



RMU – 12

Integrated Modular

MBBS Curriculum 2026

Isolation to **Beyond Boundaries**

Study Guide

Hematology and Immunology Module-I

Department of Medical Education

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First Year MBBS

	Rawalpindi Medical University			
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SECTION – I

RMU – 12 Integrated Modular MBBS Curriculum 2026

Isolation to *Beyond Boundaries*

Preamble

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

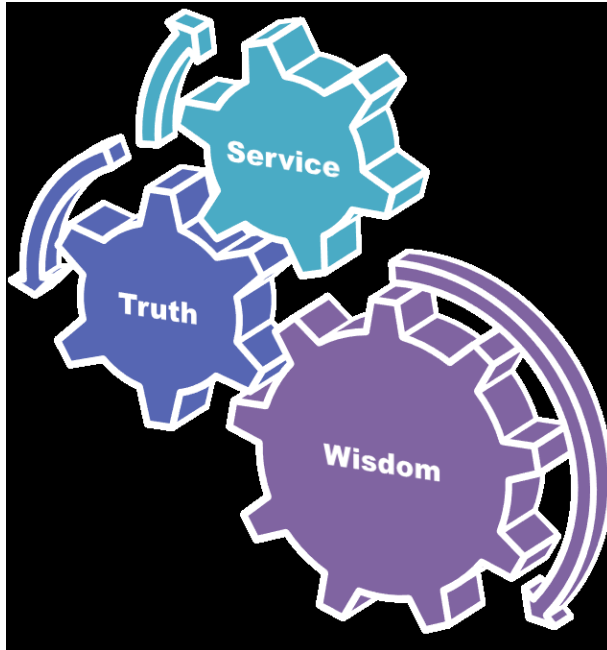
The Clinically Oriented Integrated Modular Curriculum transcends traditional disciplinary silos by promoting horizontal and vertical integration across basic, para-clinical, and clinical sciences. Learning experiences are contextualized around clinical problems and patient-centered care, fostering early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

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

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

University Moto, Vision, Values & Goals

RMU – 12



Vision and Values

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

Mission Statement

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

Goals of the Undergraduate Integrated Modular Curriculum

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

The RMU-12 Undergraduate Medical Program is designed to:

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

Table of Contents

SECTION – I: RMU – 12 Integrated Modular MBBS Curriculum 2026 Isolation to Beyond Boundaries8

University Moto, Vision, Values & Goals.....9

RMU – 12 Structured Framework of Integrated Modular MBBS Curriculum 2026 16

Isolation to Beyond Boundaries..... 16

RMU – 12 Structured Framework of Integrated Modular MBBS Curriculum 2026 17

RMU – 12 Assessment Framework of Integrated Modular MBBS Curriculum 2026 Isolation to Beyond Boundaries 18

Clinico - Concept Connect Session (C³6).....34

Introduction:.....34

1. Clinical Trigger (Case Introduction).....34

2. Concept Mapping and Exploration34

3. Integrated Discussion.....35

4. Application and Reflection35

Implementation Strategy.....35

Educational Value35

Example of Clinico - Concept Connect (C³6) Session36

Theme Title from Molecules to Medicine: Clinical Applications of Molecular Biology and Genetics.....36

Clinical Case Scenario: A lady with progressive fatigue.....36

Educational Relevance to Theme.....37

Learning Objectives37

Integration Framework.....37

Harden Level 9 – Multidisciplinary Integration37

Disciplines Involved37

Explicit EPA Mapping.....38

EPA-1: Interpret Clinical and Laboratory Data38

EPA-2: Apply Basic Science to Clinical Reasoning.....	38
EPA-3: Communicate Findings in a Structured Manner	38
EPA-4: Demonstrate Professionalism and Teamwork	38
Mapping to Harden Levels.....	39
Teaching–Learning Strategy	39
Assessment Alignment.....	39
Summary Statement	39
Hematology & Immunity Module-I Team.....	45
Module IV- Hematology & Immunity Module-I.....	46
Module Outcomes	46
Knowledge	46
Skills	46
Attitude	46
SECTION – II: Teaching and Learning Methodologies / Strategies	47
Terms & Abbreviations.....	47
Teaching and Learning Methodologies / Strategies.....	49
Clinico - Concept Connect Session (C ³ 6).....	49
Introduction:.....	49
1. Clinical Trigger (Case Introduction).....	49
2. Concept Mapping and Exploration	49
3. Integrated Discussion.....	50
4. Application and Reflection	50
Implementation Strategy	50
Educational Value	50
Large Group Interactive Session (LGIS)	51

Small Group Discussion (SGD).....	52
Self-Directed Learning (SDL)	54
Case Based Learning (CBL)	54
Problem Based Learning (PBL).....	54
Self-Directed Learning (SDL) at Rawalpindi Medical University (RMU)	55
What is Self-Directed Learning (SDL)?	55
Why is SDL Important in Medical Education?.....	55
SDL Hours in the MBBS Program	55
Assessment of SDL at RMU.....	56
Alignment with PM&DC and WFME Standards	56
PM&DC	56
WFME.....	56
Practical Sessions/Skill Lab (SKL).....	57
SECTION – III: Themes, Learning Objectives, Teaching Strategies & Tool of Assessments	58
Theme 1: Fatigue, Pallor & Reduced Exercise Tolerance (1st Week)	60
Specific Learning Objectives	63
Spiral Courses (1 st Week)	75
Behavioral Sciences	75
Family Medicine	75
Multidisciplinary (Hardens Level 9) Clinico-Concept Connect (C ³ 6) Sessions for 1 st Week.....	76
Theme 2: Jaundice & Dark Urine with Hepatosplenomegaly. (2nd Week).....	78
Specific Learning Objectives	81
Spiral Courses (2 nd Week)	90
Behavioral Sciences	90
Multidisciplinary (Hardens Level 9) Clinico-Concept Connect (C ³ 6) Sessions for 2 nd Week.....	91

Theme 3: Easy Bruising, Prolonged Bleeding & Thrombotic Events. (3rd Week)	93
Specific Learning Objectives	96
Multidisciplinary (Hardens Level 9) Clinico-Concept Connect (C ³ 6) Sessions for 3 rd Week	105
Theme 4: Recurrent Infections, Fever & Lymphadenopathy (4th Week)	107
Specific Learning Objectives	110
Spiral Courses (4 th Week)	119
Family Medicine	119
Multidisciplinary (Hardens Level 9) Clinico-Concept Connect (C ³ 6) Sessions for 4 th Week	120
Anatomy LGIS Syllabus of Learning Management System (LMS).....	122
Anatomy SGD Syllabus of Learning Management System (LMS).....	124
Anatomy SKL Syllabus of Learning Management System (LMS)	129
Physiology Syllabus of Learning Management System (LMS)	130
Biochemistry Syllabus of Learning Management System (LMS).....	132
SECTION – IV: Assessment	138
RMU – 12 Assessment Framework of Integrated Modular MBBS Curriculum 2026	139
Isolation to Beyond Boundaries.....	139
3.1 Formative Assessment	141
3.2 Summative Assessment	141
3.2.1 Components of Assessment	141
Table of Specification (TOS) For Module & Block Examination for First Year MBBS	143
3.2.4 Continuous Internal Assessment (CIA)	144
Table of Specifications for Pre-Annual Examination.....	162
Table of Specification: First and Second year Final Annual Assessment (Professional).....	171
SECTION – V: Time Table	190
Hematology & Immunity Module-I Team.....	192

Discipline Wise Details of Modular Contents	193
Categorization of Modular Contents.....	196
Anatomy.....	196
Teaching Staff / Human Resources of Department of Anatomy.....	197
Physiology.....	198
Teaching Staff / Human Resource of Department of Physiology	200
Biochemistry	201
Annexure I	219
Templates for Theory Paper.....	219
• MCQ, SEQ Paper, & EMQ	219
Templates for AV OSPE.....	219
Templates for Structured Viva.....	219
Annexure II	238
Entrustable Professional Activities (EPAs)	238

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

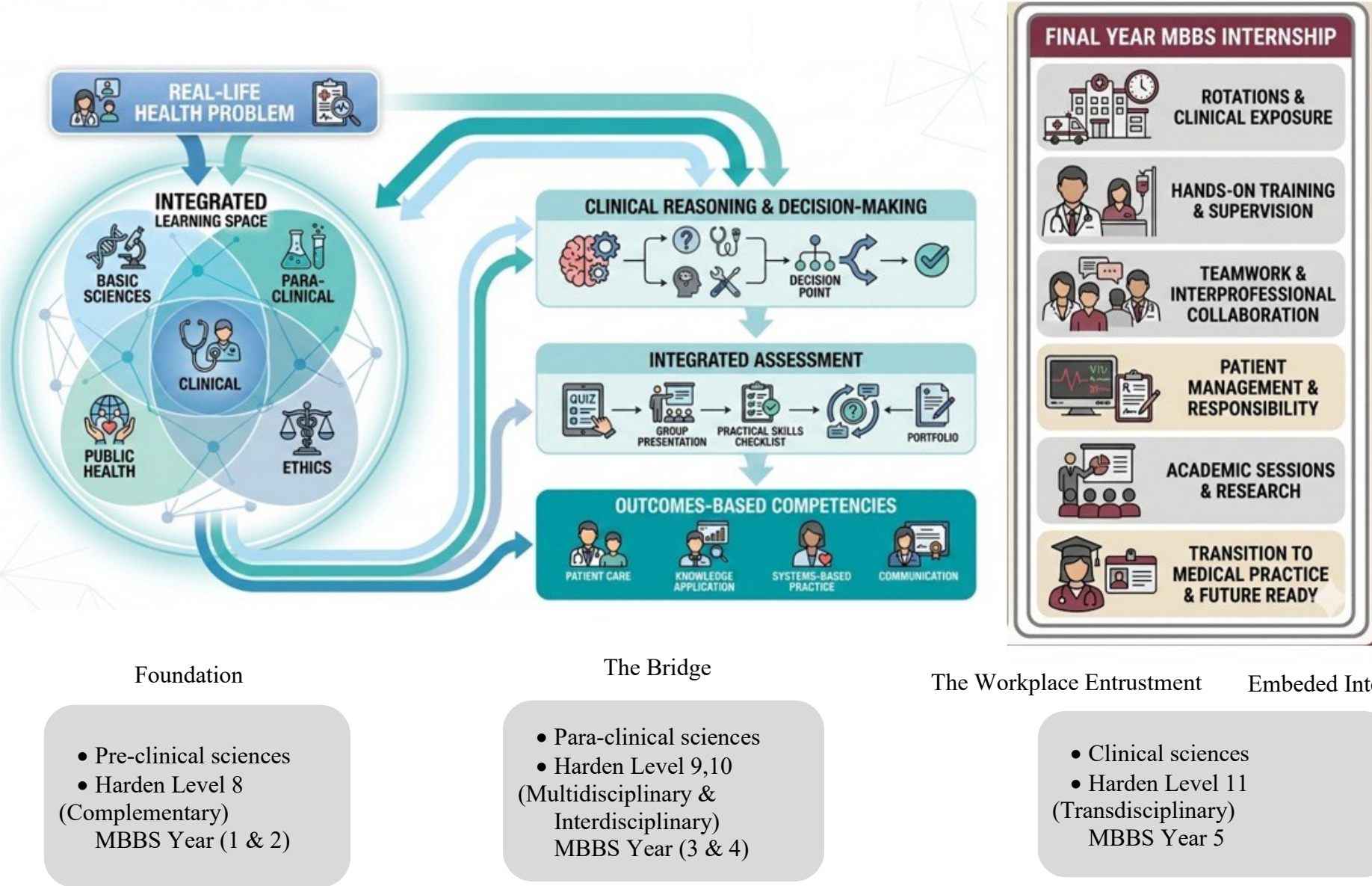


Figure 2

RMU – 12 Structured Framework of Integrated Modular MBBS Curriculum 2026

Isolation to **Beyond Boundaries**

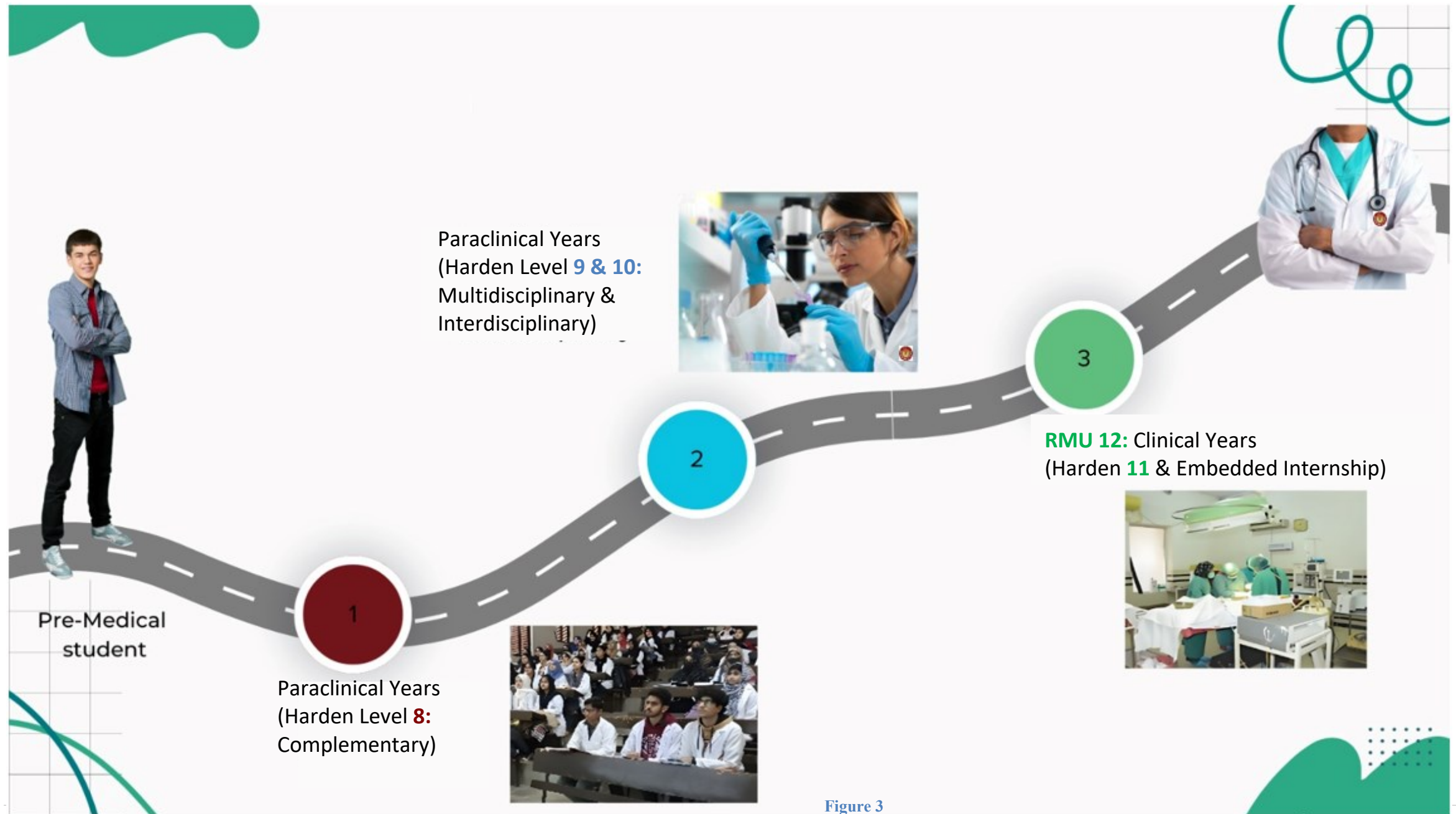


Figure 3

RMU – 12 Assessment Framework of Integrated Modular MBBS Curriculum 2026

Isolation to Beyond Boundaries

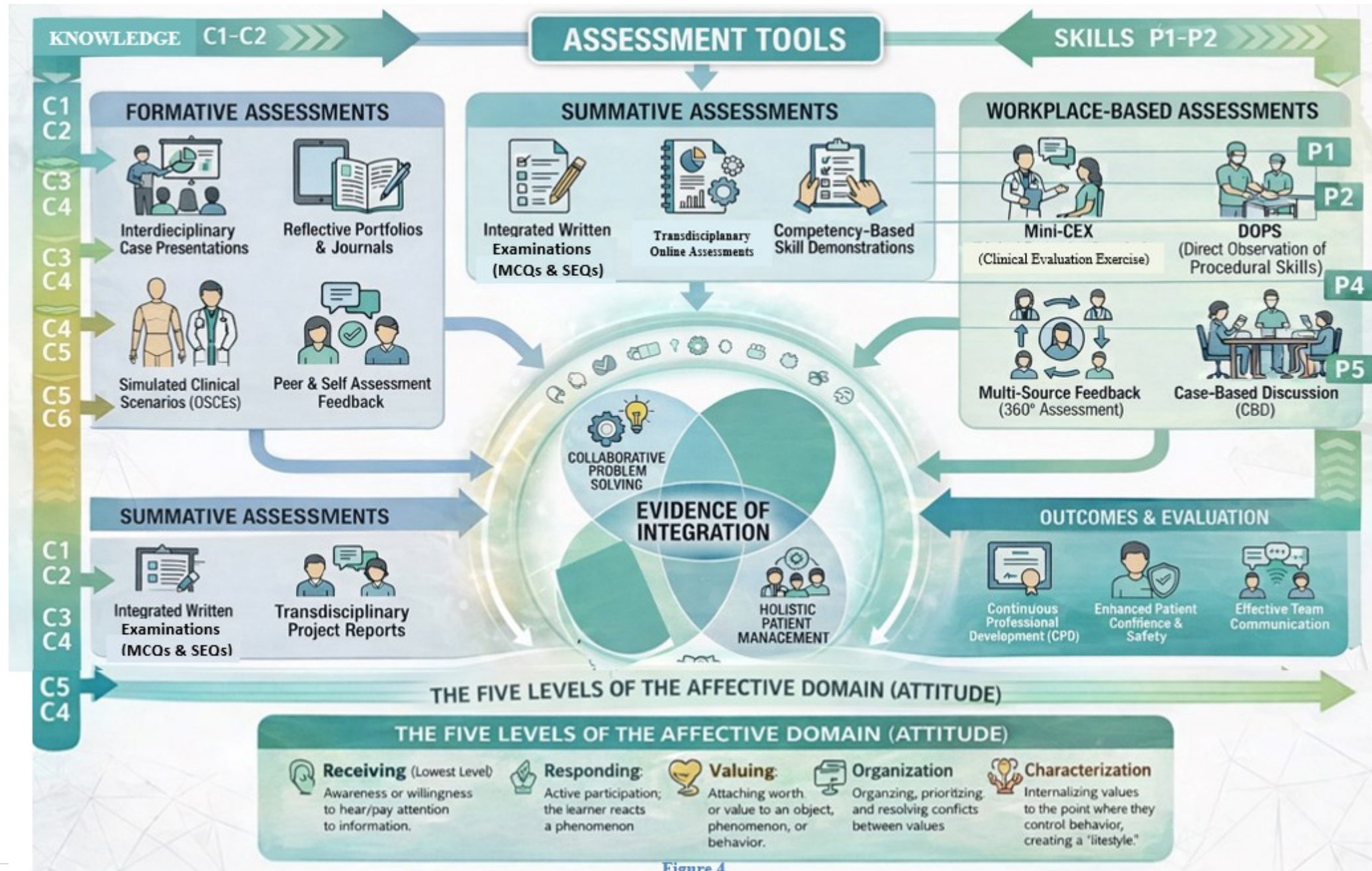


Figure 4

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

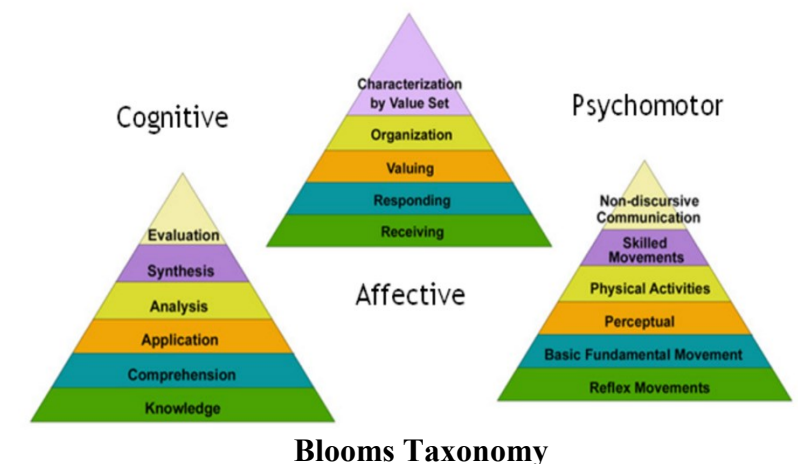
Rawalpindi Medical University has adopted a staged curricular framework that reflects a progressive movement along Harden’s integration ladder, culminating in going beyond the ladder to **RMU 12**. The curriculum is designed to ensure that knowledge acquired in the early years is not isolated or terminal,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

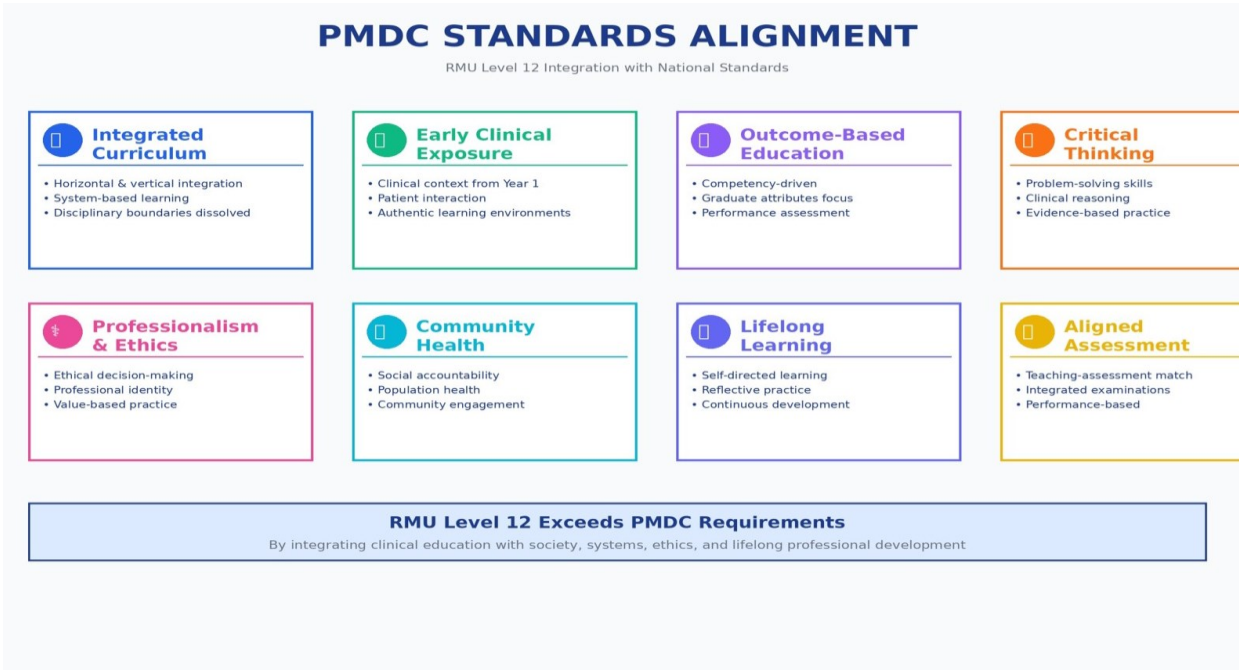
1.1 PMDC Standards for Medical Education

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

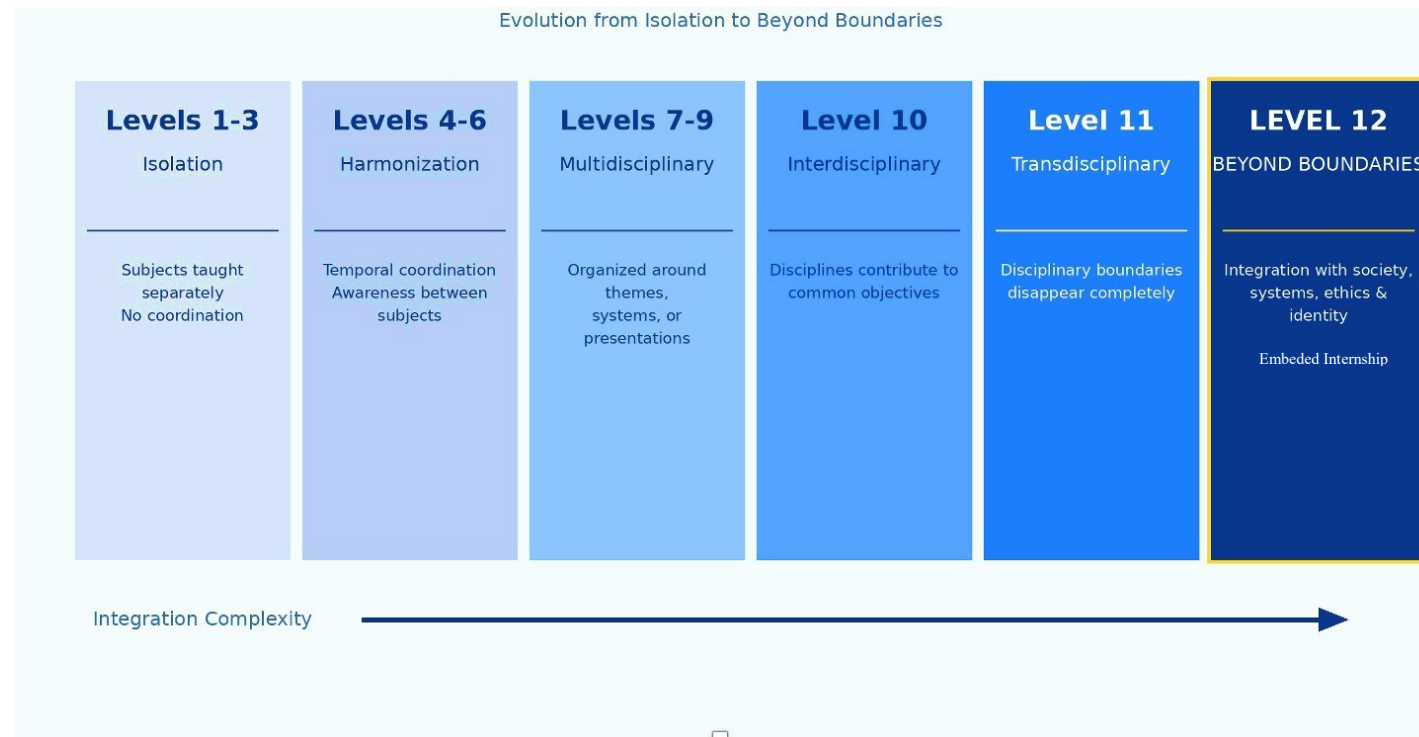
Harden's Integration Ladder provides a systematic framework for evaluating curricular integration, progressing through 11 levels:



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
- Evidence-based practice and innovation

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

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

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

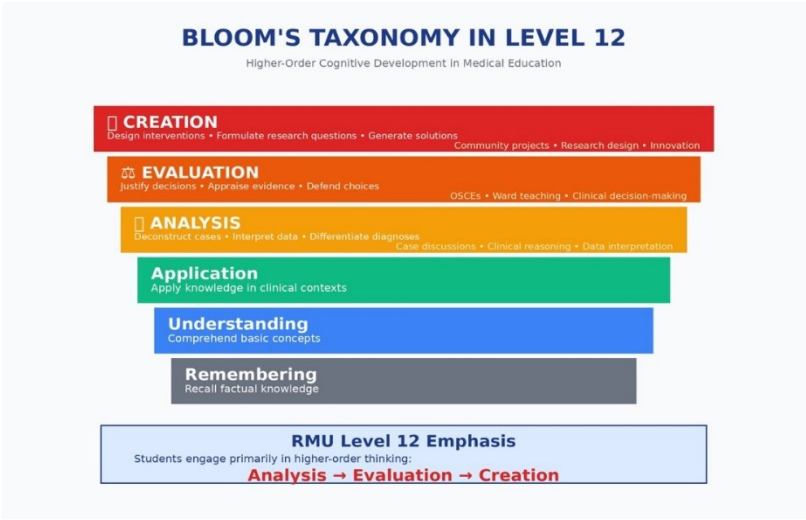
PMDC Competency	RMU Implementation	Level 12 Justification
Medical Knowledge	Integrated system-based modules combining anatomy, physiology, pathology, pharmacology, radiology, and clinical medicine	Knowledge constructed through real patient problems; subject boundaries dissolved
Clinical Skills & Patient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

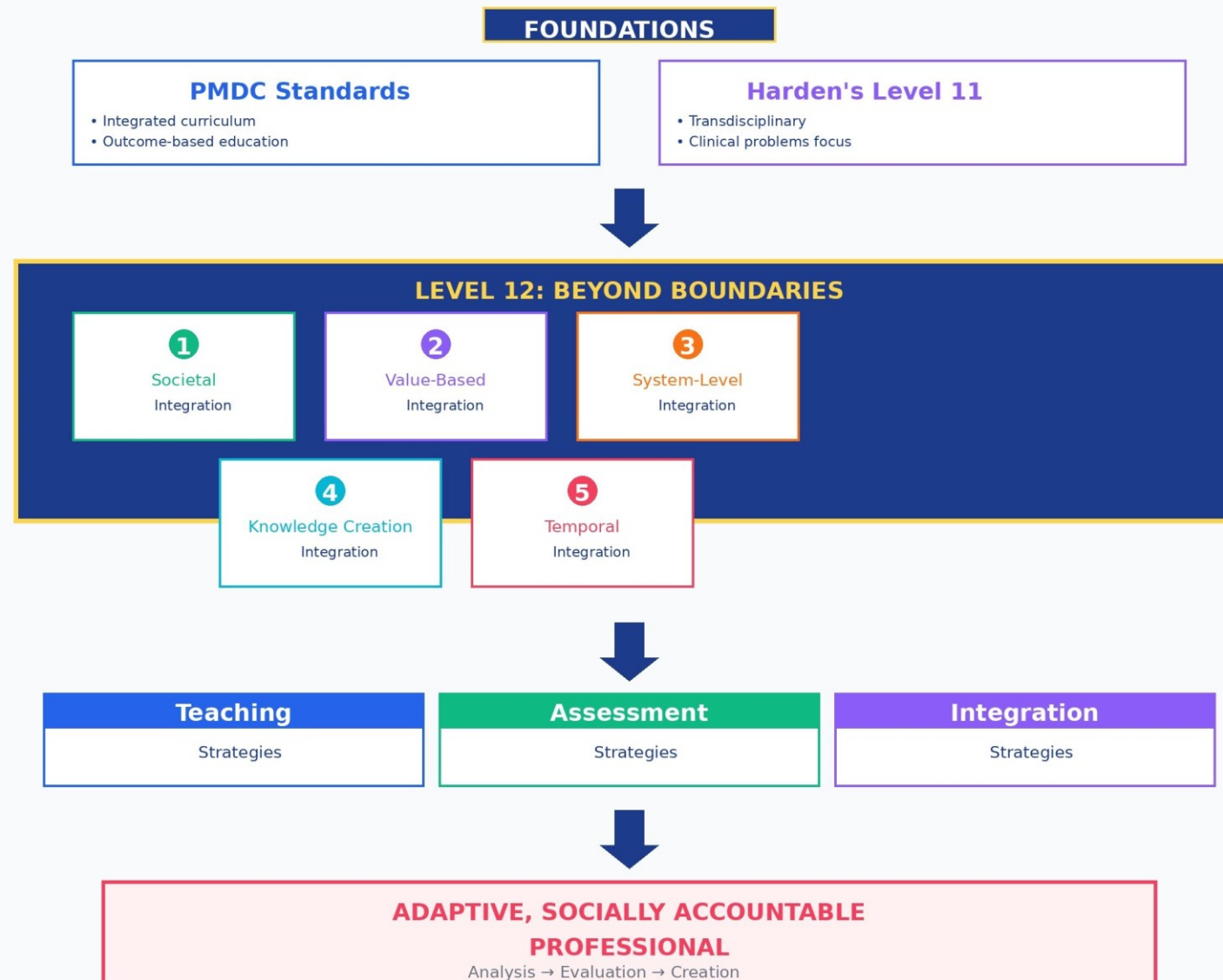
📁 Leadership

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

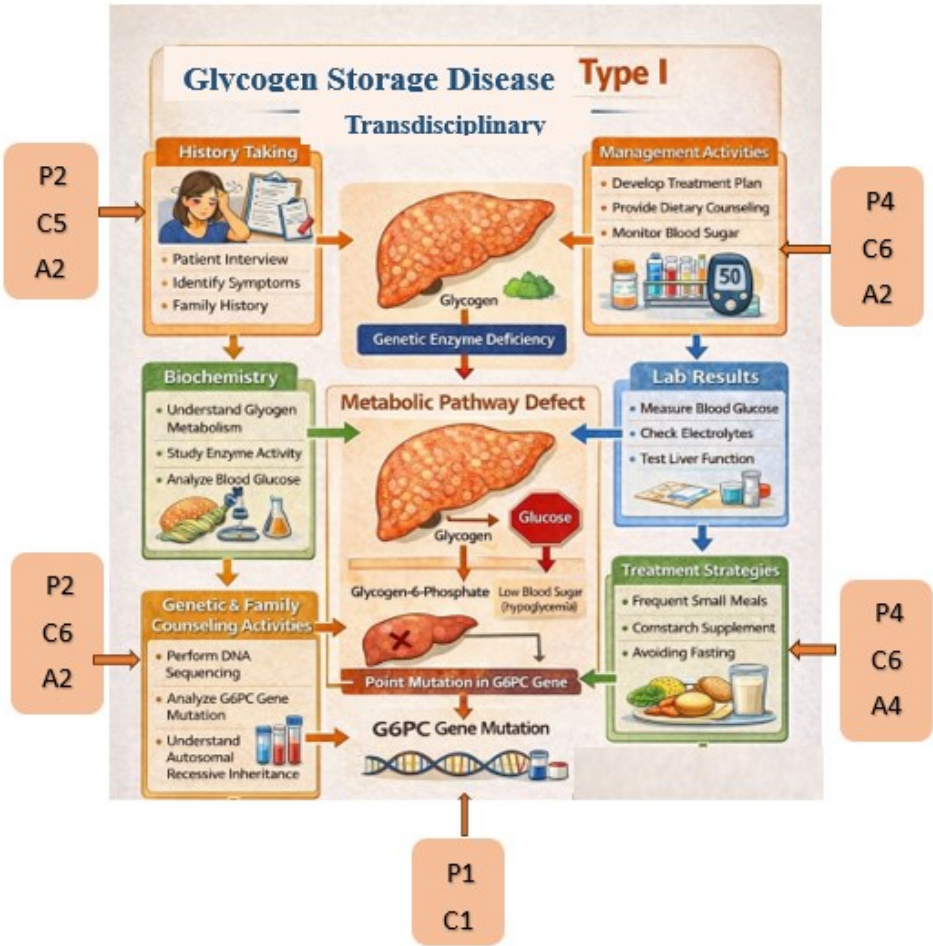
Clinical Case Scenario: A lady with progressive fatigue

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.

