Integration: Level 11 (Practice-Based Integration)

This case represents a real OPD clinical presentation where students must integrate anatomy of the knee, physiology of synovial fluid and inflammation, pathology of autoimmune arthritis, clinical examination skills, and emergency recognition of septic arthritis. The session functions as a unified patient-care task rather than separate subject teaching, fulfilling Harden Level 11 integration into professional practice.

Theme 4 Clinico-Concept Connect (C³6)

C5
A2
P3

Adolescent Inflammatory Arthritis: A Clinical Case Study of the Knee

CLINICAL PRESENTATION & HISTORY

The Patient Profile: 16-Year-Old Female

Presents with a 2-month history of dull, aching pain and swelling in the right knee, worsened by rest and improved with movement.



Morning Stiffness (>1 Hour)

A hallmark sign of inflammatory arthritis where fluid accumulates overnight, causing significant mobility issues immediately after waking.

Systemic Involvement

The patient reports mild fatigue and displays mild pallor (anemia of chronic disease), with early inflammatory signs in the wrists.

CLINICAL EXAMINATION & DIAGNOSTICS



Patellar Tap & Bulge Sign

Clinical maneuvers used to confirm joint effusion (excess fluid) within the knee capsule.

Inflammatory Markers (ESR/CRP)

Elevated Erythrocyte Sedimentation Rate and C-Reactive Protein levels are essential markers for measuring disease activity and severity.

Imaging Modalities

Ultrasound is used as a bedside tool to confirm effusion and Baker cysts, while X-rays help exclude fractures and identify chronic joint changes.

ANATOMICAL & PHYSIOLOGICAL BASIS

The Role of the Synovium:

The synovial membrane produces fluid for lubrication and nutrition; in arthritis, autoimmune activation leads to chronic synovitis and pannus formation.



Mechanism of Effusion:

Inflammatory mediators (prostaglandins/cytokines) increase vascular permeability, causing fluid exudation into the joint cavity and raising intra-articular pressure.

Popliteal Fossa & Baker Cyst

Swelling in the posterior knee can result from the herniation of the synovial membrane into the popliteal space, known as a Baker cyst.

COMPARISON OF KNEE SWELLING CAUSES

Feature	Inflammatory Arthritis	Traumatic Swelling
Onset	Gradual (weeks/months)	Sudden (post-injury)
Morning Stiffness	Prolonged (>1 hour)	Minimal or absent
Movement	Improves with activity	Worsens with activity
Systemic Signs	Fatigue, anemia, multiple joints	Usually localized to one joint

THE ORTHOPEDIC EMERGENCY: SEPTIC ARTHRITIS

Red Flag: Septic Arthritis

Must be ruled out if the patient presents with fever, chills, severe pain, and an absolute inability to bear weight.

Immediate Action Required

Septic arthritis is a limb-threatening emergency requiring urgent joint aspiration and referral to prevent rapid cartilage destruction.

C5
A3
P3

Harden Level 11 Transdisciplinary

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Specific Learning Objectives

Subject	Code	Topic	Learning Objectives Students Should Be Able To	Calgary Gauge	Learning Domain	Teaching Strategy	Assessment Tools
Anatomy (SGD)	M3-MSK-II-A-0065	Popliteal Fossa	- Identify surface landmarks - Enlist contents - Discuss boundaries, roof and floor - Map the outline of popliteal artery in a simulated patient / model - Analyse the clinical conditions - Understand the preventive and curative health care measures - Practice the principles of Bioethics - Apply strategic use of AI in health care - Read relevant research article	Must know Must know Must know Must know Should know Should know Nice to know Nice to know Nice to know	C1 C1 C2 P C4 C3 C3 C3 C3	SGD	MCQ SEQ VIVA OSPE
	M3-MSK-II-A-0066	Knee Joint	- State type of joint - Describe its articular surfaces - Demonstrate capsular attachments, - Enlist extra capsular and intracapsular ligaments and their attachments - Demonstrate the movements possible at knee joint and muscles producing them. - Describe the concept of locking and unlocking of knee joint - Describe blood supply and nerve supply of joint - Analyse the clinical conditions - Understand the preventive and curative health care measures - Practice the principles of Bioethics - Apply strategic use of AI in health care - Read relevant research article	Must know Must know Must know Must know Must know Must know Must know Should know Should know Nice to know Nice to know Nice to know Nice to know	C1 C2 P C1 P C2 C5 C3 C3 C3 C3	SGD	MCQ SEQ VIVA OSPE
	M3-MSK-II-A-0067	Anterior Compartment of Leg (Muscles and Neurovascular	- Demonstrate surface landmarks - Discuss superficial fascia & deep fascia, their contents including retinacula - Describe Origin, insertion, nerve supply and action of all muscles of anterior compartment of leg	Must know Must know Must know	P C2 C2 C1	SGD	MCQ SEQ VIVA OSPE

		Organization)	- Identify different structures in compartment - Correlate the clinical conditions - Understand the preventive and curative health care measures - Practice the principles of Bioethics - Apply strategic use of AI in health care - Read relevant research article	Must know Should know Should know Nice to know Nice to know Nice to know	C3 C3 C3 C3 C3 C3		
Anatomy (SKL)		Lateral Compartment	- Describe the muscles of the lateral compartment of the leg - Discuss the origin, insertion, nerve supply, and actions of muscles in the lateral compartment of the leg - Describe the course, relations, and branches of the superficial fibular (peroneal) nerve - Correlate the clinical conditions associated with the lateral compartment of the leg (e.g., nerve injury, compartment syndrome, ankle instability) - Understand the preventive and curative health care measures related to lateral leg injuries and conditions - Practice the principles of bioethics in the management of patients with lower limb disorders - Apply the strategic use of AI in the diagnosis and management of lateral compartment leg conditions - Read and critically appraise relevant research articles related to the lateral compartment of the leg	Should know Should know Should know Must know Must know Nice to know Nice to know Nice to know	C2 C2 C2 C3 C3 C3 C3 C3	Skill Lab	MCQ SEQ VIVA OSPE
	M3-MSK-II-A-0068	Radiology / Cross Sectional Anatomy	- Demonstrate major landmarks of thigh and anterior compartment of leg on radiographs - Identify the structures present at different levels of cross sections Upper 3rd of thigh Mid shaft of femur Lower 3rd of thigh Upper part of patella Distal part of patella Through tibial condyles Correlate the clinical conditions	Must know Must know Should know	P C2 C3	Skill Lab	MCQ SEQ VIVA OSPE
	M3-MSK-II-A-0041	Thin skin	- Identify thin skin under microscope - Illustrate microscopic structure of thin skin - Write two points of identification	P C2 C1		Skill Lab	MCQ SEQ VIVA

			• Focus the slide	P	OSPE
Anatomy (SDL)	M3-MSK-II-A-0035	Osteoarthritis of Hip Hip Dislocations (Posterior more common) Developmental Dysplasia of Hip (DDH)	• Describe the type of joint • Describe articular surfaces, • Describe capsular attachments. • Discuss synovial membrane and its folding. • Enlist ligaments and their attachments • Discuss movements possible at hip joint and muscles producing them • Describe blood supply and nerve supply. • Correlate the clinical aspects • Read relevant research article • Use digital library	Clinical Oriented Anatomy by Keith L. Moore.5TH Edition. (Page 510-626,629-632,660-661). https://www.youtube.com/watch?v=AeuLBN5ouwo https://link.springer.com/referenceworkentry/10.1007/978-3-030-43240-9_2	
	M3-MSK-II-A-0036	Tibial Shaft Fracture Shin Splints (Medial Tibial Stress Syndrome) Stress Fractures of Tibia	• Identify bone • Demonstrate its side. • Demonstrate its normal anatomical position. • Describe bony features. • Discuss attachment of muscle and ligament • Describe articular surfaces • Identify nutrient foramen • Describe its ossification • Correlate the clinical aspects • Read relevant research article • Use digital library	Clinical Oriented Anatomy by Keith L. Moore.5TH Edition. (Page 19, 510,520-521,604). https://www.youtube.com/watch?v=AeuLBN5ouwo https://link.springer.com/chapter/10.1007/978-3-030-93685-3_14 https://link.springer.com/chapter/10.1007/978-3-319-78387-1_69	
	M3-MSK-II-A-0037	Fibular Fractures (commonly with ankle injuries) Common Peroneal Nerve Injury at Neck of Fibula (foot drop) Fibular Graft Harvest	• Identify bone • Demonstrate its side. • Demonstrate its normal anatomical position. • Describe bony features. • Discuss attachment of muscleS and ligamentS • Describe articular surfaces • Identify nutrient foramen • Describe its ossification • Correlate the clinical aspects • Read relevant research article • Use digital library	Clinical Oriented Anatomy by Keith L. Moore.5TH Edition. (Page 20,510,513,521,528,687,790). https://www.youtube.com/watch?v=AeuLBN5ouwo https://link.springer.com/chapter/10.1007/978-3-030-93685-3_14 https://link.springer.com/chapter/10.1007/978-3-319-78387-1_69	

Physiology (LGIS)	M3-MSK-II-P-0012	Comparison of 3 types of muscle	Discuss differences among three types of muscle in detail	Must Know	A	C2	MCQ SAQ VIVA	Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.Muscle (Chapter 12,Page 444)	https://training.seer.cancer.gov/anatomy/muscular/types.html https://youtu.be/eShBZ3-RxHA
	M3-MSK-II-P-0013	Excitatory & Conducting system of heart	- Describe the conductive system of heart in detail - Enlist the various components of conductive system of heart - Describe the mechanism of production of action potential in SA node, AV node, ventricles. Also - describe its propagation	Must Know Must Know Must Know	A A A	C1 C1 C1	MCQ SAQ VIVA	Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.Muscle (Chapter 12,Page 488) Physiological Basis of Medical Practice by Best & Taylor’s.13th Edition. (Chapter 08,page 155,162) Textbook of Medical Physiology by Guyton & Hall.14th Edition.Section 02. (Chapter 10, Page 127,133)	https://youtu.be/TnFoJ7Hhi-M https://teachmeanatomy.info/thorax/organs/heart/conducting-system/
	M3-MSK-II-P-0017	Comparison of three types of muscle	- Discuss three types of muscles - Discuss differences among three types of muscle in detail					C2 C2	LGIS	MCQ SAQ VIVA
Physiology (SDL)	M3-MSK-II-P-0029	Comparison of 3 types of muscle	Discuss differences among three types of muscle in detail		Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.Muscle (Chapter 12,Page 444)			https://training.seer.cancer.gov/anatomy/muscular/types.html https://youtu.be/eShBZ3-RxHA	
	M3-MSK-II-P-0030	Excitatory & Conducting system of heart	- Describe the conductive system of heart in detail - Enlist the various components of conductive system of heart - Describe the mechanism of production of action potential in		- Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.Muscle (Chapter 12,Page 488) - Physiological Basis of Medical Practice by Best & Taylor’s.13th Edition. (Chapter 08,page 155,162)			https://youtu.be/TnFoJ7Hhi-M https://teachmeanatomy.info/thorax/organs/heart/conducting-system/	

			SA node, AV node, ventricles.also describe its propagation	Textbook of Medical Physiology by Guyton & Hall.14th Edition.Section 02. (Chapter 10, Page 127,133)			
Physiology (SKL)	M3-MSK-II-P-0033	Determination of ABO, Bloodgroups	- Principle - Procedure - Methods - Types of blood groups - Clinical Corelations of blood transfusion	C1 C1 C2 C3	Skill Lab	OSPE	Practical Notebook of Physiology Second year MBBS by Dr Saqib Sohail
Biochemistry (LGIS)	M3-MSK-II-B-007	Secondary protein structure	Define secondary structure of proteins	Must Know	C1	LGIS	MCQ SAQ SEQ VIVA
			Explain the formation of α-helix and β-pleated sheet with reference to hydrogen bonding.	Must Know	C2		
			Illustrate the hydrogen bonding pattern in α-helix and β-pleated sheet using diagrams.	Must Know	C3		
			Differentiate between α-helix and β-pleated sheet based on structure, bonding, and stability.	Must Know	C4		
			Assess the effect of amino acid composition (e.g., proline) on the stability of secondary structures.	Should 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		
	M3-MSK-II-B-008	Protein separation techniques	List the common protein separation techniques (e.g., chromatography, electrophoresis, centrifugation, detection of proteins by Isoelectric pH).	Must Know	C1	LGIS	MCQ SAQ SEQ VIVA
			Explain the basic principles of protein separation techniques based on size, charge, and affinity	Must Know	C2		

			• Apply appropriate protein separation techniques to isolate proteins based on their physicochemical properties	Should Know	C3		
			• Differentiate between various protein separation techniques in terms of principle, procedure, and applications.	Should Know	C4		
			• Justify the selection of a specific separation method for isolating a target protein	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		
	M3-MSK-II-B-009	Tertiary and quaternary structure	• Define tertiary and quaternary structure of proteins.	Must Know	C1	LGIS	MCQ SAQ SEQ VIVA
			• List the types of bonds and interactions involved in tertiary and quaternary structure of protein.	Must Know	C1		
			• Explain how interactions between amino acid side chains stabilize the tertiary & quaternary structure of proteins.	Must Know	C2		
			• Differentiate between tertiary and quaternary structures based on organization, bonding and function.	Should Know	C4		
			• Apply the strategic use of	Nice to Know	C3		

			artificial intelligence in healthcare • Use HEC digital library • Practice principles of bioethics • Understand the curative and preventive health care measures				
	M3-MSK-II-B-010	Protein folding & denaturation	• Define protein folding and denaturation	Must Know	C1	LGIS	MCQ SAQ SEQ VIVA
			• Apply the principles of protein chemistry to show how changes in environmental conditions (temperature, pH, chemicals) lead to protein denaturation in laboratory or clinical scenarios.	Should Know	C3		
			• Compare denaturation and hydrolysis based on type of bonds affected and reversibility	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 (SGD)	M3-MSK-II-B-012	Protein structure	• Explain primary, secondary, tertiary and quaternary structures of proteins	Must Know	C2	SGD	MCQ SAQ SEQ VIVA
			• Apply the strategic use of artificial intelligence in healthcare • Use HEC digital library • Practice principles of bioethics • Understand the curative and preventive health care measures	Nice to Know	C3		
Biochemistry (SDL)	M3-MSK-II-B-019	Higher Levels of Protein Organization	• Identify different levels of protein structure	Should Know	Lippincott biochemistry 8th edition , Chapter No. 2, Pages 16-21 Harper’s Illustrated Biochemistry 32nd edition , Chapter No. 5, Pages: 35-40		
			• Explain the types of bonds and interactions stabilizing each level	Should Know			

			• Relate protein structure to its function with simple examples	Should Know	https://youtu.be/PPJ7C3hcnPw?si=BRahE-9qIZNCkfoD		
	M3-MSK-II-B-020	Clinical Applications of Protein Separation Techniques	• Describe common protein separation techniques (e.g., electrophoresis, chromatography).	Should Know	Lehninger Principle of Biochemistry 5th edition, Chapter No. 3, Pages 85-91 https://youtu.be/MvcJuEaPiNQ?si=uCUs8wGmSsViVp51		
			• Explain how these techniques are used in diagnosis (e.g., serum protein electrophoresis).	Should Know			
			• Interpret basic results of protein separation in common clinical conditions.	Should Know			
Biochemistry (SKL)	M3-MSK-II-B-024	Chromatography	• Perform separation of amino acids by paper chromatography	Must Know	P	Skill	OSPE
Pediatric	M3-MSK-II-VI(Peads)-001	Juvenile Idiopathic Arthritis (JIA)	• Define Congenital Talipes Equino Varus (CTEV).		C2	LGIS	MCQs
			• Recognize the classical clinical features of clubfoot.		C2		
			• Classify CTEV (unilateral vs bilateral, flexible vs rigid).		C2		
			• Discuss the importance of early diagnosis and referral.		C2		

Spiral Courses (4th Week)

Community Health Education and Promotion Initiative (CHEPI) RMU

Code	Topic	Time Allocated	Learning Objectives	Learning Domain
M3-MSK-I-SI(CHEPI)-004	Non-Communicable Diseases & Coronary Heart Disease Risk Factors and Prevention (2 hours) Introduction of NCDs & Heart diseases	hour Theory 1-hour practical	Theory	C2
			Differentiate between communicable and non-communicable diseases	C2
			Describe the risk factors and their importance in causation of NCDs, especially cardiovascular diseases	
			Appraise about the burden of cardiovascular diseases in Pakistan	C3
			Impart health education and advise to the people about the role of risk factors in prevention and control of cardiovascular diseases	C3
			Practical	
M3-MSK-I-SI(CHEPI)-005	Prevention of accidents	1 hour theory	Conduct group activity (role playing)on identification of modifiable and non modifiable risk factors for cardiovascular diseases	P3
			Conduct group activity (role playing) in prevention and control of cardiovascular diseases	P3
			Theory:	C2
			Categorize different types of accidents	C2
			Describe risk factors involved in accidents	C2
			Describe steps involved in prevention of different types of accidents.	

