



RMU – 12

Integrated Modular

MBBS Curriculum 2026

Isolation to **Beyond Boundaries**

Study Guide

Renal Module-I

Department of Medical Education

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Second Year MBBS

	Rawalpindi Medical University			
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SECTION – I

RMU – 12 Integrated Modular MBBS Curriculum 2026

Isolation to *Beyond Boundaries*

Preamble

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

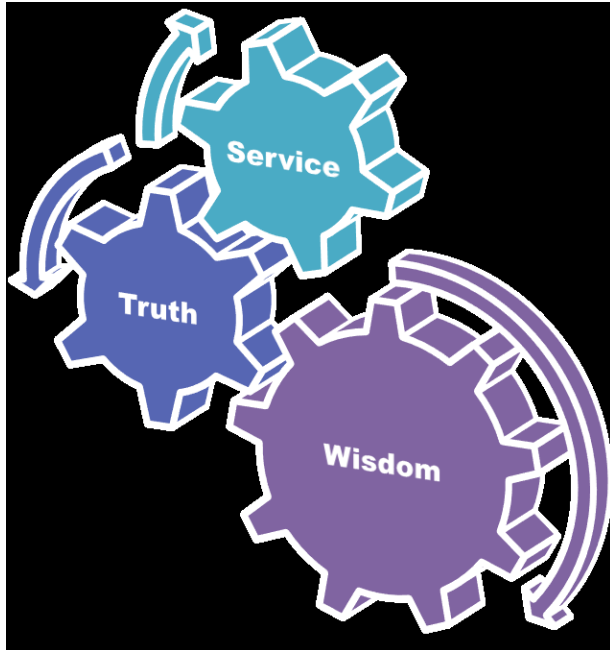
The Clinically Oriented Integrated Modular Curriculum transcends traditional disciplinary silos by promoting horizontal and vertical integration across basic, para-clinical, and clinical sciences. Learning experiences are contextualized around clinical problems and patient-centered care, fostering early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

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

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

University Moto, Vision, Values & Goals

RMU – 12



Vision and Values

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

Mission Statement

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

Goals of the Undergraduate Integrated Modular Curriculum

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

The RMU-12 Undergraduate Medical Program is designed to:

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

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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

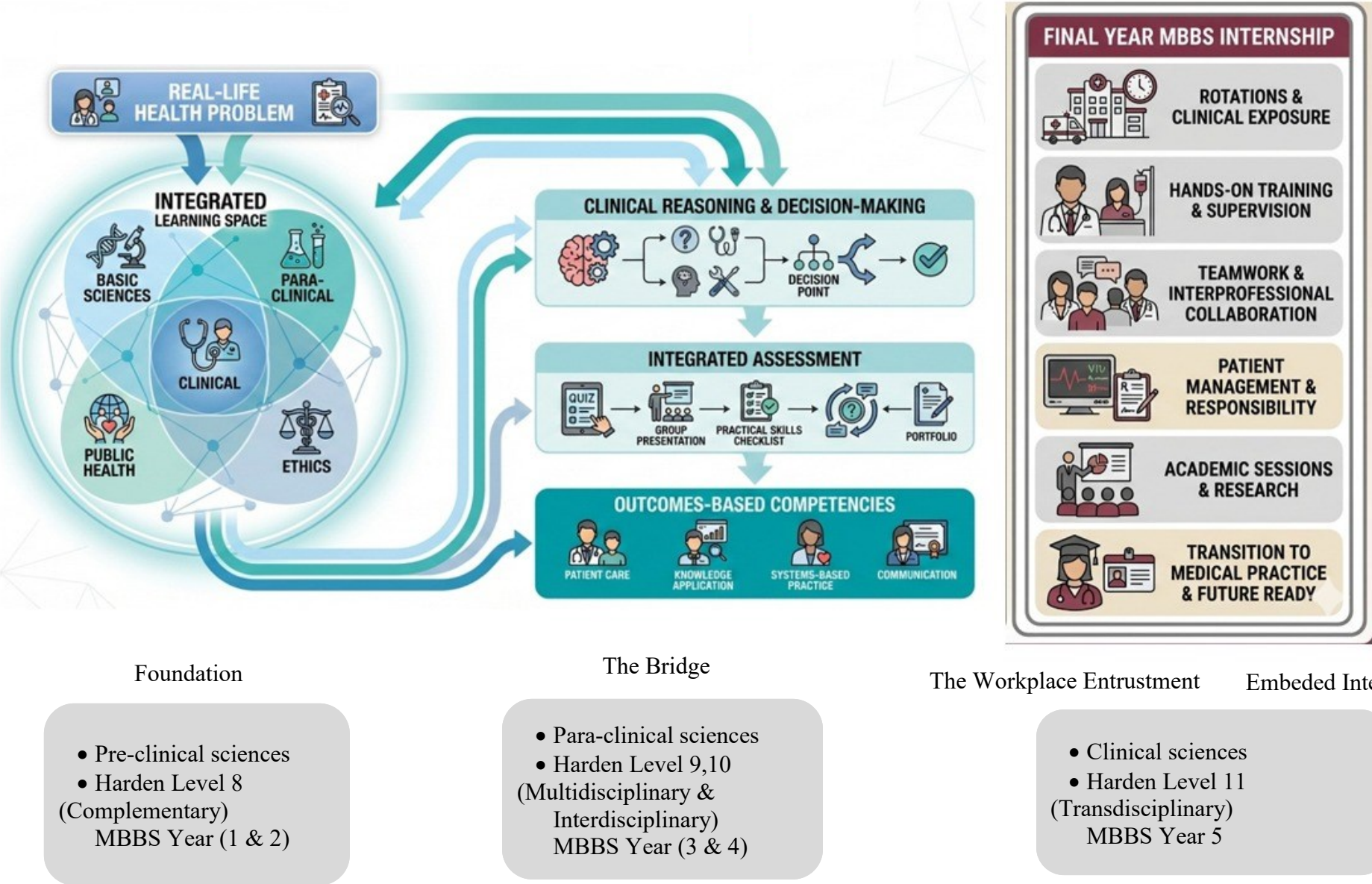


Figure 2

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

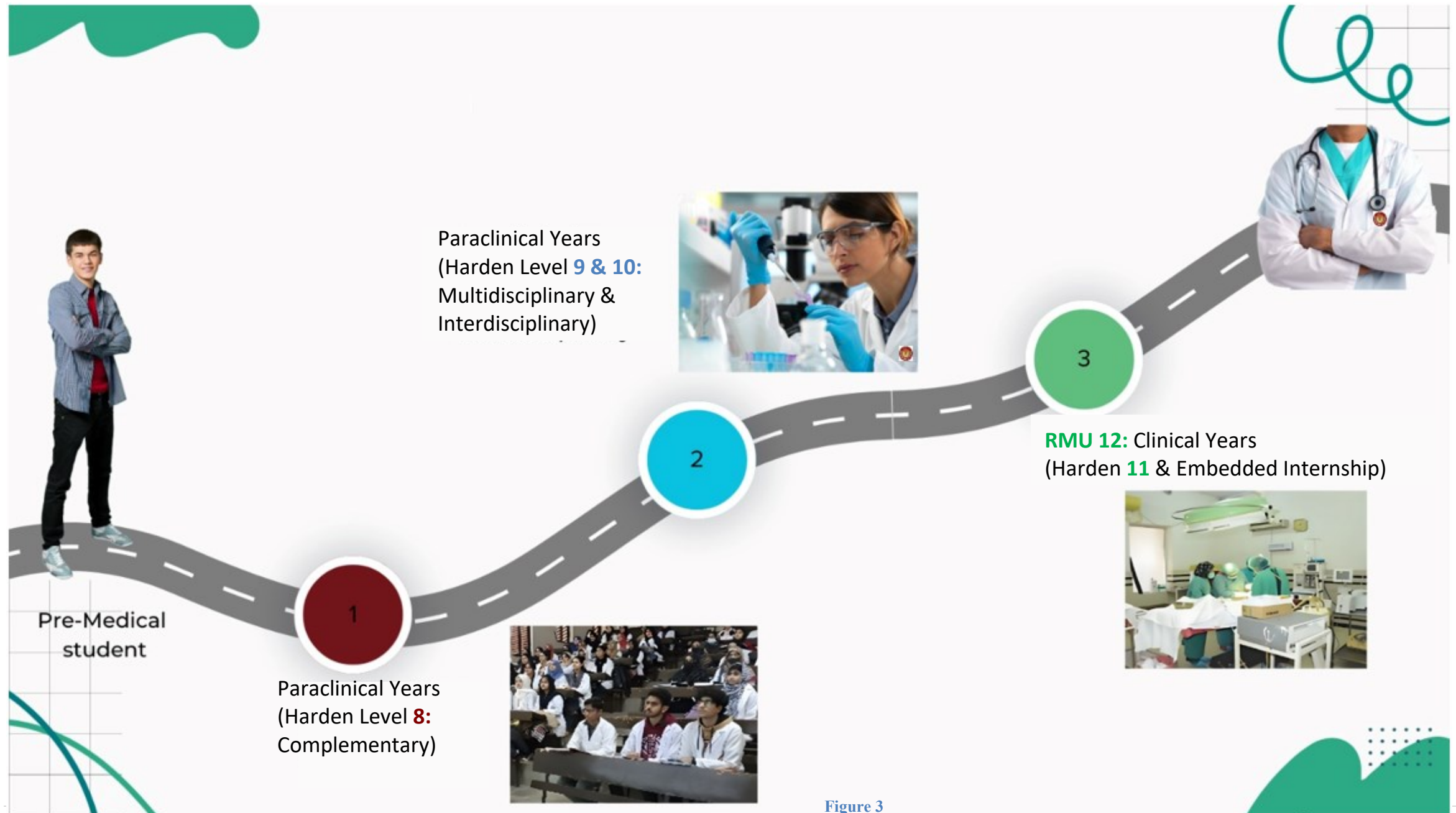


Figure 3

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

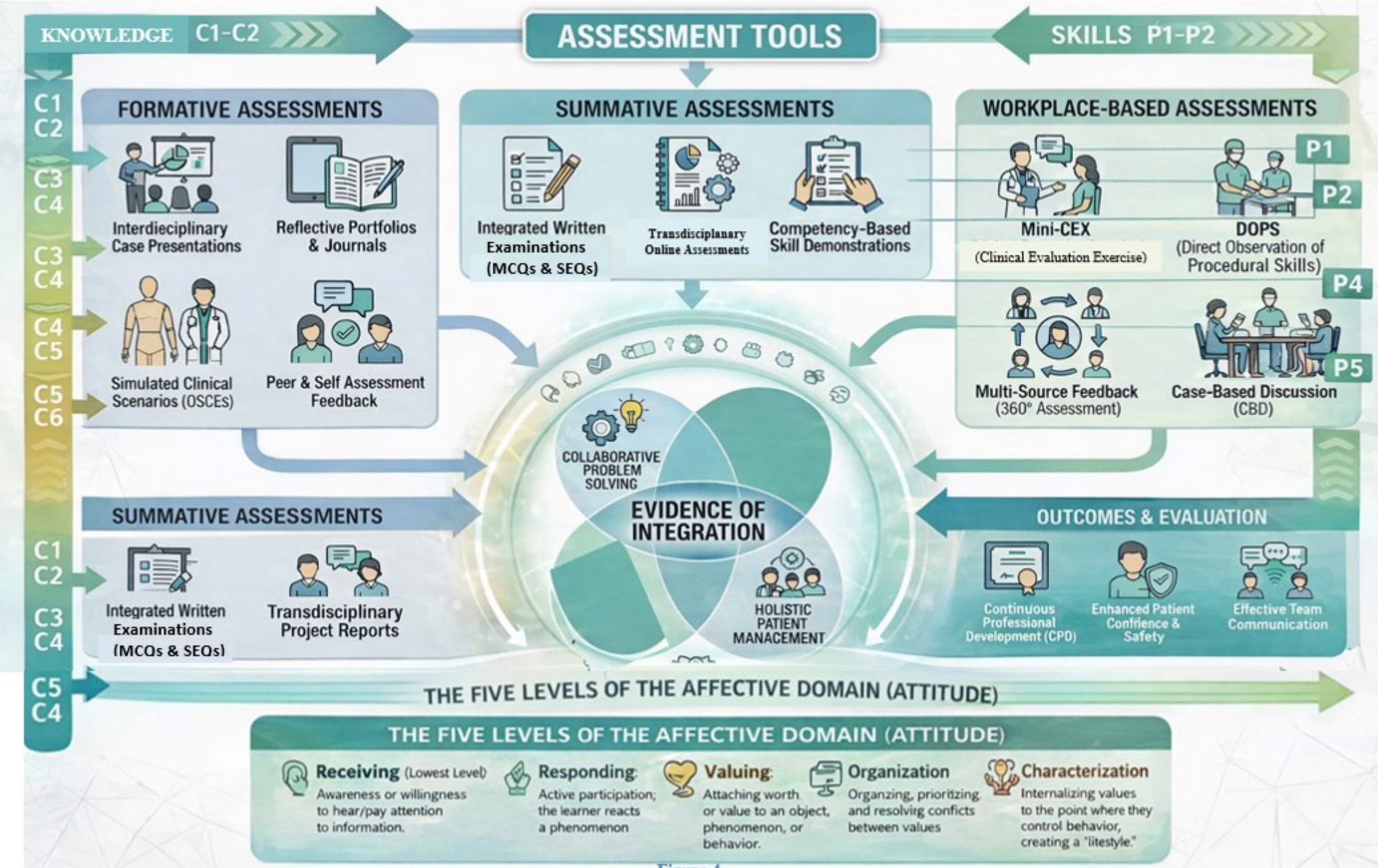


Figure 4

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

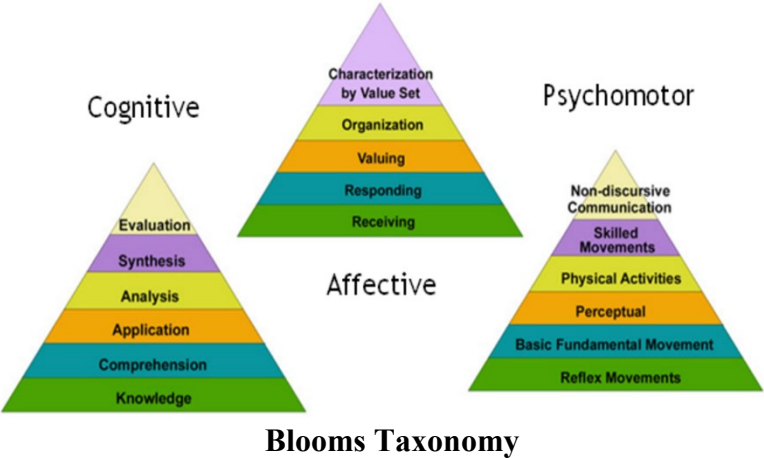
Rawalpindi Medical University has adopted a staged curricular framework that reflects a progressive movement along Harden’s integration ladder, culminating in going beyond the ladder to **RMU 12**. The curriculum is designed to ensure that knowledge acquired in the early years is not isolated or terminal,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

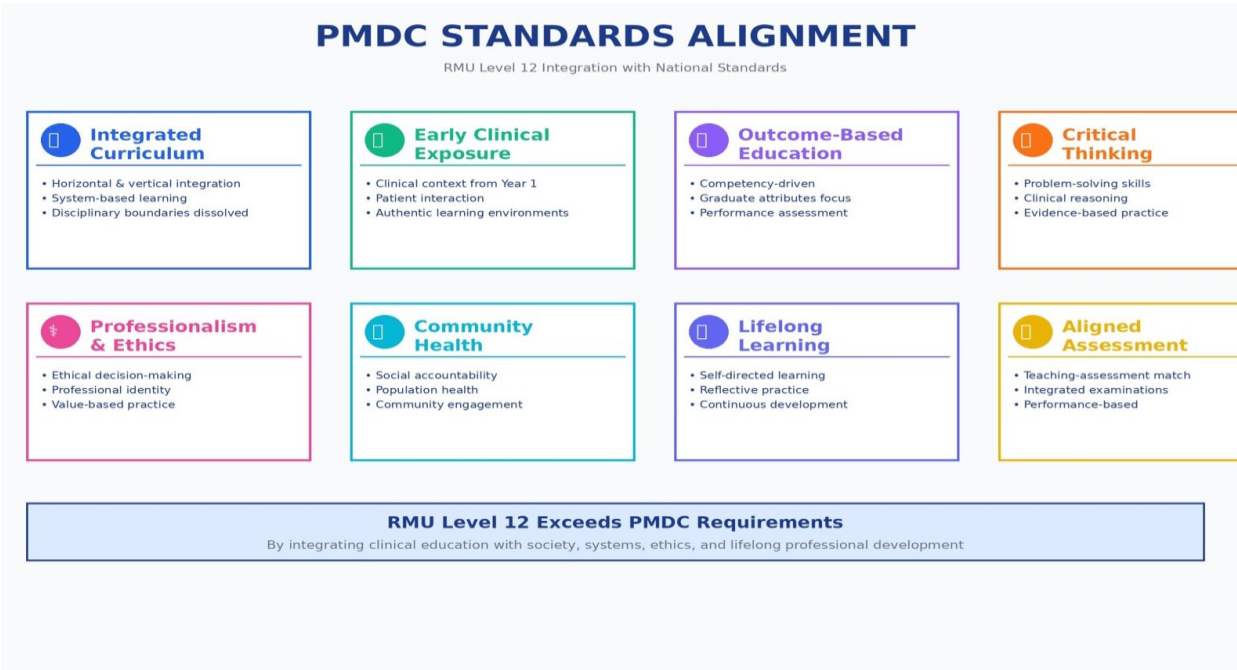
1.1 PMDC Standards for Medical Education

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

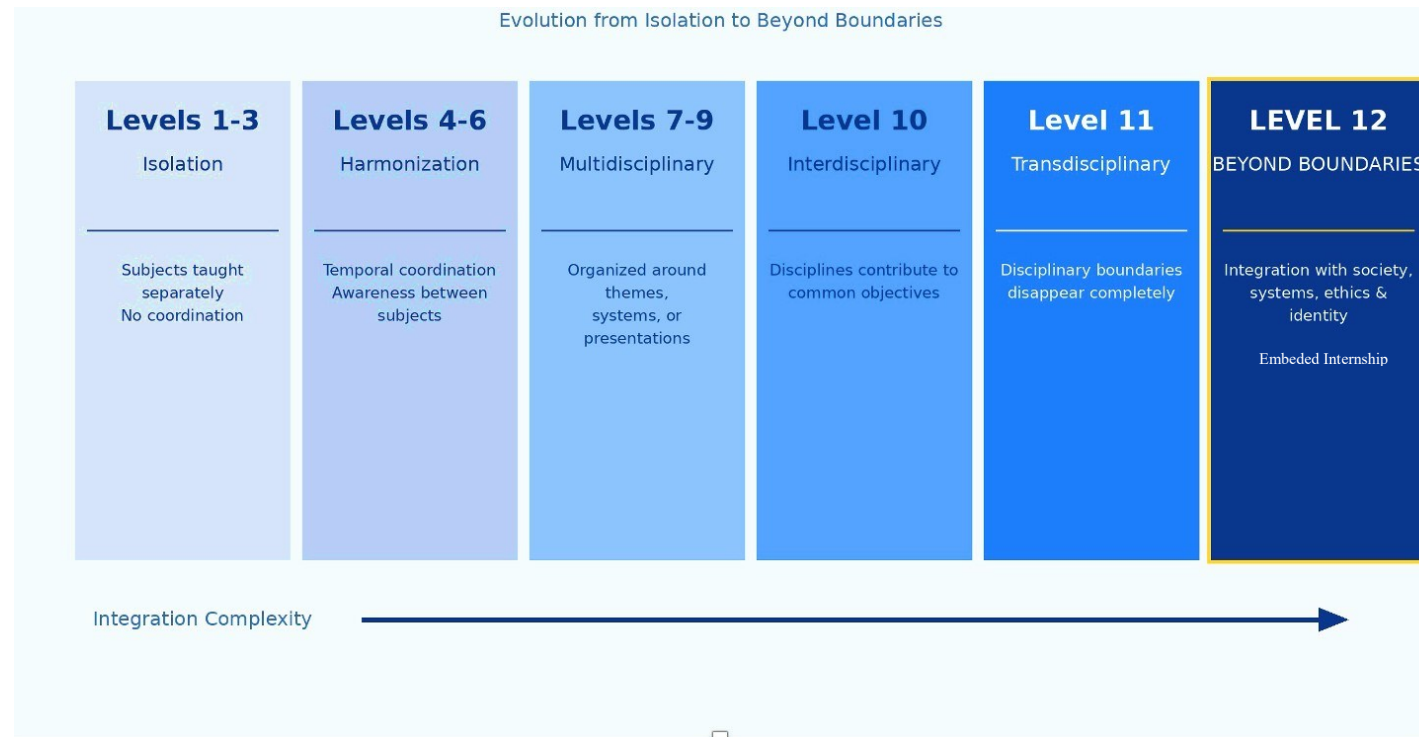
Harden's Integration Ladder provides a systematic framework for evaluating curricular integration, progressing through 11 levels:



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.

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

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

- 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:

4. Bloom's Taxonomy & Higher-Order Thinking

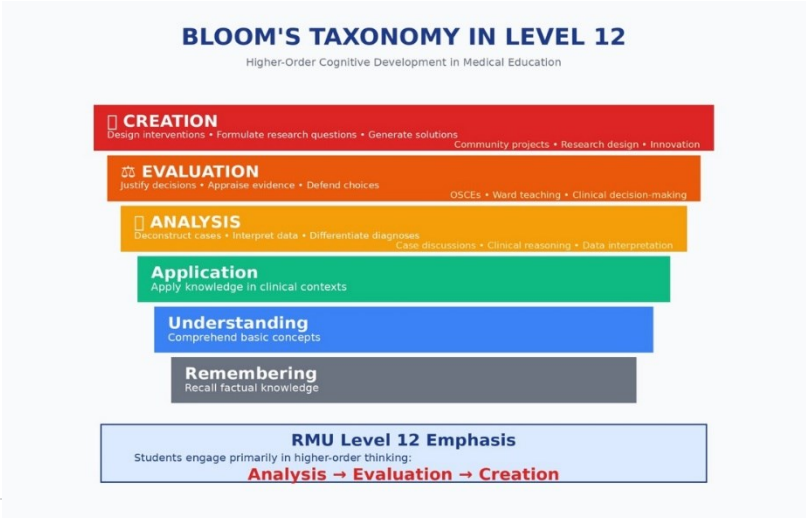
PMDC Competency	RMU Implementation	Level 12 Justification
Medical Knowledge	Integrated system-based modules combining anatomy, physiology, pathology, pharmacology, radiology, and clinical medicine	Knowledge constructed through real patient problems; subject boundaries dissolved
Clinical Skills & Patient 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

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

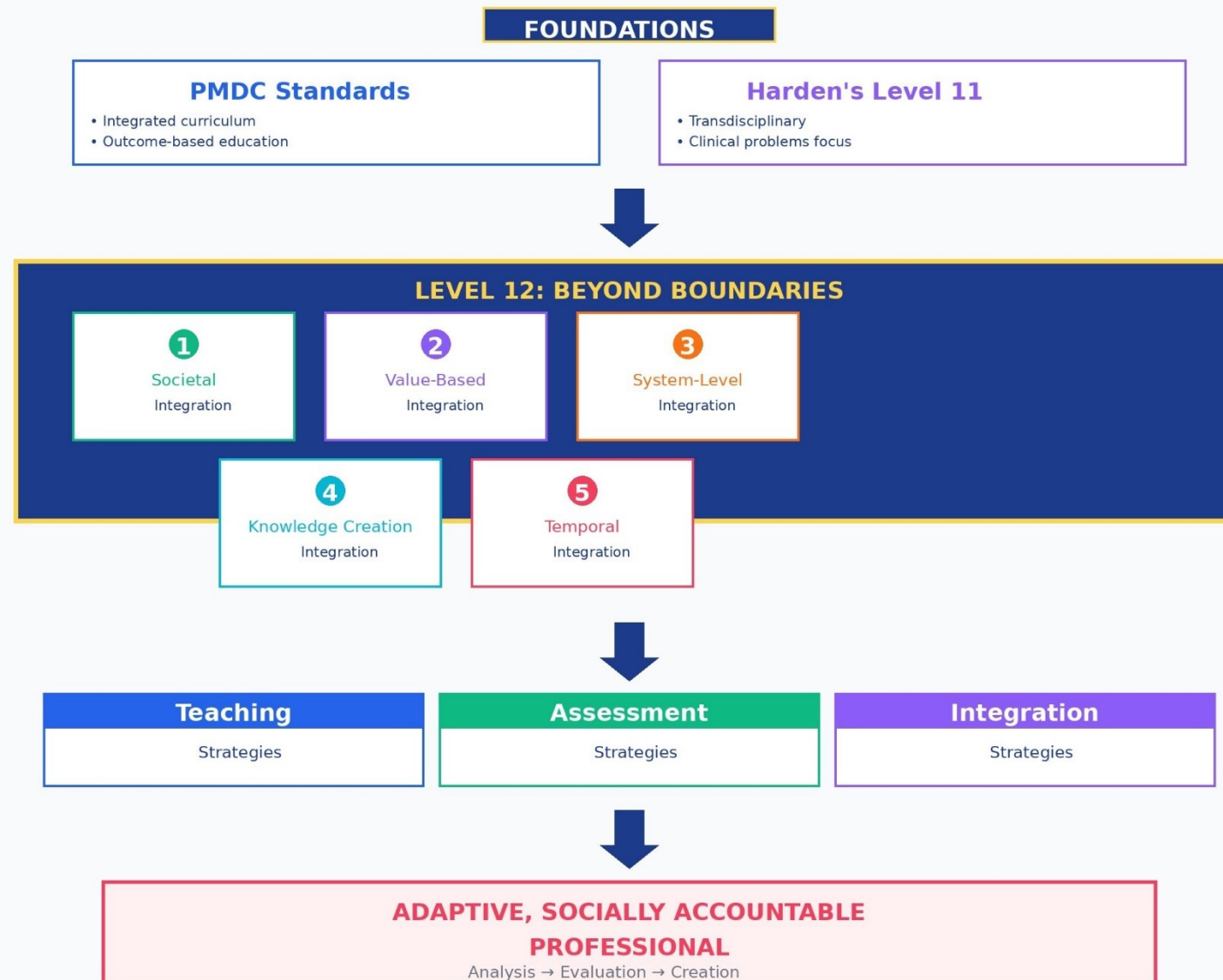
📁 Leadership

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

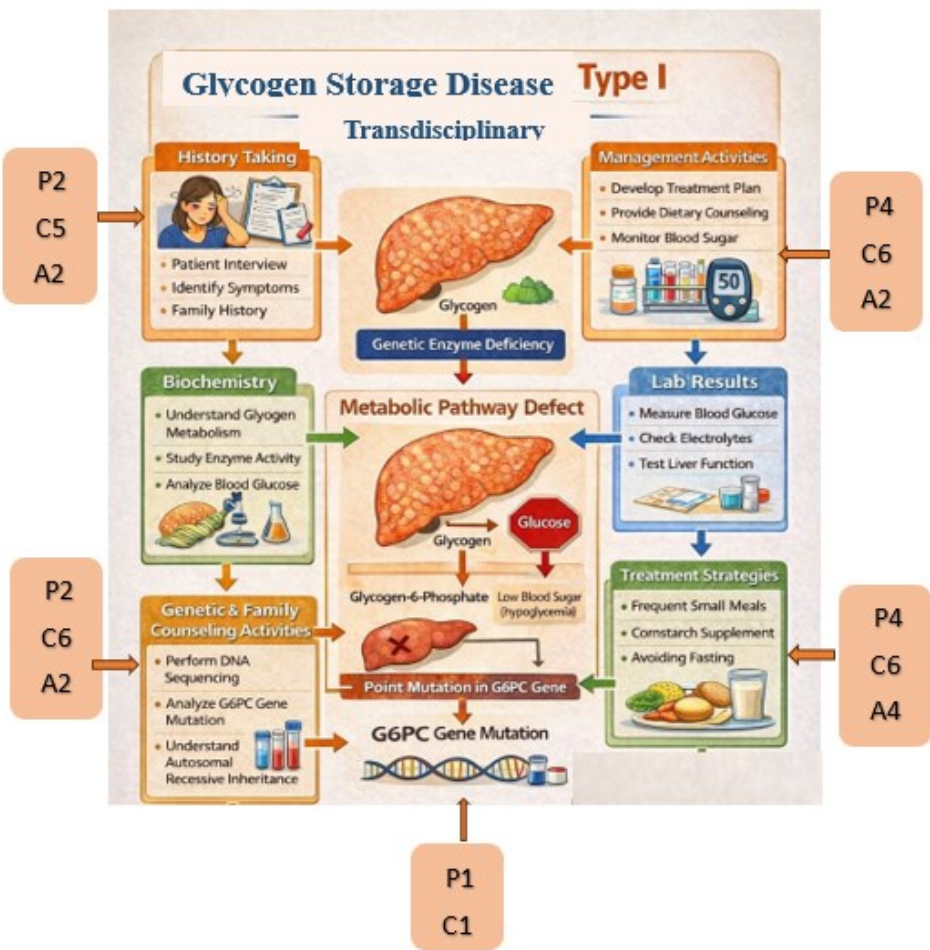
Clinical Case Scenario: A lady with progressive fatigue

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



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

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:

- 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**

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				

- 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.