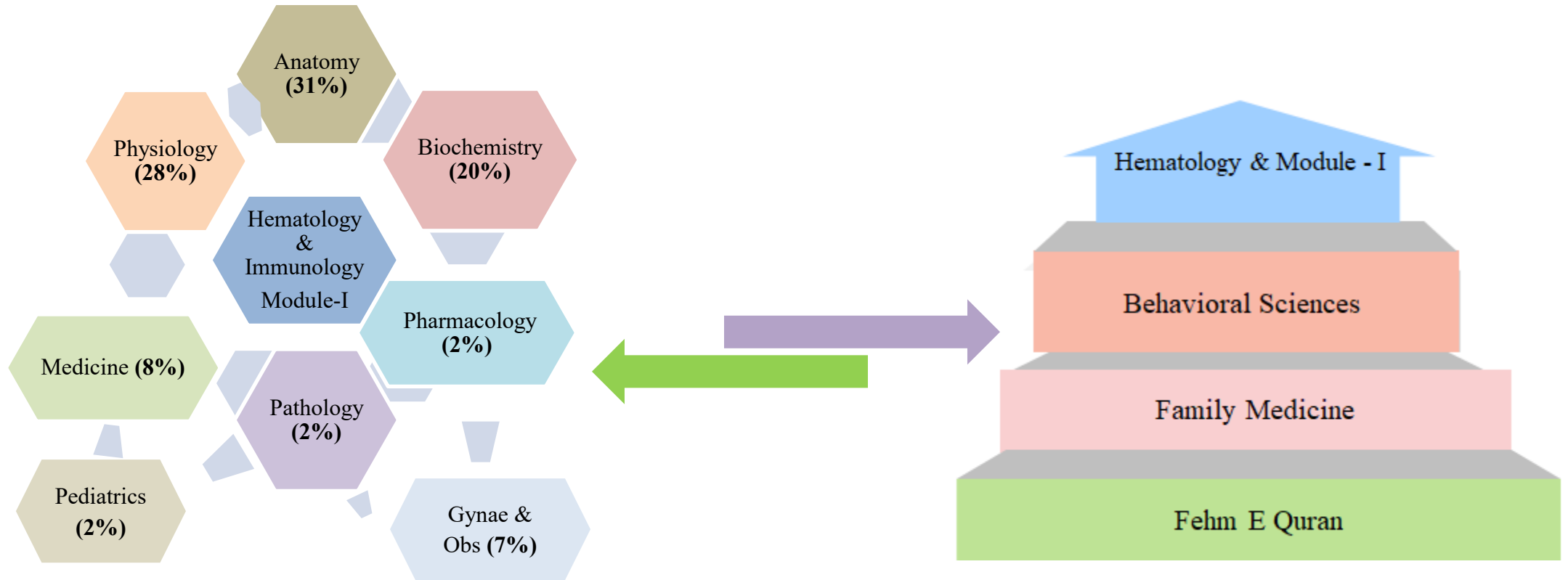
RMU – 12 Integrated Modular MBBS Curriculum 2026

Isolation to Beyond Boundaries

Study Guide

Hematology & Immunology Module-I

Multi-Disciplinary Integration



Disciplines in Hematology & Immunology Module

Spiral / General Education Cluster Courses (5%)

Discipline Wise Details of Modular Contents

Integration Themes						
Block	Subjects	Embryology	Histology	Gross Anatomy	CBL	SDL
V	Anatomy	- Development of pharyngeal arches - Development of spleen - Development of thymus	- Spleen - Thymus - Lymph nodes - Tonsils	Lower Limb Posterior compartment of leg to foot	- Ankle sprain - Flat foot	- Posterior compartment of leg and flexor retinaculum - Neurovascular organization of posterior compartment of leg - Foot joints - Ankle joints - Sole of foot - Spleen - Gait cycle
	Physiology	- Plasma Proteins - Stages of erythropoiesis & factors affecting erythropoiesis - Hemoglobin & Hemoglobinopathies, Iron Metabolism - Red cell fragility, ESR & Red cell indices, Anemia & polycythemia - Fate of RBCs & Jaundice - Types of immunity, Physiology of innate immunity tolerance & auto immunity - Physiology of acquired immunity B-Cells - Physiology of acquired immunity T-Cells. Allergy and Hypersensitivity reactions, Auto-immune diseases and AIDS - Composition of blood & Hemopoiesis - WBCs classification & formation. Neutrophils, Eosinophils & Basophils and their properties - Platelet formation & function. hemostasis, blood coagulation tests (BT, CT, PT, APTT and INR - Blood coagulation - Concept of intravascular anticoagulants and bleeding disorders (Vit K deficiency, hemophilia and thrombocytopenia) - Thromboembolic condition (DVT, Pulmonary Embolism, DIC) Anticoagulant therapy (Heparin, warfarin, Prevention of blood clotting outside the body) - Physiological mechanism of temperature regulation - Role of Hypothalamus in temperature regulation - Disorders of temperature regulation (Fever, Heat stroke, Exposure of body to extreme cold) - ABO & Rh Blood grouping system - Rh Blood grouping system and Erythroblastosis fetalis - Blood transfusion hazards				

		• Tissue and organ transplantations
	• Biochemistry	• Heme synthesis • Porphyria • Breakdown of hemoglobin • Jaundice • Blood • Structure of hemoglobin and myoglobin • Types of Hemoglobin • Oxygen dissociation curve. • Abnormalities in Hemoglobin. • Hemoglobinopathies • Plasma proteins • Acute phase proteins & Albumin • Haptoglobin and transferrin. • Ferritin and hemosiderin • Ceruloplasmin. • Antiproteases and amyloidosis • Immunoglobulins • AIDs • Folic acid. • Vitamin B12 • Iron
	Spiral Courses	
	• Fehm E Quran	• Subordinating Conjunction(أن), Was (كان), Vocative Particle (النداء حرف) • Quranic Adjective Compounds صفة وموصوف • Quranic Possessive Construction مضاف ومضاف إليه
	• Behavioral Sciences	• Professionalism in Healthcare • Psychology in Medical Practice
	• Family Medicine	• Anemia • The Role of Primary Care in Early Detection and Preventive Management of Recurrent Pediatric Infections
	Vertical Integration	
	• Pathology	• Clinical Disorders of Coagulation
	• Pharmacology	• Hematinics
	• Medicine	• Jaundice • Bleeding and Clotting Disorders • Pyrexia of Unknown Origin

		• Autoimmune Diseases Rheumatic Fever and its Complication
	• Gynae & Obs	• Anaemia in Preganacy • Rh incompatibility / ABO incompatibility and its significance • Hematological Changes in Pregnancy, Venous Thromboembolism
	• Pediatrics	• Hemolytic Disease of New Born

Hematology & Immunity Module-I Team

Module Name	:	Hematology & Immunity Module-I
Duration of module	:	05 Weeks
Coordinator	:	Dr. Almas Ejaz
Co-coordinator	:	Dr. Nayab Ramzan
Reviewed by	:	Module Committee

Module Committee			Module Task Force Team		
1.	Vice Chancellor RMU	Prof. Dr. Muhammad Umar	1.	Coordinator	Dr. Almas Ejaz (Demonstrator of Biochemistry)
2.	Director DME & Dean Basic Sciences	Prof. Dr. Ifra Saeed	2.	DME Focal Person	Dr. Farzana Fatima
3.	Additional Director (Assessment) DME	Dr. Arsalan Manzoor Mughal	3.	Co-coordinator	Dr. Nida Fatima (Demonstrator of Anatomy)
4.	Chairperson Physiology	Prof. Dr. Samia Sarwar	4.	Co-Coordinator	Dr. Farah Ali Shah (Senior Demonstrator of Physiology)
5.	Chairperson Anatomy	Prof. Dr. Ayesha Yousaf	5.	Co-coordinator	Dr. Nayab Ramzan (Demonstrator of Biochemistry)
6.	Chairperson Biochemistry	Dr. Aneela Jamil			
7.	Focal Person Anatomy 1 st Year MBBS	Ass. Prof. Dr. Tayyaba Qureshi			
8.	Focal Person Physiology	Dr. Sidra Hamid	DME Implementation Team		
9.	Focal Person Pharmacology	Dr. Zunera Hakim	1.	Director DME	Prof. Dr. Ifra Saeed
10.	Focal Person Pathology	Dr. Syeda Aisha	2.	Implementation Incharge 1st & 2 nd Year MBBS	Dr. Arsalan Manzoor Mughal 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			

Module IV- Hematology & Immunity Module-I

Rationale

Blood is a specialized connective tissue that delivers necessary substances such as nutrients and oxygen to the cells and transports metabolic waste products away from those same cells.. Blood accounts for 8% of the human body weight. The average adult has a blood volume of roughly 5 liters, composed of plasma and several kinds of cells (occasionally called corpuscles); these formed elements of the blood are erythrocytes (red blood cells, RBCs), leukocytes (white blood cells), and thrombocytes (platelets). By volume, the red blood cells constitute about 45% of whole blood, the plasma about 54.3%, and white cells about 0.7%.

White blood cells are part of the body's immune system; they destroy and remove old or aberrant cells and cellular debris, as well as attack infectious agents (pathogens) and foreign substances.

The rationale behind is to introduce the students the basic constituents, functions and transport of various substances through blood.

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 Hematology and Immunity system.
- Used technology based Medical Education including.

Artificial Intelligence

- Appreciate concept and importance of
Biomedical Ethics,
Research
Family Medicine

Skills

- Demonstrate effective skill for performing and interpreting various laboratory tests like Haemin crystal test.
- Demonstrate awareness of ethical, legal and social implication of issues related to bioethics.

Attitude

- Demonstrate **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:

- 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:

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- A concise, authentic clinical scenario is presented.
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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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- Emphasis is placed on **mechanisms**, not memorization.

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- Faculty from relevant disciplines facilitate discussion collaboratively.
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- Learners reflect on how conceptual understanding informs clinical thinking.
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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:

- **Faculty Collaboration:** Basic science and clinical faculty jointly design and facilitate sessions to ensure coherence and relevance.
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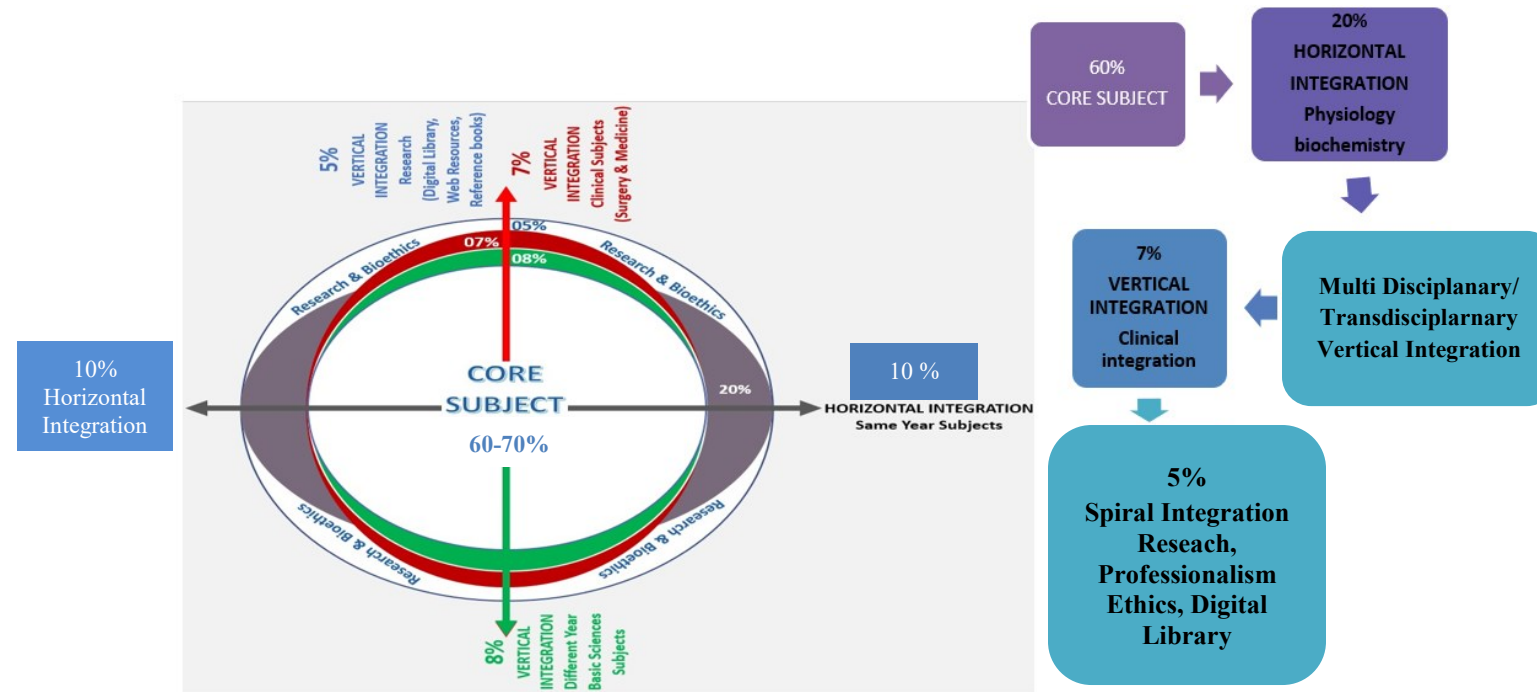
Educational Value

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 be followed for delivery of all LGIS. The lecturer will introduce a topic or common clinical condition and explain the underlying phenomena through questions, pictures, videos of patients, interviews, and exercises, etc. Students are actively involved in the learning process.



Prof Umar's Model of Integrated Lecture

Small Group Discussion (SGD)

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

Table 2. Standardization of teaching content in Small Group Discussions

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

Table 3. Steps of Implementation of Small Group Discussions

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

Self-Directed Learning (SDL)

- Self- directed learning is a process where students take primary charge of planning, continuing, and evaluating their learning experiences.
- Time Home assignment
- Learning objectives will be multi-disciplinary/transdisciplinary and interdisciplinary.
- Learning resources will be given to students = Textbook (page no), web site
- Assessment:
 - i Will be online on LMS (Mid module/ end of Module)
 - ii.OSPE station

Case Based Learning (CBL)

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

Problem Based Learning (PBL)

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

The 7- Jump-Format of PBL (Maastricht Medical School)		Learning Domain
Step 7	Synthese & Report	C6
Step 6	Collect Information from outside	C6
Step 5	Generate learning Issues	C6
Step 4	Discuss and Organise Ideas	C4
Step 3	Brainstorming to Identify Explanations	C3
Step 2	Define the Problem	C1
Step 1	Clarify the Terms and Concepts of the Problem Scenario	C1
Problem- Scenario		

Figure 2. PBL 7 Jumps Model

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

What is Self-Directed Learning (SDL)?

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

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

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

Why is SDL Important in Medical Education?

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

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

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

SDL at RMU (How It is Conducted)

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

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

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

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

SDL Hours in the MBBS Program

SDL at RMU is implemented longitudinally across all professional years.

- The total SDL contribution is more than 500 hours



- These hours are distributed from Second Year to Final Year MBBS
- The purpose is to gradually develop independent learning skills throughout the program

Assessment of SDL at RMU

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

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

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

. Alignment with PM&DC and WFME Standards

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

PM&DC

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

WFME

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

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

RMU's structured SDL program supports these global standards.

Practical Sessions/Skill Lab (SKL)

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

SECTION – III

Themes, Learning Objectives, Teaching Strategies & Tool of Assessments

Contents

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

Heamatology & Immunology Module-I – First Year MBBS

Duration of Module (Four Weeks)

Sr No.	Themes	Duration
1.	Fatigue, Pallor & Reduced Exercise Tolerance	1 st Week
2.	Jaundice & Dark Urine with Hepatosplenomegaly	2 nd Week
3.	Easy Bruising, Prolonged Bleeding & Thrombotic Events	3 rd Week
4.	Recurrent Infections, Fever & Lymphadenopathy	4 th Week

Theme 1: Fatigue, Pallor & Reduced Exercise Tolerance (1st Week)

Theme	Rationale	Learning objectives
Fatigue, Pallor & Reduced Exercise Tolerance	Core content on erythropoiesis, hemoglobin structure, iron metabolism, and anemia integrate biochemistry, physiology, pathology, pharmacology (hematinic), and family medicine anchored to the classic presentation of anemia.	• Explain the physiological and biochemical basis of anemia, focusing on how reduced hemoglobin and iron deficiency impair oxygen-carrying capacity and erythropoiesis • Recognize clinical manifestations of anemia, such as fatigue, pallor, tachycardia, and reduced exercise tolerance, in a primary care setting • Evaluate dietary and menstrual risk factors and understand the role of hematinics (iron therapy) in management and prevention • Correlate laboratory findings, including red cell indices and peripheral smear patterns, with the patient's clinical presentation
Case Scenario 1: A patient with Fatigue, Pallor and Reduced Exercise Tolerance A 19-year-old female student presented to the Family Medicine clinic with complaints of increasing fatigue, generalized weakness, and reduced exercise tolerance for the last 3 months. She reported that earlier she was able to attend her classes and walk up two flights of stairs without difficulty, but now she becomes tired easily even after mild exertion. She also feels short of breath while climbing stairs and notices occasional palpitations during physical activity. She further complained that her family and friends have recently noticed that she looks pale. She described difficulty concentrating during study hours and feels exhausted by the end of the day. There is no history of fever, cough, chest pain, joint pain, leg swelling, or weight loss. She denied any history of bleeding from gums, epistaxis, hematemesis, or passage of black stools. On further questioning, she revealed that her diet is poor in meat and green leafy vegetables and that she often skips meals due to her busy academic routine. She also reported heavy menstrual bleeding for the last several months. There is no previous history of blood transfusion, jaundice, or diagnosed chronic illness. Her symptoms have gradually progressed and are now interfering with her daily activities and academic performance. Past Medical History 1. No known diabetes mellitus 2. No hypertension 3. No history of chronic kidney disease, tuberculosis, or thyroid disorder Drug History 1. No regular medications 2. Occasional use of analgesics for menstrual pain Family History 1. Mother has a history of anemia		

2. No family history of hemoglobinopathy or bleeding disorder

Social History

1. Poor dietary intake with low iron-rich food consumption
2. Irregular meal pattern
3. No smoking or alcohol use

Examination

General Physical Examination

Young female, conscious and oriented, appearing tired and pale. Pulse 102/min, BP 106/68 mmHg, Respiratory Rate 18/min, Temp 98.4°F.

General Findings

1. Pallor present over conjunctiva and nail beds
2. No icterus, cyanosis, clubbing, edema, or lymphadenopathy
3. Mild koilonychia may be noted

Systemic Examination

Cardiovascular System: Mild tachycardia, heart sounds normal

Respiratory System: Clear chest, no added sounds

Abdomen: Soft, non-tender, no hepatosplenomegaly

Central Nervous System: Normal

Educational Relevance (Discipline-wise Integration)

Discipline	Relevance
Physiology	Hemoglobin function, oxygen transport, reduced oxygen-carrying capacity, compensatory cardiovascular changes, erythropoiesis
Biochemistry	Heme synthesis, structure of hemoglobin, iron metabolism, oxygen dissociation curve, nutritional basis of anemia
Anatomy / Histology	Bone marrow as site of hemopoiesis, basic structural basis of blood cell formation
Family Medicine	Recognition of anemia in primary care, focused history, dietary and menstrual assessment, early counseling
Pharmacology	Hematinics, rationale of iron therapy, compliance and adverse effects
Pathology	Correlation with laboratory findings such as Hb level, red cell indices, peripheral smear patterns in anemia
Community Medicine / Prevention	Nutritional anemia, prevention through diet, awareness in young females, public health relevance

Entrustable Professional Activities (EPAs)

- 1. Obtain a focused history in a patient presenting with fatigue, pallor, and reduced exercise tolerance.
- 2. Perform a general physical examination to identify pallor and other basic signs of anemia.
- 3. Correlate clinical findings with basic science concepts and recognize the need for initial investigations and counseling.

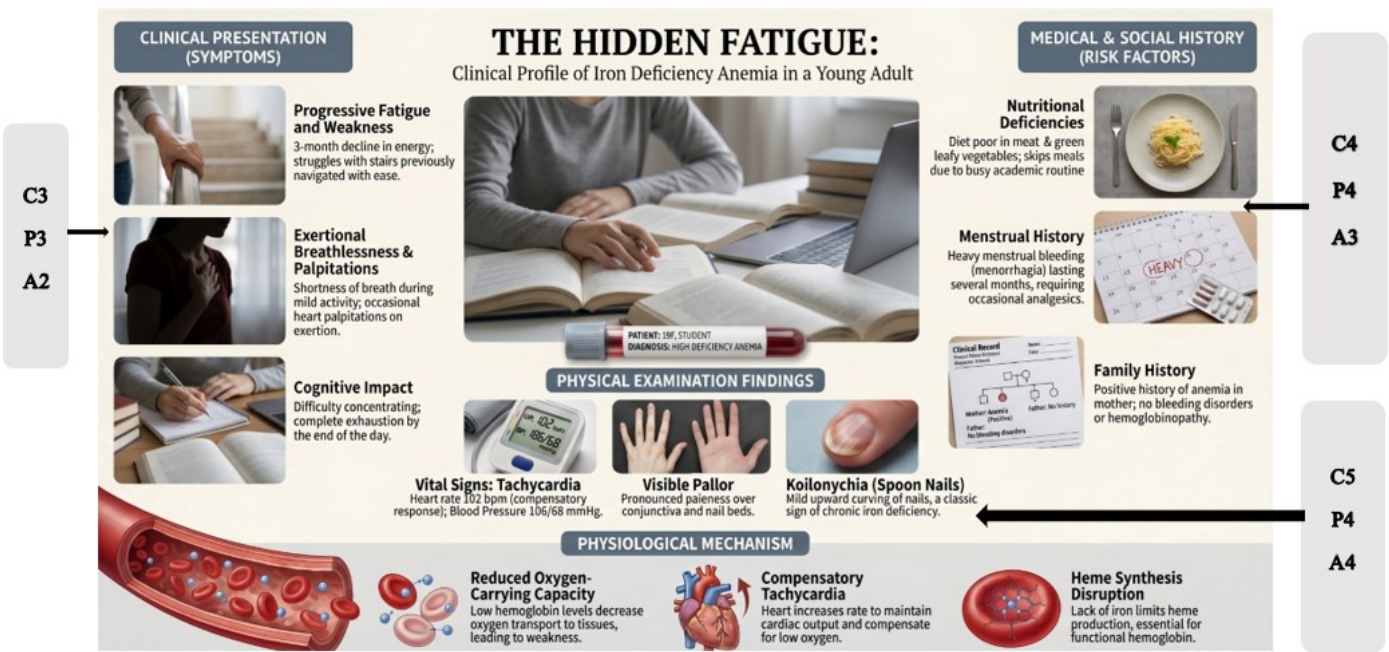
EPAs Detail Annexure-II

Justification

Harden Level 11 Justification

This case represents an authentic patient-based learning task in which students integrate **physiology, biochemistry, anatomy/histology, family medicine, pharmacology, and pathology** to explain a common clinical presentation using foundational science concepts. It supports clinically oriented, practice-relevant integrated learning consistent with **Harden Level 11**.

Theme 1 Clinico-Concept Connect (C³6)



Harden Level 11 Transdisciplinary

Specific Learning Objectives

Subject	Code	Topic	Theory				
			At the End of The Session Students Should Be Able To:	Calgary Gauge	Learning Domain	Teaching Strategy	Assessment Tools
Anatomy (Embryology)	M4-H&I-A-004	Development of Pharyngeal arches & pouches	• Define pharyngeal arches and pouches	Must know	C1	LGIS	MCQ SAQ VIVA
			• Discuss the components of pharyngeal arches and pouches	Must know	C2		
			• Describe the development and fate of each pharyngeal arch and pouches	Must know	C2		
			• Analyze the clinical correlation of pharyngeal arches and pouches	Should know	C4		
			• 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		
			• Read a research article	Nice to know	C3		
Anatomy (Histology)	M4-H&I-A-001	Lymph node	• Classify lymphoid tissue	Must know	C2	LGIS	MCQ SAQ VIVA
			• Define diffuse lymphoid tissue, nodular lymphoid tissue and lymphoid organs	Must know	C1		
			• Discuss the histological features of lymph node	Must know	C2		
			• Enlist functions of lymph node	Must know	C1		
			• Understand the supporting elements of lymph node	Must know	C2		
			• Describe filtration through lymph node	Must know	C2		
			• Discuss importance of high endothelial venules in lymph node	Must know	C2		
			• Analyze the clinical correlation of lymph node	Should know	C4		
			• 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 a research article	Nice to know	C3		
Anatomy (Gross SGD)	M4-H&I-A-005	Posterior Compartment of Leg (muscles) and flexor retinaculum	• Illustrate cutaneous innervation	Must know	C2	SGD, Skill Lab	MCQ SAQ VIVA OSPE
			• Describe superficial fascia & deep fascia.	Must know	C2		
			• Discuss superficial and deep muscle groups in posterior compartment	Must know	C2		
			• Tabulate origin, insertion, nerve supply and action of all muscles of posterior compartment of leg	Must know	C2		
			• Aanalyze ruputured calcaneal tendon, calcaneal bursitis and accessory soleus muscle	Should know	C4		

			• 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 a research article	Nice to know	C3		
	M4-H&I-A-006	Posterior Compartment of Leg (Neurovascular organization)	• Describe origin, course relations, branches and tributaries of neurovascular bundle	Must know	C2	SGD, Skill Lab	MCQ SAQ VIVA OSPE
			• Discuss superficial veins i.e long and short saphenous veins	Must know	C2		
			• Palpate the posterior tibial pulse	Must know	C3		
			• Analyze the clinical conditions	Should know	C4		
			• 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 a research article	Nice to know	C3		
	M4-H&I-A-007	Bones of Foot	• Enumerate the bones of foot	Must know	C1	SGD, Skill Lab	MCQ SAQ VIVA OSPE
			• Identify different bones of foot	Must know	C1		
			• Discuss bony features and muscle attachment	Must know	C2		
			• Evaluate fracture of metatarsals and os trigonum, avascular necrosis of head of talus	Should know	C5		
			• Analyze the clinical conditions	Should know	C4		
			• 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 a research article	Nice to know	C3		
	M4-H&I-A-008	Dorsum of foot (Muscle & neurovascular organization)	• Tabulate muscle on the dorsal aspect of foot	Must know	C2	SGD, Skill Lab	MCQ SAQ VIVA OSPE
			• Describe blood supply and nerve supply	Must know	C2		
			• Discuss cutaneous innervation of dorsum of foot	Must know	C2		
			• Palpate the dorsalis pedis artery on dorsum of foot	Should know	C3		
			• Evaluate clinicals related to the dorsum of the foot	Should know	C5		
			• 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 a research article					Nice to know	C3		
Anatomy (SKL)	M4-H&I-A-0025	Lymph node	• Identify lymph node under microscope					Should know	P	Skill Lab	OSPE
			• Focus the slide					Should know	P		
			• Draw the histological structure of lymph node					Must know	C2		
			• Enlist two identification points of lymph node					Must know	C1		
Anatomy (SDL)	M4-H&I-A-0017	Achilles Tendon Rupture	• Illustrate cutaneous innervation					Clinically Oriented Anatomy 9th Edition, pg no.755 https://www.youtube.com/watch?v=Bj4c7wGdIwc&pp=ygUTY29tcGFydG1lbnRzIG9mIGxlZw%3D%3D https://www.sciencedirect.com/science/article/abs/pii/S1440244004800343			
			• Descrube superficial fascia & deep fascia								
			• Discuss superficial and deep muscle groups in posterior compartment								
			• Tabulate origin, insertion, nerve supply and action of all muscles of posterior compartment of leg.								
			• Discuss ruptured calcaneal tendon, calcaneal bursistis and accessory soleus muscle								
			• Correlate the clinical aspects								
			• Read relevant research article								
			• Use digital library								
	M4-H&I-A-0018	Tibial Nerve Entrapment (Tarsal Tunnel Syndrome)	• Describe origin, course relations, branches and tributaries of neurovascular bundle					Clinically Oriented Anatomy 9th Edition, pg no. 755 https://www.youtube.com/watch?v=Bj4c7wGdIwc&pp=ygUTY29tcGFydG1lbnRzIG9mIGxlZw%3D%3D https://www.mdpi.com/2077-0383/11/21/6448			
			• Discuss superficial veins i.e long and short saphenous veins								
			• Palpate the posterior tibial pulse								
			• Discuss clinical correlation related to venous return in leg								
			• Correlate the clinical aspects								
			• Read relevant research article								
			• Use digital library								
Physiology LGIS	M4-H&I-P-001	Composition of blood & Hemopoiesis	Describe composition and general functions of blood	Must Know	A	C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment)	• Ganong’s Review of Medical Physiology.25 TH Editi on. Section05, Cardiovascular Physiology (Chapter 31, Page 553) • Human Physiology by Dee Unglaub Silver thorn. 8 TH Edition. (Chapter 16, Page	• https://accessmedicine.mhmedical.com/content.aspx?bookid=3047&sectionid=255121548 • https://youtu.be/cm8IK24RRvA	
			Explain the role of bone marrow in hemopoiesis and erythropoiesis	Must Know	A	C2					
			Draw steps of hemopoiesis	Must Know	A	C3					
			Distinguish committed cells from uncommitted cells	Should Know	B	C4					

									547,548) • Physiological Basis of Medical Practice by Best & Taylor's.13thEdition. Section 03, Blood (Chapter 19, Page347) (Chapter 20, Page 356) • Textbook of Medical Physiology by Guyton & Hall.14thEdition. Red blood cells, Anemia and Polycythemia. Section 06. (Chapter 33, Page 439)	
	M4-H&I-P-002	Plasma Proteins	Enumerate plasma proteins, their properties, sites of production and their functions.	Must Know	A	C1	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE	• Ganong's Review of Medical Physiology.25TH Edition. Section05, Cardiovascular Physiology (Chapter 31, Page 563) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. (Chapter 16, Page 547) • Physiological Basis of Medical Practice by Best & Taylor's.13thEdition. Section 03, Blood (Chapter 19, Page	• https://www.ncbi.nlm.nih.gov/books/NBK531504/ • https://accessmedicine.mhmedical.com/content.aspx?bookid=1366&sectionid=7324709534853
			Explain effects of deficiency of plasma proteins	Must Know	A	C2				
			Discuss conditions associated with decreased production and increased excretion of plasma proteins	Should Know	B	C2				

	M4-H&I-P-003	WBCs classification & formation. Neutrophils, Eosinophils & Basophils and their properties	Classify and explain various types of leukocytes and steps of leucopoiesis.	Must Know	A	C4	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE	Textbook of Medical Physiology by Guyton & Hall. 14th Edition. Resistance of the body to Infection. Section 06. (Chapter 34, Page 449, 456, 457)	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9777002/ 2. https://youtu.be/TelOcCkZX7c
			Explain the characteristics and functions.	Must Know	A	C2				
			Conditions in which these cells are increased and decreased.	Must Know	A	C2				
			Leukemias and their effects on the body	Should Know	B	C2				
	M4-H&I-P-004	Stages of erythropoiesis & factors affecting erythropoiesis	Elaborate Morphological features of RBCs.	Should Know	B	C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE	- Ganong's Review of Medical Physiology. 25th Edition. Section 05, Cardiovascular Physiology (Chapter 31, Page 553) - Human Physiology by Dee Unglaub Silver thorn. 8th Edition. (Chapter 16, Page 547, 548) - Physiological Basis of Medical Practice by Best & Taylor's. 13th Edition. Section 03, Blood (Chapter 19, Page 347) (Chapter 20, Page 356) - Textbook of Medical Physiology by Guyton & Hall. 14th Edition. Red blood cells,	https://accessmedicine.mhmedical.com/content.aspx?bookid=3047&sectionid=255121548 2. https://youtu.be/cm8IK24RRvA
			Describe the stages of production of RBCs.	Must Know	A	C1				
			Recall Life span of RBCs	Should Know	B	C2				
			Enumerate and explain factors which affect erythropoiesis.	Must Know	A	C2				
			Enlist sites of production of erythropoietin	Should Know	B	C2				
			Describe recombinant erythropoietin.	Nice to Know	C					
			Explain mechanism of release and action of erythropoietin	Must Know	A					

									Anemia and Polycythemia. Section 06. (Chapter 33, Page 439)	
	M4-H&I-P-005	Monocytes - macrophage system & lymphocytes	Explain the characteristics and functions of monocytes. Explain monocyte-macrophage system; importance	Must Know Must Know	A A	C2 C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE	- Ganong's Review of Medical Physiology. 25TH Edition. Section 01, Immunity, Infection and Inflammation (Chapter 03, Page 67) - Physiological Basis of Medical Practice by Best & Taylor's. 13th Edition. Section 03, Blood (Chapter 21, Page 371) (Chapter 22, Page 387) - Textbook of Medical Physiology by Guyton & Hall. 14th Edition. Section 06. (Chapter 34, Page 450-452)	https://www.sciencedirect.com/topics/pharmacology-toxicology-and-pharmaceutical-science/mononuclear-phagocyte-system 2. https://bmcbiol.biomedcentral.com/articles/10.1186/s12915-017-0392-4
Physiology (SGD)	M4-H&I-P-0023	Functions & composition of blood, Hemopoiesis and Bone marrow	1. Describe composition and general functions of blood 2. Explain the role of bone marrow in hemopoiesis and erythropoiesis 3. Draw steps of hemopoiesis 4. Differentiate committed and uncommitted cells 5. Correlate basic knowledge with clinical application			1. C2 2. C2 3. C3 4. C4 5. C3		SGD	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE	

	M4-H&I-P-0024	Hemoglobin & Hemoglobinopathies, Iron Metabolism	1. Discuss details about iron metabolism in body including iron absorption and storage 2. Understand the structure, synthesis and functions of hemoglobin and its types 3. Classify different types of hemoglobinopathies 4. Correlate basic knowledge with clinical application	C2 C2 C4 C3	SGD	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE
	M4-H&I-P-0025	Platelet formation & function. hemostasis, blood coagulation tests (BT, CT, PT, APTT and INR)	1. Explain thrombocytopenia 2. Describe functions of platelets 3. Define hemostasis 4. Explain steps of hemostasis 5. Correlate basic knowledge with clinical application	C2 C2 C1 C2 C4	SGD	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE
Physiology (SDL)	M4-H&I-P-0032	ON CAMPUS Platelet formation & function. hemostasis, blood coagulation tests (BT, CT, PT, APTT and INR)	1. Explain thrombocytopenia 2. Describe functions of platelets 3. Define hemostasis • Explain steps of hemostasis	- Ganong's Review of Medical Physiology. 25TH Edition. Section 05, (Chapter 31, Page 564) (Chapter 03, Page 79) - Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. (Chapter 16, Page 558) - Physiological Basis of Medical Practice by Best & Taylor's. 13th Edition. (Chapter 24, Page 413) - Textbook of Medical Physiology by Guyton & Hall. 14th Edition. Section 06. (Chapter 37, Page 477, 487) https://my.clevelandclinic.org/health/symptoms/21999-hemostasis https://www.sciencedirect.com/topics/neuroscience/hemostasis		
	M4-H&I-P-0033	Concept of intravascular anticoagulants and bleeding disorders (Vit K deficiency, hemophilia and thrombocytopenia)	1. Explain Intravascular coagulation 2. Discuss Bleeding disorders • Enlist Types of hemophilia	- Ganong's Review of Medical Physiology. 25TH Edition. Section 05, (Chapter 31, Page 566) - Physiological Basis of Medical Practice by Best & Taylor's. 13th Edition. (Chapter 24, page 427) - Textbook of Medical Physiology by Guyton & Hall. 14th Edition. (Chapter 37, Page 484) https://youtu.be/unp3vGsxlIA https://www.hematology.org/education/patients/bleeding-disorders		
	M4-H&I-P-0034	(OFF CAMPUS): Composition of blood	1. Describe composition and general functions of blood 2. Explain the role of bone marrow in hemopoiesis and erythropoiesis	- Ganong's Review of Medical Physiology. 25TH Edition. Section 05, Cardiovascular Physiology (Chapter 31, Page 553) - Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. (Chapter 16, Page 547, 548) - Physiological Basis of Medical Practice by Best & Taylor's. 13th Edition. Section 03, Blood (Chapter 19, Page 347) (Chapter 20, Page 356)		

			3. Draw steps of hemopoiesis • 4. Differentiate committed and uncommitted cells	• Textbook of Medical Physiology by Guyton & Hall. 14 th Edition. Red blood cells, Anemia and Polycythemia. Section 06. (Chapter 33, Page 439) 1. https://accessmedicine.mhmedical.com/content.aspx?bookid=3047&sectionid=255121548 • 2. https://youtu.be/cm8IK24RRvA			
Biochemistry (LGIS)	M4-H&I-Bs-001	Structure of Myoglobin and hemoglobin and its types	• List the structural components of hemoglobin and myoglobin	Must Know	C1	LGIS	MCQ SAQ SEQ VIVA
			• Enlist various types of Hemoglobin	Must Know	C1		
			• Discuss Biochemical roles of hemoglobin and myoglobin	Should Know	C2		
			• Apply knowledge of hemoglobin structure to explain its oxygen-carrying function in blood	Should Know	C3		
			• Interpret importance of HbA1c in diagnosis of Diabetes	Nice to Know	C3		
			• Differentiate between the tertiary structure of myoglobin and quaternary structure of hemoglobin	Should Know	C4		
			• Differentiate between adult and fetal hemoglobin based on globin chain composition.	Should Know	C4		
			• Critique the impact of structural mutations on hemoglobin function and human health.	Nice to Know	C5		
			• Apply the strategic use of artificial intelligence in healthcare • Use HEC digital library • Practice principles of bioethics • Understand the curative and preventive health care measures	Nice to Know	C3		
	M4-H&I-B-002	Oxygen dissociation curve	• Explain the oxygen dissociation curves of hemoglobin and myoglobin.	Must Know	C2	LGIS	MCQ SAQ SEQ VIVA
			• Explain why myoglobin shows a hyperbolic oxygen dissociation curve	Must Know	C2		

			• Explain the factors that shift the oxygen dissociation curve to the right |& Left	Must Know	C2		
			• Describe the Bohr effect and its role in oxygen delivery.	Must Know	C2		
			• Explain the role of 2,3-bisphosphoglycerate (2,3-BPG) in fetal circulation.	Must Know	C2		
			• Interpret changes in the oxygen dissociation curve in physiological & clinical conditions such as exercise, anemia, Carbon monoxide poisoning or high altitude.	Should Know	C3		
			• Analyze the relationship between partial pressure of oxygen and percentage saturation of hemoglobin.	Nice to Know	C4		
			• Evaluate the adaptive significance of changes in oxygen affinity during hypoxia and high-altitude exposure	Nice to Know	C5		
			• Develop a clinical scenario demonstrating alteration of the oxygen dissociation curve and predict its consequences on tissue oxygenation.	Nice to Know	C6		
			• Apply the strategic use of artificial intelligence in healthcare • Use HEC digital library • Practice principles of bioethics • Understand the curative and preventive health care measures	Nice to Know	C3		
	M4-H&I-B-003	Hemoglobinopathies	• Describe the genetic and biochemical basis of hemoglobinopathies.	Must Know	C2	LGIS	MCQ SAQ SEQ VIVA
			• Interpret laboratory findings of a patient with sickle cell anemia or thalassemia.	Should Know	C3		
			• Examine peripheral blood smear and hemoglobin electrophoresis findings to identify different hemoglobinopathies.	Nice to Know	C4		

			Assess the role of carrier screening and genetic counseling in prevention of hemoglobinopathies.	Nice to Know	C5		
			- Apply the strategic use of artificial intelligence in healthcare - Use HEC digital library - Practice principles of bioethics - Understand the curative and preventive health care measures	Nice to Know	C3		
	M4-H&I-B-004	Heme synthesis and Porphyria	Define heme and porphyrias.	Must Know	C1	LGIS	MCQ SAQ SEQ VIVA
			Discuss the role of heme in hemoglobin and cytochromes.	Should Know	C2		
			Explain the steps of heme biosynthesis.	Must Know	C2		
			Describe the regulation of heme biosynthesis.	Should Know	C2		
			Apply knowledge of heme synthesis to interpret laboratory findings in porphyrias.	Should Know	C3		
			Correlate photosensitivity with accumulation of porphyrin intermediates.	Nice to Know	C3		
			Differentiate various porphyrias using biochemical and clinical findings	Nice to Know	C4		
			Assess the role of environmental and drug triggers in precipitating porphyric attacks.	Nice to Know	C5		
			- Apply the strategic use of artificial intelligence in healthcare - Use HEC digital library - Practice principles of bioethics - Understand the curative and preventive health care measures	Nice to Know	C3		
	M4-H&I-B-005		Explain the pathway of heme degradation from hemoglobin to bilirubin excretion.	Must Know	C2	LGIS	MCQ

		Heme degradation and jaundice	Differentiate between unconjugated and conjugated bilirubin	Must Know	C2		SAQ SEQ VIVA
			Apply knowledge of bilirubin metabolism to identify prehepatic, hepatic, and posthepatic jaundice.	Should Know	C3		
			Interpret serum bilirubin findings in a patient with jaundice.	Should Know	C3		
			Compare conjugated and unconjugated hyperbilirubinemia with respect to causes, clinical presentation, and biochemical abnormalities.	Nice to Know	C4		
			Justify the use of phototherapy in neonatal jaundice based on biochemical principles.	Nice to Know	C5		
			Develop a comparative table of inherited hyperbilirubinemias including enzyme defect, bilirubin type, and clinical features	Nice to Know	C6		
			- Apply the strategic use of artificial intelligence in healthcare - Use HEC digital library - Practice principles of bioethics - Understand the curative and preventive health care measures	Nice to Know	C3		
Biochemistry (SGD)	M4-H&I-B-14	Types of Hb and Oxygen Dissociation Curve	Explain the structure, types and biomedical role of hemoglobin	Should Know	C2	SGD	MCQ SAQ SEQ VIVA
			Describe oxygen dissociation curve and its significance	Should Know	C2		
			- Apply the strategic use of artificial intelligence in healthcare - Use HEC digital library - Practice principles of bioethics - Understand the curative and preventive health care measures	Nice to Know	C3		
Biochemistry	M4-H&I-B-16	Lead poisoning, vitamin B6	Describe the role of vitamin B6 in heme synthesis	Should Know	Lippincott Illustrated reviews of biochemistry 8th edition (Chapter 21, page 308-313)		