Family Medicine

Theory					
Code	Topic	At the End Of Lecture Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
M3-MSK-II-SI(FM)-001	Communication and consultation skills in Family Medicine Practice	To be able to communicate with the patients keeping mind the principle of communication skills	C2	LGIS	MCQS
M3-MSK-II-SI(FM)-002	Approach to a Patient of Muscular dystrophy	Understand the basic clinical approach to a patient with muscular dystrophy, including history taking, examination, and recognition of key features.	C2	LGIS	MCQS
		Learn the fundamentals of diagnosis, types of muscular dystrophy, and general principles of management and supportive care.	C2	LGIS	MCQS

Behavioural Sciences

Theory					
Code	Topic	At the End of Lecture Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
M3-MSK-II-SI(BS)-001	Rights and Responsibilities of patients and doctors	Understand the rights and responsibilities of doctors	C2	LGIS CBL	MCQS
		Understand the rights and responsibilities of patients	C2		
		Analyze critical situations/ challenges in clinical practice to solve clinical problems	C2		
M3-MSK-I-SI(BS)-002	Psychological relation in doctor-patient relationship	Understand the ethical boundaries of conduct in doctor patient relationship	C2		
		Understand the phenomena of social bonding, dependance and resistance	C2		
		Understand and differentiate Transference and Countertransference	C2		
		Elaborate the Unwell Physician / Burn-out	C2		

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	Knee Pain & Swelling with Instability: From Popliteal Fossa to Inflammatory Arthritis	Anatomy	Knee joint capsule, synovium, ligaments, menisci, popliteal fossa contents	- Describe the anatomical structure of the knee joint, including: - Distal femur, proximal tibia, and patella - Articular cartilage and synovial joint classification	C3	MCQs SAQ
				- Explain the role of the synovial membrane and joint capsule in: - Joint stability - Synovial fluid production - Inflammatory swelling in arthritis	C4	
				- Identify and describe the menisci, including: - Medial and lateral menisci - Their function in shock absorption and load distribution - Clinical relevance in knee pain and locking	C3	
				- Outline the major ligaments stabilizing the knee, including: - ACL and PCL - Medial and lateral collateral ligaments - and relate ligament integrity to knee stability.	C4	
				- Explain the anatomical boundaries and contents of the popliteal fossa, including: - Popliteal artery and vein - Tibial and common peroneal nerves - Lymph nodes and fat - and discuss the clinical significance of swelling in this region.	C4	
				- Relate Baker cyst formation to posterior knee swelling, by explaining: - Herniation of synovial membrane - Accumulation of synovial fluid in the popliteal space	C5	
		Physiology	Synovial fluid production, inflammatory mediators causing effusion and stiffness	- Explain the physiological functions of synovial fluid, including: - Lubrication of joint surfaces - Reduction of friction during movement - Nutritional support of avascular cartilage	C4	
				- Describe the mechanism of synovial fluid production, emphasizing: - Plasma filtration through synovial capillaries - Secretory activity of synoviocytes	C4	
				Explain how inflammation leads to joint effusion, through:	C4	

				○ Increased vascular permeability ○ Exudation of fluid into the joint cavity ○ Raised intra-articular pressure causing pain		
				● Relate inflammatory mediators to clinical signs, including: ○ Pain due to prostaglandins and cytokines ○ Warmth and redness due to vasodilation ○ Restricted movement due to swelling and spasm	C5	
				● Explain the basis of morning stiffness in inflammatory arthritis due to: ○ Overnight inflammatory fluid accumulation ○ Improvement with movement during the day	C6	
		Pathology	Autoimmune synovitis in RA/JIA, pannus formation, cartilage destruction	● Describe the basic immunopathogenesis of rheumatoid arthritis, including: ○ Autoimmune activation against synovial tissue ○ Chronic synovitis ○ Formation of pannus leading to cartilage destruction	C3	
				● Explain the concept of Juvenile Idiopathic Arthritis (JIA) as: ○ Chronic inflammatory arthritis in children/adolescents ○ Presentation with joint swelling, stiffness, and systemic symptoms	C3	
				● Differentiate inflammatory arthritis from traumatic joint swelling, based on: ○ Gradual onset and morning stiffness (inflammatory) ○ Sudden onset after injury (traumatic)	C4	
				● Recognize pathological outcomes of chronic synovitis, such as: ○ Joint deformity ○ Loss of function ○ Secondary osteoarthritis	C5	
				● Explain septic arthritis as an acute pathological emergency, involving: ○ Infection of synovial space ○ Rapid cartilage destruction ○ Need for urgent intervention	C5	
		Medicine	Knee examination, effusion tests, distinguishing inflammatory vs traumatic swelling	● Obtain a focused clinical history for swollen knee, including: ○ Duration and progression ○ Morning stiffness ○ Trauma history ○ Fever and systemic symptoms	C5	
				● Perform a structured clinical examination of the knee, including:	P2	

				○ Inspection (swelling, redness, deformity) ○ Palpation (warmth, tenderness) ○ Range of motion assessment		
				● Demonstrate clinical tests for joint effusion, such as: ○ Patellar tap test ○ Bulge sign ○ and interpret findings correctly.	P2	
				● Identify clinical features suggestive of inflammatory arthritis, including: ○ Persistent swelling ○ Warm tender joint ○ Prolonged morning stiffness ○ Functional limitation	C4	
				● Recognize septic arthritis as an emergency, based on: ○ Severe pain with inability to bear weight ○ Fever ○ Marked warmth and tenderness ○ requiring urgent referral.	C5	
				● Interpret ESR and CRP as markers of inflammation, and relate them to: ○ Disease activity ○ Severity ○ Response to treatment	C6	
		Radiology	Role of ultrasound and X-ray in joint swelling evaluation	● Describe the role of X-ray in evaluation of knee swelling, including: ○ Excluding fractures ○ Identifying chronic joint changes	C3	
				● Explain the role of ultrasound in confirming effusion and Baker cyst, as a bedside imaging tool.	C4	
				● Recognize imaging as supportive evidence, integrated with clinical findings in arthritis assessment.	C5	

Anatomy LGIS Syllabus of Learning Management System (LMS)

Code	Topic	Learning Objectives At the End of Lecture Students Should Be Able To:	Calgary Gauge	Learning Domain	Learning Resources
General Anatomy					
M3-MSK-II-A-0042	Muscle I	- Classify muscles with examples - Describe the general features of skeletal muscle. - Differentiate between Red white and intermediate fibers. - Describe blood supply and nerve supply of skeletal muscles. - Correlate the clinical conditions - Understand the preventive and curative health care measures - Practice the principles of Bioethics - Apply strategic use of AI in health care - Read relevant research article	Must know Must know Must know Must know Should know Should know Nice to know Nice to know Nice to know	C1 C3 C3 C3 C3 C3 C3 C3	- Junqueira's Basic Histology 18th Edition - USMLE Q Bank Step 1 (Volume 1) 2023-2034
M3-MSK-II-A-0043	Muscle II	- Discuss connective tissue associated with skeletal muscle. - Discuss parts of skeletal muscles. - Give classification of skeletal muscles. - Explain the actions of a prime mover or agonist Fixators - Synergist and antagonist with examples. - Correlate the clinical conditions - Understand the preventive and curative health care measures - Practice the principles of Bioethics - Apply strategic use of AI in health care - Read relevant research article	Must know Must know Must know Must know Must know Should know Should know Nice to know Nice to know Nice to know	C2 C2 C1 C2 C3 C3 C3 C3 C3 C3	- Junqueira's Basic Histology 18th Edition - USMLE Q Bank Step 1 (Volume 1) 2023-2034

M3-MSK-II-A-0043	Skin	• Enlist functions of skin • Discuss types of skin • Compare between thick and thin skin • Classify skin lines • Describe the significance of skin lines • Discuss burns of skin • Correlate the clinical conditions • Understand the preventive and curative health care measures • Practice the principles of Bioethics • Apply strategic use of AI in health care	Must know Must know Must know Must know Must know Must know Should know Should know Nice to know Nice to know Nice to know	C1 C2 C2 C1 C2 C3 C3 C3 C3 C3 C3	• Junqueira's Basic Histology 18th Edition • USMLE Q Bank Step 1 (Volume 1) 2023-2034
Histology					
M3-MSK-II-A-0044	Skeletal Muscle	• Classify muscle on histological basis. • Describe histological structure of skeletal muscles • Discuss ultrastructure of skeletal muscles • Understand the contraction mechanism • Correlate the clinical conditions • Understand the preventive and curative health care measures • Practice the principles of Bioethics • Apply strategic use of AI in health care • Read relevant research article	Must know Must know Must know Should know Should know Nice to know Nice to know Nice to know Nice to know Nice to know	C1 C2 C2 C2 C3 C3 C3 C3 C3 C3	• Junqueira's Basic Histology 18th Edition • USMLE Q Bank Step 1 (Volume 1) 2023-2034

	Cardiac & Smooth Muscles	- Describe histological structure of cardiac and smooth muscles - Describe ultrastructure of smooth and cardiac muscles. - Differentiate between skeletal smooth and cardiac muscles. - Discuss regeneration of muscle fibers - Correlate the clinical conditions - Understand the preventive and curative health care measures - Practice the principles of Bioethics - Apply strategic use of AI in health care	Must know Must know Must know Must know Should know Should know Nice to know Nice to know	C2 C2 C2 C2 C3 C3 C3 C3	- Junqueira's Basic Histology 18th Edition - USMLE Q Bank Step 1 (Volume 1) 2023-2034
M3-MSK-II-A-0045	Skin	- Enlist components of integumentary system - Describe histological structure of skin with special reference to cells residing in epidermis. - Describe histological features of thick and thin skin - Differentiate between thick and thin skin - Correlate the clinical conditions - Understand the preventive and curative health care measures - Practice the principles of Bioethics - Apply strategic use of AI in health care	Must know Must know Must know Must know Should know Should know Nice to know Nice to know Nice to know	C1 C2 C2 C2 C3 C3 C3 C3 C3	- Junqueira's Basic Histology 18th Edition - USMLE Q Bank Step 1 (Volume 1) 2023-2034
M3-MSK-II-A-0046	Skin Appendages	- Describe appendages of skin - Discuss histological structure of hair - Discuss histological structure of nail - Discuss histological structure of glands of skin - Correlate the clinical conditions - Understand the preventive and curative health care measures	Must know Must know Must know Must know Should know Should know Nice to know	C2 C2 C2 C2 C3 C3 C3	- Junqueira's Basic Histology 18th Edition - USMLE Q Bank Step 1 (Volume 1) 2023-2034

		- Practice the principles of Bioethics - Apply strategic use of AI in health care	Nice to know Nice to know	C3 C3	
Embryology					
M3-MSK-II-A-0047	Development Of Axial Skeleton	- Discuss the cartilaginous stage of vertebral column - Discuss the bony stage of vertebral column - Describe development of ribs and sternum. - Correlate the clinical conditions - Understand the preventive and curative health care measures - Practice the principles of Bioethics - Apply strategic use of AI in health care - Read relevant research article	Must know Must know Must know Should know Should know Nice to know Nice to know Nice to know	C2 C2 C2 C3 C3 C3 C3 C3	- KLM Embryology Developing Human 11th Edition - USMLE Q Bank Step 1 (Volume 1) 2023-2024
M3-MSK-II-A-0048	Development of limbs	- Enlist different stages of limb development - Discuss early and late stage of limb development - Correlate congenital anomalies of limb development - Correlate the clinical conditions - Understand the preventive and curative health care measures - Practice the principles of Bioethics - Apply strategic use of AI in health care	Must know Must know Should know Should know Should know Nice to know Nice to know	C1 C2 C3 C3 C3 C3 C3	- Developing Human 11th Edition - USMLE Q Bank Step 1 (Volume 1) 2023-2024
M3-MSK-II-A-0049	Development Of Muscles	- Discuss development of skeletal muscle with special reference to myotomes, pharyngeal arch muscles and limb muscle along with limb skeleton. - Describe development of smooth and cardiac muscles with anomalies. - Correlate the clinical conditions	Must know Must know Should know Should know	C2 C2 C3 C3	- Developing Human 11th Edition - USMLE Q Bank Step 1 (Volume 1) 2023-2024

		• Understand the preventive and curative health care measures • Practice the principles of Bioethics • Apply strategic use of AI in health care	Nice to know Nice to know Nice to know	C3 C3 C3	
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Anatomy SGD Syllabus of Learning Management System (LMS)

Code	Topic	Learning Objectives Students Should Be Able To	Calgary Gauge	Learning Domain	Learning Resources
Gross Anatomy					
M3-MSK-II-A-0050	Hip Bone-I	• Demonstrate the anatomical position • Identify bony features of ilium. • Describe the muscular, ligamentous, and capsular attachments. • Discuss the ventral and dorsal auricular surfaces, ossification. • Correlate the clinical conditions • Understand the preventive and curative health care measures • Practice the principles of Bioethics • Apply strategic use of AI in health care • Read relevant research article	Must know Must know Must know Must know Should know Should know Nice to know Nice to know Nice to know	P C1 C2 C2 C3 C3 C3 C3 C3	• Clinically oriented anatomy edition 10 • USMLE Q Bank Step 1 (Volume 1) 2023-2034
M3-MSK-II-A-0051	Hip Bone-II	• Demonstrate the anatomical position • Identify bony features of pubis and ischium. • Describe the muscular, ligamentous, and capsular attachments. • Discuss the ventral and dorsal auricular surfaces, ossification. • Correlate the clinical conditions • Understand the preventive and curative health care measures • Practice the principles of Bioethics • Apply strategic use of AI in health care	Must know Must know Must know Must know Should know Should know Nice to know Nice to know Nice to know	P C1 C2 C2 C3 C3 C3 C3 C3	• Clinically oriented anatomy edition 10 • USMLE Q Bank Step 1 (Volume 1) 2023-2034
M3-MSK-II-A-0052	Femur	• Demonstrate the anatomical position of bone • Demonstrate different parts • Describe proximal and distal articulations • State angle of femoral torsion. • Correlate the clinical conditions • Understand the preventive and curative health care measures • Practice the principles of Bioethics • Apply strategic use of AI in health care	Must know Must know Must know Should know Should know Should know Nice to know Nice to know Nice to know	P C1 C2 C1 C3 C3 C3 C3 C3	• Clinically oriented anatomy edition 10 • USMLE Q Bank Step 1 (Volume 1) 2023-2034

		• Read relevant research article			
M3-MSK-II-A-0053	Femur and Patella	• Demonstrate the anatomical position of bones • Describe muscle attachment and ossification • Discuss fractures with special reference to the fracture of neck of femur in old age. • Describe anatomy of patella and factors responsible for its stability. • Enumerate different bursae related to patella • Correlate the clinical conditions • Understand the preventive and curative health care measures • Practice the principles of Bioethics • Apply strategic use of AI in health care	Must know Must know Must know Must know Must know Should know Should know Nice to know Nice to know Nice to know	P C2 C2 C2 C1 C3 C3 C3 C3 C3	• Clinically oriented anatomy edition 10 • USMLE Q Bank Step 1 (Volume 1) 2023-2034
M3-MSK-II-A-0054	Anterolateral Compartment of Thigh (Muscles)	• Describe the origin and insertion of muscles in anterior compartment of thigh. • Describe the origin and insertion of muscles in lateral compartment of thigh. • Discuss the femoral triangle and adductor canal with contents • Identify these muscles. • Correlate the clinical conditions • Understand the preventive and curative health care measures • Practice the principles of Bioethics • Apply strategic use of AI in health care • Read relevant research article	Must know Must know Must know Must know Should know Should know Nice to know Nice to know Nice to know	 C2 C2 C2 C1 C3 C3 C3 C3	• Clinically oriented anatomy edition 10 • USMLE Q Bank Step 1 (Volume 1) 2023-2034
M3-MSK-II-A-0055	Anterolateral compartment of thigh (Neurovascular organization)	• Describe the nerves and vessels of anterolateral compartment of thigh • Discuss various relation of vessels and nerves in anterolateral compartment of thigh • Identify these structures • Map the outline of femoral artery in a simulated patient / model • Correlate the clinical conditions • Understand the preventive and curative health care measures	Must know Must know Must know Must know Should know Should know	C2 C2 C1 P C3	• Clinically oriented anatomy edition 10 • USMLE Q Bank Step 1 (Volume 1) 2023-2034

		- Practice the principles of Bioethics - Apply strategic use of AI in health care - Read relevant research article	Nice to know Nice to know Nice to know	C3 C3 C3	
M3-MSK-II-A-0056	Medial Compartment of thigh	- Describe the muscles of medial compartment of thigh - Discuss origin, insertion and nerve supply of medial compartment - Describe the course relations and branches of obturator nerve. - Correlate the clinical conditions - Understand the preventive and curative health care measures - Practice the principles of Bioethics - Apply strategic use of AI in health care - Read relevant research article	Must know Must know Must know Should know Should know Nice to know Nice to know Nice to know	C2 C2 C2 C3 C3 C3 C3 C3	- Clinically oriented anatomy edition 10 - USMLE Q Bank Step 1 (Volume 1) 2023-2034
M3-MSK-II-A-0057	Gluteal Region (Muscles)	- Tabulate the he various muscles of gluteal region with origin, insertion, action nerve supply. - Enlist various structures undercover of gluteal maximus i.e. muscles, vessels, nerves, bones and joints, ligaments, bursae. - Understand the preventive and curative health care measures - Practice the principles of Bioethics - Apply strategic use of AI in health care - Read relevant research article	Must know Must know Should know Nice to know Nice to know Nice to know	C2 C1 C3 C3 C3 C3	- Clinically oriented anatomy edition 10 - USMLE Q Bank Step 1 (Volume 1) 2023-2034
M3-MSK-II-A-0058	Gluteal Region (Neurovascular organization)	- Describe trochanteric anastomosis and cruciate anastomosis. - Enumerate the structures passing through greater sciatic foraman. - Discuss the formation course relations, branches, distribution of sciatic nerve with applied anatomy.. - Correlate the clinical conditions - Understand the preventive and curative health care measures	Must know Must know Should know Should know Nice to know Nice to know Nice to know	C2 C1 C2 C3 C3 C3 C3	- Clinically oriented anatomy edition 10 - USMLE Q Bank Step 1 (Volume 1) 2023-2034