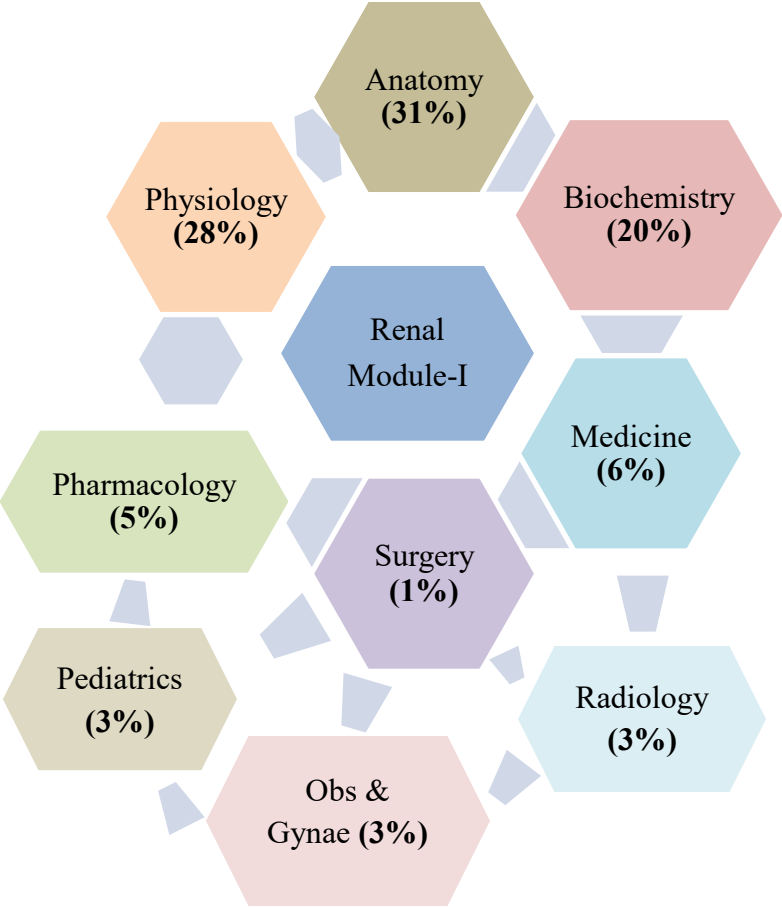
RMU – 12 Integrated Modular MBBS Curriculum 2026

Isolation to Beyond Boundaries

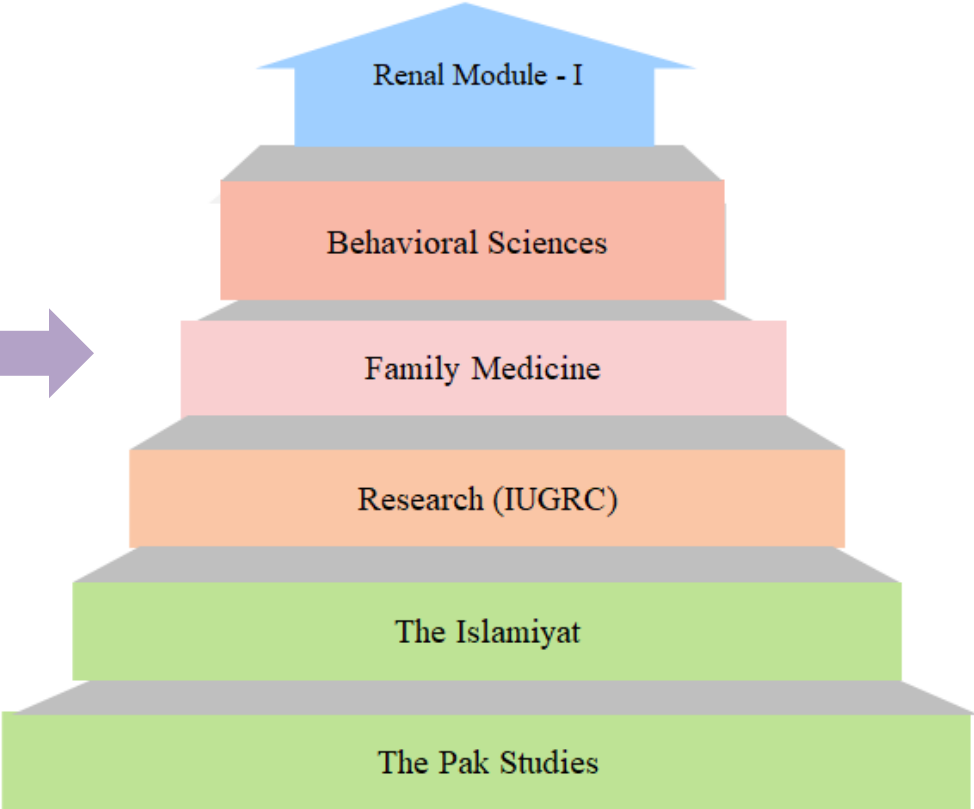
Study Guide

Renal Module - I

Multi Disciplinary Integration



Disciplines in Renal Module - I



Spiral / General Education Cluster Courses (5%)

Discipline Wise Details of Modular Content

Integration Themes					
Block	Module	Embryology	Histology	Gross Anatomy	
IV	Anatomy	Embryology - Kidney - Ureter - Urinary Bladder - Urethra	Histology - Kidney - Ureter - Urinary Bladder	Posterior Abdominal Wall & Organs of Urinary System	
	Biochemistry	- Amino Acid Pool Protein Turn Over Nitrogen Balance & transport of Amino Acid, - Urea Cycle & Disorder - Amino Acid Metabolism - Ammonia Toxicity - Acid Base in Balance - Serum Electrolyte			
	Physiology	- Body Fluid Compartments, Volume & osmolarity of ECF NICF - Physiology of Renal System, GFR - Regulation of GFR & RBF - Tubular Reabsorbtion & Scretion - Micturition Reflex & Abnomalities - Acid base balance			
	Spiral Courses				
	Islamiyat	- The literal and civic meaning of Prophethood and the need for Prophethood - The meaning of the Akharat, its necessity, and wisdom - Aqida Akhirat, its meaning, necessity, and wisdom			
	Pak Studies	- The Objectives and Goals of the Creation of Pakistan - Nazria e Pakistan or Quid e Azam - The foundation of the Muslim community			
	Fehm e Quran	- Laam for emphasis (التأكيد لام) Superlative Degree like أكبر Revision of all Quranic Sentences - Emphatic Particle إن Preposition “For” (اللام) Preposition (في)			
	Research Club Activity (1-4)	- Synopsis Writing - Questionnaire Development - Data Analysis			

		• Manuscript Writing
	• Family Medicine	• Renal Failure
	• Behavioral Sciences	• Perception • Thinking and Motivation
	Vertical Integration	
	• Radiology	• Radiological Evaluation of Oliguria and Renal Failure • Role of Ultrasound X Ray & CT in Renal Systematic Causes
	• Medicine	• Acute renal failure • Potassium imbalance and its management
	• Surgery	• Hydronephrosis / Pyonephrosis
	• Obstetrics & Gynecology	• Physiological Changes in the Renal System in Pregnancy & UTI
	• Pharmacology	• Introduction to diuretics
	• Peads	• UTI
	• Joint Session	• Nephrotic Syndrome (Peads, Medicine, Anatomy, Physiology & Biochemistry)

Renal Module-I Team

Module Name	:	Renal Module-I
Duration of module	:	05 Weeks
Coordinator	:	Dr. Sheena Tariq
Co-coordinator	:	Dr. Jawad Hassan
Reviewed by	:	Module Committee

Module Committee			Module Task Force Team		
1.	Vice Chancellor RMU	Prof. Dr. Muhammad Umar	1.	Coordinator	Dr. Sheena Tariq (Senior 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. Tariq Furqan (Senior Demonstrator of Anatomy)
4.	Chairperson Physiology	Prof. Dr. Samia Sarwar	4.	Co-Coordinator	Dr. Jawad Hassan (Senior Demonstrator of Physiology)
5.	Chairperson Anatomy	Prof. Dr. Ayesha Yousaf	5.	Co-coordinator	Dr. Sana Latif (Demonstrator of Biochemistry)
6.	Chairperson Biochemistry	Dr. Aneela Jamil			
7.	Focal Person Anatomy 2 nd Year MBBS	Dr. Maria Tasleem			
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 Ayesha	2.	Implementation Incharge 1st & 2 nd Year MBBS	Dr. Arsalan Manzoor Mughal
11.	Focal Person Behavioral Sciences	Dr. Zona Tahir			Dr. Farzana Fatima
12.	Focal Person Community Medicine	Dr. Afifa Kulsoom	3.	Assistant Director DME	Dr. Farzana Fatima
13.	Focal Person Quran Translation Lectures	Dr. Fahd Anwar	4.	Editor	Muhammad Arslan Aslam
14.	Focal Person Family Medicine	Dr. Sadia Khan			

Module II – Renal Module-I

Rationale: The urinary system is an important system of the body, and it is also concerned with homeostasis, and it is essential for survival of individuals. Kidney is the principal organ in the urinary system. It is an essential viscous concerned with maintenance of homeostasis. It performs its function through formation of urine in which hazardous waste products of metabolism, drugs, toxins and excess amounts of water and electrolytes are excreted. Kidneys also help in controlling body fluid volume, arterial blood pressure and acid base balance. Where as prostate gland is also is included in this module as it is concerned with production of semen.

Module Outcomes

By the end of the module, students will be able to:

Knowledge

- This module is expected to build students basic knowledge about normal structure, organization, functions and development of urinary system.
 - **Family Medicine**
 - **Biomedical Ethics**
 - **Artificial Intelligence**
 - **Research**

Skills

- Demonstrate effective skill for performing and interpreting various laboratory tests like urine routine examination.
- Demostrate awareness of ethical, legal and social implication of issues related to bioethics.

Attitude

- Demonstrate a **professional attitude, team building spirit and good communication** specially in small group discussions.

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

Terms & Abbreviations

Contents

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

Tables & Figures

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

Table 1. Domains of Learning According to Blooms Taxonomy

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

Teaching and Learning Methodologies / Strategies

Clinico - Concept Connect Session (C³6)

Introduction:

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Rather than teaching facts in isolation, the session emphasizes:

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- 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:

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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.

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Implementation Strategy

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

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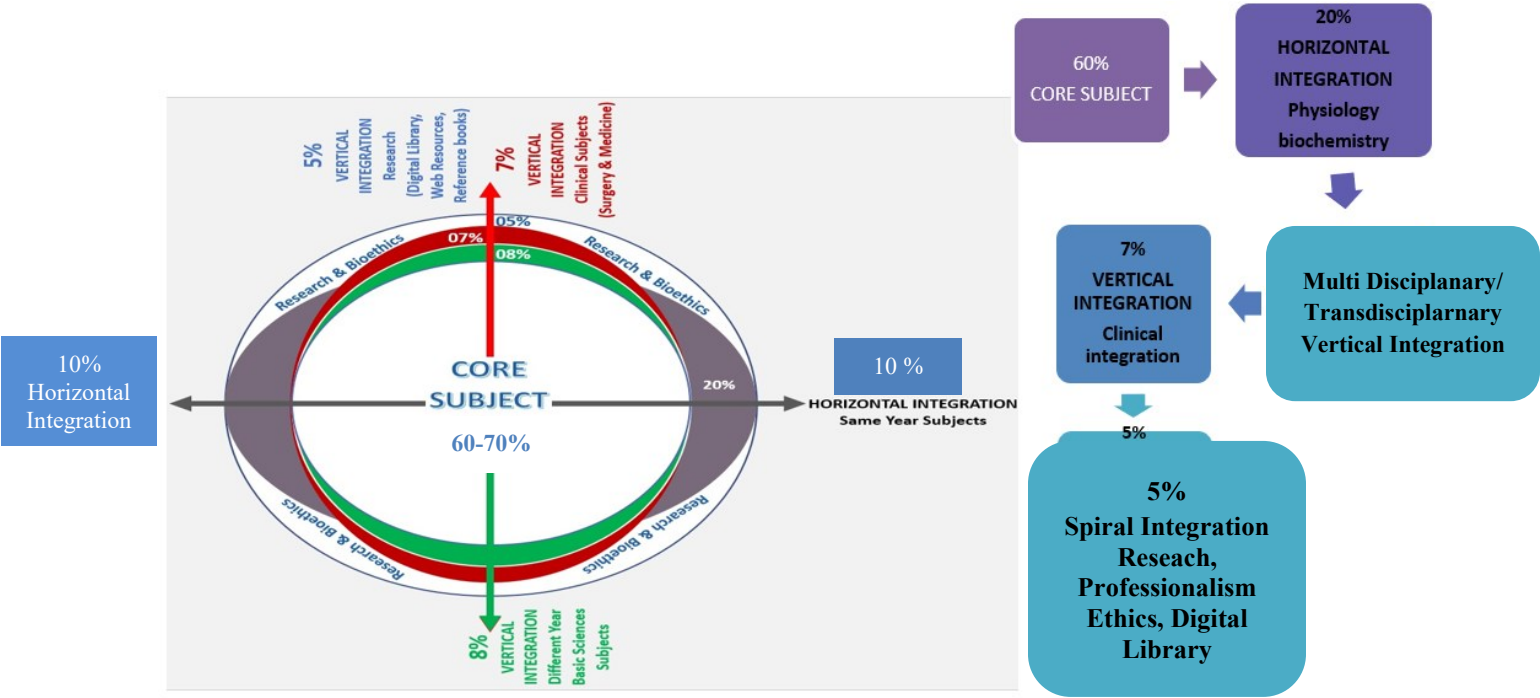
Educational Value

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**

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

- 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)

Renal – I Module – Second Year MBBS

Duration of Module (Three Weeks)

Sr No.	Themes	Duration
1.	Edema & Fluid Retention	1 st Week
2.	Polyuria & Altered Urine Concentration	2 nd Week
3.	Oliguria, Uremia & Acid–Base Disturbances	3 rd Week

Theme 1: Edema & Fluid Retention (1st Week)

Theme	Rationale	Learning objectives
Edema & Fluid Retention	This week establishes the physiological basis of edema through teaching on body fluid compartments, osmolarity, nephron structure, and GFR formation. Anatomy of the kidney, pelvis, and urinary tract, together with nitrogen metabolism and research sessions, help students clinically explain why renal patients present with generalized body swelling. Students integrate biochemical protein handling, sodium–water balance, and filtration failure, building conceptual links to nephrotic syndrome, AKI onset, and hypoalbuminemia states	After completing this theme, students should be able to: • Describe body fluid compartments and osmolar forces and explain how disturbances in hydrostatic and oncotic pressures lead to edema formation. • Explain nephron structure and glomerular filtration barrier function, and relate alterations in GFR to fluid retention and edema. • Correlate renal sodium and water handling with hormonal and physiological regulation of extracellular fluid volume. • Explain renal protein handling and nitrogen metabolism, emphasizing the role of albumin in maintaining plasma oncotic pressure. • Describe the anatomical basis of renal and urinary tract function and relate structural damage to functional impairment in renal disease. • Integrate biochemical, physiological, and anatomical mechanisms to explain generalized edema in renal conditions. • Apply integrated knowledge to clinical conditions, including nephrotic syndrome, acute kidney injury, and hypoalbuminemia.
Case 1: Clinical Scenario: Generalized Edema Due to Renal Dysfunction A 28-year-old male presents with a 2-week history of progressive body swelling, first noticed as periorbital puffiness in the morning, later involving the lower limbs and abdomen. He reports reduced urine output, recent weight gain, and frothy urine. There is no history of cardiac or liver disease. He had a recent upper respiratory infection one month earlier. On examination, he has periorbital edema, bilateral pitting pedal edema, and mild ascites. His blood pressure is elevated. Systemic examination is otherwise unremarkable. Laboratory Investigations Urinalysis: Marked proteinuria (+++/++++) with protein casts 24-hour urinary protein: > 3.5 g/day Serum albumin: Decreased Total serum protein: Reduced Blood urea & serum creatinine: Elevated Estimated GFR: Reduced		

Serum electrolytes: Mild hyponatremia

Lipid profile: Hypercholesterolemia, raised LDL and triglycerides

CBC: Within normal limits

Renal ultrasound: Normal-sized kidneys with preserved corticomedullary differentiation

Educational Relevance to the Theme

This clinical scenario is designed to help second-year MBBS students integrate concepts from physiology, anatomy, and biochemistry covered in the edema theme:

Physiology:

Reinforces understanding of body fluid compartments, osmolar forces, and Starling forces in edema formation.

Demonstrates the physiological significance of GFR and renal sodium–water handling.

Anatomy:

Applies knowledge of nephron structure, glomerular capillaries, and renal anatomy to explain how structural damage leads to functional impairment.

Links renal pelvis and urinary tract anatomy with urine formation and excretion.

Biochemistry:

Highlights the role of plasma proteins, especially albumin, in maintaining oncotic pressure.

Integrates protein metabolism and nitrogen handling in renal disease states.

Clinical Integration:

Introduces students to common renal conditions such as nephrotic syndrome and early acute kidney injury, without requiring advanced clinical knowledge.

Develops the ability to explain clinical signs using basic science principles, a core competency at this stage of training.

Entrustable Professional Activities (EPAs)

EPA-1: Obtain focused history and perform examination in a patient with generalized edema

- Elicit onset, progression of edema (periorbital → dependent), urinary changes (frothy urine, oliguria), infections, and comorbidities.
- Perform examination for periorbital edema, pitting edema, blood pressure, ascites, and volume status.
- Entrustment Level: Level 1–2 (Observation → Performs with supervision)

EPA-2: Correlate renal anatomy, physiology, and biochemistry with edema formation

- Explain role of Starling forces, hypoalbuminemia, reduced GFR, and sodium–water retention.
- Integrate damage to the glomerular filtration barrier with protein loss and systemic edema.
- Entrustment Level: Level 2

EPA-3: Interpret basic investigations in renal edema

- Interpret proteinuria, serum albumin levels, lipid abnormalities, and eGFR.
- Relate laboratory findings to nephrotic syndrome and renal dysfunction.
- Entrustment Level: Level 2

EPAs Detail Annexure-II

Justification:

This case represents full integration into authentic clinical practice, where students manage a real-world renal presentation (generalized edema with proteinuria) by applying Anatomy (glomerular filtration barrier), Physiology (Starling forces, GFR reduction, sodium–water retention), and Biochemistry (hypoalbuminemia, lipid abnormalities) in a unified manner. The scenario requires learners to interpret investigations, explain clinical signs, and develop early management reasoning, reflecting how renal edema is approached in professional healthcare settings. Subject boundaries are no longer visible, fulfilling the criteria of Harden Level 11, where learning is embedded in holistic patient care and clinical performance.

Theme 1 Clinico-concept connect (C³6)



Harden Level 11 Transdisciplinary

Specific Learning Objectives

Subject	Code	Topic	Learning Objectives At the End of The Lecture the Student Should Be Able To	Calgary Gauge	Learning Domain	Teaching Strategy	Assessment Tool
Anatomy Embryology	M2-Renal-A-001	Development of Kidney & ureter	Enumerate the derivatives of intermediate mesoderm, urogenital and gonadal ridges.	Must know	C1	LGIS	OSPE MCQ SAQ VIVA
			Analyze the embryological derivatives of intermediate mesoderm and correlate their segmental origin with adult urogenital structures.	Nice to know	C4		
			Describe the stages of development of human kidneys	Must know	C2		
			Describe the molecular regulation of kidney development.	Nice to know	C2		
			Correlate positional changes of the kidney with its blood supply	Must know	C1		
			Describe different stages of development of ureter from ureteric bud and metanephrogenicblastema.	Must know	C1		
			Understand the bio-physiological aspects of kidney & ureter development	Must know	C2		
			Enumerate Congenital anomalies of kidney and ureter.	Must know	C3		
			Correlate the clinical conditions (polycystic kidney, horseshoe shaped kidney)	Should know	C3		
			Understand the preventive and curative health care measures	Nice to know	C3		
			Practice the principles of Bioethics	Nice to know	C3		
			Apply strategic use of AI in health care	Nice to know	C3		
			Read relevant research article	Nice to know	C3		
Anatomy Embryology	M2-Renal-A-002	Development of urinary bladder & urethra	Describe the development of urinary bladder	Must know	C2	LGIS	OSPE MCQ SAQ VIVA
			Evaluate how embryological development of detrusor muscle and trigone influences postnatal bladder function.	Nice to know	C5		
			Discuss the parts of urethra in males and females	Must know	C2		
			Describe development of male urethra	Must know	C2		
			Describe development of female urethra	Must know	C2		

			Discuss the anomalies related to urethra & bladder development	Should know	C3		
Anatomy Histology	M2-Renal-A-003	Histology of kidney I (Cortex & Medulla)	Discuss the structural components of the nephron.	Must know	C2	LGIS	OSPE MCQ SAQ VIVA
			Discuss the histology of filtration barrier.	Must know	C2		
			Understand the bio-physiological aspects of filtration	Must know	C2		
			Distinguish the key microscopic components of the renal cortex and medulla.	Must know	C2		
			Differentiate the histological appearance of proximal tubule, loop of Henley, distal convoluted tubule and collecting duct.	Must know	C2		
			Correlate the clinical conditions	Should know	C3		
			Distinguish and analyze the microscopic organization of renal cortex and medulla.	Should know	C4		
			Practice the principles of Bioethics	Nice to know	C3		
			Apply strategic use of AI in health care	Nice to know	C3		
			Read relevant research article	Nice to know	C3		
Anatomy Histology	M2-Renal-A-004	Histology of kidney II (Collecting System)	Enumerate the component cells of the juxta glomerular apparatus.	Should know	C1	LGIS	OSPE MCQ SAQ VIVA
			Discuss the component cells of the juxtaglomerular apparatus	Must know	C1		
			Discuss the effect of diabetes & hypertension on glomerular filtration rate	Should know	C2		
			Evaluate the role of juxtaglomerular apparatus in regulation of systemic blood pressure.	Should know	C5		
			Read relevant research article	Nice to Know	C3		
Gross Anatomy	M2-Renal-A-007	Posterior abdominal wall I (Fascia & Muscles)	Describe the fascia of posterior abdominal wall	Must know	C2	SGD	OSPE MCQ SAQ VIVA
			Tabulate the muscles of posterior abdominal wall with reference to, origin, insertion, nerve supply and action.	Must know	C2		
			Describe the relations of Psoas major muscle.	Should Know	C2		
			Correlate the clinical conditions (Psoas Abscess)	Should know	C3		
			Analyze the arrangement of thoracolumbar fascia and explain its role in compartmentalization and force transmission	Should Know	C4		

			• Map Root of mesentery on SP/Model	Should Know	C3		
			• Practice the principles of Bioethics	Should Know	C3		
			• Apply Strategic use of AI in health care	Nice to know	C3		
Gross Anatomy	M2-Renal-A-008	Posterior abdominal wall II (Nerves)	• Trace the nerves present on posterior abdominal wall	Must know	C2	SGD	OSPE MCQ SAQ VIVA
			• DI Discuss the formation of nerves	Must know	C2		
			• Discuss the formation of lumbosacral plexus	Must know	C2		
			• Correlate the clinical conditions (Lumbar symphatectomy)	Should know	C3		
			• Understand the preventive and curative health care measures	Nice to Know	C3		
			• Practice the principles of Bioethics	Nice to Know	C3		
			• Apply Strategic use of AI in health care	Nice to Know	C3		
			• Read relevant research articles	Nice to Know	C3		
Gross Anatomy	M2-Renal-A-009	Posterior abdominal wall III (vessels) & Lumbar Vertebrae	• Enlist branches of Abdominal Aorta.	Must know	C1	SGD	OSPE MCQ SAQ VIVA
			• Describe the tributaries of inferior vena cava.	Must know	C2		
			• Describe lymph nodes of posterior abdominal wall with emphasis on lumbar and intestinal trunk.	Must know	C2		
			• Differentiate between typical and atypical lumbar vertebrae.	Must know	C2		
			• Identify different parts of lumbar vertebrae.	Must know	C2		
			• Discuss the attachments of lumbar vertebrae.	Nice to Know	C2		
			• Correlate the clinical conditions (abdominal aortic aneurysm)	Should know	C3		
			• Understand the preventive and curative health care measures	Must know	C3		
			• Map Abdominal aorta, Inferior Vena cava & Portal vein on simulated patient (SP)/Model	Must know	C3		
			• Practice the principles of Bioethics	Nice to Know	C3		
			• Apply Strategic use of AI in health care	Nice to Know	C3		
			• Read relevant research articles	Nice to Know	C3		

Gross Anatomy	M2-Renal-A-0010	Kidney	• Discuss the site and extent of kidneys	Must know	C2	SGD	OSPE MCQ SAQ VIVA
			• Differentiate right from left kidney	Must know	C2		
			• Understand the bio-physiological aspects of kidney	Must know	C2		
			• Discuss the renal capsule and its role in support of kidney.	Must know	C2		
			• Describe the structure of cortex and medulla	Must know	C2		
			• Describe peritoneal relationship of both kidneys.	Must know	C2		
			• Describe visceral relationship of both kidneys	Must know	C2		
			• Explain blood supply of both kidneys with emphasis on renal artery.	Must know	C2		
			• Discuss the venous drainage of both kidneys.	Must know	C2		
			• Correlate the clinical conditions (perinephric abscess, nephroptosis, renal cysts and renal colic)	Should know	C3		
			• Evaluate the clinical significance of segmental arteries in nephrectomy.	Nice to know	C5		
			• Map the kidney on the back (Morrison's Parrallelogram) on SP/Model	Nice to know	C3		
			• Practice the principles of Bioethics	Nice to know	C3		
			• Apply Strategic use of AI in health care	Nice to know	C3		
			• Read relevant research articles	Nice to know	C3		
Gross Anatomy	M2-Renal-A-0011	Ureter	• Discuss extent and course of ureter in abdomen and pelvis in males and females	Must know	C2	SGD	OSPE MCQ SAQ VIVA
			• Explain peritoneal reflections of ureter in both sexes.	Must know	C2		
			• Describe relations of ureter.	Should know	C2		
			• Describe the arterial, venous and lymphatic drainage of ureter.	Nice to know	C2		
			• Correlate the clinical conditions (ureteric colic)	Nice to know	C3		
			• Understand the preventive and curative health care measures	Must know	C3		
			• Map Ureter from the back on SP/Model	Nice to Know	C3		

			Practice the principles of Bioethics	Nice to Know	C3			
			Apply Strategic use of AI in health care	Nice to Know	C3			
			Read relevant research articles	Nice to Know	C3			
Anatomy (SKL)	M2-Renal-A-0024	Kidney	Identify the histological slide of kidney.	Must know	C3		Skill Lab	OSPE
			Construct a labeled histological diagram correlating cortex and medulla organization.	Should know	C6			
			Enlist two points of identification.	Must know	C2			
			Focus the slide	Must know	C3			
Physiology (LGIS)	M2-Renal-P-001	Body fluid compartments, Volume & osmolarity of ECF & ICF.	- Fluid Intake/Output balance - Body fluid compartments - Constituents of ECF & ICF - Concept of Osmolarity, Osmolality, Osmosis and Osmotic pressure	Should know	B	C1	LGIS	SAQ MCQ VIVA
				Must know	A	C2		
				Must know	A	C2		
				Must know	A	C1		
	M2-Renal-P-002	Physiology of Renal system, Glomerular filtration rate	- Functions of kidney. - Physiologic Anatomy of Kidney - Concept of Glomerular Filtration - Introduction to Glomerular filtration rate.	Should know	B	C2	LGIS SGD	SAQ MCQ VIVA
				Should know	B	C2		
				Must know	A	C2		
				Must know	A	C1		
	M2-Renal-P-003	Abnormalities of fluid volume & regulation, Edema	- Volume and osmolarity in abnormal states - Abnormalities of fluid volume & Regulation - Hyponatremia and Hypernatremia - Edema and its Mechanism. - Fluid in potential spaces of the body	Must know	A	C1	LGIS SGD	SAQ MCQ VIVA
				Must know	A	C1		
				Should know	B	C2		
				Must know	A	C1		
	M2-Renal-P-004	A. Regulation of GFR & RBF-I (Determinants of GFR & RBF) Regulation of GFR & RBF-II, Physiological control of GFR and	- Glomerular filtration rate & Renal Blood flow - Determinants of GFR	Must know	A	C1	LGIS SGD	SAQ MCQ VIVA
				Must know	A	C1		
	M2-Renal-P-005	RBF, Auto regulation of GFR and RBF/Macula	- Determinants of RBF - Physiological control of GFR and RBF. - Auto regulation of GFR and RBF. - Tubulo-glomerular Feedback Mechanism	Must know	A	C1	LGIS SGD	SAQ MCQ VIVA
				Must know	A	C1		
				Must know	A	C2		
				Must know	A	C1		

		densa feedback mechanism	• Macula-densa Feedback Mechanism		Must know	A	C2		
Physiology (SGD)	M2-Renal-P-009	GFR & RBF	• Explain factors effecting GFR		Must Know	A	C2	SGD	MCQ SEQ VIVA OSPE
			• Discuss determinants of RBF		Must Know	A	C2		
			• Explain autoregulatory mechanism of GFR & RBF		Must Know	A	C2		
Physiology (SDL)	M2-Renal-P-0015	Abnormalities of fluid volume ®ulation, Edema	• Volume and osmolarity in abnormal states • Abnormalities of fluid volume & Regulation • Hyponatremia and Hypernatremia • Edema and its Mechanism. • Fluid in potential spaces of the body		• Physiology by Linda S. Costanzo 6 th Edition.Renal Physiology (Chapter 06. Page 251) • Human Physiology by Dee Unglaub Silver thorn. 8 TH Edition. The Kidneys (Chapter 20 Page 672-677) • Physiological Basis of Medical Practice by Best & Taylor’s.13 th Edition. Section 04. Regulation ofVolume and Osmolality of the Body Fluids. (Chapter 32, Page 530) • Textbook of Medical Physiology by Guyton & Hall.14 th Edition. The Body Fluids And Kidneys.Section 05. (Chapter 25, Page 314-320)				
	M2-Renal-P-0016	B. Regulation of GFR & RBF-I (Determinants of GFR & RBF) C. Regulation of GFR & RBF-II, Physiological control of GFR and	• Glomerular filtration rate & Renal Blood flow • Determinants of GFR		❖ A. ❖ Ganong’s Review of Medical Physiology.25 TH Edition. Regulation of ECF composition andvolume, Section 07 (Chapter 37, Page 674) ❖ Physiology by Linda S. Costanzo 6 th Edition.Renal Physiology (Chapter 06. Page 257,261)				
	M2-Renal-P-0017	RBF, Auto regulation of GFR and RBF/Macula densa feedback mechanism	• Determinants of RBF • Physiological control of GFR and RBF. • Auto regulation of GFR and RBF. • Tubulo-glomerular Feedback Mechanism • Macula-densa Feedback Mechanism		❖ Physiological Basis of Medical Practice by Best & Taylor’s.13th Edition. Section 04. Physiology of Body Fluids. (Chapter 28,Page 473) ❖ Textbook of Medical Physiology by Guyton & Hall.14th Edition. The Body Fluids And Kidneys. Section 05. (Chapter 27, Page 331,333,337) ❖ B. ❖ Textbook of Medical Physiology by Guyton & Hall.14th Edition. The Body Fluids And Kidneys. Section 05. (Chapter 27, Page 337,342) ❖ Physiological Basis of Medical Practice by Best & Taylor’s.13th Edition. Section 04. Filtration and Blood Flow. (Chapter 28,Page 476,483)				