(SDL)		deficiency and heme synthesis	Apply knowledge of heme synthesis to explain anemia in patients with lead toxicity	Nice to Know	https://doi.org/10.1016/j.bcmed.2017.10.006 https://www.youtube.com/watch?v=Qv-KEyGKAYw https://youtu.be/ejGFFQL1Wg?si=lzqrSP5ga2mZM8dl https://pubmed.ncbi.nlm.nih.gov/34200315/ https://youtu.be/Q_WkjA4ZcjY?si=r68BIl7DanAByiDr - Use digital library https://www.ucsfhealth.org/medical-tests/hemoglobin-		
			Correlate clinical symptoms with underlying defects in heme synthesis pathway	Nice to Know			
	M4-H&I-B-17	Hemoglobin related clinical disorders	Describe the common clinical disorders associated with abnormal hemoglobin structure or synthesis	Should Know	- Lippincott Illustrated reviews of biochemistry 8th edition (Chapter 03, page 27-41) https://pubmed.ncbi.nlm.nih.gov/30193516/ - Use digital library https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3163784/ https://youtu.be/89feCoBXRGE?si=iZTc39rvyVf3gcOy https://youtu.be/fIIJmg_1hv0?si=jmmuwjDRmEPblMtu		
			Predict changes in oxygen delivery in patients with carbon monoxide poisoning or methemoglobinemia	Nice to Know			
			Use laboratory findings such as Hb electrophoresis to identify common hemoglobin disorders.	Nice to Know			
			Differentiate between structural hemoglobin disorders and disorders of globin chain synthesis	Nice to Know			
Biochemistry (SKL)	M4-H&I-B-22	Blood Drawing Technique	Demonstrate the correct technique of venipuncture using appropriate aseptic measures	Must Know	P	Skill Lab	OSPE
Gynae & Obs	M4-H&I-VI(OBG)-003	Anaemia in Preganacy	Define anemia in pregnancy	C1	LGIS		MCQs
			Understand pathophysiology of physiological anemia and other anemias in pregnancy	C2			
			Interpret signs and symtoms of anemia	C2			
			Enlist basic and advanced investigations	C1			
			Relate effects of anemia on mother fetus	C3			
			Justify management of anemia according to different clinical scenarios	C6			
			Discuss role of nutrition in prevention and treatment of anemia	C2			

Spiral Courses (1st Week)

Behavioral Sciences

Code	Topic	At the End of Lecture Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
M4-FM-SI(Fmed)001	Professionalism in Healthcare	To understand the importance of knowledge, skills and attitude in the clinical settings and dealing with the patients	C1/C2	LGIS	MCQs

Family Medicine

Code	Topic	At the End of Lecture Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
M4-FM-SI(Fmed)001	Anemia	Define Anemia.	C1	LGIS	MCQs
		Discuss various Types and Subtypes of Anemia.	C2		
		Discuss the signs and symptoms of a patient with Anemia.	C2		
		Discuss the workup for diagnosis of type of anemia.	C2		
		Discuss Treatment of Various types of anemia.	C2		

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

Session	Topic	Department	Educational Relevance	At the End of The Demonstration Student Should Be Able To	Learning Domain	Assessment Tool
Clinico-Concept Connect (C ³ 6) Sessions – I	Fatigue, Pallor & Reduced Exercise Tolerance	Anatomy	Bone marrow as site of hemopoiesis, basic structural basis of blood cell formation	• Identify bone marrow as the major site of hemopoiesis.	C1	MCQs SAQ
				• Describe the structural basis of blood cell formation in hematopoietic tissue.	C2	
				• Correlate marrow function with normal red cell production.	C4	
				• Recognize the relevance of hematopoietic tissue in common blood disorders.	C3	
		Physiology	Hemoglobin function, oxygen transport, reduced oxygen-carrying capacity, compensatory cardiovascular changes, erythropoiesis	• Explain how reduced hemoglobin concentration lowers the oxygen-carrying capacity of blood.	C3	
				• Relate fatigue, palpitations, and reduced exercise tolerance to decreased tissue oxygen delivery.	C4	
				• Describe the process of erythropoiesis and factors affecting red blood cell production.	C3	
				• Explain the physiological basis of compensatory changes such as tachycardia in anemia.	C3	
		Biochemistry	Heme synthesis, structure of hemoglobin, iron metabolism, oxygen dissociation curve, nutritional basis of anemia	• Describe the structure and function of hemoglobin in oxygen transport.	C2	
				• Explain the role of iron in heme synthesis and hemoglobin formation.	C3	
				• Correlate abnormalities in hemoglobin synthesis with reduced exercise tolerance and pallor.	C4	
				• Relate the oxygen dissociation curve to oxygen delivery in anemia.	C4	
		Family Medicine	Recognition of anemia in primary care, focused history, dietary and menstrual assessment, early counseling	• Recognize fatigue and pallor as common presenting features of anemia in primary care.	C4	
				• Obtain a focused history regarding diet, menstrual blood loss, and duration of symptoms.	C3	
				• Identify when a patient with anemia requires further laboratory evaluation and follow-up.	C4	
				• Counsel patients regarding diet, adherence to treatment, and prevention of recurrence.	C4	
		Pharmaology	Hematinics, rationale of iron therapy, compliance and adverse effects	• Identify iron preparations used as hematinics in nutritional anemia.	C2	
				• Explain the basic rationale for iron supplementation in iron deficiency states.	C3	

				• Recognize common adverse effects of oral iron therapy.	C3	
				• Emphasize the importance of compliance with hematinic treatment.	C3	
		Pathology	Correlation with laboratory findings such as Hb level, red cell indices, peripheral smear patterns in anemia	• Relate low hemoglobin and altered red cell indices to anemia.	C5	
				• Recognize common peripheral smear patterns associated with iron deficiency anemia.	C5	
				• Correlate laboratory findings with the patient's clinical presentation.	C4	
				• Differentiate nutritional anemia from selected other common causes of pallor at an introductory level.	C3	
		Community Medicine	Nutritional anemia, prevention through diet, awareness in young females, public health relevance	• Discuss iron deficiency anemia as a common community health problem, especially in young females.	C2	
				• Identify nutritional and menstrual risk factors contributing to anemia.	C3	
				• Promote dietary prevention through iron-rich foods and health education.	C4	
				• Appreciate the importance of early recognition and screening in at-risk groups.	C5	

Theme 2: Jaundice & Dark Urine with Hepatosplenomegaly. (2nd Week)

Theme	Rationale	Learning objectives
Jaundice & Dark Urine with Hepatosplenomegaly	Heme degradation, bilirubin metabolism, hemoglobinopathies, hemolysis, and neonatal jaundice converge clinically as jaundice with splenic enlargement, linking basic RBC fate to medicine, pediatrics, and pathology.	• Describe the anatomy and physiology of red blood cell destruction, focusing on the role of the spleen, liver, and monocyte-macrophage system • Analyze the biochemical pathway of heme degradation to differentiate between unconjugated and conjugated jaundice • Identify key clinical signs of hemolysis, including jaundice, dark urine, and hepatosplenomegaly, particularly in pediatric patients • Assess the importance of family history in screening for inherited hemoglobinopathies or hemolytic disorders
Case Scenario 2: Jaundice, Dark Urine and Hepatosplenomegaly A 10-year-old boy was brought to the outpatient clinic by his mother with complaints of yellow discoloration of the eyes, dark-colored urine, and progressive abdominal fullness for the last 2 weeks. The mother reported that he had also become increasingly tired, less active than usual, and unable to participate in routine play. She noticed that his eyes first became yellow, followed by dark urine a few days later. Over the same period, his abdomen seemed more prominent, especially on the left side. There was no history of fever, burning micturition, edema, skin rash, or recent drug intake. The child had experienced two similar but milder episodes in the past that improved with symptomatic treatment. His mother also recalled that he had been described as “anemic” previously. There was no history of blood in stool or vomiting. His appetite had decreased, but there was no significant weight loss. On further inquiry, the parents mentioned that a maternal cousin had a blood disorder requiring repeated hospital visits. There was no history of recent travel or known hepatitis exposure. The child’s symptoms had gradually worsened, and his school attendance was affected because of weakness and abdominal discomfort. Past Medical History 1. Previous episodes of pallor and weakness 2. No known chronic liver disease 3. No history of renal disease or congenital anomaly Drug History 1. No regular medication 2. Occasional use of paracetamol Family History 1. Positive family history of blood disorder in a close relative 2. No known bleeding disorder in parents Social History 1. Lives with family, fully vaccinated 2. No significant dietary restriction 3. No known toxin exposure		

Examination**General Physical Examination**

Child is conscious, cooperative, mildly irritable, and appears pale and icteric.

Pulse 104/min, BP 100/64 mmHg, Respiratory Rate 20/min, Temperature 98.6°F.

General Findings

1. Pallor present
2. Mild icterus present
3. No cyanosis, clubbing, edema, or lymphadenopathy

Abdominal Examination

1. Abdomen soft, non-distended
2. Liver palpable 3 cm below right costal margin
3. Spleen palpable 4 cm below left costal margin
4. No ascites or tenderness

Systemic Examination

Cardiovascular System: Mild tachycardia, otherwise normal

Respiratory System: Normal vesicular breathing

Central Nervous System: Normal

Educational Relevance (Discipline-wise Integration)**Anatomy**

Liver and spleen anatomy, reticuloendothelial system, and hepatosplenic enlargement.

Physiology

Red blood cell destruction, hemoglobin breakdown, bilirubin formation, and the role of macrophages and spleen in hemolysis.

Biochemistry

Heme degradation pathway, bilirubin metabolism, hemoglobinopathies, and biochemical basis of jaundice.

Medicine / Pediatrics

Clinical interpretation of jaundice, dark urine, anemia, and hepatosplenomegaly in a child.

Pathology

Introductory correlation with hemolytic disorders, red cell fragility, and blood picture abnormalities.

Family Medicine / Community Medicine

Early recognition of jaundice and anemia, family history screening, counseling, and timely referral.

Entrustable Professional Activities (EPAs)

1. **Obtain a focused history** in a child presenting with jaundice, dark urine, and abdominal fullness.
2. **Perform a general and abdominal examination** to identify pallor, icterus, and hepatosplenomegaly.
3. **Correlate clinical findings with basic science concepts** and recognize the need for initial investigations and referral.

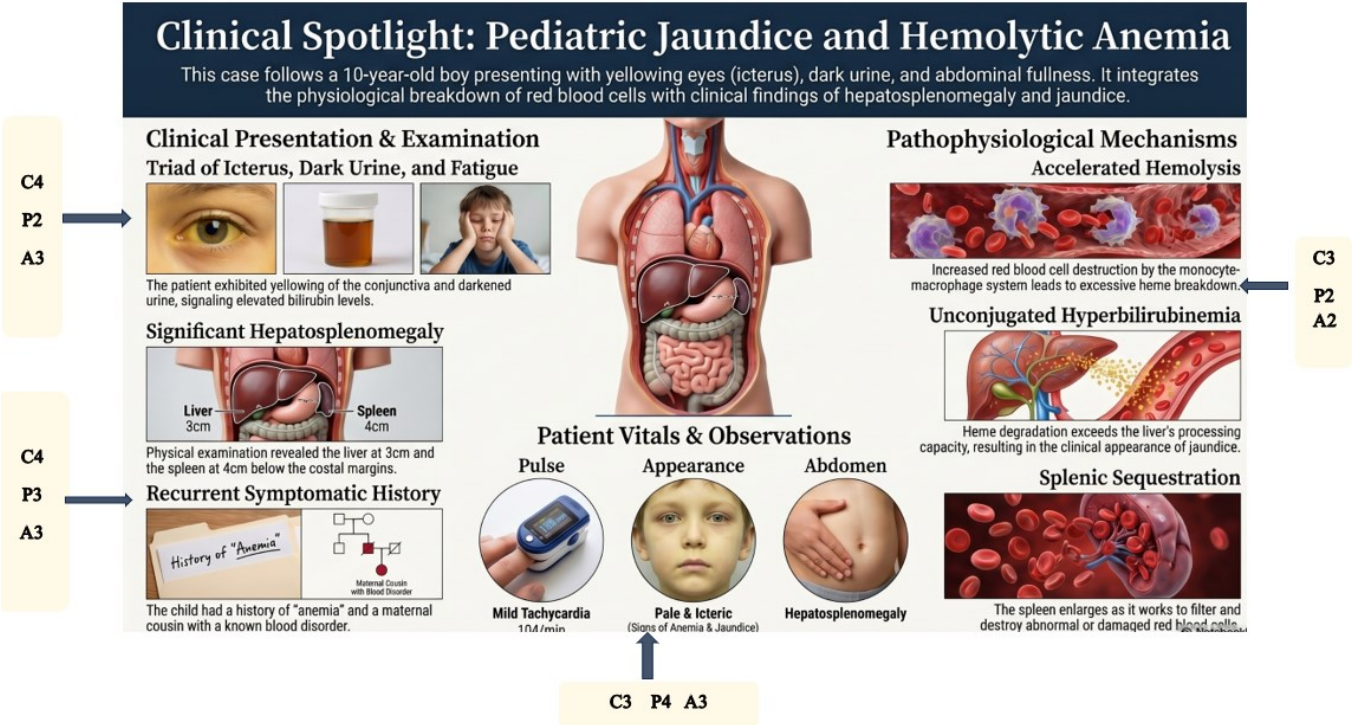
EPAs Detail Annexure-II

Justification

Harden Level 11 Justification

This case supports integrated learning by linking **anatomy, physiology, biochemistry, pathology, and clinical disciplines** to an authentic patient presentation. It helps students apply foundational science knowledge to explain jaundice, dark urine, and hepatosplenomegaly in a clinically meaningful context, consistent with **Harden Level 11**.

Theme 2 Clinico-Concept Connect (C³6)



Specific Learning Objectives

Subject	Code	Topic	At the End Of The Session Students Should Be Able To:	Calgary Gauge	Learning Domains	Teaching Strategy	Assessment Tools
Anatomy (Gross SGD)	M4-H&I-A-009	Ankle Joint	• Describe the articular surfaces of ankle joint	Must know	C2	Skill Lab	MCQ SAQ VIVA OSPE
			• Describe the attachment of capsule	Must know	C2		
			• Enumerate the ligaments	Must know	C1		
			• Analyze the movements possible at ankle joint and muscles producing them	Must know	C4		
			• Discuss ankle sprain	Must know	C3		
			• Evaluate different types of ankle injuries	Should know	C5		
			• Analyze the clinical conditions	Should know	C4		
			• 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 a research article	Nice to know	C3		
	M4-H&I-A-0010	Joints of Foot	• Classify the joints of foot	Must know	C2	Skill Lab	MCQ SAQ VIVA OSPE
			• Analyze the articular surfaces, joint capsules, ligaments, movements and muscles producing movements	Must know	C4		
			• Discuss major ligaments in detail	Must know	C2		
			• Evaluate tibial nerve entrapment	Must know	C5		
			• Defend the club foot, claw foot and other clinical conditions	Must know	C5		
			• Analyze the clinical conditions	Should know	C4		
			• 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 a research article	Nice to know	C3				
Anatomy (SKL)	M4-H&I-A-0026	Thymus	• Identify the slide of thymus under light microscope	Should know	P	Skill Lab	MCQ SAQ VIVA OSPE
			• Focus the slide	Should know	P		
			• Draw the histological structure of thymus	Must know	C2		
			• Enlist two identifications points of thymus	Must know	C1		
Anatomy (SDL)	M4-H&I-A-0019	Posterior Tibial Artery Occlusion	• Classify the joints of foot • Discuss the articular surfaces, joint capsules, ligaments,	Clinically Oriented Anatomy 9th Edition, pg no. 808			

		Palpation of Posterior Tibial Pulse for Peripheral Vascular Disease	movements and muscles producing movements • Discuss major ligaments in detail • Discuss tibial nerve entrapment • Discuss club foot, claw foot and other clinical conditions • Correlate the clinical aspects • Read relevant research article Use digital library	https://www.youtube.com/watch?v=Ex9KzkAYN8&pp=ygUKZm9vdCBqb2ludA%3D%3D https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3180294/		
	M4-H&I-A-0020	Clubfoot (Congenital Talipes Equinovarus) Flatfoot (Pes Planus)	• Classify the joints of foot • Discuss the articular surfaces, joint capsules, ligaments, movements and muscles producing movements • Discuss major ligaments in detail • Discuss tibial nerve entrapment • Discuss club foot, claw foot and other clinical conditions • Correlate the clinical aspects • Read relevant research article • Use digital library	Clinically Oriented Anatomy 9th Edition, pg no. 806 https://www.youtube.com/watch?v=Ex9KzkAYN8&pp=ygUKZm9vdCBqb2ludA%3D%3D https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3414868/		

Physiology (LGIS)	M4-H&I-P-006	Hemoglobin & Hemoglobino pathies, Iron Metabolism	Discuss details about iron metabolism in body including iron absorption and storage.	Should Know	B	C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment , MST based Assessment) OSPE	• Ganong’s Review of Medical Physiology.25THEdition. Section05, (Chapter 31, Page 555) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. (Chapter 16, Page 553) • Physiological Basis of Medical Practice by Best & Taylor’s.13thEdition. (Chapter 23, Page 407,409) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 06. (Chapter 34, Page 446,447)	https://www.sciencedirect.com/topics/medicine-and-dentistry/red-blood-cell-indices 2. https://youtu.be/QUHqYVK-Nhg 3. https://youtu.be/mOrRJBqm744
			Understand the structure, synthesis and functions of hemoglobin and its types.	Must Know	A	C2				
			Classify different types of hemoglobinopathies	Should KNow	B	C4				

	M4-H&I-P-007	Process of inflammation and Lines of defense during inflammation	Describe the role of neutrophils and monocytes in inflammation.	Must Know	A	C1, C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE	- Ganong's Review of Medical Physiology. 25TH Edition. Section 01, Immunity, Infection and Inflammation (Chapter 03, Page 81) - Physiological Basis of Medical Practice by Best & Taylor's. 13th Edition. Section 03, Blood (Chapter 22, Page 384) - Textbook of Medical Physiology by Guyton & Hall. 14th Edition. Section 06. (Chapter 34, Page 454)	https://youtu.be/WFm9j1rNkQs https://en.wikipedia.org/wiki/Inflammation https://www.verwellhealth.com/signs-of-inflammation-4580526
			Compare Lines of defense	Must Know	A	C4				
	M4-H&I-P-008	Red cell fragility, ESR & Red cell indices, Anemia & polycythemia	Define RBC fragility; importance; conditions in which fragility is changed.	Should Know	B	C1 C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE	- Ganong's Review of Medical Physiology. 25TH Edition. Section 05, (Chapter 31, Page 555) - Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. (Chapter 16, Page 553) - Physiological Basis of Medical Practice by Best & Taylor's. 13th Edition. (Chapter 23, Page	https://www.sciencedirect.com/topics/medicine-and-dentistry/red-blood-cell-indices 2. https://youtu.be/QUHqYVK-Nhg 3. https://youtu.be/mOrRJBqm744
			Discuss various blood indices, give their formulae, co-related with different types of anemias.	Should Know	B	C2				
			Classify various types of anemias and polycythemias.	Must Know	A	C4				

			Discuss details about various types of anemias and polycythemia and their effect on circulatory system.	Must Know	A				407,409) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 06. (Chapter 34, Page 446,447)	
	M4-H&I-P-009	Platelet formation & function. hemostasis, blood coagulation tests (BT, CT, PT, APTT and INR)	Explain thrombocytopoiesis. Describe functions of platelets Define hemostasis. Break down steps of hemostasis	Must Know Must Know Must Know	A A A	C2 C2 C4	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment , MST based Assessment) OSPE	• Ganong's Review of Medical Physiology.25TH Edition. Section05, (Chapter 31, Page 564) (Chapter 03, Page 79) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. (Chapter 16, Page 558) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. (Chapter 24, Page 413) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 06. (Chapter 37, Page 477,487)	https://my.clevelandclinic.org/health/symptoms/21999-hemostasis https://www.sciencedirect.com/topics/neuroscience/hemostasis
	M4-H&I-P-0010	Fate of RBCs & Jaundice	Give life span of RBCs and explain their destruction.	Should Know	B	C1, C2, C1, C2	LGIS	MCQ SEQ VIVA VOCE	• Ganong's Review of Medical Physiology.25TH Edition	https://www.sciencedirect.com/topics/medicine-and-

			Describe various types, compare and differentiate between various types of jaundice	Should Know	B	C4		MCQ (LMS based Assessment, MST based Assessment) OSPE	. Section05, (Chapter 31, Page 555) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. (Chapter 16, Page 553) • Physiological Basis of Medical Practice by Best & Taylor's.13thEdition. (Chapter 23, Page 407,409) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 06. (Chapter 34, Page 446,447)	dentistry/red-blood-cell-indices 2. https://youtu.be/QUHqYVK-Nhg 3. https://youtu.be/mOrRJBqm744
Physiology (SGD)	4-H&I-P-0026	Physiological mechanism of temperature regulation	1. Explain Concept of temperature 2. Discuss Physiological mechanism of temperature regulation 3. Correlate basic knowledge with clinical application					C2 C2 C4	SGD	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE
	M4-H&I-P-0027	Stages of Erythropoiesis Factors Affecting Erythropoiesis (First week)	1. Elaborate Morphological features of RBCs 2. Describe the stages of production of RBCs 3. Recall Life span of RBCs 4. Enumerate and explain factors which affect erythropoiesis 5. Enlist sites of production of erythropoietin 6. Describe recombinant erythropoietin 7. Explain mechanism of release and action of erythropoietin					C2 C1 C1 C2 C1 C2 C2	SGD	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE

Physiology (SDL)	M4-H&I-P-0035	Function of Plasma Proteins	1.Enumerate plasma proteins, their properties, sites of productions and their functions 2.Explain effects of deficiency of plasma proteins 3.Discuss conditions associated with decreased production and increased excretion of plasma proteins	- Ganong's Review of Medical Physiology.25TH Edition. Section 05, Cardiovascular Physiology (Chapter 31, Page 563) - Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. (Chapter 16, Page 547) - Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 03, Blood (Chapter 19, Page 348,353) 1. https://www.ncbi.nlm.nih.gov/books/NBK531504/ 2.https://accessmedicine.mhmedical.com/content.aspx?bookid=1366&sectionid=73247095			
	M4-H&I-P-0036	WBCs classification & formation. Neutrophils, Eosinophils & Basophils and their properties	Enumerate and explain various types of leukocytes and steps of leucopoiesis Explain the characteristics and functions Conditions in which these cells are increased and decreased Leukemias and their effects on the body	Textbook of Medical Physiology by Guyton & Hall.14th Edition. Resistance of the body to Infection. Section 06. (Chapter 34, Page 449,456,457) 1. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9777002/ 2.https://youtu.be/TelOcCkZX7c			
	M4-H&I-P-0037	Monocytes - macrophage system & lymphocytes	Explain the characteristics and functions of monocytes. Explain monocyte-macrophage system; importance	- Ganong's Review of Medical Physiology.25TH Edition. Section 01, Immunity, Infection and Inflammation (Chapter 03, Page 67) - Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 03, Blood (Chapter 21, Page 371) (Chapter 22, Page 387) - Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 06. (Chapter 34, Page 450-452) 1. https://www.sciencedirect.com/topics/pharmacology-toxicology-and-pharmaceutical-science/mononuclear-phagocyte-system 2.https://bmcbiol.biomedcentral.com/articles/10.1186/s12915-017-0392-4			
Biochemistry (LGIS)	M4-H&I-B-003	Hemoglobinopathies	Describe the genetic and biochemical basis of hemoglobinopathies.	Must Know	C2	LGIS	MCQ SAQ SEQ VIVA
			Interpret laboratory findings of a patient with sickle cell anemia or thalassemia.	Should Know	C3		
			Examine peripheral blood smear and hemoglobin electrophoresis findings to identify different hemoglobinopathies.	Nice to Know	C4		

			Assess the role of carrier screening and genetic counseling in prevention of hemoglobinopathies.	Nice to Know	C5		
			- Apply the strategic use of artificial intelligence in healthcare - Use HEC digital library - Practice principles of bioethics - Understand the curative and preventive health care measures	Nice to Know	C3		
	M4-H&I-B-005	Heme degradation and jaundice	Explain the pathway of heme degradation from hemoglobin to bilirubin excretion.	Must Know	C2	LGIS	MCQ SAQ SEQ VIVA
			Differentiate between unconjugated and conjugated bilirubin	Must Know	C2		
			Apply knowledge of bilirubin metabolism to identify prehepatic, hepatic, and posthepatic jaundice.	Should Know	C3		
			Interpret serum bilirubin findings in a patient with jaundice.	Should Know	C3		
			Compare conjugated and unconjugated hyperbilirubinemia with respect to causes, clinical presentation, and biochemical abnormalities.	Nice to Know	C4		
			Justify the use of phototherapy in neonatal jaundice based on biochemical principles.	Nice to Know	C5		
			Develop a comparative table of inherited hyperbilirubinemias including enzyme defect, bilirubin type, and clinical features	Nice to Know	C6		
			- Apply the strategic use of artificial intelligence in healthcare - Use HEC digital library - Practice principles of bioethics - Understand the curative and preventive health care measures	Nice to Know	C3		
	M4-H&I-B-006	AIDS	Define Acquired Immunodeficiency Syndrome (AIDS) and identify its causative agent.	Should Know	C1	LGIS	MCQ SAQ SEQ VIVA
			Describe the immunological defects caused by AIDS, particularly the role of CD4⁺ T-cell depletion.	Should Know	C2		
			Interpret basic laboratory investigations used in the	Nice to Know	C3		

			diagnosis and monitoring of AIDS, including CD4 count and viral load				
			Analyze the role of preventive measures in controlling the spread of AIDS	Nice to Know	C4		
			- Apply the strategic use of artificial intelligence in healthcare - Use HEC digital library - Practice principles of bioethics - Understand the curative and preventive health care measures	Nice to Know	C3		
	M4-H&I-B-007	Plasma proteins functions, Albumin	List the major plasma proteins and their sites of synthesis	Must Know	C1	LGIS	MCQ SAQ SEQ VIVA
			Explain the physiological functions of plasma proteins in maintaining transport, immunity, coagulation, and osmotic balance	Should Know	C2		
			Apply the knowledge of albumin functions to explain the development of edema in hypoalbuminemia.	Should Know	C3		
			Differentiate between positive and negative acute phase proteins based on their changes during inflammatory conditions.	Nice to Know	C4		
			Evaluate laboratory findings of plasma protein abnormalities to identify possible underlying clinical conditions such as liver disease, nephrotic syndrome, or malnutrition.	Nice to Know	C5		
			- Apply the strategic use of artificial intelligence in healthcare - Use HEC digital library - Practice principles of bioethics - Understand the curative and preventive health care measures	Nice to Know	C3		
	Biochemistry (SDL)	M4-H&I-B-18	Congenital causes of hyperbilirubinemia & Neonatal Jaundice	Explain the biochemical basis of congenital causes of hyperbilirubinemia.	Should Know	- Lippincott Illustrated reviews of biochemistry 8th edition (Chapter 21, page 314-317) - Harper’s Illustrated Biochemistry 32nd edition, Chapter No. 31, Pages 321-325 https://pubmed.ncbi.nlm.nih.gov/14765767/ https://youtu.be/gIACp5js4MU?si=uh_rPKOeqZIKtwZc	
Describe the pathophysiology and types of neonatal jaundice.				Should Know			
Apply biochemical principles to explain the role of phototherapy in neonatal jaundice				Should Know			

	M4-H&I-B-19	Edema and Oncotic Pressure	• Apply the knowledge of albumin deficiency to explain the development of edema in clinical conditions such as liver disease, nephrotic syndrome, and malnutrition	Should Know	• Harper’s Illustrated Biochemistry 32nd edition, Chapter No. 52, Pages 635-637 • https://youtu.be/EBf97p7AeZc?si=FRHTfMJJQIHKziFt • https://youtu.be/6ecmOuCIoNc?si=pwbR7tvFru-Q0bLH		
Biochemistry (SKL)	M4-H&I-B-23	Estimation of Serum Bilirubin	• Describe Principal, method, normal blood level and clinical significance of S. Bilirubin	Should Know	P	Skill	OSPE
			• Perform estimation of serum bilirubin	Should Know	P		
Medicine	M4-H&I-VI(Med)-001	Jaundice	• Discuss Jaundice.	C2		LGIS	MCQs
			• Discuss various Types and Subtypes of Jaundice.	C2			
			• Discuss the signs and symptoms of a patient with Jaundice due to various Causes.	C2			
			• Discuss the workup for diagnosis of different type of Jaundice	C2			
			• Discuss Treatment of Various Causes of Jaundice.	C2			
			• Discuss the diagnostic workup and treatment.	C2			
Pediatrics	M4-H&I-VI(Peads)-001	Hemolytic Disease of New Born	• Define Hemolytic Disease of the Newborn (HDN) and describe its etiology, with emphasis on Rh and ABO incompatibility between mother and fetus.	C1		LGIS	MCQs
			• Explain the basic immunological mechanism underlying HDN, including the role of maternal alloantibodies and their effects on fetal red blood cells.	C2			
			• List the clinical features, preventive strategies (e.g., anti-D immunoglobulin), and complications associated with HDN in neonates.	C1			
Gynae & Obs	M4-H&I-VI(OBG)-002	Rh incompatibility / ABO incompatibility and its significance	• Understand the pathophysiology of Rh and ABO incompatibly	C2		LGIS	MCQs
			• Comprehend the etiology of Rhesus and ABO incompatibility	C2			
			• Describe the fetal anemia	C2			
			• Discuss the role of anti-D antibodies in prevention of Rh isoimmunization	C2			
			• Interpret signs of fetal anemia	C3			
			• Discuss the role of antibodies in prevention of Rh Isoimmunization	C6			
			• Justify management of sensitized and unsensitized pregnancy acooding to different clinical scenarios	C6			

Spiral Courses (2nd Week)

Behavioral Sciences

Code	Topic	At the End of Lecture Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
M4-FM-SI(Fmed)002	Psychology in Medical Practic	• Role of psychological factors in the precipitation (triggering) of illnesses	C1		
		• Psychological factors in the management of illnesses	C2		
		• Psychological and social factors in diseases causing disability. handicap and stigma	C2		
		• Role of psychological factors in patient's reactions to illness	C1		
		• Medically Unexplained Physical Symptoms (MUPS)	C1		

Multidisciplinary (Hardens Level 9) Clinico-Concept Connect (C³6) Sessions for 2nd Week

Session	Topic	Department	Educational Relevance	At the End of The Demonstration Student Should Be Able To	Learning Domain	Assessment Tool
Clinico-Concept Connect (C ³ 6) Sessions – II	Jaundice & Dark Urine with Hepatosplenomegaly	Anatomy	Liver and spleen anatomy, reticuloendothelial system, and hepatosplenic enlargement.	• Describe the gross anatomy of the liver and spleen.	C2	MCQs SAQ
				• Explain the anatomical basis of hepatomegaly and splenomegaly.	C3	
				• Identify the role of the spleen in red blood cell sequestration and destruction.	C2	
				• Relate hepatobiliary anatomy to the formation and excretion of bile pigments.	C4	
		Physiology	Red blood cell destruction, hemoglobin breakdown, bilirubin formation, and the role of macrophages and spleen in hemolysis.	• Explain the normal life span and destruction of red blood cells.	C3	
				• Describe the physiological role of the monocyte-macrophage system in hemolysis.	C2	
				• Relate increased red cell destruction to jaundice and dark urine.	C4	
				• Correlate anemia with weakness, pallor, and reduced activity.	C4	
		Biochemistry	Heme degradation pathway, bilirubin metabolism, hemoglobinopathies, and biochemical basis of jaundice	• Describe the pathway of heme degradation and bilirubin formation.	C2	
				• Differentiate the basic biochemical basis of unconjugated and conjugated jaundice.	C2	
				• Explain how abnormal hemoglobin structure or increased hemolysis can lead to jaundice.	C3	
				• Relate bilirubin metabolism to the clinical findings of icterus and dark urine.	C4	
		Pediatrics	Clinical interpretation of jaundice, dark urine, anemia, and hepatosplenomegaly in a child.	• Recognize jaundice, dark urine, pallor, and hepatosplenomegaly as important clinical findings.	C4	
				• Develop an introductory approach to a child presenting with possible hemolytic anemia.	C6	
				• Correlate the clinical picture with underlying disturbances in red cell breakdown and bilirubin metabolism.	C5	
				• Appreciate the importance of history, examination, and basic investigations in such a case.	C4	
		Pathology	Introductory correlation with hemolytic disorders, red cell fragility, and	• Recognize the basic pathological basis of hemolytic disorders.	C3	
				• Correlate increased red cell destruction with anemia and bilirubin excess.	C4	

			blood picture abnormalities.	• Understand the relevance of peripheral blood findings in suspected hemolytic disease.	C3	
				• Relate splenic enlargement to increased red cell destruction.	C3	
		Community Medicine	Early recognition of jaundice and anemia, family history screening, counseling, and timely referral.	• Identify jaundice and pallor as warning signs requiring early medical assessment.	C2	
				• Elicit a focused family history in patients with suspected inherited blood disorders.	C4	
				• Counsel caregivers regarding follow-up and need for further evaluation.	A3	
				• Appreciate the value of early recognition and referral of children with recurrent jaundice or anemia.	C4	

Theme 3: Easy Bruising, Prolonged Bleeding & Thrombotic Events. (3rd Week)

Theme	Rationale	Learning objectives
Easy Bruising, Prolonged Bleeding & Thrombotic Events	Platelet function, coagulation pathways, vitamin K, bleeding disorders, anticoagulants, and thromboembolism integrate into bleeding vs clotting presentations commonly encountered in wards and emergency settings.	- Understand the normal process of hemostasis, including the coagulation cascade and the physiological balance between procoagulant and anticoagulant mechanisms - Identify clinical risk factors for deep vein thrombosis (DVT), such as immobility, surgery, and the postpartum state - Recognize manifestations of bleeding disorders, including easy bruising and prolonged bleeding, and correlate them with platelet or coagulation factor deficiencies - Explain the mechanism and adverse effects of anticoagulant therapy (e.g., heparin and warfarin) to ensure safe clinical monitoring
Case Scenario 3: Easy Bruising, Prolonged Bleeding and Thrombotic Event A 28-year-old woman presented to the Emergency Department with pain and swelling in her left calf for the last 2 days. She had delivered a baby by cesarean section 10 days earlier and had remained relatively immobile for several days after delivery. She described the pain as dull and aching, which increased on walking, and noticed that the left leg had become swollen compared with the right. She also reported that over the last few days she had developed multiple bluish patches over her arms and abdomen, especially around injection sites. In addition, she noticed bleeding from her gums while brushing and prolonged bleeding after a small cut on her finger. There was no history of fever, trauma, hematemesis, melena, or hematuria. She denied any previous major bleeding disorder but mentioned that she had received injections in the hospital after delivery for prevention of clot formation. She felt anxious because the leg swelling was increasing and the bruises seemed to be appearing more easily than before. Her symptoms were now affecting her mobility and ability to care for her newborn. Past Medical History - Recent cesarean section 10 days earlier - No known hypertension or diabetes mellitus - No previous history of liver disease or chronic illness Drug History - Recent injectable anticoagulant therapy after surgery - Occasional analgesics for postoperative pain Family History - No known family history of bleeding disorder - No known inherited thrombotic disorder Social History - Recent prolonged bed rest after delivery - Reduced mobility in the postoperative period - No smoking or alcohol use		

Examination

General Physical Examination

Young female, conscious and oriented, mildly anxious, lying comfortably but reluctant to move the left leg.
Pulse 98/min, BP 110/70 mmHg, Respiratory Rate 18/min, Temp 98.4°F.

General Findings

- 1. Multiple small ecchymotic patches over arms and lower abdomen
- 2. Mild oozing from gum margin on examination
- 3. Pallor absent, no icterus, cyanosis, clubbing, or edema elsewhere

Local Examination of Left Lower Limb

- 1. Left calf swollen compared with right
- 2. Local tenderness present over calf muscles
- 3. Mild warmth over the affected area
- 4. Peripheral pulses palpable

Systemic Examination

Cardiovascular System: Normal heart sounds

Respiratory System: Clear chest, no added sounds

Abdomen: Soft, non-tender

Central Nervous System: Normal

Educational Relevance (Discipline-wise Integration)

Discipline	Relevance
Physiology	Hemostasis, platelet function, coagulation cascade, physiological balance between bleeding and clotting
Biochemistry	Vitamin K–dependent clotting factors, plasma proteins involved in coagulation, biochemical basis of anticoagulant action
Pathology	Thromboembolic conditions such as DVT, bleeding disorders, thrombocytopenia, and coagulation abnormalities
Pharmacology	Heparin, warfarin, and the effect of anticoagulant therapy on bleeding tendency
Medicine / Gynae & Obs	Postoperative and postpartum risk of venous thromboembolism, recognition of bleeding manifestations
Family Medicine / Community Medicine	Risk-factor identification, patient counseling, early recognition, and referral of bleeding or thrombotic complications

Entrustable Professional Activities (EPAs)

- 1. **Obtain a focused history** in a patient presenting with leg swelling, easy bruising, and prolonged bleeding.
- 2. **Perform a general and local examination** to identify bruising, bleeding signs, and features suggestive of DVT.
- 3. **Correlate clinical findings with basic science concepts** and recognize the need for urgent investigation and referral

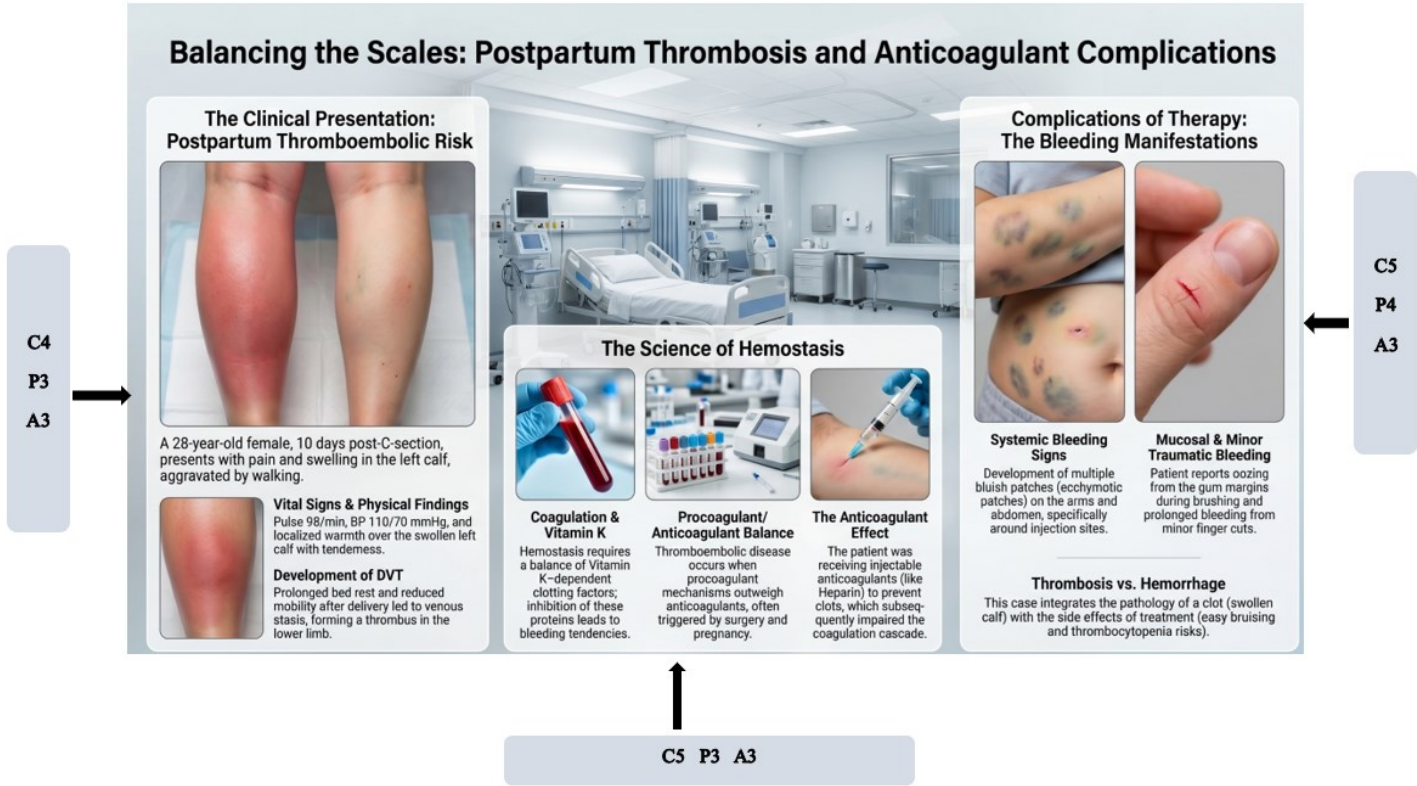
EPAs Detail Annexure-II

Justification

Harden Level 11 Justification

This case represents an integrated patient-based learning task in which students apply **physiology, biochemistry, pathology, pharmacology, and clinical knowledge** to explain both **bleeding manifestations and thrombotic disease** in a real-life clinical context. It supports authentic, practice-oriented integrated learning consistent with **Harden Level 11**.