		- Practice the principles of Bioethics - Apply strategic use of AI in health care - Read relevant research article	Nice to know	C3	
M3-MSK-II-A-0060	Posterior Compartment of Thigh (Muscles)	- Enlist the Hamstring muscles - Discuss origin insertion, nerve supply and actions - Identify the muscles - Correlate the clinical conditions - Understand the preventive and curative health care measures - Practice the principles of Bioethics - Apply strategic use of AI in health care - Read relevant research article	Must know Must know Must know Should know Should know Nice to know Nice to know Nice to know	C1 C2 C1 C3 C3 C3 C3 C3	- Clinically oriented anatomy edition 10 - USMLE Q Bank Step 1 (Volume 1) 2023-2034
M3-MSK-II-A-0061	Posterior Compartment of thigh (Neurovascular Organization)	- Describe the nerves and vessels of posterior compartment of thigh - Discuss course, relations, distribution and branches of neurovascular structures of posterior compartment - Identify these structures - Correlate the clinical conditions - Understand the preventive and curative health care measures - Practice the principles of Bioethics - Apply strategic use of AI in health care - Read relevant research article	Must know Must know Must know Should know Should know Nice to know Nice to know Nice to know	C2 C2 C1 C3 C3 C3 C3 C3	- Clinically oriented anatomy edition 10 - USMLE Q Bank Step 1 (Volume 1) 2023-2034
M3-MSK-II-A-0062	Hip Joint	- Describe the type of joint - Describe articular surfaces, - Describe capsular attachments. - Discuss synovial membrane and its folding. - Enlist ligaments and their attachments - Discuss movements possible at hip joint and muscles producing them - Describe blood supply and nerve supply. - Correlate the clinical conditions - Understand the preventive and curative health care measures	Must know Must know Must know Must know Must know Must know Must know Should know Should know Nice to know Nice to know	C2 C2 C2 C2 C1 C2 C2 C3 C3 C3 C3	- Clinically oriented anatomy edition 10 - USMLE Q Bank Step 1 (Volume 1) 2023-2034

		- Practice the principles of Bioethics - Apply strategic use of AI in health care - Read relevant research article	Nice to know	C3	
M3-MSK-II-A-0063	Tibia	- Identify bone - Demonstrate its side. - Demonstrate its normal anatomical position. - Describe bony features. - Discuss attachment of muscle and ligament - Describe articular surfaces - Identify nutrient foramen - Describe its ossification - Correlate the clinical conditions - Understand the preventive and curative health care measures - Practice the principles of Bioethics - Apply strategic use of AI in health care	Must know Must know Must know Must know Must know Must know Must know Must know Should know Should know Nice to know Nice to know Nice to know	C1 P P C2 C2 C2 C1 C2 C3 C3 C3 C3 C3	- Clinically oriented anatomy edition 10 - USMLE Q Bank Step 1 (Volume 1) 2023-2034
M3-MSK-II-A-0064	Fibula	- Identify bone - Demonstrate its side. - Demonstrate its normal anatomical position. - Describe bony features. - Discuss attachment of muscles and ligaments - Describe articular surfaces - Identify nutrient foramen - Describe its ossification - Correlate the clinical conditions - Understand the preventive and curative health care measures - Practice the principles of Bioethics - Apply strategic use of AI in health care	Must know Must know Must know Must know Must know Must know Must know Must know Should know Should know Nice to know Nice to know Nice to know	C1 P P C2 C2 C2 C1 C2 C3 C3 C3 C3 C3	- Clinically oriented anatomy edition 10 - USMLE Q Bank Step 1 (Volume 1) 2023-2034
M3-MSK-II-A-0065	Popliteal Fossa	- Identify surface landmarks - Enlist contents - Discuss boundaries, roof and floor - Map the outline of popliteal artery in a simulated patient / model - Correlate the clinical conditions - Understand the preventive and curative health	Must know Must know Must know Must know Should know Should know	C1 C1 C2 P C3 C3	- Clinically oriented anatomy edition 10 - USMLE Q Bank Step 1 (Volume 1) 2023-2034

		care measures - Practice the principles of Bioethics - Apply strategic use of AI in health care - Read relevant research article	Nice to know Nice to know Nice to know	C3 C3 C3	
M3-MSK-II-A-0066	Knee Joint	- State type of joint - Describe its articular surfaces - Demonstrate capsular attachments, - Enlist extra capsular and intracapsular ligaments and their attachments - Demonstrate the movements possible at knee joint and muscles producing them. - Describe the concept of locking and unlocking of knee joint - Describe blood supply and nerve supply of joint - Correlate the clinical conditions - Understand the preventive and curative health care measures - Practice the principles of Bioethics - Apply strategic use of AI in health care - Read relevant research article	Must know Must know Must know Must know Must know Must know Must know Should know Should know Nice to know Nice to know Nice to know	C1 C2 P C1 P C2 C2 C3 C3 C3 C3 C3	- Clinically oriented anatomy edition 10 - USMLE Q Bank Step 1 (Volume 1) 2023-2034
M3-MSK-II-A-0067	Anterior Compartment of Leg (Muscles and Neurovascular Organization)	- Demonstrate surface landmarks - Discuss superficial fascia & deep fascia, their contents including retinacula - Describe Origin, insertion, nerve supply and action of all muscles of anterior compartment of leg - Identify different structures in compartment - Correlate the clinical conditions - Understand the preventive and curative health care measures - Practice the principles of Bioethics - Apply strategic use of AI in health care - Read relevant research article	Must know Must know Must know Must know Should know Should know Nice to know Nice to know Nice to know	P C2 C2 C1 C3 C3 C3 C3 C3	- Clinically oriented anatomy edition 10 - USMLE Q Bank Step 1 (Volume 1) 2023-2034
	Radiology /	Demonstrate major landmarks of thigh and anterior compartment of leg on radiographs	Must know	P	Clinically oriented anatomy edition 10

M3-MSK-II-A-0068	Cross Sectional Anatomy	- Identify the structures present at different levels of cross sections Upper 3rd of thigh Mid shaft of femur Lower 3rd of thigh Upper part of patella Distal part of patella Through tibial condyles - Correlate the clinical conditions	Must know	C2	USMLE Q Bank Step 1 (Volume 1) 2023-2034
			Should know	C3	

Anatomy SKL Syllabus of Learning Management System (LMS)

Code	Topic	At The End Of The Practical The Students Should Be Able To	Calgary Gauge	Learning Domain	Learning Resources
Histology					
M3-MSK-II-A-0069	Skeletal muscles	• Identify slide under microscope	Should know	P	• DiFiore's Atlas of histology with clinical correlation, 11 th edition, chapter 6
		• Illustrate histological structure of skeletal muscle	Must know	C2	
		• Write two points of identification	Must know	C1	
		• Write two points of identification	Must know	C1	
		• Focus the slide	Should know	P	
M3-MSK-II-A-0070	Cardiac and smooth muscles	• Identify slide under microscope	Should know	P	• DiFiore's Atlas of histology 11 th edition, chapter 6
		• Illustrate histological structure of cardiac and smooth muscles	Must know	C2	
		• Write two points of identification	Must know	C1	
		• Differentiate between cardiac and smooth muscles	Must know	C2	
		• Focus the slide	Should know	P	
M3-MSK-II-A-0071	Thick skin	• Identify slide under microscope	Should know	P	• DiFiore's Atlas of histology 11 th edition, chapter 10
		• Illustrate microscopic structure of thick skin	Must know	C2	
		• Discuss the structure of thick skin	Must know	C1	
		• Write two points of identification	Must know	C1	
		• Focus the slide	Should know	P	
M3-MSK-II-A-0072	Thin skin	• Identify slide under microscope	Should know	P	• DiFiore's Atlas of histology 11 th edition, chapter 10
		• Illustrate microscopic structure of thin skin	Must know	C2	
		• Write two points of identification	Must know	C1	
		• Focus the slide	Should know	P	

Physiology Syllabus of Learning Management System (LMS)

Code	Topics	Learning Objectives	Calgary Model	Mode of Assessment	Tool of Assessment
M3-MSK-II-P-0034	Introduction to muscle physiology, Structure of sarcomere	- Explain the physiologic anatomy of skeletal muscle - Draw and label the sarcomere	Nice to know (C)	SDL	MCQs
M3-MSK-II-P-0035	Sarcotubular system, excitation contraction coupling mechanism in skeletal muscle	- Discuss the sliding filament model of muscle contraction - Describe the structure sarcotubular system and its importance in muscle contraction	Must Know (A)	LGIS&SDL	MCQs
M3-MSK-II-P-0036	Molecular Mechanism of skeletal muscle contraction, Rigor mortis, Muscular dystrophies	- Define motor unit - Discuss recruitment and its effect on force of contraction - Discuss Molecular Mechanism of skeletal muscle contraction	Must Know (A)	LGIS&SDL	MCQs
M3-MSK-II-P-0037	Length tension curve, Load and velocity of contraction, diseases of muscle	Draw and describe Length duration curve Load and velocity of contraction	Nice to know (C)	SDL	MCQs
M3-MSK-II-P-0038	Energetics, efficiency and types of contraction, heat production in muscle	- Elaborate Energetic and efficiency of contraction. - Discuss heat production in nerve and muscle	Nice to know (C)	SDL	MCQs
M3-MSK-II-P-0039	Properties of skeletal muscles, Tetanus & Fatigue	- Discuss various properties of skeletal muscle in detail - Tetanus and fatigue	Must Know (A)/ Should know (B)	LGIS&SDL	MCQs
M3-MSK-II-P-0040	Introduction to CVS	Introduction to Cardiovascular system. Classify blood vessels	Nice to know (C)	SDL	MCQs
M3-MSK-II-P-0041	Physiologic anatomy, types and properties of Smooth Muscle	- Enlist type of smooth muscles and explain their characteristics - Explain the properties of smooth muscle	Nice to know (C)	SDL	MCQs
M3-MSK-II-P-0042	Introduction to pericardium Properties of myocardium & endocardium, myocardial action potential	- Describe the physiologic anatomy of myocardium - Discuss properties of myocardium - Discuss in detail various properties of myocardium - Describe the mechanism of production of action potential and its propagation - Describe excitation contraction	Must Know (A)/ Should know (B)	LGIS&SDL	MCQs

		coupling in detail • Discuss propagation of electrical activity in cardiac muscle			
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Biochemistry Syllabus of Learning Management System (LMS)

Code	Topic	Learning Objectives At the end of lecture students should be able to	Learning Domain	Calgary Model	Learning Resources
M3-MSK-II-B-0023	Properties of amino acids& Important peptides	- Describe amphoteric properties of amino acids - Discuss Post transitional amino acids and location of amino acids in proteins - Explain Important peptides	C2 C2 C2	Should know	Textbook of Lippincott 8 th Edition
M3-MSK-II-B-0024	Proteins	- Discuss Importance of proteins - Classify proteins - Describe Functions of proteins	C1 C2 C2	Should know	Textbook of Lippincott 8 th Edition
M3-MSK-II-B-0025	Primary structure of proteins	- Describe Primary structure of protein - Discuss Peptide bond	C2 C2	Must know Nice to know	Textbook of Lippincott 8 th Edition
M3-MSK-II-B-0026	Secondary structure of proteins	- Enlist Types of secondary structure. - Describe Secondary structure of proteins. - Elaborate Significance of secondary structure	C1 C2 C2	Should know	Textbook of Lippincott 8 th Edition
M3-MSK-II-B-0027	Tertiary and quaternary structure	- Describe Tertiary and quaternary structure of proteins - Understand the forces stabilizing protein structure	C2 C2	Should know	Textbook of Lippincott 8 th Edition
M3-MSK-II-B-0028	Protein folding And denaturation	- Discuss Folding of proteins - Describe protein misfolding - Interpret the clinical cases related to protein misfolding - Discuss denaturation of proteins	C2 C2 C3 C2	Should know Nice to know	Textbook of Lippincott 8 th Edition
M3-MSK-II-B-0029	Collagen and Elastin	- Describe structure of collagen and elastin - Discuss differences between collagen and elastin - Explain Synthesis of collagen - Enlist Factor regulating and helping in strengthening of collagen - Interpret defects of collagen synthesis and elastin	C2 C2 C2 C1 C3	Should know	Textbook of Lippincott 8 th Edition
M3-MSK-II-B-0030	Techniques for separation of proteins	Describe Techniques for separation of proteins	C2	Nice to know	Textbook of Lippincott 8 th Edition

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	• Traumatic Hip dislocation	Apply basic knowledge of subject to study clinical case.	C3
	• Fracture Of Neck Of Femur	Apply basic knowledge of subject to study clinical case.	C3
Physiology	• Weight Training	Apply basic knowledge of subject to study clinical case.	C3
Biochemistry	• Marfan Syndrome	Apply basic knowledge of subject to study clinical case.	C3
	• Collagen deficiency	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**

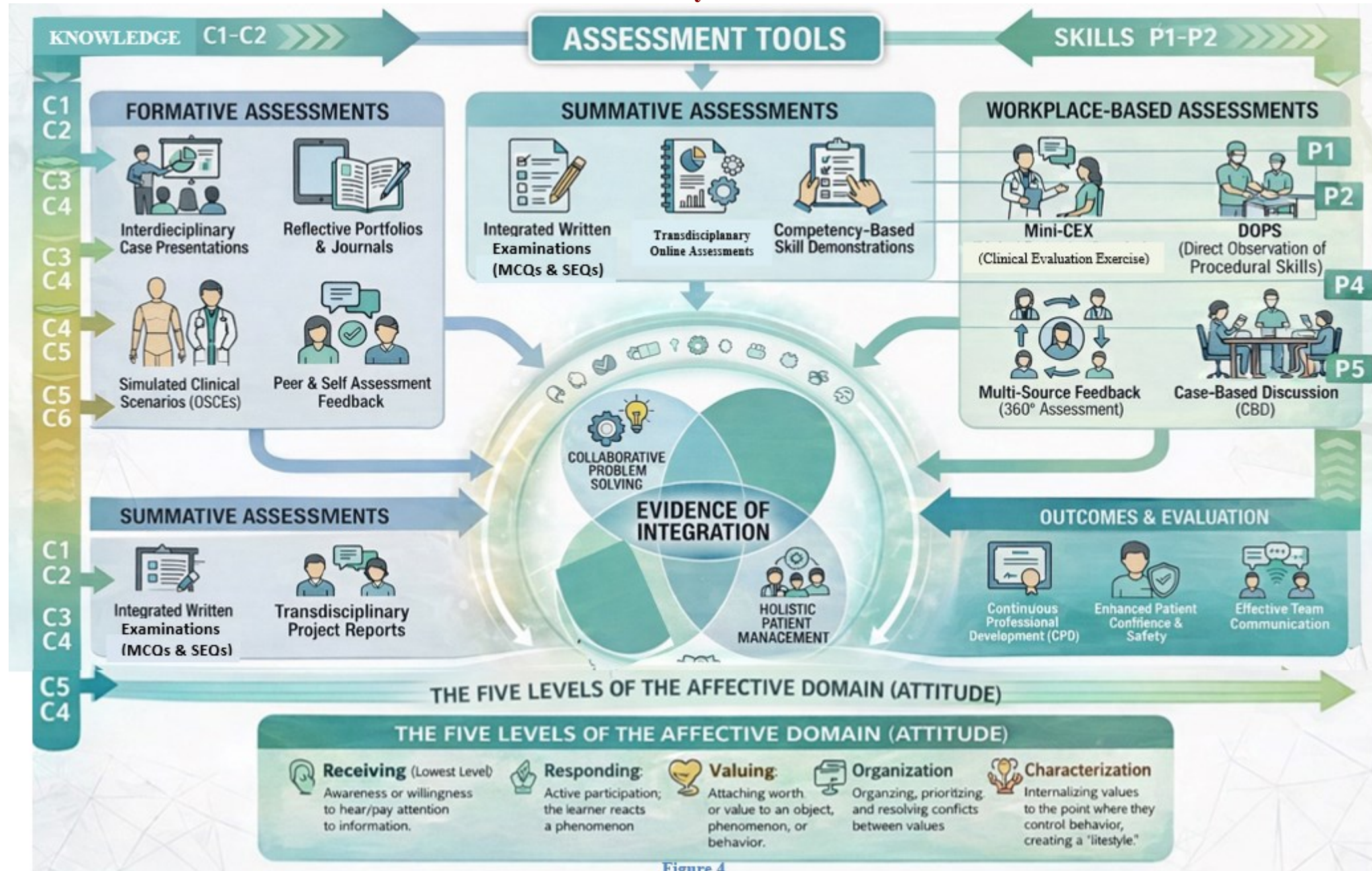


Figure 4

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				
		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			

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.