	M2-Renal-P-0013	Body fluid compartments, Volume & osmolarity of ECF & ICF.	• Fluid Intake/Output balance • Body fluid compartments • Constituents of ECF & ICF • Concept of Osmolarity, Osmolality, Osmosis and Osmotic pressure	❖ Ganong's Review of Medical Physiology. 25TH Edition. Regulation of ECF composition and volume Section 07 (Chapter 38, Page 695) ❖ Physiology by Linda S. Costanzo 6th Edition. Renal Physiology (Chapter 06. Page 245) ❖ Physiological Basis of Medical Practice by Best & Taylor's. 13th Edition. Section 04. Physiology of Body Fluids. (Chapter 26, Page 449-459) ❖ Textbook of Medical Physiology by Guyton & Hall. 14th Edition. The Body Fluids And Kidneys. Section 05. (Chapter 25, Page 305-313)			
	M2-Renal-P-0014	Physiology of Renal system, Glomerular filtration rate	• Functions of kidney. • Physiologic Anatomy of Kidney • Concept of Glomerular Filtration • Introduction to Glomerular filtration rate.	• Ganong's Review of Medical Physiology. 25TH Edition. Renal Physiology (Chapter 37, Page 671) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. The Kidneys (Chapter 19 Page 624-636) • Physiological Basis of Medical Practice by Best & Taylor's. 13th Edition. Section 04. Physiology of Body Fluids. (Chapter 27, Page 460-469) ❖ Textbook of Medical Physiology by Guyton & Hall. 14th Edition. The Body Fluids And Kidneys. Section 05. (Chapter 26, Page 321-324) (Chapter 27, Page 331-332)			
Biochemistry (LGIS)	M2-Renal-B-001	Introduction to protein metabolism	• Understand protein turn-over, amino acid pool and entry of amino acid into cell. • Read a relevant research article • Use HEC digital library	Should Know	C2 C2 C3	LGIS	MCQs, SAQs SEQs Viva
	M2- Renal -B-002	Metabolism of glycine, phenylalanine and tyrosine	• Explain Glycine, phenylalanine and tyrosine metabolism • Correlate clinically • Use HEC digital library	Must Know	C2 C4 C3	LGIS	MCQs, SAQs SEQs Viva
			• Understand the curative and preventive healthcare measures • Read a relevant research article • Use HEC digital library	Must Know	C2		MCQs, SAQs SEQs Viva
	M2- Renal -B-003	Urea Cycle	• Describe the location, steps and regulation of Urea cycle • Relate associated clinical disorders • Read a relevant research article • Use HEC digital Library	Must Know	C2 C3 C2 C3	LGIS	MCQs, SAQs SEQs Viva

	M2-Renal-B-004	Disorders of Urea Cycle	- Describe Disorders of the urea cycle - Understand the curative and preventive healthcare measures - Apply the use of artificial intelligence in healthcare		Must Know	C2 C2 C3	LGIS	MCQs, SAQs SEQs Viva
	M2-Renal-B-005	Glutamine, Histidine, Threonine and Polyamines Metabolism	- Describe Glutamine, Histidine, Threonine & Polyamines Metabolism - Correlate clinically - Use HEC digital library		Must Know	C2 C4 C3	LGIS	MCQs, SAQs SEQs Viva
Biochemistry (SGD)	M2-Renal-B-006	Phenylalanine Metabolism	- Explain Phenylalanine Metabolism - Relate with associated clinical disorder		Should Know	C2 C4	SGD	MCQs
Biochemistry (SDL)	M2-Renal-B-007	Clinical Disorders of Ammonia Metabolism	Discuss Related inherited disorders	Must Know	Harper’s illustrated biochemistry 32nd edition (Chapter 40 page 477) https://link.springer.com/article/10.1007/BF00998474			
Biochemistry (SKL)	M2-Renal-B-008	Serum estimation of Urea & Creatinine	- Understand the clinical significance of urea and creatinine levels in health and disease. - Describe methods for estimating urea and creatinine - Perform estimation of urea and creatinine		Must Know Should Know Should Know	P	Skill Lab	OSPE
Surgery	M2-Renal-VI(S)-002	Hydronephrosis / Pyonephrosis	Define hydronephrosis and pyonephrosis, including their etiology and pathophysiology.		C2		LGIS	MCQs
			Identify clinical presentations, diagnostic modalities, and management strategies for both conditions, emphasizing the importance of early recognition and intervention to prevent renal damage.		C2			
			Understand the pathophysiology, diagnosis, and management strategies for congenital anomalies like VUR and PUJO, including both surgical and non-surgical approaches.		C2			

Spiral Courses (2nd Week)

The Pak Studies

Code	Topic	Learning Objectives At the end of the lecture the student should be able to	Learning Domain	Teaching Strategy	Assessment Tool
M1-GIT-SI(PKS)-001	The Objectives and Goals of the Creation of Pakistan	Understand the historical context, objectives, and vision behind the creation of Pakistan, including the principles of social justice, religious freedom, and political autonomy that led to its establishment	C2	LGIS	SAQ
		Discuss how the goals of Pakistan's creation, such as providing a platform for the welfare of Muslims and promoting equality, can be linked to ethical principles and responsibilities within the medical profession and society at large.	C2		

Integrated Undergraduate Research Curriculum (IUGRC)

Code	Topic	Learning Objectives	Cognitive Domain	Teaching Strategy	Assessment Tool
M2-Renal-SI(IUGRC)-001	Research Club Activity 1 Synopsis Writing	Organize research idea or general thought into a topic that can be configured into research problem	C3	LGIS	MCQs
		Formulating a research question according to FINER Criteria	C3		
		Formulate appropriate research questioning using PEO/PICO/PICOT format	C2		
		Understand the concept of literature review	C2		
		Cognizant with concept of publication ethics	C2		
		Outline steps of synopsis writing according to SJRMC Guidelines			

Transdisciplinary (Hardens Level 11) 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	Edema & Fluid Retention	Anatomy	This scenario helps students correlate renal structure with impaired function.	• Identify the parts of the nephron and explain their role in urine formation.	C2	MCQs
				• Describe the anatomy of the glomerulus and renal capillary network.	C2	MCQs
				• Correlate structural changes in renal tissue with functional impairment.	C4	MCQs
				• Relate the anatomy of the renal pelvis and urinary tract to urine drainage and excretion.	C5	MCQs
		Physiology	This scenario reinforces the physiological basis of edema and fluid imbalance.	• Explain the role of Starling forces in the development of edema.	C2	MCQs
				• Describe the distribution of body fluid compartments and their relevance in fluid accumulation.	C3	MCQs
				• Discuss the importance of glomerular filtration rate (GFR) in maintaining fluid balance.	C3	MCQs
				• Explain how altered renal sodium and water handling contributes to edema formation.	C3	MCQs
		Biochemistry	This scenario highlights the biochemical mechanisms underlying edema and renal disease.	• Explain the role of albumin and plasma proteins in maintaining oncotic pressure.	C3	MCQs
				• Describe how hypoalbuminemia contributes to edema.	C3	MCQs
				• Discuss the biochemical significance of protein loss in urine.	C3	MCQs
				• Relate protein metabolism and nitrogenous waste handling to renal dysfunction.	C4	MCQs
		Medicine	This scenario introduces students to the medical interpretation of edema and renal dysfunction using basic science principles.	• Recognize common causes of edema such as renal, cardiac, hepatic, and nutritional disorders.	C2	MCQs
				• Identify the basic clinical features of nephrotic syndrome and acute kidney injury.	C4	MCQs
				• Explain clinical findings such as facial puffiness, pedal edema, oliguria, and proteinuria.	C4	MCQs
				• Develop an approach to correlating clinical signs with underlying pathophysiology.	C6	MCQs

				• Recognize common causes of edema such as renal, cardiac, hepatic, and nutritional disorders.	C6	MCQs
		Radiology	This scenario introduces the supportive role of imaging in evaluating renal structure and fluid-related disorders.	• Identify the role of ultrasound in assessing kidney size, renal structure, and urinary tract obstruction.	C2	MCQs
				• Understand how radiological investigations help in evaluating ascites, pleural effusion, or generalized fluid overload.	C2	MCQs
				• Correlate basic renal anatomy with its appearance on imaging studies.	C3	MCQs
				• Appreciate the importance of imaging as a non-invasive tool in early assessment of renal pathology.	C4	MCQs
				• Identify the role of ultrasound in assessing kidney size, renal structure, and urinary tract obstruction.	C4	MCQs
		Family Medicine	This scenario highlights the role of family medicine in early recognition, initial evaluation, and timely referral of patients with edema.	• Recognize edema as a common presenting complaint in primary care practice.	C3	MCQs
				• Take a focused history to identify possible renal and systemic causes of swelling.	C4	MCQs

Theme 2: Polyuria & Altered Urine Concentration (2nd Week)

Theme	Rationale	Learning objectives
Polyuria & Altered Urine Concentration	Learners study countercurrent mechanisms, tubular function, ammonia handling, and electrolyte regulation, which clinically underpin excessive urine output, nocturia, and dilute/high-volume urine states. Radiology and anatomy sessions on ureters, bladder, and pelvis enhance understanding of obstructive uropathy and hydronephrosis. Clearance testing, renal transport processes, and hormonal control allow students to connect physiology to real disorders such as diabetes insipidus, renal tubular defects, prerenal/renal failure, and SIADH showing why urine concentration is altered clinically.	After completing this theme, learners should be able to: • Explain the countercurrent multiplication and exchange mechanisms and describe their role in urine concentration and dilution. • Describe tubular function along different nephron segments, including water, sodium, urea, and ammonia handling, and relate defects to high-volume urine states. • Explain renal electrolyte regulation (Na⁺, K⁺, Cl⁻) and its impact on urine volume and osmolality. • Describe the physiological basis of ammonia handling and acid–base balance, and its relevance to tubular function. • Explain hormonal regulation of urine concentration, including ADH, aldosterone, and natriuretic peptides. • Interpret clearance tests and renal transport processes to distinguish between prerenal, renal, and postrenal causes of polyuria. • Correlate anatomical and radiological features of the ureters, bladder, and renal pelvis with obstructive uropathy and hydronephrosis. • Apply integrated physiological, anatomical, and biochemical concepts to clinical disorders such as diabetes insipidus, renal tubular defects, SIADH, and renal failure
Case 2: Patient with Excessive and Frequent Urine Output A 35-year-old Pakistani male presents to the outpatient clinic with complaints of passing large amounts of urine frequently, for the past three weeks. He reports that he has to wake up multiple times at night to pass urine (nocturia) and feels persistently thirsty. Despite drinking normal amounts of water initially, his urine remains clear, dilute, and high in volume. There is no history of diabetes mellitus. He denies dysuria or flank pain. He has no known cardiac or liver disease. On examination, the patient appears mildly dehydrated with dry oral mucosa. Blood pressure is normal. Systemic examination is unremarkable. Investigations (Integrated Understanding) • Urine analysis: Pale, dilute urine with low specific gravity • Urine osmolality: Reduced • Serum electrolytes: Mild hypernatremia		

- Serum creatinine: Within normal limits
- Water deprivation test: Failure to concentrate urine
- Renal ultrasound: Normal kidneys, no obstruction

Clinical Correlation

The patient's symptoms are explained by impaired tubular response to ADH, leading to failure of water reabsorption in the collecting ducts. Dysfunction of the countercurrent mechanism prevents formation of concentrated urine, resulting in polyuria and nocturia.

This scenario demonstrates how tubular transport processes, hormonal control, and countercurrent physiology determine urine concentration. It also allows learners to differentiate between diabetes insipidus, renal tubular defects, SIADH, and obstructive causes using basic science principles.

Educational Relevance for Second-Year MBBS (Basic Sciences)

This theme enables students to:

Link physiology to patient complaints such as excessive urine output and nocturia

Understand why urine becomes dilute or concentrated clinically

Apply renal anatomy and radiology to exclude obstruction and hydronephrosis

Use clearance concepts and hormonal regulation to interpret investigations

Develop early clinical reasoning without requiring advanced clinical knowledge

This approach strengthens horizontal and vertical integration, reinforcing the clinical relevance of renal physiology taught in the basic sciences.

Entrustable Professional Activities (EPAs)

EPA-1: Obtain focused history and perform examination in polyuria

- Assess urine frequency, volume, nocturia, thirst, and fluid intake.
- Evaluate hydration status, blood pressure, and mucosal dryness.
- Entrustment Level: Level 1–2

EPA-2: Explain physiological mechanisms responsible for polyuria

- Correlate countercurrent mechanism, ADH activity, and collecting duct physiology with urine concentration.
- Explain mechanisms of diabetes insipidus and tubular defects.
- Entrustment Level: Level 2

EPA-3: Interpret investigations and differentiate causes of polyuria

- Interpret urine osmolality, specific gravity, serum sodium, and water deprivation test.
- Differentiate diabetes insipidus, osmotic diuresis, SIADH, and renal tubular disorders.
- Entrustment Level: Level 2

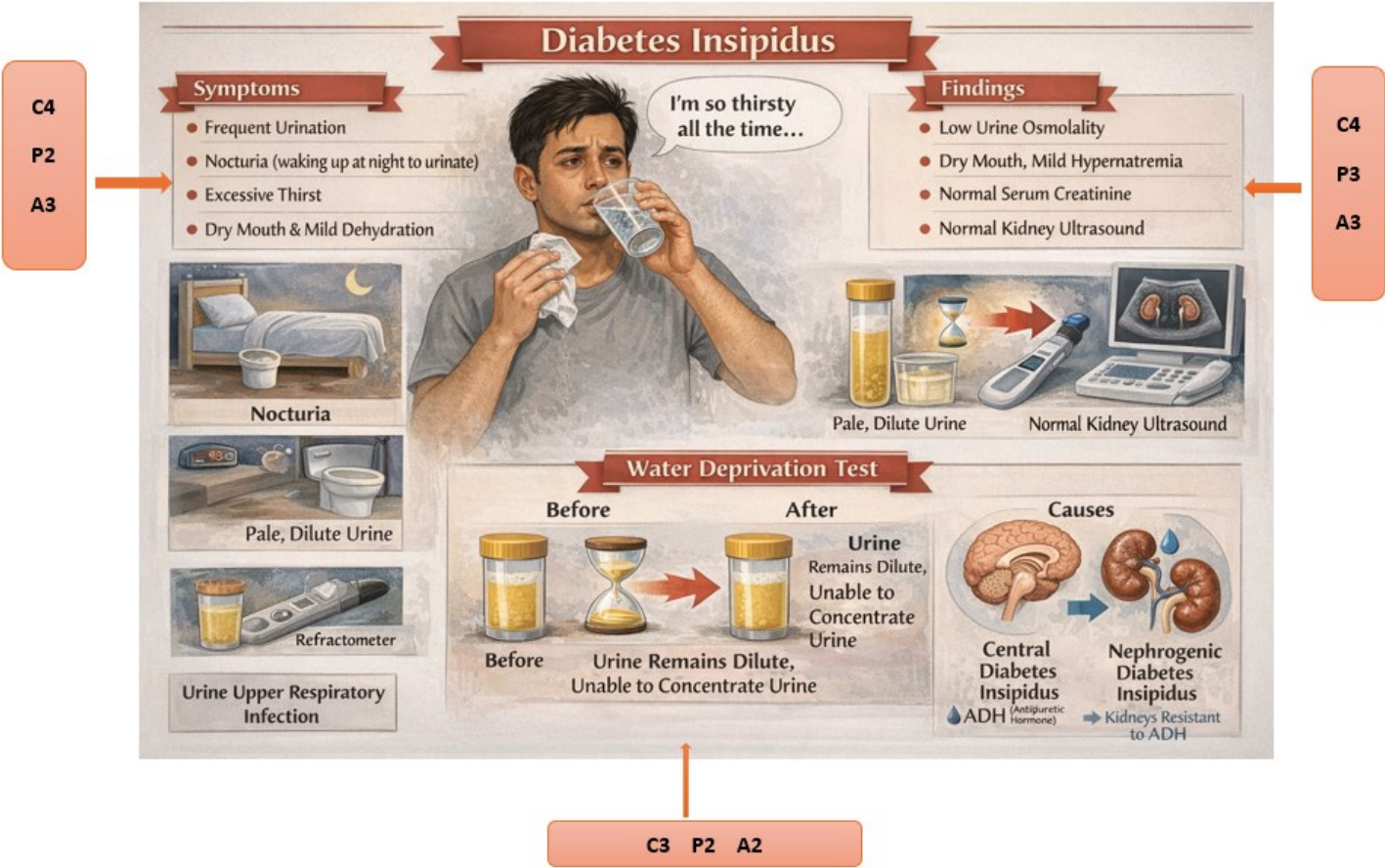
EPAs Detail Annexure-II

Justification:

This case functions as a **true patient-centered clinical task**, requiring students to integrate renal physiology (countercurrent mechanism, tubular transport, ADH

response), Anatomy and Radiology (exclusion of obstruction/hydronephrosis), and Biochemistry (electrolyte disturbances, osmolality changes) seamlessly in diagnosing polyuria. Learners must apply basic sciences directly to clinical decision-making, including interpretation of the water deprivation test and differentiation of diabetes insipidus from other disorders. Such workplace-style reasoning demonstrates **Harden Level 11 integration**, where biomedical knowledge is applied as a single professional competency rather than separate subjects.

Theme 2 Clinico-concept connect (C³6)



Harden Level 11 Transdisciplinary

Specific Learning Objectives

Subject	Code	Topic	Learning Objectives At the End of The Lecture the Student Should Be Able To	Calgary Gauge	Learning Domain	Teaching Strategy	Assessment Tool
Anatomy Histology	M2-Renal-A-005	Histology of Urinary Bladder	• Describe histological characteristics of urinary bladder.	Must know	C2	LGIS	OSPE MCQ SAQ VIVA
			• Explain the concept of umbrella cells and Uroplakins.	Must know	C2		
			• Explain the concept of internalization	Must know	C2		
			• Understand the bio-physiological effects of urinary epithelium	Must know	C2		
			• Compare the histological changes of empty and full bladder.	Must know	C2		
			• Correlate the clinical conditions	Should know	C2		
			• Analyze the structural specialization of umbrella cells and the functional role of uroplakins in maintaining urinary barrier integrity.	Nice to Know	C4		
			• Practice the principles of Bioethics	Nice to Know	C2		
			• Apply strategic use of AI in health care	Nice to Know	C2		
			• Read relevant research article	Nice to Know	C2		
Anatomy Histology	M2-Renal-A-006	Histology of ureter & urethra	• Describe the microscopic structure of ureter	Must know	C2	LGIS	OSPE MCQ SAQ VIVA
			• Discuss the histological features of urethra				
			• Distinguish the transition in epithelium in different types of urethrae	Must know	C2		
			• Correlate the clinical conditions	Must know	C2		
			• Understand the preventive and curative health care measures	Should know	C3		
			• Develop an ethical framework for invasive urethral procedures.	Nice to Know	C6		
			• Apply strategic use of AI in health care	Nice to Know	C3		
Gross Anatomy	M2-Renal-A-0012	Supra renal gland	• Describe the location & visceral relations of right and left supra renal glands	Must know	C2	SGD	OSPE MCQ SAQ
			• Understand the bio-physiological aspects of kidney	Must know	C2		
			• Discuss supra renal cortex and medulla	Must know	C2		

			• Discuss vessels and nerves of supra renal gland	Must know	C2		VIVA
			• Correlate the clinical conditions	Should know	C3		
			• Understand the preventive and curative health care measure	Nice to Know	C3		
			• Practice the principles of Bioethics	Nice to Know	C3		
			• Apply Strategic use of AI in health care	Nice to Know	C3		
			• Read relevant research articles	Nice to Know	C3		
Gross Anatomy	M2-Renal-A-0013	Urinary bladder	• Interpret size and extent of urinary bladder in different ages and states.	Must know	C2	SGD	OSPE MCQ SAQ VIVA
			• Discuss the peritoneal and visceral relationships of urinary bladder (bladder bed)	Must know	C2		
			• Understand the bio-physiological aspects of kidney	Must know	C2		
			• Discuss the trigone of urinary bladder	Must know	C2		
			• Elaborate nerve supply of urinary bladder	Must know	C2		
			• Correlate the clinical conditions (urinary incontinence, suprapubiccystotomy and atonic bladder	Should know	C3		
			• Understand the preventive and curative health care measures	Nice to Know	C3		
			• Practice the principles of Bioethics	Nice to know	C3		
			• Apply Strategic use of AI in health care	Should know	C3		
Gross Anatomy	M2-Renal-A-0013	Urethra	• Read relevant research article	Nice to know	C3		
			• Describe different parts of male and female urethra.	Must know	C2	SGD	OSPE MCQ SAQ VIVA
			• Explain blood supply, innervation and lymphatics of urethra in both sexes	Must know	C2		
			• Discuss the clinically significant differences between male and female urethra	Must know	C2		
			• Correlate the clinical conditions	Should know	C3		
			• Understand the preventive and curative health care measures	Must know	C3		
			• Analyze the structural organization of male and female urethra and relate regional differences to functional	Nice to know	C4		

			significance.															
			• Apply Strategic use of AI in health care		Nice to know		C3											
			• Read relevant research articles		Nice to know		C3											
Anatomy (SKL)	M2-Renal-A-0025	Ureter	• Identify the histological slide of ureter		Must know		C2		Skill Lab	OSPE								
			• Illustrate the histological structure of ureter.		Should know		C2											
			• Enlist two points of identification.		Must know		C1											
			• Focus the slide • Evaluate the adequacy of focusing technique to accurately visualize mucosal folds and muscular layers.		Must know Nice to know		C3 C5											
Physiology (LGIS)	M2-Renal-P-008	A. Clearance methods to quantify kidney function Micturition reflex & Abnormalities of micturition	• Clearance Methods (Inulin clearance, Creatinine clearance, Para ammino hipuric acid clearance) • Filtration Fraction • Anatomy of bladder • Micturition and urine formation. • Control of Micturition and Micturition Reflex • Abnormalities of Micturition Reflex		Must know		A	C1	LGIS SGD	SAQ MCQ VIVA								
								C1										
								C1										
					Should know		B	C1										
								Must know			A	C1						
												Must know		A	C2			
	M2-Renal-P-006	Tubular reabsorption & secretion along various parts of nephrons	• Tubular reabsorption & secretion in - Proximal tubule - Loop of Henle - Distal tubule & collecting tubule. Active and passive transport mechanisms		Must know		A	C1	LGIS Group presentations	SAQ MCQ VIVA								
								Must know			A	C2						
												Must know		A	C1			
															Must know		A	C1
Must know																		A	C2
		Physiology (SGD)	M2-Renal-P-0010	Micturition	• Describe the physiological anatomy & nervous connections of urinarybladder		Should Know		B	C1	SGD	MCQ SEQ VIVA OSPE						
• Explain Micturition reflex					Must Know		A	C2										
• Discuss abnormalities of Micturition					Must Know								A	C2				
Physiology (SDL)	M2-Renal-P-0018	Tubular reabsorption & secretion along various parts of nephrons	• Tubular reabsorption & secretion in - Proximal tubule - Loop of Henle - Distal tubule & collecting tubule. • Active and passive transport mechanisms		• Ganong’s Review of Medical Physiology.25TH Edition. Regulation of ECF composition and volume Section 07 (Chapter 37, Page 679) • Physiology by Linda S. Costanzo 6th Edition. Renal Physiology (Chapter 06. Page 267) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. The Kidneys (Chapter 19 Page 636,643) • Physiological Basis of Medical Practice by Best & Taylor’s.13th Edition. Section 04. Physiology of Body Fluids. (Chapter 29,Page 487-497) . (Chapter 30,Page 498) . (Chapter 31,Page 508) ❖ Textbook of Medical Physiology by Guyton & Hall.14th Edition. The													

				Body Fluids And Kidneys. Section 05. (Chapter 28, Page 343,355)			
	M2-Renal-P-0019	Regulation of tubular reabsorption	• Concept of Glomerulo tubular Balance • Peritubular capillary and Renal interstitial fluid Physical forces. • Mechanism of Pressure natriuresis and Pressure diuresis	• Ganong's Review of Medical Physiology.25TH Edition. Regulation of ECF composition and volume Section 07 (Chapter 39, Page 709) • Physiology by Linda S. Costanzo 6th Edition. Renal Physiology (Chapter 06. Page 276,298) ❖ Textbook of Medical Physiology by Guyton & Hall.14th Edition. The Body Fluids And Kidneys. Section 05. (Chapter 28, Page 355-360)			
Biochemistry (LGIS)	M2-Renal-B-009	Metabolism of ammonia	• Explain sources of NH₃ formation and its transport • Correlate causes and effects of Hyperammonemia • Reframe the mechanism of ammonia toxicity • Design the curative and preventive healthcare measures • Read a relevant research article • Use HEC digital library	Must Know	C2 C4 C5 C6 C2 C3	LGIS	MCQs, SAQs Viva
	M2-Renal-B-010	Metabolism of Arginine & branched chain amino acids	• Explain Metabolism of arginine and branched chain amino acids • Reframe related inherited disorders • Role play principles of bioethics • Design the curative and preventive healthcare measures. • Use HEC digital library	Must Know	C2 C5 C6 C6 C3	LGIS	MCQs, SAQs SEQs Viva
	M2-Renal-B-011	Sodium and chloride Metabolism	• Describe Daily requirements, sources, functions & their deficiency and toxic effects on body • Design the curative and preventive healthcare measures. • Apply the use of artificial intelligence in healthcare • Read a relevant research article • Use HEC digital library	Must Know Must Know	C2 C6 C3 C2 C3	LGIS LGIS	MCQs, SAQs Viva MCQs, SAQs Viva
	M2-Renal-B-012	Acid base Imbalance-I	• Reframe causes and compensation of metabolic acid base disorders • Describe anion gap and its significance • Categorize different acid base disorders • Design the curative and preventive healthcare measures. • Read a relevant research article • Use HEC digital library	Must Know	C5 C2 C4 C6 C2 C3	LGIS	MCQs, SAQs SEQs Viva

Biochemistry (SGD)	M2-Renal-B-013	Ammonia Toxicity	Correlate ammonia toxicity	Should Know	C4	SGD/CBL	MCQs SAQs Viva
Biochemistry (SDL)	M2-Renal-B-014	Disorders Related to Branched Chain Amino Acid Metabolism	Describe Disorders Related to Branched Chain Amino Acid Metabolism	❖ Reference Book: Lippincott's Illustrated reviews of Biochemistry 8th Edition Chapter#20, Page 290-300.			
Biochemistry (SKL)	M2-Renal-B-015	Urine Analysis-I	- Examine urine for its color, odor, pH and specific gravity - Perform tests on urine to detect its normal constituents	Should Know Should Know	P P	Skill Lab	OSPE
Radiology	M2-Renal-VI(R)-002	Contrast Nephropathy	Understand the diverse manifestations of nephropathy, including diabetic nephropathy and IgA nephropathy	C2		LGIS	MCQs
Medicine	M2-Renal-VI(M)-001	Acute renal failure	Understand the etiology, pathophysiology, and clinical manifestations of ARF	C2		LGIS	MCQs
			Recognizing the diagnostic criteria and appropriate investigations for ARF	C2		LGIS	MCQs

Spiral Courses (2nd Week)

Behavioral Sciences

Code	Topic	At the End of Lecture Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
M2-Renal-VI(BS)-001	Perception	Understand the basic principles of sensory perception, including how sensory stimuli are detected and processed by the nervous system.	C2	LGIS	MCQs
		Explain the mechanisms involved in different types of sensory perception (visual, auditory, tactile, etc.) and their neural pathways.	C2		
M2-Renal-VI(BS)-002	Thinking and Motivation	Explain the different types of thinking (e.g., critical thinking, problem-solving, decision-making) and their relevance in clinical practice.	C2		
		Understand how effective thinking and decision-making are essential for diagnosis, treatment planning, and patient care.	C2		

Integrated Undergraduate Research Curriculum (IUGRC)

Code	Topic	Learning Objectives	Cognitive Domain	Teaching Strategy	Assessment Tool
M2-Renal-SI(IUGRC)-003	Research Club Activity 3 Data Analysis	Make variables on computer	C2	LGIS	MCQs
		Feed data under variables on computers	C3		
		Summarize data on computer including text, tabulations & graphics	C2		
		Perform Descriptive analysis of data on computer	C3		
		Organize, and save data in a suitable way.	C3		
		Organize, and save data in a suitable way.	C2		
		Calculate/recode variables and prepare data for analysis.	C2		
		Conduct descriptive and basic inferential statistics.	C2		
		Be familiar with SPSS presentation of statistical output.	C3		
		Create and edit graphical displays of data.	C3		

M2-Renal-SI(IUGRC)-004	Research Club Activity 4 Manuscript Writing	Interpret & apply basic principles of manuscript writing of research report	C3	LGIS	MCQs
		Perceive authorships requirements or rules of drafting manuscript of a research report for publication in indexed journal	C2		
		Write discussion section of draft	C2		
		Explain conclusion, recommendation and acknowledge part of research report	C2		
		clarify types of citations included in discussion section	C2		

The Islamiyat

Code	Topic	Learning Objectives At the end of the lecture the student should be able to	Learning Domain	Teaching Strategy	Assessment Tool
M1-GIT-SI(ISL)-001	The literal and civic meaning of Prophethood and the need for Prophethood	Understand the literal and civic meanings of Prophethood, including its role in guiding ethical behavior, morality, and the establishment of a just society, and relate these principles to medical practice and patient care.	C2	LGIS	SAQ
		Discuss the necessity of Prophethood in providing a moral and spiritual framework for human guidance,	C2		
M1-GIT-SI(ISL)-002	The meaning of the Akharat, its necessity, and wisdom	Understand the concept of the Akhirat (Hereafter), its significance in Islamic teachings, and how it influences ethical decision-making and moral responsibility in both personal and professional life, including medical practice.	C2	LGIS	SAQ
		Discuss the necessity of belief in the Akhirat for shaping human behavior, motivating compassion and accountability, and explore the wisdom behind the concept in fostering a sense of duty and integrity in the healthcare profession.	C2		

Transdisciplinary (Hardens Level 11) **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	Polyuria & Altered Urine Concentration	Anatomy	This theme is highly relevant for second-year MBBS students because it allows them to apply core concepts of physiology, anatomy, biochemistry, and early clinical interpretation to a common renal presentation. It helps students relate basic science knowledge to patient complaints such as excessive urine output, nocturia, and altered urine concentration, while remaining within the level of understanding expected in the preclinical years.	• Apply knowledge of renal anatomy to understand urine formation and drainage.	C2	MCQs
				• Relate the nephron and collecting system to clinical symptoms involving urine output.	C2	MCQs
				• Understand the anatomical basis of urinary obstruction and hydronephrosis.	C3	MCQs
				• Correlate renal structure with functional disturbances in urinary complaints.	C4	MCQs
		Physiology		• Link renal physiology to patient complaints such as polyuria and nocturia.	C2	MCQs
				• Understand the mechanisms responsible for dilute and concentrated urine formation.	C3	MCQs
				• Apply concepts of clearance, GFR, and tubular handling in interpreting renal function.	C4	MCQs
				• Explain the role of hormonal regulation, especially ADH and aldosterone, in water and electrolyte balance.	C3	MCQs
		Biochemistry		• Interpret the biochemical basis of water and electrolyte imbalance in renal disorders.	C4	MCQs
				• Understand how changes in solute handling affect urine concentration.	C3	MCQs
				• Apply basic concepts of urea, creatinine, and renal clearance to laboratory interpretation.	C4	MCQs
				• Relate hormonal control of fluid balance to underlying biochemical mechanisms.	C5	MCQs
		Medicine		• Develop an early understanding of common renal complaints such as polyuria, nocturia, and altered urine output.	C2	MCQs
				• Interpret patient symptoms using basic physiological principles rather than advanced clinical knowledge.	C6	MCQs
				• Recognize how disturbances in renal handling of water and solutes produce clinical manifestations.	C5	MCQs

				• Build early clinical reasoning by linking symptoms, examination findings, and investigations.	C6	MCQs
		Radiology		• Appreciate the role of ultrasonography and imaging in evaluating the urinary system.	C2	MCQs
				• Apply renal anatomy to exclude obstruction, hydronephrosis, and structural abnormalities.	C6	MCQs
				• Correlate imaging findings with symptoms related to abnormal urine flow or renal pathology.	C6	MCQs
				• Understand the value of radiology in supporting the assessment of renal function and urinary tract disease.	C4	MCQs
		Family Medicine		• Recognize polyuria and nocturia as important symptoms commonly encountered in primary care.	C5	MCQs
				• Understand the importance of focused history-taking and early investigation in patients with urinary complaints.	C5	MCQs
				• Appreciate the role of primary care in identifying patients who may need further renal evaluation.	C5	MCQs
				• Develop an approach to early patient counseling and appropriate referral without requiring specialist-level knowledge.	C6	MCQs

Theme 3: Oliguria, Uremia & Acid–Base Disturbances (3rd Week)

Theme	Rationale	Learning objectives
Oliguria, Uremia & Acid–Base Disturbances	Teaching expands to renal pathophysiology, acid–base balance, and electrolyte homeostasis (K^+ , Ca^{2+} , Na^+ , PO_4^{3-}). Pathology content on nephrotic syndrome, UTI, and CKD progression explains uremic symptoms, fatigue, confusion, and hypertension. Pharmacology of diuretics and dialysis concepts vertically integrate medicine and surgery, highlighting why patients develop reduced urine output, acidosis, hyperkalemia, and volume overload. The week reinforces clinical reasoning behind dialysis indications, renal bone disease, and acute emergencies such as arrhythmias and encephalopathy.	After completing this theme, learners should be able to: • After completing this theme, learners should be able to: • Define oliguria and describe normal urine output in adults. • Explain the physiological regulation of urine formation, including renal blood flow, glomerular filtration rate (GFR), and tubular reabsorption. • Describe the role of body fluid compartments and effective circulating volume in maintaining adequate urine output. • Explain the hormonal control of urine production, including the roles of ADH, renin–angiotensin–aldosterone system (RAAS), and natriuretic peptides. • Differentiate between prerenal, renal, and postrenal causes of oliguria using basic physiological principles. • Describe the anatomical basis of urinary tract obstruction, including the kidneys, ureters, bladder, and urethra. • Integrate biochemical, physiological, and anatomical concepts to explain oliguria in conditions such as dehydration, acute kidney injury, shock, and obstructive uropathy. • Apply basic science knowledge to interpret clinical findings related to reduced urine output.
Case 3: Reduced Urine Output (Oliguria) A 45-year-old male presents to the emergency department with complaints of passing very little urine for the past 24 hours. He reports feeling extremely weak and dizzy and has had multiple episodes of vomiting and diarrhea over the last two days. Despite drinking small amounts of water, he notes that his urine output has become markedly reduced. On examination, the patient appears dehydrated, with dry oral mucosa and reduced skin turgor. His blood pressure is low, and pulse rate is increased. Abdominal examination is unremarkable, and there is no suprapubic distension. Laboratory and Basic Investigations • Urine output: < 400 mL/day • Urine specific gravity: Increased • Blood urea: Elevated		

- Serum creatinine: Mildly elevated
- Serum electrolytes: Mild hypernatremia
- Renal ultrasound: Normal-sized kidneys, no evidence of obstruction
- **Clinical Correlation**

The patient's oliguria is due to reduced effective circulating volume caused by dehydration. Decreased renal perfusion leads to a reduction in GFR, activating compensatory mechanisms such as RAAS and ADH, which increase water and sodium reabsorption in the renal tubules. These physiological responses reduce urine output in an attempt to preserve intravascular volume.