Theme 3 Clinico-Concept Connect (C³6)



Harden Level 11 Transdisciplinary

Specific Learning Objectives

Subject	Code	Topic	At the End of The Session Students Should Be Able To:	Calgary Gauge	Learning Domains	Teaching Strategy	Assessment Tools
Anatomy (Embryology & Histology)	M4-H&I-A-002	Development & Histology of Thymus & Tonsil	• Describe the location and functions of thymus	Must know	C1	LGIS	MCQ SAQ VIVA
			• Describe development of thymus & tonsil	Must know	C1		
			• Discuss congenital abnormalities of thymus & tonsil	Should know	C3		
			• Enumerate different types of reticuloepithelial cells	Must know	C1		
			• Describe microscopic structure of thymus	Must know	C2		
			• Compare the histological structure of thymus and other lymphoid organs	Must know	C2		
			• Discuss blood thymus barrier	Must know	C2		
			• Describe general histological structure of tonsils	Must know	C2		
			• Differentiate palatine, lingual, and pharyngeal tonsils histologically	Must know	C2		
			• Discuss the clinical correlation of thymus	Should know	C3		
			• 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		
			• Read a research article	Nice to know	C3		
	M4-H&I-A-003	Development & Histology of Spleen	• Describe development of spleen	Must know	C1	LGIS	MCQ SAQ VIVA
			• Discuss congenital abnormalities of spleen	Should know	C3		
			• Describe the location and functions of spleen	Must know	C2		
			• Describe microscopic structure of spleen	Must know	C2		
			• Differentiate between red and white pulp of spleen	Must know	C2		
			• Discuss blood circulation through spleen	Must know	C2		
			• Discuss the clinical correlation of spleen	Should know	C3		
			• 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		
			• Read a research article	Nice to know	C3		
Anatomy (Gross SGD)	M4-H&I-A-0011	Sole of foot (Muscles)	• Identify Surface landmarks	Must know	C1	SGD, Skill Lab	MCQ SAQ VIVA
			• Describe cutaneous innervation of sole of foot	Must know	C2		
			• Describe Plantar aponeurosis its attachments	Must know	C2		

			• Discuss flexor retinaculum	Must know	C2		OSPE
			• Evaluate muscles in different layers of foot with origin, insertion, nerve supply and actions	Must know	C5		
			• Analyze the clinical conditions	Should know	C4		
			• 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 a research article	Nice to know	C3		
	M4-H&I-A-0012	Sole of foot (Neurovascular Organization)	• Enlist nerves and arteries present in sole of foot	Must know	C1	SGD, Skill Lab	MCQ SAQ VIVA OSPE
			• Define route and relations of neurovascular bundle in sole of foot	Must know	C5		
			• Describe the formation of vascular arches of foot along with clinicals	Must know	C2, C3		
			• Evaluate plantar fasciitis	Must know	C5		
			• Analyze the clinical conditions	Should know	C4		
			• 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 a research article	Nice to know	C3		
	M4-H&I-A-0013	Arches of Foot and Gait Cycle	• Classify the arches of foot	Must know	C2	SGD, Skill Lab	MCQ SAQ VIVA OSPE
			• Describe different components of arches of foot	Must know	C2		
			• Evaluate stability factors of arches of foot	Should know	C5		
			• Discuss pes planus (flat foot), club foot and other clinicals	Must know	C3		
			• Analyze gait cycle and its stages	Should know	C4		
			• Analyze the clinical conditions	Should know	C4		
			• 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 a research article	Nice to know	C3		
Anatomy (SKL)	M4-H&I-A-0027	Spleen	• Identify the slide of spleen under light microscope	Should know	P	Skill Lab	OSPE
			• Focus the slide	Should know	P		
			• Draw histological structure of spleen,	Must know	C2		

			• Enlist two identification points of spleen					Must know	C1		
Anatomy (SDL)	M4-H&I-A-0021	Ankle Sprain Pott’s Fracture Tibiotalar Dislocation	• Describe the attachment of capsule • Enumerate the ligaments • Discuss the movements possible at ankle joint and muscles producing them • Discuss ankle sprain • Discuss different types of ankle injuries • Correlate the clinical aspects • Read relevant research article • Use digital library					Clinically Oriented Anatomy 9th Edition, pg no. 806 https://www.youtube.com/watch?v=Ex9KzkAYN8&pp=ygUKZm9vdCBqb2ludA%3D%3D https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3414868/			
	M4-H&I-A-0022	Plantar Fasciitis Heel Spurs (Calcaneal Spur)	• Identify Surface landmarks • Describe cutaneous innervation of sole of foot • Describe Plantar aponeurosis its attachments • Discuss flexor retinaculum • Discuss muscles in different layers of foot with origin, insertion, nerve supply and actions • Correlate the clinical aspects • Read relevant research article • Use digital library					Clinically Oriented Anatomy 9th Edition, pg no. 768-781 • https://www.youtube.com/watch?v=JorGDBbPzI&pp=ygUcc29sZSBvZiBmb290IGFuYXRvbXkgbGVjdHVyZQ%3D%3D • https://www.ncbi.nlm.nih.gov/pmc/articles/PMC311689/			
Physiology (LGIS)	M4-H&I-P-0011	Blood coagulation	Explain hemostasis, mechanism of blood coagulation, fibrinolysis and anticoagulants	Must Know	A	C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE	• Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. (Chapter 16, Page 559) • Physiological Basis of Medical Practice by Best & Taylor’s.13thEdition. (Chapter 24, Page 417) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 06. (Chapter 37, Page 479)	https://youtu.be/gExUCrpAKyQ https://medlineplus.gov/lab-tests/coagulation-factor-tests/	
	M4-H&I-P-0012	Types of immunity,	Define immunity and its types.	Must Know	A	C1		MCQ SEQ	• Ganong’s Review of	https://www.sciencedirect.com/	

		Physiology of innate immunity tolerance & auto immunity	Compare and contrast innate and acquired immunity.	Must Know	A	C4	LGIS	VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE	Medical Physiology.25TH Edition. Section01, Immunity, Infection and Inflammation (Chapter 03, Page 67) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 03, Blood (Chapter 21, Page371) (Chapter 22, Page 387) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 06. (Chapter 34, Page 450-452)	topics/pharmacology-toxicology-and-pharmaceutical-science/mononuclear-phagocyte-system 2. https://bmcbiol.biomedcentral.com/articles/10.1186/s12915-017-0392-4
			Differentiate between passive and active immunity	Must Know	A	C4				
	M4-H&I-P-0013	Concept of intravascular anticoagulants and bleeding disorders (Vit K deficiency, hemophilia and thrombocytopenia)	Explain Intravascular coagulation. Discuss Bleeding disorders. Categorize various Types of hemophilia	Must Know	A	1.C2 2.C2 3. C4	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE	• Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. (Chapter 16, Page 559) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. (Chapter 24, Page 417) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 06. (Chapter 37, Page 479)	https://youtu.be/gExUCrpAKyQ https://medlineplus.gov/lab-tests/coagulation-factor-tests/
	M4-H&I-P-0014	Physiology of acquired immunity B-Cells	Enumerate various types of lymphocytes Discuss their important characteristics and Explain the mechanism of	Must Know Must Know	A A A	C1 C2 C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment,	• Ganong's Review of Medical Physiology.25TH Edition. Section01, Immunity, Infection and Inflammation (Chapter 03, Page 67)	https://www.sciencedirect.com/topics/pharmacology-toxicology-and-pharmaceutical-science/mononuclear-phagocyte-system

			preprocessing	Must Know				MST based Assessment) OSPE	- Physiological Basis of Medical Practice by Best & Taylor's.13thEdition. Section 03, Blood (Chapter 21, Page371) (Chapter 22, Page 387) - Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 06. (Chapter 34, Page 450-452)	science/mononuclear-phagocyte-system 2. https://bmcbiol.biomedcentral.com/articles/10.1186/s12915-017-0392-4	
	M4-H&I-P-0015	Thromboembolic condition (DVT, Pulmonary Embolism, DIC) Anticoagulant therapy (Heparin, warfarin, Prevention of blood clotting outside the body)	Discuss different Thromboembolic Conditions Explain Pulmonary Embolism and clinical correlation Enlist different Anticoagulant therapy	Should Know	B	C2 C2 C1	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE	- Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. (Chapter 16, Page 559) - Physiological Basis of Medical Practice by Best & Taylor's.13thEdition. (Chapter 24, Page 417) - Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 06. (Chapter 37, Page 479)	https://youtu.be/gExUCrpAKyQ https://medlineplus.gov/lab-tests/coagulation-factor-tests/	
Physiology (SGD)	M4-H&I-P-0028	Physiology of WBC (third week)	1. Classify various types of leukocytes and steps of leucopoiesis 2. Explain the characteristics and functions 3. Conditions in which these cells are increased and decreased 4. Leukemias and their effects on the body						C4 C2 C2 C2	SGD	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE
	M4-H&I-P-0029	Physiology of platelets (Fourth week)	1. Explain thrombocytopenia 2. Describe functions of platelets 3. Define hemostasis 4. Explain steps of hemostasis						C2 C2 C1 C2	SGD	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE

Physiology (SDL)	M4-H&I-P-0038	Process of inflammation and Lines of defense during inflammation	1. Describe the role of neutrophils and monocytes in inflammation Elaborate Lines of defense	- Ganong’s Review of Medical Physiology.25TH Edition. Section 01, Immunity, Infection and Inflammation (Chapter 03, Page 81) - Physiological Basis of Medical Practice by Best & Taylor’s.13th Edition. Section 03, Blood) (Chapter 22, Page 384) - Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 06. (Chapter 34, Page 454) 1. https://youtu.be/WFm9j1rNkQs 2. https://en.wikipedia.org/wiki/Inflammation 3. https://www.verywellhealth.com/signs-of-inflammation-4580526			
	M4-H&I-P-0039	Red cell fragility, ESR & Red cell indices, Anemia & polycythemia	1. Define RBC fragility; importance; conditions in which fragility is changed. 2. Discuss various blood indices, give their formulae, co-relate with different types of anemias. 3. Enumerate various types of anemias and polycythemias. Discuss details about various types of anemias and polycythemia and their effect on circulatory system.	1. Ganong’s Review of Medical Physiology.25TH Edition. Section 05, (Chapter 31, Page 555) 2. Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. (Chapter 16, Page 553) 3. Physiological Basis of Medical Practice by Best & Taylor’s.13th Edition. (Chapter 23, Page 407,409) 4. Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 06. (Chapter 34, Page 446,447) 1. https://www.sciencedirect.com/topics/medicine-and-dentistry/red-blood-cell-indices 2.https://youtu.be/QUHqYVK-Nhg 3. https://youtu.be/mOrRJBqm744			

Biochemistry (LGIS)	M4-H&I-B-008	Haptoglobin, ceruloplasmin	Explain the role of haptoglobin in binding free hemoglobin and preventing its renal loss.	Must Know	C2	LGIS	MCQ SAQ SEQ VIVA
			Discuss the role of ceruloplasmin in copper transport and iron metabolism.	Must Know	C2		
			Interpret alterations in serum haptoglobin levels in intravascular hemolytic conditions	Should Know	C3		

			Analyze the effect of ceruloplasmin deficiency on copper accumulation and tissue damage in liver and brain.	Nice to Know	C4		
			Evaluate the diagnostic significance of serum haptoglobin estimation in suspected hemolytic anemia	Nice to Know	C5		
			- Apply the strategic use of artificial intelligence in healthcare - Use HEC digital library - Practice principles of bioethics - Understand the curative and preventive health care measures	Nice to Know	C3		
	M4-H&I-B-009	Transferrin, ferritin	Explain the role of transferrin in iron transport and ferritin in iron storage.	Should Know	C2	LGIS	MCQ SAQ SEQ VIVA
			Interpret laboratory findings of serum ferritin and transferrin in patients with iron deficiency anemia and iron overload disorders.	Should Know	C3		
			- Apply the strategic use of artificial intelligence in healthcare - Use HEC digital library - Practice principles of bioethics - Understand the curative and preventive health care measures	Nice to Know	C3		
	M4-H&I-B-10	Vitamin K	Enlist dietary sources of vitamin K	Should Know	C1	LGIS	MCQ SAQ SEQ VIVA
			Discuss the absorption, transport, storage, and metabolism of Vitamin K.	Should Know	C2		
			Describe the biochemical functions of vitamin K	Must Know	C2		
			Analyze the biochemical basis of bleeding disorders associated with Vitamin K deficiency or anticoagulant therapy (e.g., warfarin use)	Nice to Know	C4		
			Apply the strategic use of artificial intelligence in healthcare	Nice to Know	C3		

			• Use HEC digital library • Practice principles of bioethics Understand the curative and preventive health care measures				
	M4-H&I-B-11	Vitamin B9 and vitamin B12	• Enlist dietary sources of vitamin B9 and B12	Must Know	C1	LGIS	MCQ SAQ SEQ VIVA
			• Describe the absorption and biochemical functions of vitamin B12	Must Know	C2		
			• Explain the role of folic acid in one carbon metabolism	Must Know	C2		
			• Apply knowledge of vitamin B12 and folic acid metabolism to identify causes and clinical manifestations of megaloblastic anemia.	Should Know	C3		
			• Differentiate between vitamin B12 deficiency and folate deficiency based on biochemical pathways, laboratory findings, and clinical presentation	Nice to Know	C4		
			• Evaluate the relationship between homocysteine metabolism and deficiencies of vitamin B12 and folic acid in cardiovascular and systemic disorders.	Nice to Know	C5		
			• Apply the strategic use of artificial intelligence in healthcare • Use HEC digital library • Practice principles of bioethics Understand the curative and preventive health care measures	Nice to Know	C3		
Biochemistry (SDL)	M4-H&I-B-20	Clinical aspects of Vitamin K	• Discuss the causes, clinical manifestations, and consequences of vitamin K deficiency	Should Know	• Lippincott Illustrated reviews of biochemistry 8th edition (Chapter 28, page 440-441) • Harper’s Illustrated Biochemistry 32nd edition (Chapter No. 44, Pages 540-541) • https://youtu.be/r90ptZSF6q0?si=FzBhC6NtJzOQX95_		
	• Correlate vitamin K deficiency with hemorrhagic disease of the newborn using clinical case scenarios	Should Know					

Biochemistry (SKL)	M4-H&I- B-24	Quantitative estimation of serum total proteins	Describe Principal, method, normal blood level and clinical significance of S. Proteins	Should Know	P	Skill	OSPE
			Perform estimation of serum Protein	Should Know	P		
Gynae & Obs	M4-H&I- VI(OBG)- 001	Hematological Changes in Pregnancy, Venous Thromboembolism	Define Venous thromboembolism	C1		LGIS	MCQs
			Comprehend the Hematological changes in pregnancy (changes in plasma volume, blood cells and coagulation)	C2			
			Understand the pathophysiology of VTE	C2			
			Discuss the risk factors of VTE in pregnancy	C3			
			Coorelate the hematological changes in pregnancy with increased risk of VTE	C3			
			Outline the measures to prevent DVT	C3			
Medicine	M4-H&I- VI(Med)- 002	Bleeding and Clotting Disorders	Enlist various bleeding and clothing disorders	C1		LGIS	MCQs
			Discuss the clinical presentation	C2			
			Explain the workup done to differentiate various causes	C2			
			Discuss is the general and specific management	C2			
Pathology	M4-H&I- VI(Path)- 001	Cllinical Disorders of Coagulation	Classify Disorders of Coagulation	C1		LGIS	MCQs
			Discuss Hemophilia A&B	C1			
			Discuss Von Willebrand Disease	C1			

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

Session	Topic	Department	Educational Relevance	At the End of The Demonstration Student Should Be Able To	Learning Domain	Assessment Tool
Clinico-Concept Connect (C ³ 6) Sessions – III	Easy Bruising, Prolonged Bleeding & Thrombotic Events	Physiology	Hemostasis, platelet function, coagulation cascade, physiological balance between bleeding and clotting	• Describe the normal process of hemostasis, including vascular spasm, platelet plug formation, and coagulation.	C2	MCQs SAQ
				• Explain how impairment of coagulation can lead to easy bruising and prolonged bleeding.	C3	
				• Relate venous stasis and hypercoagulability to the formation of a thrombus.	C4	
				• Understand the physiological balance between procoagulant and anticoagulant mechanisms in the body.	C3	
		Biochemistry	Vitamin K–dependent clotting factors, plasma proteins involved in coagulation, biochemical basis of anticoagulant action	• Explain the role of vitamin K–dependent clotting factors in blood coagulation.	C3	
				• Describe the biochemical basis of coagulation proteins and their activation pathways.	C3	
				• Relate deficiency or inhibition of clotting factors to bleeding manifestations.	C3	
				• Correlate plasma proteins involved in coagulation with clinical findings in thrombotic and bleeding states.	C4	
		Pathology	Thromboembolic conditions such as DVT, bleeding disorders, thrombocytopenia, and coagulation abnormalities	• Recognize the basic pathological basis of deep vein thrombosis (DVT).	C4	
				• Correlate bruising and prolonged bleeding with disorders of platelets or coagulation factors.	C4	
				• Understand the relevance of thrombocytopenia, vitamin K deficiency, and anticoagulant-related bleeding.	C3	
				• Relate thromboembolic disease to common clinical risk factors such as surgery, immobility, and pregnancy.	C3	
		Pharmacology	Heparin, warfarin, and the effect of anticoagulant therapy on bleeding tendency	• Identify commonly used anticoagulants such as heparin and warfarin.	C2	
				• Explain the basic mechanism by which anticoagulants prevent clot formation.	C3	
				• Recognize bleeding as an important adverse effect of anticoagulant therapy.	C3	
				• Appreciate the importance of careful monitoring and safe use of anticoagulants.	C3	

		Gynae & Obs	Postoperative and postpartum risk of venous thromboembolism, recognition of bleeding manifestations	Recognize painful swollen calf as an important clinical presentation of possible DVT.	C3	
				Identify postpartum and postoperative state as risk factors for venous thromboembolism.	C2	
				Correlate bruising and prolonged bleeding with possible coagulation disturbance or treatment effect.	C4	
				Appreciate the importance of early recognition of thrombotic and bleeding complications in clinical practice.	C5	
		Family Medicine	Risk-factor identification, patient counseling, early recognition, and referral of bleeding or thrombotic complications	Identify common risk factors for thrombosis and bleeding in the community and primary care setting.	C3	
				Counsel patients regarding warning signs such as leg swelling, gum bleeding, and easy bruising.	C4	
				Understand the importance of early referral in patients with suspected thromboembolic disease.	C3	
				Promote awareness regarding mobility, hydration, and safe use of medications after surgery or delivery.	C5	

Theme 4: Recurrent Infections, Fever & Lymphadenopathy (4th Week)

Theme	Rationale	Learning objectives
Recurrent Infections, Fever & Lymphadenopathy	Innate and acquired immunity, hypersensitivity, autoimmunity, AIDS, lymphoid organs, and immunoglobulins are unified through the symptom cluster of infections, fever, enlarged nodes, and immune dysfunction.	• Describe the structural organization and defensive roles of lymphoid organs, including the thymus, tonsils, spleen, and lymph nodes • Differentiate between innate and acquired immunity and explain the roles of lymphocytes and macrophages in host defense • Evaluate the clinical significance of recurrent infections, fever, and lymphadenopathy as potential indicators of immune dysfunction • Appreciate the role of preventive care, such as vaccination, in reducing the infectious disease burden in the community
Case Scenario 4: Recurrent Infections, Fever and Lymphadenopathy A 7-year-old boy was brought to the Pediatrics outpatient clinic by his mother with complaints of recurrent fever, repeated throat and chest infections, and swelling in the neck for the last 4 months. The mother reported that the child had been suffering from frequent episodes of sore throat, cough, and fever, requiring multiple visits to local clinics. Although he improved temporarily with treatment, the symptoms kept recurring after a short interval. She also noticed multiple small swellings in his neck that had gradually increased in size over the past few weeks. The child had become less active, had a poor appetite, and had missed several school days because of repeated illness. There was no history of weight loss, night sweats, skin rash, bleeding, or jaundice. The fever was usually low to moderate grade and was sometimes associated with throat pain and malaise. On further questioning, the mother mentioned that the child often suffered from upper respiratory tract infections since early childhood and seemed to take longer than usual to recover. There was no known contact with tuberculosis. Vaccination history was incomplete. No similar illness was reported in siblings, but the family was concerned because the swelling in the neck persisted even between febrile episodes. Past Medical History 1. Recurrent respiratory tract infections since early childhood 2. No known congenital heart disease or chronic liver disease 3. No previous hospitalization for major illness Drug History 1. Repeated short courses of antibiotics in the past few months 2. Occasional use of paracetamol for fever Family History 1. No known family history of immunodeficiency 2. No known hematological malignancy in close relatives Social History 1. School-going child with frequent absenteeism 2. Incomplete vaccination history 3. No significant travel history or known toxin exposure Clinical Examination General Physical Examination		

Child is conscious, cooperative, mildly febrile, and appears tired.
Pulse 102/min, BP 98/62 mmHg, Respiratory Rate 20/min, Temp 100.4°F.

General Findings

- 1. Mild pallor may be present
- 2. Multiple enlarged cervical lymph nodes palpable, discrete and mobile
- 3. No icterus, cyanosis, clubbing, or edema

Local Examination

- 1. Bilateral cervical lymphadenopathy present
- 2. Throat mildly congested
- 3. No obvious skin infection or oral ulceration

Abdominal Examination

- 1. Mild splenic enlargement may be present
- 2. Liver not significantly enlarged
- 3. Abdomen soft and non-tender

Systemic Examination

Cardiovascular System: Normal heart sounds

Respiratory System: Occasional scattered crackles may be present during active infection

Central Nervous System: Normal

Educational Relevance (Discipline-wise Integration)

Discipline	Relevance
Anatomy	Thymus, tonsils, spleen, and lymph nodes as important lymphoid organs involved in immune defense
Physiology	Innate and acquired immunity, role of lymphocytes, monocyte-macrophage system, inflammation, and fever regulation
Biochemistry	Immunoglobulins, acute phase response, and biochemical basis of host defense
Medicine / Pediatrics	Early recognition of recurrent infections, fever patterns, lymphadenopathy, and possible immunodeficiency states
Pathology	Introductory correlation with lymph node enlargement, leukocytosis, and disorders affecting immune cells
Family Medicine / Community Medicine	Early detection, vaccination relevance, counseling, and referral in children with recurrent infections

Entrustable Professional Activities (EPAs)

- 1. **Obtain a focused history** in a child presenting with recurrent infections, fever, and neck swelling.
- 2. **Perform a general and local examination** to identify fever, lymphadenopathy, and associated clinical signs.
- 3. **Correlate clinical findings with basic science concepts** and recognize the need for initial investigations and referral.

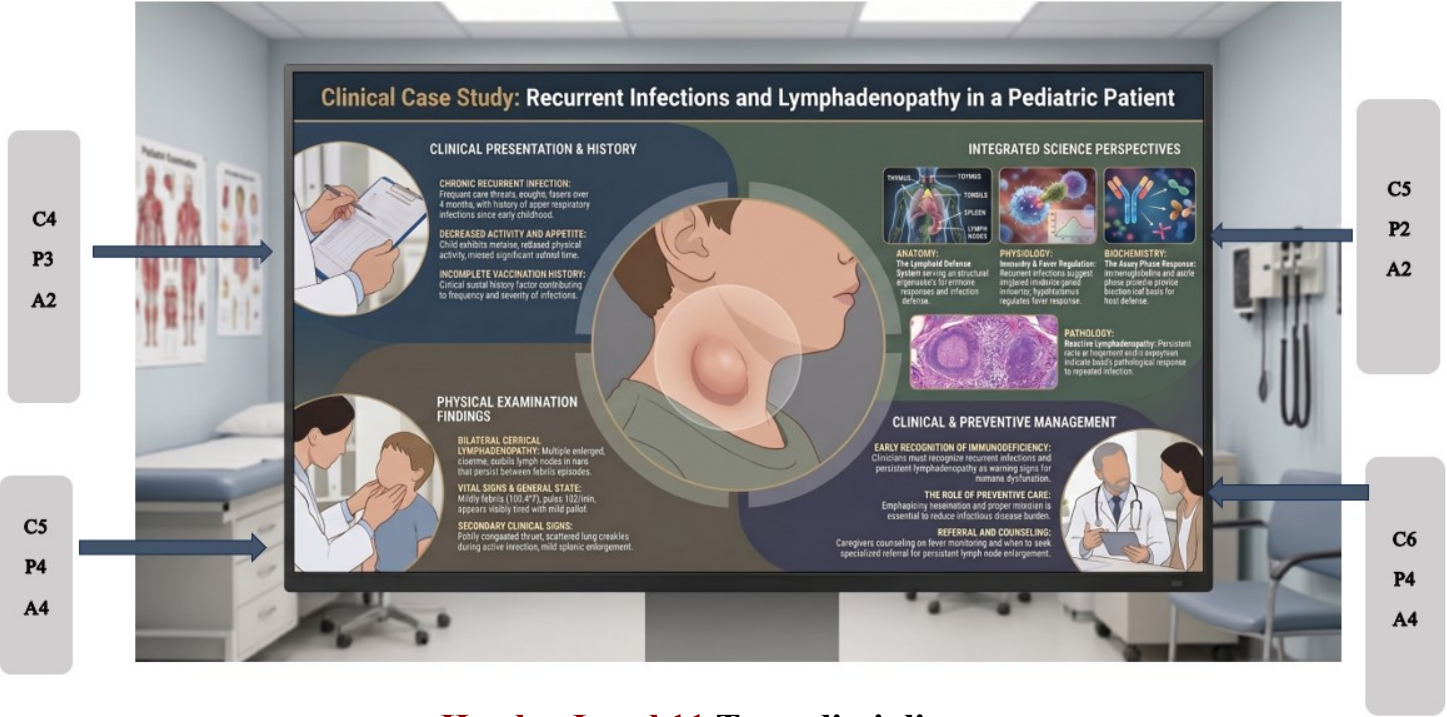
EPAs Detail Annexure-II

Justification

Harden Level 11 Justification

This case supports integrated learning by linking **anatomy, physiology, biochemistry, pathology, pediatrics, and community-oriented care** to an authentic patient presentation. It helps students apply foundational science knowledge to explain recurrent infections, fever, and lymphadenopathy in a clinically meaningful context, consistent with **Harden Level 11**.

Theme 4 Clinico-Concept Connect (C³6)



Harden Level 11 Transdisciplinary

Specific Learning Objectives

Subject	Code	Topic	At the End of The Session Students Should Be Able To	Calgary Gauge	Learning Domains	Teaching Strategy	Assessment Tools
Anatomy (SKL)	M4-H&I-A-0028	Tonsils	• Identify the slide of tonsils under light microscope	Should know	P	Skill Lab	OSPE
			• Focus the slide	Should know	P		
			• Draw histological structure of tonsils	Must know	C2		
			• Write two identification points of tonsils	Must know	C1		
Anatomy (Gross SGD)	M4-H&I-A-0014	Thymus, Tonsils	• Discuss anatomical features of thymus and tonsils	Must know	C2	SGD, Skill Lab	MCQ SAQ VIVA OSPE
			• Describe blood supply, venous drainage and lymphatic drainage of thymus and tonsils	Must know	C2		
			• Enumerate functions of thymus and tonsils	Must know	C1		
			• Analyze the clinical conditions	Should know	C4		
			• 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 a research article	Nice to know	C3		
	M4-H&I-A-0015	Spleen	• Discuss the location of spleen	Must know	C2	SGD, Skill Lab	MCQ SAQ VIVA OSPE
			• Enumerate anatomical relations of spleen	Must know	C1		
			• Discuss blood supply, venous drainage and lymphatic drainage of spleen	Must know	C2		
			• Analyze the clinical conditions	Should know	C4		
			• 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 a research article	Nice to know	C3		
	M4-H&I-A-0016	Radiology, Surface Anatomy & Cross-Sectional Anatomy	• Identify different structures on radiographs	Should know	C3	SGD, Skill Lab	MCQ SAQ VIVA OSPE
			• Demonstrate the surface anatomy of various structures present in posterior compartment of leg and foot	Should know	P		
			• Demonstrate the surface anatomy of spleen, thymus and tonsils	Should know	P		
			• Evaluate the Cross-Sectional anatomy at the level of leg & foot	Should know	C5		
			• Analyze the clinical conditions	Should know	C3		

			• Understand the preventive and curative health care measures • Practice the principles of Bioethics • Apply strategic use of AI in health care • Read a research article	Should know	C3					
				Nice to know	C3					
				Nice to know	C3					
				Nice to know	C3					
Anatomy (SDL)	\M4-H&I-A-0023	Splenic Rupture Portal Hypertension	• Discuss the location of spleen • Enumerate anatomical relations of spleen • Discuss blood supply, venous drainage and lymphatic drainage of spleen • Discuss clinical correlations of spleen with special reference to splenecto • Correlate the clinical aspects • Read relevant research article • Use digital library	Clinically Oriented Anatomy 9th Edition, pg no. 487 https://www.youtube.com/watch?v=3K5I6MMDA8M&pp=ygUOc3BsZWVuIGFuYXRvbXk%3D https://www.sciencedirect.com/science/article/pii/S0046817782802232						
	M4-H&I-A-0024	Trendelenburg Gait Steppage Gait	• Define the gait cycle • Discuss the stages of gait cycle • Correlate the clinical aspects • Read relevant research article • Use digital library	Clinically Oriented Anatomy 9th Edition, pg no. 701, 768-781 https://www.youtube.com/watch?v=1u6d1CX7o9c&pp=ygUXZ2FpdCBjeWNsZSBiaW9tZWNoYW5pY3M%3D https://www.sciencedirect.com/topics/engineering/gait-cycle						
Physiology (LGIS)	M4-H&I-P-0016	Physiology of acquired immunity T-Cells. Allergy and Hypersensitivity reactions, Auto-immune diseases and AIDS	Define clone and explain the roles of T and B lymphocyte clones in immunity Discuss the mechanisms involved in Immune Tolerance Compare Type I and Type IV hypersensitivity reactions Describe the process of immunization Understand role of T-lymphocytes in transplants Identify different types of tissue grafts	Must Kow	A	C1, C2 C2 C4 C1 C2 C1	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE	• Ganong’s Review of Medical Physiology.25THEdition. Section01, Immunity, Infection and Inflammation (Chapter 03, Page 67) • Physiological Basis of Medical Practice by Best & Taylor’s.13thEdition. Section 03, Blood (Chapter 21, Page371) (Chapter 22, Page 387) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 06. (Chapter 34,	https://www.sciencedirect.com/topics/pharmacology-toxicology-and-pharmaceutical-science/mononuclear-phagocyte-system 2. https://bmcbiol.biomedcentral.com/articles/10.1186/s12915-017-0392-4

								Page 450-452)	
M4-H&I-P-0017	Physiological mechanism of temperature regulation	Explain Concept of temperature Discuss Physiological mechanism of temperature regulation	Must Know Must Know	A A	C2 C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE	- Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 06. (Chapter 73, Page 889-936)	https://shop.elsevier.com/books/guyton-and-hall-textbook-of-medical-physiology/hall/978-0-323-59712-8
M4-H&I-P-0018	ABO & Rh Blood grouping system	Explain Blood grouping and classify into various types Explain Rh Blood Grouping System	Must Know Must Know	A A	C4 C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE	- Ganong’s Review of Medical Physiology.25TH Edition. Section05, (Chapter 31, Page 558) (Chapter 36, Page 473) - Physiological Basis of Medical Practice by Best & Taylor’s.13th Edition. (Chapter 25, Page 432) - Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 06. (Chapter 36, Page 471)	https://www.sciencedirect.com/topics/agricultural-and-biological-sciences/abo-blood-group-system https://youtu.be/wfqNuYIY78
M4-H&I-P-0019	Role of Hypothalamus in temperature regulation	Discuss Role of Hypothalamus in temperature regulation Explain Temperature Regulating centers	Must Know Must Know	A A	C2 C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE	- Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 06. (Chapter 73, Page 889-936)	https://shop.elsevier.com/books/guyton-and-hall-textbook-of-medical-physiology/hall/978-0-323-59712-8
M4-H&I-P-0020	Rh Blood grouping system and Erythroblastosis fetalis	Discuss Rh Blood Grouping System Associate clinical picture of Erythroblastosis fetalis with the pathophysiology	Must Know Must Know	A A	C2 C4	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based	Ganong’s Review of Medical Physiology.25TH Edition. Section05, (Chapter 31, Page 558) (Chapter 36, Page 473)	https://www.sciencedirect.com/topics/agricultural-and-biological-sciences/abo-

			Discuss Clinical correlation			C2		Assessment, MST based Assessment) OSPE	- Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. (Chapter 25, Page 432) - Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 06. (Chapter 36, Page 471)	blood-group-system https://youtu.be/wfqNuYIY78	
	M4-H&I-P-0021	Disorders of temperature regulation (Fever, Heat stroke, Exposure of body to extreme cold)	Discuss Disorders of temperature regulation Explain Concept of Fever Clinical correlation Of Heat Stroke	Should Know Must Know	B B	1.C2 2.C2 3.C3	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE	- Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 06. (Chapter 73, Page 889-936)	https://shop.elsevier.com/books/guyton-and-hall-textbook-of-medical-physiology/hall/978-0-323-59712-8	
	M4-H&I-P-0022	Blood transfusion hazards. Tissue and organ transplantations	Discuss Blood transfusion hazards. Explain Effect of blood transfusion on various organs Explain Tissue and organ transplantations	Must Know Should know Should Know	A B B	C2 C2 C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE	- Ganong's Review of Medical Physiology.25TH Edition. Section05, (Chapter 31, Page 558) (Chapter 36, Page 473) - Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. (Chapter 25, Page 432) - Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 06. (Chapter 36, Page 471)	https://www.sciencedirect.com/topics/agricultural-and-biological-sciences/aboblood-group-system https://youtu.be/wfqNuYIY78	
Physiology (SGD)	M4-H&I-P-0030	Blood transfusion hazards. Tissue and organ transplantations (Fifth week)	1. Discuss Blood transfusion hazards. 2. Explain Effect of blood transfusion on various organs 3. Explain Tissue and organ transplantations						C2 C2 C2	SGD	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment)

							OSPE
	M4-H&I-P-0031	Disorders of temperature regulation (Fever, Heat stroke, Exposure of body to extreme cold) (Fifth week)	1. Classify various Disorders of temperature regulation 2. Explain Concept of Fever 3. Clinical correlation Of Heat Stroke	1.C4 2.C2 3.C3		SGD	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE
Physiology (SDL)	M4-H&I-P-0040	Blood coagulation	Explain hemostasis, mechanism of blood coagulation, fibrinolysis and anticoagulants	1. Human Physiology by Dee Unglaub Silver thorn. 8 TH Edition. (Chapter 16, Page 559) 2. Physiological Basis of Medical Practice by Best & Taylor's.13 th Edition. (Chapter 24, Page 417) 3. Textbook of Medical Physiology by Guyton & Hall.14 th Edition. Section 06. (Chapter 37, Page 479) 1. https://youtu.be/gExUCrpAKyQ 2. https://medlineplus.gov/lab-tests/coagulation-factor-tests/			
	M4-H&I-P-0041	ABO & Rh Blood grouping system	Blood group and its types Rh Blood Grouping System	- Ganong's Review of Medical Physiology.25TH Edition. Section 05, (Chapter 31, Page 558) (Chapter 36, Page 473) - Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. (Chapter 25, Page 432) - Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 06. (Chapter 36, Page 471) https://www.sciencedirect.com/topics/agricultural-and-biological-sciences/abo-blood-group-system https://youtu.be/wfqgNuYIY78			
Biochemistry (LGIS)	M4-H&I-B-009	Transferrin, ferritin	Explain the role of transferrin in iron transport and ferritin in iron storage.	Should Know	C2	LGIS	MCQ SAQ SEQ VIVA
			Interpret laboratory findings of serum ferritin and transferrin in patients with iron deficiency anemia and iron overload disorders.	Should Know	C3		
			- Apply the strategic use of artificial intelligence in healthcare - Use HEC digital library	Nice to Know	C3		