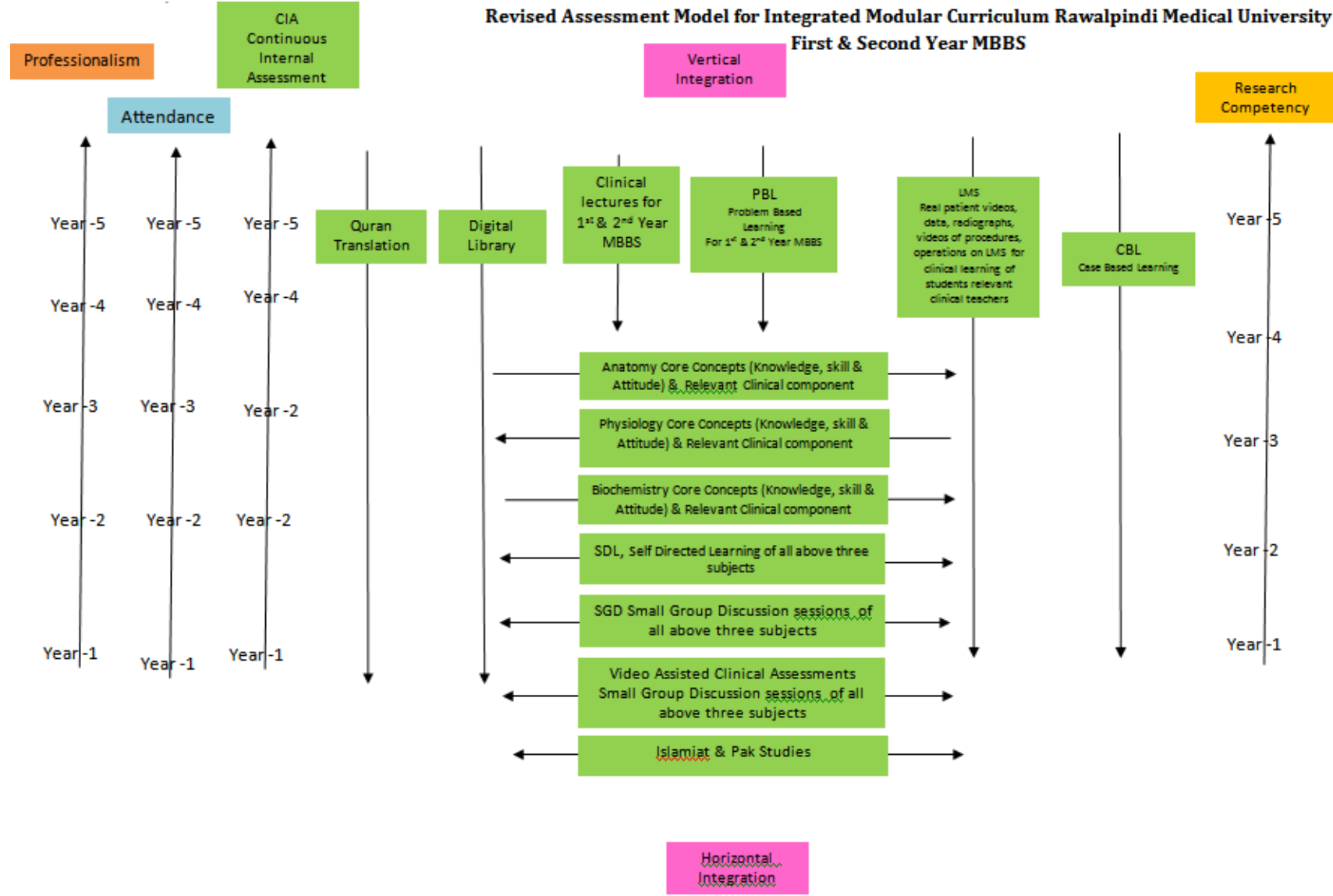
Break up of internal assessment is as follows:

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 “Mumtahin”“ممتحن”(The Examiner)

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

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

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 marks		240+35 = 275 marks		
GRAND TOTAL MARKS		800			

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

Block -I Theory Component (Knowledge)

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

Block -I Practical Component (Skill & Attitude)

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

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

Block -II Theory Component (Knowledge)

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

Block -II Practical Component (Skill & Attitude)

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

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

Block -III Theory Component (Knowledge)

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

Block -III Practical Component (Skill & Attitude)

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

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

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

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
GEC	General Education Cluster
K	Knowledge

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

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

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 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
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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)	
Block – II 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 – 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)	
	Anatomy	30 (Theory-15)	10 marks (Theory-6)	10 marks (Theory-6)	10 Marks (Theory-3)	Block – III

Block – III 90 Marks		Practical-15)	Practical-4)	Practical-4)	Practical-7)	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)	
	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)	

		Practical-5)	Practical-2.5)	Practical-2.5)	
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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		Total			Marks	Time
		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) 180 Marks	Anatomy	37 marks	35 marks	72 marks	(Core subjects + Integrated Subjects) 154+26 = 180 marks
	Physiology	20 marks	20 marks	40 marks	
	Biochemistry	17 marks	25 marks	42 marks	
	Total	74	80	154 marks	
	Integrated Subjects			26Marks	
	Community Medicine /Research	3Marks			
	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 (Core subjects + Integrated Subjects) 210 Marks	Anatomy	23 marks	25 marks	48marks	(Core subjects + Integrated Subjects) 158+22 = 180 marks
	Physiology	42 marks	30 marks	72 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	
				iOSPE	3 X 5	15	
	Section II- SEQ	6x5	30	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	
				iOSPE	3 X 5	15	
	Section II- SEQ	6x5	30	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 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	
				OSCE	4 X 5	20	
				OSVE	6 x 5	30	
				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		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	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-II Module Time Table

First Year MBBS

Session 2025 – 2026

Batch – 53

MSK-II Module Team

Module Name	:	MSK- II Module
Duration of module	:	05 Weeks
Coordinator	:	Dr. Fahd Anwar
Co- Coordinator	:	Dr. Fareed Ullah
Reviewed by	:	Module Committee

Module Committee			Module Task Force Team		
1.	Vice Chancellor RMU	Prof. Dr. Muhammad Umar	1.	Coordinator	Dr. Fahd Anwar (Demonstrator of Physiology)
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. Sajjad Hussain (Demonstrator of Anatomy)
4.	Chairperson Physiology	Prof. Dr. Samia Sarwar	4.	Co-Coordinator	Dr. Fareed Ullah (Senior Demonstrator of Physiology)
5.	Chairperson Anatomy	Prof. Dr. Ayesha Yousaf	5.	Co-coordinator	Dr. Almas (Demonstrator of Biochemistry)
6.	Chairperson Biochemistry	Dr. Aneela Jamil			
7.	Focal Person Anatomy 1 st Year MBBS	Asso. Prof. Dr. Mohtasham 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					
Theory					
Block	Module	General Anatomy	Embryology	Histology	Gross Anatomy
II	Anatomy	- Muscles - Skin	- Development of Axial Skeleton - Development of limbs - Development of muscles	General Histology - Muscles - Skin - Skin appendages	Gluteal Region to Lateral compartment of leg
	Biochemistry	Protein chemistry, Protein separation techniques, Collagen and Elastin			
	Physiology	- Sarcotubular system, excitation contraction coupling mechanism in skeletal muscle. - Molecular Mechanism of skeletal muscle contraction, Rigormortis, Muscular dystrophies - Introduction to muscle physiology, Structure of sarcomere - Energetics, efficiency and types of contraction, heat production in muscle - Physiologic anatomy, types and properties of Smooth Muscle - Mechanism of smooth muscle contraction & its control - Introduction to pericardium Properties of myocardium & endocardium,myocardial action potential - Regulation of myocardial activity - Comparison of 3 types of Muscle - Introduction to CVS - Excitatory & Conducting system of heart			
	Spiral Courses				
	Community Medicine (CHEPI)	- Life style medicine (Practical Activity 1) - Smoking - Smoking (Practical Activity 2) - Prevention and control of tuberculosis - Prevention and control of tuberculosis (Practical Activity 3) - Non-Communicable Diseases & Coronary Heart - Non-Communicable Diseases & Coronary Heart (Practical Activity 4)			
	Family Medicine	- Communication and consultation skills in Family Medicine Practice - Approach to a Patient of Muscular dystrophy			
	Behavioral Scineces	- Rights and responsibilities of patients and doctors - Psychological relation in Doctor-patient relationship			
Vertical Integration					

	• Pediatrics	• Juvenile Idiopathic Arthritis (JIA)
	• Orthopedics	• Femur Fracture
	• Radiology	• X-rays of Hip Bone
	• Surgery	• Bone Tumors

Categorization of Modular Content

Department of Anatomy

Category A*	Category B**		Category C***			
Embryology	General Histology	General Anatomy	Demonstrations (SGD)	Practicals/Skill Lab. (SKL)	CBL	SDL
• Development of Axial Skeleton • Development of limbs • Development of muscles	• Muscles-I • Muscles-II • Skin • Appendages	• Muscles-I • Muscles-II • Skin	Gross Anatomy: • Hip bone • Femur • Anterolateral compartment of thigh (muscles) • Anterolateral compartment of thigh (neurovascular organization) • Medial compartment of thigh • Gluteal region (muscles) • Gluteal region (neurovascular organization) • Posterior compartment of thigh (muscles) • Posterior compartment of thigh (neurovascular organization) • Hip joint • Tibia • Fibula • Popliteal fossa • Knee joint • Anterior compartment of leg(muscles) • Anterior compartment of leg (neurovascular organization) • Lateral compartment of leg • Surface marking and radiology	• Skeletal muscles • Smooth muscle and cardiac muscle • Thick skin • Thin skin	• Hip Dislocation • Fracture of neck of femur	• Pelvic Fractures • Developmental Dysplasia of the Hip (DDH) • Fracture of Neck of Femur Avascular Necrosis of Femoral Head Coxa Vara and Coxa Valga Deformities • Femoral Hernia injury to Femoral Nerve • Adductor Tendinopathy Obturator Nerve Entrapment Syndrome • Sciatica Trochanteric Bursitis Hip Dislocations • Hamstring Muscle Tear/Strain Deep Vein Thrombosis (DVT) • Osteoarthritis of Hip • Hip Dislocations (Posterior more common) Developmental Dysplasia of Hip (DDH) • Tibial Shaft Fracture • Shin Splints (Medial Tibial Stress Syndrome) • Stress Fractures of Tibia • Fibular Fractures (commonly with ankle injuries) Common Peroneal Nerve Injury at Neck of Fibula (foot drop) Fibular Graft Harvest

Category A*: By Professors

Category B:** By Associate & Assistant Professors

Category C*:** By Senior Demonstrators & Demonstrators

Teaching Staff / Human Resource of Department 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	01
3.	Assistant professor of Anatomy department (AP)	03
4.	Demonstrators of Anatomy department	04

Contact Hours (Faculty)

Sr. #	Hours Calculation for Various Type of Teaching Strategies	Total Hours
1.	Large Group Interactive Session (LGIS)	$2 * 13 = 26$ hours
2.	Small Group Discussions (SGD)	$2 * 21 = 42$ hours
3.	Case Based Learning (CBL)	$2 * 2 = 4$ hours
4.	Practical / Skill Lab	$1.5 * 20 = 30$ hours

Contact Hours (Students)

Sr. #	Hours Calculation for Various Type of Teaching Strategies	Total Hours
1.	Large Group Interactive Session (LGIS)	$1 * 10 = 10$ hours
2.	Small Group Discussions (SGD)	$1 * 4 = 4$ hours $2 * 13 = 26$ Hours
3.	Case Based Learning (CBL)	$2 * 2 = 4$ hours
4.	Practical / Skill Lab	$1.5 * 4 = 6$ hours
5.	Self-Directed Learning (SDL)	$1 * 8 = 8$ hours

Department of Physiology

Category A	Category B	Category C
Sarcotubular system, excitation contraction coupling mechanism in skeletal muscle (Prof. Dr. Samia Sarwar/Dr Aneela) (Even)	Introduction to pericardium Properties of myocardium & endocardium, myocardial action potential (By Dr. Sidra)	Length tension curve, Load and velocity of contraction, diseases of muscle (By Dr. Nayab) Properties of skeletal muscles, Tetanus & Fatigue (By Dr. Nayab)
Molecular Mechanism of skeletal muscle contraction, Rigormortis, Muscular dystrophies (Prof. Dr. Samia Sarwar/ Dr Aneela) (Even)	Regulation of myocardial activity (By Dr Sidra)	Practical: 1. Determination of RBC count 2. Determination of TLC 3. Determination of Platelet Count 4. Determination of ABO, Blood groups
	Introduction to muscle physiology, Structure of sarcomere (By Dr Aneela) (Even)	SGD: 1. Sliding filaments of skeletal muscle, sarcotubular system 2. Physiology of smooth muscle, mechanism of smooth muscle contraction 3. Properties of myocardium, myocardial action potential, Excitatory and conduction system of heart 4. Comparison of three types of muscle
	Physiologic anatomy, types and properties of Smooth Muscle (By Dr Aneela)	SDL: (ON CAMPUS) 1. Sarcotubular system, excitation contraction coupling mechanism in skeletal muscle 2. Molecular Mechanism of skeletal muscle contraction, Rigor mortis, Muscular dystrophies 3. Length tension curve, Load and velocity of contraction, diseases of muscle 4. Physiological properties and types of Smooth Muscle 5. Mechanism of smooth muscle contraction & its control 6. Regulation of myocardial activity 7. Excitatory & Conducting system of heart 8. Comparison of 3 types of muscle
	Mechanism of smooth muscle contraction & its control (By Dr Aneela)	
	Comparison of 3 types of Muscle (By Dr Aneela)	
	Introduction to muscle physiology, Structure of sarcomere (By Dr Uzma) (Odd)	SDL: (OFF CAMPUS) 1. Introduction to muscle physiology, Structure of sarcomere 2. Sarcotubular system, excitation contraction coupling mechanism in skeletal muscle 3. Mechanism of skeletal muscle contraction. 4. Rigor mortis, Muscular dystrophies

		5. Energetics, efficiency and types of contraction 6. Properties of skeletal muscles, Tetanus & Fatigue 7. Physiological properties of Smooth Muscle 8. Myocardial Action potential
	Sarcotubular system, excitation contraction coupling mechanism inskeletal muscle (By Dr Uzma)(Odd)	
	Molecular Mechanism of skeletal muscle contraction , Rigormortis, Muscular dystrophies (By Dr Uzma)(Odd)	
	Energetics, efficiency and types of contraction, heat production in muscle (By Dr Uzma)	
	Introduction to CVS (By Dr Fahad)	
	Excitatory & Conducting system of heart (By Dr Fahad)	PBL=NIL CBL=NIL
Category A*: By Professors		
Category B**: By Associate & Assistant Professors		
Category C***: By Senior Demonstrators & Demonstrators		

Teaching Staff / Human Resource of Department 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

Contact Hours (Faculty)

Sr. #	Hours Calculation for Various Type of Teaching Strategies	Total Hours
1.	Large Group Interactive Session (LGIS)	13 * 2 = 26 hours
2.	Small Group Discussions (SGD) / (CBL)	20 * 1.5=30 hours
3.	Practical / Skill Lab	20 * 1.5 = 30 hours

Department of Biochemistry

Category A*	Category B**	Category C***				
LGIS	LGIS	PBL	CBL	Practical's	SGD	
Collagen structure synthesis and disorders	Properties of amino acids and important peptides		Alpha -1 Antitrypsin deficiency	Color tests for detection of proteins	Collagen	
Elastin structure and disorders			Protein folding and misfolding	Detection of proteins by Isoelectric pH	Protein structure	
					Fractional precipitation of proteins	
					Chromatography	
Protein folding and misfolding	Secondary structure of protein					
Techniques of separation of protein	Tertiary and quarternary structure of proteins					
Protein denaturation						

Category A*: Associate Professor & Assistant Professor

Category B:** Senior Demonstrators & APWMO

Category C*:** By All Demonstrators

Teaching Staff / Human Resource of Department 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)

Sr. #	Hours Calculation for Various Type of Teaching Strategies	Total Hours
1.	Large Group Interactive Session (LGIS)	24 hours
2.	Small Group Discussions (SGD)	$6 * 5 = 30$ hours
3.	Problem Based Learning (PBL)	$2 * 1 = 2$ hours
4.	Practical / Skill Lab	$6 * 5 = 30$ hours

Contact Hours (Students)

Sr. #	Hours Calculation for Various Type of Teaching Strategies	Total Hours
1.	Large Group Interactive Session (LGIS)	12
2.	Small Group Discussions (SGD)	6
3.	Problem Based Learning (PBL)	2
4.	Practical / Skill Lab	6
5.	Self-Directed Learning (SDL)	08

Time Table for MSK-II Module (First Week) **(08-05-2026 To 13-05-2026)**

Date/Day	Theme	8:00 AM – 09:00 AM		09:00AM – 10:00 AM		10:00 AM – 11:00 AM		11:00 AM – 12:00 PM		Home Assignment					
08-05-2026 Friday	Hip Pain, Limp & Deformity after Trauma or Congenital Hip/Foot Disorders	Practical & SGD/CBL Topics & venue mentioned at the end Saturday Batch		BIOCHEMISTRY LGIS		ANATOMY LGIS		PHYSIOLOGY LGIS		SDL Anatomy Pelvic Fractures Developmental Dysplasia of the Hip (DDH)					
				Properties of amino acids & important peptides	Collagn structure, synthesuis and related disorders	General Anatomy (Muscle I)	Histology (Skeletal Muscle)	Introduction to muscle physiology,Structure of sarcomere	Introduction to muscle physiology, Structure of sarcomere						
				Dr. Rahat (Even)	Dr. Aneela (Odd)	Assit. Prof. Dr. Sumayya (Even)	Assoc. Prof. Dr Mohtasham (Odd)	Dr Aneela (Even)	Dr. Ali Zain (Odd)						
Date/Day			8:00am – 09:00am		09:00am– 10:00am		10:00am – 10:20am		10:20am-11:20am		11:20am-12:10pm		12:10pm-12:30pm	12:30pm – 2:00pm	Home Assignment
09-05-2026 Saturday		SGD/DISSECTION				B r e a k	ANATOMY LGIS		PHYSIOLOGY LGIS		B r e a k	Practical & SGD/CBL Topics & venue mentioned at the end	SDL Anatomy Fracture of Neck of Femur Avascular Necrosis of Femoral Head Coxa Vara and Coxa Valga Deformities		
		Hip bone					Properties of amino acids & important peptides	Collagn structure, synthesuis and related disorders	Sarcotubular system, excitation contraction coupling mechanism in skeletal muscle	Sarcotubular system, excitation contraction coupling mechanism in skeletal muscle					
							Assoc. Prof. Dr Mohtasham (Even)	Assit. Prof. Dr. Sumayya (Odd)	Prof. Dr. Samia Sarwar/ Dr Aneela (Even)	Dr. Ali Zain (Odd)					
11-05-2026 Monday		RADIOLOGY		BIOCHEMISTRY LGIS			ANATOMY LGIS		PHYSIOLOGY LGIS			Practical & SGD/CBL Topics & venue mentioned at the end	SDL Physiology Rigor mortis, Muscular dystrophies		
		X rays of Hip Bone		Collagn structure, synthesuis and related disorders	Properties of amino acids & important peptides		General Anatomy (Muscle II)	Histology (Cardiac & Smooth Muscles)	Molecular Mechanism of skeletal muscle contraction rigor mortis, Muscular dystrophies	Molecular Mechanism of skeletal muscle contraction rigor mortis, Muscular dystrophies					
				Dr. Abdul Ahad (Even)	Dr. Faisal (Odd)		Dr. Aneela (Even)	Dr. Rahat (Odd)	Assit. Prof. Dr. Sumayya (Even)	Assoc. Prof. Dr Mohtasham (Odd)				Prof. Dr. Samia Sarwar/ Dr. Aneela (Even)	Dr. Ali Zain (Odd)
12-05-2026 Tuesday		DISSECTION					ANATOMY LGIS		PHYSIOLOGY LGIS			Practical & SGD/CBL Topics & venue mentioned at the end	SDL Physiology Molecular Mechanism of skeletal muscle contraction rigor mortis, Muscular dystrophies		
		Femur					Histology (Cardiac & Smooth Muscles)	General Anatomy (Muscle II)	Length tension curve, Load and velocity of contraction, diseases of muscle	Energetics, efficiency and types of contraction, heat production in muscle					
							Assoc. Prof. Dr Mohtasham (Even)	Assit. Prof. Dr. Sumayya (Odd)	Dr. Sheena (Even)	Dr. Ali Zain (Odd)					
13-05-2026 Wednesday		CBL / DISSECTION					CLINICO-CONCEPT CONNECT (C36) SESSION - I		PHYSIOLOGY LGIS			Practical & SGD/CBL Topics & venue mentioned at the end	SDL Biochemistry Acidic and Basic properties of amino acids		
		Femur / Patella Fracture Neck of Femur					Hip Pain, Limp & Deformity after Trauma or Congenital Hip/Foot Disorders		Energetics, efficiency and types of contraction, heat production in muscle	Length tension curve, Load and velocity of contraction, diseases of muscle					
							Anatomy	Dr. Nida	Dr. Ali Zain (Even)	Dr. Sheena (Odd)					
														Physiology	Dr. Fahd Anwar
							Radiology	Dr. Aneeqa							
							Orthopedics	Dr. Muhammad Hassan							
							Community Medicine	Dr. Rizwana							
8 th International Conference RMU (14 th May to 16 th May)															