This scenario demonstrates how renal physiology, hormonal regulation, fluid balance, and kidney anatomy interact to produce oliguria, helping students understand the basic science mechanisms underlying prerenal acute kidney injury.

Educational Relevance for Second-Year MBBS

This theme helps students:

Link renal physiology with a common clinical symptom

Understand why urine output falls in dehydration and shock

Apply GFR and tubular function concepts to patient care

Develop early clinical reasoning using basic sciences only

Entrustable Professional Activities (EPAs)

EPA-1: Obtain focused history and perform examination in oliguria

- Assess duration of oliguria, fluid losses, intake, and systemic symptoms.
- Evaluate hydration status, blood pressure, pulse, and signs of obstruction.
- Entrustment Level: Level 1–2

EPA-2: Explain physiological regulation of urine output

- Correlate renal perfusion, GFR, RAAS activation, ADH release, and fluid balance with oliguria.
- Entrustment Level: Level 2

EPA-3: Interpret investigations and differentiate causes of oliguria

- Distinguish prerenal, renal, and postrenal causes using clinical findings, urine concentration, and imaging.
- Entrustment Level: Level 2

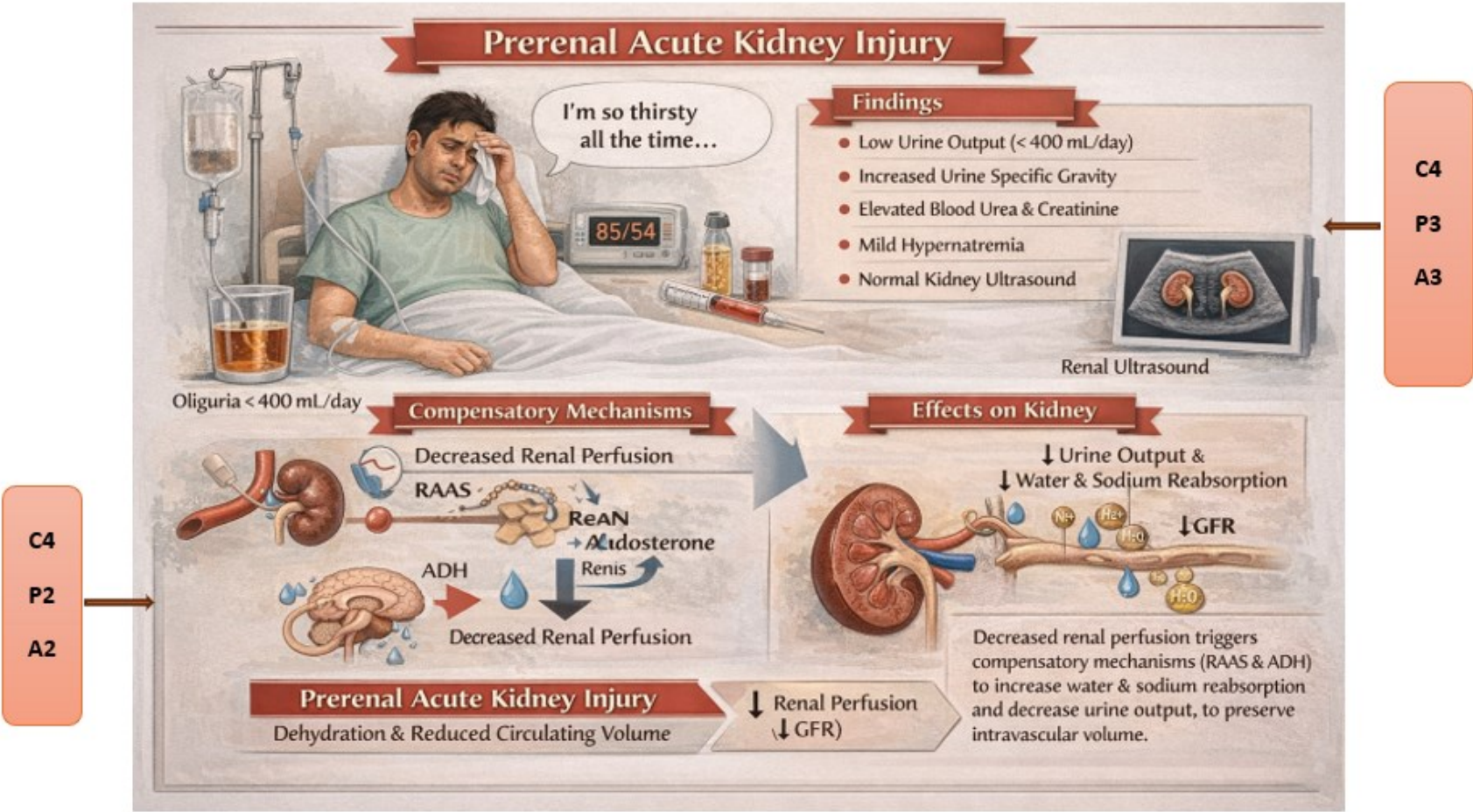
EPAs Detail Annexure-II

Justification:

This case reflects the highest level of curricular integration by simulating an emergency clinical presentation (oliguria due to dehydration/prerenal AKI). Students integrate Physiology (renal perfusion, RAAS and ADH activation, GFR decline), Anatomy (urinary tract evaluation to rule out obstruction), and Biochemistry (uremia, electrolyte imbalance) into one coherent explanation of the patient's condition. The case promotes holistic reasoning, interpretation of investigations, and

understanding of acute renal emergencies as encountered in real practice. This complete disappearance of discipline boundaries and focus on professional clinical competence aligns with **Harden Level 11**

Theme 3 Clinico-concept connect (C³6)



Harden Level 11 Transdisciplinary

Specific Learning Objectives

Subject	Code	Topic	Learning Objectives At the End of The Lecture the Student Should Be Able To		Calgary Gauge	Learning Domain	Teaching Strategy	Assessment Tool
Gross Anatomy	M2-Renal-A-0014	Cross Sectional Anatomy	• Identify different structures at different levels of vertebral column; L2, L3, L4, L5		Must know	C2	SGD	OSPE MCQ SAQ VIVA
			• Correlate the clinical conditions at the given level		Should know	C3		
			• Understand the preventive and curative health care measures		Nice to Know	C3		
			• Practice the principles of Bioethics		Nice to Know	C3		
			• Apply Strategic use of AI in health care		Nice to Know	C3		
			• Read relevant research articles		Nice to Know	C3		
Gross Anatomy	M2-Renal-A-0015	Radiological Anatomy	• Identify structures on a normal X-ray abdomen		Should know	C2	SGD	OSPE MCQ SAQ VIVA
			• Identify kidney and its associated structures on contrast studies.		Should know	C2		
			• Appreciate filling defects.		Must know	C2		
			• Mark anatomical landmarks.		Must know	C2		
			• Understand the preventive and curative health care measures		Should know	C3		
			• Practice the principles of Bioethics		Nice to know	C3		
			• Apply Strategic use of AI in health care		Nice to Know	C3		
			• Read relevant research articles		Nice to know	C3		
			• Correlate the clinical conditions		Nice to know	C3		
Anatomy (SKL)	M2-Renal-A-0026	Urinary bladder	• Identify the histological slide of urinary bladder.		Must know	P	Skill Lab	OSPE
			• Illustrate the histological structure of urinary bladder		Should know	C2		
			• Enlist two points of identification.		Must know	C1		
			• Focus the slide • Analyze microscopic features to accurately differentiate urinary bladder from other hollow viscera.		Must know Nice to know	P C4		
Physiology (LGIS)	M2-Renal-P-007		• Concept of Glomerulo tubular Balance		Must know	A	C1	SAQ MCQ
			• Peritubular capillary and Renal interstitial fluid		Should know	B	C2	

		Regulation of tubular reabsorption	Physical forces. • Mechanism of Pressure natriuresis and Pressure diuresis	Must know	A		Group presentations	VIVA
	M2-Renal-P-0011	Clearance methods	• Define Renal clearance	Should Know	B	C1	SGD	MCQ SEQ VIVA OSPE
			• Enumerate & Explain clearance methods to quantify renal functions	Must Know	A	C1		
			• Explain filtration fraction	Nice to Know	C	C2		
	M2-Renal-P-0012	Acid base balance	• Describe mechanism of action of buffer systems of body fluid	Must Know	A	C1	SGD	MCQ SEQ VIVA OSPE
			• Discuss buffering power of respiratory & renal system	Must Know	A	C2		
			• Explain the acid base disorders	Must Know	A	C2		
Physiology (LGIS)	M2-Renal-P-0020	B. Clearance methods to quantify kidney function C. Micturition reflex & Abnormalities of micturition	• Clearance Methods (Inulin clearance, Creatinine clearance, Para ammino hipuric acid clearance) • Filtration Fraction • Anatomy of bladder • Micturition and urine formation. • Control of Micturition and Micturition Reflex • Abnormalities of Micturition Reflex	❖ A. ❖ Physiology by Linda S. Costanzo 6th Edition.Renal Physiology (Chapter 06. Page 255) ❖ Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. The Kidneys (Chapter 19,Page 643- 647) ❖ Physiological Basis of Medical Practice by Best & Taylor’s.13th Edition. Section 04. (Chapter 27, Page 469,483) ❖ Textbook of Medical Physiology by Guyton & Hall.14th Edition. The Body Fluids And Kidneys. Section 05. (Chapter 28, Page 360-364) ❖ B. ❖ Ganong’s Review of Medical Physiology.25TH Edition. Regulation of ECF composition and volume Section 07 (Chapter 37, Page 691) ❖ Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. The Kidneys (Chapter 19,Page 648) ❖ Textbook of Medical Physiology by Guyton & Hall.14th Edition. The Body Fluids And Kidneys. Section 05. (Chapter 26, Page 324-328)				
Physiology (SKL)	M2-Renal-P-0021	Specific gravity of Urine	• Apparatus identification	Must Know	A	C1	Skill lab	OSPE
			• Principle	Must Know	A	C1		
			• Procedure	Must Know	A	P, A		
			• Precautions	Should Know	B	C1		
			• Use of urinometer	Should Know	B	C1		
			• Recall normal values of specific gravity	Nice to Know	C	C1		

Biochemistry (LGIS)	M2-Renal-B-016	Acid Base Imbalance-II	- Reframe causes and compensation of Respiratory acid base disorders - Categorize related acid base disorders - Design the curative and preventive healthcare measures. - Read a relevant research article - Use HEC digital library	Must Know	C5 C4 C6 C2 C3	LGIS	MCQs, SAQs SEQs Viva
	M2-Renal-B-017	Potassium Metabolism	- Describe Daily requirements, sources, functions & their deficiency and toxic effects on body - Design the curative and preventive healthcare measures. - Apply the use of artificial intelligence in healthcare - Read a relevant research article - Use HEC digital library	Must Know	C2 C6 C3 C2 C3	LGIS	MCQs, SAQs SEQs Viva
Biochemistry (SGD)	M2-Renal-B-018	Metabolic Acidosis	Describe metabolic acidosis	Must Know	C2	SGD	MCQs
Biochemistry (SDL)	M2-Renal-B-019	Clinical conditions related to potassium metabolism	Describe the clinical conditions related to potassium metabolism	❖ Reference Book: Lippincott’s Illustrated reviews of Biochemistry 8th Edition Chapter#29, Page 448-449.			
Biochemistry (SKL)	M2-Renal-B-020	Urine analysis-II	Perform tests to detect abnormal constituents of urine (proteins, ketone bodies, bile salts)	Must Know	P	Skill Lab	OSPE
Gynae & Obs	M2-Renal-VI(OBG)-001	Physiological Changes in the Renal System in Pregnancy & UTI	The anatomic and functional changes in the renal system in pregnancy	C2		LGIS	MCQs
			The changes in indices of renal function during pregnancy	C2			
Pharmacology	M2-Renal-VI(Pharm)-001	Introduction to diuretics	Understanding the mechanism of action of diuretics in altering renal function to promote urine production.	C2		LGIS	MCQs
			Identifying the major classes of diuretics, their pharmacokinetics, clinical indications, and potential side effects.	C2			

			Exploring the role of diuretics in managing conditions such as hypertension, edema, and congestive heart failure	C2		
Medicine	M2-Renal-VI(M)-003	Potassium imbalance and its management	Understand the physiological role of potassium in the body and recognize the clinical manifestations of hypo- and hyperkalemia.	C2	LGIS	MCQs
			Develop competence in diagnosing and managing potassium imbalances, including appropriate treatment modalities and monitoring strategies.	C2		
Radiology	M2-Renal-VI(R)-001	Role of Ultrasound X Ray & CT in Renal Systematic Causes	Describe the principles of imaging modalities: Ultrasound, X-ray, and CT scan.	C2	LGIS	MCQs
			Identify the normal anatomy of kidneys on ultrasound.	C2		
	M2-Renal-VI(R)-002	Radiological Evaluation of Oliguria and Renal Failure	Describe the role of imaging modalities (Ultrasound, X-ray, CT) in the evaluation of oliguria and renal failure.	C2	LGIS	MCQs
			List common radiological findings in acute and chronic kidney disease.	C2		
Peads	M2-Renal-VI(Peads)-001	UTI	Define Urinary Tract Infection (UTI) and its classification (e.g., uncomplicated vs. complicated).	C2	LGIS	MCQs
			Explain the mechanism of infection, including the role of pathogens, host defense mechanisms, and predisposing factors.	C2		
			Understand the differences between gram-positive and gram-negative organisms causing UTIs.	C2		

Spiral Courses (3rd Week)

Family Medicine

Code	Topic	Learning Objectives At the end of the lecture the student should be able to	Learning Domain	Teaching Strategy	Assessment Tool
M2-Renal-SI(FMed)-001	Renal Failure	• Describe presenting complains of patients with Renal failure	C3	LGIS-1	MCQs
		• Disscus complications of Renal failure			
		• Descirbe intial treatment of patients with Renal failure			
		• Know when to refer patient to consultant/ Hospital			

Integrated Undergraduate Research Curriculum (IUGRC)

Code	Topic	Learning Objectives	Cognitive Domain	Teaching Strategy	Assessment Tool
M2-Renal-SI(IUGRC)-004	Research Club Activity 4 Manuscript Writing	• Interpret & apply basic principles of manuscript writing of research report	C3	LGIS	MCQs
		• Perceive authorships requirements or rules of drafting manuscript of a research report for publication in indexed journal	C2		
		• Write discussion section of draft	C2		
		• Explain conclusion, recommendation and acknowledge part of research report	C2		
		• clarify types of citations included in discussion section	C2		

The Pak Studies

Code	Topic	Learning Objectives At the end of the lecture the student should be able to	Learning Domain	Teaching Strategy	Assessment Tool
M1-GIT-SI(PKS)-003	The foundation of the Muslim community	• Understand the Historical and Theological Foundation of the Muslim Community:	C2	LGIS	SAQ
		• Discuss the Role of Social Responsibility in the Muslim Community:	C2		

The Islamiyat

Code	Topic	Learning Objectives At the end of the lecture the student should be able to	Learning Domain	Teaching Strategy	Assessment Tool
M1-GIT-SI(ISL)-003	Aqida Akhirat, its meaning, necessity, and wisdom	Understand the concept of Aqida Akhirat (belief in the Hereafter), its meaning, and how this belief shapes moral and ethical principles, including its relevance to fostering responsibility and compassion in the medical profession.	C2	LGIS	SAQ
		Discuss the necessity of Aqida Akhirat in providing a sense of purpose, accountability, and motivation for positive actions, and explore the wisdom behind its teachings in guiding medical professionals toward ethical decision-making and patient care.	C2		

Transdisciplinary (Hardens Level 11) 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	Oliguria, Uremia & Acid–Base Disturbances	Anatomy	This theme is relevant for second-year MBBS students because it helps them understand the basic science basis of reduced urine output in dehydration and shock. It promotes integration of foundational knowledge with early clinical interpretation, while remaining within the level expected in the preclinical years.	• Identify the major parts of the nephron involved in filtration, reabsorption, and urine concentration.	C2	MCQs
				• Describe the anatomical relationship of the glomerulus, renal tubules, and collecting ducts in urine formation.	C2	MCQs
				• Relate renal blood supply to the kidney’s role in maintaining filtration.	C5	MCQs
				• Apply knowledge of urinary tract anatomy to distinguish reduced urine formation from urinary outflow obstruction.	C6	MCQs
		Physiology		• Explain how dehydration and shock reduce renal perfusion and lead to decreased urine output.	C2	MCQs
				• Describe the effect of reduced blood volume and blood pressure on glomerular filtration rate (GFR).	C3	MCQs
				• Discuss the role of tubular reabsorption in conserving water and sodium during dehydration.	C3	MCQs
				• Explain the physiological actions of ADH and the renin–angiotensin–aldosterone system (RAAS) in maintaining fluid balance.	C3	MCQs
		Biochemistry		• Explain the biochemical basis of fluid and electrolyte imbalance in dehydration.	C4	MCQs
				• Understand the significance of urea and creatinine as markers of renal function.	C4	MCQs
				• Relate changes in osmolarity and solute concentration to urine concentration mechanisms.	C5	MCQs
				• Describe how altered renal perfusion affects the body’s handling of metabolic waste products.	C4	MCQs
		Medicine		• Recognize oliguria as an important clinical sign in dehydration and shock.	C2	MCQs
				• Correlate reduced urine output with changes in circulatory volume and renal perfusion.	C4	MCQs

				• Interpret common patient complaints and signs using basic physiological principles.	C5	MCQs
				• Develop early clinical reasoning by linking symptoms with underlying renal mechanisms.	C5	MCQs
		Radiology		• Understand the role of ultrasound in assessing kidney size and urinary tract patency.	C2	MCQs
				• Recognize the value of imaging in excluding obstruction or hydronephrosis in a patient with low urine output.	C4	MCQs
				• Correlate basic renal anatomy with its appearance on common imaging studies.	C4	MCQs
				• Appreciate radiology as an adjunct to clinical and physiological assessment of renal function.	C5	MCQs
		Family Medicine		• Identify reduced urine output as an important warning sign in dehydrated or critically ill patients.	C5	MCQs
				• Take a focused history related to fluid loss, intake, and associated symptoms.	C5	MCQs
				• Understand the role of early recognition and timely referral in patients with possible renal hypoperfusion.	C6	MCQs
				• Counsel patients and attendants regarding hydration status and danger signs requiring urgent assessment.	C6	MCQs

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	• Renal Failure	Apply basic knowledge of subject to study clinical case.	C3
	• Ureteric Colic	Apply basic knowledge of subject to study clinical case.	C3
Physiology	• Acute Glomerulo Nephritis	Apply basic knowledge of subject to study clinical case.	C3
	• Anuria	Apply basic knowledge of subject to study clinical case.	C3
Biochemistry	• Metabolic Acidosis	Apply basic knowledge of subject to study clinical case.	C3
	• Ammonia Toxicity	Apply basic knowledge of subject to study clinical case.	C3

Anatomy LGIS Syllabus of Learning Management System (LMS)

Code	Topic	Learning Objectives At the End of The Lecture The Student Should Be Able To	Calgary Gauge	Learning Domain	References
Embryology					
M2-Renal-A-0027	Development of Kidney & ureter	Enumerate the derivatives of intermediate mesoderm, urogenital and gonadal ridges.	Must know	C1	1.KLM Embryology Developing Human 11 th Edition 2. USMLE Q Bank Step 1 (Volume 1) 2023-2034 3.UWORLD Step 1 (Volume 3) 2023-2024
		Describe the stages of development of human kidneys	Must know	C2	
		Describe the molecular regulation of kidney development.	Nice to know	C2	
		Correlate positional changes of the kidney with its blood supply	Must know	C1	
		Describe different stages of development of ureter from ureteric bud and metanephrogenicblastema.	Must know	C1	
		Understand the bio-physiological aspects of kidney & ureter development	Must know	C2	
		Enumerate Congenital anomalies of kidney and ureter.	Must know	C3	
		Correlate the clinical conditions (polycystic kidney, horseshoe shaped kidney)	Should know	C3	
		Understand the preventive and curative health care measures	Nice to know	C3	
		Practice the principles of Bioethics	Nice to know	C3	
		Apply strategic use of AI in health care	Nice to know	C3	
		Read relevant research article	Nice to know	C3	
M2-Renal-A-0028	Development of urinary bladder & urethra	Describe the development of urinary bladder	Must know	C2	1.Embryology: - KLM Embryology Developing Human 11 th Edition 2. USMLE Q Bank Step 1 (Volume 1) 2023-2034 3. UWORLD Step 1 (Volume 3) 2023-2024
		Understand the bio-physiological aspects of bladder development	Must know	C2	
		Discuss the parts of urethra in males and females	Must know	C2	
		Describe development of male urethra	Must know	C2	
		Describe development of female urethra	Must know	C2	
		Discuss the anomalies related to urethra & bladder development	Should know	C3	
Histology					
		Discuss the structural components of the nephron.	Must know	C2	

M2-Renal-A-0029	Histology of kidney I (Cortex & Medulla)	• Discuss the histology of filtration barrier.	Must know	C2	1.Histology:-Junqueira's Basic Histology 18th Edition 2.USMLE Q Bank Step 1 (Volume 1) 2023-2034 3.UWORLD Step 1 (Volume 3) 2023-2024
		• Understand the bio-physiological aspects of filtration	Must know	C2	
		• Distinguish the key microscopic components of the renal cortex and medulla.	Must know	C2	
		• Differentiate the histological appearance of proximal tubule, loop of Henley, distal convoluted tubule and collecting duct.	Must know	C2	
		• Correlate the clinical conditions	Should know	C3	
		• Understand the preventive and curative health care measures	Should know	C2	
		• Practice the principles of Bioethics	Nice to know	C3	
		• Apply strategic use of AI in health care	Nice to know	C3	
		• Read relevant research article	Nice to know	C3	
M2-Renal-A-0030	Histology of kidney II (Collecting System)	• Enumerate the component cells of the juxta glomerular apparatus.	Should know	C1	1.Histology :-Junqueira's Basic Histology 18th Edition 2.USMLE Q Bank Step 1 (Volume 1) 2023-2034 3.UWORLD Step 1 (Volume 3) 2023-2024
		• Discuss the component cells of the juxtaglomerular apparatus	Must know	C1	
		• Discuss the effect of diabetes & hypertension on glomerular filtration rate	Should know	C2	
		• Understand the effect of hypertension on renin angiotensin release	Should know	C3	
M2-Renal-A-0031	Histology of Urinary Bladder	• Describe histological characteristics of urinary bladder.	Must know	C2	1.Histology :-Junqueira's Basic Histology 18th Edition 2.USMLE Q Bank Step 1 (Volume 1) 2023-2034 3.UWORLD Step 1 (Volume 3) 2023-2024
		• Explain the concept of umbrella cells and Uroplakins.	Must know	C2	
		• Explain the concept of internalization	Must know	C2	
		• Understand the bio-physiological effects of urinary epithelium	Must know	C2	
		• Compare the histological changes of empty and full bladder.	Must know	C2	
		• Correlate the clinical conditions	Should know	C2	
		• Understand the preventive and curative health care measures	Nice to Know	C2	
		• Practice the principles of Bioethics	Nice to Know	C2	
		• Apply strategic use of AI in health care	Nice to Know	C2	
		• Read relevant research article	Nice to Know	C2	
		• Describe the microscopic structure of ureter	Must know	C2	

M2-Renal-A-0032	Histology of ureter & urethra	• Discuss the histological features of urethra	Must know	C2	1. Histology: -Junqueira's Basic Histology 18th Edition 2.USMLE Q Bank Step 1 (Volume 1) 2023-2034 3.UWORLD Step 1 (Volume 3) 2023-2024
		• Distinguish the transition in epithelium in different types of urethra	Must know	C2	
		• Correlate the clinical conditions	Should know	C3	
		• Understand the preventive and curative health care measures	Nice to Know	C3	
		• Practice the principles of Bioethics	Nice to Know	C3	
		• Apply strategic use of AI in health care	Nice to Know	C3	
		• Read relevant research article	Nice to Know	C3	

Anatomy SGD's Syllabus of Learning Management System (LMS)

Code	Topics	Learning Objectives Students Should Be Able To	Calgary Gauge	Learning Domain	References
M2-Renal-A-0033	Posterior abdominal wall I (Fascia & Muscles)	• Describe the fascia of posterior abdominal wall	Must know	C2	❖ Clinical Oriented Anatomy by Keith L. Moore.8 TH Edition. (Chapter 5, Page 537-541). ❖ https://www.youtube.com/watch?v=5ZnlcZrC-XY
		• Tabulate the muscles of posterior abdominal wall with reference to, origin, insertion, nerve supply and action.	Must know	C2	
		• Describe the relations of Psoas major muscle.	Should Know	C2	
		• Correlate the clinical conditions (Psoas Abscess)	Should know	C3	
		• Understand the preventive and curative health care measures	Should Know	C3	
		• Map Root of mesentery on SP/Model	Should Know	C3	
		• Practice the principles of Bioethics	Should Know	C3	
		• Apply Strategic use of AI in health care	Nice to know	C3	
M2-Renal-A-0034	Posterior abdominal wall II (Nerves)	• Trace the nerves present on posterior abdominal wall	Must know	C2	❖ Clinical Oriented Anatomy by Keith L. Moore.8 TH Edition. (Chapter 5, Page 527-532).
		• DI Discuss the formation of nerves	Must know	C2	
		• Discuss the formation of lumbosacral plexus	Must know	C2	
		• Correlate the clinical conditions (Lumbar	Should know	C3	

		sympathectomy)			❖ https://www.youtube.com/watch?v=5ZnlcZrC-XY
		• Understand the preventive and curative health care measures	Nice to Know	C3	
		• Practice the principles of Bioethics	Nice to Know	C3	
		• Apply Strategic use of AI in health care	Nice to Know	C3	
		• Read relevant research articles	Nice to Know	C3	
M2-Renal-A-0035	Posterior abdominal wall III (vessels) & Lumbar Vertebrae	• Enlist branches of Abdominal Aorta.	Must know	C1	❖ Clinical Oriented Anatomy by Keith L. Moore.8TH Edition. (Chapter 5, Page 541-544, 544-547). https://www.youtube.com/watch?v=pSDYlPzNg4s
		• Describe the tributaries of inferior vena cava.	Must know	C2	
		• Describe lymph nodes of posterior abdominal wall with emphasis on lumbar and intestinal trunk.	Must know	C2	
		• Differentiate between typical and atypical lumbar vertebrae.	Must know	C2	
		• Identify different parts of lumbar vertebrae.	Must know	C2	
		• Discuss the attachments of lumbar vertebrae.	Nice to Know	C2	
		• Correlate the clinical conditions (abdominal aortic aneurysm)	Should know	C3	
		• Understand the preventive and curative health care measures	Must know	C3	
		• Map Abdominal aorta, Inferior Vena cava & Portal vein on simulated patient (SP)/Model	Must know	C3	
		• Practice the principles of Bioethics	Nice to Know	C3	
		• Apply Strategic use of AI in health care	Nice to Know	C3	
		• Read relevant research articles	Nice to Know	C3	
M2-Renal-A-0036	Kidney	• Discuss the site and extent of kidneys	Must know	C2	❖ Clinical Oriented Anatomy by Keith L. Moore.8TH Edition. (Chapter 5, Page 515-517,523-524). https://www.youtube.com/watch?v=ZVlVquVYGDo
		• Differentiate right from left kidney	Must know	C2	
		• Understand the bio-physiological aspects of kidney	Must know	C2	
		• Discuss the renal capsule and its role in support of kidney.	Must know	C2	
		• Describe the structure of cortex and medulla	Must know	C2	

		Describe peritoneal relationship of both kidneys.	Must know	C2	
		Describe visceral relationship of both kidneys	Must know	C2	
		Explain blood supply of both kidneys with emphasis on renal artery.	Must know	C2	
		Discuss the venous drainage of both kidneys.	Must know	C2	
		Correlate the clinical conditions (perinephric abscess, nephroptosis, renal cysts and renal colic)	Should know	C3	
		Understand the preventive and curative health care measures	Nice to know	C3	
		Map the kidney on the back (Morrison's Parrallelogram) on SP/Model	Nice to know	C3	
		Practice the principles of Bioethics	Nice to know	C3	
		Apply Strategic use of AI in health care	Nice to know	C3	
		Read relevant research articles	Nice to know	C3	
M2-Renal-A-0037	Ureter	Discuss extent and course of ureter in abdomen and pelvis in males and females	Must know	C2	❖ Clinical Oriented Anatomy by Keith L. Moore.8TH Edition. (Chapter 5, Page 517-518,525). https://www.youtube.com/watch?v=1P0utMb5nkg
		Explain peritoneal reflections of ureter in both sexes.	Must know	C2	
		Describe relations of ureter.	Should know	C2	
		Describe the arterial, venous and lymphatic drainage of ureter.	Nice to know	C2	
		Correlate the clinical conditions (ureteric colic)	Nice to know	C3	
		Understand the preventive and curative health care measures	Must know	C3	
		Map Ureter from the back on SP/Model	Nice to Know	C3	
		Practice the principles of Bioethics	Nice to Know	C3	
		Apply Strategic use of AI in health care	Nice to Know	C3	
		Read relevant research articles	Nice to Know	C3	
		Describe the location & visceral relations of right and left supra renal glands	Must know	C2	❖ Clinical Oriented Anatomy by Keith L.