			- Practice principles of bioethics - Understand the curative and preventive health care measures				
	M4-H&I-B-11	Vitamin B9 and vitamin B12	Enlist dietary sources of vitamin B9 and B12	Must Know	C1	LGIS	MCQ SAQ SEQ VIVA
			Describe the absorption and biochemical functions of vitamin B12	Must Know	C2		
			Explain the role of folic acid in one carbon metabolism	Must Know	C2		
			Apply knowledge of vitamin B12 and folic acid metabolism to identify causes and clinical manifestations of megaloblastic anemia.	Should Know	C3		
			Differentiate between vitamin B12 deficiency and folate deficiency based on biochemical pathways, laboratory findings, and clinical presentation	Nice to Know	C4		
			Evaluate the relationship between homocysteine metabolism and deficiencies of vitamin B12 and folic acid in cardiovascular and systemic disorders.	Nice to Know	C5		
			- Apply the strategic use of artificial intelligence in healthcare - Use HEC digital library - Practice principles of bioethics - Understand the curative and preventive health care measures	Nice to Know	C3		
	M4-H&I-B-12	Immunoglobulins	Describe Structure of Immunoglobulin.	Must Know	C2	LGIS	MCQ SAQ SEQ VIVA
			Discuss biochemical role of various Immunoglobulin.	Must Know	C2		
			Interpret laboratory findings related to immunoglobulin levels in clinical	Should Know	C3		

			conditions				
			Apply the concept of immunoglobulin class switching to explain antibody responses in different immune conditions.	Nice to Know	C3		
			Differentiate the structural and functional characteristics of IgG, IgA, IgM, IgD, and IgE in immune responses.	Nice to Know	C4		
	M4-H&I-B-13	Iron	- Apply the strategic use of artificial intelligence in healthcare - Use HEC digital library - Practice principles of bioethics - Understand the curative and preventive health care measures	Nice to Know	C3	LGIS	MCQ SAQ SEQ VIVA
			Enlist the sources of iron	Must Know	C1		
			Explain the absorption, transport, storage, and excretion of iron	Must Know	C2		
			Explain the biochemical role of iron in hemoglobin synthesis and cellular respiration.	Should Know	C2		
			Interpret laboratory investigations used to assess iron status (serum ferritin, serum iron, TIBC, transferrin saturation).	Nice to Know	C3		
			Analyze the biochemical and clinical differences between iron deficiency anemia and iron overload disorders.	Nice to Know	C4		
			Assess the impact of iron overload on organ function in conditions such as hemochromatosis.	Nice to Know	C5		
			- Apply the strategic use of artificial intelligence in healthcare - Use HEC digital library - Practice principles of bioethics - Understand the curative and	Nice to Know	C3		

			preventive health care measures				
Biochemistry (SGD)	M4-H&I-B-15	Iron	List the major proteins involved in iron metabolism (ferritin, transferrin, hemosiderin)	Must Know	C1	SGD	MCQ SAQ SEQ VIVA
			Describe the role of hepcidin in regulation of iron metabolism	Should Know	C2		
			Describe the biochemical functions of iron	Should Know	C2		
			Apply knowledge of iron metabolism to explain clinical manifestations of iron deficiency anemia and iron overload disorders.		C3		
			- Apply the strategic use of artificial intelligence in healthcare - Use HEC digital library - Practice principles of bioethics - Understand the curative and preventive health care measures	Nice to Know	C3		
Biochemistry (SDL)	M4-H&I-B-21	Clinical Aspects of Hematopoietic Vitamins	Explain the role of hematopoietic vitamins in erythropoiesis and normal hematological function.	Should Know	- Lippincott Illustrated reviews of biochemistry 8th edition (Chapter 28, page 424-427) - Harper’s Illustrated Biochemistry 32nd edition (Chapter No. 44, Pages 544-546) https://youtu.be/qcLpAXR0W-o?si=gO8rdModRz29adMW https://youtu.be/6PrWVgS5Sxk?si=KOHsKKDJCgWzaW3R		
			Apply knowledge of hematopoietic vitamins to interpret laboratory findings in patients with megaloblastic anemia.	Should Know			
Biochemistry (SKL)	M4-H&I-B-25	Haemin crystals	Interpret the Haemin Crystals slide under the microscope	Should Know	P	Skill	OSPE
			Describe Preparation, shape and clinical significance of hemin crystals Illustrate Method and precautions to draw blood	Should Know	P		
Medicine	M4-H&I-VI(Med)-003	Pyrexia of Unknown Origin	Define PUO	C1		LGIS	MCQs

			• Discuss the clinical presentation	C2		
			• Discuss the workup and management according to the cause	C2		
	M4-H&I-VI(Med)-004	Autoimmune Diseases Rheumatic Fever and its Complication	• Discuss Various Autoimmune diseases	C2	LGIS	MCQs
			• Discuss the presentation of patient with Rheumatic fever	C2		
			• Discuss the diagnostic criteria of Rheumatic fever	C2		
			• Discuss the management of Rheumatic fever	C2		

Spiral Courses (4th Week)

Family Medicine

Code	Topic	At the End of Lecture Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
M4-FM-SI(Fmed)002	The Role of Primary Care in Early Detection and Preventive Management of Recurrent Pediatric Infections.	Identify clinical "red flags," such as recurrent infections and persistent lymphadenopathy, that require medical assessment		LGIS	MCQs
		Conduct focused histories and examinations to evaluate infection frequency, recovery duration, and vaccination status			
		Advocate for primary prevention by emphasizing the role of vaccination and preventive care in reducing disease burden			
		Counsel caregivers effectively regarding fever monitoring, nutritional support, and adherence to follow-up schedules			
		Define criteria for referral to specialist care for children with suspected immune dysfunction or persistent symptoms			
		Correlate clinical findings like reactive lymphadenopathy with the body's underlying immune response			

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

Session	Topic	Department	Educational Relevance	At the End of The Demonstration Student Should Be Able To	Learning Domain	Assessment Tool
Clinico-Concept Connect (C ³ 6) Sessions – IV	Recurrent Infections, Fever & Lymphadenopathy	Anatomy	Thymus, tonsils, spleen, and lymph nodes as important lymphoid organs involved in immune defense	• Describe the anatomy of the thymus, tonsils, spleen, and lymph nodes.	C3	MCQs SAQ
				• Explain the structural organization of lymphoid organs involved in immune responses.	C3	
				• Correlate enlargement of cervical lymph nodes with local or systemic infection.	C4	
				• Relate splenic and lymph node anatomy to their defensive role in the body.	C4	
		Physiology	Innate and acquired immunity, role of lymphocytes, monocyte-macrophage system, inflammation, and fever regulation	• Describe the role of innate and acquired immunity in protection against infection.	C3	
				• Explain the functions of lymphocytes, monocytes, and macrophages in host defense.	C3	
				• Relate recurrent infections to impaired immune function at a basic level.	C4	
				• Explain the physiological basis of fever and its regulation by the hypothalamus.	C3	
		Biochemistry	Immunoglobulins, acute phase response, and biochemical basis of host defense	• Describe the role of immunoglobulins in immune defense.	C3	
				• Explain the biochemical basis of the acute phase response during infection.	C3	
				• Relate altered immune protein function to recurrent infections.	C4	
				• Understand the relevance of basic biochemical markers in inflammatory and immune states.	C3	
		Pediatrics	Early recognition of recurrent infections, fever patterns, lymphadenopathy, and possible immunodeficiency states	• Recognize recurrent infections, fever, and lymphadenopathy as important clinical findings in a child.	C3	
				• Develop an introductory approach to a child with possible immune dysfunction or persistent infection.	C3	
				• Correlate fever and lymph node enlargement with underlying immune activation.	C5	
				• Appreciate the importance of clinical history, examination, and basic investigations in such cases.	C4	
		Pathology		• Recognize the basic pathological basis of reactive lymphadenopathy.	C4	

			Introductory correlation with lymph node enlargement, leukocytosis, and disorders affecting immune cells	• Correlate recurrent infections with abnormalities in white blood cells and immune responses.	C5	
				• Understand the relevance of laboratory findings such as leukocytosis or abnormal differential counts.	C4	
				• Relate persistent lymph node enlargement to the need for further evaluation.	C4	
		Family Medicine	Early detection, vaccination relevance, counseling, and referral in children with recurrent infections	• Identify recurrent infections and persistent lymphadenopathy as warning signs requiring medical assessment.	C3	
				• Emphasize the role of vaccination and preventive care in reducing infectious disease burden.	C3	
				• Counsel caregivers regarding fever monitoring, nutrition, and timely follow-up.	C4	
				• Recognize when referral is needed for a child with repeated infections or persistent lymph node enlargement.	C5	

Anatomy LGIS Syllabus of Learning Management System (LMS)

Code	Topic	At the End of The Session Students Should Be Able To:	Calgary Gauge	Learning Domain	Learning Resources
Histology					
M4-H&I-A-0029	Lymph node	• Classify lymphoid tissue	Must know	C2	- Junqueira's Basic Histology 18th Edition chapter 14 - USMLE Q Bank Step 1 (Volume 1) 2023-2034
		• Define diffuse lymphoid tissue, nodular lymphoid tissue and lymphoid organs	Must know	C1	
		• Discuss the histological features of lymph node	Must know	C2	
		• Enlist functions of lymph node	Must know	C1	
		• Understand the supporting elements of lymph node	Must know	C2	
		• Describe filtration through lymph node	Must know	C2	
		• Discuss importance of high endothelial venule in lymph node	Must know	C2	
		• Discuss the clinical correlation of lymph node	Should know	C3	
		• Correlate the clinical conditions	Should know	C3	
		• 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 a research article	Nice to know	C3	
M4-H&I-A-0030	Thymus & Tonsil	• Describe the location and functions of thymus	Must know	C1	- Junqueira's Basic Histology 18th Edition chapter 14 - USMLE Q Bank Step 1 (Volume 1) 2023-2034
		• Enumerate different types of reticulo-epithelial cells	Must know	C1	
		• Describe microscopic structure of thymus	Must know	C2	
		• Compare the histological structure of thymus and other lymphoid organs	Must know	C2	
		• Discuss blood thymus barrier	Must know	C2	
		• Describe general histological structure of tonsils	Must know	C2	
		• Differentiate palatine, lingual, and pharyngeal tonsils histologically	Must know	C2	
		• Discuss the clinical correlation of thymus	Should know	C3	

		• Correlate the clinical conditions	Should know	C3	
		• Understand the preventive and curative health care measures	Should know	C3	
		• Practice the principles of Bioethics	Nice to know	C3	
		• Read a research article	Nice to know	C3	
M4-H&I-A-0031	Spleen	• Describe the location and functions of spleen	Should know	C2	• Junqueira's Basic Histology 18th Edition chapter 14 • USMLE Q Bank Step 1 (Volume 1) 2023-2034
		• Describe microscopic structure of spleen	Should know	C2	
		• Differentiate between red and white pulp of spleen	Should know	C2	
		• Discuss blood circulation through spleen	Should know	C2	
		• Discuss the clinical correlation of spleen	Must know	C3	
		• Correlate the clinical conditions	Must know	C3	
		• Understand the preventive and curative health care measures	Must know	C3	
		• Practice the principles of Bioethics	Nice to know	C3	
		• Read a research article	Nice to know	C3	
Embryology					
M4-H&I-A-0032	Development of Pharyngeal arches & pouches	• Define pharyngeal arches and pouches	Must know	C1	• Junqueira's Basic Histology 18th Edition chapter 14 • USMLE Q Bank Step 1 (Volume 1) 2023-2034
		• Discuss the components of pharyngeal arches and pouches	Must know	C2	
		• Describe the development and fate of each pharyngeal arch and pouches	Must know	C2	
		• Discuss the clinical correlation of pharyngeal arches and pouches	Should know	C3	
		• Correlate the clinical conditions	Must know	C3	
		• Understand the preventive and curative health care measures	Should know	C3	
		• Practice the principles of Bioethics	Nice to know	C3	
		• Read a research article	Nice to know	C3	

Anatomy SGD Syllabus of Learning Management System (LMS)

Code	Topic	At the End Of The Session Students Should Be Able To:	Calgary Gauge	Learning Domains	Learning Resources
Gross Anatomy					
M4-H&I-A-0033	Posterior Compartment of Leg (muscles) and flexor retinaculum	• Illustrate cutaneous innervation	Must know	C2	- Clinically oriented anatomy edition 10 - USMLE Q Bank Step 1 (Volume 1) 2023-2034
		• Describe superficial fascia & deep fascia.	Must know	C2	
		• Discuss superficial and deep muscle groups in posterior compartment	Must know	C2	
		• Tabulate origin, insertion, nerve supply and action of all muscles of posterior compartment of leg	Must know	C2	
		• Discuss ruptured calcaneal tendon, calcaneal bursitis and accessory soleus muscle	Should know	C3	
		• Correlate the clinical conditions	Should know	C3	
		• 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 a research article	Nice to know	C3	
M4-H&I-A-0034	Posterior Compartment of Leg (Neurovascular organization)	• Describe origin, course relations, branches and tributaries of neurovascular bundle	Must know	C2	- Clinically oriented anatomy edition 10 - USMLE Q Bank Step 1 (Volume 1) 2023-2034
		• Discuss superficial veins i.e long and short saphenous veins	Must know	C2	
		• Palpate the posterior tibial pulse	Must know	C3	
		• Correlate the clinical conditions	Should know	C3	
		• 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 a research article	Nice to know	C3	
M4-H&I-A-0035	Bones of Foot	• Enumerate the bones of foot	Must know	C1	

		• Identify different bones of foot • Discuss bony features and muscle attachment • Discuss fracture of metatarsals and os trigonum, avascular necrosis of head of talus • Correlate the clinical conditions • Understand the preventive and curative health care measures • Practice the principles of Bioethics	Must know	C1	• Clinically oriented anatomy edition 10 • USMLE Q Bank Step 1 (Volume 1) 2023-2034
			Must know	C2	
			Should know	C3	
			Should know	C3	
			Should know	C3	
			Nice to know	C3	
M4-H&I-A-0036	Dorsum of foot	• Apply strategic use of AI in health care	Nice to know	C3	• Clinically oriented anatomy edition 10 • USMLE Q Bank Step 1 (Volume 1) 2023-2034
		• Read a research article	Nice to know	C3	
		• Tabulate muscle on the dorsal aspect of foot	Must know	C2	
		• Describe blood supply and nerve supply	Must know	C2	
		• Discuss cutaneous innervation of dorsum of foot	Must know	C2	
		• Palpate the dorsalis pedis artery on dorsum of foot	Should know	C3	
		• Discuss other clinical related to the dorsum of the foot	Should know	C3	
		• Correlate the clinical conditions	Should know	C3	
		• 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 a research article	Nice to know	C3	
M4-H&I-A-0037	Ankle Joint	• Describe the articular surfaces of ankle joint	Must know	C2	• Clinically oriented anatomy edition 10 • USMLE Q Bank Step 1 (Volume 1) 2023-2034
		• Describe the attachment of capsule	Must know	C2	
		• Enumerate the ligaments	Must know	C1	
		• Discuss the movements possible at ankle joint and muscles producing them	Must know	C2	
		• Discuss ankle sprain	Should know	C3	
		• Discuss different types of ankle injuries	Should know	C3	
		• Correlate the clinical conditions	Should know	C3	
		• Understand the preventive and curative health care	Should know	C3	

		measures			
		• Practice the principles of Bioethics	Nice to know	C3	
		• Apply strategic use of AI in health care	Nice to know	C3	
		• Read a research article	Nice to know	C3	
M4-H&I-A-0038	Joints of Foot	• Classify the joints of foot	Must know	C2	• Clinically oriented anatomy edition 10 • USMLE Q Bank Step 1 (Volume 1) 2023-2034
		• Discuss the articular surfaces, joint capsules, ligaments, movements and muscles producing movements	Must know	C2	
		• Discuss major ligaments in detail	Must know	C2	
		• Discuss tibial nerve entrapment	Should know	C3	
		• Discuss club foot, claw foot and other clinical conditions	Should know	C3	
		• Correlate the clinical conditions	Should know	C3	
		• 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	
M4-H&I-A-0030	Sole of foot (Muscles)	• Read a research article	Nice to know	C3	• Clinically oriented anatomy edition 10 • USMLE Q Bank Step 1 (Volume 1) 2023-2034
		• Identify Surface landmarks	Should know	C1	
		• Describe cutaneous innervation of sole of foot	Must know	C2	
		• Describe Plantar aponeurosis its attachments	Must know	C2	
		• Discuss flexor retinaculum	Must know	C2	
		• Discuss muscles in different layers of foot with origin, insertion, nerve supply and actions	Must know	C2	
		• Correlate the clinical conditions	Should know	C3	
		• Understand the preventive and curative health care measures	Should know	C3	
		• Practice the principles of Bioethics	Should know	C3	
		• Apply strategic use of AI in health care	Nice to know	C3	
		• Read a research article	Nice to know	C3	
M4-H&I-A-0031	Sole of foot (Neurovascular	• Enlist nerves and arteries present in sole of foot	Must know	C1	
		• Discuss route and relations of neurovascular bundle in	Must know	C2	

	Organization)	sole of foot			• Clinically oriented anatomy edition 10 • USMLE Q Bank Step 1 (Volume 1) 2023-2034
		• Describe the formation of vascular arches of foot along with clinical	Should know	C2, C3	
		• Discuss plantar fasciitis	Should know	C3	
		• Correlate the clinical conditions	Should know	C3	
		• Understand the preventive and curative health care measures	Should know	C3	
		• Practice the principles of Bioethics	Must know	C3	
		• Apply strategic use of AI in health care	Must know	C3	
		• Read a research article	Must know	C3	
M4-H&I-A-0032	Arches of Foot and Gait Cycle	• Classify the arches of foot	Must know	C2	• Clinically oriented anatomy edition 10 • USMLE Q Bank Step 1 (Volume 1) 2023-2034
		• Describe different components of arches of foot	Must know	C2	
		• Discuss stability factors of arches of foot	Must know	C2	
		• Discuss pes planus (flat foot), club foot and other clinical	Should know	C3	
		• Discuss gait cycle and its stages	Must know	C2	
		• Correlate the clinical conditions	Should know	C3	
		• 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	• Clinically oriented anatomy edition 10 • USMLE Q Bank Step 1 (Volume 1) 2023-2034
		• Read a research article	Nice to know	C3	
M4-H&I-A-0033	Thymus, Tonsils	• Describe location of thymus and tonsils	Must know	C2	
		• Describe blood supply, venous drainage and lymphatic drainage of thymus and tonsils	Must know	C2	
		• Enumerate functions of thymus and tonsils	Must know	C1	
		• Correlate the clinical conditions	Should know	C3	
		• 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 a research article	Nice to know	C3	
M4-H&I-A-0034	Spleen	• Discuss the location of spleen	Must know	C2	- Clinically oriented anatomy edition 10 - USMLE Q Bank Step 1 (Volume 1) 2023-2034
		• Enumerate anatomical relations of spleen	Must know	C1	
		• Discuss blood supply, venous drainage and lymphatic drainage of spleen	Must know	C2	
		• Correlate the clinical conditions	Should know	C3	
		• 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 a research article	Nice to know	C3	
M4-H&I-A-0035	Radiology, Surface Anatomy & Cross-Sectional Anatomy	• Identify different structures on radiographs	Should know	C3	- Clinically oriented anatomy edition 10 - USMLE Q Bank Step 1 (Volume 1) 2023-2034
		• Demonstrate the surface anatomy of various structures present in posterior compartment of leg and foot	Should know	P	
		• Demonstrate the surface anatomy of spleen, thymus and tonsils	Should know	P	
		• Discuss the Cross-Sectional anatomy at the level of leg & foot	Should know	C2	
		• Correlate the clinical conditions	Should know	C3	
		• 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 a research article	Nice to know	C3	

Anatomy SKL Syllabus of Learning Management System (LMS)

Code	Topic	At the End of The Session Students Should Be Able To:	Calgary Gauge	Learning Domains	Learning Resources
Histology					
M4-H&I-A-0036	Lymph node	• Identify lymph node under microscope	Should know	P	• DiFiore's Atlas of histology 11th edition, chapter 9 • USMLE Q Bank Step 1 (Volume 1) 2023-2034
		• Focus the slide	Should know	P	
		• Draw the histological structure of lymph node	Must know	C2	
		• Enlist two identification points of lymph node	Must know	C1	
M4-H&I-A-0037	Thymus	• Identify the slide of thymus under light microscope	Should know	P	• DiFiore's Atlas of histology 11th edition, chapter 9 • USMLE Q Bank Step 1 (Volume 1) 2023-2034
		• Focus the slide	Should know	P	
		• Draw the histological structure of thymus	Must know	C2	
		• Enlist two identifications points of thymus	Must know	C1	
M4-H&I-A-0038	Spleen	• Identify the slide of spleen under light microscope	Should know	P	• DiFiore's Atlas of histology 11th edition, chapter 9 • USMLE Q Bank Step 1 (Volume 1) 2023-2034
		• Focus the slide	Should know	P	
		• Draw histological structure of spleen,	Must know	C2	
		• Enlist two identification points of spleen	Must know	C1	
M4-H&I-A-0039	Tonsils	• Identify the slide of tonsils under light microscope	Should know	P	• DiFiore's Atlas of histology 11th edition, chapter 9 • USMLE Q Bank Step 1 (Volume 1) 2023-2034
		• Focus the slide	Should know	P	
		• Draw histological structure of tonsils	Must know	C2	
		• Write two identification points of tonsils	Must know	C1	

Physiology Syllabus of Learning Management System (LMS)

Code	Topics	Learning Objectives	Calgary Model	Mode of Assessment	Tool of Assessment
M4-H&I-P-0046	Composition of blood	- Describe composition and general functions of blood - Explain the role of bone marrow in hemopoiesis and erythropoiesis - Draw steps of hemopoiesis - Define committed and uncommitted cells	Must Know (A)/ Should know (B)	LGIS &SDL	MCQs
M4-H&I-P-0047	Function of Plasma Proteins	- Enumerate plasma proteins, their properties, sites of productions and their functions - Explain effects of deficiency of plasma proteins - Discuss conditions associated with decreased production and increased excretion of plasma proteins	Nice to know (C)	SDL	MCQs
M4-H&I-P-0048	WBCs classification & formation. Neutrophils, Eosinophils & Basophils and their properties	- Enumerate and explain various types of leukocytes and steps of leucopoiesis - Explain the characteristics and functions - Conditions in which these cells are increased and decreased - Leukemias and their effects on the body	Must Know (A)/ Should know (B)	LGIS&SDL	MCQs
M4-H&I-P-0049	Monocytes - macrophage system & lymphocytes	- Explain the characteristics and functions of monocytes. - Explain monocyte-macrophage system; importance	Must Know (A)	LGIS&SDL	MCQs
M4-H&I-P-0050	Process of inflammation and Lines of defense during inflammation	- Describe the role of neutrophils and monocytes in inflammation - Elaborate Lines of defense	Must Know (A)	LGIS&SDL	MCQs

M4-H&I-P-0051	Red cell fragility, ESR & Red cell indices, Anemia & polycythemia	• Define RBC fragility; importance; conditions in which fragility is changed. • Discuss various blood indices, give their formulae, co-relate with different types of anemias. • Enumerate various types of anemias and polycythemias. • Discuss details about various types of anemias and polycythemia and their effect on circulatory system.	Must Know (A)	LGIS&SDL	MCQs
M4-H&I-P-0052	Blood coagulation	• Explain hemostasis, mechanism of blood coagulation, fibrinolysis and anticoagulants	Must Know (A)	LGIS&SDL	MCQs
M4-H&I-P-0053	ABO & Rh Blood grouping system	• Blood group and its types • Rh Blood Grouping System	Must Know (A)	LGIS&SDL	MCQs

Biochemistry Syllabus of Learning Management System (LMS)

Code	Domain of Teaching Activity	Topics	At the end of lecture students should be able to	Calgary Category	Learning Domain	Learning Resources	Assessment Tool
M4-H&I-B-0035	LGIS	Hemoglobin and Myoglobin	- Describe Structure of hemoglobin and Myoglobin - Describe structure of myoglobin. - Discuss Biochemical roles of hemoglobin and myoglobin. - Enlist various types of Hemoglobin. - Describe Importance of heme and globin components - Interpret importance of HbA1c in diagnosis of Diabetes	Should Know Should Know Should Know Should Know Should Know Nice to know	C1 C1 C2 C1 C2 C3	- Lippincott illustrated Biochemistry 8th Edition - Harper's Textbook of Biochemistry 32nd Edition - Google scholar articles https://scholar.google.com/	MCQs
M4-H&I-B-0036	LGIS	Abnormalities in Hemoglobin.	- Elaborate congenital abnormalities in structure of Hemoglobin. - Enlist Structural defects of hemoglobin - Discuss Preventive measures.	Should Know Should Know Nice to Know	C2 C1 C3	- Lippincott illustrated Biochemistry 8th Edition - Harper's Textbook of Biochemistry 32nd Edition - Google scholar articles https://scholar.google.com/	MCQs
M4-H&I-B-0037	LGIS	Heme synthesis	☐ Biochemical Pathway of Heme Synthesis ☐ Regulation of Heme Synthesis ☐ Heme Degradation and Its Clinical Implications Pharmacological and Toxicological Effects on Heme Synthesis	Should Know Must Know Must/Nice to Know Nice to Know	C2 C2 C3 C3	- Lippincott illustrated Biochemistry 8th Edition - Harper's Textbook of Biochemistry 32nd Edition - Google scholar articles https://scholar.google.com/	MCQs
M4-H&I-B-0038	LGIS	Breakdown of hemoglobin	- Elaborate steps in the breakdown of hemoglobin. - Describe Steps in synthesis of Bilirubin	Should Know Should Know	C2 C2	- Lippincott illustrated Biochemistry 8th Edition - Harper's Textbook of Biochemistry 32nd Edition	MCQs

						Google scholar articles https://scholar.google.com/	
M4-H&I-B-0039	LGIS	Plasma proteins	- Describe plasma proteins. - Discuss Biochemical role of various plasma proteins. - Recall normal levels of plasma proteins - Illustrate Role of A/G ratio.	Should Know Should Know Should Know Should Know	C2 C2 C1 C3	- Lippincott illustrated Biochemistry 8th Edition - Harper's Textbook of Biochemistry 32nd Edition - Google scholar articles https://scholar.google.com/	MCQs
M4-H&I-B-0040	LGIS	Acute phase proteins & Albumin	- Enlist various proteins raise in inflammation. - Describe Role of albumin. - Discuss Role of C- reactive protein.	Must Know Should Know Must Know	C1 C2 C2	- Lippincott illustrated Biochemistry 8th Edition - Harper's Textbook of Biochemistry 32nd Edition - Google scholar articles https://scholar.google.com/	MCQs
M4-H&I-B-0041	LGIS	Haptoglobin	- Describe Structure of Haptoglobin. - Discuss biochemical Role of Haptoglobin.	Should Know Should Know	C2 C2	- Lippincott illustrated Biochemistry 8th Edition - Harper's Textbook of Biochemistry 32nd Edition - Google scholar articles https://scholar.google.com/	MCQs
M4-H&I-B-0042	LGIS	Ferritin, transferrin and hemosiderin	- Describe biochemical role of ferritin, transferrin and hemosiderin. - Describe Hemosiderosis.	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
M4-H&I-B-0043	LGIS	Ceruloplasmin.	- Describe biochemical role of ceruloplasmin. - Discuss Wilson's disease.	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

M4-H&I-B-0044	SGD	Hb and Oxygen Dissociation Curve	• Explain the structure, types and biomedical role of hemoglobin • Describe oxygen dissociation curve and its significance.	Should Know	C2	• Lippincott 8th Edition • Harper's 32nd Edition • https://www.youtube.com/watch?v=wQ2eCRN02f4	MCQs
M4-H&I-B-0045	CBL	Thalassemia	• Apply basic knowledge of subject to clinically interpret the disorder.	Must Know	C3	• Lippincott Biochemistry 8th Edition • Harper's Biochemistry 32nd Edition • https://www.ncbi.nlm.nih.gov/books/NBK545151/	MCQs
M4-H&I-B-0046	SDL	Clinical Disorders Related to Heme Synthesis	• Enlist various types of Hemoglobin. • Describe Importance of heme and globin components. • Discuss Disorders Affecting Heme Synthesis and their impact on quality of life. (Porphyria)	Should Know Should Know Must Know	C1 C1 C2	• Lippincott Illustrated reviews of biochemistry 8th edition (Chapter 03, page 25-28) • https://doi.org/10.1016/j.bcmd.2017.10.006 • https://www.youtube.com/watch?v=Qv-KExGKAYw • Use digital library • https://chemed.chem.purdue.edu/genchem/topicreview/bp/1biochem/blood3.html • Lippincott Illustrated reviews of biochemistry 8th edition (Chapter 03, page 33-34) • https://pubmed.ncbi.nlm.nih.gov/34200315/ • https://www.youtube.com/@DrAishwaryaKelkar • Use digital library • https://www.ucsfhealth.org/medical-tests/hemoglobin-electrophoresis#:~:text=Many%20different%20types%20of	MCQs

						%20hemoglobin,have%20small%20amounts%20of%20HbF	
M4-H&I-B-0047	LGIS	Hemoglobinopathies	- Define Hemoglobinopathies - Enlist types of Hemoglobinopathies - Discuss familial Counselling - Elaborate Preventive Measures	Should Know Should Know Nice to Know Nice to Know	C1 C2 C3 C3	- Lippincott Illustrated reviews of biochemistry 8th edition (Chapter 03, page 35-39) https://pubmed.ncbi.nlm.nih.gov/30193516/ https://youtu.be/34u1sOLrgV0 - Use digital library https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3163784/	MCQs
M4-H&I-B-0048	SDL	AIDS	- Define AIDS - Pathogenesis and Biochemical Basis of AIDS - Prevalence and Prevention	Must Know Must Know Nice to know	C2 C2 C3	- Mushtaq volume II, 7th edition (chapter 11 page – 333-338) https://pubmed.ncbi.nlm.nih.gov/3277764/ https://www.who.int/news-room/fact-sheets/detail/hiv-aids#:~:text=Acquired%20immunodeficiency%20syndrome%20(AIDS)%20is,tuberculosis%2C%20infections%20and%20some%20cancers. https://www.cdc.gov/hiv/basics/watchhiv.html - Use digital library	MCQs
M4-H&I-B-0049	CBL	Clinical Aspect of Heme Degradation (Jaundice)	- Define jaundice. - Recall normal level of Bilirubin. - Enlist types of Jaundice. - Describe Biochemical tests to distinguish various types of jaundice. - Describe Physiological Jaundice	Must Know Should Know Must Know Should Know Must Know	C1 C1 C2 C3 C2	- Lippincott Illustrated reviews of biochemistry 8th edition (Chapter 21, page 284-285) https://pubmed.ncbi.nlm.nih.gov/14765767/ https://www.youtube.com/watch?v=gIACp5js4MU https://my.clevelandclinic.org/health/diseases/15367-adult-jaundice	MCQs

M4-H&I-B-0050	SDL	Acute phase proteins & Albumin related diseases	- Describe Role of albumin. - Describe Protein raise in response to inflammation. - Discuss Role of C- reactive protein. - Albumin Related Clinical Disorders	Should Know Must Know Must Know Must Know	C1 C2 C2 C3	- Harpers Illustrated biochemistry 32nd edition (Chapter 49, page 590-592) https://www.youtube.com/watch?v=xMSE11ad0z8 https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3053509/ https://pubmed.ncbi.nlm.nih.gov/9971870/ - Use digital library	MCQs
M4-H&I-B-0051	SDL	Vitamin K	Clinical aspects of Vitamin K	Must Know	C3	- Harpers Illustrated Biochemistry 32nd Edition CHAPTER 44 Micronutrients: Vitamins & Minerals Page (540-542) https://pmc.ncbi.nlm.nih.gov/articles/PMC8907489/ https://www.mdpi.com/2076-3921/10/4/566	MCQs

Transdisciplinary, Interdisciplinary & Multidisciplinary Case Based Learning (CBL)

Subjects	Topics	At the end of the session the student should be able to	Learning Domains
Anatomy	• Ankle sprain	Apply basic knowledge of subject to study clinical case.	C3
	• Flat foot	Apply basic knowledge of subject to study clinical case.	C3
Physiology	• Anemia	Apply basic knowledge of subject to study clinical case	C3
Biochemistry	• Thalassemia	Apply basic knowledge of subject to study clinical case.	C3
	• Heme Degradation and Jaundice	Apply basic knowledge of subject to study clinical case.	C3

SECTION – IV

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

Assessment

RMU – 12 Assessment Framework of Integrated Modular MBBS Curriculum 2026

Isolation to **Beyond Boundaries**

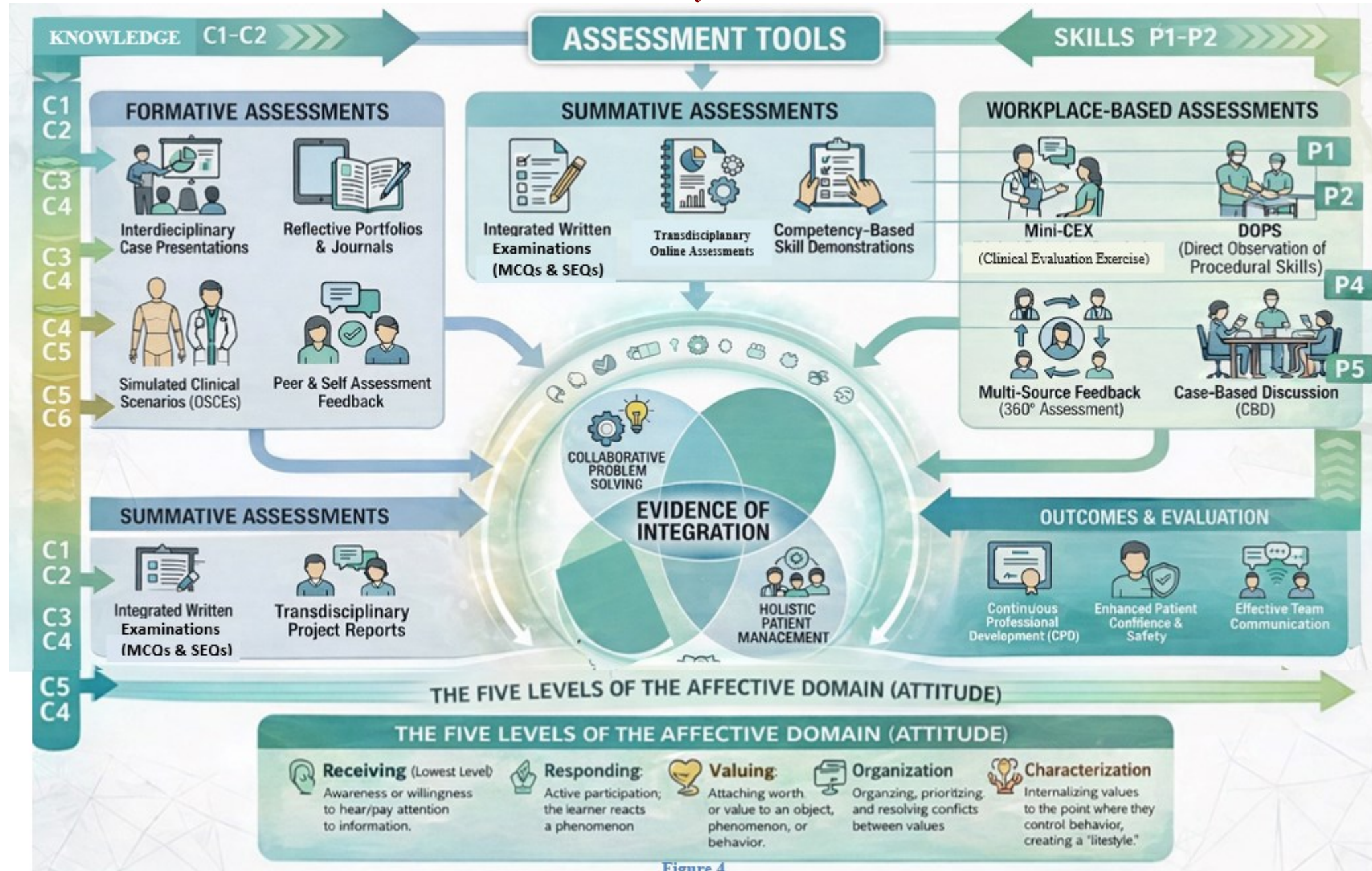


Figure 4

Assessment

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

Assessment Policy

Scope

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

1. Guiding principles

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

2. Purposes of Assessment.

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

3. Forms of assessments

3.1 Formative Assessment

A formative assessment refers to a low-stakes assessment that does not normally contribute towards a student's final grade. Assessment for learning is carried out throughout modules and clerkships using various strategies (at the discretion of module coordinators and clerkship directors' feedback. Formative assessment is conducted at both mid-module and end-module stages for clinical lectures and joint multidisciplinary sessions. These assessments are carried out through an on-campus online assessment platform to monitor students' ongoing learning and progress.

3.2 Summative Assessment

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

3.2.1 Components of Assessment

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

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

3.2.2 End of Module Assessment (EMA)

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

3.2.3 End of Block Assessment (EBA)

- End of block assessments will be conducted at the end of each block.
- The block teams will be responsible for the assessment plan including assessment strategies, timings, and other essentials
- 85% attendance in each subject will be mandatory
- Student must pass in all LMS, mid module assessments to appear in EBA
- There will be no remedial classes for attendance compensation
- There will be no remedial of assessment in case of poor academic performance

3.2.4 Weekly LMS Based Online Assessment

- Weekly assessment of Large Group Interactive Session (LGIS) and Self-Directed Learning (SDL) Sessions will be conducted on LMS (learning management system). The LMS result will be shared by module coordinator and DME through vice chancellor on weekly basis

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

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

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

50% Questions/OSPE Stations/Viva Stations will be from Foundation Module and 50% Questions will be from MSK-1 Module														
For Each assessment student will have to individually pass Theory and Practical components														

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

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

3.2.4 Continuous Internal Assessment (CIA)

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

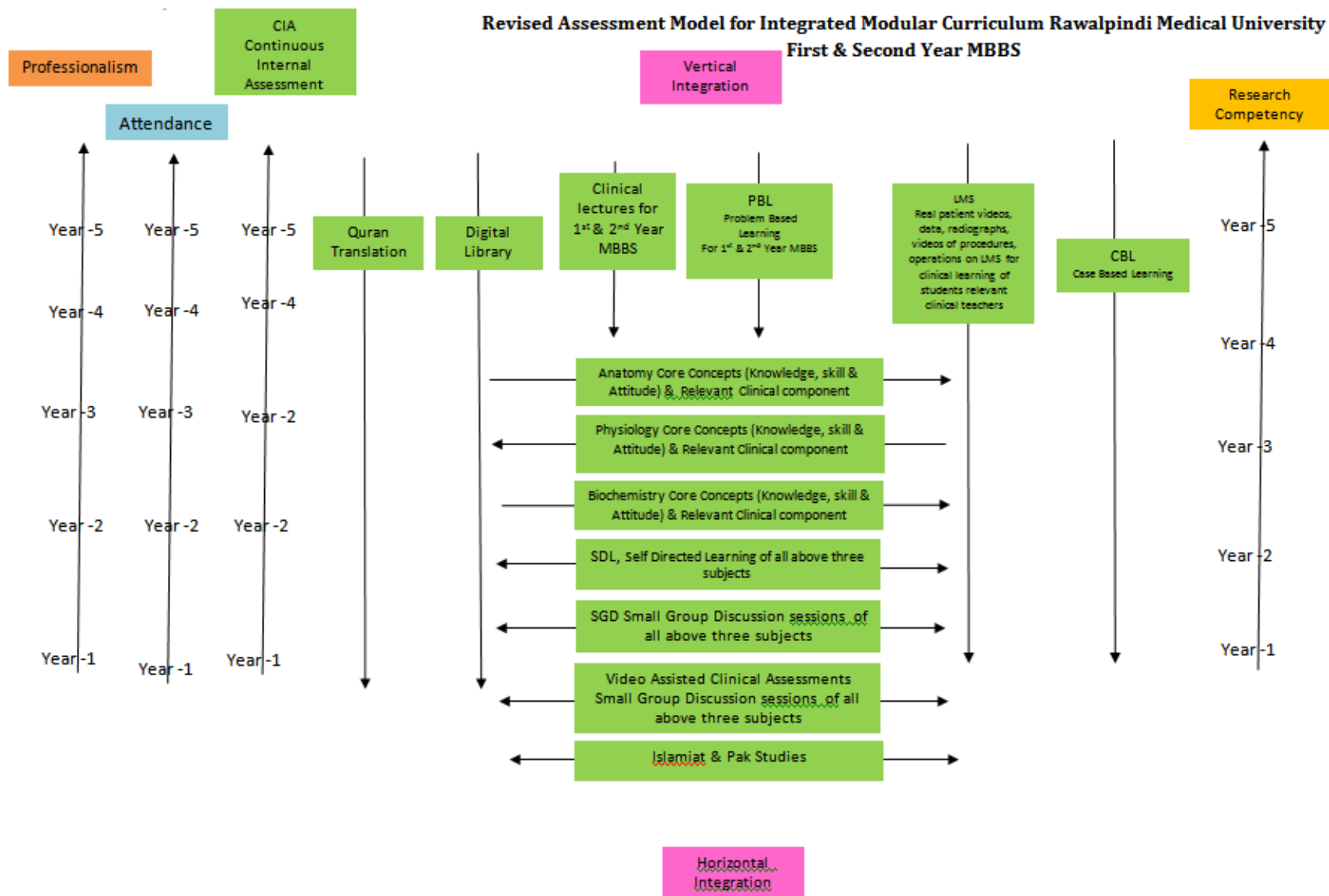
Break up of internal assessment is as follows:

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

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

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

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



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

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

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

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

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

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

Total Time of Anatomy Assessments for First Year MBBS:

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

Total Teaching Hours vs Total Assessment Hours

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

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

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

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

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

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

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

Total Time of Physiology Assessments for First Year MBBS:

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

Total Teaching Hours vs Total Assessment Hours

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

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

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

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

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

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

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

Total Time of Biochemistry Assessments for First Year MBBS:

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

Total Teaching Hours vs Total Assessment Hours

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

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

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

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

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

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

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

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

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

Total Teaching Hours vs Total Assessment Hours

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

3.2.4 Pre- Annual Assessment (PAA)

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

Table of Specifications for Pre-Annual Examination

- Total Marks: 845

Total marks =800 Marks			
Subjects		% Weightage of subjects	Marks distribution as per weightage
	Anatomy	28%	240 Marks
	Physiology	28%	240 Marks
	Biochemistry	28%	240 Marks
	Integrated Subjects Community Medicine & Public Health/Research Behavioral Sciences Pathology Pharmacology Radiology Family Medicine Surgery Medicine Gynae & Obs Orthopedics Pediatrics Surgery Ophthalmology Otorhinolaryngology	14 %	115 Marks
	Early Clinical Exposure (ECE)	1%	5 Marks

	ALPHA(Artificial Intelligence, Leadership, Professionalism, Humanities & Arts) GEC (General Education Cluster)	1%	5 Marks
	Total Marks		845 Marks

Notes:

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

A - Blockwise Distribution of Marks

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

B - Subject wise marks breakup in Blocks

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

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

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

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

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

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

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

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

Block -I Theory Component (Knowledge)

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

Block -I Practical Component (Skill & Attitude)

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

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

Block -II Theory Component (Knowledge)

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

Block -II Practical Component (Skill & Attitude)

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

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

Block -III Theory Component (Knowledge)

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

Block -III Practical Component (Skill & Attitude)

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

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

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

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

Statutes:

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

Table: 1 Number of Papers/Blocks in First & Second Annual professional Examination

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

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

b. Second Professional Examination Total Marks = 1000 *

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

4. Continuous Internal Assessment (CIA):

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

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

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

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

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

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

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

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

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

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

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

i. Laboratory OSPE (Lab OSPE):

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

ii. Integrated OSPE (I OSPE):

This section will include stations, from each core subject, emphasizing horizontal and vertical integration, each station carries 5 marks.

iii. Objective Structured Clinical Examinations (OSCE):

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

iv. Objective Structured Viva Examinations (OSVE):

This section will consist of table viva for each core subject. Students will be evaluated by internal and external examiner using a structured marking rubric, with total marks 10.