Table No. 1 (Time: 12:30pm – 02:00pm)																	
Batch Distribution for Practical Skills (all subjects) CBL / Small Group Discussion (Biochemistry and Physiology)			Topics for Skill Lab with Venue - Anatomy Histology Practical: Skeletal Muscles (Dr. Kashif) - Physiology Practical: Determination of Red blood cell count - Biochemistry Practical: Color tests for detection of proteins		Day	Histology Practical		Biochemistry Practical		Physiology Practical			Physiology SGD		Biochemistry SGD		
						Batch	Teacher Name	Batch	Teacher Name		Batch		Teacher Name		Batch	Teacher Name	
Sr. No	Batch	Roll No.			Monday	C	Supervised by HOD	B	Dr. Rahat	Supervised by HOD	E	Dr. Ali /Dr. Afsheen	Supervised by HOD	A	Dr. Sheena	D	Dr. Uzma Zafar
1.	A	01-70			Tuesday	D		C	Dr. Almas		A	Dr. Sheena		B	Dr. Uzma	E	Dr. Romessa
2.	B	71-140			Wednesday	E		D	Dr. Uzma		B	Dr. Uzma		C	Dr. Farah	A	Dr. Sana Latif
3.	C	141-210			Thursday	B		A	Dr. Sana Latif		D	Dr. Ayesha		E	Dr. Ali/Dr. Afsheen	C	Dr. Almas
4.	D	211-280			Saturday	A		E	Dr. Romessa		C	Dr. Farah		D	Dr. Ayehsa	B	Dr. Rahat
5.	E	281-onwards															
			Topics for SGDs / CBL with Venue														
			- Physiology SGD: Sliding filaments of skeletal muscle, sarcotubular system (Lecture Hall 5) - Biochemistry SGD: Collagen - Anatomy CBL: Fracture Neck of Femur														

Table No. 2 Batch Distribution with Venues and Teachers Name for Problem Based Learning (PBL) Sessions									
Sr No.	Batches	Roll No	Venue	Teachers	Sr No.	Batches	Roll No	Venue	Teachers
1.	A1	(01-35)	Lecture Hall no.05 Physiology	Dr. Sana Latif (Senior Demonstrator Biochemistry)	6.	C2	(176-210)	New Lecture Hall Complex Lecture Theater # 03	Dr. Ali Zain (PGT Physiology)
2.	A2	(36-70)	Lecture Hall #.04 (1st Floor Anatomy)	Dr. Maaria (PGT 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	Prof. Dr. Ayesha Yousaf / Dr. Kashif Ashraf (Demonstrator Anatomy)
4.	B2	(106-140)	Lecture Hall no.03 (First Floor)	Dr. Zeneara Saqib (Senior Demonstrator of Anatomy)	9.	E1	(281-315)	Anatomy Museum (First Floor Anatomy)	Dr. Uzma Zafar (APWMO Biochemistry)
5.	C1	(141-175)	Anatomy Museum (First Floor Anatomy)	Dr. Farhat (PGT Physiology)	10	E2	(315 onwards)	Lecture Hall no.04	Dr. Najam (PGT Physiology)

Table No. 3 Venues for Large Group Interactive Session (LGIS)	
Odd Roll Numbers	New Lecture Hall Complex Lecture Theater # 03
Even Roll Number	New Lecture Hall Complex Lecture Theater # 02

Table No. 4 Batch Distribution and Venues for Anatomy Small Group Discussion SGDs / Dissections					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. Tayyaba Qureshi (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. Sajjad Hussain (Senior. 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 (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. Zaneera Saqib (Senior. Demonstrator)	Anatomy Lecture Hall 04	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. Sumyyia Bashir (Assistant Professor)	New Lecture Hall Complex 03	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. Aeysha (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. Nida Fatima (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 Module MSK-II (Second Week) **(18-05-2026 To 23-05-2026)**

Date/ Day	Theme	8:00am-9:00am	9:00am – 10:00am	10:00am – 10:20am	10:20am-11:20am	11:20am-12:10pm	12:10pm-12:30pm	12:30pm – 2:00pm	Home Assignment			
18-05-2026 Monday	Groin/Thigh Pain with Weakness: Hernia, Nerve Injury & Compartment Dysfunction	SGD / DISSECTION		Break	ANATOMY LGIS		ORTHOPEDICS		Break	Practical & SGD/CBL Topics & venue mentioned at the end	SDL Physiology Rigor mortis, Muscular dystrophies	
		Anterolateral compartment of thigh (Muscles & Neurovascular organization)			Embryology	Histology	Femur Fracture					
					(Development of Axial Skeleton)	(Skin)						
					Prof. Dr Ayesha Yousaf (Even)	Assoc. Prof. Dr. Mohtasham (Odd)	Dr. Saad Riaz (Even)	Dr. Mubashir (Odd)				
Date/Day			8:00am-9:00am	9:00am – 10:00am	10:00am – 10:20am	10:20am-11:20am	11:20am-12:10pm	12:10pm-12:30pm	12:30pm – 2:00pm	Home Assignment		
19-05-2026 Tuesday			SGD / DISSECTION		Break	BIOCHEMISTRY LGIS		PHYSIOLOGY LGIS		Break	Practical & SGD/CBL Topics & venue mentioned at the end	SDL Physiology Length tension curve, Load and velocity of contraction, diseases of muscle
		Gluteal Region Muscles / Neurovascular organization		Classification and functions of proteins		Elastin structure and related disorders	Properties of skeletal muscles, Tetanus & Fatigue	Introduction to CVS				
				Dr. Rahat (Even)		Dr. Nayab (Odd)	Dr. Sheena (Even)	Dr. Fahd (Odd)				
				SGD / DISSECTION		PBL 1 (SESSION-I)		PHYSIOLOGY LGIS				
20-05-2026 Wednesday			Medial Compartment of thigh	PBL Team		Histology	Embryology	Introduction to CVS	Properties of skeletal muscles, Tetanus & Fatigue			
						(Skin)	(Development of Axial Skeleton)					
						Assoc. Prof. Dr. Mohtasham (Even)	Prof. Dr Ayesha Yousaf (Odd)				Dr. Fahd (Even)	Dr. Sheena (Odd)
			RESEARCH CLUB ACTIVITY IV			ANATOMY LGIS		PBL 1 (SESSION-II)			Practical & SGD/CBL Topics & venue mentioned at the end	SDL Biochemistry Classification of proteins
21-05-2026 Thursday			Synopsis Presentation by all groups			Histology	Embryology	PBL Team				
						(Skin Appendages)	(Development of limbs)					
						Dr. Mehwish Riaz (Odd)	Dr. Farah Pervaiz (Even)						Assoc. Prof. Dr. Mohtasham. (Even)	Prof. Dr Ayesha Yousaf (Odd)
Date/Day			8:00 AM – 09:00 AM	09:00AM – 10:00 AM		10:00 AM – 11:00 AM		11:00 AM – 12:00 PM			Home Assignment	
22-05-2026 Friday			RESEARCH CLUB ACTIVITY V		ANATOMY LGIS		PHYSIOLOGY LGIS		SDL Anatomy Femoral Hernia injury to Femoral Nerve			
			Questionnaire Development		Embryology	Histology	Physiologic anatomy, types and properties of Smooth muscle	Introduction topericardium Properties of myocardium & endocardium myocardial action potential				
					(Development of limbs)	(Skin Appendages)						
			Dr. Rizwana Shahid (Odd)	Dr. Mehwish Riaz (Even)	Prof. Dr Ayesha Yousaf (Even)	Assoc. Prof. Dr. Mohtasham (Odd)	Dr. Aneela (Even)	Dr. Sidra (Odd)				
Date/Day			8:00am-9:00am	9:00am – 10:00am	10:00am – 10:20am	10:20am-11:20am	11:20am-12:10pm	12:10pm-12:30pm	12:30pm – 2:00pm	Home Assignment		
23-05-2026 Saturday			SGD / DISSECTION		Break	PAPER DISSCUSION		CLINICO-CONCEPT CONNECT (C36) SESSION - II		Break	Practical & SGD/CBL Topics & venue mentioned at the end	SDL Anatomy Adductor Tendinopathy Obturator Nerve Entrapment Syndrome Mid Clinico-Concept Connect (C ³ 6) Session Evaluation
		Dissection		Anatomy, Physiology & Biochemistry		Groin/Thigh Pain with Weakness: Hernia, Nerve Injury & Compartment Dysfunction						
	Anatomy					Dr. Nafeesa						
	Physiology					Dr. Fareed Ullah						
	Radiology					Dr. Zahid						
	Surgery					Dr. Asad Amir						

Table No. 1 (Time: 12:30pm – 02:00pm)																	
Batch Distribution for Practical Skills (all subjects) CBL / Small Group Discussion (Biochemistry and Physiology)			Topics for Skill Lab with Venue - Anatomy Histology Practical: Smooth and cardiac muscles (Dr. Kashif) - Physiology Practical: Determination of Total leukocyte Count (TLC) - Biochemistry practical: Detection of proteins by Isoelectric pH		Day	Histology Practical		Biochemistry Practical			Physiology Practical			Physiology SGD		Biochemistry SGD	
						Batch	Teacher Name	Batch	Teacher Name		Batch	Teacher Name		Batch	Teacher Name	Batch	Teacher Name
Sr. No	Batch	Roll No.			Monday	C	Supervised by HOD	B	Dr. Rahat	Supervised by HOD	E	Dr. Ali /Dr. Afsheen	Supervised by HOD	A	Dr. Sheena	D	Dr. Uzma Zafar
1.	A	01-70			Tuesday	D		C	Dr. Almas		A	Dr. Sheena		B	Dr. Uzma	E	Dr. Romessa
2.	B	71-140			Wednesday	E		D	Dr. Uzma		B	Dr. Uzma		C	Dr. Farah	A	Dr. Sana Latif
3.	C	141-210			Thursday	B		A	Dr. Sana Latif		D	Dr. Ayesha		E	Dr. Ali/Dr. Afsheen	C	Dr. Almas
4.	D	211-280			Saturday	A		E	Dr. Romessa		C	Dr. Farah		D	Dr. Ayesha	B	Dr. Rahat
5.	E	281-onwards															
			Topics for SGDs / CBL with Venue - Physiology SGD: Physiology of smooth muscle, mechanism of smooth muscle contraction (Lecture Hall 5) - Biochemistry CBL: Alpha-1 Antitrypsin Deficiency														

Table No. 2 Batch Distribution with Venues and Teachers Name for Problem Based Learning (PBL) Sessions									
Sr No.	Batches	Roll No	Venue	Teachers	Sr No.	Batches	Roll No	Venue	Teachers
1.	A1	(01-35)	Lecture Hall no.05 Physiology	Dr. Sana Latif (Senior Demonstrator Biochemistry)	6.	C2	(176-210)	New Lecture Hall Complex Lecture Theater # 03	Dr. Ali Zain (PGT Physiology)
2.	A2	(36-70)	Lecture Hall #.04 (1st Floor Anatomy)	Dr. Maaria (PGT 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	Prof. Dr. Ayesha Yousaf / Dr. Kashif Ashraf (Demonstrator Anatomy)
4.	B2	(106-140)	Lecture Hall no.03 (First Floor)	Dr. Zeneera Saqib (Senior Demonstrator of Anatomy)	9.	E1	(281-315)	Anatomy Museum (First Floor Anatomy)	Dr. Uzma Zafar (APWMO Biochemistry)
5.	C1	(141-175)	Anatomy Museum (First Floor Anatomy)	Dr. Farhat (PGT Physiology)	10	E2	(315 onwards)	Lecture Hall no.04	Dr. Najam (PGT Physiology)

Table No. 3 Venues for Large Group Interactive Session (LGIS)	
Odd Roll Numbers	New Lecture Hall Complex Lecture Theater # 03
Even Roll Number	New Lecture Hall Complex Lecture Theater # 02

Table No. 4 Batch Distribution and Venues for Anatomy Small Group Discussion SGDs / Dissections					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. Tayyaba Qureshi (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. Sajjad Hussain (Senior. 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 (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. Zaneera Saqib (Senior. Demonstrator)	Anatomy Lecture Hall 04	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. Sumyyia Bashir (Assistant Professor)	New Lecture Hall Complex 03	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. Ayesha (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. Nida Fatima (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 Module MSK-II (Third Week)

(25-05-2026 To 02-06-2026)

Date/Day	Theme	8:00am – 09:00am	09:00am – 10:00am	10:00am – 10:20am	10:20am-11:20am	11:20am-12:10pm	12:10pm-12:30pm	12:30pm – 2:00pm	Home Assignment	
25-05-2026 to 28-05-2026	Radiating Hip-to-Leg Pain: Sciatica vs Hip Pathology (with Functional Limitation)	Eid ul-Adha Holidays								
Date/Day		8:00am – 09:00am	09:00am – 10:00am	10:00am – 11:00am		11:00am – 12:00pm		Home Assignment		
29-05-2026 Friday		PEDIATRIC	PBL 2 (SESSION-II)	BIOCHEMISTRY LGIS		FAMILY MEDICINE		SDL Anatomy Sciatica Trochanteric Bursitis Hip Dislocations		
		Juvenile Idiopathic Arthritis (JIA)	PBL Team	Primary protein structure	Protein folding and misfolding	Communication and consultation skills in Family Medicine Practice				
		Dr. Musfira Aziz (Odd)		Dr. Samia Hafeez (Even)	Dr. Rahat (Even)	Dr. Kanwal (Odd)	Dr. Sidra Hamid (Odd)			Dr. Sadia Azam (Even)
30-05-2026 Saturday		RESEARCH CLUB ACTIVITY VI		Break	ANATOMY LGIS		PHYSIOLOGY LGIS		Break	SDL Anatomy Hamstring Muscle Tear/Strain Deep Vein Thrombosis (DVT)
		Discriptive Analysis			(General Anatomy of Skin)	Embryology (Development of Muscles)	Regulation of myocardial activity	Mechanism of smooth muscle contraction & its control		
		Dr. Rizwana Shahid (Even)	Dr. Abdul Qudoos (Odd)		Assit. Prof. Dr. Sumayya (Even)	Assoc. Prof. Dr. Mohtasham (Odd)	Dr..Sdra (Even)	Dr. Aneela (Odd)		
		SGD/ DISSECTION			BIOCHEMISTRY LGIS		PHYSIOLOGY LGIS			
01-06-2026 Monday		Tibia	Protein folding and misfolding		Primary protein structure	Fracture of Lower Limb		Excitatory &Conducting system ofheart		Comparison of 3 types of muscle
			Dr. Kanwal (Even)		Dr. Rahat (Odd)	Anatomy	Ortho	Patho		Dr. Fahd (Even)	Dr. Aneela (Odd)
		CBL / DISSECTION			BIOCHEMISTRY LGIS		CLINICO-CONCEPT CONNECT (C36) SESSION - III			
02-06-2026 Tuesday		Hip joint / Hip Dislocations			Protein separation techniques	Secondary protein structure	Radiating Hip-to-Leg Pain: Sciatica vs Hip Pathology (with Functional Limitation)			
					Dr. Kanwal (Even)	Dr. Rahat (Odd)	Anatomy	Dr. Zeneara		
							Physiology	Dr. Fahd Anwar		
				Medicine						
				Orthopedics			Dr. Yasir Hadiyat			
				Community Medicine			Dr. Rizwana Shahid			

Table No. 1 (Time: 12:30pm – 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
			• Anatomy Histology Practical: Thick Skin (Dr. Kashif) • Physiology Practical: Determination of platelet count • Biochemistry Practical: Fractional precipitation of proteins	Monday	C	Supervised by HOD	B	Dr. Rahat	E	Dr. Ali /Dr. Afsheen	A	Dr. Sheena	D	Dr. Uzma Zafar
1.	A	01-70		Tuesday	D		C	Dr. Almas	A	Dr. Sheena	B	Dr. Uzma	E	Dr. Romessa
2.	B	71-140		Wednesday	E		D	Dr. Uzma	B	Dr. Uzma	C	Dr. Farah	A	Dr. Sana Latif
3.	C	141-210		Thursday	B		A	Dr. Sana Latif	D	Dr. Ayesha	E	Dr. Ali/Dr. Afsheen	C	Dr. Almas
4.	D	211-280		Saturday	A		E	Dr. Romessa	C	Dr. Farah	D	Dr. Ayesha	B	Dr. Rahat
5.	E	281-onwards												