M2-Renal-A-0038	Supra renal gland	Understand the bio-physiological aspects of kidney	Must know	C2	Moore.8TH Edition. (Chapter 5, Page 519-523). https://www.youtube.com/watch?v=iE8nCvLaGM4
		Discuss supra renal cortex and medulla	Must know	C2	
		Discuss vessels and nerves of supra renal gland	Must know	C2	
		Correlate the clinical conditions	Should know	C3	
		Understand the preventive and curative health care measure	Nice to Know	C3	
		Practice the principles of Bioethics	Nice to Know	C3	
		Apply Strategic use of AI in health care	Nice to Know	C3	
		Read relevant research articles	Nice to Know	C3	
M2-Renal-A-0039	Urinary bladder	Interpret size and extent of urinary bladder in different ages and states.	Must know	C2	❖ Clinical Oriented Anatomy by Keith L. Moore.8TH Edition. (Chapter 6, Page 591-595). https://www.youtube.com/watch?v=tGouMldaQgU
		Discuss the peritoneal and visceral relationships of urinary bladder(bladder bed)	Must know	C2	
		Understand the bio-physiological aspects of kidney	Must know	C2	
		Discuss the trigone of urinary bladder	Must know	C2	
		Elaborate nerve supply of urinary bladder	Must know	C2	
		Correlate the clinical conditions (urinary incontinence, suprapubiccystotomy and atonic bladder	Should know	C3	
		Understand the preventive and curative health care measures	Nice to Know	C3	
		Practice the principles of Bioethics	Nice to know	C3	
		Apply Strategic use of AI in health care	Should know	C3	
		Read relevant research article	Nice to know	C3	
		Describe different parts of male and female urethra.	Must know	C2	❖ Clinical Oriented Anatomy by Keith L. Moore.8TH Edition. (Chapter 6, Page 595).
		Explain blood supply, innervation and lymphatics of urethra in both sexes	Must know	C2	

M2-Renal-A-0040	Urethra	Discuss the clinically significant differences between male and female urethra	Must know	C2	https://www.youtube.com/watch?v=EQUdo392wg0
		Correlate the clinical conditions	Should know	C3	
		Understand the preventive and curative health care measures	Must know	C3	
		Practice the principles of Bioethics	Nice to know	C3	
		Apply Strategic use of AI in health care	Nice to know	C3	
		Read relevant research articles	Nice to know	C3	
M2-Renal-A-0041	Cross Sectional Anatomy	Identify different structures at different levels of vertebral column; L2, L3, L4, L5	Must know	C2	- Gross Anatomy :- KLM clinically oriented anatomy edition 10 - USMLE Q Bank Step 1 (Volume 1) 2023-2034 - UWORLD Step 1 (Volume 3) 2023-2024
		Correlate the clinical conditions at the given level	Should know	C3	
		Understand the preventive and curative health care measures	Nice to Know	C3	
		Practice the principles of Bioethics	Nice to Know	C3	
		Apply Strategic use of AI in health care	Nice to Know	C3	
		Read relevant research articles	Nice to Know	C3	
M2-Renal-A-0042	Radiology	Identify structures on a normal X-ray abdomen	Should know	C2	- Gross Anatomy :- KLM clinically oriented anatomy edition 10 - USMLE Q Bank Step 1 (Volume 1) 2023-2034 - UWORLD Step 1 (Volume 3) 2023-2024
		Identify kidney and its associated structures on contrast studies.	Should know	C2	
		Appreciate filling defects.	Must know	C2	
		Mark anatomical landmarks.	Must know	C2	
		Understand the preventive and curative health care measures	Should know	C3	
		Practice the principles of Bioethics	Nice to know	C3	
		Apply Strategic use of AI in health care	Nice to Know	C3	
		Read relevant research articles	Nice to know	C3	
		Correlate the clinical conditions	Nice to know	C3	

Anatomy Practicals Syllabus of Learning Management System (LMS)

Code	Topic	At the End of Practical Students Should Be Able To	Calgary Gauge	Learning Domain	Assessment Tool
M2-Renal-A-0043	Kidney	Identify the histological slide of kidney.	Must know	C3	1.Histology Junqueira's Basic Histology 18th Edition 2.USMLE Q Bank Step 1 (Volume 1) 2023-2034 3.UWORLD Step 1 (Volume 3) 2023-2024
		Illustrate the histological structure of Kidney.	Should know	C2	
		Enlist two points of identification.	Must know	C2	
		Focus the slide	Must know	C3	
M2-Renal-A-0044	Ureter	Identify the histological slide of ureter	Must know	C2	1.Histology Junqueira's Basic Histology 18th Edition 2.USMLE Q Bank Step 1 (Volume 1) 2023-2034 3.UWORLD Step 1 (Volume 3) 2023-2024
		Illustrate the histological structure of ureter.	Should know	C2	
		Enlist two points of identification.	Must know	C1	
		Focus the slide	Must know	C3	
M2-Renal-A-0045	Urinary bladder	Identify the histological slide of urinary bladder.	Must know	P	Histology: -Junqueira's Basic Histology 18th Edition 2.USMLE Q Bank Step 1 (Volume 1) 2023-2034 3.UWORLD Step 1 (Volume 3) 2023-2024
		Illustrate the histological structure of urinary bladder	Should know	C2	
		Enlist two points of identification.	Must know	C1	
		Focus the slide	Must know	P	

Physiology Syllabus of Learning Management System (LMS)

Code	Topics	Learning Objectives	Calgary Model	Mode of Assessment	Tool of Assessment
M2-Renal-P-0022	Body fluid compartments, Volume & osmolarity of ECF & ICF.	- Fluid Intake/Output balance - Body fluid compartments - Constituents of ECF & ICF - Concept of Osmolarity, Osmolality, Osmosis and Osmotic pressure	Nice to know (C)	SDL	MCQs
M2-Renal-P-0023	Physiology of Renal system, Glomerular filtration rate	- Functions of kidney. - Physiologic Anatomy of Kidney - Concept of Glomerular Filtration - Introduction to Glomerular filtration rate.	Must Know (A)/ Should know (B)	LGIS& SDL	MCQs
M2-Renal-P-0024	Abnormalities of fluid volume & regulation, Edema	- Volume and osmolarity in abnormal states - Abnormalities of fluid volume & Regulation - Hyponatremia and Hypernatremia - Edema and its Mechanism. - Fluid in potential spaces of the body	Should know (B)	LGIS&SDL	MCQs
M2-Renal-P-0025	Regulation of GFR & RBF-I (Determinants of GFR & RBF)	- Glomerular filtration rate & Renal Blood flow - Determinants of GFR - Determinants of RBF	Must Know (A)/ Should know (B)	LGIS&SDL	MCQs
M2-Renal-P-0026	Excretion of dilute urine	- Mechanism of Excretion of Excess water through Dilute Urine. - Role of ADH (Anti-Diuretic Hormone) - Renal mechanism for excreting dilute urine.	Must Know (A)/ Should know (B)	LGIS&SDL	MCQs
M2-Renal-P-0027	Regulation of GFR & RBF-II, Physiological control of GFR and RBF, Auto regulation of GFR and RBF/Macula densa feedback mechanism	- Physiological control of GFR and RBF. - Auto regulation of GFR and RBF. - Tubulo-glomerular Feedback Mechanism - Macula-densa Feedback Mechanism	Must Know (A)/ Should know (B)	LGIS&SDL	MCQs
M2-Renal-P-0028	Excretion of concentrated urine (Counter current multiplier)	- Concentrated urine and Conservation of water. - Counter-current multiplier and counter current exchanger mechanism. - Osmoreceptor-ADH feedback mechanism - Specific gravity of urine and Importance of thirst.	Must Know (A)	LGIS&SDL	MCQs

M2-Renal-P-0029	Tubular reabsorption & secretion along various parts of nephrons	• Tubular reabsorption & secretion in Proximal tubule • Loop of Henle • Distal tubule & collecting tubule. • Active and passive transport mechanisms	Must Know (A)/ Should know (B)	LGIS&SDL	MCQs
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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	Calgary Category	Learning Domain	Learning Resources	Assessment Tool
M2-Renal-B-0033	Introduction to protein metabolism	Understand protein turn-over, amino acid pool and entry of amino acid into cell.	Should Know	C2	• Lippincott illustrated Biochemistry 8th Edition • Harper's Textbook of Biochemistry 32nd Edition • Google scholar articles https://scholar.google.com/	MCQs
M2-Renal-B-0034	Nitrogen balance	Describe positive and negative nitrogen balance	Should Know	C2	• Lippincott illustrated Biochemistry 8th Edition • Harper's Textbook of Biochemistry 32nd Edition • Google scholar articles https://scholar.google.com/	MCQs
M2-Renal-B-0035	General reactions of amino acids	Discuss reactions of amino acids Interpret the clinical importance of transaminases	Should Know Must Know	C2 C3	• Lippincott illustrated Biochemistry 8th Edition • Harper's Textbook of Biochemistry 32nd Edition • Google scholar articles https://scholar.google.com/	MCQs
M2-Renal-B-0036	Urea cycle And its disorders	Describe the location, steps and regulation of Urea cycle Describe Disorders of the urea cycle	Should Know Should know	C2 C3	• Lippincott illustrated Biochemistry 8th Edition • Harper's Textbook of Biochemistry 32nd Edition • Google scholar articles https://scholar.google.com/	MCQs

M2-Renal-B-0037	Metabolism of glycine	Explain Glycine metabolism and related disease	Should Know	C2	• Lippincott illustrated Biochemistry 8th Edition • Harper's Textbook of Biochemistry 32nd Edition • Google scholar articles https://scholar.google.com/	MCQs
M2-Renal-B-0038	Metabolism of tyrosine	Explain tyrosine metabolism Discuss related inherited disorders	Should Know	C2 C3	• Lippincott illustrated Biochemistry 8th Edition • Harper's Textbook of Biochemistry 32nd Edition • Google scholar articles https://scholar.google.com/	MCQs
M2-Renal-B-0039	Metabolism of Tryptophan	Explain Tryptophan metabolism Discuss related inherited disorders	Should Know Must Know	C2	• Lippincott illustrated Biochemistry 8th Edition • Harper's Textbook of Biochemistry 32nd Edition • Google scholar articles https://scholar.google.com/	MCQs
M2-Renal-B-0040	Metabolism of methionine	Describe metabolism of sulfur containing amino acids Discuss related disorders	Should Know Must Know	C2 C2	• Lippincott illustrated Biochemistry 8th Edition • Harper's Textbook of Biochemistry 32nd Edition • Google scholar articles https://scholar.google.com/	MCQs
M2-Renal-B-0041	Metabolism of branched chain amino acids	Explain Metabolism of branched chain amino acids Discuss related inherited disorders	Should Know Must Know	C2 C2	• Lippincott illustrated Biochemistry 8th Edition • Harper's Textbook of Biochemistry 32nd Edition • Google scholar articles https://scholar.google.com/	MCQs
M2-Renal-B-0042	Metabolism of polyamines	Discuss Synthesis of polyamines and their clinical significance	Should Know Must Know	C2	• Lippincott illustrated Biochemistry 8th Edition • Harper's Textbook of Biochemistry 32nd Edition • Google scholar articles https://scholar.google.com/	MCQs

M2-Renal-B-0043	Phenylalanine Metabolism	Explain phenylalanine Metabolism in detail Highlight the Disorders	Should Know Nice to Know	C2 C3	- Harper's Textbook Of biochemistry 32nd Edition - Lippincott Biochemistry 8th edition (chapter 19) https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3854183/	MCQs
M2-Renal-B-0044	Ammonia	Explain sources of NH ₃ formation and its transport Describe Metabolism Discuss Ammonia Toxicity interpret the related disorders	Must Know Must Know Must Know Nice to Know	C3 C2 C3 C3	- Lippincott illustrated Biochemistry 8th Edition - Harper's Textbook of Biochemistry 32nd Edition - Harper's illustrated biochemistry 32nd edition (Chapter 40 page 477) https://link.springer.com/article/10.1007/BF00998474 https://www.youtube.com/watch?v=JX6wPV4JHJ4&t=77s https://www.ncbi.nlm.nih.gov/books/NBK546677/	MCQs
M2-Renal-B-0045	Phenylalanine and Tyrosine	Clinical disorders related to Phenylalanine and tyrosine metabolism	Must Know	C2	- Lippincott Biochemistry 8th edition (chapter 19 page – 271) https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3854183/	MCQs
M2-Renal-B-0046	Arginine & Branched Chain Amino Acid Metabolism	Explain Metabolism of branched chain amino acids Discuss related inherited disorders	Should Know Must Know	C1 C2	- Harper's illustrated biochemistry 32nd edition (Chapter 40 page 477) https://link.springer.com/article/10.1007/BF00998474	MCQs

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	• Renal Failure	Apply basic knowledge of subject to study clinical case.	C3
	• Ureteric Colic	Apply basic knowledge of subject to study clinical case.	C3
Physiology	• Acute Glomerulo Nephritis	Apply basic knowledge of subject to study clinical case.	C3
	• Anuria	Apply basic knowledge of subject to study clinical case.	C3
Biochemistry	• Metabolic Acidosis	Apply basic knowledge of subject to study clinical case.	C3
	• Ammonia Toxicity	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**

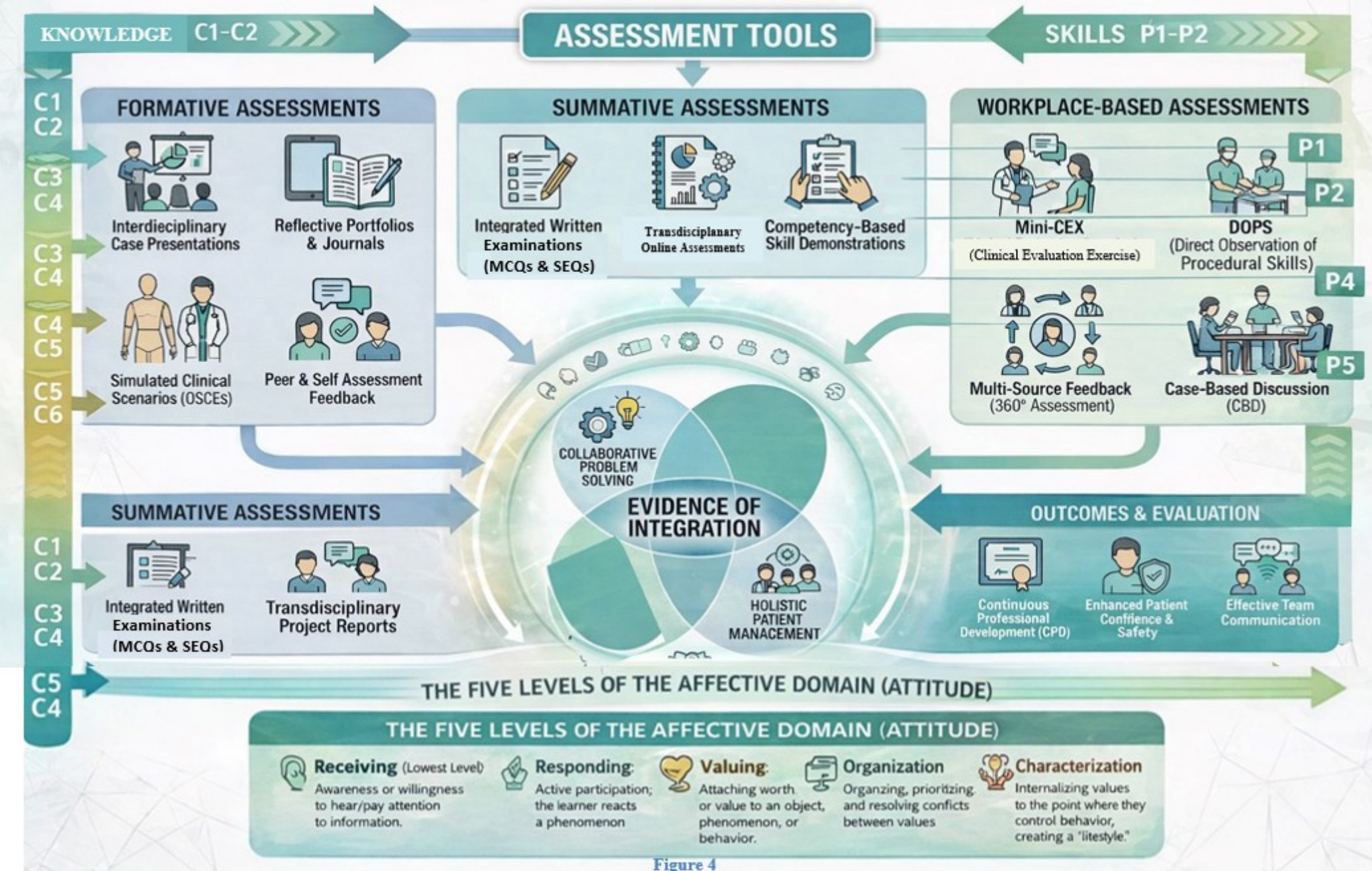


Figure 4

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

Table of Specification (TOS) For Module Examination for Second 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 Assessment of 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
	Physiology	21	6	3	30	30 min	14		4	2	20	60	6 HRS	90
	Biochemistry	21	6	3	30	30 min	14		4	2	20	60	6 HRS	90

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

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

Marks per Item

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

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

3.2.4 Continuous Internal Assessment (CIA)

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

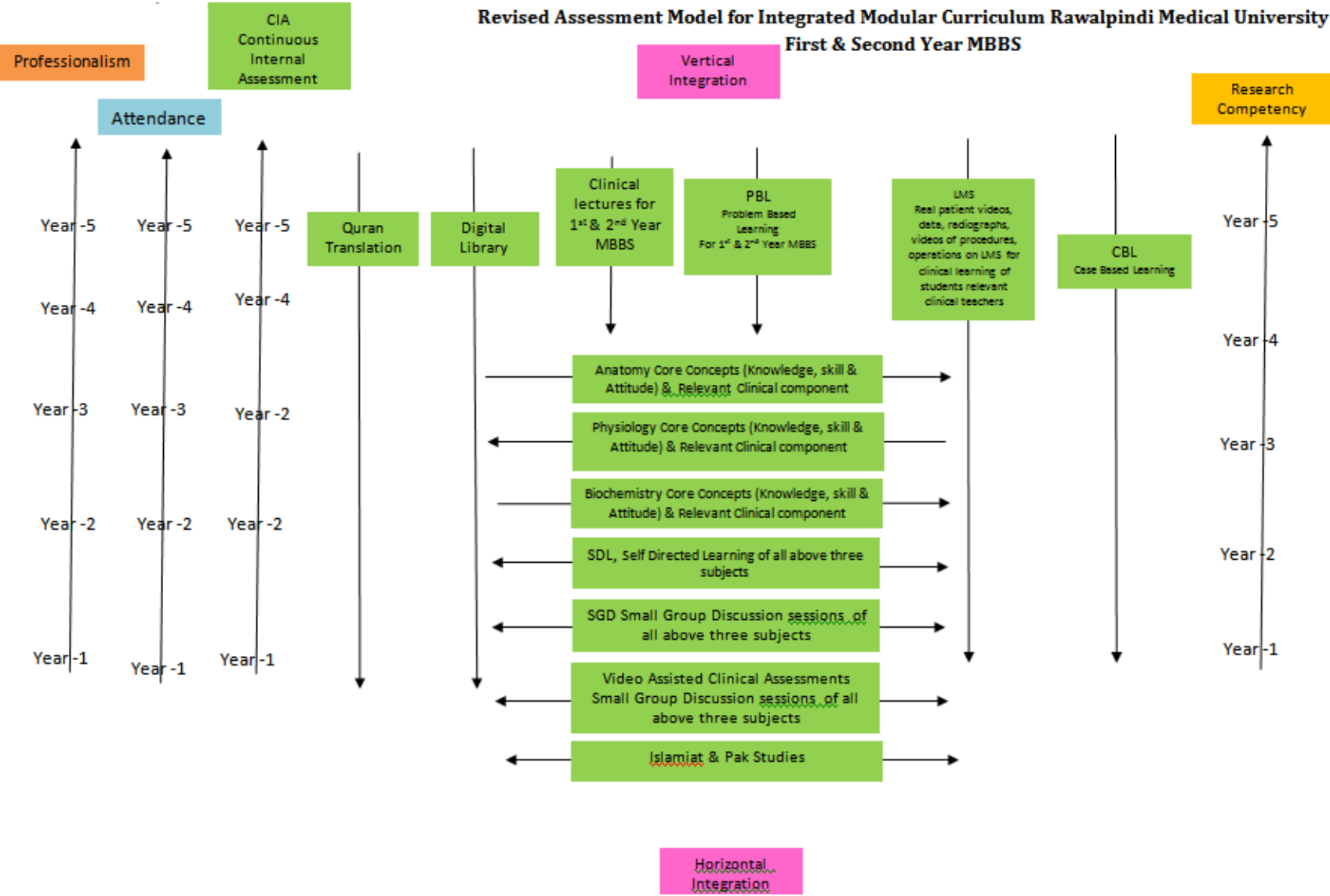
Break up of internal assessment is as follows:

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

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

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

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



Reference: The Integrated & Clinically Oriented Assessment Model For Under Graduates Rawalpindi Medical University “Mumtahn” “ممتحن” (The Examiner)

No. of Assessments of Anatomy for Second Year MBBS (Block- IV):

Block	Sr. #	Module – 1 GIT Module - I Components	Type of Assessments	Total Assessments Time			No. of Assessments	
				Assessment Time	Summative Assessment Time	Formative Assessment Time		
Block – IV	1	End Module Examinations (SEQs, SAQs, EMQs, MCQs Av OSPE Based)	Summative	2 Hours 25 minutes	2 Hours & 35 minutes	30 Minutes	1 Formative	2 Summative
	2	Structured & Clinically oriented Viva voce	Summative	10 Minutes				
	3	Weekly LMS based Assessment (MCQs based)	Formative	30 Minutes				
	Total				3 Hours & 05 Minutes		3 Assessments	
	Sr. #	Module – 2 Renal 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)	Formative	2 x 30 Minutes				
	Total				3 Hours & 35 Minutes		4 Assessments	
	Sr. #	Block – IV 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 Second Year MBBS (Block- V):

Block	Sr. #	Module – 3 Reproduction Module-I Components	Type of Assessments	Total Assessments Time			No. of Assessments	
				Assessment Time	Summative Assessment Time	Formative Assessment Time		
Block – V	1	End Module Examinations (SEQs, SAQs, EMQs, MCQs AvOSPE Based)	Summative	2 Hours 25 minutes	2 Hours & 35 minutes	30 Minutes	1 Formative	2 Summative
	2	Structured & Clinically oriented Viva voce	Summative	10 Minutes				
	3	Weekly LMS based Assessment (MCQs based)	Formative	30 Minutes				
	Total			3 Hours & 05 Minutes			3 Assessments	
	Sr. #	Module – 4 CNS 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)	Formative	2 x 30 Minutes				
	Total			3 Hours & 35 Minutes			4 Assessments	
	Sr. #	Block – V 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 Second Year MBBS (Block- VI):

Block	Sr. #	Module – 5 Special Senses Module Components	Type of Assessments	Total Assessments Time			No. of Assessments	
				Assessment Time	Summative Assessment Time	Formative Assessment Time		
Block – VI	1	End Module Examinations (SEQs,SAQs,EMQs, MCQs AvOSPE Based)	Summative	2 Hours 25 minutes	2 Hours & 35 minutes	30 Minutes	1 Formative	2 Summative
	2	Structured & Clinically oriented Viva voce	Summative	10 Minutes				
	3	Weekly LMS based Assessment (MCQs based)	Formative	30 Minutes				
	Total			3 Hours & 05 Minutes			3 Assessments	
	Sr. #	Module – 6 Endocrinology Module-IComponents	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)	Formative	2 x 30 Minutes				
	Total			3 Hours & 35 Minutes			4 Assessments	
	Sr. #	Block – VI 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 Second Year MBBS:

Module	Summative Assessment Time	Formative Assessment Time	Total Assessments Time
GIT Module - I	2 Hours & 35 minutes	30 Minutes	3 Hours & 05 Minutes
Renal Module-I	2 Hours & 35 minutes	60 Minutes	3 Hours & 35 Minutes
Block -IV	5 Hours & 30 Minutes		5 Hours & 30 Minutes
Reproduction Module-I	2 Hours & 35 minutes	30 Minutes	3 Hours & 05 Minutes
CNS Module-I	2 Hours & 35 minutes	60 Minutes	3 Hours & 35 Minutes
Block -V	5 Hours & 30 Minutes		5 Hours & 30 Minutes
Special Senses Module	2 Hours & 35 minutes	30 Minutes	3 Hours & 05 Minutes
Endocrinology-I Module	2 Hours & 35 minutes	60 Minutes	3 Hours & 35 Minutes
Block -VI	5 Hours & 30 Minutes		5 Hours & 30 Minutes
Pre-Annual Examination		.....	7 Hours & 45 Minutes
Second 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 Second Year MBBS (Block- IV):

Block	Sr. #	Module – 1 GIT Module - I Components	Type of Assessments	Total Assessments Time			No. of Assessments	
				Assessment Time	Summative Assessment Time	Formative Assessment Time		
Block – IV	1	End Module Examinations (SEQs, SAQs, EMQs, MCQs AvOSPE Based)	Summative	2 Hours 25 minutes	2 Hours & 35 minutes	30 Minutes	1 Formative	2 Summative
	2	Structured & Clinically oriented Viva voce	Summative	10 Minutes				
	3	Weekly LMS based Assessment (MCQs based)	Formative	30 Minutes				
	Total			3 Hours & 05 Minutes			3 Assessments	
	Sr. #	Module – 2 Renal 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)	Formative	2 x 30 Minutes				
	Total			3 Hours & 35 Minutes			4 Assessments	
	Sr. #	Block – IV 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 Second Year MBBS (Block- V)

Block	Sr. #	Module – 3 Reproduction Module-I Components	Type of Assessments	Total Assessments Time			No. of Assessments	
				Assessment Time	Summative Assessment Time	Formative Assessment Time		
Block – V	1	End Module Examinations (SEQs, SAQs, EMQs, MCQs Av OSPE Based)	Summative	2 Hours 25 minutes	2 Hours & 35 minutes	30 Minutes	1 Formative	2 Summative
	2	Structured & Clinically oriented Viva voce	Summative	10 Minutes				
	3	Weekly LMS based Assessment (MCQs based)	Formative	30 Minutes				
	Total			3 Hours & 05 Minutes			3 Assessments	
	Sr. #	Module – 4 CNS 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)	Formative	2 x 30 Minutes				
	Total			3 Hours & 35 Minutes			4 Assessments	
	Sr. #	Block –V 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 Second Year MBBS (Block- VI):

Block	Sr. #	Module – 5 Special Senses Module Components	Type of Assessment s	Total Assessments Time			No. of Assessments		
				Assessment Time	Summative Assessment Time	Formative Assessment Time			
Block – VI	1	End Module Examinations (SEQs, SAQs, EMQs, MCQs AvOSPE Based)	Summative	2 Hours 25 minutes	2 Hours & 35 minutes	30 Minutes	1 Formative	2 Summative	
	2	Structured & Clinically oriented Viva voce	Summative	10 Minutes					
	3	Weekly LMS based Assessment (MCQs based)	Formative	30 Minutes					
	Total				3 Hours & 05 Minutes			3 Assessments	
	Sr. #	Module – 6 Endocrinology 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)	Formative	2 x 30 Minutes					
	Total				3 Hours & 35 Minutes			4 Assessments	
	Sr. #	Block – VI 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 Second Year MBBS:

Module	Summative Assessment Time	Formative Assessment Time	Total Assessments Time
GIT Module - I	2 Hours & 35 minutes	30 Minutes	3 Hours & 05 Minutes
Renal Module-I	2 Hours & 35 minutes	60 Minutes	3 Hours & 35 Minutes
Block -IV	5 Hours & 30 Minutes		5 Hours & 30 Minutes
Reproduction Module-I	2 Hours & 35 minutes	30 Minutes	3 Hours & 05 Minutes
CNS Module-I	2 Hours & 35 minutes	60 Minutes	3 Hours & 35 Minutes
Block -V	5 Hours & 30 Minutes		5 Hours & 30 Minutes
Special Senses Module	2 Hours & 35 minutes	30 Minutes	3 Hours & 05 Minutes
Endocrinology-I Module	2 Hours & 35 minutes	60 Minutes	3 Hours & 35 Minutes
Block -VI	5 Hours & 30 Minutes		5 Hours & 30 Minutes
Pre-Annual Examination		.....	7 Hours & 45 Minutes
Second 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 Second Year MBBS (Block- IV):

Block	Sr. #	Module – 1 GIT Module - I Components	Type of Assessments	Total Assessments Time			No. of Assessments	
				Assessment Time	Summative Assessment Time	Formative Assessment Time		
Block – IV	1	End Module Examinations (SEQs, SAQs, EMQs, MCQs AvOSPE Based)	Summative	2 Hours 25 minutes	2 Hours & 35 minutes	30 Minutes	1 Formative	2 Summative
	2	Structured & Clinically oriented Viva voce	Summative	10 Minutes				
	3	Weekly LMS based Assessment (MCQs based)	Formative	30 Minutes				
	Total			3 Hours & 05 Minutes			3 Assessments	
	Sr. #	Module – 2 Renal 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)	Formative	2 x 30 Minutes				
	Total			3 Hours & 35 Minutes			4 Assessments	
	Sr. #	Block – IV 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 Second Year MBBS (Block-V):