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

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

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

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

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

Table: 5 Table of Abbreviation

CIA	Continuous Internal Assessment
I-OSPE	Integrated OSPE
Lab OSPE	Laboratory Objective Structured Practical Examination
OSCE	Objective Structured Clinical Examinations
OSVE	Objective Structured Viva Examinations
ECE	Early Clinical Exposure
ALPHA	(Artificial Intelligence, Leadership, Professionalism, Humanities & Arts)

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

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

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

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

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

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

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

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

Note:

- Total Operational marks =4410 converted to 270 marks and per block 1470 marks will be converted to 90 marks for Annual Professional marks calculation .

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

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

Components of CIA

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

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

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

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

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

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

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

Table 3 : Extrapolated marks to be calculated from on campus Summative assessments throughout the Academic Year 2025

Blocks	Modules	Anatomy	Physiology	Biochemistry	Total
Block 1 1470 Marks	Module 1	200	200	200	600
	Module 2	200	200	200	600
	Block Exam	90	90	90	270
	Total	490	490	490	1470
Block 2 1470 Marks	Module 1	200	200	200	600
	Module 2	200	200	200	600
	Block Exam	90	90	90	270
	Total	490	490	490	1470
Block 3 1470 Marks	Module 1	200	200	200	600
	Module 2	200	200	200	600
	Block Exam	90	90	90	270
	Total	490	490	490	1470
Total Marks		1470	1470	1470	4410

Note:

- Total Operational marks =4410 converted to 270 marks and per block 1470 marks will be converted to 90 marks for Annual Professional marks calculation.
- The CIA should be submitted to Examination cell in round off values.

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

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

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

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

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

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

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

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

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

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

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

50% Questions/OSPE Stations/Viva Stations will be from Foundation Module and 50% Questions will be from MSK-1 Module															
For Each assessment student will have to individually pass Theory and Practical components															

Marks per Item

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

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

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

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

A: First Professional Examination (60%)

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

B: Block wise Distribution of Marks

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

C: Subject wise marks breakup in Blocks

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

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

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

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

(Core subjects + Integrated Subjects) 210 Marks	Physiology	42 marks	30 marks	72 marks	(Core subjects + Integrated Subjects) 158+22 = 180 marks
	Biochemistry	13 marks	25 marks	38 marks	
	Total	78	80	158 marks	
	Integrated Subjects			22 Marks	
	Community Medicine	1 Marks			
	Behavioural Sciences	1 Marks			
	Medicine	1 Marks			
	Family medicine	1 Mark			
	Gynae & Obs	1 Mark			
	Radiology	1 Mark			
	Pediatrics	1 Mark			
	Otorhinolaryngology	1 Mark			
	Ophthalmology	1 Mark			
	Pathology	1 Marks			
	Pharmacology	1 Marks			
	ECE		5 Marks		
	ALPHA and GEC		5 Marks		
	Total marks		158+22 = 180 marks		
GRAND TOTAL MARKS		540 Marks			

E: Block wise distribution of Marks for First year MBBS (Batch 52)
(Annual Professional Marks + CIA)

Subject	Theory			Practical			Total Marks
	Component	No of Items	Marks	Component	No of Stations	Marks	
Block I Total Annual marks=180	Section I- MCQ	60x1	60	LabOSPE	5 X 5	25	180
	Section II- SEQ	6x5	30	iOSPE	3 X 5	15	
				OSCE	4 X 5	20	
				OSVE	6 x 5	30	
	Total		90	Total		90	
CIA = 120 Marks	Continuous Internal Assessment (40%)		60	Continuous Internal Assessment (40%)		60	120

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

F: 1st Professional Examination 2025(Batch 52)

Block 1 Assessment Breakup

(Foundation & MSK-1 Module)

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

G: 1st Professional Examination 2025 (Batch 52)

Block 2 Assessment

(MSK-2 & Blood/Immunity Module)

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

H: 1st Professional Examination 2025 (Batch 52)

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

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

SECTION - V

Time Table

RMU – 12 Integrated Modular MBBS Curriculum 2026

Isolation to *Beyond Boundaries*

Hematology & Immunology Module-I Time Table

First Year MBBS

Session 2025 – 2026

Batch – 53

Hematology & Immunity Module-I Team

Module Name	:	Hematology & Immunity Module-I
Duration of module	:	05 Weeks
Coordinator	:	Dr. Almas Ejaz
Co-coordinator	:	Dr. Nayab Ramzan
Reviewed by	:	Module Committee

Module Committee			Module Task Force Team		
1.	Vice Chancellor RMU	Prof. Dr. Muhammad Umar	1.	Coordinator	Dr. Almas Ejaz (Demonstrator of Biochemistry)
2.	Director DME & Dean Basic Sciences	Prof. Dr. Ifra Saeed	2.	DME Focal Person	Dr. Farzana Fatima
3.	Additional Director (Assessment) DME	Dr. Arsalan Manzoor Mughal	3.	Co-coordinator	Dr. Nida Fatima (Demonstrator of Anatomy)
4.	Chairperson Physiology	Prof. Dr. Samia Sarwar	4.	Co-Coordinator	Dr. Farah Ali Shah (Senior Demonstrator of Physiology)
5.	Chairperson Anatomy	Prof. Dr. Ayesha Yousaf	5.	Co-coordinator	Dr. Nayab Ramzan (Demonstrator of Biochemistry)
6.	Chairperson Biochemistry	Dr. Aneela Jamil			
7.	Focal Person Anatomy 1 st Year MBBS	Ass. Prof. Dr. Tayyaba Qureshi			
8.	Focal Person Physiology	Dr. Sidra Hamid	DME Implementation Team		
9.	Focal Person Pharmacology	Dr. Zunera Hakim	1.	Director DME	Prof. Dr. Ifra Saeed
10.	Focal Person Pathology	Dr. Syeda Aisha	2.	Implementation Incharge 1 st & 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 Contents

Integration Themes						
Block	Subjects	Embryology	Histology	Gross Anatomy	CBL	SDL
V	Anatomy	- Development of pharyngeal arches - Development of spleen - Development of thymus	- Spleen - Thymus - Lymph nodes - Tonsils	Lower Limb Posterior compartment of leg to foot	- Ankle sprain - Flat foot	- Posterior compartment of leg and flexor retinaculum - Neurovascular organization of posterior compartment of leg - Foot joints - Ankle joints - Sole of foot - Spleen - Gait cycle
	Physiology	- Plasma Proteins - Stages of erythropoiesis & factors affecting erythropoiesis - Hemoglobin & Hemoglobinopathies, Iron Metabolism - Red cell fragility, ESR & Red cell indices, Anemia & polycythemia - Fate of RBCs & Jaundice - Types of immunity, Physiology of innate immunity tolerance & auto immunity - Physiology of acquired immunity B-Cells - Physiology of acquired immunity T-Cells. Allergy and Hypersensitivity reactions, Auto-immune diseases and AIDS - Composition of blood & Hemopoiesis - WBCs classification & formation. Neutrophils, Eosinophils & Basophils and their properties - Platelet formation & function. hemostasis, blood coagulation tests (BT, CT, PT, APTT and INR) - Blood coagulation - Concept of intravascular anticoagulants and bleeding disorders (Vit K deficiency, hemophilia and thrombocytopenia) - Thromboembolic condition (DVT, Pulmonary Embolism, DIC) Anticoagulant therapy (Heparin, warfarin, Prevention of blood clotting outside the body) - Physiological mechanism of temperature regulation - Role of Hypothalamus in temperature regulation - Disorders of temperature regulation (Fever, Heat stroke, Exposure of body to extreme cold) - ABO & Rh Blood grouping system - Rh Blood grouping system and Erythroblastosis fetalis - Blood transfusion hazards - Tissue and organ transplantations				

	Biochemistry	- Heme synthesis - Porphyria - Breakdown of hemoglobin - Jaundice - Blood - Structure of hemoglobin and myoglobin - Types of Hemoglobin - Oxygen dissociation curve. - Abnormalities in Hemoglobin. - Hemoglobinopathies - Plasma proteins - Acute phase proteins & Albumin - Haptoglobin and transferring. - Ferritin and hemosiderin - Ceruloplasmin. - Antiproteases and amyloidosis - Immunoglobulins - AIDs - Folic acid. - Vitamin B12 - Iron
Spiral Courses		
	Fehm E Quran	- Subordinating Conjunction(أن), Was (كان), Vocative Particle (النداء حرف) - Quranic Adjective Compounds صفة وموصوف - Quranic Possessive Construction مضاف ومضاف إليه
	Behavioral Sciences	- Professionalism in Healthcare - Psychology in Medical Practice
	Family Medicine	- Anemia - The Role of Primary Care in Early Detection and Preventive Management of Recurrent Pediatric Infections
Vertical Integration		
	Pathology	Clinical Disorders of Coagulation
	Pharmacology	Hematinics
	Medicine	- Jaundice - Bleeding and Clotting Disorders - Pyrexia of Unknown Origin - Autoimmune Diseases Rheumatic Fever and its Complication

	• Gynae & Obs	• Anaemia in Preganacy • Rh incompatibility / ABO incompatibility and its significance • Hematological Changes in Pregnancy, Venous Thromboembolism
	• Pediatrics	• Hemolytic Disease of New Born

Categorization of Modular Contents

Anatomy

Category A*	Category B**	Category C***			
		Demonstrations / SGD	CBL	SKL/Practical's	Self-Directed Learning (SDL)
General Embryology	General Histology	- Posterior compartment of leg and flexor retinaculum - Posterior compartment of leg (Neurovascular organization) - Bones of the foot - Dorsum of foot (Muscles and Neurovascular organization) - Ankle joint (ankle sprain) - Joints of foot - Sole of foot (Muscles) - Sole of foot (Neurovascular organization) - Arches of foot - Spleen - Thymus and tonsils - Radiology and surface marking	- Ankle sprain - Flat foot	- Lymph node - Spleen - Thymus - Tonsil	- Achilles Tendon Rupture - Tibial Nerve Entrapment (Tarsal Tunnel Syndrome) - Posterior Tibial Artery Occlusion, Palpation of Posterior Tibial Pulse for Peripheral Vascular Disease - Clubfoot (Congenital Talipes Equinovarus), Flatfoot (Pes Planus) - Ankle Sprain, Pott's Fracture Tibiotalar Dislocation - Plantar Fasciitis, Heel Spurs (Calcaneal Spur) - Splenic Rupture, Portal Hypertension - Trendelenburg Gait, Steppage Gait

Category A*: By Professor

Category B:** By Associate & Assistant Professors

Category C*:** By Senior Demonstrators & Demonstrators

Teaching Staff / Human Resources of Department of Anatomy

Sr. #	Designation of Teaching Staff / Human Resource	Total number of teaching staff
1.	Professor of Anatomy Department	01
2.	Associate Professor	01
3.	Assistant Professor of Anatomy Department (AP)	03
4.	Demonstrators of Anatomy Department	04

Contact Hours (Faculty)

Sr. #	Hours Calculation for Various Type of Teaching Strategies	Total Hours
1.	Large Group Interactive Session (LGIS)	$2 * 04 = 08$ hours
2.	Small Group Discussions (SGD)	$2 * 16 = 32$ hours
3.	Practical / Skill Lab	$1.5 * 20 = 30$ hours

Contact Hours (Students)

Sr. #	Hours Calculation for Various Type of Teaching Strategies	Total Hours
1.	Large Group Interactive Session (LGIS)	$1 * 4 = 04$ hours
2.	Small Group Discussions (SGD)	$2 * 16 = 32$ hours
3.	Practical / Skill Lab	$1.5 * 4 = 6$ hours
4.	Self-Directed Learning (SDL)	$2 * 4 = 8$ hours

Physiology

Category A*	Category B**	Category C***				
LGIS	LGIS	PBL	CBL	Practical's	SGD	SDL
- Monocytes - macrophage system & lymphocytes - Process of inflammation and Lines of defense during inflammation	- Plasma Proteins - Stages of erythropoiesis & factors affecting erythropoiesis - Hemoglobin & Hemoglobinopathies, Iron Metabolism - Red cell fragility, ESR & Red cell indices, Anemia & polycythemia - Fate of RBCs & Jaundice - Types of immunity, Physiology of innate immunity tolerance & auto immunity - Physiology of acquired immunity B-Cells - Physiology of acquired immunity T-Cells. Allergy and Hypersensitivity reactions, Auto-immune diseases and AIDS - Composition of blood & Hemopoiesis - WBCs classification & formation. Neutrophils, Eosinophils & Basophils and their properties - Platelet formation & function. hemostasis, blood coagulation tests (BT, CT, PT, APTT and INR) - Blood coagulation - Concept of intravascular anticoagulants and bleeding disorders (Vit K deficiency, hemophilia and thrombocytopenia) - Thromboembolic condition (DVT, Pulmonary Embolism, DIC) Anticoagulant therapy (Heparin, warfarin, Prevention of blood clotting outside the body)			- Determination of Rh blood group - Determination of Clotting time (CT) - Determination of Bleeding time (BT) - Recording of Body Temperature	- Functions & composition of blood, Hemopoiesis and Bone marrow - Hemoglobin & Hemoglobinopathies, Iron Metabolism - Platelet formation & function. hemostasis, blood coagulation tests (BT, CT, PT, APTT and INR) - Physiological mechanism of temperature regulation - Stages of Erythropoiesis Factors Affecting Erythropoiesis (First week) - Physiology of WBC (third week) - Physiology of platelets (Fourth week) - Blood transfusion hazards. Tissue and organ transplantations (Fifth week) - Disorders of temperature regulation (Fever, Heat stroke, Exposure of body to extreme cold) (Fifth week)	SDL On Campus Platelet formation & function. hemostasis, blood coagulation tests (BT, CT, PT, APTT and INR) - Concept of intravascular anticoagulants and bleeding disorders (Vit K deficiency, hemophilia and thrombocytopenia) SDL Off Campus Composition of blood - Functions of Plasma Proteins - WBCs classification & formation. Neutrophils, Eosinophils & Basophils and their properties - Monocytes - macrophage system & lymphocytes - Process of inflammation and Lines of defense during inflammation - Red cell fragility, ESR & Red cell

	• Physiological mechanism of temperature regulation • Role of Hypothalamus in temperature regulation • Disorders of temperature regulation (Fever, Heat stroke, Exposure of body to extreme cold) • ABO & Rh Blood grouping system • Rh Blood grouping system and Erythroblastosis fetalis • Blood transfusion hazards. Tissue and organ transplantations					indices, Anemia & polycythemia 9. Blood coagulation 10. ABO & Rh Blood grouping system
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Category A*: By HOD and Associate Professor

Category B:** By All (HOD, Associate, Assistant, Senior Demonstrators)

Category C*:** By Demonstrators and Residents

Teaching Staff / Human Resource of Department of Physiology

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

Contact Hours (Faculty) & Contact Hours (Students)

Sr. #	Hours Calculation for Various Type of Teaching Strategies	Total Hours
1.	Large Group Interactive Session (LECTURES)	11 x 2 = 22 hours
2.	Small Group Discussions (SGD)/CBL	20 x 1.5 hour = 30 hours + 6 hours = 36 hours
3.	Problem Based Learning (PBL)	---
4.	Practical / Skill Lab	20 x 1.5 hour = 30 hours
5.	Self-Directed Learning (SDL)	2x1 = 2 hours (on campus) 8x1 = 8 hours (off campus)

Biochemistry

Category A*	Category B**	Category C***			
LGIS	LGIS	PBL	CBL	Practical's	SGD
• Heme synthesis • Porphyria • Heam Degradation & Jaundice • Plasma Protein Functions, Albumin • Haptoglobin, Ceruloplasmin. • Transferrin, Ferritin • Immunoglobulins	• Hb, Myoglobin and O₂ Dissociation Curve • Hemoglobinopathies • AIDs • Vitamin K • Vitamin B9 & B12 • Iron		• Heme Degradation/Jaundice • Thalassemia	• How to draw blood technique • Estimation of Serum Bilirubin by spectrophometer • Quantitative Estimation of serum total proteins by spectrophometer • Haemin crystals	• Types of Hb and oxygen dissociation curve • Iron

Category A*: Associate Professor & Assistant Professor

Category B**: Senior Demonstrators & APWMO

Category C***: By All Demonstrators

Teaching Staff / Human Resource of Department of Biochemistry

Sr. #	Designation of Teaching Staff / Human Resource	Total number of teaching staff
1.	Associate Professor of Biochemistry Department (AP)	01
2.	Assistant Professor Biochemistry Department	02
3.	Demonstrators of Biochemistry Department	07

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 (LGIS)	$2 * 12 = 24$ hours	12
2.	Small Group Discussions (SGD)	$1.5 * 5 * 4 = 30$ hours	06
3.	Problem Based Learning (PBL)	4 hours	04
4.	Practical / Skill Lab	$1.5 * 5 * 4 = 30$ hours	6
5.	Self-Directed Learning (SDL)	-----	06

Hematology & Immunity Module-I (2 Days)

(19-06-2026 To 20-06-2026)

Date/Day	Theme	8:00am-9:00am	9:00am – 10:00am	10:00am-11:00am		11:20am-12:10pm		Home Assignments(2hrs)				
19-06-2026 Friday	Fatigue, Pallor & Reduced Exercise Tolerance	FEHM E QURAN – VIII	FEHM E QURAN – IX	BIOCHEMISTRY (LGIS)		PHYSIOLOGY (LGIS)		SDL Physiology Composition of blood				
		Subordinating Conjunction(أن), Was (النداء حرف), Vocative Particle (كان)	Quranic Adjective Compounds صفة وموصوف)	Hb, Myoglobin & O2 Dissociation Curve	Heme Synthesis & Porphyria	Composition of blood & Hemopoiesis	Plasma Proteins					
		Qari Abdul Wahid	Qari Abdul Wahid	Dr. Khalid (Even)	Dr. Aneela (Odd)	Dr Sheena (Even)	Dr. Sidra (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(2hrs)
20-06-2026 Saturday		SGD/DISSECTION			B r e a k	BIOCHEMISTRY (LGIS)		PHYSIOLOGY (LGIS)		B r e a k	Practical & SGD/CBL Topics & venue mentioned at the end	SDL Physiology Functions of plasma protein
		Posterior Compartment of Leg & Flexor Retinaculum				Heme Synthesis & Porphyria	Hb, Myoglobin & O2 Dissociation Curve	Plasma Proteins	Composition of blood & Hemopoiesis			
						Dr. Aneela (Even)	Dr. Khalid (Odd)	Dr. Sidra (Even)	Dr Sheena (Odd)			

Summer Vacations

22nd June – 19th July 2026

Hematology & Immunity Module-I (First Week)
(20-07-2026 To 25-07-2026)

Date/Day	Theme	8:00am-9:20am	9:20am – 10:10am	10:10am – 10:30am	10:30am-11:20am	11:20am-12:10pm	12:10pm-12:30pm	12:30pm – 2:00pm	Home Assignments(2hrs)					
20-07-2026 Monday	Fatigue, Pallor & Reduced Exercise Tolerance	SGD/DISSECTION			Break	BEHAVIORAL SCIENCES		PHYSIOLOGY (LGIS)		Break	Practical & SGD/CBL Topics & venue mentioned at the end	SDL Physiology Composition of blood		
		Posterior Compartment of Leg & Flexor Retinaculum				Professionalism in Healthcare		Stages of erythropoiesis & factors affecting erythropoiesis	WBCs classification & formation. Neutrophils, Eosinophils & Basophils and their properties					
								Dr. Faisal Amir (Odd)	Dr. Mehboob Ali (Even)				Dr. Sidra (Even)	Dr Sheena (Odd)
								FEHME QURAN – X			PHYSIOLOGY (LGIS)			
21-07-2026 Tuesday		SGD/DISSECTION				Break	Quranic Possessive Construction مضاف ومضاف إليه		WBCs classification & formation. Neutrophils, Eosinophils & Basophils and their properties		Stages of erythropoiesis & factors affecting erythropoiesis	Practical & SGD/CBL Topics & venue mentioned at the end	SDL Physiology Functions of plasma protein	
		Neurovascular Organization Posterior Compartment of Leg							Qari Abdul Wahid		Dr Sheena (Even)			Dr. Sidra (Odd)
									PBL 1 (SESSION – I)		PHYSIOLOGY (LGIS)			
22-07-2026 Wednesday		SGD/DISSECTION					Break	PBLTeam			Monocytes - macrophage system & lymphocytes	Hemoglobin & Hemoglobinopathies , IronMetabolism	Practical & SGD/CBL Topics & venue mentioned at the end	SDL Biochemistry Lead Poisoning, Vitamin B6 Deficiency and Heme Synthesis
		Bones of the foot									Prof. Dr. Samia Sarwar / Dr. Sheena (Even)	Dr. Sidra (Odd)		
GYNAE & OBS											FAMILY MEDICINE		ANATOMY (LGIS)		PHYSIOLOGY (LGIS)		Practical & SGD/CBL Topics & venue mentioned at the end	SDL Biochemistry Hemoglobin related clinical disorders
23-07-2026 Thursday		Anaemia in Preganacy		Anemia				Development of pharyngeal arches	Development and histology of Lymph node		Hemoglobin & Hemoglobinopathies, Iron Metabolism	Monocytes - macrophage system & lymphocytes		
		Dr. Maryam Zaheer (Odd)	Dr. Ayesha Javed (Even)	Dr. Sidra	Prof. Dr. Ayesha Yousaf (Even)			Asso. Dr. Arsalan Manzoor (Odd)	Dr. Sidra (Even)		Prof. Dr. Samia Sarwar / Dr. Sheena (Odd)			
		24-07-2026 Friday	8:00 AM – 9:00 AM		9:00 AM – 10:00AM			10:00AM– 11:00AM			11:00AM-12:00PM		. SDL Anatomy Achilles Tendon Rupture	
BIOCHEMISTRY (LGIS)			PAPER DISCUSSION	ANATOMY (LGIS)				PHYSIOLOGY (LGIS)						
Hemoglobinopat hies			Heam Degradation & Jaundice	Anatomy, Physiology & Biochemistry	Development of pharyngeal arches			Development and histology of Lymph Node	Process of inflammation and Lines of defense during inflammation		Red cell fragility, ESR & Red cell indices, Anemia & polycythemia			
Dr Khalid (Even)			Dr. Aneela (Odd)		Prof. Dr. Ayesha Yousaf (Odd)	Asso. Dr. Arsalan Manzoor (Even)		Prof. Dr. Samia Sarwar / Dr. Sheena (Even)	Dr. Sidra (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(2hrs)				
25-07-2026 Saturday		SGD/DISSECTION			Break	PHARMACOLOGY		CLINICO-CONCEPT CONNECT (C ³ 6) SESSION - I		Break	Practical & SGD/CBL Topics & venue mentioned at the end	SDL Anatomy Tibial Nerve Entrapment (Tarsal Tunnel Syndrome)		
		Muscles and Neurovascular Organization Dorsum of Foot				Hematinics		Fatigue, Pallor & Reduced Exercise Tolerance						
								Anatomy	Dr. Nida					
								Physiology	Dr. Farah					
								Biochemistry	Dr. Almas					
								Family Medicine	Dr. Sadia / Dr. Sidra					
						Pathology	Dr. Rabbya							
						Pharmacology	Dr. Zufishan							
Community Medicine	Dr.													

Table No. 1 (Time: 12:30pm – 02:00pm)																
Batch Distribution for Practical Skills (all subjects) CBL / Small Group Discussion(Biochemistry and Physiology)			Topics for Skill Lab with Venue	Schedule for Practical												
				Day	Histology Practical		Biochemistry Practical		Physiology Practical		Physiology SGD	Biochemistry SGD				
Sr. No	Batch	Roll No.	Batch		Teacher Name	Batch	Teacher Name	Batch	Teacher Name	Batch		Teacher Name	Batch	Teacher Name		
1.	A	01-70	• Lymph node (Anatomy Histology Practical) Venue-Histology laboratory (Dr. Kashif) • Draw of blood technique (Biochemistry Practical) Venue-Biochemistry laboratory • Determination of Rh blood group (Physiology –practical) Venue – Physiology Lecture Hall No 5	Monday	C	Supervised by HOD	B	Dr. Rahat	Supervised by HOD	E	Dr. Ali /Dr. Afsheen	Supervised by HOD	A	Dr. Sheena	D	Dr. Uzma Zafar
2.	B	71-140		Tuesday	D		C	Dr. Almas		A	Dr. Sheena		B	Dr. Uzma	E	Dr. Romessa
3.	C	141-210		Wednesday	E		D	Dr. Uzma		B	Dr. Uzma		C	Dr. Farah	A	Dr. Sana Latif
4.	D	211-280		Thursday	B		A	Dr. Sana Latif		D	Dr. Nazia		E	Dr. Ali/Dr. Afsheen	C	Dr. Almas
5.	E	281-onwards		Saturday	A		E	Dr. Romessa		C	Dr. Farah		D	Dr. Nazia	B	Dr. Rahat
				Topics for SGDs / CBL with Venue												
			• Physiology SGD - Functions & composition of blood, Hemopoiesis and Bone marrow (Basement)) • Biochemistry SGD: Types of Hb and oxygen dissociation curve (Venue: Lecture Hall No 2)													

Table No. 2 Batch Distribution with Venues and Teachers Name for Problem Based Learning (PBL) Sessions									
Sr No.	Batches	Roll No	Venue	Teachers	Sr No.	Batches	Roll No	Venue	Teachers
1.	A1	(01-35)	Lecture Hall no.05 Physiology	Dr. Sana Latif (Senior Demonstrator Biochemistry)	6.	C2	(176-210)	New Lecture Hall Complex Lecture Theater # 03	Dr. Nabiha (PGT Physiology)
2.	A2	(36-70)	Lecture Hall #.04 (1st Floor Anatomy)	Dr. Maaria (PGT Physiology)	7.	D1	(210-245)	New Lecture Hall Complex Lecture Theater # 02	Dr. Jawad (Demonstrator Physiology)
3.	B1	(71-105)	Anatomy Museum (First Floor Anatomy)	Dr. Nayab Ramzan (APWMO Biochemistry)	8.	D2	(246-280)	New Lecture Hall Complex Lecture Theater # 02	Dr. Kashif Ashraf (Demonstrator Anatomy)
4.	B2	(106-140)	Lecture Hall no.03 (First Floor)	Dr. Zeneara Saqib (Senior Demonstrator of Anatomy)	9.	E1	(281-315)	Anatomy Museum (First Floor Anatomy)	Dr. Uzma Zafar (APWMO Biochemistry)
5.	C1	(141-175)	Anatomy Museum (First Floor Anatomy)	Dr. Farhat (PGT Physiology)	10	E2	(315 onwards)	Lecture Hall No.04	Dr. Najam (PGT Physiology)
Table No. 3 Venues for Large Group Interactive Session (LGIS)									
Odd Roll Numbers				New Lecture Hall Complex Lecture Theater # 03					
Even Roll Number				New Lecture Hall Complex Lecture Theater # 02					

Table No. 4 Batch Distribution and Venues for Anatomy Small Group Discussion SGDs / Dissections					Table No. 5 Batch Distribution and Venues for Physiology & Biochemistry Small Group Discussion SGDs						
Batches	Roll No	Subgroup	Anatomy Teacher	Venue	Batches	Roll No	Subgroup	Physiology Teacher	Physiology Venue	Biochemistry Teacher	Biochemistry Venue
A	01- 70	A1: Roll No (1 – 17) A2: Roll No (18 – 34) A3: Roll No (35 – 51) A4: Roll No (52 – 70)	Dr. Zeneera Saqib (Demonstrator)	New Lecture Hall Complex 1	A	01-70	A1: Roll No (1 – 14) A2: Roll No (15 – 28) A3: Roll No (29 – 42) A4: Roll No (43 – 56) A5: Roll No (57 – 70)	Dr. Sheena Tariq (APWMO)	Physiology Lecture Hall 5	Dr. Uzma Zafar (APWMO)	Basement Lecture Hall No. 2
B	71-140	B1: Roll No (71 – 87) B2: Roll No (88 – 104) B3: Roll No (105 – 121) B4: Roll No (122 – 140)	Dr. Tayyaba Qureshi (Assistant Professor)	New Lecture Hall Complex 03	B	71-140	B1: Roll No (71 – 84) B2: Roll No (85 – 98) B3: Roll No (99 – 112) B4: Roll No (113 – 126) B5: Roll No (127 – 140)	Dr. Uzma Kiyani (Senior Demonstrator)	Physiology Lecture Hall 5	Dr. Rahat (APWMO)	Basement Lecture Hall No. 2
C	141-210	C1: Roll No (141 – 157) C2: Roll No (158 – 174) C3: Roll No (175 – 191) C4: Roll No (192 – 210)	Dr. Nida Fatima (Demonstrator)	Anatomy Lecture Hall 04	C	141-210	C1: Roll No (141 – 154) C2: Roll No (155 – 168) C3: Roll No (169 – 182) C4: Roll No (183 – 196) C5: Roll No (197 – 210)	Dr. Farah Shah (Demonstrator)	Physiology Lecture Hall 5	Dr. Almas (APWMO)	Basement Lecture Hall No. 2
D	211- 280	D1: Roll No (211 – 227) D2: Roll No (228 - 244) D3: Roll No (245 – 261) D4: Roll No (262 – 280)	Dr. Sajjad Hussain (Senior. Demonstrator)	Anatomy Lecture Hall 03	D	211-280	D1: Roll No (211 – 224) D2: Roll No (225 – 238) D3: Roll No (239 – 252) D4: Roll No (253 – 266) D5: Roll No (267 – 280)	Dr. Nazia (Demonstrator)	Physiology Lecture Hall 5	Dr. Sana Latif (Senior Demonstrator)	Basement Lecture Hall No. 2
E	281- onwards	E1: Roll No (281 – 297) E2: Roll No (298 – 314) E3: Roll No (315 – 331) E4: Roll No (332 – onwards)	Dr. Nafeesa (Assistant Professor)	New Lecture Hall Complex 02	E	281- onwards	E1: Roll No (281 – 294) E2: Roll No (295 – 308) E3: Roll No (309 – 322) E4: Roll No (323 – 336) E5: Roll No (337 – onwards)	Dr. Ali Zain / Dr. Afsheen (P. G Trainee)	Physiology Lecture Hall 5	Dr. Romessa (Demonstrator)	Basement Lecture Hall No. 2
Supervised by Prof. Dr. Ayesha Yousaf					Supervised by Prof. Dr. Samia Sarwar					Supervised by. Dr. Aneela Jamil	

Hematology & Immunity Module-I (Second Week)

(27-07-2025 To 01-08-2026)

Date/Day	Theme	8:00am-9:20am	9:20am – 10:10am	10:10am – 10:30am	10:30am-11:20am	11:20am-12:10pm	12:10pm-12:30pm	12:30pm – 2:00pm	Home Assignments(2hrs)				
27-07-2026 Monday	Jaundice & Dark Urine with Hepatosplenomegaly	SGD/DISSECTION		Break	MEDICINE		PHYSIOLOGY (LGIS)		Break	Practical & SGD/CBL Topics & venue mentioned at the end	SDL Physiology WBCs classification & formation. Neutrophils, Eosinophils & Basophils and their properties		
28-07-2026 Tuesday		Ankle Joint (Ankle Sprain)			Jaundice		Red cell fragility, ESR & Red cell indices, Anemia & polycythemia	Process of inflammation and Lines of defense during inflammation					
										Dr. Umer Daraz (Even)	Dr. Sheryar (Odd)	Dr. Sidra (Even)	Prof. Dr. Samia Sarwar / Dr. Sheena (Odd)
					DISSECTION/CBL		BIOCHEMISTRY (LGIS)			PEDIATRICS		Practical & SGD/CBL Topics & venue mentioned at the end	SDL Physiology Monocytes - macrophage system & lymphocytes
					Joints of Foot		Hemoglobinopathies	Heme degradation & Jaundice		Hemolytic Disease of New Born			
Dr. Khalid (Odd)		Dr. Aneela (Even)	Dr. Shazia (Odd)				Dr. Sonia (Even)	Practical & SGD/CBL Topics & venue mentioned at the end		Biochemistry SDL Congenital Causes of Hyperbilirubinemia & Neonatal Jaundice			
29-07-2026 Wednesday		BEHAVIORAL SCIENCES	PBL 1 (SESSION – II)		BIOCHEMISTRY (LGIS)		PHYSIOLOGY (LGIS)						
		Psychology in Medical Practice	PBL Team		Aids	Plasma proteins functions, Albumin	Fate of RBCs & Jaundice				Platelet formation & function. hemostasis, blood coagulation tests (BT, CT, PT, APTT and INR)		
												Dr. Zarnain Umar (Odd)	Dr. Nadia Haroon (Even)	Dr. Almas (Even)	Dr. Tayba Hashmi (Odd)	Dr. Sidra (Odd)	Dr. Fareed (Even)
		30-07-2026 Thursday	GYNAE OBS (LGIS)		BIOCHEMISTRY (LGIS)	JOINT SESSION				Practical & SGD/CBL Topics & venue mentioned at the end	Biochemistry SDL Edema and Oncotic Pressure		
Rh incompatibility / ABO incompatibility and its significance			Aids		Plasma proteins functions, Albumin	Thalasimia (Physiology, Biochemistry, Medicine & Pathology)							
Dr. Ruqiya (Even)			Dr. Tabinda (Odd)		Dr. Almas (Odd)	Dr. Tayba Hashmi (Even)	Physiology	Biochemistry				Medicine	Pathology
Dr. Farah Ali Shah			Dr. Kanwal		Dr. Umar Daraz / Dr. Sheryar	Dr.							
31-07-2026 Friday		Early Clinical Exposure (ECE)									SDL Anatomy Posterior Tibial Artery Occlusion Palpation of Posterior Tibial Pulse for Peripheral Vascular Disease		
01-08-2026 Saturday		SGD/DISSECTION			Break	PBL 2 (SESSION – I)		CLINICO-CONCEPT CONNECT (C ³ 6) SESSION - II		Break	Practical & SGD/CBL Topics & venue mentioned at the end	SDL Anatomy Clubfoot (Congenital Talipes Equinovarus) Flatfoot (Pes Planus) Mid Clinico-Concept Connect (C36) Session Evaluatio	
	Dissection		PBL Team			Jaundice & Dark Urine with Hepatosplenomegaly							
						Anatomy	Dr. Sajjad						
						Physiology	Dr. Farah						
						Biochemistry	Dr. Khalid						
						Pediatrics	Dr. Anum Asif						
						Pathology	Dr. Sarah						
						Community Medicine							

Table No. 1 (Time: 12:30pm – 02:00pm)															
Batch Distribution for PracticalSkills (all subjects) CBL / Small Group Discussion(Biochemistry and Physiology)			Topics for Skill Lab with Venue - Spleen (Anatomy Histology Practical) Venue-Histology Laboratory (Dr. Kashif) - Estimation of Serum Bilirubin by Spectrophotometer (Biochemistry Practical) Venue- Biochemistry Laboratory - Determination of Clotting time (CT) (Physiology Practical) Venue – Physiology Lab	Day	Histology Practical		BiochemistryPractical		Physiology Practical			Physiology SGD		Biochemistry SGD	
					Batch	Teacher Name	Batch	Teacher Name	Supervised by HOD	Batch		Teacher Name	Supervised by HOD	Batch	Teacher Name	Batch	Teacher Name
Sr. No	Batch	Roll No.	Monday	C	Supervised by HOD	B	Dr. Rahat	E		Dr. Ali /Dr. Afsheen	A	Dr. Sheena		D	Dr. Uzma Zafar
1.	A	01-70	Tuesday	D		C	Dr. Almas	A		Dr. Sheena	B	Dr. Uzma		E	Dr. Romessa
2.	B	71-140	Wednesday	E		D	Dr. Uzma	B		Dr. Uzma	C	Dr. Farah		A	Dr. Sana Latif
3.	C	141-210	Thursday	B		A	Dr. Sana Latif	D		Dr. Nazia	E	Dr. Ali/Dr. Afsheen		C	Dr. Almas
4.	D	211-280	Saturday	A		E	Dr. Romessa	C		Dr. Farah	D	Dr. Nazia		B	Dr. Rahat
5.	E	281-onwards													
			Topics for SGDs / CBL with Venue - Physiology SGD- Hemoglobin & Hemoglobinopathies, Iron Metabolism (Venue: Lecture Hall No 5) - Biochemistry CBL – Heme Degradation and Jaundice (Lecture Hall No 2) - Anatomy CBL: Ankle Sprain												