		Topics for SGDs / CBL with Venue											
		- Physiology SGD: Properties of myocardium, myocardial action potential, Excitatory and conduction system of heart (Physiology Lecture 05) - Biochemistry CBL: Protein folding and misfolding - Anatomy CBL: Hip Dislocation											

Table No. 2 Batch Distribution with Venues and Teachers Name for Problem Based Learning (PBL) Sessions									
Sr No.	Batches	Roll No	Venue	Teachers	Sr No.	Batches	Roll No	Venue	Teachers
1.	A1	(01-35)	Lecture Hall no.05 Physiology	Dr. Sana Latif (Senior Demonstrator Biochemistry)	6.	C2	(176-210)	New Lecture Hall Complex Lecture Theater # 03	Dr. Ali Zain (PGT Physiology)
2.	A2	(36-70)	Lecture Hall #.04 (1st Floor Anatomy)	Dr. Maaria (PGT 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	Prof. Dr. Ayesha Yousaf / Dr. Kashif Ashraf (Demonstrator Anatomy)
4.	B2	(106-140)	Lecture Hall no.03 (First Floor)	Dr. Zeneara Saqib (Senior Demonstrator of Anatomy)	9.	E1	(281-315)	Anatomy Museum (First Floor Anatomy)	Dr. Uzma Zafar (APWMO Biochemistry)
5.	C1	(141-175)	Anatomy Museum (First Floor Anatomy)	Dr. Farhat (PGT Physiology)	10	E2	(315 onwards)	Lecture Hall no.04	Dr. Najam (PGT Physiology)

Table No. 3 Venues for Large Group Interactive Session (LGIS)	
Odd Roll Numbers	New Lecture Hall Complex Lecture Theater # 03
Even Roll Number	New Lecture Hall Complex Lecture Theater # 02

Table No. 4 Batch Distribution and Venues for Anatomy Small Group Discussion SGDs / Dissections					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. Tayyaba Qureshi (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. Sajjad Hussain (Senior. 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 (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. Zaneera Saqib (Senior. Demonstrator)	Anatomy Lecture Hall 04	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. Sumyyia Bashir (Assistant Professor)	New Lecture Hall Complex 03	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. Ayesha (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. Nida Fatima (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 Module MSK-II (Fourth Week) (03-06-2026 To 09-06-2026)

Date/Day	Theme	8:00am – 10:00am	10:00am – 10:20am	10:20am-11:20am	11:20am-12:10pm	12:10pm-12:30pm	12:30pm – 2:00pm	Home Assignment		
03-06-2026 Wednesday	Knee Pain & Swelling with Instability: From Popliteal Fossa to Inflammatory Arthritis	SGD / DISSECTION	Break	BIOCHEMISTRY LGIS		BEHAVIORAL SCIENCES		Break	Practical & SGD/CBL Topics & venue mentioned at the end	SDL Physiology Regulation of Myocardial Activity
		Fibula		Secondary protein structure	Protein separation techniques	Rights and responsibilities of patients and doctors				
				Dr. Rahat (Even)	Dr. Kanwal (Odd)	Dr. Zona Tahir (Even)	Dr. Zarnain Umer (Odd)			
04-06-2026 Thursday		SGD / DISSECTION		RESEARCH CLUB ACTIVITY VI					Practical & SGD/CBL Topics & venue mentioned at the end	SDL Physiology Excitatory & Conducting system of heart Comparison of 3 types of muscle
		Popliteal Fossae / Knee joint		Discussion on Manuscript						
			Dr. Mehwish Riaz (Odd)			Dr. Farah Pervaiz (Even)				
Date/Day			8:00 AM – 09:00 AM	09:00 AM – 10:00 AM	10:00 AM – 11:00 AM	11:00 AM – 12:00 PM	SDL Anatomy Osteoarthritis of Hip Hip Dislocations (Posterior more common) Developmental Dysplasia of Hip (DDH)			
05-06-2026 Friday		Early Clinical Exposure (ECE)								
Date/Day			8:00am – 10:00am	10:00am – 10:20am	10:20am-11:20am	11:20am-12:10pm	12:10pm-12:30pm	12:30pm – 2:00pm	Home Assignment	
06-06-2026 Saturday		Knee Pain & Swelling with Instability: From Popliteal Fossa to Inflammatory Arthritis	SGD / DISSECTION	Break	PHYSIOLOGY LGIS		FAMILY MEDICINE		Break	Practical & SGD/CBL Topics & venue mentioned at the end	SDL Anatomy Tibial Shaft Fracture Stress Fractures of Tibia / Fibular Fractures
	Anterior compartment of leg (muscles and neurovascular organization)		Comparison of 3 types of muscle		Excitatory & Conducting system of heart	Approach to a Patient of Muscular dystrophy				
			Dr. Aneela (Even)		Dr. Fahd (Odd)	Dr. Sadia Azam (Odd)	Dr. Sidra Hamid (Even)			
08-06-2026 Monday	SGD / DISSECTION		BIOCHEMISTRY LGIS		BEHAVIOURAL SCIENCES		Practical & SGD/CBL Topics & venue mentioned at the end	SDL Biochemistry Higher Levels of Protein Organization		
	Lateral compartment of leg (muscles and neurovascular organization)		Protein denaturation		Tertiary and quaternary structure	Psychological relation in doctor-patient relationship				
			Dr. Kanwal (Even)		Dr. Rahat (Odd)	Dr. Faisal Amir (Even)	Dr. Nadia Haroon (Odd)			
09-06-2026 Tuesday	SGD / DISSECTION		BIOCHEMISTRY LGIS		CLINICO-CONCEPT CONNECT (C36) SESSION - IV		Practical & SGD/CBL Topics & venue mentioned at the end	SDL Biochemistry Clinical Applications of Protein Separation Techniques End Clinico-Concept Connect (C ³ 6) Session Evaluation		
	Cross Sectional Anatomy / Radiology		Tertiary and quaternary structure		Protein denaturation	Knee Pain & Swelling with Instability: From Popliteal Fossa to Inflammatory Arthritis				
			Dr. Rahat (Even)		Dr. kanwal Odd)	Anatomy				Dr. Sajjad
						Physiology				Dr. Fareed Ullah
		Pathology		Dr. Sarah Rafi						
		Medicine								

Table No. 1 (Time: 12:30pm – 02:00pm)																
Batch Distribution for Practical Skills (all subjects) CBL / Small Group Discussion (Biochemistry and Physiology) Sr. No | Batch | Roll No. 1. | A | 01-70 2. | B | 71-140 3. | C | 141-210 4. | D | 211-280 5. | E | 281-onwards			Topics for Skill Lab with Venue		Schedule for Practical											
			• Anatomy Histology Practical: Thick Skin (Dr. Kashif) • Physiology Practical: Determination of ABO, Blood groups • Biochemistry Practical: Chromatography	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	Batch	Teacher Name
				Monday	C	Supervised by HOD	B	Dr. Rahat	E	Dr. Ali /Dr. Afsheen	A		Dr. Sheena	D	Dr. Uzma Zafar	
				Tuesday	D		C	Dr. Almas	A	Dr. Sheena	B		Dr. Uzma	E	Dr. Romessa	
				Wednesday	E		D	Dr. Uzma	B	Dr. Uzma	C		Dr. Farah	A	Dr. Sana Latif	
				Thursday	B		A	Dr. Sana Latif	D	Dr. Ayesha	E		Dr. Ali/Dr. Afsheen	C	Dr. Almas	
			Saturday	A	E		Dr. Romessa	C	Dr. Farah	D	Dr. Ayesha		B	Dr. Rahat		
Topics for SGDs / CBL with Venue																
• Physiology SGD: Comparison of three types of muscle (Physiology Lecture 05) • Biochemistry SGD: Protein Structure																

Table No. 2 Batch Distribution with Venues and Teachers Name for Problem Based Learning (PBL) Sessions									
Sr No.	Batches	Roll No	Venue	Teachers	Sr No.	Batches	Roll No	Venue	Teachers
1.	A1	(01-35)	Lecture Hall no.05 Physiology	Dr. Sana Latif (Senior Demonstrator Biochemistry)	6.	C2	(176-210)	New Lecture Hall Complex Lecture Theater # 03	Dr. Ali Zain (PGT Physiology)
2.	A2	(36-70)	Lecture Hall #.04 (1st Floor Anatomy)	Dr. Maaria (PGT 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	Prof. Dr. Ayesha Yousaf / Dr. Kashif Ashraf (Demonstrator Anatomy)
4.	B2	(106-140)	Lecture Hall no.03 (First Floor)	Dr. Zeneara Saqib (Senior Demonstrator of Anatomy)	9.	E1	(281-315)	Anatomy Museum (First Floor Anatomy)	Dr. Uzma Zafar (APWMO Biochemistry)
5.	C1	(141-175)	Anatomy Museum (First Floor Anatomy)	Dr. Farhat (PGT Physiology)	10	E2	(315 onwards)	Lecture Hall no.04	Dr. Najam (PGT Physiology)

Table No. 3 Venues for Large Group Interactive Session (LGIS)	
Odd Roll Numbers	New Lecture Hall Complex Lecture Theater # 03
Even Roll Number	New Lecture Hall Complex Lecture Theater # 02

Table No. 4 Batch Distribution and Venues for Anatomy Small Group Discussion SGDs / Dissections					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. Tayyaba Qureshi (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. Sajjad Hussain (Senior. 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 (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. Zaneera Saqib (Senior. Demonstrator)	Anatomy Lecture Hall 04	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. Sumyyia Bashir (Assistant Professor)	New Lecture Hall Complex 03	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. Ayesha (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. Nida Fatima (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	

Timetable for MSK-II Module
Makeup Classes for Academic Sessions Scheduled on 25th May & 26th May 2026
(10-06-2026 to 11-06-2026)

Date/Day	Theme	8:00am – 09:00am	09:00am – 10:00am	10:00am – 10:20am	10:20am-11:20am	11:20am-12:10pm	12:10pm-12:30pm	12:30pm – 2:00pm	Home Assignment			
10-06-2026 Wednesday	Radiating Hip-to-Leg Pain: Sciatica vs Hip Pathology (with Functional Limitation)	SGD / DISSECTION	PBL 2 (SESSION-I)	Break	ANATOMY LGIS		PHYSIOLOGY LGIS		Practical & SGD/CBL Topics & venue mentioned at the end	SDL Physiology Physiologic anatomy, types and properties of Smooth muscle		
		Dissection	PBL Team		Embryology (Development of Muscles)	(General Anatomy of Skin)	Introduction to pericardium Properties of myocardium & endocardium myocardial action potential	Physiologic anatomy, types and properties of Smooth muscle				
					Assoc. Prof. Dr. Mohtasham (Even)						Assit. Prof. Dr. Sumayya (Odd)	
					Dr. Sidra (Even)	Dr. Aneela (Odd)						
11-06-2026 Thursday		SGD / DISSECTION				BIOCHEMISTRY LGIS		PHYSIOLOGY LGIS		Practical & SGD/CBL Topics & venue mentioned at the end	SDL Physiology Mechanism of smooth muscle contraction & its control	
		Posterior compartment of thigh Muscles / Neurovascular organization	Elastin structure and related disorders		Classification and functions of proteins	Mechanism of smooth muscle contraction & its control	Regulation of myocardial activity					
			Dr. Nayab (Even)		Dr. Rahat (Odd)	Dr..Aneela (Even)	Dr. Sidra (Odd)					
			Hip joint / Hip Dislocations		Protein separation techniques	Secondary protein structure	Radiating Hip-to-Leg Pain: Sciatica vs Hip Pathology (with Functional Limitation)					
		Dr. Kanwal (Even)			Dr. Rahat (Odd)	Anatomy	Dr. Zeneera					
						Physiology	Dr. Fahd Anwar					
	Medicine											
	Orthopedics			Dr. Yasir Hadiyat								
			Community Medicine	Dr. Rizwana Shahid								

Schedule for LMS Based Weekly Online Assessments for First Year MBBS (Musculoskeletal-II Module)

The online assessment for Musculoskeletal -II 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-II Module	Monday 18-05-2026	7:00 pm-7:30pm	Prof. Dr Ayesha Yousaf	Anatomy
		Tuesday 19-05-2026	7:00 pm-7:30pm	Prof. Dr Samia Sarwar	Physiology
		Wednesday 20-05-2026	7:00 pm-7:30pm	Dr Aneela Jamil	Biochemistry
		Monday 01-06-2026	7:00 pm-7:30pm	Prof. Dr Ayesha Yousaf	Anatomy
		Tuesday 02-06-2026	7:00 pm-7:30pm	Prof. Dr Samia Sarwar	Physiology
		Wednesday 03-06-2026	7:00 pm-7:30pm	Dr Aneela Jamil	Biochemistry

**Tentative Date Sheet for End of MSK-II Module Assessment
(12-06-2026 To 18-06-2026)**

Date & Day	Tentative Schedule
12-06-2026 Friday	Assessment Week
13-06-2026 Saturday	
15-06-2026 Monday	
16-06-2026 Tuesday	
17-06-2026 Wednesday	
18-06-2026 Thursday	

*Note: Detailed notice regarding content, time and venue will be issued accordingly

Note: Timetable Subject to change according to the current circumstances.

Annexure I

Templates for Thoery Paper

• MCQ, SEQ Paper, & EMQ

Templates for AV OSPE

Templates for Structured Viva

Note: These sample papers aim to facilitate comprehension. However, it's important to note that the content and format of actual assessment papers may differ.

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. c. d. e. USMLE: Type Question Reference: Ganong 25 th Edition Page No. 101	C3
Spiral Integration (10%)		
Medical Bioethics		
4.	Question	C2

	a. b. c. d. e. USMLE: Type Question Reference: Ganong 25th Edition Page No. 101	
Family Medicine		
5.	Question a. b. c. d. e. USMLE: Type Question Reference: Ganong 25th Edition Page No. 101	

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

Total Marks: 70

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

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

_____ Year MBBS (Batch _____)

Day: _____

Date: _____

10 AV OSPE Slides

Time Allowed: 50 minutes

05 minutes for each slide

Chairperson

Department of _____
Rawalpindi Medical University, Rawalpindi

Additional Director Assessment

Rawalpindi Medical University
Rawalpindi

Director DME

Rawalpindi Medical University
Rawalpindi

Vice Chancellor

Rawalpindi Medical University
Rawalpindi

Slide 1

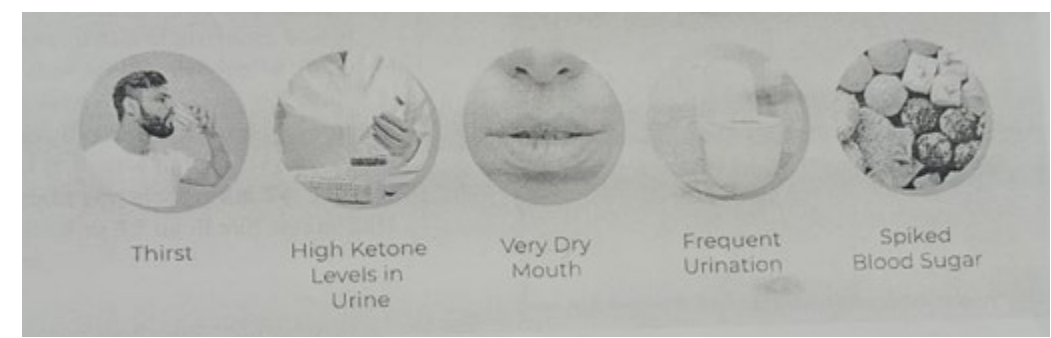
Core Knowledge with Horizontal / Vertical / Spiral Integration

Topic:

Teaching Strategy:

Requirements: Answer sheet, Pen

Objective: _____



- | | |
|---------|------|
| 1. | (01) |
| 2. | (01) |
| 3. | (01) |
| 4. | (01) |
| 5. | (01) |

Slide 1

Key for Examiner

- | |
|---------|
| 1. |
| 2. |
| 3. |
| 4. |
| 5. |

Department of Anatomy
MSK-I Module (Structured Viva)

Date: Time: 8:00-2:00pm

Roll no: 181 onwards

[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

[illegible]

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

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

1. A 52-years-old woman fell after slipping and was unable to extend her leg at the knee joint. Which of the following muscles were most likely to be damaged as a result of this accident? A) Semitendinosus B) Sartorius C) Gracilis D) Quadriceps femoris E) Biceps femoris	Anatomy
2. A 24-year-old woman presents to the clinic with generalized muscle weakness and fatigue. She reports difficulty climbing stairs and has noticed her symptoms worsening over the past few weeks. Laboratory tests show normal serum creatine kinase (CK) levels. The patient is subsequently diagnosed with a condition affecting the actin-myosin interaction in muscle contraction. The process of attachment and detachment of the myosin head from the actin filament is regulated by a chemical change in specific protein chains. Which of the following modifications to regulatory protein chains is most responsible for the cycling of myosin attachment and detachment in muscle contraction? A) Phosphorylation B) Hydroxylation C) Oxidation D) Methylation E) Carboxylation	Physiology
3. A 30-year-old man presents to the emergency department after experiencing severe fatigue and shortness of breath. Blood tests reveal low hemoglobin levels, and further investigation suggests a deficiency in oxygen-carrying proteins. The physician notes that one of the proteins involved in this patient's condition acts as both a chromoprotein and a metalloprotein, helping in the transport and storage of oxygen. Which of the following proteins functions as both a chromoprotein and a metalloprotein? A) Ferritin B) Albumin C) Myoglobin D) Hemoglobin E) Transferrin	Biochemistry

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

Q1. A patient walked in OPD with waddling gait. On examination his pelvis tilted towards unsupported side when he was asked to raise his leg. 1. Which nerve is damaged? 1) 2. Enlist muscles that are damaged. (1) 3. Explain the mechanism behind this clinical condition. (2) 4. What is the clinical name for the gait observed in this patient? (0.5) 5. Which clinical test would most likely confirm the diagnosis in this patient? (0.5)	Anatomy
Q2. A young male athlete was fond of going to gym for body building. He was using energy drinks and special protein supplements to increase his muscle endurance. He was mainly interested in power lifting exercises. 1. Which type of skeletal muscle contraction he was doing predominantly? 2. Name the type of skeletal muscle fibers involved in causing this type of contraction. 3. Differentiate between the two types of skeletal muscle fibers. 4. How does the use of energy drinks and protein supplements help an athlete during powerlifting exercises? 5. What is the primary metabolic pathway utilized by Type IIb muscle fibers during powerlifting?	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 Paper of EMQ

Theme: Diagnosis of Musculoskeletal Disorders

Directions:

For each case scenario below, select the most appropriate diagnosis from the list of options provided.