Block	Sr. #	Module – 3 Reproduction Module-I Components	Type of Assessments	Total Assessments Time			No. of Assessments	
				Assessment Time	Summative Assessment Time	Formative Assessment Time		
Block – V	1	End Module Examinations (SEQs, SAQs, EMQs, MCQs AvOSPE Based)	Summative	2 Hours 25 minutes	2 Hours & 35 minutes	30 Minutes	1 Formative	2 Summative
	2	Structured & Clinically oriented Viva voce	Summative	10 Minutes				
	3	Weekly LMS based Assessment (MCQs based)	Formative	30 Minutes				
	Total			3 Hours & 05 Minutes			3 Assessments	
	Sr. #	Module – 4 CNS 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)	Formative	2 x 30 Minutes				
	Total			3 Hours & 35 Minutes			4 Assessments	
	Sr. #	Block – V 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 Second Year MBBS (Block- VI):

Block	Sr. #	Module – 5 Special Senses Module Components	Type of Assessments	Total Assessments Time			No. of Assessments	
				Assessment Time	Summative Assessment Time	Formative Assessment Time		
Block – VI	1	End Module Examinations (SEQs, SAQs, EMQs, MCQs AvOSPE Based)	Summative	2 Hours 25 minutes	2 Hours & 35 minutes	30 Minutes	1 Formative	2 Summative
	2	Structured & Clinically oriented Viva voce	Summative	10 Minutes				
	3	Weekly LMS based Assessment (MCQs based)	Formative	30 Minutes				
	Total			3 Hours & 05 Minutes			3 Assessments	
	Sr. #	Module – 6 Endocrinology 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)	Formative	2 x 30 Minutes				
	Total			3 Hours & 35 Minutes			4 Assessments	
	Sr. #	Block – VI 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 Second Year MBBS:

Module	Summative Assessment Time	Formative Assessment Time	Total Assessments Time
GIT Module - I	2 Hours & 35 minutes	30 Minutes	3 Hours & 05 Minutes
Renal Module-I	2 Hours & 35 minutes	60 Minutes	3 Hours & 35 Minutes
Block -IV	5 Hours & 30 Minutes		5 Hours & 30 Minutes
Reproduction Module-I	2 Hours & 35 minutes	30 Minutes	3 Hours & 05 Minutes
CNS Module-I	2 Hours & 35 minutes	60 Minutes	3 Hours & 35 Minutes
Block -V	5 Hours & 30 Minutes		5 Hours & 30 Minutes
Special Senses Module	2 Hours & 35 minutes	30 Minutes	3 Hours & 05 Minutes
Endocrinology-I Module	2 Hours & 35 minutes	60 Minutes	3 Hours & 35 Minutes
Block -VI	5 Hours & 30 Minutes		5 Hours & 30 Minutes
Pre-Annual Examination		.....	7 Hours & 45 Minutes
Second 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 Second Year MBBS (Block- IV):

Block	Sr. #	Module – 1 GIT Module - I Components	Type of Assessments	Total Assessments Time		No. of Assessments
				Assessment Time	Formative Assessment Time	
Block – IV	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 Renal 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 Second Year MBBS (Block- V):

Block	Sr. #	Module – 3 Reproduction Module-I Components	Type of Assessments	Total Assessments Time		No. of Assessments
				Assessment Time	Formative Assessment Time	
Block – V	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 CNS 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 Second Year MBBS (Block- VI):

Block	Sr. #	Module – 5 Special Senses Module Components	Type of Assessments	Total Assessments Time		No. of Assessments
				Assessment Time	Formative Assessment Time	
Block – VI	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 Endocrinology 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 Second Year MBBS:

Module	Formative Assessment Time	Total Assessments Time
GIT Module - I	45 Minutes	45 Minutes
Renal Module-I	45 Minutes	45 Minutes
Block -IV		
Reproduction Module-I	45 Minutes	45 Minutes
CNS Module-I	45 Minutes	45 Minutes
Block -V		
Special Senses Module	45 Minutes	45 Minutes
Endocrinology - I Module	45 Minutes	45 Minutes
Block -VI		
Pre-Annual Examination	.....	35 Minutes
Second Professional	.....	60 Minutes
Grand Total	4 hours and 30 minutes	6 hours and 5 minutes

Total Teaching Hours vs Total Assessment Hours

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

3.2.4 Pre- Annual Assessment (PAA)

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

Proposed Table of Specifications for 2nd Pre-Annual Examination 2025

- Total Marks: 845

Total marks =800 Marks			
Subjects		% Weightage of subjects	Marks distribution as per weightage
	Anatomy	28%	240 Marks
	Physiology	28%	240 Marks
	Biochemistry	28%	240 Marks
	Integrated Subjects Community Medicine & Public Health/Research Behavioural 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 IV Marks	BLOCK V Marks	BLOCK VI Marks	Total Marks
845 Marks	285 Marks	285 Marks	275 Marks	845 Marks

B - Subject wise marks breakup in Blocks

Subjects	Block IV	Block V	Block VI	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 Second year MBBS - Block -IV

Block	Subjects	Theory (Knowledge)	Practical (Skill/attitude)	Total marks	Total marks (Core subjects + Integrated Subjects)
Block IV	Anatomy	50	30	80 marks	240+ 45 = 285 marks
	Physiology	50	30	80 marks	
	Biochemistry	50	30	80 marks	

(Core subjects + Integrated Subjects)	Total			240 marks	285 Marks
	Integrated Subjects			45 Marks	
	Community Medicine /Research	6 Marks			
	Behavioural Sciences	3 Marks			
	Pathology	2 Marks			
	Pharmacology	3 Marks			
	Radiology	2 Marks			
	Gynae & Obs	4 Marks			
	Medicine	2 Marks			
	Family Medicine	2 Marks			
	Paediatrics	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 Second year MBBS - Block -V

Block	Subjects	Theory (Knowledge)	Practical (Skill/attitude)	Total marks	Total marks (Core subjects + Integrated Subjects)
Block V (Core subjects + Integrated Subjects)	Anatomy	50	30	80 marks	240+ 45 = 285 marks
	Physiology	50	30	80 marks	
	Biochemistry	50	30	80 marks	
	Total			240 marks	
	Integrated Subjects				

285 Marks	Community Medicine /Research	4 Marks		45 Marks	
	Family Medicine	3 Marks			
	Orthopedics	3 Marks			
	Radiology	3 Marks			
	Medicine	3 Marks			
	Gynae & Obs	3 Marks			
	Behavioural 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 Second year MBBS - Block -VI

Block	Subjects	Theory (Knowledge)	Practical (Skill/attitude)	Total marks	Total marks (Core subjects + Integrated Subjects)
Block VI Total marks (Core subjects + Integrated Subjects) 275 Marks	Anatomy	50	30	80 marks	240+35 = 275 marks
	Physiology	50	30	80 marks	
	Biochemistry	50	30	80 marks	
	Total			240 marks	
	Integrated Subjects			35 Marks	
	Community Medicine	2 Marks			
	Behavioural 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(GIT Module - I) & Module 2(Renal Module-I) - Block -IV

Block -IV 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 -IV 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 (Reproduction Module-I) & Module 4(CNS Module-I) - Block -V

Block -V 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 -V Practical Component (Skill & Attitude)

Subjects	LabOSPE			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	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 (Special Senses Module) &Module 6 (Endocrinology Module) - Block -VI

Block -VI 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 -VI Practical Component (Skill & Attitude)

Subjects	LabOSPE			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 Second Year MBBS 2025

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

3.2.5 Annual Professional Assessment (APA)

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

Regulations

- Final Annual Assessment shall be open to any student who:
 - Has been enrolled/registered and completed one academic year preceding the concerned Final Annual Assessment in Rawalpindi Medical University.

- Has his/her name submitted to the Controller of Examinations for assessment purposes by the Principal of the College and meets all prerequisites for the assessment.
- Has his/her internal assessment marks for all Blocks submitted to the Controller of Examinations by the Principal of the College along with the admission form.
- Produces good character certificate the following certificates duly verified by the Principal:
- Candidates not meeting the above requirements shall not be allowed to appear in the Final Annual Assessment but may sit for the supplementary examination if they fulfill all remaining requirements and stay enrolled as regular students up to the next examination.
- To pass the Final Annual Assessment, students must achieve at least 50% in both the Written and Oral/Practical/Clinical assessments, as well as a 50% aggregate score simultaneously.
- Candidates scoring 85% or above in any paper will be awarded a "distinction" in that Block, provided they achieve at least 80% in the Written component. Candidates must pass all papers in the Final Annual Assessment concurrently to receive any distinctions.
- A candidate who fails one or more papers in the Final Annual Assessment may temporarily join the next professional class until the supplementary examination but will not be promoted permanently without passing all papers.
- Students taking the supplementary examination for the Second time due to an absence in the annual examination, if failing any paper, will be retained in their current class.
- Any student failing to clear the Second or Second Final Annual Assessment MBBS within four attempts will be ineligible to continue or reapply for MBBS or BDS admission.
- Examination applications must be submitted to the Controller of Examination via the College Principal, with the required fee and documentation.
- College must submit question papers, internal assessment marks, and attendance records for each block to the Examinations Department of Rawalpindi Medical University.
- Revised internal assessments are only permissible for detained students. Continuous assessment records must be maintained by college departments.
- Examination fees are to be paid through the Principal, using a bank draft, pay order, or crossed cheque made out to the Treasurer, Rawalpindi Medical University.
- One annual and one supplementary examination for Second and Second Final Annual Assessment MBBS are allowed per academic session. Under exceptional circumstances, such as national emergencies, a special examination may be arranged with the Syndicate and Board of Governors' approval.

Reference: UHS Integrated Curriculum Version 2

Statutes:

- **Scheduling:** The Second Professional MBBS will be held at the end of Second year whereas the Second Professional MBBS shall be held at the end of Second year.
- **Subjects:** Every candidate is required to appear in the following subjects in each Block
 - a. Core subjects-** Integrated Anatomy, Integrated Physiology, Integrated Biochemistry
 - b. Vertically integrated Subjects-** Community Medicine C Public Health, Behavioral Sciences, Pathology, Pharmacology, associated Clinical Subjects
 - c. Spirally Integrated subjects-** General Education Cluster (GEC), ALPHA (Artificial Intelligence, Leadership, Professionalism, Humanities and Arts), Early Clinical Exposure (ECE) and Research.
- **Assessments:** There will be three papers in Second Annual Professional Examination and four papers in the Second Annual professional Examination.

Paper	Second year MBBS	Second year MBBS
Paper-1	Block -IV	Block -IV
Paper-2	Block- V	Block- V
Paper-3	Block-VI	Block-VI
Paper-4	-----	GEC (Islamic Studies C Pakistan Studies)

- a. Second Professional Examination Total Marks = G00***
 - 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- 1000 Marks***
 - 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 C Pakistan Studies) Total Marks = 100

*Marks Adopted from University of Health Sciences (UHS)

Reference: <https://www.uhs.edu.pk/downloads/2k23mbbscurriculum.pdf>

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

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

- **Block Assessment Components:** the components of Block Assessment shall be as follows:

- a. **One theory Paper (K)** having two sections

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

Second year MBBS	Number of MCQs	Number of SEQs
Block -IV	75	6
Block -V	75	6
Block -VI	75	6
Second Year MBBS	Number of MCQs	Number of SEQs
Block -IV	70	7
Block -V	75	6
Block -VI	80	5

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

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

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

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

ii. **Objective Structured Viva Examinations (OSVE):** This section will consist of table viva for each core subject. Students will be evaluated by internal and external examiner using a structured marking rubric, with each viva carries 15 marks.

Second year MBBS	Number of LabOSPE Stations	Number of iOSPE Stations	Number of OSCE Stations	Number of tables VIVA
Block -IV	5	3	4	3
Block -V	5	3	4	3
Block -VI	4	3	5	3
Second Year MBBS	Number of LabOSPE Stations	Number of iOSPE Stations	Number of OSCE Stations	Number of tables VIVA
Block -IV	4	3	5	3
Block -V	5	3	4	3
Block -VI	5	3	4	3

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

Table of Abbreviation

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

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

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

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

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

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

Blocks	Modules	Anatomy	Physiology	Biochemistry	Total
Block IV 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
	Module 1	200	200	200	600

BlockV 1470 Marks	Module 2	200	200	200	600
	Block Exam	90	90	90	270
	Total	490	490	490	1470
Block VI 1470 Marks	Module 1	200	200	200	600
	Module 2	200	200	200	600
	Block Exam	90	90	90	270
	Total	490	490	490	1470
Total Marks		1470	1470	1470	4410

Note:

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

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

Annual Second Professional Examinations 2025

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

A: Second Professional Examination (70%)

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

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

B: Blockwise Distribution of Marks

Total Annual Professional Marks (70%)	BLOCK IV Marks	BLOCK V Marks	BLOCK VI Marks	Total Marks
630 Marks	210 Marks	210 Marks	210 Marks	630 Marks

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

C: Subject Wise Marks Breakup in Blocks

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

D: Subject Wise Distribution of Marks for Second Year MBBS

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

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

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

	Gynae C Obs	1 Marks					
	Behavioural Sciences	4 Marks					
	Pathology	2 Marks					
	ECE		5 Marks				
	ALPHA and GEC		5 Marks				
Total marks		181+29 = 210 marks					
Block	Subjects	Theory	Practical	Total marks	Total marks Core Subject + Integrated Subjects		
Block VI	Anatomy	25 marks	30 marks	55 marks	183+27 = 210 marks		
	Physiology	48 marks	35 marks	83 marks			
	Biochemistry	15 marks	30 marks	45 marks			
	Total	88	95	183 marks			
	Integrated Subjects			27 Marks			
	Community Medicine	3 Marks					
	Behavioural Sciences	2 Marks					
	Medicine	2 Marks					
	Family medicine	1 Marks					
	Gynae C Obs	1 Marks					
	Radiology	1 Marks					
	Pediatrics	1 Marks					
	Otorhinolaryngology	1 Marks					
	Ophthalmology	1 Marks					
	Pathology	2 Marks					
	Pharmacology	2 Marks					
	210 Marks						

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

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

Subject	Theory			Practical			Total Marks
	Component	No of Items	Marks	Component	No of Items	Marks	
Block IV (GIT / Renal) Total Annual marks=210	Section I- MCQ	75	75	LabOSPE	5	25	210
	Section II- SEQ	6	30	iOSPE	3	15	
	OSCE		4	20			
	OSVE		3	45			
	CIA =90 Marks		Continuous Internal Assessment (30%)		45	Continuous Internal Assessment (30%)		45	90
Total Annual marks+ CIA =210+90= 300	Total Marks		150	Total Marks		150	300
Block V (Reproduction, CNS) Total Annual marks=210	Section I- MCQ	75	75	LabOSPE	5	25	210
	Section II- SEQ	6	30	iOSPE	3	15	
	OSCE		4	20			
	OSVE		3	45			
	CIA =90 Marks		Continuous Internal Assessment (30%)		45	Continuous Internal Assessment (30%)		45	90
Total Annual marks+ CIA =210+90= 300	Total Marks		150	Total Marks		150	300
Block VI (Special Senses, Endocrinology) Total Annual	Section I- MCQ	75	75	LabOSPE	4	20	210
	Section II-	6	30	iOSPE	3	15	
			OSCE	5	25		

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

F: 2nd Professional Examination 2025 (Batch 52)

Block IV Assessment Breakup (GIT, Renal Module-I)

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

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

G: 2nd Professional Examination 2025 (Batch 52)

Block V Assessment

Reproduction, CNS Module-I

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

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

H: 2nd Professional Examination 2025 (Batch 52)
Block VI Assessment
Special Senses, Endocrinology Modules

Themes	Discipline	Theory			Practical			OSVE		Total Marks per subject	
		No of MC Qs (1 marks each)	No of SEQs (5 marks each)	Marks	No of Stations of LabOSPE (5 marks each)	No of Stations of iOSPE (5 marks each)	No of Stations of OSCE (5 marks each)	OSVE (15 Marks)	Marks	Marks	%
Core s Horizontally Integrated Subjects	Anatomy C Applied /Clinical	15	2	25	1	1	1	1	30	55	26
	Physiology C Applied/Clinical	33	3	48	2	1	1	1	35	83	40
	Biochemistry C Applied/clinical	10	1	15	1	1	1	1	30	45	21
Vertically Integrated Subjects	Community Medicine C Public Health	2	-	2	-	-	-	-	-	2	13
	Behavioural Sciences	2	-	2	-	-	-	-	-	2	
	Pathology	2	-	2	-	-	-	-	-	2	
	Medicine	2		2						2	
	Family medicine	1		1						1	
	Gynae C Obs	1		1						1	
	Radiology	1		1						1	
	Pediatrics	1		1						1	
	Otorhinolaryngolog y	1		1						1	
	Ophthalmology	1		1						1	
	Pathology	2		2						2	

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

SECTION - V

Time Table

RMU – 12 Integrated Modular MBBS Curriculum 2026

Isolation to **Beyond Boundaries**

Renal Module - I Time Table

Second Year MBBS

Session 2025 - 2026

Batch- 52

Renal Module – I Team

Module Name	:	Renal Module-I
Duration of module	:	04 Weeks
Coordinator	:	Dr. Sheena Tariq
Co-coordinator	:	Dr. Jawad Hassan
Reviewed by	:	Module Committee

Module Committee			Module Task Force Team		
1.	Vice Chancellor RMU	Prof. Dr. Muhammad Umar	1.	Coordinator	Dr. Sheena Tariq (Senior 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. Tariq Furqan (Senior Demonstrator of Anatomy)
4.	Chairperson Physiology	Prof. Dr. Samia Sarwar	4.	Co-Coordinator	Dr. Jawad Hassan (Senior Demonstrator of Physiology)
5.	Chairperson Anatomy	Prof. Dr. Ayesha Yousaf	5.	Co-coordinator	Dr. Sana Latif (Demonstrator of Biochemistry)
6.	Chairperson Biochemistry	Dr. Aneela Jamil			
7.	Focal Person Anatomy 2 nd Year MBBS	Dr. Maria Tasleem			
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 Ayesha	2.	Implementation Incharge 1st & 2 nd Year MBBS	Dr. Arsalan Manzoor Mughal Dr. Farzana Fatima
11.	Focal Person Behavioral Sciences	Dr. Zona Tahir	3.	Assistant Director DME	Dr. Farzana Fatima
12.	Focal Person Community Medicine	Dr. Afifa Kulsoom	4.	Editor	Muhammad Arslan Aslam
13.	Focal Person Quran Translation Lectures	Dr. Fahd Anwar			
14.	Focal Person Family Medicine	Dr. Sadia Khan			

Discipline Wise Details of Modular Content

Integration Themes				
Block	Module	Embryology	Histology	Gross Anatomy
IV	Anatomy	Embryology - Kidney - Ureter - Urinary Bladder - Urethra	Histology - Kidney - Ureter - Urinary Bladder	Posterior Abdominal Wall & Organs of Urinary System
	Biochemistry	- Amino Acid Pool Protein Turn Over Nitrogen Balance & transport of Amino Acid, - Urea Cycle & Disorder - Amino Acid Metabolism - Ammonia Toxicity - Acid Base in Balance - Serum Electrolyte		
	Physiology	- Body Fluid Compartments, Volume & osmolarity of ECF NICF - Physiology of Renal System, GFR - Regulation of GFR & RBF - Tubular Reabsorbtion & Scretion - Micturition Reflex & Abnomalities - Acid base balance		
	Spiral Courses			
	Islamiyat	- The literal and civic meaning of Prophethood and the need for Prophethood - The meaning of the Akharat, its necessity, and wisdom - Aqida Akhirat, its meaning, necessity, and wisdom		
	Pak Studies	- The Objectives and Goals of the Creation of Pakistan - Nazria e Pakistan or Quid e Azam - The foundation of the Muslim community		
	Fehm e Quran	- Laam for emphasis (التأكيد لام) Superlative Degree like أكبر Revision of all Quranic Sentences - Emphatic Particle إن Preposition “For” (اللام) Preposition (في)		
	Research Club Activity (1-4)	- Synopsis Writing - Questionnaire Development - Data Analysis		

		• Manuscript Writing
	• Family Medicine	• Renal Failure
	• Behavioral Sciences	• Perception • Thinking and Motivation
	Vertical Integration	
	• Radiology	• Radiological Evaluation of Oliguria and Renal Failure • Role of Ultrasound X Ray & CT in Renal Systematic Causes
	• Medicine	• Acute renal failure • Potassium imbalance and its management
	• Surgery	• Hydronephrosis / Pyonephrosis
	• Obstetrics & Gynecology	• Physiological Changes in the Renal System in Pregnancy & UTI
	• Pharmacology	• Introduction to diuretics
	• Peads	• UTI
	• Joint Session	• Nephrotic Syndrome (Peads, Medicine, Anatomy, Physiology & Biochemistry)

Categorization of Modular Content of Anatomy

Category A*	Category B**	Category C				
Special Embryology	Special Histology	Demonstrations / SGD	CBL	Practical's	SSDL	Self-Directed Learning (SDL)
• Development of Kidney & Ureter • Development of Urinary Bladder & urethra	• Histology of Kidney-I • Histology of Kidney-II • Histology of Urinary Bladder • Histology of Ureter & Urethra	• Fascia & Muscles of Posterior Abdominal Wall • Nerves of Posterior Abdominal Wall • Vessels of Posterior Abdominal Wall • Lumbar Vertebra • Kidney & Ureter • Suprarenal Gland • Urethra • Radiology & Surface Marking	• Renal failure • Uretric stones	• Kidney • Ureter • Urinary Bladder	• Vessels of Posterior Abdominal Wall • Lumbar Vertebra • Urinary Bladder • Spotting	• Psoas Abscess • Ureteric Stones • Hydroureter • Atonic Bladder • Adrenogenital Syndrome • Vertebral Venous Plexus • Listhesis

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
3.	Assistant professor of Anatomy department (AP)	01
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)	$2 * 05 = 10$ hours
2.	Small Group Discussions (SGD)	$1.5 * 7 = 10.5$ hours
4.	Practical / Skill Lab	$1.5 * 15 = 22.5$ hours

Contact Hours (Students)

Sr. #	Hours Calculation for Various Type of Teaching Strategies	Total Hours
1.	Large Group Interactive Session (LGIS)	$1 * 5 = 05$ hours
2.	Small Group Discussions (SGD)	$1.5 * 7 = 10.5$ hours
4.	Practical / Skill Lab	$1.5 * 3 = 4.5$ hours
5.	Self-Directed Learning (SDL)	$1 * 7 = 7$ hours

Categorization of Modular Content of Physiology

Category A*	Category B**	Category C***				
LGIS	LGIS	PBL	CBL	Practical's	SGD	SDL
Regulation of GFR & RBF – I, (Determinants of GFR and RBF (Prof Dr Samia Sarwar/Dr. Faizania))	Excretion of dilute urine (Dr. Sidra)		Accute Glomerular Nephritis	Estimation of specific gravity of urine Examination of 9th, 10th, 11th & 12th cranial nerves Examination of 5 th cranial nerves	Formation of dilute & concentrated urine Acid base balance. Volume & osmolarity of ECF & ICF, Abnormalities of fluid volume & regulation (first week, 16-03-2023)	Body fluid compartments, Volume & osmolarity of ECF & ICF. Physiology of Renal system, Glomerular filtration rate Abnormalities of fluid volume & regulation, Edema A. Regulation of GFR & RBF-I (Determinants of GFR & RBF) B. Regulation of GFR & RBF-II, Physiological control of GFR and RBF, Autoregulation of GFR and RBF/Macula densa feedback mechanism Tubular reabsorption & secretion along various parts of nephrons Regulation of tubular reabsorption A. Clearance methods to quantify kidney function B. Micturition reflex & Abnormalities of micturition
Regulation of GFR & RBF – II, Physiological control of GFR and RBF and Autoregulation of GFR and RBF/ macula densa feedback mechanism (Prof Dr Samia Sarwar/Dr. Faizania)	Excretion of concentrated urine (counter current multiplier) (Dr. Sidra)					
Physiology of Renal system and Glomerular filtration rate (Dr. Faizania)	Excretion of concentrated urine (counter current exchanger) (Dr. Sidra)					
Tubular reabsorption & secretion along various parts of nephrons (Dr. Faizania)	Introduction to physiology of acid base balance & buffer systems, Respiratory and renal regulation of acid base balance (Dr. Sidra)					
Regulation of tubular reabsorption (Dr. Faizania)	Acid base disorders (Dr. Sidra)					
Clearance methods to quantify kidney function (Dr. Faizania)	Body fluid compartments, Volume & osmolarity of ECF & ICF (Dr. Sheena)					
Micturition reflex & Abnormalities of micturition (Dr. Faizania)	Abnormalities of fluid volume & regulation, Edema (Dr. Sheena)					
	Control of ECF osmolarity (Dr. Sheena)					
	Regulation of ECF K ⁺ concentration, Regulation of Ca ⁺⁺ , PO ₄ ⁻³ & Mg ²⁺ concentration (Dr. Sheena)					
	Integration of renal mechanism for control of ECF, Nervous & hormonal factors for renal body fluid feedback control (Dr. Sheena)					

	Renal failure & hemodialysis (Dr. Sheena)					
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 / HumanResource	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
4.	Demonstrators of physiology department	07
5.	Residents of physiology department (PGTs)	08

Contact Hours (Faculty) & Contact Hours (Students)

Sr. #	Hours Calculation for Various Type of Teaching Strategies	Total Hours
1.	Large Group Interactive Session (Lectures)	2* 18 =36 hours
2.	Small Group Discussions (SGD)/CBL	1.5-hour x 14 =21 hours + 1 hour = 22 hours
3.	Problem Based Learning (PBL)	---
4.	Practical / Skill Lab	1.5-hour x 14 = 21 hours
5.	Self-Directed Learning (SDL)	1hour x 7 = 7 hours

Categorization of Modular Content of Department of Biochemistry:

Category A*	Category B**	Category C***			
LGIS	LGIS	PBL	CBL	Practical's	SGD
Amino Acid Metabolism	Ammonia Toxicity		Ammonia Toxicity	Estimation of Urea & Creatinine	Phenyl Alanine Metabolism
Acid Based imbalance	Amino Acid pool,		Metabolic Acidosis	Urine Analysis-I	Sodium & Chloride Metabolism
Urea Cycle	Nitrogen Balance			Urine Analysis-II	
	Ammonia Transport Serum Electrolytes				

Category A*: By HOD & Assistant Professor

Category B:** By 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	01
2	Assistant professor of biochemistry department (AP)	02
3	Demonstrators of biochemistry department	06

Contact Hours (Faculty) & Contact Hours (Students)

Sr. #	Hours Calculation for Various Type of Teaching Strategies	Total Hours (Faculty)	Total Hours (student)
1.	Large Group Interactive Session (Lectures)	$10 * 2 = 20$ hours	10
2.	Small Group Discussions (SGD)	$6 * 5 = 30$ hours	06
4.	Practical / Skill Lab	$6 * 5 = 30$ hours	06
5.	Self-Directed Learning (SDL)	$1 * 4 = 4$ hours	04

Time Table for Renal Module-I (First Week)
(27-04-2026 To 02-05-2026)

Date/Day	Theme	8:00am-9:20am	9:20am – 10:10am		10:10am – 10:30am	10:30am-11:20am		11:20am-12:10pm		12:10pm-12:30pm	12:30pm – 2:00pm	Home Assignments	
27-04-2026 Monday	Edema & Fluid Retention	Practical &CBL/SGD Topics & venue mentioned at the end. Batches, Teachers & Venue Mentioned in Table No. 1	PHYSIOLOGY (LGIS)		Break	ANATOMY (LGIS)		BIOCHEMISTRY (LGIS)		Break	DISSECTION/SGD	SDL Physiology Body fluid compartments& Edema	
28-04-2026 Tuesday			Body fluid compartments Volume & Osmolarity of ECF & ICF	Physiology of Renal system, Glomerular filtration rate		Embryology	Histology	Amino Acids Pool, Protein Turnover, Nitrogen balance & Chemical Reaction of Amino Acids	Glutamine Histidine, Threonine & Polyamines Metabolism		Fascia, Muscles and Nerves of Posterior Abdominal wall		
			Dr. Sheena (Even)	Dr. Faizania (Odd)		Development of kidney & Ureter	kidney I	Dr. Aneela / Dr. Uzma (Even)	Dr. Kanwal Huma (Odd)				
		PHYSIOLOGY (LGIS)		PAK STUDIES		BIOCHEMISTRY (LGIS)		DISSECTION/SGD	SDL Physiology Volume & osmolarity of ECF& ICF, Abnormalities of fluid volume & regulation				
Physiology of Renal system, Glomerular filtration rate		Body fluid compartments Volume & Osmolarity of ECF & ICF	5) The Objectives and Goals of the Creation of Pakistan			Glutamine Histidine, Threonine & Polyamines Metabolism	Amino Acids Pool, Protein Turnover, Nitrogen balance & Chemical Reaction of Amino Acids	Vessels of Posterior Abdominal Wall Lumbar Vertebra					
Dr. Faizania (Even)		Dr. Sheena (Odd)	Miss. Kinza Fiaz			Dr. Kanwal Huma (Even)	Dr. Aneela / Dr. Uzma (Odd)						
PHYSIOLOGY (LGIS)		ANATOMY (LGIS)		BIOCHEMISTRY (LGIS)		RESEARCH CLUB ACTIVITY- 1	SDL Biochemistry Clinical Disorders Related to Phenylalanine & Tyrosine						
29-04-2026 Wednesday		Abnormalities of fluid volume & regulation Edema	Regulation GFR & RBF-I (Determinats of GFR & RBF)	Histology		Embryology		Urea cycle & its Disorders	Glycine Phenylalanine & Tyrosine Metabolism		Synopsis Writing		
		Dr. Sheena (Even)	Prof. Dr. Samia Sarwar / Dr. Aneela (Odd)	Kidney-I		Development of kidney & Ureter		Dr. Kanwal Huma (Even)	Dr. Aneela / Dr. Uzma (Odd)		Dr. Farah (Odd)		
		PHYSIOLOGY (LGIS)		SURGERY		BIOCHEMISTRY (LGIS)		DISSECTION/CBL	SDL Biochemistry Clinical Disorders of Ammonia Metabolism				
30-04-2026 Thursday		Regulation GFR & RBF-I (Determinats of GFR & RBF)	Abnormalities of fluid volume & regulation Edema	Hydronephrosis / Pyonephrosis		Glycine Phenylalanine & Tyrosine Metabolism	Urea cycle & its Disorders	Kidney					
		Prof. Dr. Samia Sarwar / Dr. Aneela (Even)	Dr. Sheena (Odd)	Dr. Usman (Even)		Dr. Sarmad (Odd)	Dr. Aneela /Dr. Uzma (Even)	Dr. Kanwal Huma (Odd)					
		01-05-2026 Friday	Labour Day										
Date/Day		8:00am-9:20am		9:20am – 10:10am		10:10am – 10:30am	10:30am-11:20am		11:20am-12:10pm		12:10pm-12:30pm	12:30pm – 2:00pm	Home Assignments
02-05-2026 Saturday		Practical &CBL/SGD Topics & venue mentioned at the end. Batches, Teachers & Venue Mentioned in Table No. 1	PHYSIOLOGY (LGIS)		Break	ANATOMY (LGIS)		CLINICO-CONCEPT CONNECT (C36) SESSION - I		Break	DISSECTION/CBL	SDL Anatomy Psoas Abcess	
			Excretion of dilute urine	Regulation of GFR & RBF-II, Physiological control of GFR and RBF, Autoregulation of GFR and RBF		Histology	Embryology	Edema & Fluid Retention					
						Development of urinary bladder and urethra	kidney II	Anatomy					
								Physiology					
			Biochemistry										
			Asso. Prof. Dr Arsalan Manzoor Mughal (Even)	Ass. Prof. Dr. Maria (Odd)		Medicine							
						Radiology							
Family Medicine													