Table No. 2 Batch Distribution with Venues and Teachers Name for Problem Based Learning (PBL) Sessions									
Sr No.	Batches	Roll No	Venue	Teachers	Sr No.	Batches	Roll No	Venue	Teachers
1.	A1	(01-35)	Lecture Hall no.05 Physiology	Dr. Sana Latif (Senior Demonstrator Biochemistry)	6.	C2	(176-210)	New Lecture Hall Complex Lecture Theater # 03	Dr. Nabiha (PGT Physiology)
2.	A2	(36-70)	Lecture Hall #.04 (1st FloorAnatomy)	Dr. Maaria (PGT Physiology)	7.	D1	(210-245)	New Lecture Hall Complex Lecture Theater # 02	Dr. Jawad (Demonstrator Physiology)
3.	B1	(71-105)	Anatomy Museum (First Floor Anatomy)	Dr. Nayab Ramzan (APWMO Biochemistry)	8.	D2	(246-280)	New Lecture Hall Complex Lecture Theater # 02	Dr. Kashif Ashraf (Demonstrator Anatomy)
4.	B2	(106-140)	Lecture Hall no.03 (First Floor)	Dr. Zeneara Saqib (Senior Demonstrator ofAnatomy)	9.	E1	(281-315)	Anatomy Museum (First Floor Anatomy)	Dr. Uzma Zafar (APWMO Biochemistry)
5.	C1	(141-175)	Anatomy Museum (First FloorAnatomy)	Dr. Farhat (PGT Physiology)	10	E2	(315 onwards)	Lecture Hall no.04	Dr. Najam (PGT Physiology)

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

Table No. 4 Batch Distribution and Venues for Anatomy Small Group Discussion SGDs / Dissections					Table No. 5 Batch Distribution and Venues for Physiology & Biochemistry Small Group Discussion SGDs						
Batches	Roll No	Subgroup	Anatomy Teacher	Venue	Batches	Roll No	Subgroup	Physiology Teacher	Physiology Venue	Biochemistry Teacher	Biochemistry Venue
A	01- 70	A1: Roll No (1 – 17) A2: Roll No (18 – 34) A3: Roll No (35 – 51) A4: Roll No (52 – 70)	Dr. Zeneera Saqib (Demonstrator)	New Lecture Hall Complex 1	A	01-70	A1: Roll No (1 – 14) A2: Roll No (15 – 28) A3: Roll No (29 – 42) A4: Roll No (43 – 56) A5: Roll No (57 – 70)	Dr. Sheena Tariq (APWMO)	Physiology Lecture Hall 5	Dr. Uzma Zafar (APWMO)	Basement Lecture Hall No. 2
B	71-140	B1: Roll No (71 – 87) B2: Roll No (88 – 104) B3: Roll No (105 – 121) B4: Roll No (122 – 140)	Dr. Tayyaba Qureshi (Assistant Professor)	New Lecture Hall Complex 03	B	71-140	B1: Roll No (71 – 84) B2: Roll No (85 – 98) B3: Roll No (99 – 112) B4: Roll No (113 – 126) B5: Roll No (127 – 140)	Dr. Uzma Kiyani (Senior Demonstrator)	Physiology Lecture Hall 5	Dr. Rahat (APWMO)	Basement Lecture Hall No. 2
C	141-210	C1: Roll No (141 – 157) C2: Roll No (158 – 174) C3: Roll No (175 – 191) C4: Roll No (192 – 210)	Dr. Nida Fatima (Demonstrator)	Anatomy Lecture Hall 04	C	141-210	C1: Roll No (141 – 154) C2: Roll No (155 – 168) C3: Roll No (169 – 182) C4: Roll No (183 – 196) C5: Roll No (197 – 210)	Dr. Farah Shah (Demonstrator)	Physiology Lecture Hall 5	Dr. Almas (APWMO)	Basement Lecture Hall No. 2
D	211- 280	D1: Roll No (211 – 227) D2: Roll No (228 - 244) D3: Roll No (245 – 261) D4: Roll No (262 – 280)	Dr. Sajjad Hussain (Senior. Demonstrator)	Anatomy Lecture Hall 03	D	211-280	D1: Roll No (211 – 224) D2: Roll No (225 – 238) D3: Roll No (239 – 252) D4: Roll No (253 – 266) D5: Roll No (267 – 280)	Dr. Nazia (Demonstrator)	Physiology Lecture Hall 5	Dr. Sana Latif (Senior Demonstrator)	Basement Lecture Hall No. 2
E	281- onwards	E1: Roll No (281 – 297) E2: Roll No (298 – 314) E3: Roll No (315 – 331) E4: Roll No (332 – onwards)	Dr. Nafeesa (Assistant Professor)	New Lecture Hall Complex 02	E	281- onwards	E1: Roll No (281 – 294) E2: Roll No (295 – 308) E3: Roll No (309 – 322) E4: Roll No (323 – 336) E5: Roll No (337 – onwards)	Dr. Ali Zain / Dr. Afsheen (P. G Trainee)	Physiology Lecture Hall 5	Dr. Romessa (Demonstrator)	Basement Lecture Hall No. 2
Supervised by Prof. Dr. Ayesha Yousaf					Supervised by Prof. Dr. Samia Sarwar					Supervised by. Dr. Aneela Jamil	

Hematology & Immunity Module-I (Third Week)
(03-08-2026 To 08-08-2026)

Date/Day	Theme	8:00am-9:20am	9:20am – 10:10am	10:10am – 10:30am	10:30am-11:20am	11:20am-12:10pm	12:10pm-12:30pm	12:30pm – 2:00pm	Home Assignments(2hrs)		
03-08-2026 Monday	Easy Bruising, Prolonged Bleeding & Thrombotic Events	SGD/DISSECTION		Break	BIOCHEMISTRY (LGIS)		PHYSIOLOGY (LGIS)		Break	Practical & SGD/CBL Topics & venue mentioned at the end	SDL Physiology Process of inflammation and Lines of defense during inflammation
		Sole of Foot (Muscles)			Vitamin K	Haptoglobin, ceruloplasmin	Blood coagulation	Types of immunity, Physiology of innate immunity tolerance & auto immunity			
					Dr. Almas (Even)	Dr. Tayba Hashmi (Odd)	Dr. Fareed (Even)	Dr. Sidra (Odd)			
04-08-2026 Tuesday		SGD/DISSECTION			BIOCHEMISTRY (LGIS)		PHYSIOLOGY (LGIS)			Practical & SGD/CBL Topics & venue mentioned at the end	SDL Physiology Red cell fragility, ESR & Red cell indices, Anemia & polycythemia
		Sole of Foot (Neurovascular Organization)			Vitamin K	Haptoglobin, ceruloplasmin	Types of immunity, Physiology of innate immunity tolerance & auto immunity	Blood coagulation			
					Dr. Almas (Odd)	Dr. Tayba Hashmi (Even)	Dr. Sidra (Even)	Dr. Fareed (Odd)			
05-08-2026 Wednesday		SGD/DISSECTION			GYNAE & OBS		PHYSIOLOGY (LGIS)			Practical & SGD/CBL Topics & venue mentioned at the end	SDL Biochemistry Clinical aspects of Vitamin K
		Dissection			Hematological Changes in Pregnancy, Venous Thromboembolism		Concept of intravascular anticoagulants and bleeding disorders (Vit K deficiency, hemophilia and thrombocytopenia)	Physiology of acquired immunity B-Cells			
							Dr. Farah Diba (Even)	Dr. Amina Abbasi (Odd)				Dr. Fareed (Even)	Dr. Sidra (Odd)
06-08-2026 Thursday		DISSECTION / CBL			MEDICINE		PHYSIOLOGY (LGIS)			Practical & SGD/CBL Topics & venue mentioned at the end	SDL Biochemistry
		Arches of Foot			Bleeding and Clotting Disorders		Physiology of acquired immunity B-Cells	Concept of intravascular anticoagulants and bleeding disorders (Vit K deficiency, hemophilia and thrombocytopenia)			
							Dr. Sadaf Zaman (Odd)	Dr. Sania Sabir (Even)				Dr. Sidra (Even)	Dr. Fareed (Odd)
Date/Day		08:00am– 09:00am	09:00am– 10:00am		10:00am – 11:00am	11:00am – 12:00pm					
07-08-2026 Friday		PATHOLOGY (LGIS)		BIOCHEMISTRY (LGIS)		PBL 2 (SESSION – II)				PHYSIOLOGY (LGIS)	
		Clinical Disorders of Coagulation		Vitamin 9 and vitamin B12	Transferrin, ferritin	PBL Team	Thromboembolic condition (DVT, Pulmonary Embolism, DIC) Anticoagulant therapy (Heparin, warfarin, Prevention of blood clotting outside the body)	Physiology of acquired immunity T-Cells. Allergy and Hypersensitivity reactions, Auto-immune diseases and AIDS ls. Ac	SDL Anatomy Ankle Sprain Pott’s Fracture Tibiotalar Dislocation		
							Dr. Fareed (Even)	Dr. Sidra (Odd)			
		Dr. Rabiya (Even)	Dr. Sara Rafi (Odd)	Dr. Almas (Even)	Dr. Tayba Hashmi (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(2hrs)		
08-08-2026 Saturday		SGD/DISSECTION		Break	CLINICO-CONCEPT CONNECT (C ³ 6) SESSION - III		PHYSIOLOGY (LGIS)		Break	Practical & SGD/CBL Topics & venue mentioned at the end	SDL Anatomy Plantar Fasciitis Heel Spurs (Calcaneal Spur)
		Gait cycle.			Easy Bruising, Prolonged Bleeding & Thrombotic Events		Physiology of acquired immunity T-Cells. Allergy and Hypersensitivity reactions, Auto-immune diseases and AIDS	Thromboembolic condition (DVT, Pulmonary Embolism, DIC) Anticoagulant therapy (Heparin, warfarin, Prevention of blood clotting outside the body)			
					Physiology	Dr. Farah					
					Biochemistry	Dr. Kanwal					
					Pathology	Dr. Rabbya					
					Pharmacology						
					Gynae & Obs						
	Family Medicine	Dr. Sadia / Dr. Sidra	Dr. Sidra (Even)	Dr. Fareed (Odd)							

Table No. 1 (Time: 12:30pm – 02:00pm)																
Batch Distribution for Practical Skills (all subjects) CBL / Small Group Discussion (Biochemistry and Physiology) Sr. No Batch Roll No. 1. A 01-70 2. B 71-140 3. C 141-210 4. D 211-280 5. E 281-onwards			Topics for Skill Lab with Venue		Schedule for Practical											
			Day	Histology Practical		Biochemistry Practical			Physiology Practical		Supervised by HOD	Physiology SGD		Biochemistry SGD		
				Batch	Teacher Name	Batch	Teacher Name		Batch	Teacher Name		Batch	Teacher Name	Batch	Teacher Name	
			Monday	C	Supervised by HOD	B	Dr. Rahat	Supervised by HOD	E	Dr. Ali /Dr. Afsheen		Supervised by HOD	A	Dr. Sheena	D	Dr. Uzma Zafar
			Tuesday	D		C	Dr. Almas		A	Dr. Sheena			B	Dr. Uzma	E	Dr. Romessa
			Wednesday	E		D	Dr. Uzma		B	Dr. Uzma			C	Dr. Farah	A	Dr. Sana Latif
			Thursday	B		A	Dr. Sana Latif		D	Dr. Nazia			E	Dr. Ali/Dr. Afsheen	C	Dr. Almas
Saturday	A	E	Dr. Romessa	C		Dr. Farah	D		Dr. Nazia	B			Dr. Rahat			
Topics for SGDs / CBL with Venue																
- Physiology SGD- Platelet formation & function. hemostasis, blood coagulation tests (BT, CT, PT, APTT and INR (Venue: Lecture Hall No 5) - Biochemistry CBL – Thalassemia (Lecture Hall No 2) - Anatomy CBL: Flat Foot																

Table No. 2 Batch Distribution with Venues and Teachers Name for Problem Based Learning (PBL) Sessions									
Sr No.	Batches	Roll No	Venue	Teachers	Sr No.	Batches	Roll No	Venue	Teachers
1.	A1	(01-35)	Lecture Hall no.05 Physiology	Dr. Sana Latif (Senior Demonstrator Biochemistry)	6.	C2	(176-210)	New Lecture Hall Complex Lecture Theater # 03	Dr. Nabiha (PGT Physiology)
2.	A2	(36-70)	Lecture Hall #.04 (1st Floor Anatomy)	Dr. Maaria (PGT Physiology)	7.	D1	(210-245)	New Lecture Hall Complex Lecture Theater # 02	Dr. Jawad (Demonstrator Physiology)
3.	B1	(71-105)	Anatomy Museum (First Floor Anatomy)	Dr. Nayab Ramzan (APWMO Biochemistry)	8.	D2	(246-280)	New Lecture Hall Complex Lecture Theater # 02	Dr. Kashif Ashraf (Demonstrator Anatomy)
4.	B2	(106-140)	Lecture Hall no.03 (First Floor)	Dr. Zeneera Saqib (Senior Demonstrator of Anatomy)	9.	E1	(281-315)	Anatomy Museum (First Floor Anatomy)	Dr. Uzma Zafar (APWMO Biochemistry)
5.	C1	(141-175)	Anatomy Museum (First Floor Anatomy)	Dr. Farhat (PGT Physiology)	10	E2	(315 onwards)	Lecture Hall no.04	Dr. Najam (PGT Physiology)

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

Table No. 4 Batch Distribution and Venues for Anatomy Small Group Discussion SGDs / Dissections					Table No. 5 Batch Distribution and Venues for Physiology & Biochemistry Small Group Discussion SGDs						
Batches	Roll No	Subgroup	Anatomy Teacher	Venue	Batches	Roll No	Subgroup	Physiology Teacher	Physiology Venue	Biochemistry Teacher	Biochemistry Venue
A	01- 70	A1: Roll No (1 – 17) A2: Roll No (18 – 34) A3: Roll No (35 – 51) A4: Roll No (52 – 70)	Dr. Zeneera Saqib (Demonstrator)	New Lecture Hall Complex 01 / Anatomy Museum	A	01-70	A1: Roll No (1 – 14) A2: Roll No (15 – 28) A3: Roll No (29 – 42) A4: Roll No (43 – 56) A5: Roll No (57 – 70)	Dr. Sheena Tariq (APWMO)	Physiology Lecture Hall 5	Dr. Uzma Zafar (APWMO)	Basement Lecture Hall No. 2
B	71-140	B1: Roll No (71 – 87) B2: Roll No (88 – 104) B3: Roll No (105 – 121) B4: Roll No (122 – 140)	Dr. Tayyaba Qureshi (Assistant Professor)	Anatomy Lecture Hall 03	B	71-140	B1: Roll No (71 – 84) B2: Roll No (85 – 98) B3: Roll No (99 – 112) B4: Roll No (113 – 126) B5: Roll No (127 – 140)	Dr. Uzma Kiyani (Senior Demonstrator)	Physiology Lecture Hall 5	Dr. Rahat (APWMO)	Basement Lecture Hall No. 2
C	141-210	C1: Roll No (141 – 157) C2: Roll No (158 – 174) C3: Roll No (175 – 191) C4: Roll No (192 – 210)	Dr. Nida Fatima (Demonstrator)	Anatomy Lecture Hall 04	C	141-210	C1: Roll No (141 – 154) C2: Roll No (155 – 168) C3: Roll No (169 – 182) C4: Roll No (183 – 196) C5: Roll No (197 – 210)	Dr. Farah Shah (Demonstrator)	Physiology Lecture Hall 5	Dr. Almas (APWMO)	Basement Lecture Hall No. 2
D	211- 280	D1: Roll No (211 – 227) D2: Roll No (228 - 244) D3: Roll No (245 – 261) D4: Roll No (262 – 280)	Dr. Sajjad Hussain (Senior. Demonstrator)	New Lecture Hall Complex 02	D	211-280	D1: Roll No (211 – 224) D2: Roll No (225 – 238) D3: Roll No (239 – 252) D4: Roll No (253 – 266) D5: Roll No (267 – 280)	Dr. Nazia (Demonstrator)	Physiology Lecture Hall 5	Dr. Sana Latif (Senior Demonstrator)	Basement Lecture Hall No. 2
E	281- onwards	E1: Roll No (281 – 297) E2: Roll No (298 – 314) E3: Roll No (315 – 331) E4: Roll No (332 – onwards)	Dr. Nafeesa (Assistant Professor)	New Lecture Hall Complex 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. Ali Zain / Dr. Afsheen (P. G Trainee)	Physiology Lecture Hall 5	Dr. Romessa (Demonstrator)	Basement Lecture Hall No. 2
Supervised by Prof. Dr. Ayesha Yousaf					Supervised by Prof. Dr. Samia Sarwar					Supervised by. Dr. Aneela Jamil	

Hematology & Immunity Module-I (Fourth Week)

(10-08-2026 To 15-08-2026)

Date/Day	Theme	8:00am-9:20am		9:20am – 10:10am		10:10am – 10:30am	10:30am-11:20am		11:20am-12:10pm		12:10pm-12:30pm	12:30pm – 2:00pm	Home Assignments(2HRS)
10-08-2026 Monday	Recurrent Infections, Fever & Lymphadenopathy	SGD/DISSECTION				Break	ANATOMY (LGIS)		PHYSIOLOGY (LGIS)		Break	Practical & SGD/CBL Topics & venue mentioned at the end	SDL Physiology Red cell fragility, ESR & Red cell indices, Anemia & polycythemia
		Thymus, Tonsils and Spleen					Histology & Development of Thymus and Tonsils	Histology and Development of Spleen	Physiological mechanism of temperature regulation	ABO & Rh Blood grouping system			
							Dr. Nafeesa (Odd)	Dr. Tayyaba (Even)	Dr. Shazia (Even)	Dr. Fahad (Odd)			
11-08-2026 Tuesday		SGD/DISSECTION					BIOCHEMISTRY (LGIS)		PHYSIOLOGY (LGIS)			Practical & SGD/CBL Topics & venue mentioned at the end	SDL Physiology Monocyte & Macrophage System
		Radiology, Surface Anatomy & Cross-Sectional Anatomy					Vitamin 9 and vitamin B12	Transferrin, ferritin	Rh Blood grouping system and Erythroblastosis fetalis	Role of Hypothalamus in temperature regulation			
							Dr. Almas (Odd)	Dr. Tayba Hashmi (Even)	Dr. Fahad (Even)	Dr. Shazia (Odd)			
12-08-2026 Wednesday		MEDICINE (LGIS)		BIOCHEMISTRY (LGIS)			ANATOMY (LGIS)		PHYSIOLOGY (LGIS)			Practical & SGD/CBL Topics & venue mentioned at the end	SDL Biochemistry Clinical Aspects of Hematopoietic Vitamins
		Pyrexia of Unknown Origin		Immunoglobulins	Iron		Histology & Development of Thymus and Tonsils	Histology and Development of Spleen	Role of Hypothalamus in temperature regulation	Rh Blood grouping system and Erythroblastosis fetalis			
							Dr. Waqar Cheema (Even)	Dr. Shaheer (Odd)	Dr. Tayba Hashmi (Even)	Dr. Uzma (Odd)				Dr. Nafeesa (Even)	Dr. Tayyaba (Odd)	Dr. Shazia (Even)	Dr. Fahad (Odd)
13-08-2026 Thursday		SGD/DISSECTION					FAMILY MEDICINE		PHYSIOLOGY (LGIS)			Practical & SGD/CBL Topics & venue mentioned at the end	SDL Biochemistry Iron Deficiency Anemia
		Dissection					The Role of Primary Care in Early Detection and Preventive Management of Recurrent Pediatric Infections		Disorders of temperature regulation (Fever, Heat stroke, Exposure of body to extreme cold)	Blood transfusion hazards. Tissue and organ transplantations			
									Dr. Sadia (Odd)	Dr. Sidra (Even)				Dr. Shazia (Even)	Dr. Fahad (Odd)
14-08-2026 Friday	Independence Day											SDL Anatomy Splenic Rupture Portal Hypertension	
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(2HRS)
15-08-2026 Saturday	BIOCHEMISTRY (LGIS)		MEDICINE		Break	CLINICO-CONCEPT CONNECT (C ³ 6) SESSION - IV		PHYSIOLOGY (LGIS)		Break	Practical & SGD/CBL Topics & venue mentioned at the end	SDL Anatomy Trendelenburg Gait Steppage Gait End Clinico-Concept Connect (C36) Session Evaluation	
	Immunoglobulins	Iron	Autoimmune Diseases Rheumatic Fever and its Complication			Recurrent Infections, Fever & Lymphadenopathy		Disorders of temperature regulation (Fever, Heat stroke, Exposure of body to extreme cold)	Blood transfusion hazards. Tissue and organ transplantations				
						Anatomy	Dr. Zenera						
						Physiology	Dr. Farah						
						Biochemistry	Dr. Khalid						
						Pediatrics	Dr. Sheryar Shahir						
			Pathology	Dr. Sarah									
		Family Medicine	Dr. Sadia / Dr. Sidra		Dr. Shazia (Odd)	Dr. Fahad (Even)							

Table No. 1 (Time: 12:30pm – 02:00pm)															
Batch Distribution for Practical Skills (all subjects) CBL / Small Group Discussion (Biochemistry and Physiology)			Topics for Skill Lab with Venue - Tonsils (Anatomy Histology Practical) Venue-Histology Laboratory (Dr. Kashif) - Haemin crystals (Biochemistry Practical) Venue- Biochemistry Laboratory - Recording of Body temperature (BT) (Physiology Practical) Venue – Physiology Lab	Day	Histology Practical		Biochemistry Practical		Physiology Practical			Physiology SGD		Biochemistry SGD	
					Batch	Teacher Name	Batch	Teacher Name	Supervised by HOD	Batch		Teacher Name	Supervised by HOD	Batch	Teacher Name	Batch	Teacher Name
Sr. No	Batch	Roll No.	Monday	C	Supervised by HOD	B	Dr. Rahat	E		Dr. Ali /Dr. Afsheen	A	Dr. Sheena		D	Dr. Uzma Zafar
1.	A	01-70	Tuesday	D		C	Dr. Almas	A		Dr. Sheena	B	Dr. Uzma		E	Dr. Romessa
2.	B	71-140	Wednesday	E		D	Dr. Uzma	B		Dr. Uzma	C	Dr. Farah		A	Dr. Sana Latif
3.	C	141-210	Thursday	B		A	Dr. Sana Latif	D		Dr. Nazia	E	Dr. Ali/Dr. Afsheen		C	Dr. Almas
4.	D	211-280	Saturday	A		E	Dr. Romessa	C		Dr. Farah	D	Dr. Nazia		B	Dr. Rahat
5.	E	281-onwards													
			Topics for SGDs / CBL with Venue												
			- Physiology SGD- Physiological mechanism of temperature regulation (Venue: Lecture Hall No 5) - Biochemistry CBL – Iron (Lecture Hall No 2)												

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

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

Table No. 4 Batch Distribution and Venues for Anatomy Small Group Discussion SGDs / Dissections					Table No. 5 Batch Distribution and Venues for Physiology & Biochemistry Small Group Discussion SGDs						
Batches	Roll No	Subgroup	Anatomy Teacher	Venue	Batches	Roll No	Subgroup	Physiology Teacher	Physiology Venue	Biochemistry Teacher	Biochemistry Venue
A	01- 70	A1: Roll No (1 – 17) A2: Roll No (18 – 34) A3: Roll No (35 – 51) A4: Roll No (52 – 70)	Dr. Zeneera Saqib (Demonstrator)	New Lecture Hall Complex 01 / Anatomy Museum	A	01-70	A1: Roll No (1 – 14) A2: Roll No (15 – 28) A3: Roll No (29 – 42) A4: Roll No (43 – 56) A5: Roll No (57 – 70)	Dr. Sheena Tariq (APWMO)	Physiology Lecture Hall 5	Dr. Uzma Zafar (APWMO)	Basement Lecture Hall No. 2
B	71-140	B1: Roll No (71 – 87) B2: Roll No (88 – 104) B3: Roll No (105 – 121) B4: Roll No (122 – 140)	Dr. Tayyaba Qureshi (Assistant Professor)	Anatomy Lecture Hall 03	B	71-140	B1: Roll No (71 – 84) B2: Roll No (85 – 98) B3: Roll No (99 – 112) B4: Roll No (113 – 126) B5: Roll No (127 – 140)	Dr. Uzma Kiyani (Senior Demonstrator)	Physiology Lecture Hall 5	Dr. Rahat (APWMO)	Basement Lecture Hall No. 2
C	141-210	C1: Roll No (141 – 157) C2: Roll No (158 – 174) C3: Roll No (175 – 191) C4: Roll No (192 – 210)	Dr. Nida Fatima (Demonstrator)	Anatomy Lecture Hall 04	C	141-210	C1: Roll No (141 – 154) C2: Roll No (155 – 168) C3: Roll No (169 – 182) C4: Roll No (183 – 196) C5: Roll No (197 – 210)	Dr. Farah Shah (Demonstrator)	Physiology Lecture Hall 5	Dr. Almas (APWMO)	Basement Lecture Hall No. 2
D	211- 280	D1: Roll No (211 – 227) D2: Roll No (228 - 244) D3: Roll No (245 – 261) D4: Roll No (262 – 280)	Dr. Sajjad Hussain (Senior. Demonstrator)	New Lecture Hall Complex 02	D	211-280	D1: Roll No (211 – 224) D2: Roll No (225 – 238) D3: Roll No (239 – 252) D4: Roll No (253 – 266) D5: Roll No (267 – 280)	Dr. Nazia (Demonstrator)	Physiology Lecture Hall 5	Dr. Sana Latif (Senior Demonstrator)	Basement Lecture Hall No. 2
E	281- onwards	E1: Roll No (281 – 297) E2: Roll No (298 – 314) E3: Roll No (315 – 331) E4: Roll No (332 – onwards)	Dr. Nafeesa (Assistant Professor)	New Lecture Hall Complex 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. Ali Zain / Dr. Afsheen (P. G Trainee)	Physiology Lecture Hall 5	Dr. Romessa (Demonstrator)	Basement Lecture Hall No. 2
Supervised by Prof. Dr. Ayesha Yousaf					Supervised by Prof. Dr. Samia Sarwar					Supervised by. Dr. Aneela Jamil	

Schedule for LMS Based Weekly Online Assessments for First Year MBBS (Hematology & Immunity Module-I)

The online assessment for Hematology & Immunity Module-I for First Year MBBS will be as per following schedule:

Class	Module	Day & Date	Time of Assessment	Focal Person	Department Responsible
First Year MBBS	Hematology & Immunity Module-I	Monday 27 th July, 2026	7:00 pm-7:30pm	Prof. Dr Ayesha Yousaf	Anatomy
		Tuesday 28 th July, 2026	7:00 pm-7:30pm	Prof. Dr Samia Sarwar	Physiology
		Wednesday 29 th July, 2026	7:00 pm-7:30pm	Dr Aneela Jamil	Biochemistry
		Monday 03 rd August, 2026	7:00 pm-7:30pm	Prof. Dr Ayesha Yousaf	Anatomy
		Tuesday 04 th August, 2026	7:00 pm-7:30pm	Prof. Dr Samia Sarwar	Physiology
		Wednesday 05 th August, 2026	7:00 pm-7:30pm	Dr Aneela Jamil	Biochemistry

**Tentative Date Sheet for End of Hematology & Immunology Module-I Module Assessment
(17-08-2026 To 27-08-2026)**

Date/time	9:00am - 12:00pm	12:00-02:00pm
17-08-2026 Monday	Module Assessment	
18-08-2026 Tuesday		
19-08-2026 Wednesday		
20-08-2026 Thursday	Block Assessment	
21-08-2026 Friday		
22-08-2026 Saturday		
24-08-2026 Monday		
25-08-2026 Tuesday	Eid Milad un Nabi	
26-08-2026 Wednesday	Block Assessment	
27-08-2026 Thursday		

Note: Timetable Subject to Change According to The Current Circumstances

(Logistic details of Assessments will be notified separately)

Annexure I

Templates for Theory 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.

RMU-12
Integrated Modular Curriculum 2026
Isolation to Beyond Boundaries

Approved Template of Module Assessment

Multiple choice questions (MCQs)		% Weightage	Number of MCQs	Level of Cognition
Section A	Complimentary Integration (Theme Based) of Anatomy / Physiology / Biochemistry	(70%)	18MCQs	C1-C4
Section B	Integrations	(30%)		
	• Multidisciplinary Integration	(10%)	2 MCQs	C4
	• Interdisciplinary Integration	(5%)	1 MCQs	C4, C5
	• Transdisciplinary Integration	(5%)	2 MCQs	C5, C6
	• C ³ 6 Sessions Transdisciplinary Integration	(10%)	2 MCQs	C6

Chairperson

Department of _____
Rawalpindi Medical University, Rawalpindi

Additional Director Assessment

Rawalpindi Medical University
Rawalpindi

Director DME

Rawalpindi Medical University
Rawalpindi

Prof. Dr. Muhammad Umar

Vice Chancellor
Rawalpindi Medical University
Rawalpindi

Rawalpindi Medical University Rawalpindi
Department of Anatomy, Physiology & Biochemistry
MCQs & EMQ Paper for _____ Module, First Year MBBS Batch 53
Date: 00-00-0000

Total Marks: 30 (MCQs: 25, EMQ: 5)

Total Time: 30 Minutes

Each MCQ carries 1 mark and EMQ carries 5 marks

Roll No. _____

Name. _____

Encircle the single best response

Q.#	RMU-12 Integrated Modular Curriculum 2026 Isolation to Beyond Boundaries Integrated Modular Assessment of the Subject Anatomy, Physiology & Biochemistry Section A: Complimentary Integration 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%)		
Multidisciplinary Integration (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	C4
Interdisciplinary/Transdisciplinary Integration (15%)		

3.	Question a. b. c. d. e. USMLE: Type Question Reference: Ganong 25 th Edition Page No. 101	C5
C ³ 6 Sessions Integration (10%)		
4.	Question a. b. c. d. e. USMLE: Type Question Reference: Ganong 25 th Edition Page No. 101	C6
5.	Question a. b. c. d. e. USMLE: Type Question Reference: Ganong 25 th Edition Page No. 101	C6

RMU-12
Integrated Modular Curriculum 2026
Isolation to Beyond Boundaries
Approved Template of Module Assessment

Short Answer Questions (SAQs) Total Marks: 25 (Each SAQ carries 5 marks)	% Weightage	Number of SAQs	Level of Cognition
Complimentary Integration (Theme Based) of Anatomy / Physiology / Biochemistry	(60%)	3SAQ	C1-C4
Integrations	(40%)		
Multidisciplinary Integration	(20%)	1SAQ	C4
Interdisciplinary Integration / Transdisciplinary Integration / C ³ 6 Sessions Transdisciplinary Integration	(20%)	1SAQ	C4, C5

Short Essay Question (SEQs) Total Marks: 45 (Each SEQ carries 9 marks)	% Weightage	Number of SEQs	Level of Cognition
Complimentary Integration (Theme Based) of Anatomy / Physiology / Biochemistry	(60%)	3SEQ	C1-C4
Integrations	(40%)		
Multidisciplinary Integration	(20%)	1SEQ	C4
Interdisciplinary Integration / Transdisciplinary Integration / C ³ 6 Sessions Transdisciplinary Integration	(20%)	1SEQ	C4, C5

Chairperson
Department of _____
Rawalpindi Medical University, Rawalpindi

Additional Director Assessment
Rawalpindi Medical University
Rawalpindi

Director DME
Rawalpindi Medical University
Rawalpindi

Prof. Dr. Muhammad Umar
Vice Chancellor
Rawalpindi Medical University
Rawalpindi

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

RMU-12 Integrated Modular Curriculum 2026 Isolation to Beyond Boundaries Integrated Modular Assessment of the Subject Anatomy, Physiology & Biochemistry					
Integration			Percentage		
• Complimentary Integration (Theme Based) of Anatomy/Physiology Biochemistry (CI)			(70%)		
• Integration			(30%)		
○ Multidisciplinary Integration (MI)			(05%)		
○ Interdisciplinary (II)/Transdisciplinary Integration (TI)			(15%)		
○ C ³ 6 Assessment			(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)					
SA Q 1	A 55 years Male, known case of Coronary Artery Disease, presented to.....	CI & TI	.....	.....	.....
	a.	CI	2	8%	C2
	b.	CI	2	12%	C2

					
	c.	CI	2	8%	C2
	d.	CI	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	CI	1	8%	C2
Short Essay Question (SEQs) Total Marks: 45					
SEQ 1	A 55 years Male, known case of Coronary Artery Disease, presented to.....	CI & TI	.....	.....	..... ...
	a.	MI with Anatomy	2	6.66%	C4
	b.	CI	3	6.66%	C2
	c.	CI	2	6.66%	C2
	d.	CI	1	6.66%	C2
	e. USMLE Style Question. References: • Part a: Guyton & Hall 14 th Edition page # 101	CI	1	6.66%	C2

	• Part b: Guyton & Hall 14th Edition Page # 103 • Part c: Guyton & Hall 14th Edition Page # 103				
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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

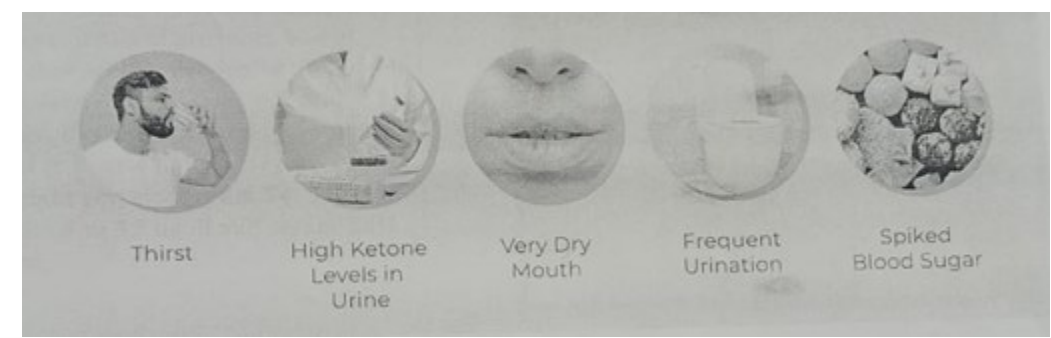
Core Knowledge with Horizontal / Vertical / Spiral Integration

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
Haematology & Immunology Module-I (Structured Viva)

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

Roll no: 181 onwards

[illegible]

P: Punctuality, D: Dressing, C: Communication

Instructions:

All students should bring their gross sketch copy
University ID CARD is must during viva examination

Prof. Dr. Ayesha Yousaf
Head of Anatomy Department
Rawalpindi Medical University
Rawalpindi

Department of Physiology
Haematology & Immunology Module-I (Structured Viva)

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

[illegible]

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

Department of Biochemistry
Heamatology & Immunology 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) (06 Marks)	Additional domains of Knowledge to be assessed Family Medicine, Artificial Intelligence, Ethics and Research (C1, C2, C3) (02 Marks)	Professionalism & Behavior (A3) (04 Marks)	Total marks (25)

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

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

1. A 21-year-old boy had a motorcycle accident. On x-ray groove in the lower surface of the cuboid bone was destroyed. Which of the following muscle tendons is most likely damaged? A). Flexor hallucis longus B). Peroneus brevis C). Peroneus longus D). Tibialis anterior E). Tibialis posterior	Anatomy
2. A 6-year-old boy is brought to the pediatric clinic for a routine follow-up. He has β -thalassemia major and receives regular blood transfusions. On examination, he appears pale with mild hepatosplenomegaly. His serum ferritin levels are significantly elevated. MRI shows iron deposition in the liver. A liver biopsy reveals golden-yellow granules that stain positively with Prussian blue. Which of the following is the most likely insoluble storage form of iron found in his tissues due to iron overload? A). Ferritin B). Apoferritin C). Hemopexin D). Hemosiderin E). Ferroheme	Physiology
3. A 4-day-old newborn is brought to the emergency department with excessive bleeding from the umbilical stump and oozing from the site of a recent heel prick. The infant was born at home and has not received any vaccinations or supplements since birth. Physical examination reveals pallor and mild hepatomegaly. Laboratory tests show prolonged prothrombin time (PT) and normal platelet count. Which of the following steps in the coagulation pathway is most dependent on the vitamin that this infant is deficient in? A) Conversion of prothrombin to thrombin B) Synthesis of prothrombin C) Conversion of fibrinogen to fibrin D) Formation of thromboplastin E) Fibrinolysis	Biochemistry

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

Q1. A 28-year-old patient presents with generalized lymphadenopathy and splenomegaly. To investigate the underlying cause, a lymph node biopsy is performed. Histological analysis reveals atypical features. The clinician suspects either a reactive process due to infection or a hematological malignancy such as lymphoma.1. Which nerve is damaged? 1) - What key histological features should be assessed in a lymph node biopsy to help determine the cause of lymphadenopathy? - If the cause of lymphadenopathy is due to an infectious process, what specific histological changes might be expected? - How can reactive (benign) lymphadenopathy be distinguished from malignant lymphoma on histological examination? - What additional immunohistochemical markers could assist in differentiating Hodgkin lymphoma from non-Hodgkin lymphoma? - In the setting of splenomegaly, what histopathological features of the spleen may suggest an underlying hematological malignancy or chronic infection?	Anatomy
Q2. A 21-year-old female college student complains of fatigue, dizziness, and shortness of breath. She follows a vegan diet and has heavy menstrual periods. Her roommate, a male athlete on a calorie-restricted diet, experiences muscle loss and weakness despite adequate protein intake. - Identify and briefly describe three different causes of anemia that may be relevant to the student in this case. - How can nutritional deficiencies, such as iron, vitamin B12, or folate, contribute to different types of anemia? - What is meant by obligatory degradation of proteins, and why does it occur during prolonged fasting or low energy intake? - What clinical consequences might arise from excessive protein breakdown in athletes or undernourished individuals? - Suggest three effective strategies to help prevent or reduce obligatory protein degradation in individuals under physical or dietary stress.	Physiology
Q3. A 56-year-old man with a history of chronic liver disease presents with abdominal swelling and bilateral leg edema. Physical examination reveals shifting dullness, pitting pedal edema, and mild jaundice. Laboratory results show a serum albumin level of 2.1 g/dL (normal: 3.5–5.0 g/dL), elevated liver enzymes, and prolonged prothrombin time. A diagnosis of hypoalbuminemia secondary to liver cirrhosis is made. What is the most likely diagnosis? - What are three key physiological functions of albumin in the human body? - How does hypoalbuminemia lead to edema and ascites in this patient? - What is the role of albumin in transporting substances in the blood? Give two examples of molecules it carries. - Why does liver disease often result in low albumin levels, and how can this affect overall plasma oncotic pressure? - Besides liver disease, list two other conditions that can lead to hypoalbuminemia and briefly explain the mechanism in each.	Biochemistry

Sample Paper of EMQ

Topic: Thalassemia

Theme: Diagnosis, pathophysiology, and clinical features of Thalassemia

Instruction:

For each of the following clinical scenarios (1–4), select the most appropriate option from the list of options (A–H). Each option may be used once, more than once, or not at all.