Options:

- A. Rheumatoid Arthritis
- B. Osteoarthritis
- C. Gout
- D. Fibromyalgia
- E. Osteoporosis
- F. Tendonitis
- G. Bursitis
- H. Fracture
- I. Scoliosis
- J. Muscular Dystrophy

Case Scenarios:

Case 1: A 55-year-old woman presents with pain and stiffness in her hands, especially in the mornings. The stiffness usually lasts for about an hour. On examination, there is noticeable swelling in the finger joints.

Case 2: A 65-year-old male reports severe pain in the big toe, which appeared suddenly overnight. The toe is red, swollen, and extremely tender on examination.

Case 3: A 70-year-old female has been experiencing back pain. Recent bone density scans show significantly reduced bone mass, making her susceptible to fractures.

Case 4: A 30-year-old male presents with pain in the shoulder that worsens when lifting objects overhead. There is tenderness on palpation over the shoulder joint.

Case 5: A 45-year-old woman complains of widespread body pain, including muscle aches, fatigue, and problems with sleep. She mentions that these symptoms have been persistent for months.

**Rawalpindi Medical University
1st Year MBBS Model AV OSPE**

Slide 1 / Video

Core Knowledge with Horizontal / Vertical / Spiral Integration

Topic: Congenital Talipes Equino Varus (Clubfoot)

Teaching Strategy: Small Group Discussion

Requirements: Answer sheet, Pen

Objective: To Assess the Knowledge of Students Regarding Congenital Talipes Equino Varus (Clubfoot)



1. What is the name of the deformity shown in the video? (1)
2. Mention any two visible abnormalities you observed in the shape or position of the foot. (1)
3. Which bones are most commonly misaligned in this deformity? (1)
4. How does the position of the foot in CTEV differ from that of a normal foot in terms of alignment? (1)
5. What is the most likely consequence if this deformity is not treated early? (1)

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

Annexure II

MSK-II Module Entrustable Professional Activities (EPAs)

Theme I: A patient with severe hip pain and inability to walk after a fall

EPA-1

1. Title of the EPA

Obtain a focused trauma history in a patient presenting with hip pain and inability to bear weight

2. Specifications and limitations

This EPA includes the ability of the undergraduate medical student to obtain a **focused, organized, and clinically relevant trauma history** from a patient presenting with **acute hip pain following trauma or fall**.

The history should specifically include:

- Presenting complaint and duration of symptoms
- Mechanism of injury (fall, road traffic accident, direct trauma)
- Circumstances of fall (slipping, tripping, dizziness, syncope)
- Site, character, severity, and radiation of pain
- Ability or inability to bear weight after injury
- Functional limitation such as inability to stand, walk, or move the limb
- Associated symptoms such as swelling, deformity, numbness, weakness, or bleeding
- History suggesting hip fracture or dislocation
- History of previous fractures, osteoporosis, arthritis, or hip disease
- Relevant medical history including diabetes, steroid use, or bone disease
- Drug history including analgesics or anticoagulants
- Personal and social history relevant to falls in elderly patients
- Identification of **red flag symptoms requiring urgent orthopedic evaluation**

Context:

Emergency department, orthopedic OPD, ward-based clinical teaching, or skills laboratory.

Limitations:

This EPA does not include independently making the final diagnosis, interpreting advanced imaging, performing fracture reduction, or initiating definitive treatment without supervision. The student is expected to **obtain a focused trauma history, identify key clinical clues, and report findings appropriately.**

3. Most relevant domains of competence**Primary domains**

- Medical Expert
- Communicator
- Professional

Secondary domains

- Collaborator
- Health Advocate
- Scholar

4. Required experience, knowledge, skills, attitude, and behaviour**Knowledge**

The learner should understand:

- Basic anatomy of the hip joint and proximal femur
- Blood supply of the femoral head
- Mechanism of common hip fractures (especially neck of femur fractures in elderly)
- Basic physiology of bone strength and muscle function
- Role of calcium, phosphate, and vitamin D in bone health
- Risk factors for falls and fractures in elderly patients
- Clinical significance of inability to bear weight and severe hip pain after trauma

Skills

The learner should be able to:

- Establish rapport and obtain consent
- Take a **focused trauma history**
- Identify the **mechanism and timing of injury**
- Assess functional limitations such as inability to walk or stand
- Screen for associated neurovascular symptoms
- Identify **red flags indicating possible fracture or dislocation**
- Present the history logically to the supervising clinician

Attitude and behaviour

The learner should demonstrate:

- Respectful and empathetic communication
- Sensitivity to pain and disability
- Maintenance of patient dignity and confidentiality
- Professional behaviour in emergency settings
- Awareness of their level of training
- Prompt escalation when serious injury is suspected

Experience

The learner should gain experience through:

- Observation of clinicians taking trauma history
- Supervised practice in emergency or orthopedic clinics
- Skills laboratory practice with simulated patients
- Participation in case discussions involving musculoskeletal trauma

5. Assessment information sources to assess progress and ground a summative entrustment decision

Assessment methods may include:

- Direct observation during patient encounters
- Mini-CEX
- OSCE station on trauma history

- Case-based discussion
- Oral case presentation
- Portfolio/logbook documentation

Evidence for entrustment may include:

- At least **3–5 supervised trauma histories** in musculoskeletal injury
- Satisfactory OSCE or workplace-based assessment
- Ability to identify key clues suggesting hip fracture or dislocation

6. Entrustment: level of supervision to be reached and stage of training

Expected supervision level

Level 3 – Practice with **reactive supervision**

The student may obtain a focused trauma history independently and present findings to the supervising clinician.

Stage of training

Early clinical clerkship / undergraduate MBBS clinical phase during musculoskeletal module.

EPA-2

1. Title of the EPA

Perform a structured examination of the hip with neurovascular assessment in a patient with suspected hip injury

2. Specifications and limitations

This EPA involves the ability of a medical student to perform a **basic and structured examination of the hip joint** in a patient presenting with **acute hip pain following trauma**.

The activity includes:

- Inspection of the hip and lower limb
- Identification of limb deformity, shortening, or external rotation
- Observation of swelling, bruising, or asymmetry
- Gentle palpation of the hip and surrounding structures
- Assessment of tenderness and movement-related pain
- Assessment of **range of motion of the hip joint** (if possible)

- Evaluation of ability to bear weight
- **Neurovascular examination of the affected limb**, including
 - Distal pulses
 - Capillary refill
 - Sensory function
 - Motor function of the limb
- Identification of signs suggestive of **hip fracture or dislocation**

The activity may take place in:

- Emergency department
- Orthopedic OPD
- Clinical ward teaching
- Skills laboratory demonstrations

Limitations

This EPA does not include:

- Performing advanced orthopedic special tests
- Independently diagnosing fracture type
- Performing reduction of hip dislocation
- Ordering investigations or prescribing treatment independently

The student is expected to **recognize abnormal findings and report them to the supervising clinician.**

3. Most relevant domains of competence

Primary domains

- Medical Expert
- Communicator
- Professional

Secondary domains

- Collaborator
- Scholar

4. Required experience, knowledge, skills, attitude, and behaviour

Knowledge

The learner should understand:

- Anatomy of the hip joint
- Muscles and ligaments stabilizing the hip
- Neurovascular supply of the lower limb
- Basic biomechanics of hip movement
- Mechanism of hip fracture and dislocation

Skills

The learner should be able to:

- Introduce themselves and obtain patient consent
- Position the patient appropriately for examination
- Perform inspection of hip alignment and limb posture
- Identify **limb shortening and external rotation**
- Palpate the hip region for tenderness
- Assess **basic range of motion**
- Perform **distal neurovascular examination**
- Recognize abnormal findings suggestive of fracture or dislocation
- Report examination findings clearly

Attitude and behaviour

The learner should demonstrate:

- Gentle handling of painful joints
- Empathy and respect for patient discomfort

- Maintenance of patient dignity
- Professional conduct during clinical examination
- Awareness of limitations and need for supervision

Experience

Experience should include:

- Faculty demonstration of hip examination
- Practice in skills laboratory
- Supervised examination of musculoskeletal patients
- Participation in trauma case discussions

5. Assessment information sources

Assessment may include:

- Direct observation of examination
- OSCE station on hip examination
- Mini-CEX
- Structured clinical checklist
- Case-based discussion
- Portfolio documentation

Evidence for entrustment:

- Multiple supervised hip examinations
- Ability to identify obvious deformity or neurovascular compromise
- Appropriate communication of findings

6. Entrustment

Expected supervision level

Level 2 – Practice with **direct supervision**

Stage of training

Undergraduate MBBS students during musculoskeletal clinical exposure.

EPA-3

1. Title of the EPA

Recognize signs of hip fracture or dislocation and initiate urgent referral and patient counselling

2. Specifications and limitations

This EPA involves the ability of a medical student to **recognize clinical features suggestive of serious hip injury and initiate appropriate referral under supervision.**

The activity includes:

- Identifying **clinical features of hip fracture or dislocation**, including
 - Severe hip pain
 - Inability to bear weight
 - Limb shortening or external rotation
 - Severe movement restriction
- Recognizing the need for **urgent orthopedic evaluation**
- Informing the supervising clinician promptly
- Ensuring basic initial patient care such as immobilization and comfort
- Explaining the condition and next steps to the patient and family in simple language

The EPA may be performed in:

- Emergency department
- Orthopedic clinics
- Ward-based teaching sessions
- Trauma case discussions

Limitations

This EPA does not include:

- Making independent definitive diagnosis
- Ordering imaging independently

- Performing surgical or reduction procedures
- Prescribing definitive treatment

The student is expected to **recognize seriousness of injury and escalate care appropriately.**

3. Most relevant domains of competence

Primary domains

- Medical Expert
- Communicator
- Professional

Secondary domains

- Collaborator
- Health Advocate

4. Required experience, knowledge, skills, attitude, and behaviour

Knowledge

The learner should understand:

- Clinical presentation of hip fractures and dislocations
- Importance of early management of hip injuries
- Role of imaging in confirming diagnosis
- Complications of untreated hip fractures

Skills

The learner should be able to:

- Recognize **key clinical signs of hip fracture**
- Identify situations requiring urgent referral
- Communicate findings to senior clinicians
- Explain the suspected injury and management plan to the patient
- Demonstrate basic counselling and reassurance

Attitude and behaviour

The learner should demonstrate:

- Responsibility in recognizing emergencies
- Respectful communication with patient and relatives
- Professional conduct in acute care settings
- Willingness to seek help and escalate care

Experience

Experience may include:

- Observation of trauma management in emergency department
- Participation in orthopedic ward rounds
- Case discussions involving hip fractures
- Simulation training in trauma scenarios

5. Assessment information sources

Assessment methods may include:

- Case-based discussion
- OSCE station on trauma management decision-making
- Direct observation
- Oral viva
- Portfolio documentation

Evidence for entrustment:

- Ability to identify serious injury signs
- Appropriate escalation and communication
- Effective patient counselling

6. Entrustment

Expected supervision level

Level 2–3 (direct supervision progressing to reactive supervision)

Stage of training

Undergraduate MBBS students during musculoskeletal clinical exposure.

Theme II: Groin Pain with Medial Thigh Weakness — Hernia and Nerve Injury

EPA-1

1. Title of the EPA

Perform a focused clinical examination of groin swelling to identify features suggestive of hernia or other groin pathology

2. Specifications and limitations

This EPA includes the ability of the undergraduate medical student to perform a **systematic and focused examination of groin swelling** in a patient presenting with **groin pain and swelling**, in order to identify findings suggestive of **inguinal or femoral hernia or other groin pathologies**.

The activity includes:

- Inspection of the groin region for visible swelling, asymmetry, or skin changes
- Identification of the location of swelling relative to the **inguinal ligament and pubic tubercle**
- Observation of swelling during **coughing or straining (cough impulse)**
- Palpation of the swelling for tenderness, consistency, reducibility, and expansile cough impulse
- Assessment of whether the swelling increases with standing and reduces on lying down
- Identification of features suggestive of **inguinal or femoral hernia**
- Recognition of other possible causes of groin swelling such as lymphadenopathy or soft tissue masses

The activity may be performed in:

- Outpatient surgical clinic
- Clinical skills laboratory
- Ward-based teaching sessions
- Small group demonstration sessions

Limitations

This EPA does not include:

- Performing surgical repair of hernia
- Ordering imaging independently

- Making definitive surgical diagnosis without supervision
- Managing complications independently

The student is expected to **identify important examination findings and communicate them to the supervising clinician.**

3. Most relevant domains of competence

Primary domains

- Medical Expert
- Communicator
- Professional

Secondary domains

- Collaborator
- Scholar

4. Required experience, knowledge, skills, attitude, and behaviour

Knowledge

The learner should understand:

- Anatomy of the **inguinal region and femoral canal**
- Structure of the **inguinal ligament and inguinal canal**
- Difference between **inguinal and femoral hernia**
- Causes of groin swelling
- Mechanism of hernia formation due to increased intra-abdominal pressure

Skills

The learner should be able to:

- Introduce themselves and obtain patient consent
- Position the patient appropriately for groin examination
- Perform **inspection and palpation of groin swelling**
- Identify location, size, and characteristics of the swelling
- Demonstrate cough impulse

- Assess reducibility of swelling
- Report findings in a structured clinical format

Attitude and behaviour

The learner should demonstrate:

- Respect for patient privacy and dignity during groin examination
- Professional communication
- Sensitivity during examination of sensitive body regions
- Awareness of their training limitations
- Willingness to seek supervision when abnormal findings are detected

Experience

The learner should gain experience through:

- Demonstration of groin examination by faculty
- Skills lab practice with simulated patients
- Supervised examination in surgical clinics
- Participation in case discussions involving groin hernias

5. Assessment information sources

Assessment methods may include:

- Direct observation during patient examination
- OSCE station on groin examination
- Mini-CEX
- Case-based discussion
- Clinical checklist evaluation
- Portfolio/logbook documentation

Evidence for entrustment may include:

- Multiple supervised groin examinations
- Ability to correctly identify hernia features
- Appropriate communication of findings

6. Entrustment

Expected supervision level

Level 2 – Practice with **direct supervision**

Stage of training

Undergraduate MBBS students during musculoskeletal or surgical clinical exposure.

EPA-2

1. Title of the EPA

Perform a motor and sensory neurological assessment of the lower limb to evaluate possible nerve involvement affecting the medial thigh

2. Specifications and limitations

This EPA involves the ability of a medical student to perform a **basic neurological examination of the lower limb** in a patient presenting with **groin pain and weakness of the medial thigh**, in order to assess possible involvement of nerves such as the **obturator nerve**.

The activity includes:

- Inspection of lower limb muscle bulk and posture
- Assessment of **motor function of thigh adduction**
- Evaluation of muscle strength of relevant muscle groups
- Assessment of **sensory function over the medial thigh**
- Comparison with the opposite limb
- Identification of abnormal neurological findings

The examination may take place in:

- Outpatient clinics
- Clinical skills laboratory

- Ward teaching sessions
- Integrated case-based learning sessions

Limitations

This EPA does not include:

- Performing detailed neurological localization independently
- Diagnosing complex nerve injuries independently
- Ordering advanced neurological investigations
- Managing nerve injuries independently

The student is expected to **recognize abnormal findings and report them to the supervising clinician.**

3. Most relevant domains of competence

Primary domains

- Medical Expert
- Communicator

Secondary domains

- Scholar
- Professional

4. Required experience, knowledge, skills, attitude, and behaviour

Knowledge

The learner should understand:

- Basic anatomy of the **obturator nerve and medial thigh muscles**
- Function of muscles responsible for **thigh adduction**
- Sensory distribution of the medial thigh
- Clinical significance of nerve injury affecting motor and sensory function

Skills

The learner should be able to:

- Explain the examination procedure to the patient
- Perform inspection of the lower limb
- Assess **motor power of thigh adductors**
- Test **sensory function over the medial thigh**
- Compare findings between both limbs
- Present neurological findings clearly

Attitude and behaviour

The learner should demonstrate:

- Respectful patient interaction
- Careful handling of painful limbs
- Professionalism during examination
- Awareness of own limitations

Experience

Experience may include:

- Faculty demonstration of neurological examination
- Practice in skills laboratory
- Supervised neurological assessment in clinics
- Case discussions involving nerve injury

5. Assessment information sources

Assessment may include:

- OSCE station on neurological examination
- Direct observation
- Mini-CEX
- Case-based discussion
- Portfolio documentation

Evidence for entrustment:

- Ability to perform structured neurological examination
- Identification of abnormal motor or sensory findings
- Clear reporting of examination results

6. Entrustment

Expected supervision level

Level 2 – Practice with **direct supervision**

Stage of training

Undergraduate MBBS clinical phase.

EPA-3

1. Title of the EPA

Recognize red-flag features of complicated groin hernia such as strangulation and initiate urgent referral

2. Specifications and limitations

This EPA involves the ability of the learner to **recognize clinical signs suggesting a complicated hernia**, such as **incarceration or strangulation**, and to initiate appropriate referral under supervision.