Table No. 1 (Time: 08:00am – 09:20am)																
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			Physiology SGD		Biochemistry SGD	
Batch	Teacher Name	Batch	Teacher Name			Batch	Teacher Name	Batch	Teacher Name	Batch	Teacher Name		Batch	Teacher Name		
Sr. No	Batch	Roll No.	- Histology of Kidney (Anatomy/ Histology-practical) venue Histology Laboratory-Dr. Minhail Haq - Serum estimation of Urea & Creatinine (Biochemistry practical) venue- Biochemistry Laboratory - Estimation of specific gravity of urine (Physiology –practical) Physiology Laboratory	Monday	C	Supervised by HOD	B	Dr. Rahat	Supervised by HOD	E	Dr. Fareed	Supervised by HOD	A	Dr. Aneela	D	Dr. Uzma
1.	A	01-70		Tuesday	D		C	Dr. Romessa		A	Dr. Aneela		B	Dr. Shazia	E	Dr. Almas
2.	B	71-140		Wednesday	E		D	Dr. Uzma		B	Dr. Shazia		C	Dr. Jawad	A	Dr. Romessa
3.	C	141-210		Thursday	B		A	Dr. Almas		D	Dr. Fahd		E	Dr. Fareed	C	Dr. Romessa
4.	D	211-280		Saturday	A		E	Dr. Romessa		C	Dr. Jawad		D	Dr. Fahd	B	Dr. Rahat
5.	E	281-onwards														

		Topics for SGDs / CBL with Venue													
		- Biochemistry SGDs: Phenyl Alanine Metabolism (Venue: Lecture Hall No 2) - Physiology CBL-Body Fluid Compartment & Edema (Venue: Lecture Hall No 5) - Anatomy CBL- Renal Failure													

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. Almas Aijaz (Senior. Demo Biochemistry)	6.	C2	(176-210)	New Lecture Hall Complex Lecture Theater # 01	Dr. Najam (PGT Physiology)
2.	A2	(36-70)	Lecture Hall #.04 (1st Floor Anatomy)	Dr. Farah Ali Shah (Demonstrator Physiology)	7.	D1	(210-245)	New Lecture Hall Complex Lecture Theater # 04	Dr. Jawad (Demonstrator Physiology)
3.	B1	(71-105)	Anatomy Museum (First FloorAnatomy)	Dr. Rahat Afzal (APWMO Biochemistry)	8.	D2	(246-280)	New Lecture Hall Complex Lecture Theater # 04	Dr. Sadia Tehseen (PGT Anatomy)
4.	B2	(106-140)	Lecture Hall no.03 (First Floor)	Dr. Minhail Haq (Senior Demonstrator ofAnatomy)	9.	E1	(281-315)	Anatomy Museum (First Floor Anatomy)	Dr. Romessa (Demonstrator Biochemistry)
5.	C1	(141-175)	New Lecture Hall Complex Lecture Theater # 01	Dr. Ali Zain (PGT Physiology)	10	E2	(315 onwards)	Lecture Hall no.04 (Basement)	Dr. Afsheen (PGT Physiology)

Table No. 3 Venues for Large Group Interactive Session (LGIS)	
Odd Roll Numbers	New Lecture Hall Complex Lecture Theater # 01
Even Roll Number	New Lecture Hall Complex Lecture Theater # 04

Table No. 4 Batch Distribution and Venues for Anatomy Small Group Discussion SGDs / Dissections					Table No. 5 Batch Distribution and Venues for Physiology Small Group Discussion SGDs				
Batches	Roll No	Subgroup	Anatomy Teacher	Venue	Batches	Roll No	Subgroup	Physiology Teacher	Venue
A	01- 70	A1: Roll No (1 – 17) A2: Roll No (18 – 34) A3: Roll No (35 – 51) A4: Roll No (52 – 70)	Dr. Sara bano / Dr. Amaan (Assistant Professor)	New Lecture Hall Complex 03	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. Aneela Yasmeen (APWMO)	Physiology Lecture Hall 5
B	71-140	B1: Roll No (71 – 87) B2: Roll No (88 – 104) B3: Roll No (105 – 121) B4: Roll No (122 – 140)	Dr. Sadia Baqir (APWMO)	Anatomy Lecture Hall 4	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. Shazia Nosheen (APWMO)	Physiology Lecture Hall 5
C	141-210	C1: Roll No (141 – 157) C2: Roll No (158 – 174) C3: Roll No (175 – 191) C4: Roll No (192 – 210)	Dr. Tariq Furqan (Senior. Demonstrator)	Dissection Hall	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. Fahd Anwar (Demonstrator)	Physiology Lecture Hall 5
D	211- 280	D1: Roll No (211 – 227) D2: Roll No (228 - 244) D3: Roll No (245 – 261) D4: Roll No (262 – 280)	Dr. Minahil Haq (Senior. Demonstrator)	Anatomy Museum	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. Jawad (Demonstrator)	Physiology Lecture Hall 5
E	281- onwards	E1: Roll No (281 – 297) E2: Roll No (298 – 314) E3: Roll No (315 – 331) E4: Roll No (332 – onwards)	Dr. Sadia Tehseem (PG trainee)	Anatomy Lecture Hall 3	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. Fareed Ullah (Demonstrator)	Physiology Lecture Hall 5
Supervised by Prof. Dr. Ayesha Yousaf					Supervised by Prof. Dr. Samia Sarwar				

Time Table for Renal Module-I (Second Week)
(04-05-2026 To 09-05-2026)

Date/Day	Theme	8:00am-9:20am	9:20am – 10:10am	10:10am – 10:30am	10:30am-11:20am	11:20am-12:10pm	12:10pm-12:30pm	12:30pm – 2:00pm	Home Assignments			
04-05-2026 Monday	Polyuria & Altered Urine Concentration	Practical &CBL/SGD Topics & venue mentioned at the end. Batches, Teachers & Venue Mentioned in Table No. 1	PHYSIOLOGY (LGIS)		B r e a k	PBL 1 (SESSION-I)	BEHAVIORAL SCIENCES		B r e a k	RESEARCH CLUB ACTIVITY- 2	SDL Anatomy Radiological Identification	
05-05-2026 Tuesday			Regulation of GFR & RBF-II, Physiological control of GFR and RBF, Autoregulation of GFR and RBF	Excretion of dilute urine		PBL Team	Perception			Questionnaire Development		
			Prof. Dr. Samia Sarwar/Dr. Uzma (Even)	Dr. Sidra Hamid (Odd)								
		06-05-2026 Wednesday	PHYSIOLOGY (LGIS)				BIOCHEMISTRY (LGIS)			DISSECTION/SGD		
Excretion of Concentrated urine (Counter Current Multiplier)			Tubular Reabsorbtion & Scretion along Various parts of nephron	Histology		Embryology	Ammonia Toxicity	Arginine & Branched Chain Amino Acid Metabolism		Urinary bladder / Suprarenal Gland & Urethra	SDL Physiology Physiology of Renal system	
kidney II			Development of urinary bladder and urethra									
07-05-2026 Thursday		Dr. Sidra Hamid (Even)	Dr. Faizania (Odd)	Asso. Prof. Dr Arsalan Manzoor Mughal (Even)		Asso. Prof. Dr. Maria (Odd)						Dr. Aneela / Dr. Uzma (Even)	Dr. Kanwal Huma (Odd)
		PHYSIOLOGY (LGIS)		BIOCHEMISTRY (LGIS)		RESEARCH CLUB ACTIVITY- 3		SDI Physiology Excretion of Concentrated & Diluted urine				
		Tubular Reabsorbtion & Scretion along Various parts of nephron	Excretion of Concentrated urine (Counter Current Multiplier)	Contrast Nephropathy		Arginine & Branched Chain Amino Acid Metabolism	Ammonia Toxicity					
08-05-2026 Friday		Dr. Faizania (Even)	Dr. Sidra Hamid (Odd)	Dr- Humaira (Even)		Dr. Fizza (Odd)	Dr. Kanwal Huma (Even)			Dr. Aneela / Dr. Uzma (Odd)	Dr. Farah (Odd)	
		MEDICINE		PHYSIOLOGY (LGIS)		PHYSIOLOGY (LGIS)		ISLAMIYAT		SDL Biochemistry Disorders Related to Branched Chain Amino Acid Metabolism		
		Acute renal failure		Regulation of tubular reabsorbtion		Excretion of concentrated urine (Counter current exchanger)	Excretion of concentrated urine (Counter current exchanger)	Regulation of tubular reabsorbtion			4) The literal and civic meaning of Prophethood and the need for Prophethood	
Dr. Saima Meer (Odd)		Dr. Mudassar (Even)	Dr. Faizania (Even)	Dr. Sidra Hamid (Odd)		Dr. Sidra Hamid (Even)	/Dr. Faizania (Odd)	Mufti Naeem Sherazi				
Date/Day			8:00 AM – 9:00 AM	9:00 AM – 10:00AM		10:00AM – 11:00 AM	11:00AM – 12:00PM			Home Assignments		
08-05-2026 Friday			ISLAMIYAT	PHYSIOLOGY (LGIS)		BIOCHEMISTRY (LGIS)		ANATOMY		SDL Anatomy Uritric Stone, Hydro Uretor,		
		5) The meaning of the Akharat, its necessity, and wisdom	Control of ECF osmolarity	Clarence Method to Quantify kidney function		Sodium & Chloride Metabolism	Acid Base Imbalance I	Histology			Histology	
	Mufti Naeem Sherazi	Dr. Sidra Hamid (Even)	Dr. Faizania (Odd)	Dr Nayab (Even)	Dr. Aneela (Odd)	Asso. Prof. Dr Arsalan Manzoor Mughal (Even)	Asso. Prof. Dr. Maria (Odd)					
Date/Day		8:00am-9:20am	9:20am – 10:10am	10:10am – 10:30am	10:30am-11:20am	11:20am-12:10pm	12:10pm-12:30pm	12:30pm – 2:00pm	Home Assignments			
09-05-2026 Saturday	Practical &CBL/SGD Topics & venue mentioned at the end Batches, Teachers & Venue Mentioned in Table No. 1	PBL 1 (SESSION-II)		B r e a k	BIOCHEMISTRY (LGIS)		BEHAVIORAL SCIENCES		B r e a k	CLINICO-CONCEPT CONNECT (C36) SESSION - II Polyuria & Altered Urine Concentration	SDL Anatomy Atonic Bladder, Supra Pubic Puncture Land Mark Mid ClinicoConcept Connect (C36) Session Evaluation	
		PBL Team			Acid Base Imbalance I	Sodium & Chloride Metabolism	Thinking and Motivation					
					Dr. Aneela (Even)	Dr Nayab (Odd)				Dr. Azam (Even)		Dr. Mehmood (Odd)
					Family Medicine							

Table No. 1 (Time: 08:00am – 09:20am)																
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		Physiology SGD	Biochemistry SGD			
Sr. No	Batch	Roll No.	Batch		Teacher Name	Batch	Teacher Name		Batch	Teacher Name	Batch		Teacher Name	Batch	Teacher Name	
			- Histology of Ureter (Anatomy/ Histology-practical) venue Histology Laboratory-Dr. Tariq Furqan - Urine Analysis -I (Biochemistry practical) venue- Biochemistry Laboratory - Examination of 5th Cranial Nerve (Physiology –practical) Physiology Laboratory	Monday	C	Supervised by HOD	B	Dr. Rahat	Supervised by HOD	E	Dr. Fareed	Supervised by HOD	A	Dr. Aneela	D	Dr. Uzma
1.	A	01-70		Tuesday	D		C	Dr. Romessa		A	Dr. Aneela		B	Dr. Shazia	E	Dr. Almas
2.	B	71-140		Wednesday	E		D	Dr. Uzma		B	Dr. Shazia		C	Dr. Jawad	A	Dr. Romessa
3.	C	141-210		Thursday	B		A	Dr. Almas		D	Dr. Fahd		E	Dr. Fareed	C	Dr. Romessa
4.	D	211-280		Saturday	A		E	Dr. Romessa		C	Dr. Jawad		D	Dr. Fahd	B	Dr. Rahat
5.	E	281-onwards														

		Topics for SGDs / CBL with Venue													
		- Biochemistry CBL: Ammonia Toxicity (Venue: Lecture Hall No 2) - Physiology CBL- GFR & Auto regulation (Venue: Lecture Hall No 5) - Anatomy CBL- Kidney Failure, Ureteric Stone													

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. Almas Aijaz (Senior. Demo Biochemistry)	6.	C2	(176-210)	New Lecture Hall Complex Lecture Theater # 01	Dr. Najam (PGT Physiology)
2.	A2	(36-70)	Lecture Hall #.04 (1st Floor Anatomy)	Dr. Farah Ali Shah (Demonstrator Physiology)	7.	D1	(210-245)	New Lecture Hall Complex Lecture Theater # 04	Dr. Jawad (Demonstrator Physiology)
3.	B1	(71-105)	Anatomy Museum (First FloorAnatomy)	Dr. Rahat Afzal (APWMO Biochemistry)	8.	D2	(246-280)	New Lecture Hall Complex Lecture Theater # 04	Dr. Sadia Tehseen (PGT Anatomy)
4.	B2	(106-140)	Lecture Hall no.03 (First Floor)	Dr. Minhail Haq (Senior Demonstrator ofAnatomy)	9.	E1	(281-315)	Anatomy Museum (First Floor Anatomy)	Dr. Romessa (Demonstrator Biochemistry)
5.	C1	(141-175)	New Lecture Hall Complex Lecture Theater # 01	Dr. Ali Zain (PGT Physiology)	10	E2	(315 onwards)	Lecture Hall no.04 (Basement)	Dr. Afsheen (PGT Physiology)

Table No. 3 Venues for Large Group Interactive Session (LGIS)	
Odd Roll Numbers	New Lecture Hall Complex Lecture Theater # 01
Even Roll Number	New Lecture Hall Complex Lecture Theater # 04

Table No. 4 Batch Distribution and Venues for Anatomy Small Group Discussion SGDs / Dissections					Table No. 5 Batch Distribution and Venues for Physiology Small Group Discussion SGDs				
Batches	Roll No	Subgroup	Anatomy Teacher	Venue	Batches	Roll No	Subgroup	Physiology Teacher	Venue
A	01- 70	A1: Roll No (1 – 17) A2: Roll No (18 – 34) A3: Roll No (35 – 51) A4: Roll No (52 – 70)	Dr. Sara bano / Dr. Amaan (Assistant Professor)	New Lecture Hall Complex 03	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. Aneela Yasmeen (APWMO)	Physiology Lecture Hall 5
B	71-140	B1: Roll No (71 – 87) B2: Roll No (88 – 104) B3: Roll No (105 – 121) B4: Roll No (122 – 140)	Dr. Sadia Baqir (APWMO)	Anatomy Lecture Hall 4	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. Shazia Nosheen (APWMO)	Physiology Lecture Hall 5
C	141-210	C1: Roll No (141 – 157) C2: Roll No (158 – 174) C3: Roll No (175 – 191) C4: Roll No (192 – 210)	Dr. Tariq Furqan (Senior. Demonstrator)	Dissection Hall	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. Fahd Anwar (Demonstrator)	Physiology Lecture Hall 5
D	211- 280	D1: Roll No (211 – 227) D2: Roll No (228 - 244) D3: Roll No (245 – 261) D4: Roll No (262 – 280)	Dr. Minahil Haq (Senior. Demonstrator)	Anatomy Museum	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. Jawad (Demonstrator)	Physiology Lecture Hall 5
E	281- onwards	E1: Roll No (281 – 297) E2: Roll No (298 – 314) E3: Roll No (315 – 331) E4: Roll No (332 – onwards)	Dr. Sadia Tehseem (PG trainee)	Anatomy Lecture Hall 3	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. Fareed Ullah (Demonstrator)	Physiology Lecture Hall 5
Supervised by Prof. Dr. Ayesha Yousaf					Supervised by Prof. Dr. Samia Sarwar				

Time Table for Renal Module-I (Third Week)
11-05-2026 To 18-05-2026

Date/Day	Theme	8:00am-9:20am		9:20am – 10:10am		10:10am – 10:30am	10:30am-11:20am		11:20am-12:10pm		12:10pm-12:30pm	12:30pm – 2:00pm		Home Assignments			
11-05-2026 Monday	Oliguria, Uremia & Acid–Base Disturbances	Practical &CBL/SGD Topics & venue mentioned at the end Batches, Teachers & Venue Mentioned in Table No. 1		PHYSIOLOGY (LGIS)		Break	BIOCHEMISTRY (LGIS)		GYNAE & OBS		Break	JOINT SESSION		SDL Physiology Excretion of dilute and Excretion of concentrated urine			
				Clearence Method to Quantify kidney function	Control of ECF osmolarity		Acid Base Imbalance II	Potassium Metabolism	Physiological Changes in the Renal System in Pregnancy & UTI			Nephrotic Syndrome					
				Dr. Faizania (Even)	Dr. Sidra Hamid Odd)		Dr. Aneela (Even)	Dr. Nayab (Odd)	Dr. Saima (Even)	Dr. Zainab (Odd)		Peads, Medicine, Anatomy, Physiology & Biochemistry					
12-05-2026 Tuesday		Practical &CBL/SGD Topics & venue mentioned at the end Batches, Teachers & Venue Mentioned in Table No. 1		PHYSIOLOGY (LGIS)			BIOCHEMISTRY		PHARMACOLOGY			RESEARCH CLUB ACTIVITY- 4		SDL Physiology Clearance methods to quantify kidney function.			
				Regulation of ECF K ⁺ &Regulation of ECF: Ca ⁺⁺ , PO ₄ ⁻³ & Mg ⁺² concentration	Micturition Reflex & Abnormalities of Micturition		Potassium Metabolism	Acid Base Imbalance II	Introduction to diuretics			Manuscript Writing					
				Dr. Sheena (Even)	Dr. Faizania (Odd)		Dr. Nayab (Even)	Dr Aneela (Odd)	Dr. Memuna (Even)	Dr. Uzma (Odd)		Dr. Khuala Noreen					
13-05-2026 Wednesday		Practical &CBL/SGD Topics & venue mentioned at the end Batches, Teachers & Venue Mentioned in Table No. 1		PHYSIOLOGY (LGIS)			PBL 2 (SESSION-I)		FAMILY MEDICINE			DISSECTION/SGD		SDL Biochemistry Hypo & Hypernatremia			
				Micturition Reflex & Abnormalities of Micturition	Regulation of ECF K ⁺ &Regulation of ECF: Ca ⁺⁺ , PO ₄ ⁻³ & Mg ⁺² concentration		PBL Team Referred to Table No. 2		Approched to a patient with Renal Failure			Surface Marking / Radiogrph/ Cross Sectional Anatomy					
				Dr. Faizania (Even)	Dr. Sheena (Odd)				Dr. Sidra Hamid (Even)	Dr Sadia (Odd)							
14-05-2026 Thursday		Practical &CBL/SGD Topics & venue mentioned at the end Batches, Teachers & Venue Mentioned in Table No. 1		PHYSIOLOGY (LGIS)			RADIOLOGY		MEDICINE			12:30pm – 1:10pm		SDL Biochemistry Clinical Conditions related to Potassium Metabolism			
				Renal Machanism for control of ECF, Nervous & hormonal factors for body Fluid	Physiology of acid base balance respiratory & renal regulation of acid base balance		Radiological Evaluation of Oliguria and Renal Failure		Potassium imbalance and its management			1:10pm – 2:00pm					
												PAK STUDIES	PAK STUDIES				
							Nazria e Pakistan or Quid e Azam	The foundation of the Muslim community									
			Dr. Sheena (Even)	Dr. Sidra Hamid (Odd)				Dr. Saima Meer (Even)	Dr. Mudassar (Odd)	Miss. Kinza Fiaz							
15-05-2026 Friday		8:00 AM – 9:00 AM		9:00 AM – 10:00AM			10:00AM – 11:00 AM		11:00AM – 12:00PM			SDL Anatomy Chromafin System Adreno Genital Syndrome					
		PBL 2 (SESSION-II)		PHYSIOLOGY (LGIS)			PHYSIOLOGY (LGIS)		ISLAMIYAT								
		PBL Team Referred to Table No. 2		Physiology of acid base balanced respiratory & renal regulation of acid base balance	Renal Machanism for control of ECF, Nervous & hormonal factors for body Fluid		Acid base disorders	Renal failure & hemodialysis Diuretics	6) Aqida Akhirat, its meaning, necessity, and wisdom								
16-05-2026 Saturday		Practical &CBL/SGD Topics & venue mentioned at the end Batches, Teachers & Venue Mentioned in Table No. 1		Early Clinicaly Exposure (ECE)										SDL Anatomy Vertebral Venous Plexus, Listhesis (Role of Ligaments and Paraspinal Muscles) End Clinico Concept Connect (C36) Session Evaluation			
Date/Day			8:00am-9:20am		9:20am – 10:10am		10:10am – 10:30am	10:30am-11:20am		11:20am-12:10pm		12:10pm-12:30pm	12:30pm – 01:10pm		01:10pm – 02:00pm		
18-05-2026 Monday		RADIOLOGY		PHYSIOLOGY (LGIS)		Break	PEADS		CLINICO-CONCEPT CONNECT (C36) SESSION - III		Break	FEHM E QURAN – IV		FEHM E QURAN – V			
	Role of Ultrasound X Ray & CT in Renal Systematic Causes		Renal failure & hemodialysis	Acid base disorders	UTI		Oliguria, Uremia & Acid–Base Disturbances			Laam for emphasis (التأكيد لام) Superlative Degree like أكبر Revision of all Quranic Sentences		Emphatic Particle ان Preposition “For” ((اللام) Preposition (في)					
	Dr. Aniqa (Odd)	Dr. Madiha (Even)	Dr. Sheena (Even)	Dr. Sidra Hamid (Odd)	Dr. Afrah (Even)		Dr. Ayesha (Odd)	Anatomy		Qari Abdul Wahid		Qari Abdul Wahid					
								Physiology									
								Biochemistry									
								Medicine									
								Radiology									
								Family Medicine									
								Surgery									
								Community Medicine									

Table No. 1 (Time: 08:00am – 09:20am)																
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			Physiology SGD		Biochemistry SGD	
Batch	Teacher Name	Batch	Teacher Name		Batch	Teacher Name	Batch	Teacher Name		Batch	Teacher Name		Batch	Teacher Name		
Sr. No	Batch	Roll No.	- Histology of Kidney (Anatomy/ Histology-practical) venue Histology Laboratory-Dr. Sadia Baqir - Urinalysis II (Pathological Urine) (Biochemistry practical) venue- Biochemistry Laboratory - Estimation of specific gravity of urine (Physiology –practical) Physiology Laboratory	Monday	C	Supervised by HOD	B	Dr. Rahat	Supervised by HOD	E	Dr. Fareed	Supervised by HOD	A	Dr. Aneela	D	Dr. Uzma
1.	A	01-70		Tuesday	D		C	Dr. Romessa		A	Dr. Aneela		B	Dr. Shazia	E	Dr. Almas
2.	B	71-140		Wednesday	E		D	Dr. Uzma		B	Dr. Shazia		C	Dr. Jawad	A	Dr. Romessa
3.	C	141-210		Thursday	B		A	Dr. Almas		D	Dr. Fahd		E	Dr. Fareed	C	Dr. Romessa
4.	D	211-280		Saturday	A		E	Dr. Romessa		C	Dr. Jawad		D	Dr. Fahd	B	Dr. Rahat
5.	E	281-onwards														

		Topics for SGDs / CBL with Venue													
		- Biochemistry CBL: Metabolic Acidosis (Venue: Lecture Hall No 2) - Physiology CBL-Body Fluid Compartment & Edema (Venue: Lecture Hall No 5) - Anatomy CBL- Renal Failure													

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. Almas Aijaz (Senior. Demo Biochemistry)	6.	C2	(176-210)	New Lecture Hall Complex Lecture Theater # 01	Dr. Najam (PGT Physiology)
2.	A2	(36-70)	Lecture Hall #.04 (1st Floor Anatomy)	Dr. Farah Ali Shah (Demonstrator Physiology)	7.	D1	(210-245)	New Lecture Hall Complex Lecture Theater # 04	Dr. Jawad (Demonstrator Physiology)
3.	B1	(71-105)	Anatomy Museum (First Floor Anatomy)	Dr. Rahat Afzal (APWMO Biochemistry)	8.	D2	(246-280)	New Lecture Hall Complex Lecture Theater # 04	Dr. Sadia Tehseen (PGT Anatomy)
4.	B2	(106-140)	Lecture Hall no.03 (First Floor)	Dr. Minhail Haq (Senior Demonstrator of Anatomy)	9.	E1	(281-315)	Anatomy Museum (First Floor Anatomy)	Dr. Romessa (Demonstrator Biochemistry)
5.	C1	(141-175)	New Lecture Hall Complex Lecture Theater # 01	Dr. Ali Zain (PGT Physiology)	10	E2	(315 onwards)	Lecture Hall no.04 (Basement)	Dr. Afsheen (PGT Physiology)

Table No. 3 Venues for Large Group Interactive Session (LGIS)	
Odd Roll Numbers	New Lecture Hall Complex Lecture Theater # 01
Even Roll Number	New Lecture Hall Complex Lecture Theater # 04

Table No. 4 Batch Distribution and Venues for Anatomy Small Group Discussion SGDs / Dissections					Table No. 5 Batch Distribution and Venues for Physiology Small Group Discussion SGDs				
Batches	Roll No	Subgroup	Anatomy Teacher	Venue	Batches	Roll No	Subgroup	Physiology Teacher	Venue
A	01- 70	A1: Roll No (1 – 17) A2: Roll No (18 – 34) A3: Roll No (35 – 51) A4: Roll No (52 – 70)	Dr. Sara bano / Dr. Amaan (Assistant Professor)	New Lecture Hall Complex 03	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. Aneela Yasmeen (APWMO)	Physiology Lecture Hall 5
B	71-140	B1: Roll No (71 – 87) B2: Roll No (88 – 104) B3: Roll No (105 – 121) B4: Roll No (122 – 140)	Dr. Sadia Baqir (APWMO)	Anatomy Lecture Hall 4	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. Shazia Nosheen (APWMO)	Physiology Lecture Hall 5
C	141-210	C1: Roll No (141 – 157) C2: Roll No (158 – 174) C3: Roll No (175 – 191) C4: Roll No (192 – 210)	Dr. Tariq Furqan (Senior. Demonstrator)	Dissection Hall	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. Fahd Anwar (Demonstrator)	Physiology Lecture Hall 5
D	211- 280	D1: Roll No (211 – 227) D2: Roll No (228 - 244) D3: Roll No (245 – 261) D4: Roll No (262 – 280)	Dr. Minahil Haq (Senior. Demonstrator)	Anatomy Museum	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. Jawad (Demonstrator)	Physiology Lecture Hall 5
E	281- onwards	E1: Roll No (281 – 297) E2: Roll No (298 – 314) E3: Roll No (315 – 331) E4: Roll No (332 – onwards)	Dr. Sadia Tehseem (PG trainee)	Anatomy Lecture Hall 3	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. Fareed Ullah (Demonstrator)	Physiology Lecture Hall 5
Supervised by Prof. Dr. Ayesha Yousaf					Supervised by Prof. Dr. Samia Sarwar				

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

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

Class	Module	Day & Date	Time of Assessment	Focal person	Department Responsible
Second Year MBBS	Renal Module - I	04-05-2026 Monday	9:00 pm - 9:30pm	Prof. Dr Ayesha Yousaf	Anatomy
		05-05-2026 Tuesday	9:00 pm – 9:30pm	Prof. Dr Samia Sarwar	Physiology
		06-05-2026 Wednesday	9:00 pm - 9:30pm	Dr Aneela Jamil	Biochemistry

*Note: All dates are subject to change.

Tentative Date Sheet for End of Renal Module-I Assessment
19-05-2026 To 28-05-2026

Date & Day	Tentative Schedule
19-05-2026 Tuesday	Module Assessment
20-05-2026 Wednesday	
21-05-2026 Thursday	
22-05-2026 Friday	Block Assessment
23-05-2026 Saturday	
25-05-2026 Monday	
26-05-2026 Tuesday	
27-05-2026 Wednesday	
28-05-2026 Thursday	

Note: All dates are subject to change in observance of Eid ul Adha

(Logistic details of Assessments will be notified separately)

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, Second Year MBBS Batch 52
Date: 00-00-0000

Total Marks: 30 (MCQs: 25, EMQ: 5)
Total Time: 30 Minutes
Each MCQ carries 1 mark and EMQ carries 5 marks

Roll No. _____
Name. _____

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 a. b. c. d. e. USMLE: Type Question Reference: Ganong 25 th Edition Page No. 101	C2
Family Medicine		
5.	Question a. b. c. d. e. USMLE: Type Question Reference: Ganong 25 th Edition Page No. 101	

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

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

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

Attempt all Questions

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

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

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

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

Day: _____

Date: _____

10 AV OSPE Slides

Time Allowed: 50 minutes

05 minutes for each slide

Chairperson

Department of _____
Rawalpindi Medical University, Rawalpindi

Additional Director Assessment

Rawalpindi Medical University
Rawalpindi

Director DME

Rawalpindi Medical University
Rawalpindi

Vice Chancellor

Rawalpindi Medical University
Rawalpindi

Slide 1

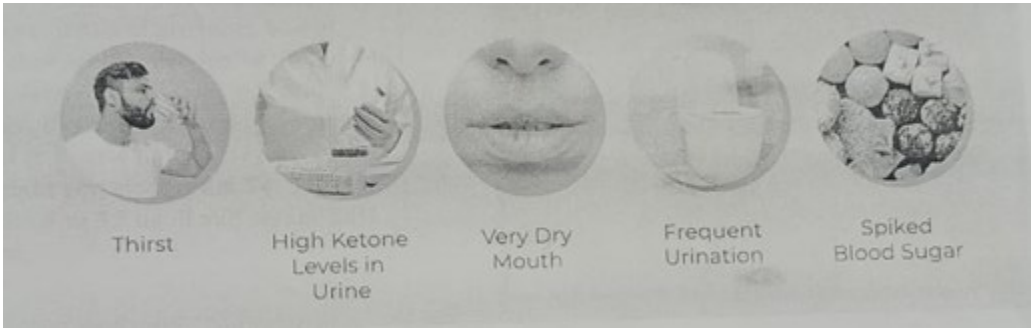
Core Knowledge with Horizontal / Vertical / Spiral Integration

Topic:

Teaching Strategy:

Requirements: Answer sheet, Pen

Objective: _____



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

Slide 1

Key for Examiner

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

Department of Anatomy
Renal Module - I (Structured Viva)

Date:

Time: 8:00-2:00pm

Roll no: 181 onwards

P: Punctuality, D: Dressing, C: Communication

[illegible]

Examiner _____

Sign _____

Stamp _____

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

Department of Physiology
Renal Module - I (Structured Viva)

MODULE:	DATE:	TEACHER NAME:	SIGNATURE
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[illegible]

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

Department of Biochemistry
Renal Module - I (Structured Viva)

Date: Time: Teacher's Name

Roll No.	Classification / Definition/ Enumerate (C1) (05 Marks)	Metabolic role/ Mechanism of action/ Physiological mechanism (C2) (08 Marks)	Related clinical disorders/ Pathogenesis (C3) (07 Marks)	Additional domains of Knowledge to be assessed Family Medicine, Artificial Intelligence, Ethics and Research (C1, C2, C3) (03 Marks)	Professionalism & Behavior (A3) (02 Marks)	Total marks (25)

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

Rawalpindi Medical University
2nd Year MBBS Model MCQS (USMLE Format)

1. A 12-year-old boy was presented to Emergency with severe pain in his right loin. Ultrasound examination revealed a stone lying 6 inches from the pelvi-ureteric junction. The most probable site of ureteric constriction is. a. Pelvic brim b. Oblique passage through wall of bladder c. Pelvi-ureteric junction d. Lateral angle of trigone e. Crossing of root of mesentery	Anatomy
2. A 40-year-old obese woman presented to medical specialist with complaints of edema. She was on a weight losing diet since last 3 months. Her detailed plasma investigations revealed hypoalbuminemia. The major cause of her edema was: a. Increased plasma colloid pressure b. Increased capillary hydrostatic pressure c. Decreased plasma colloid pressure. d. Decreased interstitial fluid hydrostatic pressure. e. Increased interstitial fluid hydrostatic pressure	Physiology
3. A 40-year-old obese woman presented to medical specialist with complaints of edema. She was on a weight losing diet since last 3 months. Her detailed plasma investigations revealed hypoalbuminemia. The major cause of her edema was: a. Increased plasma colloid pressure b. Increased capillary hydrostatic pressure c. Decreased plasma colloid pressure. d. Decreased interstitial fluid hydrostatic pressure. e. Increased interstitial fluid hydrostatic pressure	Biochemistry

Rawalpindi Medical University
2nd Year MBBS Model EMQ

1. A 55-year-old male with a history of hypertension presents with fatigue, swelling of the legs, and foamy urine. Blood tests reveal proteinuria and a serum creatinine level of 3.0 mg/dL. Urinalysis shows significant protein but no hematuria. What is the most likely cause of his kidney failure?