Options:

- A. Beta-thalassemia major
- B. Alpha-thalassemia trait
- C. Beta-thalassemia trait
- D. Alpha-thalassemia major (Hb Bart's)
- E. Iron deficiency anemia
- F. Sickle cell disease
- G. Hereditary spherocytosis
- H. Anemia of chronic disease

Clinical Scenarios:

1. A 2-year-old child of Mediterranean descent presents with severe pallor, hepatosplenomegaly, and failure to thrive. Peripheral smear shows target cells and nucleated red blood cells. Hemoglobin electrophoresis reveals elevated HbF and very low HbA.

Answer: _____

2. A 22-year-old woman is found to have mild microcytic hypochromic anemia during routine screening. She is asymptomatic. Her iron profile is normal, and Hb electrophoresis shows slightly elevated HbA₂.

Answer: _____

3. A newborn is delivered at 34 weeks and rapidly develops hydrops fetalis and dies shortly after birth. Prenatal screening reveals a deletion of all four alpha-globin genes.

Answer: _____

4. A 19-year-old man presents with mild anemia. His red blood cell indices show microcytosis and hypochromia. Hemoglobin electrophoresis is normal, and genetic testing reveals deletion of two alpha-globin genes.

Answer: _____

Rawalpindi Medical University
1st Year MBBS Model AV OSPE

Slide 1 / Video

Core Knowledge with Horizontal / Vertical / Spiral Integration

Topic: Iron Deficiency Anemia

Teaching Strategy: Small Group Discussion

Requirements: Answer sheet, Pen

Objective: To Assess the Knowledge of Students Regarding Iron Deficiency Anemia



1. What are the common causes of Iron Deficiency Anemia? (1)
2. What are the key clinical features of Iron Deficiency Anemia? (1)
3. What would you expect in the peripheral blood smear of a patient with Iron Deficiency Anemia? (1)
4. How is Iron Deficiency Anemia diagnosed through laboratory tests? (1)
5. What is the treatment for Iron Deficiency Anemia? (1)

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

Observed Station ____

Marks: 05

Time Allowed: 03 Minutes

Subject: Physiology

Topic assessed: Hematological Analysis

Requirements: Complete Blood Count Reports

Objective: To Interpret the Reports

For Candidate:	Learning domain	Marks
A 19-year-old college student visits the clinic complaining of persistent fatigue, occasional dizziness, and mild shortness of breath during physical activity. She reports heavy menstrual bleeding over the past few months. On examination, she appears pale with mild tachycardia but no lymphadenopathy or organomegaly. Her laboratory investigations reveal the following CBC results:	Psychomotor (C1)	5 Marks

Parameter	Result	Reference Range
Hemoglobin (Hb)	8.5 g/dL	12–16 g/dL
Hematocrit (Hct)	27%	36–48%
Total Leukocyte Count	7,500 /mm ³	4,000–11,000 /mm ³
Platelet Count	350,000 /mm ³	150,000–400,000 /mm ³
Mean Corpuscular Volume (MCV)	70 fL	80–100 fL
Mean Corpuscular Hemoglobin (MCH)	22 pg	27–33 pg
Mean Corpuscular Hemoglobin Concentration (MCHC)	31 g/dL	32–36 g/dL

Key Station ____

Requirements: Complete Blood Count Reports

Q1	Answer	Marks
1	What does a low hemoglobin (Hb) level indicate? Name two possible causes.	1
2	If the Mean Corpuscular Volume (MCV) is decreased, what type of anemia does this suggest?	1
3	Explain the significance of an elevated Total Leukocyte Count (TLC). What conditions can cause this?	1
4	What does a low platelet count (thrombocytopenia) imply, and what clinical signs might you expect?	1
5	How would you interpret a high Mean Corpuscular Hemoglobin Concentration (MCHC)? Which condition is it commonly associated with?	1

Annexure II

Hematology & Immunology Module-I Entrustable Professional Activities (EPAs)

Theme 1: Fatigue, Pallor & Reduced Exercise Tolerance

EPA 1

1. Title of the EPA

Obtain a focused history in a patient presenting with fatigue, pallor, and reduced exercise tolerance

2. Specification and limitations

This EPA includes:

1. Establishing rapport with the patient in a respectful and professional manner.
2. Obtaining a focused history of presenting complaints including fatigue, generalized weakness, pallor, palpitations, dyspnea on exertion, and reduced exercise tolerance.
3. Asking relevant questions about onset, duration, progression, severity, associated symptoms, dietary history, menstrual history, bleeding history, drug history, and family history.
4. Identifying possible risk factors for anemia such as poor nutrition, chronic blood loss, and recurrent illness.
5. Summarizing the history in a logical sequence and presenting it to the facilitator.

Context: outpatient clinic, skills lab, simulated patient, or classroom-based clinical teaching.

Limitations:

This EPA is limited to focused history taking only and does not include independent diagnosis, detailed physical examination, interpretation of advanced investigations, or management planning. It is intended for early undergraduate medical students under faculty supervision.

3. Most relevant domains of competence

- Medical Expert ✓
- Communicator ✓
- Collaborator ✓
- Professional ✓

- Scholar ✓
- Health Advocate ✓
- Manager ✗

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

Knowledge

- Basic understanding of the clinical features of anemia.
- Basic concepts of hemoglobin function, oxygen transport, erythropoiesis, and iron deficiency.
- Awareness of common causes of fatigue and pallor in a young patient.
- Knowledge of the importance of diet, menstrual blood loss, and chronic illness in anemia.

Skill

- Ability to take a focused, organized, and relevant history.
- Ability to ask appropriate follow-up questions regarding symptoms, severity, duration, and associated factors.
- Ability to identify important red flag features and relevant risk factors.
- Ability to present the history clearly and concisely to the teacher or clinical supervisor.

Attitude and behaviour

- Respectful and empathetic communication with the patient.
- Maintenance of privacy, confidentiality, and professionalism.
- Attentive listening without interruption.
- Willingness to seek guidance when uncertain.

Experience

- Observed focused history taking in at least 2–3 anemia-related cases or simulations.
- Performed focused history taking under supervision on at least 3–5 patients / simulated patients.
- Participated in structured feedback sessions with faculty.

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

- Direct observation by facilitator during history taking.

- Mini-CEX / structured history-taking checklist.
- Case-based discussion.
- Oral presentation of the case summary.
- Feedback from simulated patient or faculty.

6. Entrustment for which level of supervision is to be reached at which stage of training?

By the end of the Hematology & Immunity Module / first year MBBS, the student should be able to obtain a focused history in such a patient with direct supervision and present the findings in an organized manner.

7. Expiration date

6–12 months without practice or until reinforced in subsequent clinical skills teaching.

EPA 2

1. Title of the EPA

Perform a general physical examination to identify pallor and other basic signs of anemia

2. Specification and limitations

This EPA includes:

1. Greeting the patient, explaining the examination, and taking consent.
2. Performing a general physical examination in a systematic manner.
3. Identifying pallor at relevant sites such as conjunctiva, nail beds, palms, and oral mucosa.
4. Looking for other basic signs that may be associated with anemia, such as tachycardia, koilonychia, glossitis, or general weakness.
5. Maintaining patient comfort, privacy, and professional behavior during the examination.
6. Summarizing the examination findings in a clear and organized manner.

Context: skills lab, classroom-based clinical session, outpatient setting, or simulated patient encounter.

Limitations:

This EPA is limited to general physical examination only. It does not include detailed systemic examination, independent diagnosis, interpretation of investigations, or treatment planning. It is intended for early undergraduate medical students under faculty supervision.

3. Most relevant domains of competence

- Medical Expert ✓
- Communicator ✓
- Collaborator ✓
- Professional ✓
- Scholar ✓
- Health Advocate ✓
- Manager ✗

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

Knowledge

- Basic understanding of the clinical signs of anemia, especially pallor.
- Knowledge of common sites where pallor is best examined.
- Basic concepts of hemoglobin deficiency and reduced oxygen-carrying capacity.
- Awareness of simple physical signs associated with nutritional anemia.

Skill

- Ability to perform a structured general physical examination.
- Ability to correctly examine for pallor in appropriate anatomical sites.
- Ability to identify and report other basic physical signs relevant to anemia.
- Ability to present examination findings clearly to the facilitator.

Attitude and behaviour

- Respect for patient dignity, privacy, and comfort.
- Polite communication and appropriate explanation before examination.
- Gentle and professional approach during examination.
- Willingness to accept correction and improve examination technique.

Experience

- Observed examination of patients with pallor/anemia in at least 2–3 supervised sessions.
- Performed general physical examination under supervision on at least 3–5 patients or simulated patients.
- Received structured feedback from faculty on examination technique.

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

- Direct observation by faculty during physical examination.
- Mini-CEX / structured clinical skills checklist.
- OSCE / station-based assessment.
- Case-based discussion.
- Faculty feedback on examination technique and presentation of findings.

6. Entrustment for which level of supervision is to be reached at which stage of training?

By the end of the Hematology & Immunity Module / first year MBBS, the student should be able to perform a general physical examination for pallor and related signs under direct supervision and report the findings appropriately.

7. Expiration date

6–12 months without practice or until reinforced in later clinical skills sessions.

EPA 3

1. Title of the EPA

Correlate clinical findings with basic science concepts and recognize the need for initial investigations and counseling

2. Specification and limitations

This EPA includes:

1. Identifying key clinical findings such as fatigue, pallor, weakness, palpitations, and reduced exercise tolerance.
2. Relating these findings to relevant basic science concepts, including hemoglobin function, oxygen transport, erythropoiesis, iron deficiency, and reduced oxygen-carrying capacity of blood.
3. Recognizing the need for basic initial investigations such as complete blood count (CBC), hemoglobin level, and peripheral blood film, as guided by the facilitator.
4. Explaining, at an introductory level, the importance of dietary advice, adherence to treatment, and follow-up.

5. Communicating findings and reasoning in a structured and simple manner.

Context: classroom discussion, CBL session, skills lab, outpatient teaching, or simulated patient encounter.

Limitations:

This EPA is limited to introductory clinical reasoning using basic sciences only. It does not include independent diagnosis, advanced interpretation of investigations, prescription writing, or definitive management. It is intended for early undergraduate medical students under faculty supervision.

3. Most relevant domains of competence

- Medical Expert ✓
- Communicator ✓
- Collaborator ✓
- Professional ✓
- Scholar ✓
- Health Advocate ✓
- Manager ✗

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

Knowledge

- Basic understanding of hemoglobin structure and function.
- Knowledge of oxygen transport and the effect of anemia on tissue oxygenation.
- Basic concepts of erythropoiesis, iron metabolism, and nutritional anemia.
- Awareness of simple initial investigations used in suspected anemia.

Skill

- Ability to relate common symptoms and signs of anemia to underlying physiological and biochemical mechanisms.
- Ability to identify when basic investigations are needed.
- Ability to explain the need for simple counseling regarding diet, compliance, and follow-up.
- Ability to present clinical reasoning in a clear and organized way.

Attitude and behaviour

- Honest and logical approach to interpreting findings.
- Respectful communication with patient and teacher.
- Awareness of one's level of competence and readiness to seek guidance.
- Professional and responsible attitude during clinical discussion and counseling.

Experience

- Participated in at least 2–3 case-based discussions related to anemia.
- Practiced correlating symptoms and signs with basic science concepts under supervision.
- Observed or participated in supervised discussions on initial investigations and counseling in simple anemia cases.
- Received feedback from faculty on reasoning and communication.

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

- Case-based discussion (CBD).
- Direct observation during tutorial / CBL / clinical discussion.
- Structured oral presentation of clinical reasoning.
- Mini-CEX / short case assessment.
- Faculty feedback on interpretation and counseling approach.

6. Entrustment for which level of supervision is to be reached at which stage of training?

By the end of the Hematology & Immunity Module / first year MBBS, the student should be able to correlate basic clinical findings with underlying science concepts and identify the need for initial investigations and counseling under direct supervision.

7. Expiration date

6–12 months without practice or until reinforced in future integrated clinical learning sessions.

Theme 2: Jaundice & Dark Urine with Hepatosplenomegaly

EPA 1

1. Title of the EPA

Obtain a focused history in a child presenting with jaundice, dark urine, and abdominal fullness

2. Specification and limitations

This EPA includes:

1. Establishing rapport with the child and caregiver in a respectful and age-appropriate manner.
2. Obtaining a focused history of presenting complaints including jaundice, dark urine, abdominal fullness, pallor, weakness, reduced activity, and duration/progression of symptoms.
3. Asking relevant questions about previous similar episodes, fever, appetite, drug intake, blood transfusion, family history of blood disorders, and history suggestive of hemolysis or liver disease.
4. Eliciting associated features such as abdominal discomfort, decreased play activity, urine color changes, and history of anemia.
5. Summarizing the history in a logical sequence and presenting it to the facilitator.

Context: outpatient clinic, pediatric teaching session, skills lab, simulated patient encounter, or classroom-based clinical teaching.

Limitations:

This EPA is limited to focused history taking only. It does not include independent diagnosis, physical examination, detailed interpretation of investigations, or management planning.

It is intended for early undergraduate medical students under faculty supervision.

3. Most relevant domains of competence

- Medical Expert ✓
- Communicator ✓
- Collaborator ✓
- Professional ✓
- Scholar ✓
- Health Advocate ✓
- Manager ✗

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

Knowledge

- Basic understanding of the clinical significance of jaundice, dark urine, pallor, and abdominal fullness.

- Basic concepts of red blood cell destruction, hemoglobin breakdown, bilirubin formation, and hepatosplenomegaly.
- Awareness of common causes of jaundice in children at an introductory level.
- Knowledge of the importance of family history in inherited blood disorders.

Skill

- Ability to take a focused and organized pediatric history from the caregiver and, where appropriate, from the child.
- Ability to ask appropriate follow-up questions regarding onset, duration, recurrence, progression, and associated symptoms.
- Ability to identify important red flag features such as recurrent jaundice, dark urine, abdominal enlargement, and family history of blood disorders.
- Ability to summarize and present the history clearly to the teacher or facilitator.

Attitude and behaviour

- Respectful, empathetic, and age-appropriate communication with the child and caregiver.
- Maintenance of privacy, confidentiality, and professionalism.
- Patience and attentive listening during history taking.
- Willingness to seek guidance when uncertain.

Experience

- Observed focused pediatric history taking in at least 2–3 supervised cases or simulations.
- Performed focused history taking under supervision on at least 3–5 children / simulated pediatric cases.
- Participated in faculty-guided feedback sessions on communication and history-taking skills.

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

- Direct observation by facilitator during history taking.
- Mini-CEX / structured history-taking checklist.
- Case-based discussion.
- Oral presentation of the history summary.
- Faculty or simulated patient feedback.

6. Entrustment for which level of supervision is to be reached at which stage of training?

By the end of the Hematology & Immunity Module / first year MBBS, the student should be able to obtain a focused history in a child with jaundice, dark urine, and abdominal fullness under direct supervision and present the findings in an organized manner.

7. Expiration date

6–12 months without practice or until reinforced in subsequent clinical skills teaching.

EPA 2

1. Title of the EPA

Perform a general and abdominal examination to identify pallor, icterus, and hepatosplenomegaly

2. Specification and limitations

This EPA includes:

1. Greeting the child and caregiver, explaining the examination, and taking consent in an age-appropriate manner.
2. Performing a general physical examination in a systematic manner.
3. Identifying pallor and icterus at appropriate sites such as conjunctiva, nail beds, palms, oral mucosa, and sclera.
4. Performing an abdominal examination to look for hepatomegaly and splenomegaly.
5. Maintaining patient comfort, privacy, and professionalism throughout the examination.
6. Summarizing the examination findings in a clear and organized manner.

Context: pediatric outpatient clinic, skills lab, classroom-based clinical session, or simulated patient encounter.

Limitations:

This EPA is limited to general and abdominal examination only. It does not include independent diagnosis, detailed systemic examination, interpretation of investigations, or management planning. It is intended for early undergraduate medical students under faculty supervision.

3. Most relevant domains of competence

- Medical Expert ✓
- Communicator ✓
- Collaborator ✓
- Professional ✓

- Scholar ✓
- Health Advocate ✓
- Manager ✗

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

Knowledge

- Basic understanding of the clinical signs of pallor, icterus, hepatomegaly, and splenomegaly.
- Knowledge of common examination sites for detecting anemia and jaundice.
- Basic concepts of liver and spleen enlargement in relation to hemolytic disorders and jaundice.
- Awareness of the importance of abdominal examination in a child with jaundice and abdominal fullness.

Skill

- Ability to perform a structured general physical examination in a child.
- Ability to correctly examine for pallor and icterus at appropriate anatomical sites.
- Ability to perform inspection, palpation, and basic abdominal assessment to detect hepatosplenomegaly.
- Ability to present examination findings clearly and logically to the facilitator.

Attitude and behaviour

- Respectful, gentle, and age-appropriate approach toward the child.
- Maintenance of privacy, comfort, and professionalism during examination.
- Clear communication with the caregiver and reassurance of the child.
- Willingness to accept feedback and improve examination technique.

Experience

- Observed examination of children with pallor, jaundice, or abdominal enlargement in at least 2–3 supervised sessions.
- Performed general and abdominal examination under supervision on at least 3–5 children or simulated pediatric cases.
- Received structured faculty feedback on examination technique and clinical presentation.

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

- Direct observation by faculty during physical examination.

- Mini-CEX / structured clinical skills checklist.
- OSCE / station-based assessment.
- Case-based discussion.
- Faculty feedback on examination technique and presentation of findings.

6. Entrustment for which level of supervision is to be reached at which stage of training?

By the end of the Hematology & Immunity Module / first year MBBS, the student should be able to perform a general and abdominal examination for pallor, icterus, and hepatosplenomegaly under direct supervision and report the findings appropriately.

7. Expiration date

6–12 months without practice or until reinforced in later clinical skills sessions.

EPA 3

1. Title of the EPA

Correlate clinical findings with basic science concepts and recognize the need for initial investigations and referral

2. Specification and limitations

This EPA includes:

1. Identifying key clinical findings such as jaundice, dark urine, pallor, weakness, and hepatosplenomegaly.
2. Relating these findings to relevant basic science concepts, including red blood cell destruction, hemoglobin breakdown, bilirubin formation, and spleen and liver involvement.
3. Recognizing the need for basic initial investigations such as complete blood count (CBC), hemoglobin level, peripheral blood film, and serum bilirubin, as guided by the facilitator.
4. Recognizing when the child requires further referral for detailed evaluation.
5. Communicating findings and reasoning in a structured and simple manner.

Context: classroom discussion, CBL session, pediatric teaching session, skills lab, or simulated patient encounter.

Limitations:

This EPA is limited to introductory clinical reasoning using basic sciences only. It does not include independent diagnosis, advanced interpretation of investigations, prescription writing, or definitive management. It is intended for early undergraduate medical students under faculty supervision.

3. Most relevant domains of competence

- Medical Expert ✓
- Communicator ✓
- Collaborator ✓
- Professional ✓
- Scholar ✓
- Health Advocate ✓
- Manager ✗

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

Knowledge

- Basic understanding of hemoglobin breakdown and bilirubin metabolism.
- Knowledge of the relationship between hemolysis, jaundice, dark urine, and hepatosplenomegaly.
- Basic concepts of the role of liver and spleen in red cell destruction and pigment metabolism.
- Awareness of simple initial investigations used in a child with jaundice and anemia.

Skill

- Ability to relate common clinical findings to underlying physiological and biochemical mechanisms.
- Ability to identify when basic investigations are needed.
- Ability to recognize when a child requires further referral for assessment.
- Ability to present clinical reasoning in a clear and organized manner.

Attitude and behaviour

- Logical and honest approach to interpretation of findings.
- Respectful communication with child, caregiver, and teacher.
- Awareness of one's level of competence and readiness to seek guidance.
- Professional attitude during clinical discussion and counseling.

Experience

- Participated in at least 2–3 case-based discussions related to jaundice, anemia, or hepatosplenomegaly.
- Practiced correlating symptoms and signs with basic science concepts under supervision.
- Observed or participated in supervised discussions on initial investigations and referral in simple pediatric cases.
- Received structured faculty feedback on reasoning and communication.

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

- Case-based discussion (CBD).
- Direct observation during tutorial / CBL / clinical discussion.
- Structured oral presentation of clinical reasoning.
- Mini-CEX / short case assessment.
- Faculty feedback on interpretation and referral decision.

6. Entrustment for which level of supervision is to be reached at which stage of training?

By the end of the Hematology & Immunity Module / first year MBBS, the student should be able to correlate basic clinical findings with underlying science concepts and identify the need for initial investigations and referral under direct supervision.

7. Expiration date

6–12 months without practice or until reinforced in future integrated clinical learning sessions.

Theme 3: Easy Bruising, Prolonged Bleeding & Thrombotic Events

EPA 1

1. Title of the EPA

Obtain a focused history in a patient presenting with leg swelling, easy bruising, and prolonged bleeding

2. Specification and limitations

This EPA includes:

1. Establishing rapport with the patient in a respectful and professional manner.
2. Obtaining a focused history of presenting complaints including leg swelling, leg pain, easy bruising, gum bleeding, prolonged bleeding after minor trauma, and duration/progression of symptoms.

3. Asking relevant questions about recent surgery, prolonged immobilization, pregnancy/postpartum status, drug history especially anticoagulant use, previous bleeding episodes, and family history of bleeding or thrombotic disorders.
4. Eliciting associated features such as calf pain, warmth, difficulty in walking, spontaneous bruising, injection-site bleeding, and any history suggestive of venous thrombosis or coagulation disorder.
5. Summarizing the history in a logical sequence and presenting it to the facilitator.

Context: outpatient clinic, emergency teaching session, skills lab, simulated patient encounter, or classroom-based clinical teaching.

Limitations:

This EPA is limited to focused history taking only. It does not include independent diagnosis, physical examination, interpretation of investigations, or management planning. It is intended for second-year MBBS students under faculty supervision.

3. Most relevant domains of competence

- Medical Expert ✓
- Communicator ✓
- Collaborator ✓
- Professional ✓
- Scholar ✓
- Health Advocate ✓
- Manager ✗

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

Knowledge

- Basic understanding of the clinical significance of leg swelling, bruising, and prolonged bleeding.
- Basic concepts of hemostasis, coagulation, platelet function, and venous thrombosis.
- Awareness of common risk factors such as surgery, immobility, pregnancy/postpartum state, and anticoagulant use.
- Knowledge of the importance of family and drug history in bleeding and thrombotic disorders.

Skill

- Ability to take a focused and organized history in a patient with possible bleeding or thrombotic disorder.
- Ability to ask appropriate follow-up questions regarding onset, duration, severity, progression, and associated symptoms.
- Ability to identify important red flag features such as unilateral leg swelling, calf pain, spontaneous bruising, and persistent bleeding.
- Ability to summarize and present the history clearly to the teacher or facilitator.

Attitude and behaviour

- Respectful, empathetic, and professional communication with the patient.
- Maintenance of privacy, confidentiality, and professionalism.
- Attentive listening and non-judgmental approach during history taking.
- Willingness to seek guidance when uncertain.

Experience

- Observed focused history taking in at least 2–3 supervised cases or simulations involving bleeding or thrombotic symptoms.
- Performed focused history taking under supervision on at least 3–5 patients / simulated cases.
- Participated in faculty-guided feedback sessions on communication and history-taking skills.

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

- Direct observation by facilitator during history taking
- Mini-CEX / structured history-taking checklist
- Case-based discussion
- Oral presentation of the history summary
- Faculty or simulated patient feedback

6. Entrustment for which level of supervision is to be reached at which stage of training?

By the end of second-year MBBS, the student should reach EPA Level 2 for this activity.

Level 2 – May perform the task with direct, proactive supervision.

At this stage, the student should be able to obtain a focused history in a patient presenting with leg swelling, easy bruising, and prolonged bleeding under direct faculty supervision, with the supervisor available to guide, prompt, and verify the findings when needed.

7. Expiration date

6–12 months without practice or until reinforced in subsequent clinical skills teaching.

EPA 2

1. Title of the EPA

Perform a general and local examination to identify bruising, bleeding signs, and features suggestive of DVT

2. Specification and limitations

This EPA includes:

1. Greeting the patient, explaining the examination, and taking consent in a respectful and professional manner.
2. Performing a general physical examination in a systematic way.
3. Identifying bruising and bleeding signs such as ecchymosis, petechiae, gum bleeding, or prolonged bleeding from minor sites.
4. Performing a local examination of the affected lower limb to identify features suggestive of deep vein thrombosis (DVT), such as unilateral leg swelling, calf tenderness, warmth, and restricted mobility due to pain.
5. Maintaining patient comfort, privacy, and professionalism throughout the examination.
6. Summarizing the examination findings in a clear and organized manner.

Context: outpatient clinic, emergency teaching session, skills lab, simulated patient encounter, or classroom-based clinical teaching.

Limitations:

This EPA is limited to general and local physical examination only. It does not include independent diagnosis, detailed interpretation of investigations, or management planning. It is intended for second-year MBBS students under faculty supervision.

3. Most relevant domains of competence

- Medical Expert ✓
- Communicator ✓
- Collaborator ✓
- Professional ✓
- Scholar ✓

- Health Advocate ✓
- Manager ✗

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

Knowledge

- Basic understanding of the clinical signs of bleeding manifestations and venous thrombosis.
- Knowledge of common examination findings in easy bruising, prolonged bleeding, and unilateral leg swelling.
- Basic concepts of hemostasis, platelet disorders, coagulation abnormalities, and DVT.
- Awareness of the clinical importance of recognizing signs requiring urgent referral.

Skill

- Ability to perform a structured general physical examination.
- Ability to identify and describe bruises, petechiae, gum bleeding, and other visible bleeding signs.
- Ability to perform a local lower limb examination to identify swelling, tenderness, warmth, and asymmetry suggestive of DVT.
- Ability to present examination findings clearly and logically to the facilitator.

Attitude and behaviour

- Respectful and empathetic communication with the patient.
- Maintenance of privacy, dignity, and patient comfort during examination.
- Gentle and professional approach during local examination of a painful limb.
- Willingness to accept supervision and improve technique through feedback.

Experience

- Observed examination of patients or simulated cases with bleeding manifestations or leg swelling in at least 2–3 supervised sessions.
- Performed general and local examination under supervision on at least 3–5 patients / simulated cases.
- Participated in structured feedback sessions on examination technique and clinical presentation.

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

- Direct observation by faculty during examination
- Mini-CEX / structured clinical skills checklist

- OSCE / station-based assessment
- Case-based discussion
- Faculty feedback on examination technique and presentation of findings

6. Entrustment for which level of supervision is to be reached at which stage of training?

By the end of second-year MBBS, the student should reach EPA Level 2 for this activity.

Level 2 – May perform the task with direct, proactive supervision.

At this stage, the student should be able to perform a general and local examination to identify bruising, bleeding signs, and features suggestive of DVT under direct faculty supervision, with the supervisor available to guide, prompt, and verify the findings when needed.

7. Expiration date

6–12 months without practice or until reinforced in subsequent clinical skills teaching.

EPA 3

1. Title of the EPA

Correlate clinical findings with basic science concepts and recognize the need for urgent investigation and referral

2. Specification and limitations

This EPA includes:

1. Identifying key clinical findings such as leg swelling, calf pain, easy bruising, gum bleeding, and prolonged bleeding after minor trauma.
2. Relating these findings to relevant basic science concepts, including hemostasis, platelet function, coagulation pathways, vitamin K–dependent clotting factors, anticoagulant action, venous stasis, and thrombus formation.
3. Recognizing the need for urgent initial investigations such as complete blood count (CBC), platelet count, bleeding/clotting profile, PT, APTT, INR, and Doppler ultrasound of the affected limb, as guided by the facilitator.
4. Recognizing when the patient requires urgent referral for further evaluation and management.
5. Communicating the clinical reasoning in a clear, structured, and simple manner.

Context: classroom discussion, CBL session, emergency teaching session, skills lab, or simulated patient encounter.

Limitations:

This EPA is limited to introductory clinical reasoning using basic science concepts only. It does not include independent diagnosis, advanced interpretation of investigations, prescription writing, or definitive management. It is intended for second-year MBBS students under faculty supervision.

3. Most relevant domains of competence

- Medical Expert ✓
- Communicator ✓
- Collaborator ✓
- Professional ✓
- Scholar ✓
- Health Advocate ✓
- Manager ✗

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

Knowledge

- Basic understanding of hemostasis, coagulation cascade, platelet function, and thrombus formation.
- Knowledge of the relationship between bleeding manifestations and coagulation or platelet abnormalities.
- Basic concepts of venous thrombosis, especially in relation to surgery, immobility, pregnancy/postpartum state, and anticoagulant use.
- Awareness of common urgent investigations used in suspected bleeding or thrombotic disorders.

Skill

- Ability to relate common clinical findings to underlying physiological, biochemical, and pathological mechanisms.
- Ability to identify when urgent investigations are needed.
- Ability to recognize when a patient requires urgent referral for further assessment.
- Ability to present clinical reasoning in a clear and organized manner.

Attitude and behaviour

- Logical, honest, and responsible approach to interpretation of findings.

- Respectful communication with the patient, caregiver, and teacher.
- Awareness of one's level of competence and readiness to seek immediate guidance when needed.
- Professional attitude during clinical discussion and referral-related decision making.

Experience

- Participated in at least 2–3 case-based discussions related to bleeding disorders or thromboembolic disease.
- Practiced correlating symptoms and signs with basic science concepts under supervision.
- Observed or participated in supervised discussions on urgent investigations and referral in relevant cases.
- Received structured faculty feedback on reasoning and communication.

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

- Case-based discussion (CBD)
- Direct observation during tutorial / CBL / clinical discussion
- Structured oral presentation of clinical reasoning
- Mini-CEX / short case assessment
- Faculty feedback on interpretation and referral decision

6. Entrustment for which level of supervision is to be reached at which stage of training?

By the end of second-year MBBS, the student should reach EPA Level 2 for this activity.

Level 2 – May perform the task with direct, proactive supervision.

At this stage, the student should be able to correlate clinical findings with basic science concepts and identify the need for urgent investigation and referral under direct faculty supervision, with the supervisor available to guide, prompt, and verify the reasoning when needed.

7. Expiration date

6–12 months without practice or until reinforced in subsequent integrated clinical learning sessions.

Theme 4: Recurrent Infections, Fever & Lymphadenopathy

EPA I

1. Title of the EPA

Obtain a focused history in a child presenting with recurrent infections, fever, and neck swelling

2. Specification and limitations

This EPA includes:

1. Establishing rapport with the child and caregiver in a respectful, professional, and age-appropriate manner.
2. Obtaining a focused history of presenting complaints including recurrent infections, fever, neck swelling, duration and frequency of symptoms, and progression over time.
3. Asking relevant questions about previous similar episodes, recurrent throat or chest infections, vaccination history, appetite, weight loss, drug history, and past medical history.
4. Eliciting associated features such as poor growth, lethargy, prolonged fever, sore throat, cough, or other enlarged swellings.
5. Asking about family history, contact history, and possible risk factors for recurrent infection or immune dysfunction.
6. Summarizing the history in a logical and structured manner and presenting it to the facilitator.

Context: pediatric outpatient clinic, classroom-based clinical teaching, skills lab, or simulated patient encounter.

Limitations:

This EPA is limited to focused history taking only. It does not include physical examination, independent diagnosis, interpretation of investigations, or management planning. It is intended for second-year MBBS students under faculty supervision.

3. Most relevant domains of competence

- Medical Expert ✓
- Communicator ✓
- Collaborator ✓
- Professional ✓
- Scholar ✓
- Health Advocate ✓
- Manager ✗

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

Knowledge

- Basic understanding of the clinical significance of recurrent infections, fever, and cervical swelling.
- Basic concepts of innate immunity, acquired immunity, lymphoid tissues, and host defense mechanisms.
- Awareness of common causes of recurrent infections and lymphadenopathy in children at an introductory level.
- Knowledge of the importance of vaccination, nutrition, and past infection history in child health.

Skill

- Ability to take a focused and organized pediatric history from the caregiver and, where appropriate, from the child.
- Ability to ask relevant follow-up questions regarding onset, duration, recurrence, severity, and associated symptoms.
- Ability to identify important red flag features such as persistent fever, repeated infections, progressive neck swelling, poor weight gain, or prolonged illness.
- Ability to summarize and present the history clearly to the facilitator.

Attitude and behaviour

- Respectful, empathetic, and age-appropriate communication with the child and caregiver.
- Maintenance of privacy, confidentiality, and professionalism.
- Patience, attentive listening, and a non-judgmental approach during history taking.
- Willingness to seek guidance when uncertain.

Experience

- Observed focused pediatric history taking in at least 2–3 supervised cases or simulations involving fever, recurrent infections, or lymphadenopathy.
- Performed focused history taking under supervision on at least 3–5 children / simulated pediatric cases.
- Participated in faculty-guided feedback sessions on communication and history-taking skills.

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

- Direct observation by facilitator during history taking
- Mini-CEX / structured history-taking checklist
- Case-based discussion
- Oral presentation of the history summary
- Faculty or simulated patient feedback

6. Entrustment for which level of supervision is to be reached at which stage of training?

By the end of second-year MBBS, the student should reach EPA Level 2 for this activity.

Level 2 – May perform the task with direct, proactive supervision.

At this stage, the student should be able to obtain a focused history in a child presenting with recurrent infections, fever, and neck swelling under direct faculty supervision, with the supervisor available to guide, prompt, and verify the findings when needed.

7. Expiration date

6–12 months without practice or until reinforced in subsequent clinical skills teaching.

EPA 2

1. Title of the EPA

Perform a general and local examination to identify fever, lymphadenopathy, and associated clinical signs

2. Specification and limitations

This EPA includes:

1. Greeting the child and caregiver, explaining the examination, and taking consent in an age-appropriate and professional manner.
2. Performing a general physical examination in a systematic way.
3. Identifying fever and associated general signs such as ill appearance, pallor, lethargy, or poor nutritional status.
4. Performing a local examination of the neck to identify cervical lymphadenopathy, including number, size, tenderness, mobility, consistency, and laterality of lymph nodes.
5. Looking for other associated clinical signs such as throat congestion, tonsillar enlargement, skin infection, hepatosplenomegaly, or signs of chronic/recurrent infection.
6. Maintaining patient comfort, privacy, and professionalism throughout the examination.
7. Summarizing the examination findings in a clear and organized manner.

Context: pediatric outpatient clinic, classroom-based clinical teaching, skills lab, or simulated patient encounter.

Limitations:

This EPA is limited to general and local physical examination only. It does not include independent diagnosis, interpretation of investigations, or management planning. It is intended for second-year MBBS students under faculty supervision.

3. Most relevant domains of competence

- Medical Expert ✓
- Communicator ✓

- Collaborator ✓
- Professional ✓
- Scholar ✓
- Health Advocate ✓
- Manager ✗

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

Knowledge

- Basic understanding of the clinical signs of fever, lymphadenopathy, and recurrent infection.
- Knowledge of common examination findings in cervical lymph node enlargement.
- Basic concepts of lymphoid tissues, inflammatory response, and immune activation.
- Awareness of associated signs that may suggest local or systemic infection.

Skill

- Ability to perform a structured general physical examination in a child.
- Ability to measure and identify fever and observe associated general signs.
- Ability to perform a local neck examination to assess lymph nodes systematically.
- Ability to identify associated clinical signs and present examination findings clearly to the facilitator.

Attitude and behaviour

- Respectful, gentle, and age-appropriate approach toward the child.
- Maintenance of privacy, comfort, and professionalism during examination.
- Clear communication with the caregiver and reassurance of the child.
- Willingness to accept supervision and improve technique through feedback.

Experience

- Observed examination of children with fever, lymphadenopathy, or recurrent infections in at least 2–3 supervised sessions.
- Performed general and local examination under supervision on at least 3–5 children / simulated pediatric cases.

- Participated in structured feedback sessions on examination technique and clinical presentation.

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

- Direct observation by faculty during examination
- Mini-CEX / structured clinical skills checklist
- OSCE / station-based assessment
- Case-based discussion
- Faculty feedback on examination technique and presentation of findings

6. Entrustment for which level of supervision is to be reached at which stage of training?

By the end of second-year MBBS, the student should reach EPA Level 2 for this activity.

Level 2 – May perform the task with direct, proactive supervision.

At this stage, the student should be able to perform a general and local examination to identify fever, lymphadenopathy, and associated clinical signs under direct faculty supervision, with the supervisor available to guide, prompt, and verify the findings when needed.

7. Expiration date

6–12 months without practice or until reinforced in subsequent clinical skills teaching.

EPA 3

1. Title of the EPA

Correlate clinical findings with basic science concepts and recognize the need for initial investigations and referral

2. Specification and limitations

This EPA includes:

1. Identifying key clinical findings such as recurrent infections, fever, cervical lymphadenopathy, lethargy, and associated constitutional symptoms.
2. Relating these findings to relevant basic science concepts, including innate and acquired immunity, lymphoid organ function, inflammatory response, fever regulation, and host defense mechanisms.
3. Recognizing the need for initial investigations such as complete blood count (CBC), differential leukocyte count, ESR/CRP, and other basic tests as guided by the facilitator.
4. Recognizing when the child requires further referral for detailed evaluation.
5. Communicating the clinical reasoning in a clear, structured, and simple manner.

Context: classroom discussion, CBL session, pediatric teaching session, skills lab, or simulated patient encounter.

Limitations:

This EPA is limited to introductory clinical reasoning using basic science concepts only. It does not include independent diagnosis, advanced interpretation of investigations, prescription writing, or definitive management. It is intended for second-year MBBS students under faculty supervision.

3. Most relevant domains of competence

- Medical Expert ✓
- Communicator ✓
- Collaborator ✓
- Professional ✓
- Scholar ✓
- Health Advocate ✓
- Manager ✗

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

Knowledge

- Basic understanding of innate immunity, acquired immunity, and the role of lymphoid tissues in host defense.
- Knowledge of the relationship between recurrent infections, fever, and lymphadenopathy.
- Basic concepts of inflammation, white blood cell response, and fever mechanisms.
- Awareness of common initial investigations used in a child with recurrent infections and lymph node enlargement.

Skill

- Ability to relate common clinical findings to underlying physiological, immunological, and pathological mechanisms.
- Ability to identify when initial investigations are needed.
- Ability to recognize when a child requires referral for further assessment.
- Ability to present clinical reasoning in a clear and organized manner.

Attitude and behaviour

- Logical, honest, and responsible approach to interpretation of findings.
- Respectful communication with the child, caregiver, and teacher.
- Awareness of one's level of competence and readiness to seek guidance when needed.
- Professional attitude during clinical discussion and referral-related decision making.

Experience

- Participated in at least 2–3 case-based discussions related to recurrent infections, fever, or lymphadenopathy.
- Practiced correlating symptoms and signs with basic science concepts under supervision.
- Observed or participated in supervised discussions on initial investigations and referral in relevant pediatric cases.
- Received structured faculty feedback on reasoning and communication.

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

- Case-based discussion (CBD)
- Direct observation during tutorial / CBL / clinical discussion
- Structured oral presentation of clinical reasoning
- Mini-CEX / short case assessment
- Faculty feedback on interpretation and referral decision

6. Entrustment for which level of supervision is to be reached at which stage of training?

By the end of second-year MBBS, the student should reach EPA Level 2 for this activity.

Level 2 – May perform the task with direct, proactive supervision.

At this stage, the student should be able to correlate clinical findings with basic science concepts and recognize the need for initial investigations and referral under direct faculty supervision, with the supervisor available to guide, prompt, and verify the reasoning when needed.

7. Expiration date

6–12 months without practice or until reinforced in subsequent integrated clinical learning sessions.