The activity includes:

- Identification of warning signs such as
 - Severe pain in the groin swelling
 - Tender, irreducible swelling
 - Redness or skin discoloration
 - Fever, vomiting, or systemic symptoms
- Recognizing that these findings may indicate **strangulated hernia**
- Promptly informing the supervising clinician
- Explaining the need for urgent medical attention to the patient

The EPA may be performed in:

- Outpatient clinics
- Emergency department
- Clinical ward teaching
- Case-based learning sessions

Limitations

This EPA does not include:

- Making independent surgical decisions
- Performing emergency surgery
- Prescribing definitive treatment

The learner is expected to **recognize emergency signs and escalate care appropriately.**

3. Most relevant domains of competence

Primary domains

- Medical Expert
- Professional
- Communicator

Secondary domains

- Collaborator
- Health Advocate

4. Required experience, knowledge, skills, attitude, and behaviour

Knowledge

The learner should understand:

- Types of hernia complications
- Pathophysiology of **hernia strangulation**
- Clinical features of surgical emergencies
- Importance of early recognition and referral

Skills

The learner should be able to:

- Identify **red-flag clinical features**
- Recognize situations requiring urgent referral
- Communicate findings to supervising clinician
- Counsel the patient regarding urgency

Attitude and behaviour

The learner should demonstrate:

- Responsibility in identifying emergencies
- Professional communication with patients and team
- Respect for patient concerns
- Willingness to escalate care when needed

Experience

Experience may include:

- Observation in surgical emergency settings
- Case-based discussions of complicated hernias
- Ward rounds with surgical teams
- Simulation exercises involving surgical emergencies

5. Assessment information sources

Assessment methods may include:

- Case-based discussion
- OSCE station on clinical reasoning
- Oral viva examination
- Direct observation
- Portfolio documentation

Evidence for entrustment:

- Ability to recognize complicated hernia signs
- Appropriate escalation of care
- Effective patient communication

6. Entrustment

Expected supervision level

Level 2–3 (direct supervision progressing to reactive supervision)

Stage of training

Undergraduate MBBS clinical exposure in surgery or musculoskeletal modules.

Theme 3: Low Back Pain Radiating to the Leg (Lumbar Radiculopathy)

EPA-1

1. Title of the EPA

Obtain a focused history of radiating low back pain and identify red-flag symptoms suggestive of serious spinal pathology

2. Specifications and limitations

This EPA includes the ability of the undergraduate medical student to obtain a **focused and organized history** from a patient presenting with **low back pain radiating to the lower limb**.

The activity includes:

- Identification of presenting complaints such as low back pain, leg pain, numbness, or tingling
- Onset, duration, and progression of pain
- Radiation of pain along the lower limb
- Character of pain such as sharp, shooting, burning, or electric-like sensation
- Factors that aggravate or relieve the pain (sitting, coughing, bending, rest)
- Functional limitations such as difficulty sitting, standing, walking, or lifting
- Occupational history relevant to posture or prolonged sitting
- Screening for **red-flag symptoms**, including
 - bladder or bowel dysfunction

- progressive neurological weakness
- fever or unexplained weight loss
- severe night pain
- history of trauma or malignancy
- Identification of symptoms suggesting spinal radiculopathy or possible hip joint pathology

Context:

- Outpatient clinic
- Orthopedic clinic
- Clinical skills laboratory
- Ward-based clinical teaching

Limitations

This EPA does not include independently making the final diagnosis, ordering imaging independently, or initiating definitive treatment. The student is expected to collect relevant history, identify warning signs, and communicate findings to the supervising clinician.

3. Most relevant domains of competence

Primary domains

- Medical Expert
- Communicator
- Professional

Secondary domains

- Collaborator
- Scholar

4. Required experience, knowledge, skills, attitude, and behaviour

Knowledge

The learner should understand:

- Basic anatomy of the lumbar spine and intervertebral discs
- Course and function of lumbar nerve roots

- Pathophysiology of lumbar disc herniation
- Clinical features of radicular pain (sciatica)
- Red-flag symptoms indicating serious spinal pathology

Skills

The learner should be able to:

- Establish rapport and obtain consent
- Take a focused history of low back pain
- Identify characteristics of radicular pain
- Screen for red-flag symptoms
- Identify features differentiating spinal and hip causes of pain
- Present the history clearly to the supervising clinician

Attitude and behaviour

The learner should demonstrate:

- Respectful and empathetic communication
- Sensitivity to patient discomfort
- Professional conduct during clinical encounters
- Awareness of personal limitations
- Willingness to seek supervision when serious pathology is suspected

Experience

The learner should gain experience through:

- Observation of clinicians taking spine-related histories
- Supervised history taking in OPD
- Skills laboratory practice with simulated cases
- Case-based learning discussions involving low back pain

5. Assessment information sources

Assessment methods may include:

- Direct observation of history taking
- Mini-CEX
- OSCE station on spine history
- Case-based discussion
- Logbook or portfolio documentation

Evidence for entrustment may include:

- Multiple supervised focused histories
- Ability to identify red-flag symptoms
- Structured presentation of clinical history

6. Entrustment

1.Expected supervision level

Level 3 – Practice with reactive supervision

2. Stage of training

Undergraduate MBBS clinical phase during musculoskeletal or orthopedic teaching.

EPA-2

1. Title of the EPA

Perform a structured examination of the lumbar spine and lower limb including neurological assessment and Straight Leg Raise test

2. Specifications and limitations

This EPA involves the ability of a medical student to perform a basic and systematic examination of the lumbar spine and lower limb in a patient presenting with radiating back pain.

The activity includes:

- Inspection of posture, spinal alignment, and gait
- Observation of lumbar curvature and muscle spasm
- Palpation of lumbar vertebrae and paraspinal muscles
- Assessment of lumbar spine movements (flexion, extension, lateral bending)
- Examination of lower limb neurological function including

- motor strength of relevant muscle groups
- sensory examination
- reflexes (knee and ankle reflex)
- Demonstration of Straight Leg Raise (SLR) test
- Recognition of findings suggestive of nerve root irritation

Context:

- Outpatient clinics
- Clinical skills laboratory
- Orthopedic ward rounds
- Demonstration sessions

Limitations

This EPA does not include advanced neurological localization, interpretation of MRI independently, or performing invasive procedures. The student is expected to recognize abnormal findings and communicate them to the supervising clinician.

3. Most relevant domains of competence

Primary domains

- Medical Expert
- Communicator
- Professional

Secondary domains

- Collaborator
- Scholar

4. Required experience, knowledge, skills, attitude, and behaviour

Knowledge

The learner should understand:

- Anatomy of the lumbar spine and nerve roots
- Mechanism of nerve root compression

- Dermatomal sensory distribution of lower limb
- Role and interpretation of the Straight Leg Raise test

Skills

The learner should be able to:

- Position the patient correctly for spine examination
- Perform inspection and palpation of the lumbar spine
- Assess spinal movements
- Perform motor and sensory neurological examination of the lower limb
- Demonstrate the Straight Leg Raise test correctly
- Recognize abnormal findings suggestive of radiculopathy
- Report findings logically

Attitude and behaviour

The learner should demonstrate:

- Gentle handling of painful joints and spine
- Respect for patient comfort and dignity
- Professional communication
- Awareness of limitations and need for supervision

Experience

Experience may include:

- Demonstration of spine examination by faculty
- Skills laboratory practice
- Supervised clinical examinations in OPD
- Participation in musculoskeletal case discussions

5. Assessment information sources

Assessment methods may include:

- Direct observation
- OSCE station on spine examination
- Mini-CEX
- Clinical checklist
- Case-based discussion
- Portfolio documentation

Evidence for entrustment may include:

- Correct demonstration of SLR test
- Ability to identify neurological abnormalities
- Accurate reporting of examination findings

6. Entrustment

Expected supervision level

Level 2 – Practice with direct supervision

Stage of training

Undergraduate MBBS clinical exposure.

EPA-3

1. Title of the EPA

Recognize clinical features of lumbar radiculopathy, counsel the patient regarding posture and activity modification, and initiate appropriate referral

2. Specifications and limitations

This EPA involves the ability of a medical student to interpret clinical findings suggesting lumbar nerve root involvement, provide basic patient counselling, and recognize when referral to a specialist is required.

The activity includes:

- Identification of signs suggesting lumbar radiculopathy
- Differentiation between spinal and hip-related causes of pain
- Recognition of red-flag symptoms requiring urgent referral

- Providing patient counselling regarding
 - posture during sitting and lifting
 - avoidance of prolonged sitting
 - activity modification and rest
- Communicating the need for further evaluation or specialist referral

Context:

- Outpatient clinic
- Orthopedic consultation settings
- Case-based learning sessions
- Clinical teaching rounds

Limitations

This EPA does not include prescribing medication independently, ordering imaging independently, or managing spinal conditions without supervision.

3. Most relevant domains of competence

Primary domains

- Medical Expert
- Communicator
- Professional

Secondary domains

- Health Advocate
- Collaborator

4. Required experience, knowledge, skills, attitude, and behaviour

Knowledge

The learner should understand:

- Clinical features of lumbar radiculopathy
- Importance of posture and ergonomic practices

- Indications for referral in spinal conditions
- Complications of untreated nerve compression

Skills

The learner should be able to:

- Recognize nerve root involvement from clinical findings
- Differentiate spinal and hip causes of leg pain
- Communicate findings clearly to the supervising clinician
- Counsel patients on posture and lifestyle modification
- Identify situations requiring specialist referral

Attitude and behaviour

The learner should demonstrate:

- Patient-centered communication
- Professional conduct
- Responsibility in recognizing serious conditions
- Willingness to escalate care when necessary

Experience

Experience may include:

- Observation of patient counselling in spine clinics
- Participation in case discussions involving lumbar disc disease
- Clinical exposure to patients with radicular pain

5. Assessment information sources

Assessment methods may include:

- Case-based discussion
- OSCE station on clinical reasoning
- Direct observation

- Oral viva examination
- Portfolio documentation

Evidence for entrustment may include:

- Ability to recognize radiculopathy features
- Appropriate counselling of patient
- Correct identification of referral criteria

6. Entrustment

- Expected supervision level

Level 2–3 (direct supervision progressing to reactive supervision)

- Stage of training

Undergraduate MBBS clinical phase during musculoskeletal teaching.

Theme 4: Patient with knee pain and swelling

EPA-1

1. Title of the EPA

Obtain a focused history of knee pain and swelling and identify red-flag symptoms suggesting serious pathology

2. Specifications and limitations

This EPA includes the ability of the undergraduate medical student to obtain a **focused and organized clinical history** from a patient presenting with **knee pain and swelling**, in order to identify the possible underlying cause and recognize warning signs that require urgent medical attention.

The activity includes:

- Identification of presenting complaints such as knee pain, swelling, stiffness, or reduced mobility
- Onset, duration, and progression of symptoms
- History of trauma or injury to the knee
- Character and severity of pain
- Functional limitations such as difficulty walking, climbing stairs, or squatting

- Associated symptoms such as redness, warmth, fever, or morning stiffness
- Screening for **red-flag symptoms**, including fever, severe pain, inability to bear weight, or rapidly increasing swelling
- Identification of clinical clues suggesting **inflammatory arthritis, trauma, or infection**

Context

- Outpatient clinic
- Orthopedic clinic
- Clinical skills laboratory
- Ward-based teaching sessions

Limitations

This EPA does not include independently making the final diagnosis, ordering imaging independently, or initiating definitive treatment. The student is expected to **obtain a focused history, identify warning signs, and communicate findings to the supervising clinician.**

3. Most relevant domains of competence

Primary domains

- Medical Expert
- Communicator
- Professional

Secondary domains

- Collaborator
- Scholar

4. Required experience, knowledge, skills, attitude, and behaviour

Knowledge

The learner should understand:

- Basic anatomy of the knee joint
- Common causes of knee pain and swelling
- Differences between inflammatory, traumatic, and infective causes of knee pathology
- Clinical significance of red-flag symptoms suggesting septic arthritis

Skills

The learner should be able to:

- Establish rapport and obtain consent
- Take a focused history of knee pain and swelling
- Identify key features suggesting trauma, arthritis, or infection
- Screen for red-flag symptoms
- Present the history clearly to the supervising clinician

Attitude and behaviour

The learner should demonstrate:

- Respectful and empathetic communication
- Sensitivity to patient discomfort
- Professional behaviour during clinical encounters
- Awareness of their level of training and limitations

Experience

The learner should gain experience through:

- Observation of clinicians taking musculoskeletal history
- Supervised patient interviews in clinics
- Skills laboratory practice with simulated patients
- Case-based learning sessions involving knee pain

5. Assessment information sources

Assessment methods may include:

- Direct observation of history taking
- Mini-CEX
- OSCE station on knee history
- Case-based discussion
- Portfolio or logbook documentation

Evidence for entrustment may include:

- Multiple supervised history-taking encounters
- Ability to identify red-flag symptoms
- Clear and structured case presentation

6. Entrustment

Expected supervision level

Level 3 – Practice with reactive supervision

Stage of training

Undergraduate MBBS clinical phase during musculoskeletal module.

EPA-2

1. Title of the EPA

Perform a structured examination of the knee joint and demonstrate clinical tests for joint effusion

2. Specifications and limitations

This EPA involves the ability of a medical student to perform a **systematic clinical examination of the knee joint** in a patient presenting with **knee pain and swelling**.

The activity includes:

- Inspection of the knee for swelling, redness, deformity, or muscle wasting
- Palpation of the joint for tenderness, warmth, and joint line pain
- Assessment of knee range of motion (flexion and extension)
- Identification of joint effusion through clinical tests such as
 - patellar tap test
 - fluctuation test
- Assessment of functional limitation and gait
- Recognition of abnormal findings suggestive of inflammation or injury

Context

- Outpatient clinics
- Clinical skills laboratory
- Orthopedic ward teaching
- Demonstration sessions

Limitations

This EPA does not include performing advanced orthopedic tests, making independent diagnosis, or initiating treatment independently. The student is expected to **identify abnormal findings and report them to the supervising clinician.**

3. Most relevant domains of competence

Primary domains

- Medical Expert
- Communicator
- Professional

Secondary domains

- Collaborator
- Scholar

4. Required experience, knowledge, skills, attitude, and behaviour

Knowledge

The learner should understand:

- Basic anatomy of the knee joint
- Mechanism of joint effusion
- Clinical signs of inflammation and joint swelling
- Basic biomechanics of knee movement

Skills

The learner should be able to:

- Position the patient appropriately for knee examination
- Perform inspection and palpation of the knee joint

- Assess knee movements
- Demonstrate patellar tap and fluctuation tests correctly
- Identify abnormal findings such as swelling, warmth, and restricted movement
- Communicate findings clearly

Attitude and behaviour

The learner should demonstrate:

- Gentle handling of painful joints
- Respect for patient comfort and dignity
- Professional communication
- Awareness of personal limitations

Experience

Experience may include:

- Demonstration of knee examination by faculty
- Practice in clinical skills laboratory
- Supervised knee examinations in clinics
- Participation in musculoskeletal case discussions

5. Assessment information sources

Assessment methods may include:

- Direct observation
- OSCE station on knee examination
- Mini-CEX
- Clinical checklist
- Case-based discussion
- Portfolio documentation

Evidence for entrustment may include:

- Correct demonstration of effusion tests
- Ability to identify joint swelling
- Structured reporting of clinical findings

6. Entrustment

Expected supervision level

Level 2 – Practice with direct supervision

Stage of training

Undergraduate MBBS clinical phase.

EPA-3

1. Title of the EPA

Recognize features suggestive of septic arthritis and initiate timely referral with appropriate patient counselling

2. Specifications and limitations

This EPA involves the ability of the learner to **recognize clinical signs suggesting serious knee pathology such as septic arthritis**, counsel the patient appropriately, and initiate referral under supervision.

The activity includes:

- Identification of warning signs such as
 - severe joint pain
 - fever
 - warm and swollen joint
 - inability to bear weight
- Differentiation between inflammatory arthritis, trauma, and infection based on clinical findings
- Communicating concerns to the supervising clinician
- Counselling the patient regarding warning signs, need for follow-up, and further evaluation

Context

- Outpatient clinic
- Orthopedic clinic
- Ward-based teaching
- Case-based learning sessions

Limitations

This EPA does not include independently diagnosing septic arthritis, prescribing treatment, or performing invasive procedures. The student is expected to **recognize emergency features and escalate care appropriately.**

3. Most relevant domains of competence

Primary domains

- Medical Expert
- Communicator
- Professional

Secondary domains

- Health Advocate
- Collaborator

4. Required experience, knowledge, skills, attitude, and behaviour

Knowledge

The learner should understand:

- Clinical features of septic arthritis
- Differences between inflammatory arthritis and traumatic knee injury
- Importance of early diagnosis and referral in joint infections

Skills

The learner should be able to:

- Identify warning signs of serious knee pathology
- Communicate findings to supervising clinician

- Counsel patients regarding warning signs and follow-up
- Recognize situations requiring urgent referral

Attitude and behaviour

The learner should demonstrate:

- Responsibility in recognizing clinical emergencies
- Professional communication with patients and team
- Respect for patient concerns
- Willingness to escalate care when necessary

Experience

Experience may include:

- Observation in orthopedic clinics
- Participation in case discussions involving joint infections
- Ward rounds with orthopedic teams
- Simulation-based case scenarios

5. Assessment information sources

Assessment methods may include:

- Case-based discussion
- OSCE station on clinical reasoning
- Direct observation
- Oral viva examination
- Portfolio documentation

Evidence for entrustment may include:

- Ability to recognize septic arthritis warning signs
- Appropriate counselling of patient
- Correct identification of referral criteria

6. Entrustment

Expected supervision level

Level 2–3 (direct supervision progressing to reactive supervision)

Stage of training

Undergraduate MBBS clinical phase during musculoskeletal module.