Options for Questions:

- A. Acute Kidney Injury (AKI)
- B. Chronic Kidney Disease (CKD)
- C. Glomerulonephritis
- D. Diabetic Nephropathy
- E. Polycystic Kidney Disease
- F. Renal Tubular Acidosis (RTA)
- G. Nephrotic Syndrome
- H. Acute Tubular Necrosis (ATN)
- I. Hypertensive Nephropathy
- J. Acute Interstitial Nephritis (AIN)

Questions:

1. A patient presents with sudden onset of decreased urine output, elevated serum creatinine, and recent history of shock due to sepsis. What is the most likely diagnosis?
2. A 55-year-old patient with poorly controlled hypertension develops progressive kidney failure over months, with proteinuria and elevated blood pressure. What is the most likely cause of his kidney failure?
3. A young patient presents with bilateral renal cysts, and a family history of similar kidney problems. What is the most likely diagnosis?
4. A patient presents with generalized edema, proteinuria, hypoalbuminemia, and hyperlipidemia. Which of the following is the most likely diagnosis?
5. 40-year-old patient presents with fever, rash, and renal failure following treatment with an antibiotic. Renal biopsy shows interstitial inflammation. What is the most likely diagnosis?

Rawalpindi Medical University
2nd Year MBBS Model SEQs & SAQs (USMLE Format)

1. A male newborn was delivered vaginally at 38 weeks. Pregnancy was uneventful, and no fetal anomalies were detected at prenatal ultrasound controls. The neonate presented at birth with exposed, everted bladder that was clearly visible immediately below umbilical stump, a completely dorsally opened urethra. The scrotum was normally developed, but caudally displaced. - What is the most probable diagnosis? - Give embryological basis of this congenital anomaly? - Which developmental processes is directly disrupted in bladder exstrophy? - Which anatomical structures is most commonly associated with abnormalities in bladder exstrophy? - What other urological anomaly commonly coexists with bladder exstrophy?	Anatomy
2. A 25-year-old patient presents with excessive thirst, frequent urination, and fatigue. Laboratory tests show a decrease in blood urea nitrogen (BUN), an imbalance in sodium and potassium levels, and an abnormally high blood pH. The patient also has a family history of kidney disease. - What is the primary function of the kidneys in regulating blood composition? - How does the kidney contribute to maintaining electrolyte balance in the body? - Explain the role of the kidneys in regulating blood pressure? - What could be the physiological consequence of the observed imbalance in sodium and potassium levels in the patient? - Based on the given clinical signs, what kidney-related disorder would you suspect, and why?	Physiology
3. A 30-year-old male patient with a history of a high-protein diet presents with altered mental status, confusion, and nausea. Blood tests show elevated blood ammonia levels. The patient also has a genetic disorder causing a deficiency in one of the enzymes of the urea cycle. - What is the primary function of the urea cycle in the body? - Which enzyme catalyzes the first step of the urea cycle, and what is its role? - In the urea cycle, which compound is formed by the reaction of carbamoyl phosphate with ornithine? - What would be the consequence of a deficiency in argininosuccinate synthetase (ASS) in the urea cycle? - Given the patient's elevated ammonia levels, which step of the urea cycle might be impaired in this patient?	Biochemistry

Rawalpindi Medical University
2nd Year MBBS Model AV OSPE

Slide 1 / Video

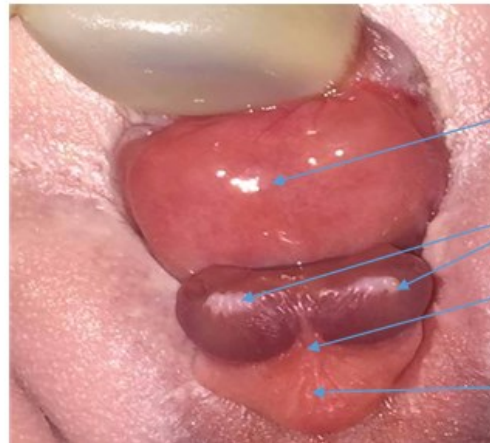
Core Knowledge with Horizontal / Vertical / Spiral Integration

Topic: Development of Urinary Bladder

Teaching Strategy: LGIS

Requirements: Answer sheet, Pen

Objective: To Assess the Knowledge of Students Regarding Congenital Abnormalities of Urinary Bladder



1. Name the clinical condition shown in video (01)
2. What is the embryological basis of this condition? (01)
3. What are the key clinical manifestations of this condition in newborn in newborns? (01)
4. Name at least three commonly associated congenital anomalies. (01)
5. What is the best treatment option? (01)

Rawalpindi Medical University
2nd Year MBBS OSPE (Block-IV)

Observed Station ____

Marks: 05

Time Allowed: 03 Minutes

Subject: Urinary System
Topic assessed: Surface Marking of Kidney
Requirements: Simulated Patient/ Torso
Objective: Surface marking of kidneys

A 40-year-old male presents with persistent lower back pain and hematuria. The physician suspects a renal pathology and requests you to perform surface marking of the kidneys to locate their anatomical position for further examination.

For Candidate:	Learning domain	Marks
As a medical student, you are required to demonstrate the surface marking of the kidneys on a simulated patient or anatomical model.	Psychomotor (C1)	5 Marks

Key Station ____

Requirements: Simulated Patient/ Torso

Q1	Answer	Marks
1	Mark the approximate surface projection of both kidneys on the posterior abdominal wall.	1
2	Identify and explain the anatomical landmarks used for kidney surface marking.	1
3	Describe the vertebral levels at which the kidneys are positioned.	1
4	Explain why the right kidney is positioned lower than the left.	1
5	Give blood supply of kidneys	1

Unobserved Station ____

Marks: 05

Time Allowed: 03 Minutes

Subject: Anatomy of Abdomen

Topic assessed: Radiology of Abdomen

Requirements: Image of CT Scan

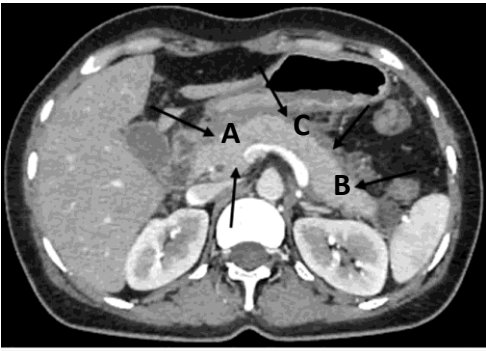
Objective: Evaluate the students' understanding of CT

A 30-year-old male is brought to the hospital with severe right upper quadrant pain. A CT scan of the abdomen is performed to assess possible causes.

For Candidate

Identify the labeled abdominal organs on the given CT scan as

1. A
2. B
3. C
4. Explain how you differentiate between soft tissue, fat, and bone on a CT image.
5. Why is **contrast-enhanced CT** preferred in trauma cases?



Annexure II

Renal Module Entrustable Professional Activities (EPAs)

Theme 1: Generalized Edema due to Renal Dysfunction

EPA-1

1. Title of the EPA

Obtain a focused renal history in a patient presenting with generalized edema.

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 generalized edema suggestive of renal disease.

The history should include:

- Presenting complaint and duration of edema
- Onset and progression of swelling (periorbital swelling progressing to dependent edema)
- Associated urinary symptoms such as frothy urine, reduced urine output, or dark urine
- History of recent infections, especially throat or skin infections
- Associated symptoms such as fatigue, weight gain, breathlessness, or decreased urine output
- History suggestive of renal disease such as nephrotic syndrome or glomerulonephritis
- Past medical history including hypertension, diabetes, or kidney disease
- Drug history including nephrotoxic medications
- Family history of renal disease
- Personal, occupational, and dietary history relevant to renal health
- Identification of **red flag symptoms requiring urgent referral**

Context:

Nephrology OPD, ward-based teaching, clinical skills laboratory, or small group case discussions.

Limitations:

This EPA does not include independently diagnosing renal disease, ordering investigations independently, or managing renal conditions without supervision.

The student is expected to obtain a structured history and report important 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 kidney and glomerular filtration barrier
- Physiology of fluid balance and edema formation
- Basic concepts of renal filtration and protein loss in urine
- Causes of generalized edema related to renal dysfunction
- Functional significance of symptoms such as frothy urine and reduced urine output

These knowledge elements are derived from the renal module learning objectives.

Skills

The learner should be able to:

- Establish rapport and obtain consent
- Take a structured renal history
- Identify progression of edema

- Elicit urinary symptoms related to renal disease
- Recognize clinical clues suggestive of nephrotic syndrome or renal dysfunction
- Identify **red flag symptoms requiring referral**
- Present findings clearly to the supervising clinician

Attitude and behaviour

The learner should demonstrate:

- Respectful and empathetic communication
- Sensitivity to patient discomfort
- Professionalism and confidentiality
- Awareness of personal limitations
- Willingness to seek supervision when serious findings are suspected

Experience

The learner should gain experience through:

- Observation of faculty obtaining renal history
- Supervised clinical exposure in nephrology clinics
- Case-based discussions related to edema and renal disease
- Practice in skills laboratories or simulated patient encounters

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

Assessment methods may include:

- Direct observation during patient interaction
- Mini-CEX
- OSCE station on renal history
- Case-based discussion
- Supervisor rating checklist
- Logbook documentation

Evidence for entrustment may include:

- Multiple observed focused renal histories
- Ability to identify key symptoms and referral indicators
- Clear clinical presentation of findings

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 renal history independently in routine cases and present it to the supervisor.

Stage of training

Second Year MBBS students during renal module teaching.

Entrustment statement

The learner can be entrusted to obtain a focused renal history in a patient presenting with generalized edema under indirect supervision and report clinically relevant findings to the supervising clinician.

EPA-2

1. Title of the EPA

Perform a basic clinical examination in a patient presenting with generalized edema.

2. Specifications and limitations

This EPA involves the ability of the undergraduate medical student to perform a **basic examination for edema and renal dysfunction**.

The activity includes:

- Inspection for periorbital swelling
- Identification of dependent edema
- Assessment of pitting edema
- Measurement of blood pressure
- Evaluation of signs of fluid overload
- Identification of systemic features suggesting renal disease

The activity may occur in:

- Clinical wards
- Nephrology OPD
- Skills laboratory sessions
- Small group clinical demonstrations

Limitations

This EPA does not include diagnosing renal disease independently or initiating treatment.

Students should identify 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

Students should understand:

- Mechanisms of edema formation
- Relationship between renal dysfunction and fluid retention
- Importance of blood pressure assessment in renal disease

Skills

Students should be able to:

- Inspect and identify edema
- Assess pitting edema
- Measure blood pressure correctly
- Recognize abnormal findings
- Present findings clearly to supervisors

Attitude and behaviour

Students should demonstrate:

- Gentle examination technique
- Respect for patient dignity
- Professional behaviour during examination

Experience

Experience may include:

- Faculty demonstration of edema examination
- Supervised practice in skills labs
- Clinical exposure in nephrology wards

5. Assessment methods

- Direct observation
- OSCE station
- Mini-CEX
- Clinical checklist

6. Entrustment level

Level 2 – Practice with direct supervision

Entrustment statement

The learner can be entrusted to perform a basic examination for edema under direct supervision and communicate findings appropriately.

EPA-3

1. Title of the EPA

Interpret basic renal investigations and correlate findings with renal physiology.

2. Specifications and limitations

This EPA includes the ability of the student to interpret **basic renal investigations** and relate them to renal function.

Activities include:

- Identifying tests such as urine analysis, serum creatinine, and eGFR
- Recognizing proteinuria and its significance
- Correlating laboratory findings with renal physiology

Limitations

Students are not expected to independently diagnose renal disease or make management decisions.

3. Most relevant domains of competence

Primary domains

- Medical Expert
- Scholar

Secondary domains

- Communicator
- Professional

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

Knowledge

Students should understand:

- Renal filtration physiology
- Mechanism of proteinuria
- Significance of serum creatinine and eGFR

Skills

Students should be able to:

- Identify major renal investigations
- Recognize abnormal results
- Correlate laboratory findings with clinical symptoms

Attitude and behaviour

Students should demonstrate:

- Curiosity for integrating laboratory findings with clinical reasoning
- Respect for multidisciplinary learning

5. Assessment methods

- OSPE/OSCE stations
- Viva examination
- Case-based discussion
- Written examinations

6. Entrustment level

Level 2 – Practice with direct supervision

Theme 2: Patient with Excessive and Frequent Urine Output (Polyuria)

EPA-1

1. Title of the EPA

Obtain a focused renal history in a patient presenting with excessive urine output (polyuria).

2. Specifications and limitations

This EPA includes the ability of the undergraduate medical student to obtain a **focused, organized, and clinically relevant history** from a patient presenting with excessive urine output.

The history should include:

- Presenting complaint and duration of increased urine output
- Frequency and approximate volume of urine passed per day
- Presence of **nocturia** and sleep disturbance due to frequent urination
- Associated symptoms such as excessive thirst (polydipsia), fatigue, or dehydration
- History of increased fluid intake
- Associated symptoms suggestive of endocrine or metabolic disorders
- History of diabetes mellitus or previous episodes of polyuria
- History of head injury, neurological disease, or endocrine disorders affecting ADH secretion
- Drug history including diuretics or medications affecting fluid balance
- Relevant past medical history including renal disease
- Identification of **red flag symptoms requiring urgent referral**

Context:

Teaching may occur in nephrology OPD, endocrinology clinics, ward-based teaching sessions, skills laboratories, or small-group clinical discussions.

Limitations

This EPA does not include independently diagnosing diabetes insipidus or other endocrine disorders, ordering specialized investigations independently, or managing polyuria without supervision.

The student is expected to obtain a focused history, identify clinically important clues, 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 renal physiology related to urine formation
- Mechanisms regulating urine concentration and dilution
- Role of **antidiuretic hormone (ADH)** in water balance
- Basic physiology of the nephron, especially the **collecting duct and countercurrent mechanism**
- Causes of polyuria including diabetes insipidus, osmotic diuresis, and renal tubular disorders
- Functional significance of symptoms such as excessive thirst and nocturia

These knowledge elements are derived from the learning objectives of the renal module.

Skills

The learner should be able to:

- Establish rapport and obtain consent
- Take a structured and sequential renal history
- Assess urinary frequency and approximate urine volume
- Identify associated symptoms such as polydipsia and dehydration
- Screen for systemic symptoms suggesting endocrine or metabolic disease

- Identify **red flag symptoms requiring urgent referral**
- Summarize the clinical history in clear and structured language
- Present findings logically to the supervising clinician

Attitude and behaviour

The learner should demonstrate:

- Respectful and empathetic communication
- Sensitivity toward patients experiencing distress due to frequent urination
- Professional conduct and confidentiality
- Awareness of their level of training and limitations
- Prompt escalation when serious findings are suspected

Experience

The learner should gain experience through:

- Observation of faculty obtaining focused renal history
- Supervised practice in skills laboratories and clinical settings
- Exposure to patients with polyuria in nephrology or endocrinology clinics
- Participation in case discussions involving disorders of water balance

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

Assessment methods may include:

- Direct observation during patient encounter
- Mini-CEX
- OSCE station on renal history
- Case-based discussion
- Supervisor rating forms or structured checklists
- Reflective feedback after clinical encounters
- Logbook or portfolio documentation

Evidence for entrustment may include:

- Multiple observed focused histories in patients with urinary complaints
- Satisfactory performance in OSCE or workplace-based assessments
- Ability to identify key historical clues and urgent referral indicators

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 renal history independently in routine cases and present findings to the supervising clinician for confirmation.

Stage of training

Second Year MBBS students during renal module teaching and early clinical exposure.

Entrustment statement

The learner can be entrusted to obtain a focused renal history in a patient presenting with polyuria under indirect supervision, recognize important clinical clues, and communicate findings appropriately to the supervising clinician.

EPA-2**1. Title of the EPA**

Explain the physiological basis of excessive urine production in a patient presenting with polyuria.

2. Specifications and limitations

This EPA involves the ability of the undergraduate medical student to explain the **basic physiological mechanisms responsible for excessive urine production** and correlate these mechanisms with clinical symptoms.

The activity includes:

- Explaining the physiology of urine formation in the nephron
- Describing the **countercurrent mechanism** responsible for urine concentration
- Explaining the role of **ADH in regulating water reabsorption**
- Describing how abnormalities in ADH secretion or renal response lead to polyuria
- Correlating physiological disturbances with clinical features such as excessive urination and thirst

Context

- Integrated renal module teaching sessions
- Small group discussions
- Tutorials linking physiology with clinical scenarios
- Case-based learning sessions

Limitations

This EPA does not include independently diagnosing endocrine disorders or managing patients with polyuria. The student is expected to demonstrate conceptual understanding and explain mechanisms during teaching sessions.

3. Most relevant domains of competence

Primary domains

- Medical Expert
- Scholar

Secondary domains

- Communicator
- Professional

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

Knowledge

Students should understand:

- Structure and function of the nephron
- Physiology of water reabsorption in the kidney
- Role of ADH in maintaining water balance
- Mechanism of urine concentration and dilution
- Pathophysiological basis of polyuria

Skills

Students should be able to:

- Explain how defects in ADH secretion or action cause polyuria
- Describe how the countercurrent mechanism regulates urine concentration
- Relate renal physiology concepts to clinical symptoms
- Communicate explanations clearly during tutorials and discussions

Attitude and behaviour

Students should demonstrate:

- Curiosity and enthusiasm for integrating physiology with clinical medicine
- Active participation in case discussions
- Respect for interdisciplinary learning
- Recognition of personal limitations in clinical interpretation

Experience

Students should gain experience through:

- Integrated teaching sessions involving renal physiology
- Case-based discussions involving disorders of water balance
- Small group tutorials explaining renal physiology

5. Assessment methods

Assessment methods may include:

- Written examinations
- Structured viva examinations
- Case-based discussion
- Small group presentations
- Integrated physiology assessments

Evidence for entrustment may include:

- Ability to explain physiological mechanisms of polyuria
- Ability to correlate physiology with clinical symptoms

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

Expected supervision level

Level 2 – Practice with direct supervision

Stage of training

Second Year MBBS students during renal module teaching.

Entrustment statement

The learner can be entrusted to explain the physiological mechanisms responsible for polyuria during teaching sessions under direct supervision, integrating renal physiology with clinical presentation.

EPA-3

1. Title of the EPA

Interpret basic urine investigations and correlate findings with renal physiology in a patient presenting with polyuria.

2. Specifications and limitations

This EPA involves the ability of the undergraduate medical student to **interpret basic laboratory investigations related to excessive urine output** and correlate these findings with renal physiology.

The activity includes:

- Identification of investigations such as **urine osmolality and urine specific gravity**
- Recognition of serum electrolyte levels, particularly **serum sodium**
- Understanding the principle of the **water deprivation test**
- Correlating laboratory findings with impaired urine concentration
- Linking laboratory abnormalities with clinical symptoms such as excessive thirst and frequent urination

The EPA may be performed in:

- Small group teaching sessions
- Integrated renal module tutorials
- Physiology and biochemistry discussions
- Ward-based clinical teaching

Limitations

This EPA does not include:

- Independent clinical diagnosis
- Writing formal laboratory reports
- Ordering investigations independently
- Interpreting complex endocrine investigations
- Managing patients without supervision

Students are expected only to recognize **basic abnormal findings and correlate them with renal physiology concepts.**

3. Most relevant domains of competence

Primary domains

- Medical Expert
- Scholar

Secondary domains

- Communicator
- Professional
- Collaborator

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

Knowledge

Students should understand:

- Physiology of urine concentration and dilution
- Role of ADH in regulating water balance
- Significance of urine osmolality and specific gravity
- Relationship between electrolyte balance and urine output
- Principles of investigations used in evaluating polyuria

Skills

Students should be able to:

- Identify common investigations used in polyuria
- Interpret urine osmolality and specific gravity values
- Recognize abnormal serum sodium levels
- Correlate laboratory findings with clinical symptoms
- Explain the physiological basis of abnormal results

Attitude and behaviour

Students should demonstrate:

- Curiosity and interest in integrating laboratory findings with clinical physiology
- Professional conduct during teaching sessions
- Recognition of limitations in interpreting laboratory data
- Willingness to seek clarification from supervising faculty

Experience

Students should gain experience through:

- Faculty demonstrations of laboratory interpretation
- Integrated case-based discussions involving polyuria
- Tutorials linking physiology with clinical investigations

5. Assessment information sources

Assessment methods may include:

- OSPE/OSCE station on urine investigation interpretation
- Case-based discussion
- Structured viva examination
- Integrated written assessment
- Portfolio or logbook documentation

Evidence for entrustment may include:

- Correct interpretation of urine investigations
- Ability to correlate laboratory findings with renal physiology

6. Entrustment

Expected supervision level

Level 2 – Practice with direct supervision

Entrustment statement

The learner can be entrusted to interpret basic urine investigations related to polyuria under direct supervision and correlate laboratory findings with renal physiology and clinical symptoms.

Theme 3: Patient with Reduced Urine Output (Oliguria)

EPA-1

1. Title of the EPA

Obtain a focused renal history in a patient presenting with reduced urine output (oliguria).

2. Specifications and limitations

This EPA includes the ability of the undergraduate medical student to obtain a **focused, organized, and clinically relevant history** from a patient presenting with reduced urine output.

The history should specifically include:

- Presenting complaint and duration of reduced urine output
- Approximate daily urine output and changes in urinary frequency
- Associated symptoms such as fatigue, swelling, or breathlessness
- History of **fluid loss due to vomiting, diarrhea, fever, or bleeding**
- History of reduced fluid intake or dehydration
- Associated symptoms such as flank pain, abdominal discomfort, or urinary obstruction
- History suggestive of renal disease or acute kidney injury
- Past medical history including hypertension, diabetes mellitus, or chronic kidney disease

- Drug history including nephrotoxic medications such as NSAIDs or antibiotics
- History of recent surgery, trauma, or severe illness
- Identification of **red flag symptoms requiring urgent referral**

Context

This EPA may be performed in:

- Nephrology outpatient clinics
- Clinical wards
- Emergency department teaching
- Skills laboratory sessions
- Case-based small group discussions

Limitations

This EPA does not include independently diagnosing renal disease, ordering investigations independently, or managing acute kidney injury without supervision.

The student is expected to obtain a focused renal history, identify important clinical clues, 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 renal physiology related to **urine formation and glomerular filtration rate (GFR)**
- Mechanisms regulating urine output
- Causes of reduced urine output including **prerenal, renal, and postrenal causes**
- Functional significance of symptoms such as decreased urine output, swelling, and fatigue
- Importance of early recognition of **acute kidney injury**

These knowledge elements are derived from the renal module learning objectives.

Skills

The learner should be able to:

- Establish rapport and obtain consent
- Take a structured renal history related to oliguria
- Assess daily urine output and associated symptoms
- Identify risk factors such as dehydration, infection, or drug use
- Recognize **red flag symptoms requiring urgent referral**
- Summarize findings clearly and present them logically to the supervising clinician

Attitude and behaviour

The learner should demonstrate:

- Respectful and empathetic communication
- Professional conduct and confidentiality
- Awareness of personal limitations
- Prompt escalation when serious findings are suspected

Experience

The learner should gain experience through:

- Observation of faculty obtaining focused renal history
- Supervised clinical exposure in nephrology wards

- Skills laboratory practice using simulated patients
- Participation in case-based discussions involving oliguria and renal dysfunction

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

Assessment methods may include:

- Direct observation during patient interaction
- Mini-CEX
- OSCE station on renal history
- Case-based discussion
- Supervisor rating forms or structured checklist
- Logbook or portfolio documentation

Evidence for entrustment may include:

- Multiple observed focused histories in patients with urinary complaints
- Satisfactory performance in OSCE or workplace-based assessment
- Ability to identify key clinical clues and referral indicators

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 renal history independently in routine cases and present findings to the supervising clinician.

Stage of training

Second Year MBBS students during renal module teaching and early clinical exposure.

Entrustment statement

The learner can be entrusted to obtain a focused renal history in a patient presenting with oliguria under indirect supervision and communicate clinically relevant findings to the supervising clinician.

EPA-2

1. Title of the EPA

Perform a basic clinical examination in a patient presenting with reduced urine output.

2. Specifications and limitations

This EPA involves the ability of the undergraduate medical student to perform a **basic clinical examination related to reduced urine output and fluid imbalance**.

The activity includes:

- Assessment of hydration status
- Measurement of blood pressure and pulse
- Identification of signs of dehydration such as dry mucous membranes
- Examination for **peripheral edema or fluid overload**
- Recognition of clinical features suggesting renal dysfunction or urinary obstruction

The activity may take place in:

- Skills laboratory sessions
- Clinical ward teaching
- Nephrology outpatient clinics
- Emergency department teaching sessions

Limitations

This EPA does not include performing advanced renal examinations, diagnosing renal disease independently, or initiating treatment.

Students should 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

Students should understand:

- Physiology of **fluid balance and renal perfusion**
- Clinical signs of dehydration and fluid overload
- Relationship between reduced renal perfusion and decreased urine output

Skills

Students should be able to:

- Perform basic examination for hydration status
- Measure blood pressure accurately
- Identify signs of dehydration or edema
- Recognize abnormal clinical findings
- Present examination findings clearly to the supervising clinician

Attitude and behaviour

Students should demonstrate:

- Respectful patient interaction
- Gentle examination technique
- Maintenance of patient comfort and dignity
- Professional conduct during examination

Experience

Students should gain experience through:

- Faculty demonstration of examination techniques
- Practice sessions in clinical skills laboratories
- Supervised examination of patients with renal complaints
- Participation in small group case discussions

5. Assessment information sources

Assessment methods may include:

- Direct observation
- Mini-CEX
- OSCE station on clinical examination
- Structured clinical checklist
- Case-based discussion

Evidence for entrustment may include:

- Multiple supervised examinations
- Correct identification of dehydration or fluid overload
- Clear reporting of examination findings

6. Entrustment

Expected supervision level

Level 2 – Practice with direct supervision

Entrustment statement

The learner can be entrusted to perform a basic examination related to hydration status and renal dysfunction under direct supervision and communicate findings appropriately.

EPA-3

1. Title of the EPA

Interpret basic renal investigations and correlate findings with renal physiology in a patient presenting with oliguria.

2. Specifications and limitations

This EPA involves the ability of the undergraduate medical student to **interpret basic renal investigations related to reduced urine output** and correlate findings with renal physiology.

The activity includes:

- Identification of common investigations such as **serum creatinine, blood urea, and urine analysis**
- Recognition of abnormal renal function tests

- Understanding the significance of reduced glomerular filtration rate (GFR)
- Correlation of laboratory findings with mechanisms of renal dysfunction
- Linking laboratory abnormalities with clinical symptoms such as oliguria, edema, or fatigue

The EPA may be performed in:

- Integrated renal module tutorials
- Small group teaching sessions
- Ward-based clinical discussions
- Physiology or biochemistry tutorials

Limitations

This EPA does not include:

- Making independent clinical diagnosis
- Writing formal laboratory reports
- Ordering investigations independently
- Managing patients with renal failure without supervision

Students are expected only to recognize **basic abnormal findings and correlate them with renal physiology concepts.**

3. Most relevant domains of competence

Primary domains

- Medical Expert
- Scholar

Secondary domains

- Communicator
- Professional
- Collaborator

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

Knowledge

Students should understand:

- Physiology of glomerular filtration
- Mechanisms regulating renal blood flow and GFR
- Significance of **serum creatinine and blood urea**
- Relationship between reduced GFR and oliguria
- Basic pathophysiology of acute kidney injury

Skills

Students should be able to:

- Identify common renal investigations
- Recognize abnormal renal function results
- Correlate laboratory findings with clinical symptoms
- Explain physiological mechanisms underlying abnormal results

Attitude and behaviour

Students should demonstrate:

- Curiosity for integrating laboratory findings with physiology
- Professional conduct during teaching sessions
- Recognition of limitations in interpreting laboratory data
- Willingness to seek guidance from supervising faculty

Experience

Students should gain experience through:

- Faculty demonstrations of renal investigation interpretation
- Integrated case-based learning sessions involving oliguria
- Tutorials linking renal physiology with clinical investigations

5. Assessment information sources

Assessment methods may include:

- OSPE/OSCE stations involving interpretation of renal investigations
- Case-based discussion
- Structured viva examination
- Integrated written assessments
- Portfolio or logbook documentation

Evidence for entrustment may include:

- Correct interpretation of renal investigations
- Ability to correlate laboratory findings with renal physiology

6. Entrustment

Expected supervision level

Level 2 – Practice with direct supervision

Entrustment statement

The learner can be entrusted to interpret basic renal investigations related to oliguria under direct supervision and correlate laboratory findings with renal physiology and clinical presentation.

References

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